OCD Received 12/7/2020

Form 3160-3
(June 2015)

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: NMNM091078

6. If Indian, Allotee or Tribe Name:

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other

1c. Type of Completion: ☐ Hydraulic Fracturing ☑ Single Zone ☐ Multiple Zone

7. If Unit or CA Agreement, Name and No.:

8. Lease Name and Well No.: RANA SALADA FED COM 0605 132H

2. Name of Operator: NOVO OIL AND GAS NORTHERN DELAWARE LLC

9. API Well No.: 30 015 47775

3a. Address: 1001 West Wilshire Boulevard Suite 206, Oklahoma City, (

3b. Phone No. *(include area code)*: (405) 404-0414

10. Field and Pool, or Exploratory: Culebra Bluff;BS ~~CORRAL DRAW BONE SPRING/null~~

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface: SENE / 1327 FNL / 355 FEL / LAT 32.338402 / LONG -104.0331154

At proposed prod. zone: SENE / 1518 FNL / 10 FEL / LAT 32.3375534 / LONG -103.9983761

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 1/T23S/R28E/NMP

14. Distance in miles and direction from nearest town or post office*: 5 miles

12. County or Parish: EDDY

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 355 feet

16. No of acres in lease: 798.88

17. Spacing Unit dedicated to this well: 316.52

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 20 feet

19. Proposed Depth: 9931 feet / 20271 feet

20. BLM/BIA Bond No. in file: FED: NMB001536

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 3089 feet

22. Approximate date work will start*: 03/01/2020

23. Estimated duration: 90 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	BRIAN WOOD / Ph: (405) 404-0414	01/15/2020

Title: President

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575) 234-5959	12/04/2020

Title	Office
Assistant Field Manager Lands & Minerals	Carlsbad Field Office

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.

- Will require a directional survey with the C-104 SL

Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string

KP 12/10/2020 GEO Review

APPROVED WITH CONDITIONS

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 12/04/2020 Entered - KMS NMOCD

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-015-47775	15011	CULEBRA BLUFF; BONE SPRING, SOUTH

[4] Property Code	[5] Property Name	[6] Well Number
325746	RANA SALADA FED COM 0605	132H

[7] OGRID No.	[8] Operator Name	[9] Elevation
372920	NOVO OIL & GAS NORTHERN DELAWARE, LLC	3089.3

[10] Surface Location

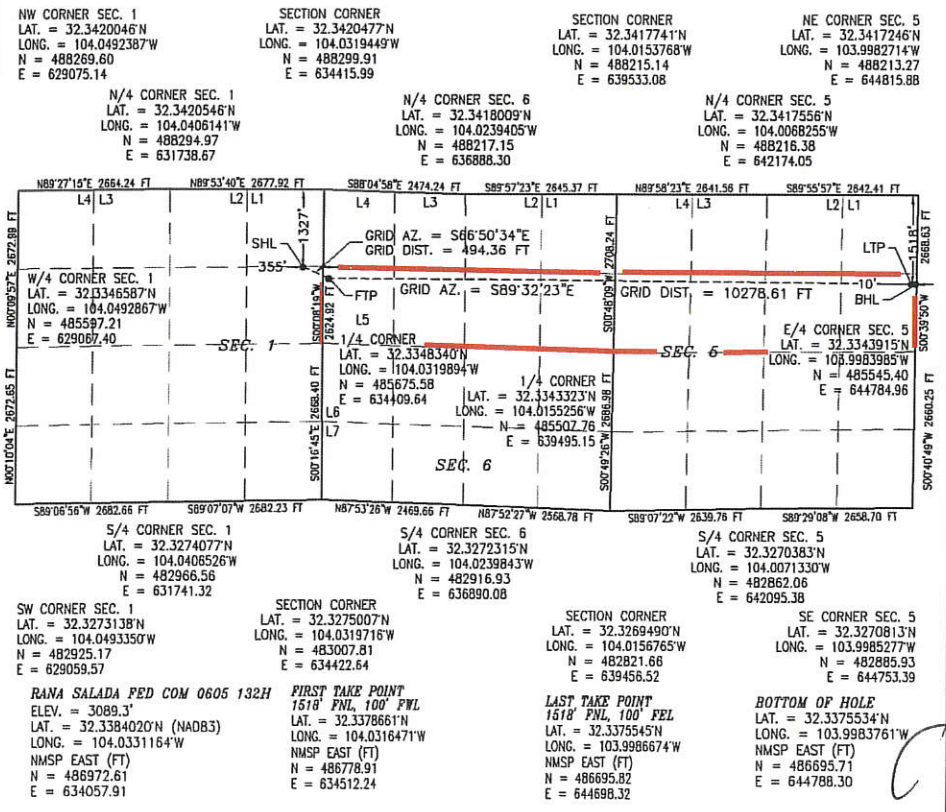
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	1	23 S	28 E		1327	NORTH	355	EAST	EDDY

[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	5	23 S	29 E		1518	NORTH	10	EAST	EDDY

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
316.52		C	

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



[17] OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

12-28-19
Signature Date

BRIAN WOOD
Printed Name

brian@permitswest.com
E-mail Address

(505) 466-8120

[18] SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

APRIL 19, 2019
Date of Survey

Signature and Seal of Professional Surveyor:

Certificate Number: FILIMON F. JARAMILLO, PLS 12797

SURVEY NO. 7173

Intent YES As Drilled

API #

Operator Name:	Property Name:	Well Number
NOVO OIL & GAS NORTHERN DELAWARE, LLC	RANA SALADA FED COM 0605	132H

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
H	1	23S	28E		1327	NORTH	355	EAST	EDDY

Latitude	Longitude	NAD
32.3384020	104.0331164	83

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
	6	23S	29E	5	1518	NORTH	100	WEST	EDDY

Latitude	Longitude	NAD
32.3378661	104.0316471	83

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
H	5	23S	29E		1518	NORTH	100	EAST	EDDY

Latitude	Longitude	NAD
32.3375545	104.9986674	83

Is this well the defining well for the Horizontal Spacing Unit? NO

Is this well an infill well? YES

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #
30-015-

Operator Name:	Property Name:	Well Number
NOVO OIL & GAS NORTHERN DELAWARE, LLC	RANA SALADA FED COM 0605	135H

KZ 06/29/2018

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Devon Energy Production Company LP**
LEASE NO.:	**NMNM091078**
LOCATION:	Section 1, T.23 S., R.28 E., NMPM
COUNTY:	Eddy County, New Mexico

WELL NAME & NO.:	Rana Salada Fed Com 0605 131H
SURFACE HOLE FOOTAGE:	1127'/N & 425'/E
BOTTOM HOLE FOOTAGE	726'/N & 10'/E

WELL NAME & NO.:	Rana Salada Fed Com 0605 132H
SURFACE HOLE FOOTAGE:	1327'/N & 355'/E
BOTTOM HOLE FOOTAGE	1518'/N & 10'/E

COA

H2S	☐ Yes	☒ No	
Potash	☐ None	☐ Secretary	☒ R-111-P
Cave/Karst Potential	☐ Low	☒ Medium	☐ High
Cave/Karst Potential	☐ Critical		
Variance	☐ None	☒ Flex Hose	☐ Other
Wellhead	☐ Conventional	☒ Multibowl	☐ Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP
Other	☐ Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☑ COM	☐ Unit

A. HYDROGEN SULFIDE

Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately **280 feet** (a minimum of **70 feet (Eddy County)** into the Rustler Anhydrite and above the salt) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature

survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

b. Wait on cement (WOC) time for a primary cement job will be a minimum of **24 hours in the Potash Area** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing shall be set at approximately **2930 feet** is:

- Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.** **Cement excess is less than 25%, more cement might be required.**

❖ In Medium Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.

❖ In R111 Potash Areas if cement does not circulate to surface on the first two salt protection casing strings, the cement on the 3rd casing string must come to surface.

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:

- Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Cement excess is less than 25%, more cement might be required.**

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'

2. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.

a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
c. Manufacturer representative shall install the test plug for the initial BOP test.
d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

D. SPECIAL REQUIREMENT (S)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ Eddy County
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 393-3612

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

   a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
   b. When the operator proposes to set surface casing with Spudder Rig
      - Notify the BLM when moving in and removing the Spudder Rig.
      - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
      - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:

    a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
    b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
    c. Manufacturer representative shall install the test plug for the initial BOP test.
    d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
    e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not

hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

e. The results of the test shall be reported to the appropriate BLM office.

f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

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

Submit Original
to Appropriate
District Office

GAS CAPTURE PLAN

Date: 12/28/2019

X Original Operator & OGRID No.: Novo Oil & Gas Northern Delaware, LLC (372920)
□ Amended - Reason for Amendment: _____

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomplete to new zone, re-frac) activity.

