

RECEIVED

Form 3160-3
(June 2015)

JAN 30 2019

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
DISTRICT II-ARTESIA O.C.D.

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMNM031200
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		7. If Unit or CA Agreement, Name and No.
2. Name of Operator PERCUSSION PETROLEUM OPERATING LLC		8. Lease Name and Well No. LAKEWOOD FEDERAL COM 7H 324926
3a. Address 919 Milam Street, Suite 2475 Houston TX 77002	3b. Phone No. (include area code) (713)589-2337	9. API Well No. 30-015-45675
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface SWSE / 580 FSL / 2317 FEL / LAT 32.625766 / LONG -104.471331 At proposed prod. zone SWSE / 20 FSL / 2346 FEL / LAT 32.609761 / LONG -104.471670		10. Field and Pool, or Exploratory N. SEVEN RIVERS; GLORIETA -YESO
11. Sec., T. R. M. or Blk. and Survey or Area SEC 27 / T19S / R25E / NMP		
14. Distance in miles and direction from nearest town or post office* 15 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)	323 feet	16. No of acres in lease 120
17. Spacing Unit dedicated to this well	160	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	1296 feet	19. Proposed Depth 2953 feet / 8506 feet
20. BLM/BIA Bond No. in file	FED: NMB001424	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3483 feet	22. Approximate date work will start* 11/01/2018	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. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification. |
| 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). | 6. Such other site specific information and/or plans as may be requested by the BLM. |

25. Signature (Electronic Submission)	Name (Printed/Typed) Brian Wood / Ph: (505)466-8120	Date 08/20/2018
Title President		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Ty Allen / Ph: (575)234-5978	Date 12/20/2018
Title Wildlife Biologist		
Office CARLSBAD		

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.

APPROVED WITH CONDITIONS
Approval Date: 12/20/2018

(Continued on page 2)

*(Instructions on page 2)

RW 2-49
2-5

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM I: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

ITEM 24: If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service well or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

ROUTINE USE: Information from the record and/or the record will be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM connects this information to a new evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Connection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

Additional Operator Remarks

Location of Well

1. SHL: SWSE / 580 FSL / 2317 FEL / TWSP: 19S / RANGE: 25E / SECTION: 27 / LAT: 32.625766 / LONG: -104.471331 (TVD: 0 feet, MD: 0 feet)
PPP: SWSE / 1320 FSL / 2362 FEL / TWSP: 29S / RANGE: 25E / SECTION: 34 / LAT: 32.613296 / LONG: -104.471651 (TVD: 2938 feet, MD: 7206 feet)
PPP: NWSE / 2640 FSL / 2396 FEL / TWSP: 19S / RANGE: 25E / SECTION: 34 / LAT: 32.616976 / LONG: -104.471602 (TVD: 2923 feet, MD: 5909 feet)
PPP: SWSE / 580 FSL / 2317 FEL / TWSP: 19S / RANGE: 25E / SECTION: 27 / LAT: 32.625766 / LONG: -104.471331 (TVD: 0 feet, MD: 0 feet)
BHL: SWSE / 20 FSL / 2346 FEL / TWSP: 19S / RANGE: 25E / SECTION: 34 / LAT: 32.609761 / LONG: -104.471679 (TVD: 2953 feet, MD: 8506 feet)

BLM Point of Contact

Name: Katrina Ponder
Title: Geologist
Phone: 5752345969
Email: kponder@blm.gov

Review and Appeal Rights

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Percussion Petroleum Operating LLC
LEASE NO.:	NMNM0504364B
WELL NAME & NO.:	Lakewood Federal Com 7H
SURFACE HOLE FOOTAGE:	580'/S & 2317'/E
BOTTOM HOLE FOOTAGE:	20'/S & 2346'/E
LOCATION:	Section 27, T.19 S., R.25 E., NMPM
COUNTY:	Eddy County, New Mexico

Potash	<input checked="" type="radio"/> None	<input type="radio"/> Secretary	<input type="radio"/> R-111-P
Cave/Karst Potential	<input type="radio"/> Low	<input type="radio"/> Medium	<input checked="" type="radio"/> High
Variance	<input checked="" type="radio"/> None	<input type="radio"/> Flex Hose	<input type="radio"/> Other
Wellhead	<input checked="" type="radio"/> Conventional	<input type="radio"/> Multibowl	
Other	<input type="checkbox"/> 4 String Area	<input type="checkbox"/> Capitan Reef	<input type="checkbox"/> WIPP

A. HYDROGEN SULFIDE

1. 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

HIGH CAVE/KARST – OPERATOR HAS PROPOSED A CONTINGENCY CASING IF LOST CIRCULATION OCCURS WHILE DRILLING THE SURFACE HOLE.

IF LOST CIRCULATION OCCURS WHILE DRILLING THE 8-3/4" HOLE, THE CEMENT PROGRAM FOR THE 7" X 5-1/2" CASING WILL NEED TO BE MODIFIED AND THE BLM IS TO BE CONTACTED PRIOR TO RUNNING THE CASING. A MINIMUM OF TWO CASING STRINGS CEMENTED TO SURFACE IS REQUIRED IN HIGH CAVE/KARST AREAS. THE CEMENT MUST BE IN A SOLID SHEATH THEREFORE, ONE INCH OPERATIONS WILL NOT BE PERMITTED. A DV TOOL WILL BE REQUIRED.

Contingency Surface Casing Plan:

1. The **13 3/8** inch contingency surface casing shall be set at approximately **400** feet (a minimum of 25 feet 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 **8 hours** 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.

Casing Plan without Contingency:

2. The **9 5/8** inch surface casing shall be set at approximately **1279** feet (a minimum of 25 feet 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 **8 hours** 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.
3. The minimum required fill of cement behind the **7 X 5 1/2** inch production casing is:
 - Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

C. PRESSURE CONTROL

1. **Contingency** - Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **13-3/8 inch** surface casing shoe shall be **3000 (3M)** psi.
2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8 inch** surface casing shoe shall be **3000 (3M)** psi.

D. SPECIAL REQUIREMENT(S)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, 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.

MHH 12152018

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)

☒ Chaves and Roosevelt Counties

Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.

During office hours call (575) 627-0272.

After office hours call (575)

☒ 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.
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.
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: 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.
- 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.



U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Operator Certification Data Report

12/27/2018

Operator Certification

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

NAME: Brian Wood

Signed on: 08/20/2018

Title: President

Street Address: 37 Verano Loop

City: Santa Fe

State: NM

Zip: 87508

Phone: (505)466-8120

Email address: afmss@permitswest.com

Field Representative

Representative Name:

Street Address:

City:

State:

Zip:

Phone:

Email address:



U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Application Data Report

12/27/2018

APD ID: 10400032823

Submission Date: 08/20/2018

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Highlighted data
reflects the most
recent changes

Well Name: LAKEWOOD FEDERAL COM

Well Number: 7H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - General

APD ID: 10400032823

Tie to previous NOS?

Submission Date: 08/20/2018

BLM Office: CARLSBAD

User: Brian Wood

Title: President

Federal/Indian APD: FED

Is the first lease penetrated for production Federal or Indian? FED

Lease number: NMNM031200

Lease Acres: 120

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? NO

Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? NO

Permitting Agent? YES

APD Operator: PERCUSSION PETROLEUM OPERATING LLC

Operator letter of designation:

Operator Info

Operator Organization Name: PERCUSSION PETROLEUM OPERATING LLC

Operator Address: 919 Milam Street, Suite 2475

Zip: 77002

Operator PO Box:

Operator City: Houston

State: TX

Operator Phone: (713)589-2337

Operator Internet Address:

Section 2 - Well Information

Well in Master Development Plan? NO

Master Development Plan name:

Well in Master SUPO? NO

Master SUPO name:

Well in Master Drilling Plan? NO

Master Drilling Plan name:

Well Name: LAKEWOOD FEDERAL COM

Well Number: 7H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: N. SEVEN RIVERS; Pool Name:

GLORIETA -YESO

Is the proposed well in an area containing other mineral resources? USEABLE WATER,NATURAL GAS,OIL

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 7H

Describe other minerals:

Is the proposed well in a Helium production area? N **Use Existing Well Pad?** NO **New surface disturbance?**

Type of Well Pad: MULTIPLE WELL

Multiple Well Pad Name:
LAKEWOOD FEDERAL COM

Number: 7H

Well Class: HORIZONTAL

Number of Legs: 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town: 15 Miles

Distance to nearest well: 1296 FT

Distance to lease line: 323 FT

Reservoir well spacing assigned across Measurement: 160 Acres

Well plat: Lake_7H_Plat_GasCap_Plan_20181019082513.pdf

Well work start Date: 11/01/2018

Duration: 90 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number: 3239

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
SHL Leg #1	580	FSL	231 7	FEL	19S	25E	27	Aliquot SWSE	32.62576 6	- 104.4713 31	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 050436 4B	348 3	0	0
KOP Leg #1	580	FSL	231 7	FEL	19S	25E	27	Aliquot SWSE	32.62576 6	- 104.4713 31	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 050436 4B	114 4	234 1	233 9
PPP Leg #1	580	FSL	231 7	FEL	19S	25E	27	Aliquot SWSE	32.62576 6	- 104.4713 31	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 050436 4B	348 3	0	0

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 7H

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
PPP Leg #1	264 0	FSL	239 6	FEL	19S	25E	34	Aliquot NWSE	32.61697 6	- 104.4716 02	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 015291	560	590 9	292 3
PPP Leg #1	132 0	FSL	236 2	FEL	29S	25E	34	Aliquot SWSE	32.61329 6	- 104.4716 51	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 031200	545	720 6	293 8
EXIT Leg #1	20	FSL	234 6	FEL	19S	25E	34	Aliquot SWSE	32.60976 1	- 104.4716 79	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 031200	530	850 6	295 3
BHL Leg #1	20	FSL	234 6	FEL	19S	25E	34	Aliquot SWSE	32.60976 1	- 104.4716 79	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 031200	530	850 6	295 3



U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Drilling Plan Data Report

12/27/2018

APD ID: 10400032823

Submission Date: 08/20/2018

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 7H

Well Type: OIL WELL

Well Work Type: Drill

Highlighted date
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
1	QUATERNARY	3483	0	0	OTHER : Caliche	USEABLE WATER	No
2	GRAYBURG	2870	613	613	DOLOMITE	NATURAL GAS,OIL	No
3	SAN ANDRES	2685	798	798	DOLOMITE	NATURAL GAS,OIL	No
4	GLORIETA	1125	2358	2359	DOLOMITE	NATURAL GAS,OIL	No
5	YESO	970	2513	2518	DOLOMITE	NATURAL GAS,OIL	Yes

Section 2 - Blowout Prevention

Pressure Rating (PSI): 3000

Rating Depth: 5000

Equipment: A 3000-psi 5000' rated BOP stack consisting of annular preventer and double (blind and pipe) ram will be used below surface casing to TD.