Note: A C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule 19.15.18.12.A

Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well	API	SHL (ULSTR)	SHL Footages	Expected MCF/D	Flared or Vented	Comments
Rana Salada Fed Com 0605 232H	30-015-	H-1-23S-28E	1127 FNL & 395 FEL	7500	30 days	Time depends on well clean up
Rana Salada Fed Com 0605 231H	30-015-46085	A-1-23S-28E	1127 FNL & 395 FEL	7500	30 days	Time depends on well clean up
Rana Salada Fed Com 0605 211H	30-015-46084	A-1-23S-28E	1127 FNL & 365 FEL	7500	30 days	Time depends on well clean up
Rana Salada Fed Com 0605 132H	30-015-	H-1-23S-28E	1327 FNL & 355 FEL	2500	30 days	Time depends on well clean up
Rana Salada Fed Com 0605 131H	30-015-	A-1-23S-28E	1127 FNL & 425 FEL	2500	30 days	Time depends on well clean up
Rana Salada Fed Com 0605 121H	30-015-46076	A-1-23S-28E	1127 FNL & 335 FEL	2500	30 days	Time depends on well clean up

Gathering System and Pipeline Notification

Wells will be connected to Enterprise via Novo's newly built 1.16 mile long pipeline rights-of-way NMNM-140581 and NMNM-140608 after flowback operations are complete. Novo Oil & Gas Northern Delaware, LLC will provide (periodically) to its Gas Transporter a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, Novo Oil & Gas Northern Delaware, LLC and its Gas Transporter have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at an as yet undetermined Gas Transporter Processing Plant located in Eddy County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on its Gas Transporter system at that time. Based on current information, it is Novo Oil & Gas Northern Delaware, LLC's belief an existing or new system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
  - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
  - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
  - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

APD ID: 10400053216 **Submission Date:** 01/15/2020

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: RANA SALADA FED COM 0605 **Well Number:** 132H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
634785	QUATERNARY	3089	0	0	OTHER : None	USEABLE WATER	N
634789	RUSTLER	2783	306	306	ANHYDRITE	NONE	N
634796	SALADO	2329	760	760	SALT	NONE	N
634790	CASTILE	1682	1407	1407	ANHYDRITE	NONE	N
634795	BELL CANYON	263	2826	2830	SANDSTONE	NATURAL GAS, OIL	N
634794	BASE OF SALT	263	2826	2830	SALT	NONE	N
634786	CHERRY CANYON	-755	3844	3853	SANDSTONE	NATURAL GAS, OIL	N
634797	BRUSHY CANYON	-2215	5304	5320	SANDSTONE	NATURAL GAS, OIL	N
634793	BONE SPRING LIME	-3266	6355	6371	LIMESTONE	NATURAL GAS, OIL	N
634798	BONE SPRING 1ST	-4385	7474	7490	SANDSTONE	NATURAL GAS, OIL	N
634787	BONE SPRING 2ND	-4645	7734	7750	OTHER : Carbonate	NATURAL GAS, OIL	N
634799	BONE SPRING 2ND	-5120	8209	8225	SANDSTONE	NATURAL GAS, OIL	N
634788	BONE SPRING 3RD	-5505	8594	8610	OTHER : Carbonate	NATURAL GAS, OIL	N
634791	BONE SPRING 3RD	-6360	9449	9473	SANDSTONE	CO2, NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: RANA SALADA FED COM 0605 **Well Number:** 132H

Pressure Rating (PSI): 5M **Rating Depth:** 12000

Equipment: A 13.625 5,000-psi BOP system will be installed on a multi-bowl (speed head) wellhead with a 13.625 flanged casing spool. Top flange of casing spool will be set in a cellar below ground level. The BOP system will consist of a single pipe ram on the bottom, mud cross, double pipe ram with blind rams on bottom and pipe rams on top, and annular preventer. Blowout preventer will be installed on top of the 13.375 surface casing and will remain installed to TD of the well. Wellhead, blowout preventer, and choke manifold diagram are included.
Requesting Variance? YES

Variance request: Variance is requested to use a co-flex hose between the BOP system and choke manifold. A typical co-flex pressure test certificate is attached. An equipment specific co-flex pressure test certificate will be on site when testing the BOP.
Testing Procedure: BOP system will be isolated with a test plug and tested by an independent tester to 250-psi low and 5000-psi high for 10 minutes before drilling out the surface shoe. Surface casing will be pressure tested to 250 psi low and 1500 psi high. Salt protection casing will be pressure tested to 250 psi low and 1500 psi high for 30 minutes.
Choke Diagram Attachment:

RS_0605_132H_Choke_20200114102827.pdf

BOP Diagram Attachment:

RS_0605_132H_BOP_20200114102832.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	381	0	381	3089	2708	381	J-55	54.5	BUTT	1.125	1.125	DRY	1.6	DRY	1.6
2	OTHER	12.25	9.625	NEW	API	N	0	2930	0	2927	3089	162	2930	J-55	40	BUTT	1.125	1.2	DRY	1.6	DRY	1.6
3	PRODUCTION	6.75	5.5	NEW	API	N	0	20271	0	9931	3089	-6842	20271	P-110	20	OTHER - TMK DQX	1.125	1.125	DRY	1.8	DRY	1.8

Casing Attachments

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: RANA SALADA FED COM 0605 **Well Number:** 132H

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

RS_0605_132H_Casing_Design_Assumptions_20200114102911.pdf

Casing ID: 2 **String Type:** OTHER - Salt Protection

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

RS_0605_132H_Casing_Design_Assumptions_20200114102942.pdf

Casing ID: 3 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

RS_0605_132H_Casing_Design_Assumptions_20200114103008.pdf

5.5in_DQX_Casing_Spec_20200114103015.pdf

Section 4 - Cement

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: RANA SALADA FED COM 0605 **Well Number:** 132H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	0	0	0	0	0		None	None
SURFACE	Tail		0	381	327	1.62	13.8	529	100	Class C	gel + accelerator + LCM
OTHER	Lead		0	2930	365	2.27	11.9	832	20	Class C	gel + extender + LCM
OTHER	Tail		0	2930	200	1.34	14.8	268	20	Class C	gel + retarder + LCM
PRODUCTION	Lead		0	20271	688	4.08	9.19	2807	20	Class H	fluid loss + retarder + LCM + extender & beads
PRODUCTION	Tail		0	20271	2350	1.42	13.2	3337	20	Class H	fluid loss + retarder + LCM

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: All necessary mud products (barite, bentonite, LCM) to control weight and fluid loss will be on site at all times. Mud program may change due to hole conditions

Describe the mud monitoring system utilized: An electronic PVT mud system will monitor flow rate, pump pressure, stroke rate, and volume.

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
2930	20271	OIL-BASED MUD	8.5	10							
0	381	OTHER : Fresh water spud	8.3	8.3							

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: RANA SALADA FED COM 0605 **Well Number:** 132H

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
381	2930	OTHER : Brine or cut brine	9.8	10.2							

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

A 2-person mud logging program will be used from 3000’ to TD.

GR will be log will be acquired by MDW tools from the intermediate casing to TD.

List of open and cased hole logs run in the well:

GAMMA RAY LOG,

Coring operation description for the well:

No core or drill stem test is planned.

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 4828 **Anticipated Surface Pressure:** 2643

Anticipated Bottom Hole Temperature(F): 150

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

RS_0605_132H_H2S_Plan_20200114103254.pdf

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: RANA SALADA FED COM 0605 **Well Number:** 132H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

RS_0605_132H_Horizontal_Plan_20200114103319.pdf

Other proposed operations facets description:

Please see highlighted casing spec sheet to address deficiency.

Other proposed operations facets attachment:

RS_0605_132H_Drill_Plan_20200114103327.pdf
CoFlex_Certs_20200114103341.pdf
RS_0605_132H_Speedhead_Specs_20200114103405.pdf
RS_0605_132H_Anti_Collision_Report_20200114103425.pdf

Other Variance attachment:

RS_0605_132H_Alternative_Casing__Spec_Request_20200114103433.pdf
RS_0605_132H_Casing_Design_Assumptions_20200114103439.pdf
Alternative_Casing_Spec_CoupoingOD_JointTension_20200903135348.pdf

Drilling Program

1. ESTIMATED TOPS

Formation Name	TVD	MD	Bearing
Quaternary	0'	0'	water
Rustler anhydrite	306'	306'	N/A
Salado salt	760'	760'	N/A
Castile anhydrite	1407'	1407'	N/A
Base salt	2826'	2830'	N/A
Bell Canyon sandstone	2826'	2830'	hydrocarbons
Cherry Canyon sandstone	3844'	3853'	hydrocarbons
Brushy Canyon sandstone	5304'	5320'	hydrocarbons
Bone Spring limestone	6355'	6371'	hydrocarbons
1st Bone Spring sandstone	7474'	7490'	hydrocarbons
2nd Bone Spring carbonate	7734'	7750'	hydrocarbons
2nd Bone Spring sandstone	8209'	8225'	hydrocarbons
3rd Bone Spring carbonate	8594'	8610'	hydrocarbons
(KOP	9237'	9254'	hydrocarbons)
3rd Bone Spring sandstone	9449'	9473'	hydrocarbons
TD	9931'	20271'	hydrocarbons

2. NOTABLE ZONES

Third Bone Spring is the goal. All perforations will be ≥100' from the dedication perimeter. Closest water well (C 02804) is 1.7 miles southeast. Depth to water was not reported in this 100' deep well.

3. PRESSURE CONTROL

A 13.625" 5,000-psi BOP system will be installed on a multi-bowl (speed head) wellhead with a 13.625" flanged casing spool. Top flange of casing spool will be

set in a cellar below ground level. BOP system will consist of a single pipe ram on the bottom, mud cross, double pipe ram with blind rams on bottom and pipe rams on top, and annular preventer. Blowout preventer will be installed on top of the 13.375" surface casing and will remain installed to TD of the well. Wellhead, blowout preventer, and choke manifold diagrams are included.

BOP system will be isolated with a test plug and tested by an independent tester to 250-psi low and 5000-psi high for 10 minutes before drilling out the surface shoe. Variance is requested to use a co-flex hose between the BOP system and choke manifold. A typical co-flex pressure test certificate is attached. An equipment specific co-flex pressure test certificate will be on site when testing the BOP.

Surface casing will be pressure tested to 250 psi low and 1500 psi high. Salt protection casing will be pressure tested to 250 psi low and 1500 psi high for 30 minutes.

4. CASING & CEMENT

Variance is requested for an option to use a surface rig to drill the surface hole, set the surface casing, and cement the surface casing. If the schedule between rigs would preclude presetting the surface casing, then the primary rig will MIRU and drill all of the well.

All casing will be API and new. Alternate couplings could be substituted on the 5.5" production casing due to coupling availability. See attached casing assumption worksheet.

Novo Oil & Gas Northern Delaware, LLC
Rana Salada Fed Com 0605 132H
SHL 1327' FNL & 355' FEL 1-23S-28E
BHL 1518' FNL & 10' FEL 5-23S-29e
Eddy County, NM

Hole O. D.	Set MD	Set TVD	Casing O. D.	Weight (lb/ft)	Grade	Joint	Collapse	Burst	Tension
17.5"	0' - 381'	0' - 381'	13.375" surface	54.5	J-55	BTC	1.125	1.125	1.6
12.25"	0' - 2930'	0' - 2927'	9.625" other (salt protection)	40	J-55	BTC	1.125	1.125	1.6
8.75"	0' – 20271'	0' – 9931'	5.5" product.	20	P-110	TMK DQX	1.125	1.125	1.8
8.75"	0' – 20271'	0' – 9931'	5.5" alternate product.	20	P-110	GBCD	1.125	1.125	1.8
8.75"	0' – 20271'	0' – 9931'	5.5" alternate product.	20	P-110 HC	CDC	1.125	1.125	1.8

Name	Type	Sacks	Yield	Cu. Ft.	Weight	Blend
Surface	Tail	327	1.62	529	13.8	Class C + gel + accelerator + LCM
TOC = GL		100% Excess			Centralizers on every jt to GL	
Other - Salt Protection	Lead	365	2.28	832	11.9	Class C + gel + extender + LCM
	Tail	200	1.34	268	14.8	Class C + gel + retarder + LCM
TOC = GL		20% Excess			Centralizers on bottom 3 jts and then 1 centralizer every 4th jt to GL	
Production	Lead	688	4.08	2807	9.2	Class H + fluid loss + retarder + LCM + extender & beads
	Tail	2350	1.42	3337	13.2	Class H + fluid loss + retarder + LCM
TOC = GL		20% Excess			None planned	

5. MUD PROGRAM

An electronic PVT mud system will monitor flow rate, pump pressure, stroke rate, and volume. Necessary mud products (barite, bentonite, LCM) to control weight and fluid loss will be on site at all times. Mud program may change due to hole conditions. A closed loop system will be used.

Type	Interval (MD)	lb/gal	Viscosity	Fluid Loss
fresh water spud	0' - 381'	8.3	30 - 60	NC
brine or cut brine	381' - 2930'	9.8 – 10.2	35 - 45	NC
OBM	2930' – 20271'	8.5 – 10.0	35 - 65	4 - 6

6. CORES, TESTS, & LOGS

No core or drill stem test is planned.

A 2-person mud logging program will be used from ≈3000' to TD.

GR log will be acquired by MWD tools from the intermediate casing to TD.

7. DOWN HOLE CONDITIONS

No abnormal pressure or temperature is expected. Maximum expected bottom hole pressure is ≈4828 psi. Expected bottom hole temperature is ≈150° F.

An H2S plan is attached.

8. OTHER INFORMATION

Anticipated spud date is upon approval. It is expected it will take ≈3 months to drill and complete the well.

RANA SALADA FED COM 0605 132H

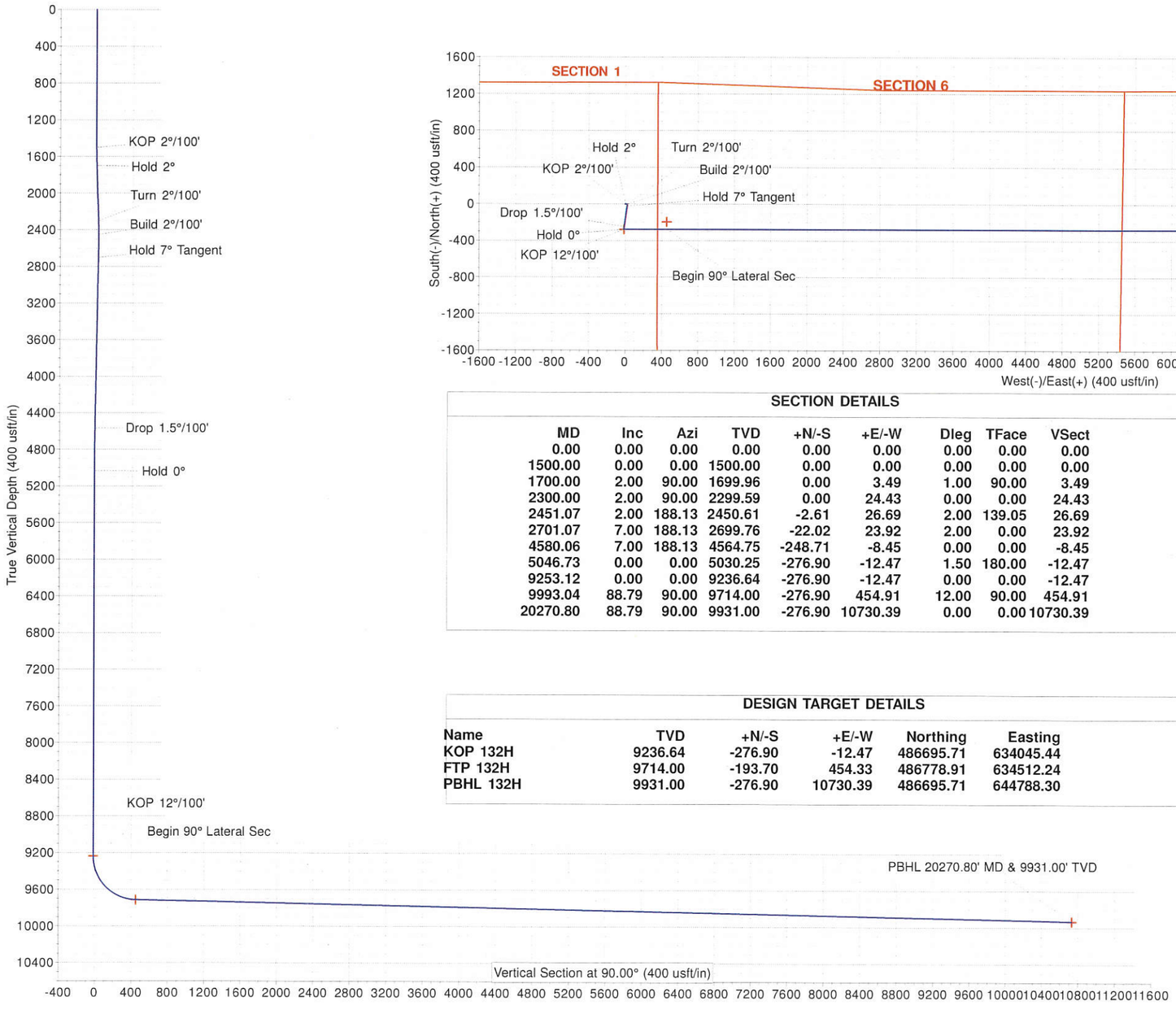
NOVO

Project:	EDDY CO., NEW MEXICO (NM27E)
Site:	SEC 01-T23S-R28E
Well:	RANA SALADA FED COM 0605 132H
Wellbore:	HORIZONTAL
Design:	PLAN 1 V1