Requesting Variance? NO

Variance request:

Testing Procedure: Pressure tests will be conducted before drilling out from under all casing strings. Third party test crews will conduct all tests. All tests will be recorded for 10-minutes on low pressure (500 psi) and 10-minutes on high pressure (3000-psi). After BOP testing is complete, test casing (without test plug) to 2000-psi for 30 minutes. All tests will be charted on a plot. BOPs will be function tested every day.

Choke Diagram Attachment:

Lake_7H_Choke_20180806130650.pdf

BOP Diagram Attachment:

Lake_7H_BOP_20180806130701.pdf

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 7H

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	12.25	9.625	NEW	API	N	0	1279	0	1279	3483		1279	J-55	36	LTC	1.125	1.125	DRY	1.8	DRY	1.8
2	PRODUCTI ON	8.75	7.0	NEW	API	Y	0	2625	0	2610	3483		2625	L-80	32	OTHER - BTC	1.125	1.125	DRY	1.8	DRY	1.8
3	PRODUCTI ON	8.75	5.5	NEW	API	Y	2625	8506	2610	2953			5881	L-80	17	OTHER - BTC	1.125	1.125	DRY	1.8	DRY	1.8

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Lake_7H_Casing_Design_Assumptions_20180806131042.pdf

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 7H

Casing Attachments

Casing ID: 2 String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Lake_7H_Casing_Design_Assumptions_20181012135952.pdf

Casing Design Assumptions and Worksheet(s):

Lake_7H_Casing_Design_Assumptions_20180806131149.pdf

Casing ID: 3 String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Lake_7H_Drill_Plan_20181012140022.pdf

Casing Design Assumptions and Worksheet(s):

Lake_7H_Casing_Design_Assumptions_20180806131327.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	1279	636	1.32	14.8	840	100	Class C	2% CaCl + ¼ pound per sack celloflake

PRODUCTION	Lead		0	2625	495	1.97	12.6	975	50	65/65/6 Class C	6% gel + 5% salt + ¼ pound per sack celloflake + 0.2% C41-P
PRODUCTION	Tail		0	2625	1433	1.32	14.8	1891	50	Class C	2% CaCl + ¼ pound per sack celloflake
PRODUCTION	Lead		2625	8506	495	1.97	12.6	975	50	65/65/6 Class C	6% gel + 5% salt + ¼ pound per sack

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 7H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
											celloflake + 0.2% C41-P
PRODUCTION	Tail		2625	8506	1433	1.32	14.8	1891	50	Class C	2% CaCl + ¼ pound per sack celloflake

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 (LCM) will be on site to handle any abnormal hole condition that may be encountered while drilling this well.

Describe the mud monitoring system utilized: An electronic/mechanical mud monitor with a minimum pit volume totalizer, stroke counter, and flow sensor will be used.

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
1279	2340	OTHER : Fresh water/cut brine	8.3	9.2							
2340	8506	OTHER : Cut brine	8.6	9.2							
0	1279	OTHER : Fresh water/gel	8.4	9.2							

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 7H

Section 6 - Test, Logging, Coring

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

A mud logger will be used from GL to TD. Samples will be collected every 10' in the lateral pay zone.

No electric logs are planned at this time.

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

MUDLOG

Coring operation description for the well:

No core or drill stem test is planned.

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 1257

Anticipated Surface Pressure: 607.34

Anticipated Bottom Hole Temperature(F): 114

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

Describe:

Contingency Plans geohazards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Lake_7H_H2S_Plan_20180806134508.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Lake_7H_Horizontal_Drill_Plan_20180806134551.pdf

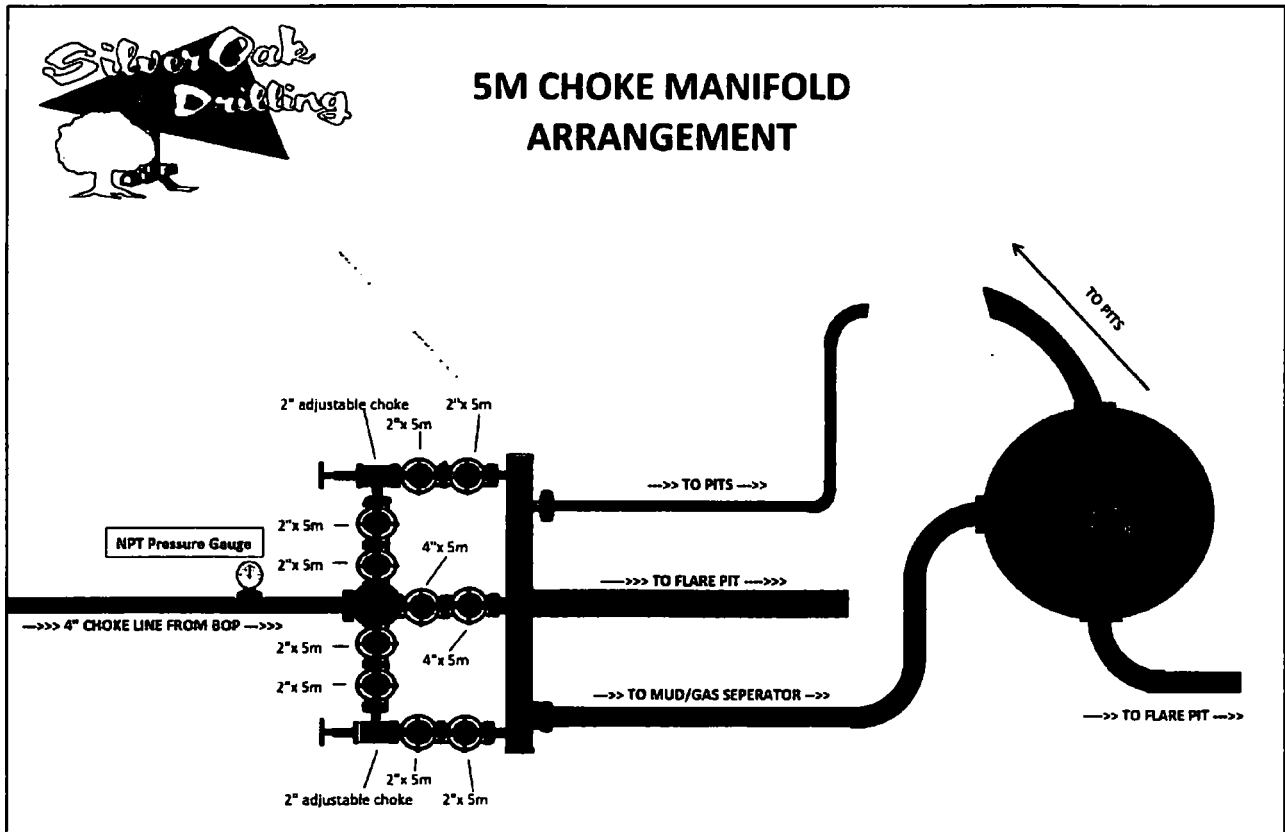
Other proposed operations facets description:

Other proposed operations facets attachment:

Lake_7H_Drill_Plan_20181012140137.pdf

Lake_7H_Contingency_Plan_20181012140214.pdf

Other Variance attachment:



Pressure Testing

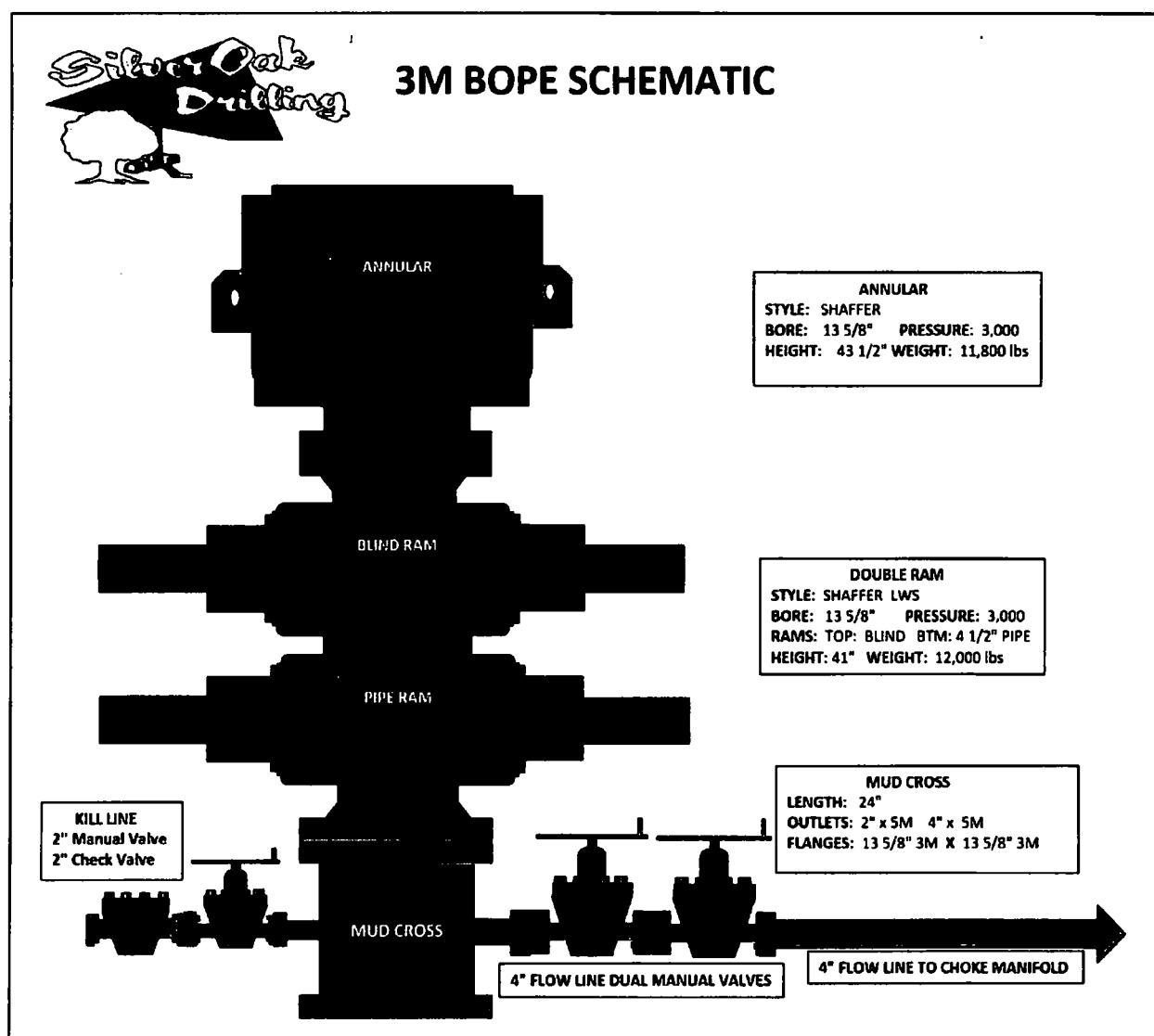
- a. All testing to be done with 3rd party testing crews
- b. All tests should be done for each BOP/Valve/Choke Manifold:
 1. Recorded for 10 minutes on low pressure (500 psi)
 2. Recorded for 10 minutes on high pressure (3000 psi)
 3. All BOP testing will be completed with a test plug in place in wellhead
- c. After BOP testing is complete, test casing (without test plug) to 2000 psi for 30 minutes
- d. Company representative to email all copies of all plots to Drilling Engineer as well as save in the well file.
- e. **BOP's shall be function tested every day.**

Gas Buster Operation

- a. Flow should be directed to pits unless choke is needed to control gas
- b. Adjustable choke to adjusted only by Percussion Rep on location
- c. Flare should remain burning (pilot lit) anytime fluid is going through gas buster
- d. Choke needs to be monitored to not overrun gas buster

Nipple-Up

- Raise stack and center over the wellhead
- Install DSA and ring gaskets
- Lower stack onto DSA
- Torque DSA flange bolts in a star pattern to the specified torque
- Verify BOP is centered to the rotary table
- Install rotating head
- Install hydraulic lines to BOP
- Verify manifold line-up
- Test BOP & manifold





Casing Design Criteria and Load Case Assumptions

Percussion Petroleum Operating, LLC.
919 Milam Street, Suite 2475
Houston, TX 77002

Lakewood Federal Com horizontal Wells

1. Collapse: $DF_c=1.125$
 - a. Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.65 psi/ft). The effects of axial load on collapse will be considered.
 - b. Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and minimum mud gradient in which the casing will be run above that (0.65 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft)

2. Burst: $DF_b=1.125$
 - a. Pressure Test: psi casing test with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
 - b. Injection Down Casing: psi surface injection pressure plus an internal pressure gradient of 0.65 psi/ft with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.

3. Tensile: $DF_T=1.8$
 - a. Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (10.5 ppg).

4. Surface Casing Program									
Casing Size (in)	Weight (ppf)	Grade	Connection	ID	ID (drift)	Collapse (psi)	Burst (psi)	Tension (1,000 lbs)	Capacity (bbl/ft)
9-5/8"	36	J-55	STC	8.921	8.765	2,020	3,520	394	0.0773
Safety Factors									
	API Rec. SF	ACTUAL SF	Case	External Fluids		Internal Fluids			
Collapse	1.125	3.30	Lost Circulation	Mud		None			
Burst	1.125	1.46	Plug Bump	Green Cement + 2ksi surf pressure		Displacement Fluid/Mud			
Tension	1.8	2.80	100 kibs Overpull	Mud		Mud			

Buoyed Casing Weight: 40,798 lbs (assuming 8.4 ppg fluid and 1,300' casing-worst case scenario)



Production Casing Program									
Casing Size (in)	Weight (ppf)	Grade	Connection	ID	ID (drift)	Collapse (psi)	Burst (psi)	Tension (1,000 lbs)	Capacity (bbl/ft)
7"	32	L-80	BTC	6.094	5.969	8,600	9,060	745	0.0361
5-1/2"	17	L-80	BTC	4.892	4.767	6,280	7,740	348	0.0232
Safety Factors									
	API Rec. SF	ACTUAL SF	Case	External Fluids		Internal Fluids			
Collapse	1.125	3.75	Lost Circulation	Mud		None			
Burst	1.125	2.47	Plug Bump	Green Cement + 2ksi surf pressure		Displacement Fluid/Mud			
Tension	1.8	2.29	100 klbs Overpull	Mud		Mud			

Buoyed Casing Weight: 86,522 lbs (assuming 8.4 ppg fluid and 3,500' TVD-worst case scenario)

Percussion Petroleum Operating, LLC
Lakewood Federal Com 7H
SHL 580' FSL & 2317' FEL 27-19S-25E
BHL 20' FSL & 2346' FEL 34-19S-25E
Eddy County, NM

DRILL PLAN PAGE 1

Drilling Program

1. ESTIMATED TOPS

Formation/Lithology	TVD	MD	Contents
Quaternary caliche	000'	000'	water
Grayburg dolomite	613'	613'	hydrocarbons
San Andres dolomite	798'	798'	hydrocarbons
(KOP	2340'	2341'	hydrocarbons)
Glorieta silty dolomite	2358'	2359'	hydrocarbons
Yeso dolomite & goal	2513'	2518'	hydrocarbons
TD	2953'	8506'	hydrocarbons

2. NOTABLE ZONES

Yeso is the goal. Closest water well (RA 03304) is 3709' NW. Water bearing strata were found from 90' to 118' in the 130' deep well.

3. PRESSURE CONTROL

A 3000-psi 5000' rated BOP stack consisting of annular preventer and double (blind and pipe) ram will be used below surface casing to TD. See attached BOP and choke manifold diagrams.

Pressure tests will be conducted before drilling out from under all casing strings. Third party test crews will conduct all tests. All tests will be recorded for 10-minutes on low pressure (500 psi) and 10-minutes on high pressure (3000-psi). After BOP testing is complete, test casing (without test plug) to 2000-psi for 30 minutes. All tests will be charted on a plot. BOPs will be function tested every day.

Percussion Petroleum Operating, LLC
 Lakewood Federal Com 7H
 SHL 580' FSL & 2317' FEL 27-19S-25E
 BHL 20' FSL & 2346' FEL 34-19S-25E
 Eddy County, NM

DRILL PLAN PAGE 2

4. CASING & CEMENT

All casing will be API and new. A contingency plan is attached.

Hole O. D.	Set MD	Set TVD	Casing O. D.	Weight (lb/ft)	Grade	Joint	Collapse	Burst	Tension
12.25"	0' - 1279'	0' - 1279'	Surface 9.625"	36	J-55	LTC	1.125	1.125	1.8
8.75"	0' - 2625'	0' - 2610'	Prod. 1 7"	32	L-80	BTC	1.125	1.125	1.8
8.75"	2625' - 8506'	2610' - 2953'	Prod. 2 5.5"	17	L-80	BTC	1.125	1.125	1.8

Casing Name	Type	Sacks	Yield	Cu. Ft.	Weight	Blend
Surface	Lead	636	1.32	840	14.8	Class C + 2% CaCl + ¼ pound per sack celloflake
TOC = GL		100% Excess			Stop collar 10' above shoe with centralizer. One on 1st collar and every 4 th collar to GL.	
Production	Lead	495	1.97	975	12.6	65/65/6 Class C + 6% gel + 5% salt + ¼ pound per sack celloflake + 0.2% C41-P
	Tail	1433	1.32	1891	14.8	Class C + 2% CaCl + ¼ pound per sack celloflake
TOC = GL		50% Excess			Stop collar 10' above shoe with centralizer. One on 1st collar and every 10 collars to 1200' with 1 centralizer in 9.625" casing.	

5. MUD PROGRAM

An electronic/mechanical mud monitor with a minimum pit volume totalizer, stroke counter, and flow sensor will be used. All necessary mud products (LCM) will be on site to handle any abnormal hole condition that may be encountered while drilling this well. A closed loop system will be used.

Percussion Petroleum Operating, LLC
Lakewood Federal Com 7H
SHL 580' FSL & 2317' FEL 27-19S-25E
BHL 20' FSL & 2346' FEL 34-19S-25E
Eddy County, NM

DRILL PLAN PAGE 3

Type	Interval (MD)	lb/gal	Viscosity	Fluid Loss	Plastic Viscosity	Yield Point
fresh water/gel	0' - 1279'	8.4 - 9.2	36-42	NC	3-5	5-7
fresh water/cut brine	1279' - 2340'	8.3 - 9.2	28-30	NC	1	1
cut brine	2340' - 8506'	8.6 - 9.2	29-32	NC	4-5	6-10

6. CORES, TESTS, & LOGS

No core or drill stem test is planned.

A mud logger will be used from GL to TD. Samples will be collected every 10' in the lateral pay zone.

No electric logs are planned at this time.

7. DOWN HOLE CONDITIONS

No abnormal pressure or temperature is expected. Maximum expected bottom hole pressure is ≈ 1257 psi. Expected bottom hole temperature is $\approx 114^{\circ}$ F.

A Hydrogen Sulfide Drilling Operation Plan is attached.

8. OTHER INFORMATION

Anticipated spud date is upon approval. It is expected it will take ≈ 1 month to drill and complete the well.

St. Devote LLC has operating rights in NMNM-0504364B, NMNM-015921, and NMNM-031200. St. Devote LLC is a subsidiary of Percussion.



Casing Design Criteria and Load Case Assumptions

Percussion Petroleum Operating, LLC.
919 Millam Street, Suite 2475
Houston, TX 77002

Lakewood Federal Com horizontal Wells

1. Collapse: $DF_c=1.125$
 - a. Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.65 psi/ft). The effects of axial load on collapse will be considered.
 - b. Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and minimum mud gradient in which the casing will be run above that (0.65 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft)
2. Burst: $DF_b=1.125$
 - a. Pressure Test: psi casing test with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
 - b. Injection Down Casing: psi surface injection pressure plus an internal pressure gradient of 0.65 psi/ft with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
3. Tensile: $DF_T=1.8$
 - a. Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (10.5 ppg).

4. Surface Casing Program									
Casing Size (in)	Weight (ppf)	Grade	Connection	ID	ID (drift)	Collapse (psi)	Burst (psi)	Tension (1,000 lbs)	Capacity (bbl/ft)
9-5/8"	36	J-55	STC	8.921	8.765	2,020	3,520	394	0.0773
Safety Factors									
	API Rec. SF	ACTUAL SF	Case	External Fluids		Internal Fluids			
Collapse	1.125	3.30	Lost Circulation	Mud		None			
Burst	1.125	1.46	Plug Bump	Green Cement + 2ksi surf pressure		Displacement Fluid/Mud			
Tension	1.8	2.80	100 klbs Overpull	Mud		Mud			

Buoyed Casing Weight: 40,798 lbs (assuming 8.4 ppg fluid and 1,300' casing-worst case scenario)



Production Casing Program									
Casing Size (in)	Weight (ppf)	Grade	Connection	ID	ID (drift)	Collapse (psi)	Burst (psi)	Tension (1,000 lbs)	Capacity (bbl/ft)
7"	32	L-80	BTC	6.094	5.969	8,600	9,060	745	0.0361
5-1/2"	17	L-80	BTC	4.892	4.767	6,280	7,740	348	0.0232
Safety Factors									
	API Rec. SF	ACTUAL SF	Case	External Fluids		Internal Fluids			
Collapse	1.125	3.75	Lost Circulation	Mud		None			
Burst	1.125	2.47	Plug Bump	Green Cement + 2ksi surf pressure		Displacement Fluid/Mud			
Tension	1.8	2.29	100 klbs Overpull	Mud		Mud			

Buoyed Casing Weight: 86,522 lbs (assuming 8.4 ppg fluid and 3,500' TVD-worst case scenario)



Casing Design Criteria and Load Case Assumptions

Percussion Petroleum Operating, LLC.

919 Milam Street, Suite 2475

Houston, TX 77002

Lakewood Federal Com horizontal Wells

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 - a. Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.65 psi/ft). The effects of axial load on collapse will be considered.
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 - a. Pressure Test: psi casing test with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
 - b. Injection Down Casing: psi surface injection pressure plus an internal pressure gradient of 0.65 psi/ft with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.