WELL DETAILS: RANA SALADA FED COM 0605 132H

3089.30

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	486972.61	634057.91	32.33840	-104.03312



SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	0.00
1700.00	2.00	90.00	1699.96	0.00	3.49	1.00	90.00	3.49
2300.00	2.00	90.00	2299.59	0.00	24.43	0.00	0.00	24.43
2451.07	2.00	188.13	2450.61	-2.61	26.69	2.00	139.05	26.69
2701.07	7.00	188.13	2699.76	-22.02	23.92	2.00	0.00	23.92
4580.06	7.00	188.13	4564.75	-248.71	-8.45	0.00	0.00	-8.45
5046.73	0.00	0.00	5030.25	-276.90	-12.47	1.50	180.00	-12.47
9253.12	0.00	0.00	9236.64	-276.90	-12.47	0.00	0.00	-12.47
9993.04	88.79	90.00	9714.00	-276.90	454.91	12.00	90.00	454.91
20270.80	88.79	90.00	9931.00	-276.90	10730.39	0.00	0.00	10730.39

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
KOP 132H	9236.64	-276.90	-12.47	486695.71	634045.44
FTP 132H	9714.00	-193.70	454.33	486778.91	634512.24
PBHL 132H	9931.00	-276.90	10730.39	486695.71	644788.30

Project	EDDY CO., NEW MEXICO (NM27E)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	SEC 01-T23S-R28E				
Site Position:		Northing:	487,172.32 usft	Latitude:	32.33895
From:	Lat/Long	Easting:	633,988.36 usft	Longitude:	-104.03334
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.16 °

Well	RANA SALADA FED COM 0605 132H					
Well Position	+N/-S	0.00 usft	Northing:	486,972.61 usft	Latitude:	32.33840
	+E/-W	0.00 usft	Easting:	634,057.91 usft	Longitude:	-104.03312
Position Uncertainty		0.00 usft	Wellhead Elevation:	3,089.30 usft	Ground Level:	3,089.30 usft

Wellbore	HORIZONTAL				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	06/24/19	6.96	60.07	47,751.85702470

Design	PLAN 1 V1				
Audit Notes:					
Version:		Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	90.00	

Survey Tool Program	Date 06/25/19			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	20,270.80	PLAN 1 V1 (HORIZONTAL)	MWD	OWSG MWD - Standard

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00
KOP 2°/100'							
1,600.00	1.00	90.00	1,599.99	0.00	0.87	0.87	1.00
1,700.00	2.00	90.00	1,699.96	0.00	3.49	3.49	1.00
Hold 2°							
1,800.00	2.00	90.00	1,799.90	0.00	6.98	6.98	0.00

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,900.00	2.00	90.00	1,899.84	0.00	10.47	10.47	0.00
2,000.00	2.00	90.00	1,999.78	0.00	13.96	13.96	0.00
2,100.00	2.00	90.00	2,099.72	0.00	17.45	17.45	0.00
2,200.00	2.00	90.00	2,199.65	0.00	20.94	20.94	0.00
2,300.00	2.00	90.00	2,299.59	0.00	24.43	24.43	0.00
Turn 2°/100'							
2,400.00	1.40	159.53	2,399.56	-1.14	26.60	26.60	2.00
2,451.07	2.00	188.12	2,450.61	-2.61	26.69	26.69	2.00
Build 2°/100'							
2,500.00	2.98	188.13	2,499.49	-4.71	26.39	26.39	2.00
2,600.00	4.98	188.13	2,599.24	-11.58	25.41	25.41	2.00
2,701.07	7.00	188.13	2,699.76	-22.02	23.92	23.92	2.00
Hold 7° Tangent							
2,800.00	7.00	188.13	2,797.95	-33.96	22.22	22.22	0.00
2,900.00	7.00	188.13	2,897.20	-46.02	20.50	20.50	0.00
3,000.00	7.00	188.13	2,996.46	-58.09	18.77	18.77	0.00
3,100.00	7.00	188.13	3,095.71	-70.15	17.05	17.05	0.00
3,200.00	7.00	188.13	3,194.97	-82.22	15.33	15.33	0.00
3,300.00	7.00	188.13	3,294.22	-94.28	13.61	13.61	0.00
3,400.00	7.00	188.13	3,393.48	-106.34	11.88	11.88	0.00
3,500.00	7.00	188.13	3,492.73	-118.41	10.16	10.16	0.00
3,600.00	7.00	188.13	3,591.99	-130.47	8.44	8.44	0.00
3,700.00	7.00	188.13	3,691.24	-142.54	6.71	6.71	0.00
3,800.00	7.00	188.13	3,790.50	-154.60	4.99	4.99	0.00
3,900.00	7.00	188.13	3,889.75	-166.67	3.27	3.27	0.00
4,000.00	7.00	188.13	3,989.01	-178.73	1.55	1.55	0.00
4,100.00	7.00	188.13	4,088.26	-190.80	-0.18	-0.18	0.00
4,200.00	7.00	188.13	4,187.51	-202.86	-1.90	-1.90	0.00
4,300.00	7.00	188.13	4,286.77	-214.93	-3.62	-3.62	0.00
4,400.00	7.00	188.13	4,386.02	-226.99	-5.34	-5.34	0.00
4,500.00	7.00	188.13	4,485.28	-239.05	-7.07	-7.07	0.00
4,580.06	7.00	188.13	4,564.74	-248.71	-8.45	-8.45	0.00
Drop 1.5°/100'							
4,600.00	6.70	188.13	4,584.54	-251.07	-8.78	-8.78	1.50
4,700.00	5.20	188.13	4,684.00	-261.33	-10.25	-10.25	1.50
4,800.00	3.70	188.13	4,783.69	-269.01	-11.34	-11.34	1.50
4,900.00	2.20	188.13	4,883.56	-274.11	-12.07	-12.07	1.50
5,000.00	0.70	188.13	4,983.52	-276.62	-12.43	-12.43	1.50
5,046.73	0.00	0.00	5,030.25	-276.90	-12.47	-12.47	1.50
Hold 0°							
5,100.00	0.00	0.00	5,083.52	-276.90	-12.47	-12.47	0.00
5,200.00	0.00	0.00	5,183.52	-276.90	-12.47	-12.47	0.00
5,300.00	0.00	0.00	5,283.52	-276.90	-12.47	-12.47	0.00
5,400.00	0.00	0.00	5,383.52	-276.90	-12.47	-12.47	0.00
5,500.00	0.00	0.00	5,483.52	-276.90	-12.47	-12.47	0.00
5,600.00	0.00	0.00	5,583.52	-276.90	-12.47	-12.47	0.00
5,700.00	0.00	0.00	5,683.52	-276.90	-12.47	-12.47	0.00
5,800.00	0.00	0.00	5,783.52	-276.90	-12.47	-12.47	0.00
5,900.00	0.00	0.00	5,883.52	-276.90	-12.47	-12.47	0.00
6,000.00	0.00	0.00	5,983.52	-276.90	-12.47	-12.47	0.00
6,100.00	0.00	0.00	6,083.52	-276.90	-12.47	-12.47	0.00
6,200.00	0.00	0.00	6,183.52	-276.90	-12.47	-12.47	0.00
6,300.00	0.00	0.00	6,283.52	-276.90	-12.47	-12.47	0.00
6,400.00	0.00	0.00	6,383.52	-276.90	-12.47	-12.47	0.00

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
6,500.00	0.00	0.00	6,483.52	-276.90	-12.47	-12.47	0.00
6,600.00	0.00	0.00	6,583.52	-276.90	-12.47	-12.47	0.00
6,700.00	0.00	0.00	6,683.52	-276.90	-12.47	-12.47	0.00
6,800.00	0.00	0.00	6,783.52	-276.90	-12.47	-12.47	0.00
6,900.00	0.00	0.00	6,883.52	-276.90	-12.47	-12.47	0.00
7,000.00	0.00	0.00	6,983.52	-276.90	-12.47	-12.47	0.00
7,100.00	0.00	0.00	7,083.52	-276.90	-12.47	-12.47	0.00
7,200.00	0.00	0.00	7,183.52	-276.90	-12.47	-12.47	0.00
7,300.00	0.00	0.00	7,283.52	-276.90	-12.47	-12.47	0.00
7,400.00	0.00	0.00	7,383.52	-276.90	-12.47	-12.47	0.00
7,500.00	0.00	0.00	7,483.52	-276.90	-12.47	-12.47	0.00
7,600.00	0.00	0.00	7,583.52	-276.90	-12.47	-12.47	0.00
7,700.00	0.00	0.00	7,683.52	-276.90	-12.47	-12.47	0.00
7,800.00	0.00	0.00	7,783.52	-276.90	-12.47	-12.47	0.00
7,900.00	0.00	0.00	7,883.52	-276.90	-12.47	-12.47	0.00
8,000.00	0.00	0.00	7,983.52	-276.90	-12.47	-12.47	0.00
8,100.00	0.00	0.00	8,083.52	-276.90	-12.47	-12.47	0.00
8,200.00	0.00	0.00	8,183.52	-276.90	-12.47	-12.47	0.00
8,300.00	0.00	0.00	8,283.52	-276.90	-12.47	-12.47	0.00
8,400.00	0.00	0.00	8,383.52	-276.90	-12.47	-12.47	0.00
8,500.00	0.00	0.00	8,483.52	-276.90	-12.47	-12.47	0.00
8,600.00	0.00	0.00	8,583.52	-276.90	-12.47	-12.47	0.00
8,700.00	0.00	0.00	8,683.52	-276.90	-12.47	-12.47	0.00
8,800.00	0.00	0.00	8,783.52	-276.90	-12.47	-12.47	0.00
8,900.00	0.00	0.00	8,883.52	-276.90	-12.47	-12.47	0.00
9,000.00	0.00	0.00	8,983.52	-276.90	-12.47	-12.47	0.00
9,100.00	0.00	0.00	9,083.52	-276.90	-12.47	-12.47	0.00
9,200.00	0.00	0.00	9,183.52	-276.90	-12.47	-12.47	0.00
9,253.12	0.00	0.00	9,236.64	-276.90	-12.47	-12.47	0.00
KOP 12°/100' - KOP 132H							
9,275.00	2.63	90.00	9,258.51	-276.90	-11.97	-11.97	12.00
9,300.00	5.63	90.00	9,283.45	-276.90	-10.17	-10.17	12.00
9,325.00	8.63	90.00	9,308.25	-276.90	-7.07	-7.07	12.00
9,350.00	11.63	90.00	9,332.86	-276.90	-2.67	-2.67	12.00
9,375.00	14.63	90.00	9,357.20	-276.90	3.00	3.00	12.00
9,400.00	17.63	90.00	9,381.22	-276.90	9.94	9.94	12.00
9,425.00	20.63	90.00	9,404.83	-276.90	18.13	18.13	12.00
9,450.00	23.63	90.00	9,427.99	-276.90	27.55	27.55	12.00
9,475.00	26.63	90.00	9,450.62	-276.90	38.16	38.16	12.00
9,500.00	29.63	90.00	9,472.67	-276.90	49.95	49.95	12.00
9,525.00	32.63	90.00	9,494.06	-276.90	62.87	62.87	12.00
9,550.00	35.63	90.00	9,514.76	-276.90	76.89	76.89	12.00
9,575.00	38.63	90.00	9,534.69	-276.90	91.98	91.98	12.00
9,600.00	41.63	90.00	9,553.80	-276.90	108.09	108.09	12.00
9,625.00	44.63	90.00	9,572.05	-276.90	125.18	125.18	12.00
9,650.00	47.63	90.00	9,589.37	-276.90	143.20	143.20	12.00
9,675.00	50.63	90.00	9,605.73	-276.90	162.10	162.10	12.00
9,700.00	53.63	90.00	9,621.08	-276.90	181.83	181.83	12.00
9,725.00	56.63	90.00	9,635.37	-276.90	202.34	202.34	12.00
9,750.00	59.63	90.00	9,648.57	-276.90	223.57	223.57	12.00
9,775.00	62.63	90.00	9,660.64	-276.90	245.46	245.46	12.00
9,800.00	65.63	90.00	9,671.55	-276.90	267.95	267.95	12.00
9,825.00	68.63	90.00	9,681.26	-276.90	290.98	290.98	12.00
9,850.00	71.63	90.00	9,689.76	-276.90	314.49	314.49	12.00

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
9,875.00	74.63	90.00	9,697.02	-276.90	338.41	338.41	12.00
9,900.00	77.63	90.00	9,703.01	-276.90	362.68	362.68	12.00
9,925.00	80.63	90.00	9,707.73	-276.90	387.22	387.22	12.00
9,950.00	83.63	90.00	9,711.15	-276.90	411.99	411.99	12.00
9,975.00	86.63	90.00	9,713.28	-276.90	436.89	436.89	12.00
9,992.45	88.72	90.00	9,713.99	-276.90	454.33	454.33	12.00
FTP 132H							
9,993.04	88.79	90.00	9,714.00	-276.90	454.92	454.92	12.00
Begin 90° Lateral Sec							
10,000.00	88.79	90.00	9,714.15	-276.90	461.88	461.88	0.00
10,100.00	88.79	90.00	9,716.26	-276.90	561.85	561.85	0.00
10,200.00	88.79	90.00	9,718.37	-276.90	661.83	661.83	0.00
10,300.00	88.79	90.00	9,720.48	-276.90	761.81	761.81	0.00
10,400.00	88.79	90.00	9,722.59	-276.90	861.79	861.79	0.00
10,500.00	88.79	90.00	9,724.70	-276.90	961.76	961.76	0.00
10,600.00	88.79	90.00	9,726.81	-276.90	1,061.74	1,061.74	0.00
10,700.00	88.79	90.00	9,728.92	-276.90	1,161.72	1,161.72	0.00
10,800.00	88.79	90.00	9,731.04	-276.90	1,261.70	1,261.70	0.00
10,900.00	88.79	90.00	9,733.15	-276.90	1,361.67	1,361.67	0.00
11,000.00	88.79	90.00	9,735.26	-276.90	1,461.65	1,461.65	0.00
11,100.00	88.79	90.00	9,737.37	-276.90	1,561.63	1,561.63	0.00
11,200.00	88.79	90.00	9,739.48	-276.90	1,661.61	1,661.61	0.00
11,300.00	88.79	90.00	9,741.59	-276.90	1,761.59	1,761.59	0.00
11,400.00	88.79	90.00	9,743.70	-276.90	1,861.56	1,861.56	0.00
11,500.00	88.79	90.00	9,745.82	-276.90	1,961.54	1,961.54	0.00
11,600.00	88.79	90.00	9,747.93	-276.90	2,061.52	2,061.52	0.00
11,700.00	88.79	90.00	9,750.04	-276.90	2,161.50	2,161.50	0.00
11,800.00	88.79	90.00	9,752.15	-276.90	2,261.47	2,261.47	0.00
11,900.00	88.79	90.00	9,754.26	-276.90	2,361.45	2,361.45	0.00
12,000.00	88.79	90.00	9,756.37	-276.90	2,461.43	2,461.43	0.00
12,100.00	88.79	90.00	9,758.48	-276.90	2,561.41	2,561.41	0.00
12,200.00	88.79	90.00	9,760.60	-276.90	2,661.38	2,661.38	0.00
12,300.00	88.79	90.00	9,762.71	-276.90	2,761.36	2,761.36	0.00
12,400.00	88.79	90.00	9,764.82	-276.90	2,861.34	2,861.34	0.00
12,500.00	88.79	90.00	9,766.93	-276.90	2,961.32	2,961.32	0.00
12,600.00	88.79	90.00	9,769.04	-276.90	3,061.30	3,061.30	0.00
12,700.00	88.79	90.00	9,771.15	-276.90	3,161.27	3,161.27	0.00
12,800.00	88.79	90.00	9,773.26	-276.90	3,261.25	3,261.25	0.00
12,900.00	88.79	90.00	9,775.38	-276.90	3,361.23	3,361.23	0.00
13,000.00	88.79	90.00	9,777.49	-276.90	3,461.21	3,461.21	0.00
13,100.00	88.79	90.00	9,779.60	-276.90	3,561.18	3,561.18	0.00
13,200.00	88.79	90.00	9,781.71	-276.90	3,661.16	3,661.16	0.00
13,300.00	88.79	90.00	9,783.82	-276.90	3,761.14	3,761.14	0.00
13,400.00	88.79	90.00	9,785.93	-276.90	3,861.12	3,861.12	0.00
13,500.00	88.79	90.00	9,788.04	-276.90	3,961.10	3,961.10	0.00
13,600.00	88.79	90.00	9,790.15	-276.90	4,061.07	4,061.07	0.00
13,700.00	88.79	90.00	9,792.27	-276.90	4,161.05	4,161.05	0.00
13,800.00	88.79	90.00	9,794.38	-276.90	4,261.03	4,261.03	0.00
13,900.00	88.79	90.00	9,796.49	-276.90	4,361.01	4,361.01	0.00
14,000.00	88.79	90.00	9,798.60	-276.90	4,460.98	4,460.98	0.00
14,100.00	88.79	90.00	9,800.71	-276.90	4,560.96	4,560.96	0.00
14,200.00	88.79	90.00	9,802.82	-276.90	4,660.94	4,660.94	0.00
14,300.00	88.79	90.00	9,804.93	-276.90	4,760.92	4,760.92	0.00
14,400.00	88.79	90.00	9,807.05	-276.90	4,860.89	4,860.89	0.00