3. Tensile: $DF_T=1.8$
 - a. Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (10.5 ppg).

4. Surface Casing Program									
Casing Size (In)	Weight (ppf)	Grade	Connection	ID	ID (drift)	Collapse (psi)	Burst (psi)	Tension (1,000 lbs)	Capacity (bbl/ft)
9-5/8"	36	J-55	STC	8.921	8.765	2,020	3,520	394	0.0773
Safety Factors									
	API Rec. SF	ACTUAL SF	Case	External Fluids		Internal Fluids			
Collapse	1.125	3.30	Lost Circulation	Mud		None			
Burst	1.125	1.46	Plug Bump	Green Cement + 2ksi surf pressure		Displacement Fluid/Mud			
Tension	1.8	2.80	100 klbs Overpull	Mud		Mud			

Buoyed Casing Weight: 40,798 lbs (assuming 8.4 ppg fluid and 1,300' casing-worst case scenario)



Production Casing Program									
Casing Size (in)	Weight (ppf)	Grade	Connection	ID	ID (drift)	Collapse (psi)	Burst (psi)	Tension (1,000 lbs)	Capacity (bbl/ft)
7"	32	L-80	BTC	6.094	5.969	8,600	9,060	745	0.0361
5-1/2"	17	L-80	BTC	4.892	4.767	6,280	7,740	348	0.0232
Safety Factors									
	API Rec. SF	ACTUAL SF	Case	External Fluids		Internal Fluids			
Collapse	1.125	3.75	Lost Circulation	Mud		None			
Burst	1.125	2.47	Plug Bump	Green Cement + 2ksi surf pressure		Displacement Fluid/Mud			
Tension	1.8	2.29	100 klbs Overpull	Mud		Mud			

Buoyed Casing Weight: 86,522 lbs (assuming 8.4 ppg fluid and 3,500' TVD-worst case scenario)



Casing Design Criteria and Load Case Assumptions

Percussion Petroleum Operating, LLC.
919 Milam Street, Suite 2475
Houston, TX 77002

Lakewood Federal Com horizontal Wells

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3. Tensile: $DF_T=1.8$
 - a. Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (10.5 ppg).

4. Surface Casing Program									
Casing Size (In)	Weight (ppf)	Grade	Connection	ID	ID (drift)	Collapse (psi)	Burst (psi)	Tension (1,000 lbs)	Capacity (bbl/ft)
9-5/8"	36	J-55	STC	8.921	8.765	2,020	3,520	394	0.0773
Safety Factors									
	API Rec. SF	ACTUAL SF	Case	External Fluids		Internal Fluids			
Collapse	1.125	3.30	Lost Circulation	Mud		None			
Burst	1.125	1.46	Plug Bump	Green Cement + 2ksi surf pressure		Displacement Fluid/Mud			
Tension	1.8	2.80	100 klbs Overpull	Mud		Mud			

Buoyed Casing Weight: 40,798 lbs (assuming 8.4 ppg fluid and 1,300' casing-worst case scenario)



Production Casing Program									
Casing Size (in)	Weight (ppf)	Grade	Connection	ID	ID (drift)	Collapse (psi)	Burst (psi)	Tension (1,000 lbs)	Capacity (bbl/ft)
7"	32	L-80	BTC	6.094	5.969	8,600	9,060	745	0.0361
5-1/2"	17	L-80	BTC	4.892	4.767	6,280	7,740	348	0.0232
Safety Factors									
	API Rec. SF	ACTUAL SF	Case	External Fluids		Internal Fluids			
Collapse	1.125	3.75	Lost Circulation	Mud		None			
Burst	1.125	2.47	Plug Bump	Green Cement + 2ksi surf pressure		Displacement Fluid/Mud			
Tension	1.8	2.29	100 klbs Overpull	Mud		Mud			

Buoyed Casing Weight: 86,522 lbs (assuming 8.4 ppg fluid and 3,500' TVD-worst case scenario)

Contingency Planning – Lakewood Federal Area Wells

Prepared by Lelan J. Anders, Percussion Petroleum Operating, LLC.

INTRODUCTION:

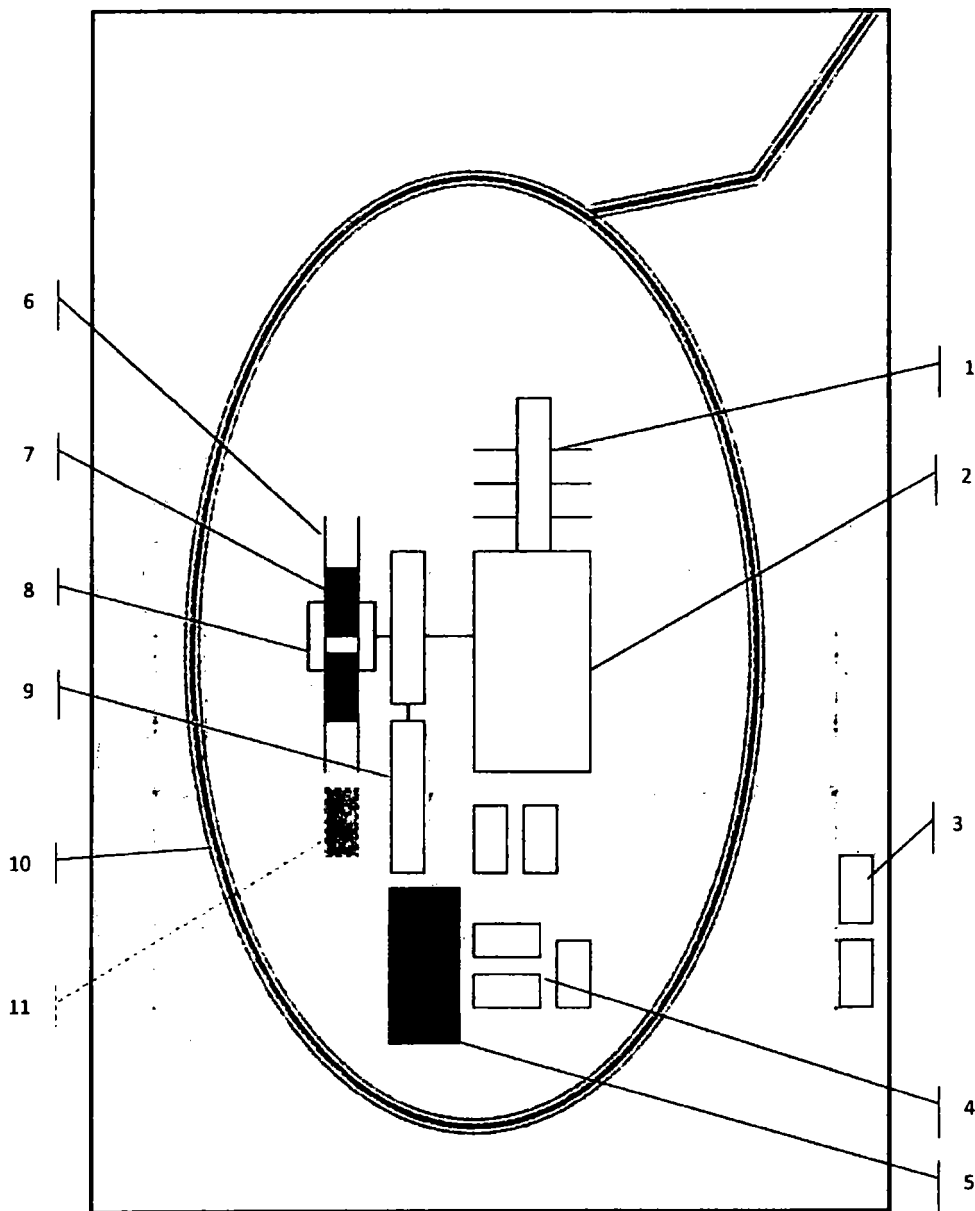
This document is designed to address the issues that could arise at any time drilling horizontal Yeso wells. Percussion Petroleum Operating (PPO) is going to follow regularly used practices and procedures in order to drill the wells to TD and still keep them economical to operate.

SCENARIO:

If a complete loss of circulation occurs while drilling above 400 ft MD.

CORRECTIVE ACTIONS:

1. Pump an LCM sweep and attempt to regain circulation – if unsuccessful go to step 2
2. Continue drilling at attempt to seal off lost circulation zone with drill cuttings
 1. Monitor torque and drag on drill string to determine if pipe is sticking
 2. Have contingency plan to 'drill dry' – have plenty of water on hand and well control in place
 3. Continue to 'dry drill' until torque and drag dictate a different plan
3. If 'dry drilling' is unsuccessful – Run contingency surface casing string
 1. Ream out 12-1/4" open hole to 17-1/2" open hole
 2. Run contingency 13-3/8" 48# H-40, STC casing to no more than 400' MD
 3. Cement 13-3/8" casing using Class C cement
 - i. Pump at minimum 100% excess cement
 1. 65/35/6 Class C Cement, 12.8 ppg, 1.87 yield, 10.15 gal/sk to be used on initial cement job.
 - ii. Top off cement from surface using 1" if necessary
 1. Top off will be 200 sks of 65/35/6 Class C Cement, 12.8 ppg, 1.87 yield, 10.15 gal/sk
 2. Second top off will be performed with same cement if needed.
 - iii. Insure that cement has cured for a minimum of 12 hours prior to drilling out
4. Install 13-3/8" 3M wellhead and drill to surface casing depth with 12-1/4" OD bit
5. Run and cement surface casing as planned



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



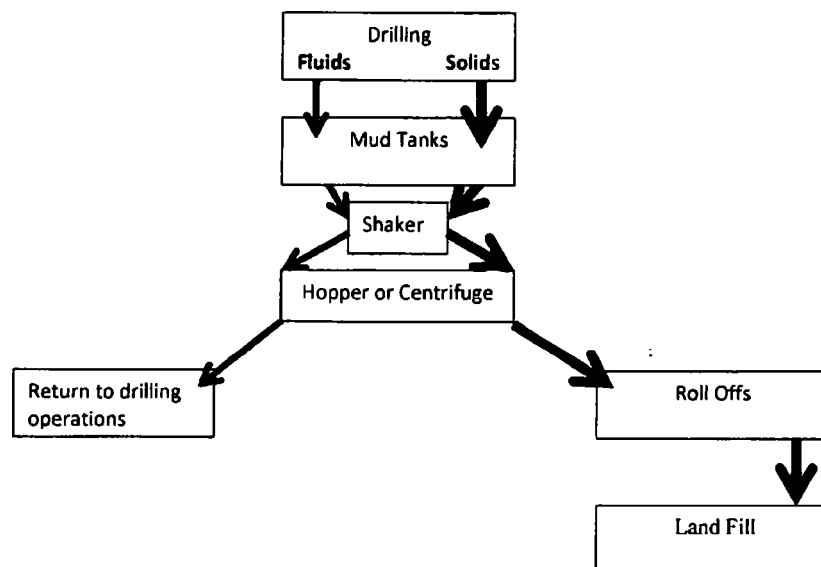
Above: Centrifugal Closed Loop System

PERMITS WEST, INC.
 PROVIDING PERMITS for LAND USERS
 17Verano Loop, Santa Fe, New Mexico 87508 (505) 466-0120



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

PERMITS WEST INC.
PROVIDING PERMITS for LAND USERS
17Verano Loop, Santa Fe, New Mexico 87508 (505) 466-8120

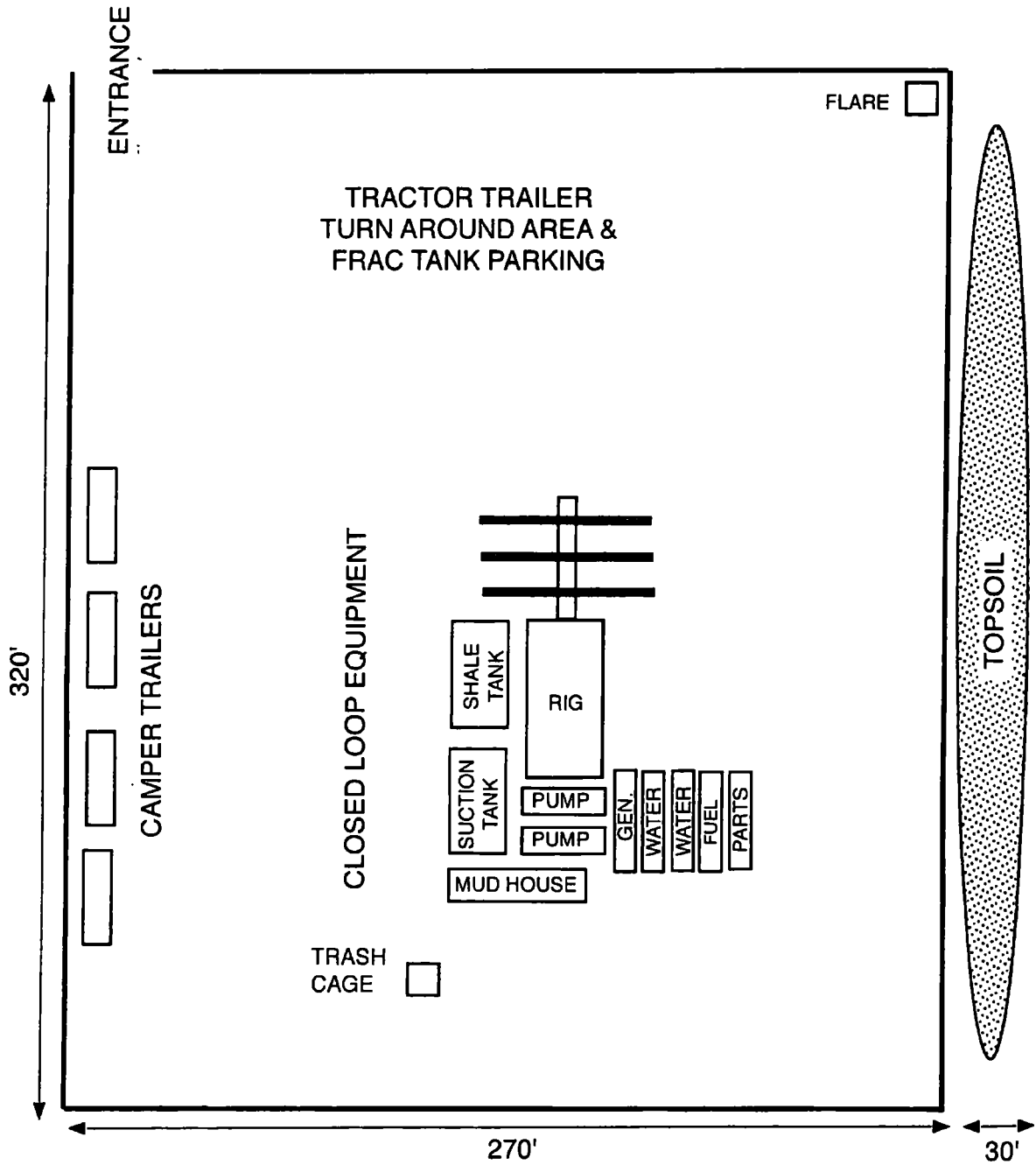
Percussion's
Lakewood Federal Com 7H
rig diagram

Prevailing Wind
out of South
or SSE



NORTH

1" = 50'





Hydrogen Sulfide Drilling Operations Plan

**Percussion Petroleum Operating, LLC.
919 Milam Street, Suite 2475
Houston, TX 77002**

1. H₂S Safety Instructions to the following:
 - Characteristics of H₂S.
 - Physical effects and hazards.
 - Principal and operation of H₂S detectors, warning system and briefing areas.
 - Evacuation procedures, routes and First Aid.
 - Proper use of safety equipment and life support systems.
 - Essential personnel meeting medical evaluation criteria will receive additional training on the proper use of 30 min pressure demand air packs.
2. H₂S Detection & Alarm Systems:
 - H₂S sensor/detectors to be located on the drilling rig floor, in the base of the sub structure/cellar area, on the mud returns pits by the shale shaker. Additional H₂S monitors may be placed as deemed necessary.
 - An audio alarm system will be installed on the derrick, the floor, and in the doghouse.
3. Windssocks and Wind Streamers:
 - Windssocks at mud pit area should be high enough to be visible.
 - Windssock on the rig floor/top of doghouse should be high enough to be visible.
4. Condition Flags & Signs:
 - Warning sign on access road to location
 - Flags to be displayed on sign at entrance to location
 - i. Green Flag – Normal Safe Operation Condition
 - ii. Yellow Flag – Potential Pressure and Danger
 - iii. Red Flag – Danger (H₂S present in dangerous concentrations) Only H₂S trained personnel admitted on location
5. Well Control Equipment:
 - See attached APD



6. Communications:

- While working under masks, chalkboards will be used for communications
- Hand signals will be used where chalk board is inappropriate
- Two-way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at drilling foreman's trailer or living quarters.

7. Drilling Stem Testing:

- No Drill Stem Tests or hole coring is planned at this time.

8. Drilling contractor supervisor will be required to be familiar with the effects H₂S has on tubular goods and other mechanical equipment.

9. If H₂S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas separator will be brought into service along with H₂S scavenger chemicals if necessary.

10. Emergency Contacts:

Emergency Contact Information - H ₂ S Contingency Plan				
Percussion Petroleum Operating, LLC	713-518-1331			
Key Parties at Percussion Petroleum		Office	Mobile	Email
Lelan J Anders	Vice President of Operations	713-429-1291	281-908-1752	Lelan@PercussionPetroleum.com
Lupe Carrillo	Chief Operating Officer	713-589-9509	832-776-1869	Lupe@PercussionPetroleum.com
John H. Campbell III	Chief Executive Officer	713-589-4683	936-718-6488	John@PercussionPetroleum.com

Artesia, New Mexico:	
Ambulance	911
State Police	575-746-2703
City Police	575-746-2703
Sheriff's Office	575-746-9888
Fire Department	575-746-2701
Local Emergency Planning Committee	575-746-2122
New Mexico Oil Conservation Division	575-748-1283

Carlsbad, New Mexico:	
Ambulance	911
State Police	575-885-3137
City Police	575-885-2111
Sheriff's Office	575-887-7551
Fire Department	575-887-3798
Local Emergency Planning Committee	575-887-6544
New Mexico Oil Conservation Division	575-887-6544

**Santa Fe, New Mexico:**

New Mexico Emergency Response Commission	505-476-9600
New Mexico Emergency Response Commission (24 hr)	505-827-9126
New Mexico State Emergency Operations Center	505-476-9635

Federal Contacts:

Carlsbad BLM Office	575-234-5972
National Emergency Response Center (Washington, DC)	800-424-8802

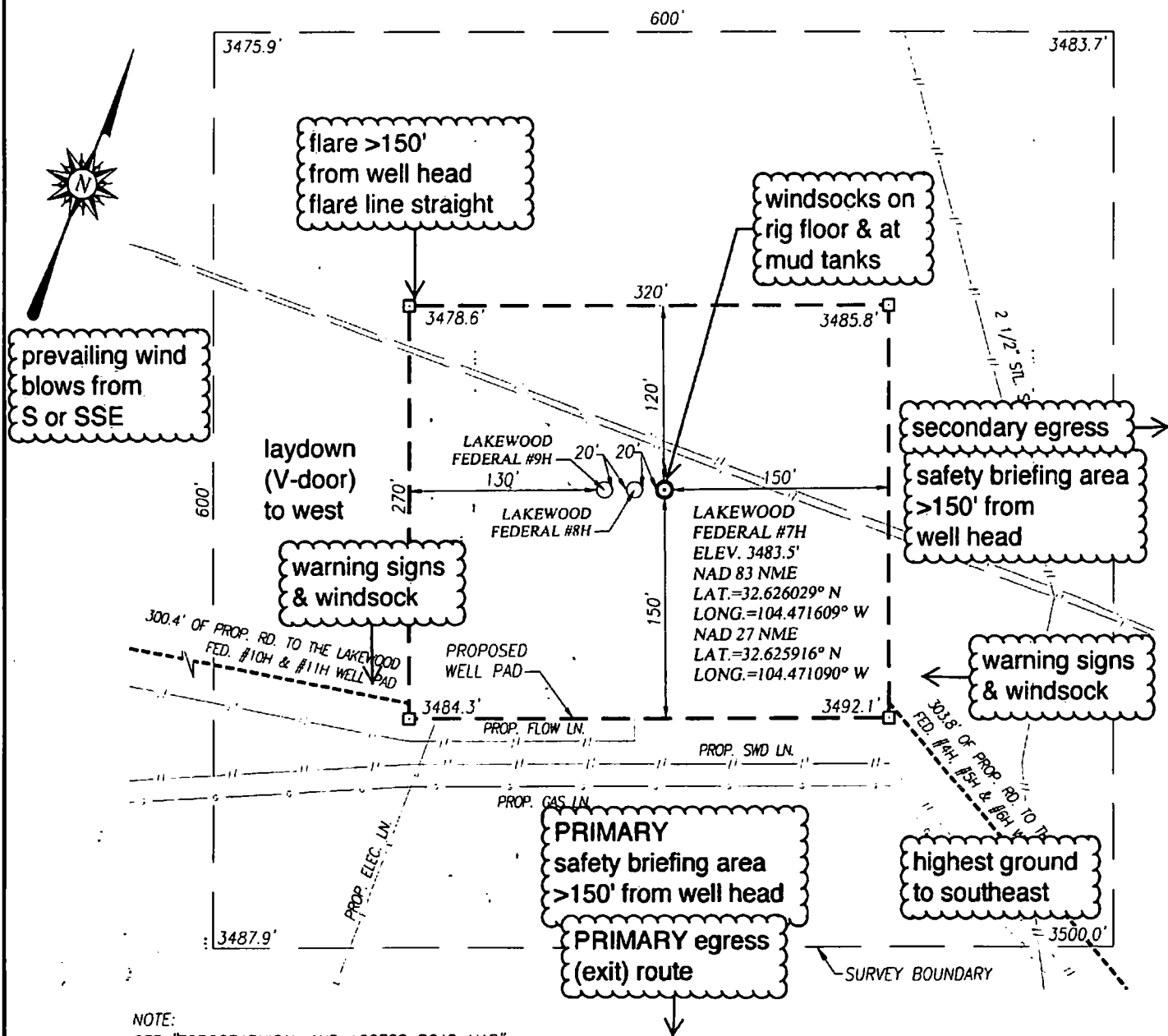
Medical:

Flight for Life - Lubbock, TX	806-743-9911
AeroCare - Lubbock, TX	806-747-8923
Med Flight Air Ambulance - Albuquerque, NM	505-842-4433
SB Air Med Service - Albuquerque, NM	505-842-4949

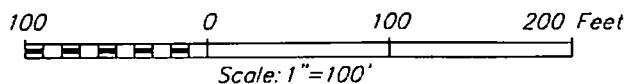
Well Control/Other:

Wild Well Control	281-784-4700
Boots & Coots IWC	800-256-9688
B.J. Services	575-746-3569
Halliburton	575-746-2757

WELL SITE PLAN



NOTE:
SEE "TOPOGRAPHICAL AND ACCESS ROAD MAP"
FOR PROPOSED ROAD LOCATION.