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
14,500.00	88.79	90.00	9,809.16	-276.90	4,960.87	4,960.87	0.00
14,600.00	88.79	90.00	9,811.27	-276.90	5,060.85	5,060.85	0.00
14,700.00	88.79	90.00	9,813.38	-276.90	5,160.83	5,160.83	0.00
14,800.00	88.79	90.00	9,815.49	-276.90	5,260.81	5,260.81	0.00
14,900.00	88.79	90.00	9,817.60	-276.90	5,360.78	5,360.78	0.00
15,000.00	88.79	90.00	9,819.71	-276.90	5,460.76	5,460.76	0.00
15,100.00	88.79	90.00	9,821.83	-276.90	5,560.74	5,560.74	0.00
15,200.00	88.79	90.00	9,823.94	-276.90	5,660.72	5,660.72	0.00
15,300.00	88.79	90.00	9,826.05	-276.90	5,760.69	5,760.69	0.00
15,400.00	88.79	90.00	9,828.16	-276.90	5,860.67	5,860.67	0.00
15,500.00	88.79	90.00	9,830.27	-276.90	5,960.65	5,960.65	0.00
15,600.00	88.79	90.00	9,832.38	-276.90	6,060.63	6,060.63	0.00
15,700.00	88.79	90.00	9,834.49	-276.90	6,160.60	6,160.60	0.00
15,800.00	88.79	90.00	9,836.60	-276.90	6,260.58	6,260.58	0.00
15,900.00	88.79	90.00	9,838.72	-276.90	6,360.56	6,360.56	0.00
16,000.00	88.79	90.00	9,840.83	-276.90	6,460.54	6,460.54	0.00
16,100.00	88.79	90.00	9,842.94	-276.90	6,560.52	6,560.52	0.00
16,200.00	88.79	90.00	9,845.05	-276.90	6,660.49	6,660.49	0.00
16,300.00	88.79	90.00	9,847.16	-276.90	6,760.47	6,760.47	0.00
16,400.00	88.79	90.00	9,849.27	-276.90	6,860.45	6,860.45	0.00
16,500.00	88.79	90.00	9,851.38	-276.90	6,960.43	6,960.43	0.00
16,600.00	88.79	90.00	9,853.50	-276.90	7,060.40	7,060.40	0.00
16,700.00	88.79	90.00	9,855.61	-276.90	7,160.38	7,160.38	0.00
16,800.00	88.79	90.00	9,857.72	-276.90	7,260.36	7,260.36	0.00
16,900.00	88.79	90.00	9,859.83	-276.90	7,360.34	7,360.34	0.00
17,000.00	88.79	90.00	9,861.94	-276.90	7,460.31	7,460.31	0.00
17,100.00	88.79	90.00	9,864.05	-276.90	7,560.29	7,560.29	0.00
17,200.00	88.79	90.00	9,866.16	-276.90	7,660.27	7,660.27	0.00
17,300.00	88.79	90.00	9,868.28	-276.90	7,760.25	7,760.25	0.00
17,400.00	88.79	90.00	9,870.39	-276.90	7,860.23	7,860.23	0.00
17,500.00	88.79	90.00	9,872.50	-276.90	7,960.20	7,960.20	0.00
17,600.00	88.79	90.00	9,874.61	-276.90	8,060.18	8,060.18	0.00
17,700.00	88.79	90.00	9,876.72	-276.90	8,160.16	8,160.16	0.00
17,800.00	88.79	90.00	9,878.83	-276.90	8,260.14	8,260.14	0.00
17,900.00	88.79	90.00	9,880.94	-276.90	8,360.11	8,360.11	0.00
18,000.00	88.79	90.00	9,883.05	-276.90	8,460.09	8,460.09	0.00
18,100.00	88.79	90.00	9,885.17	-276.90	8,560.07	8,560.07	0.00
18,200.00	88.79	90.00	9,887.28	-276.90	8,660.05	8,660.05	0.00
18,300.00	88.79	90.00	9,889.39	-276.90	8,760.03	8,760.03	0.00
18,400.00	88.79	90.00	9,891.50	-276.90	8,860.00	8,860.00	0.00
18,500.00	88.79	90.00	9,893.61	-276.90	8,959.98	8,959.98	0.00
18,600.00	88.79	90.00	9,895.72	-276.90	9,059.96	9,059.96	0.00
18,700.00	88.79	90.00	9,897.83	-276.90	9,159.94	9,159.94	0.00
18,800.00	88.79	90.00	9,899.95	-276.90	9,259.91	9,259.91	0.00
18,900.00	88.79	90.00	9,902.06	-276.90	9,359.89	9,359.89	0.00
19,000.00	88.79	90.00	9,904.17	-276.90	9,459.87	9,459.87	0.00
19,100.00	88.79	90.00	9,906.28	-276.90	9,559.85	9,559.85	0.00
19,200.00	88.79	90.00	9,908.39	-276.90	9,659.82	9,659.82	0.00
19,300.00	88.79	90.00	9,910.50	-276.90	9,759.80	9,759.80	0.00
19,400.00	88.79	90.00	9,912.61	-276.90	9,859.78	9,859.78	0.00
19,500.00	88.79	90.00	9,914.73	-276.90	9,959.76	9,959.76	0.00
19,600.00	88.79	90.00	9,916.84	-276.90	10,059.74	10,059.74	0.00
19,700.00	88.79	90.00	9,918.95	-276.90	10,159.71	10,159.71	0.00
19,800.00	88.79	90.00	9,921.06	-276.90	10,259.69	10,259.69	0.00

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
19,900.00	88.79	90.00	9,923.17	-276.90	10,359.67	10,359.67	0.00
20,000.00	88.79	90.00	9,925.28	-276.90	10,459.65	10,459.65	0.00
20,100.00	88.79	90.00	9,927.39	-276.90	10,559.62	10,559.62	0.00
20,200.00	88.79	90.00	9,929.51	-276.90	10,659.60	10,659.60	0.00
20,270.80	88.79	90.00	9,931.00	-276.90	10,730.39	10,730.39	0.00

PBHL 20270.80' MD & 9931.00' TVD - PBHL 132H

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1,500.00	1,500.00	0.00	0.00	KOP 2°/100'
1,700.00	1,699.96	0.00	3.49	Hold 2°
2,300.00	2,299.59	0.00	24.43	Turn 2°/100'
2,451.07	2,450.61	-2.61	26.69	Build 2°/100'
2,701.07	2,699.76	-22.02	23.92	Hold 7° Tangent
4,580.06	4,564.74	-248.71	-8.45	Drop 1.5°/100'
5,046.73	5,030.25	-276.90	-12.47	Hold 0°
9,253.12	9,236.64	-276.90	-12.47	KOP 12°/100'
9,993.04	9,714.00	-276.90	454.92	Begin 90° Lateral Sec
20,270.80	9,931.00	-276.90	10,730.39	PBHL 20270.80' MD & 9931.00' TVD

Checked By: _____ Approved By: _____ Date: _____

NOVO

H_2S Drilling Operations Plan

a. All personnel will be trained in H_2S working conditions as required by Onshore Order 6 before drilling out of the surface casing.

b. Two briefing areas will be established. Each will be at least 150' from the wellhead, perpendicular from one another, and easily entered and exited. See H_2S page 5 for more details.