PERCUSSION PETROLEUM OPERATING, LLC

LAKWOOD FEDERAL #7H WELL LOCATED 580 FEET FROM
THE SOUTH LINE AND 2317 FEET FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

Survey Date: 4/03/18	CAD Date: 5/02/18	Drawn By: ACK
W.O. No.: 18110403	Rev: 06/19/18	Rel. W.O.: 18110110

Sheet 1 of 1

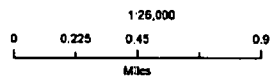


PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz
TBPLS# 10021000

**Lakewood Federal Com 9H/8H/7H
H₂S Contingency Plan:
Radius Map**

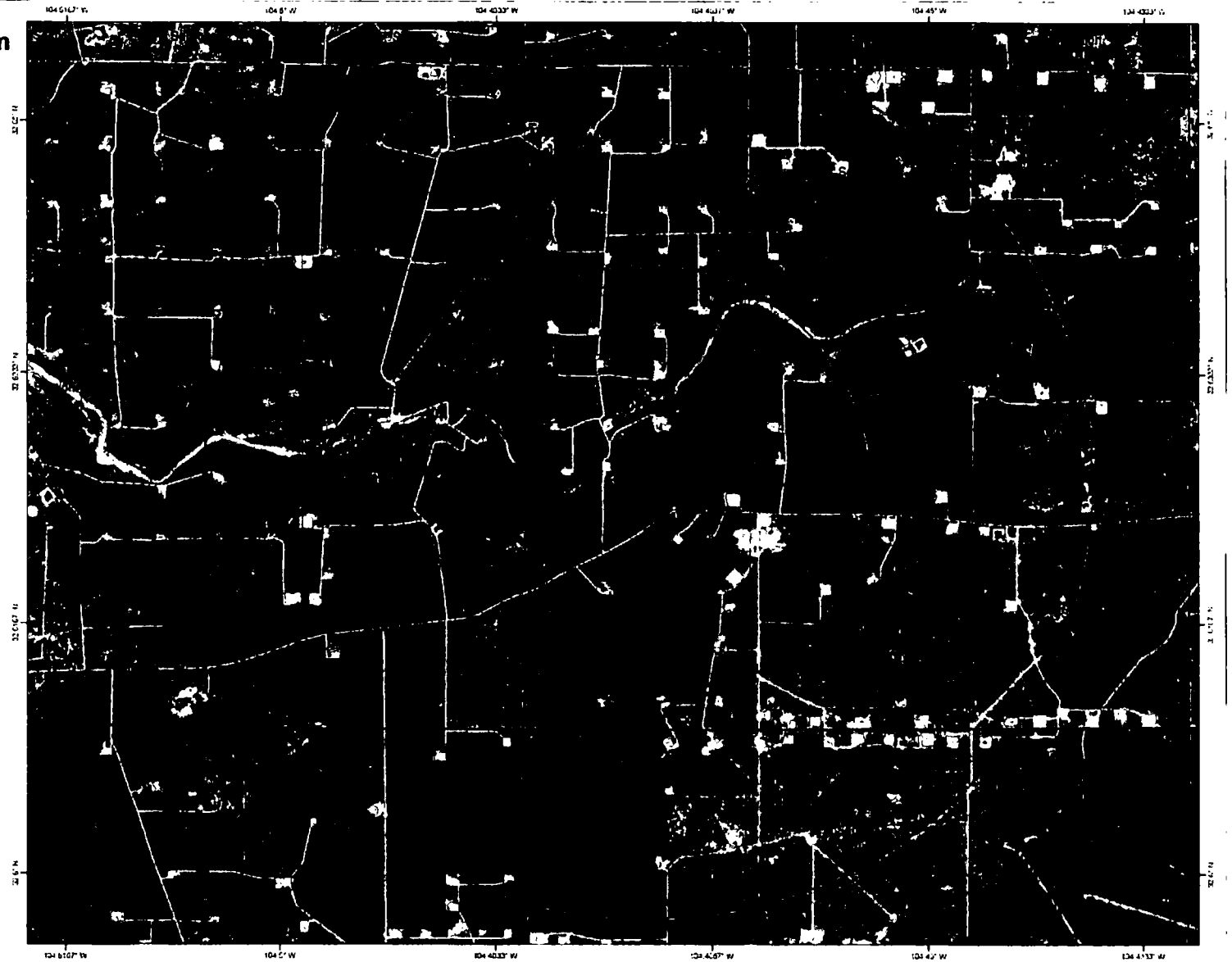
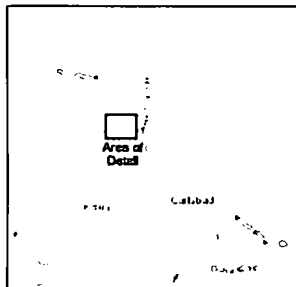
Section 27, Township 19S, Range 25E
Eddy County, New Mexico

 Surface Hole Location



NAD 1983 New Mexico State Plane East
FIPS 3001 Feet

Prepared by Permits West, Inc., June 28, 2018
for Percussion Petroleum Operating, LLC





Company: Percussion Petroleum, LLC
Project: Eddy County, NM
Site: Lakewood Federal
Well: 07H
Wellbore: OH
Rig: Silver Oak 1
Design: Plan #3 / 11:28, May 31 2018



PROJECT DETAILS: Eddy County, NM
Geodetic System: U.S. State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level

TOTAL CORRECTION
Magnetic North is 7.37° East of Grid North (Magnetic Convergence)
To convert a Magnetic Direction to a Grid Direction, Add 7.37°

WELL DETAILS: 07H

RKB=17 @ 3500.00ft (Silver Oak 1)

Northings
Easting
Longitude
Latitude
32.526029
-104.471609

SECTION DETAILS

Sec	MD	INC	AN	TVD	PN-S	+E/W	Dleg	V-Sect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	500.00	0.00	380.00	500.00	0.00	0.00	0.00	0.00
3	700.00	2.00	180.08	689.88	-3.48	0.00	1.00	2.49
4	2340.50	2.00	180.08	2339.48	-80.74	-0.92	0.00	60.74
5	3215.90	85.34	180.08	2892.39	-888.78	-0.92	10.00	628.75
6	3267.18	85.34	180.08	2893.00	-880.00	-1.00	0.00	680.00
7	3278.30	85.34	180.31	2893.13	-891.14	-1.04	2.00	691.13
8	8508.67	85.34	180.31	2893.00	-891.10	-29.10	0.00	8918.17

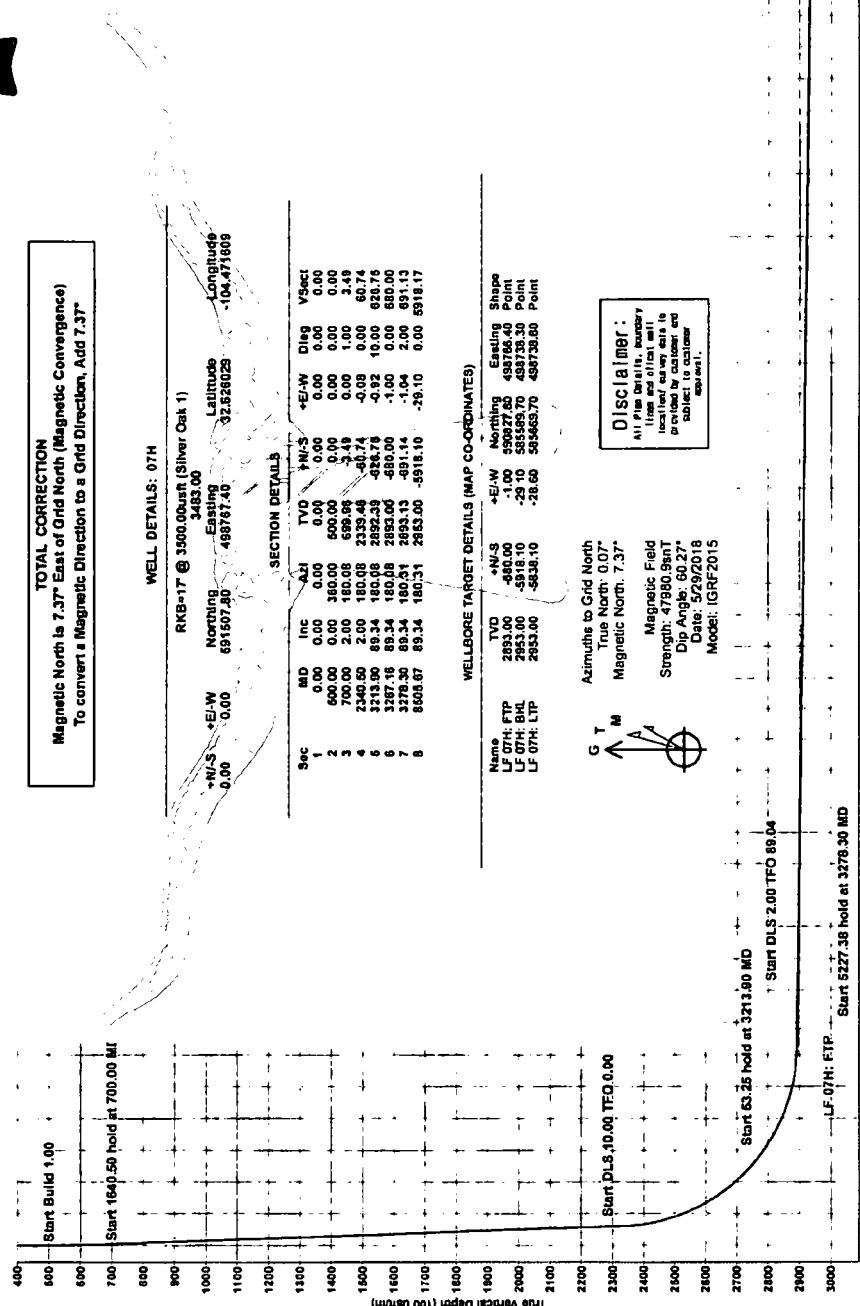
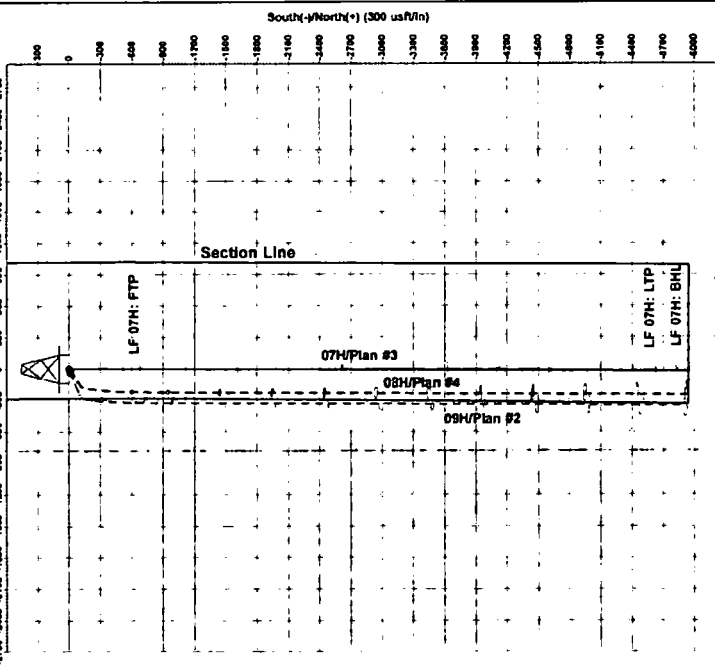
WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	MD	INC	AN	TVD	PN-S	+E/W	Easting	Shape
LF 07H: FTP	2893.00	-480.00	-1.00	5902.75	498785.30	Point	498785.30	Point
LF 07H: BHL	2893.00	-5918.10	-29.10	581585.70	498738.80	Point	498738.80	Point
LF 07H: LTP	2893.00	-5838.10	-28.60	584663.70	498738.80	Point	498738.80	Point

Asimuths to Grid North
True North: 0.07°
Magnetic North: 7.37°

Magnetic Field
Strength: 47880.9nT
Dip Angle: 60.27°
Date: 5/29/2018
Model: IGRF2015

Disclaimer:
All measurements, calculations, and data are provided for customer and subject to customer approval.



07H/Plan #3
LF 07H: LTP
LF 07H: BHL
LF 07H: LTP
LF 07H: BHL
TO at 8505.67
Plan: Plan #3 (07HCH) Silver Oak 1
Created By: Daniel Bern Date: 11:28, May 31 2018
Vertical Section at 180.31° (100 usf/m)



Wellbenders Standard Plan With Toolface



Company: Percussion Petroleum, LLC
Project: Eddy County, NM
Site: Lakewood Federal
Well: 07H
Wellbore: OH
Design: Plan #3

Local Co-ordinate Reference: Well 07H
TVD Reference: RKB=17' @ 3500.00usft (Silver Oak 1)
MD Reference: RKB=17' @ 3500.00usft (Silver Oak 1)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WBDS_SQL_2

Project	Eddy County, NM		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Lakewood Federal		
Site Position:		Northing:	590,773.06 usft
From:	Lat/Long	Easting:	499,537.28 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in
		Latitude:	32.624012
		Longitude:	-104.469105
		Grid Convergence:	-0.07 °

Well	07H		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32.626029
		Longitude:	-104.471609
		Ground Level:	3,483.00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2015	5/29/2018	7.30
			Dip Angle (°)
			60.27
			Field Strength (nT)
			47,980.91305058

Design	Plan #3		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (°)
			180.31

Survey Tool Program	Date 5/31/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
0.00	8,505.67	Plan #3 (OH)	MWD+IGRF
			Description
			OWSG MWD + IGRF or WMM



Wellbenders Standard Plan With Toolface



Company: Percussion Petroleum, LLC
Project: Eddy County, NM
Site: Lakewood Federal
Well: 07H
Wellbore: OH
Design: Plan #3

Local Co-ordinate Reference: Well 07H
TVD Reference: RKB=17' @ 3500.00usft (Silver Oak 1)
MD Reference: RKB=17' @ 3500.00usft (Silver Oak 1)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WBDS_SQL_2

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100ft)	Build (°/100ft)	Turn (°/100ft)	TFace (°)
0.00	0.00	0.00	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	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	360.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	360.00
600.00	1.00	180.08	599.99	-0.87	0.00	0.87	1.00	1.00	0.00	180.08
700.00	2.00	180.08	699.96	-3.49	0.00	3.49	1.00	1.00	0.00	0.00
800.00	2.00	180.08	799.90	-6.98	-0.01	6.98	0.00	0.00	0.00	0.00
900.00	2.00	180.08	899.84	-10.47	-0.01	10.47	0.00	0.00	0.00	0.00
1,000.00	2.00	180.08	999.78	-13.96	-0.02	13.96	0.00	0.00	0.00	0.00
1,100.00	2.00	180.08	1,099.72	-17.45	-0.02	17.45	0.00	0.00	0.00	0.00
1,200.00	2.00	180.08	1,199.65	-20.94	-0.03	20.94	0.00	0.00	0.00	0.00
1,300.00	2.00	180.08	1,299.59	-24.43	-0.03	24.43	0.00	0.00	0.00	0.00
1,400.00	2.00	180.08	1,399.53	-27.92	-0.04	27.92	0.00	0.00	0.00	0.00
1,500.00	2.00	180.08	1,499.47	-31.41	-0.04	31.41	0.00	0.00	0.00	0.00
1,600.00	2.00	180.08	1,599.41	-34.90	-0.05	34.90	0.00	0.00	0.00	0.00
1,700.00	2.00	180.08	1,699.35	-38.39	-0.05	38.39	0.00	0.00	0.00	0.00
1,800.00	2.00	180.08	1,799.29	-41.88	-0.06	41.88	0.00	0.00	0.00	0.00
1,900.00	2.00	180.08	1,899.23	-45.37	-0.06	45.37	0.00	0.00	0.00	0.00
2,000.00	2.00	180.08	1,999.17	-48.86	-0.07	48.86	0.00	0.00	0.00	0.00
2,100.00	2.00	180.08	2,099.11	-52.35	-0.07	52.35	0.00	0.00	0.00	0.00
2,200.00	2.00	180.08	2,199.05	-55.84	-0.08	55.84	0.00	0.00	0.00	0.00
2,300.00	2.00	180.08	2,298.98	-59.33	-0.08	59.33	0.00	0.00	0.00	0.00
2,340.50	2.00	180.08	2,339.46	-60.74	-0.08	60.74	0.00	0.00	0.00	0.00
2,350.00	2.95	180.08	2,348.95	-61.15	-0.09	61.15	10.00	10.00	0.02	0.00
2,400.00	7.95	180.08	2,398.71	-65.90	-0.09	65.90	10.00	10.00	0.00	0.00

Company: Percussion Petroleum, LLC
 Project: Eddy County, NM
 Site: Lakewood Federal
 Well: 07H
 Wellbore: OH
 Design: Plan #3

Local Co-ordinate Reference:
 TVD Reference:
 MD Reference:
 North Reference:
 Survey Calculation Method:
 Database:

Well 07H
 RKB=17' @ 3500.00usft (Silver Oak 1)
 RKB=17' @ 3500.00usft (Silver Oak 1)
 Grid
 Minimum Curvature
 WBDS_SQL_2

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100ft)	Build (°/100ft)	Turn (°/100ft)	TFace (°)
2,450.00	12.95	180.08	2,447.86	-74.97	-0.11	74.97	10.00	10.00	0.00	0.00
2,500.00	17.95	180.08	2,496.04	-88.28	-0.13	88.28	10.00	10.00	0.00	0.00
2,550.00	22.95	180.08	2,542.88	-105.74	-0.15	105.74	10.00	10.00	0.00	0.00
2,600.00	27.95	180.08	2,588.01	-127.22	-0.18	127.22	10.00	10.00	0.00	0.00
2,650.00	32.95	180.08	2,631.10	-152.55	-0.22	152.55	10.00	10.00	0.00	0.00
2,700.00	37.95	180.08	2,671.82	-181.54	-0.26	181.54	10.00	10.00	0.00	0.00
2,750.00	42.95	180.08	2,709.86	-213.97	-0.31	213.97	10.00	10.00	0.00	0.00
2,800.00	47.95	180.08	2,744.92	-249.59	-0.36	249.59	10.00	10.00	0.00	0.00
2,850.00	52.95	180.08	2,776.75	-288.14	-0.42	288.13	10.00	10.00	0.00	0.00
2,900.00	57.95	180.08	2,805.10	-329.30	-0.48	329.30	10.00	10.00	0.00	0.00
2,950.00	62.95	180.08	2,829.75	-372.79	-0.55	372.78	10.00	10.00	0.00	0.00
3,000.00	67.95	180.08	2,850.52	-418.25	-0.61	418.25	10.00	10.00	0.00	0.00
3,050.00	72.95	180.08	2,867.24	-465.35	-0.68	465.35	10.00	10.00	0.00	0.00
3,100.00	77.95	180.08	2,879.80	-513.73	-0.75	513.73	10.00	10.00	0.00	0.00
3,150.00	82.95	180.08	2,888.09	-563.03	-0.83	563.02	10.00	10.00	0.00	0.00
3,200.00	87.95	180.08	2,892.06	-612.85	-0.90	612.85	10.00	10.00	0.00	0.00
3,213.90	89.34	180.08	2,892.39	-626.75	-0.92	626.75	10.00	10.00	0.00	0.00
3,267.16	89.34	180.08	2,893.00	-680.00	-1.00	680.00	0.00	0.00	0.00	0.00
3,278.30	89.34	180.31	2,893.13	-691.14	-1.04	691.13	2.00	0.03	2.00	89.04
3,300.00	89.34	180.31	2,893.38	-712.84	-1.15	712.84	0.00	0.00	0.00	0.00
3,400.00	89.34	180.31	2,894.52	-812.83	-1.69	812.83	0.00	0.00	0.00	0.00
3,500.00	89.34	180.31	2,895.67	-912.83	-2.23	912.82	0.00	0.00	0.00	0.00
3,600.00	89.34	180.31	2,896.81	-1,012.82	-2.77	1,012.82	0.00	0.00	0.00	0.00
3,700.00	89.34	180.31	2,897.96	-1,112.81	-3.30	1,112.81	0.00	0.00	0.00	0.00
3,800.00	89.34	180.31	2,899.10	-1,212.80	-3.84	1,212.80	0.00	0.00	0.00	0.00
3,900.00	89.34	180.31	2,900.25	-1,312.79	-4.38	1,312.80	0.00	0.00	0.00	0.00
4,000.00	89.34	180.31	2,901.39	-1,412.79	-4.91	1,412.79	0.00	0.00	0.00	0.00