c. H_2S Safety Equipment/Systems:

i. Well Control Equipment

- Flare line will be $\geq$150' from the wellhead and ignited by a pilot light.
- Beware of SO_2 created by flaring.
- Choke manifold will include a remotely operated choke.
- Mud gas separator

ii. Protective Equipment for Essential Personnel

- Every person on site will be required to wear a personal H_2S and SO_2 monitor at all times while on site. Monitors will not be worn on hard hats. Monitors will be worn on the front of the chest.
- One self-contained breathing apparatus (SCBA) 30-minute rescue pack will be at each briefing area. Two 30-minute SCBA packs will be stored in the safety trailer.
- Four work/escape packs will be on the rig floor. Each pack will have a long enough hose to allow unimpaired work activity.
- Four emergency escape packs will be in the doghouse for emergency evacuation.
- Hand signals will be used when wearing protective breathing apparatus.
- Stokes litter or stretcher
- Two full OSHA compliant body harnesses
- A 100-foot long x 5/8 inch OSHA compliant rope
- One 20-pound ABC fire extinguisher

iii. H_2S Detection & Monitoring Equipment

- Every person on site will be required to wear a personal H_2S and SO_2 monitor at all times while on site. Monitors will not be worn on hard hats. Monitors will be worn on the front of the chest.
- A stationary detector with three sensors will be in the doghouse.
- Sensors will be installed on the rig floor, bell nipple, and at the end of the flow line or where drilling fluids are discharged.
- Visual alarm will be triggered at 10 ppm.
- Audible alarm will be triggered at 10 ppm.
- Calibration will occur at least every 30 days. Gas sample tubes will be kept in the safety trailer.

iv. Visual Warning System

- Color-coded H_2S condition sign will be set at the entrance to the pad.
- Color-coded condition flag will be installed to indicate current H_2S conditions.
- Two wind socks will be installed that will be visible from all sides.

v. Mud Program

- A water based mud with a pH of $\geq$10 will be maintained to control corrosion, H_2S gas returns to the surface, and minimize sulfide stress cracking and embrittlement.
- Drilling mud containing H_2S gas will be degassed at an optimum location for the rig configuration.
- This gas will be piped into the flare system.
- Enough mud additives will be on location to scavenge and/or neutralize H_2S where formation pressures are unknown.

vi. Metallurgy

- All equipment that has the potential to be exposed to H_2S will be suitable for H_2S service.
- Equipment that will meet these metallurgical standards include the drill string, casing, wellhead, BOP assembly, casing head and spool, rotating head, kill lines, choke, choke manifold and lines, valves, mud-gas separators, DST tools, test units, tubing, flanges, and other related equipment (elastomer packings and seals).

vii. Communication from well site

- Cell phones and/or two-way radios will be used to communicate from the well site.

d. A remote-controlled choke, mud-gas separator, and a rotating head will be installed before drilling or testing any formation expected to contain H_2S.

Company Personnel to be Notified

Kurt Shipley, Vice-President - Operations	Office: (405) 609-1596

Local & County Agencies

Loving Fire Department	911 or (575) 745-3600
Eddy County Sheriff (Carlsbad)	911 (575) 887-7551
Eddy County Emergency Management (Carlsbad)	(575) 887-9511
Carlsbad Medical Center Hospital	(575) 887-4100
Eddy County South Road Department (Carlsbad)	(575) 885-4835

State Agencies

NM State Police (Carlsbad)	(575) 885-3138
NM Oil Conservation (Artesia)	(575) 748-1283
NM Oil Conservation (Santa Fe)	(505) 476-3440
NM Dept. of Transportation (Roswell)	(575) 637-7201

Federal Agencies

BLM Carlsbad Field Office	(575) 234-5972
National Response Center	(800) 424-8802
US EPA Region 6 (Dallas)	(800) 887-6063
	(214) 665-6444

Residents within 2 miles

none

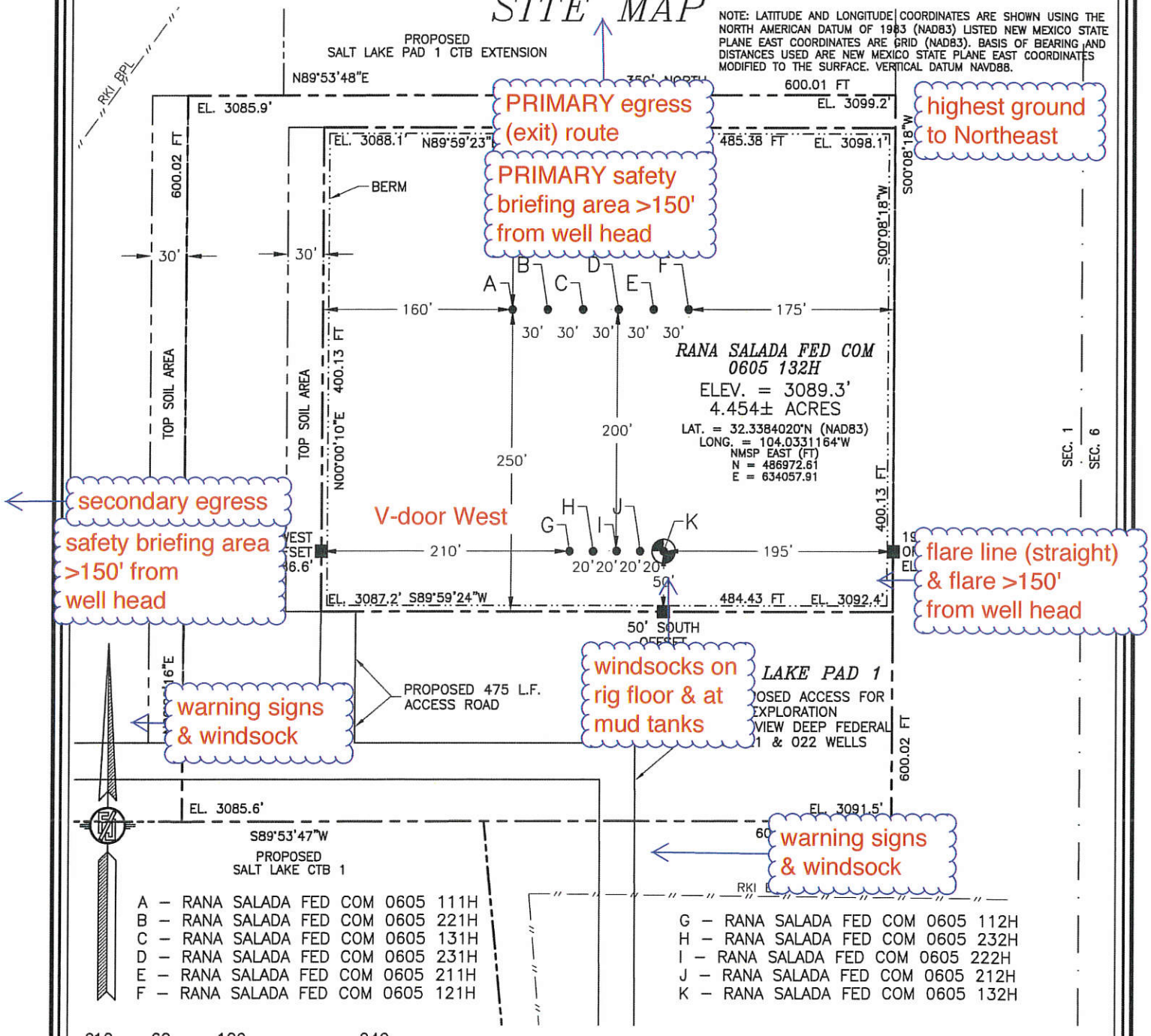
Air Evacuation

Med Flight Air Ambulance (Albuquerque)	(800) 842-4431
Lifeguard (Albuquerque)	(888) 866-7256

Veterinarians

Desert Willow Veterinary Services (Carlsbad)	(575) 885-3399
Animal Care Center (Carlsbad)	(575) 885-5352

SECTION 1, TOWNSHIP 23 SOUTH, RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SITE MAP



PRIMARY egress (exit) route

PRIMARY safety briefing area >150' from well head

highest ground to Northeast

secondary egress safety briefing area >150' from well head

flare line (straight) & flare >150' from well head

warning signs & windsock

windsocks on rig floor & at mud tanks

warning signs & windsock

prevailing wind blows from South

DIRECTIONS TO LOCATION

FROM CR 31 (POTASH MINES RD.) AND CR 605 (REFINERY RD.), GO NORTH ON CR 605 APPROX. 0.4 OF A MILE, TURN RIGHT (EAST) ON CALICHE ROAD AND GO EAST AND NORTHEAST APPROX. 0.2 OF A MILE TO A "Y" IN ROAD, TURN LEFT (NORTH) AND GO APPROX. 0.8 OF A MILE TO A ROAD SURVEY, FOLLOW ROAD SURVEY EAST 351' AND NORTH 124' TO THE SOUTHWEST PAD CORNER FOR THIS LOCATION.

NOVO OIL & GAS NORTHERN DELAWARE, LLC

RANA SALADA FED COM 0605 132H

LOCATED 1327 FT. FROM THE NORTH LINE AND 355 FT. FROM THE EAST LINE OF SECTION 1, TOWNSHIP 23 SOUTH, RANGE 28 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO

APRIL 19, 2019

SURVEY NO. 7173

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

Novo Oil and Gas Northern Delaware

Rana Salada Fed Com 0605
Pad A
H_2S Contingency Plan:
Radius Map

Section 1, Township 23S, Range 28E
Eddy County, New Mexico

Well Pad Location

1:27,000

0 0.25 0.5 1

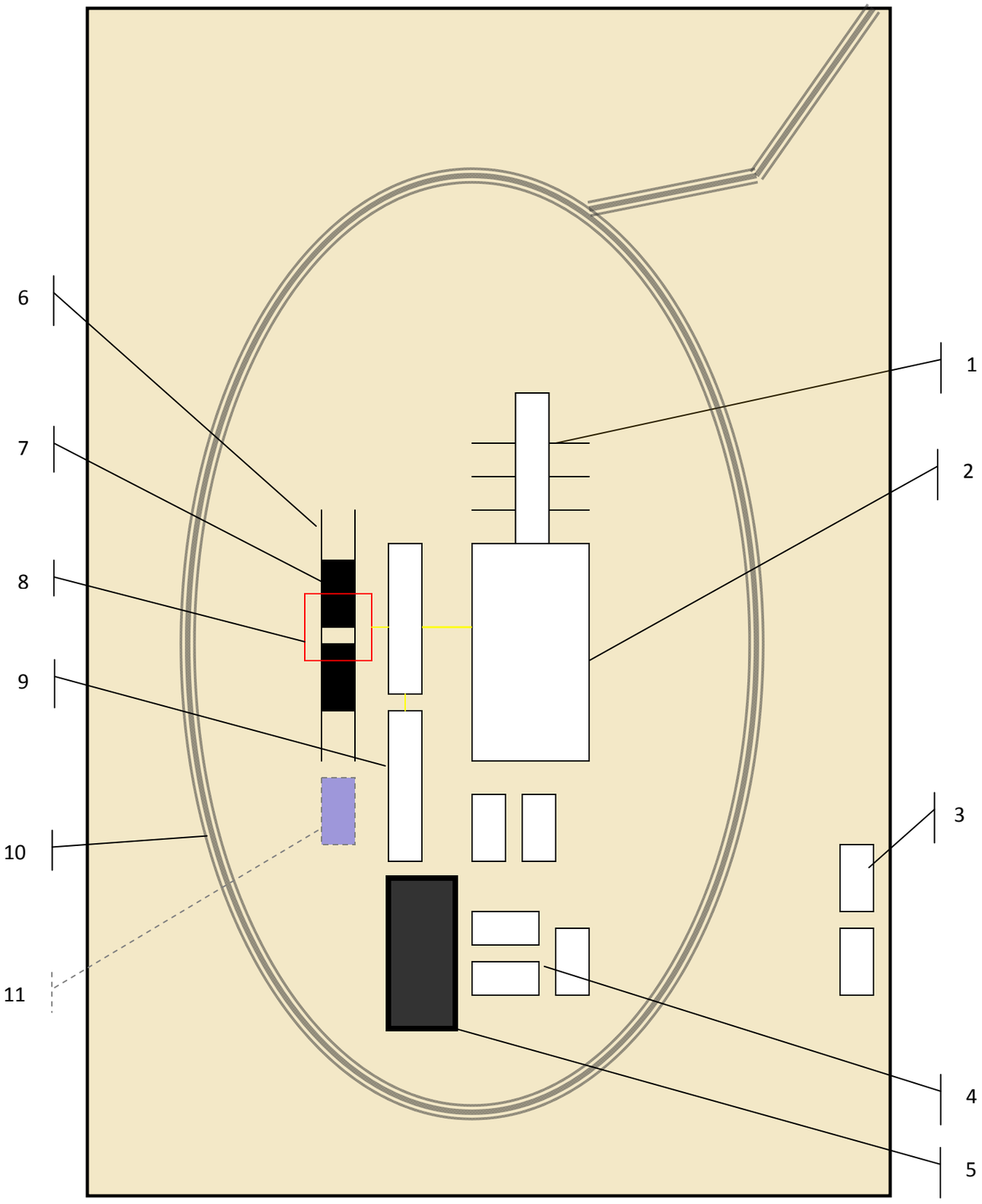
Miles

N

NAD 1983 New Mexico State Plane East
FIPS 3001 Feet

PERMITS WEST

Prepared by Permits West, Inc., November 4, 2019
for Novo Oil and Gas Northern Delaware, LLC



Schematic Closed Loop Drilling Rig*

1. **Pipe Rack**
2. **Drill Rig**
3. **House Trailers/ Offices**
4. **Generator/Fuel/Storage**
5. **Overflow-Frac Tank**
6. **Skids**
7. **Roll Offs**
8. **Hopper or Centrifuge**
9. **Mud Tanks**
10. **Loop Drive**
11. **Generator (only for use with centrifuge)**

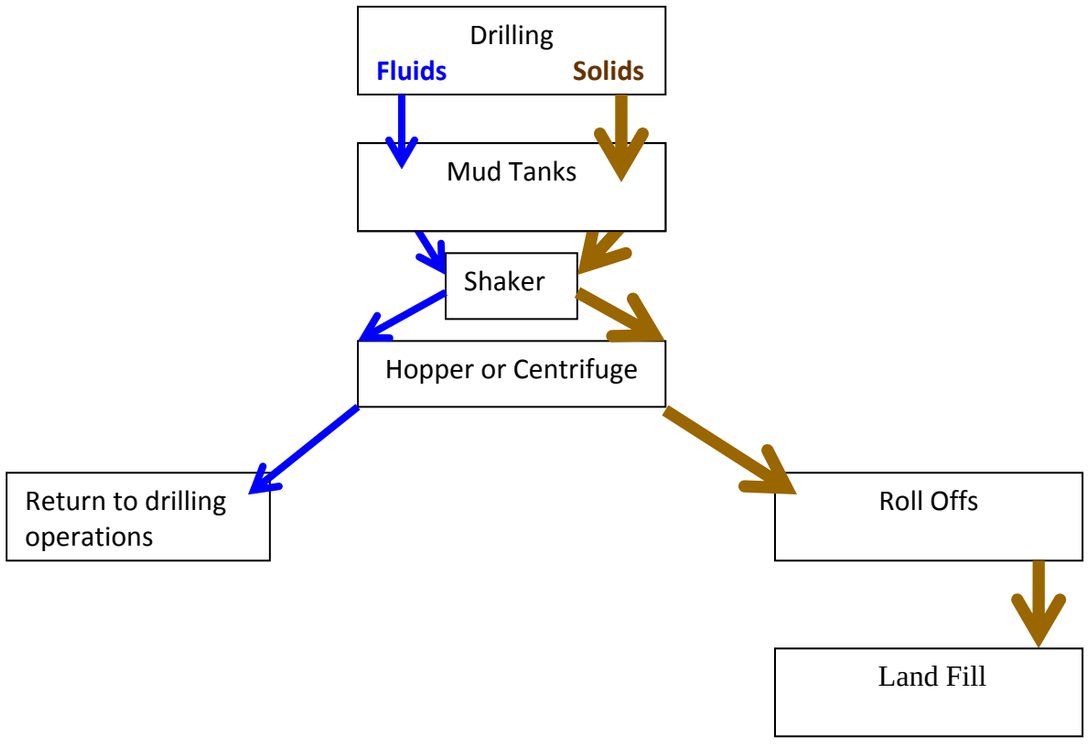
***Not drawn to scale: Closed loop system requires at least 30 feet beyond mud tanks. Ideally 60 feet would be available**

Above: Centrifugal Closed Loop System

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
37Verano Loop, Santa Fe, New Mexico 87508 (505) 466-8120

Closed Loop Drilling System: Mud tanks to right (1)
Hopper in air to settle out solids (2)
Water return pipe (3)
Shaker between hopper and mud tanks (4)
Roll offs on skids (5)

Flow Chart for Drilling Fluids and Solids



Photos Courtesy of Gandy Corporation Oil Field Service