Company: Percussion Petroleum, LLC
 Project: Eddy County, NM
 Site: Lakewood Federal
 Well: 07H
 Wellbore: OH
 Design: Plan #3

Local Co-ordinate Reference:
 TVD Reference:
 MD Reference:
 North Reference:
 Survey Calculation Method:
 Database:

Well 07H
 RKB=17' @ 3500.00usft (Silver Oak 1)
 RKB=17' @ 3500.00usft (Silver Oak 1)
 Grid
 Minimum Curvature
 WBDS_SQL_2

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100ft)	Build (°/100ft)	Turn (°/100ft)	TFace (°)
4,100.00	89.34	180.31	2,902.54	-1,512.78	-5.45	1,512.79	0.00	0.00	0.00	0.00
4,200.00	89.34	180.31	2,903.68	-1,612.77	-5.99	1,612.78	0.00	0.00	0.00	0.00
4,300.00	89.34	180.31	2,904.83	-1,712.76	-6.52	1,712.77	0.00	0.00	0.00	0.00
4,400.00	89.34	180.31	2,905.98	-1,812.75	-7.06	1,812.77	0.00	0.00	0.00	0.00
4,500.00	89.34	180.31	2,907.12	-1,912.75	-7.60	1,912.76	0.00	0.00	0.00	0.00
4,600.00	89.34	180.31	2,908.27	-2,012.74	-8.13	2,012.75	0.00	0.00	0.00	0.00
4,700.00	89.34	180.31	2,909.41	-2,112.73	-8.67	2,112.75	0.00	0.00	0.00	0.00
4,800.00	89.34	180.31	2,910.56	-2,212.72	-9.21	2,212.74	0.00	0.00	0.00	0.00
4,900.00	89.34	180.31	2,911.70	-2,312.71	-9.74	2,312.73	0.00	0.00	0.00	0.00
5,000.00	89.34	180.31	2,912.85	-2,412.71	-10.28	2,412.73	0.00	0.00	0.00	0.00
5,100.00	89.34	180.31	2,913.99	-2,512.70	-10.82	2,512.72	0.00	0.00	0.00	0.00
5,200.00	89.34	180.31	2,915.14	-2,612.69	-11.35	2,612.71	0.00	0.00	0.00	0.00
5,300.00	89.34	180.31	2,916.28	-2,712.68	-11.89	2,712.71	0.00	0.00	0.00	0.00
5,400.00	89.34	180.31	2,917.43	-2,812.67	-12.43	2,812.70	0.00	0.00	0.00	0.00
5,500.00	89.34	180.31	2,918.57	-2,912.67	-12.96	2,912.69	0.00	0.00	0.00	0.00
5,600.00	89.34	180.31	2,919.72	-3,012.66	-13.50	3,012.69	0.00	0.00	0.00	0.00
5,700.00	89.34	180.31	2,920.87	-3,112.65	-14.04	3,112.68	0.00	0.00	0.00	0.00
5,800.00	89.34	180.31	2,922.01	-3,212.64	-14.58	3,212.67	0.00	0.00	0.00	0.00
5,900.00	89.34	180.31	2,923.16	-3,312.63	-15.11	3,312.67	0.00	0.00	0.00	0.00
6,000.00	89.34	180.31	2,924.30	-3,412.63	-15.65	3,412.66	0.00	0.00	0.00	0.00
6,100.00	89.34	180.31	2,925.45	-3,512.62	-16.19	3,512.65	0.00	0.00	0.00	0.00
6,200.00	89.34	180.31	2,926.59	-3,612.61	-16.72	3,612.65	0.00	0.00	0.00	0.00
6,300.00	89.34	180.31	2,927.74	-3,712.60	-17.26	3,712.64	0.00	0.00	0.00	0.00
6,400.00	89.34	180.31	2,928.88	-3,812.59	-17.80	3,812.63	0.00	0.00	0.00	0.00
6,500.00	89.34	180.31	2,930.03	-3,912.59	-18.33	3,912.63	0.00	0.00	0.00	0.00
6,600.00	89.34	180.31	2,931.17	-4,012.58	-18.87	4,012.62	0.00	0.00	0.00	0.00
6,700.00	89.34	180.31	2,932.32	-4,112.57	-19.41	4,112.61	0.00	0.00	0.00	0.00

Company: Percussion Petroleum, LLC
Project: Eddy County, NM
Site: Lakewood Federal
Well: 07H
Wellbore: OH
Design: Plan #3

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well 07H
 RKB=17' @ 3500.00usft (Silver Oak 1)
 RKB=17' @ 3500.00usft (Silver Oak 1)
 Grid
 Minimum Curvature
 WBDS_SQL_2

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100ft)	Build (°/100ft)	Turn (°/100ft)	TFace (°)
6,800.00	89.34	180.31	2,933.46	-4,212.56	-19.94	4,212.61	0.00	0.00	0.00	0.00
6,900.00	89.34	180.31	2,934.61	-4,312.55	-20.48	4,312.60	0.00	0.00	0.00	0.00
7,000.00	89.34	180.31	2,935.75	-4,412.55	-21.02	4,412.60	0.00	0.00	0.00	0.00
7,100.00	89.34	180.31	2,936.90	-4,512.54	-21.55	4,512.59	0.00	0.00	0.00	0.00
7,200.00	89.34	180.31	2,938.05	-4,612.53	-22.09	4,612.58	0.00	0.00	0.00	0.00
7,300.00	89.34	180.31	2,939.19	-4,712.52	-22.63	4,712.58	0.00	0.00	0.00	0.00
7,400.00	89.34	180.31	2,940.34	-4,812.51	-23.16	4,812.57	0.00	0.00	0.00	0.00
7,500.00	89.34	180.31	2,941.48	-4,912.51	-23.70	4,912.56	0.00	0.00	0.00	0.00
7,600.00	89.34	180.31	2,942.63	-5,012.50	-24.24	5,012.56	0.00	0.00	0.00	0.00
7,700.00	89.34	180.31	2,943.77	-5,112.49	-24.77	5,112.55	0.00	0.00	0.00	0.00
7,800.00	89.34	180.31	2,944.92	-5,212.48	-25.31	5,212.54	0.00	0.00	0.00	0.00
7,900.00	89.34	180.31	2,946.06	-5,312.47	-25.85	5,312.54	0.00	0.00	0.00	0.00
8,000.00	89.34	180.31	2,947.21	-5,412.47	-26.39	5,412.53	0.00	0.00	0.00	0.00
8,100.00	89.34	180.31	2,948.35	-5,512.46	-26.92	5,512.52	0.00	0.00	0.00	0.00
8,200.00	89.34	180.31	2,949.50	-5,612.45	-27.46	5,612.52	0.00	0.00	0.00	0.00
8,300.00	89.34	180.31	2,950.64	-5,712.44	-28.00	5,712.51	0.00	0.00	0.00	0.00
8,400.00	89.34	180.31	2,951.79	-5,812.43	-28.53	5,812.50	0.00	0.00	0.00	0.00
8,505.67	89.34	180.31	2,953.00	-5,918.10	-29.10	5,918.17	0.00	0.00	0.00	0.00

Checked By: _____ Approved By: _____ Date: _____



PERCUSSION
PETROLEUM
LLC

Percussion Petroleum, LLC

**Eddy County, NM
Lakewood Federal
07H**

**OH
Plan #3**

Anticollision Report

31 May, 2018



Company:	Percussion Petroleum, LLC	Local Co-ordinate Reference:	Well 07H
Project:	Eddy County, NM	TVD Reference:	RKB=17' @ 3500.00usft (Silver Oak 1)
Reference Site:	Lakewood Federal	MD Reference:	RKB=17' @ 3500.00usft (Silver Oak 1)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	07H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	WBDS_SQL_2
Reference Design:	Plan #3	Offset TVD Reference:	Reference Datum

Reference	Plan #3		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD + Stations Interval 100.00usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 9,999.00 us	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date 5/31/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	8,505.67	Plan #3 (OH)	MWD+IGRF	OWSG MWD + IGRF or WMM

Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Lakewood Federal						
08H - OH - Plan #4	691.83	691.79	19.12	14.62	4.248	CC, ES
08H - OH - Plan #4	8,505.67	8,178.96	381.70	231.06	2.534	SF
09H - OH - Plan #2	200.00	200.00	40.04	39.03	39.469	CC, ES
09H - OH - Plan #2	8,505.67	8,627.03	363.18	158.71	1.776	SF

Offset Design Lakewood Federal - 08H - OH - Plan #4										Offset Site Error: 0.00 usft			
Survey Program: 0-MWD+IGRF										Offset Well Error: 0.00 usft			
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-111.06	-7.20	-18.70	20.04				
100.00	100.00	100.00	100.00	0.15	0.15	-111.06	-7.20	-18.70	20.04	19.74	0.30	67.348	
200.00	200.00	200.00	200.00	0.51	0.51	-111.06	-7.20	-18.70	20.04	19.02	1.01	19.752	
300.00	300.00	300.00	300.00	0.87	0.87	-111.06	-7.20	-18.70	20.04	18.31	1.73	11.573	
400.00	400.00	400.00	400.00	1.22	1.22	-111.06	-7.20	-18.70	20.04	17.59	2.45	8.184	
500.00	500.00	500.00	500.00	1.58	1.58	-111.06	-7.20	-18.70	20.04	16.87	3.17	6.331	
600.00	599.99	600.01	599.99	1.92	1.94	71.23	-7.20	-18.70	19.74	15.88	3.87	5.107	
691.83	691.79	691.79	691.79	2.23	2.27	77.88	-7.20	-18.70	19.12	14.62	4.50	4.248	CC, ES
700.00	699.96	699.52	699.52	2.26	2.30	78.43	-7.31	-18.85	19.23	14.68	4.55	4.225	
800.00	799.90	802.86	796.61	2.60	2.66	77.04	-12.94	-26.58	27.43	22.20	5.23	5.249	
900.00	899.84	903.51	895.11	2.95	3.01	74.42	-20.58	-37.06	38.69	32.77	5.91	6.543	
1,000.00	999.78	1,004.15	993.62	3.30	3.40	72.98	-28.22	-47.53	49.99	43.38	6.61	7.560	
1,100.00	1,099.72	1,104.80	1,092.12	3.65	3.79	72.08	-35.86	-58.01	61.31	53.99	7.32	8.376	
1,200.00	1,199.65	1,205.45	1,190.62	4.01	4.20	71.45	-43.50	-68.49	72.64	64.61	8.03	9.044	
1,300.00	1,299.59	1,306.09	1,289.13	4.36	4.61	71.00	-51.14	-78.97	83.98	75.23	8.75	9.598	
1,400.00	1,399.53	1,406.74	1,387.63	4.72	5.02	70.65	-58.78	-89.44	95.33	85.85	9.47	10.064	
1,500.00	1,499.47	1,492.61	1,486.13	5.08	5.38	70.38	-66.42	-99.92	106.67	96.53	10.14	10.518	
1,600.00	1,599.41	1,608.03	1,584.64	5.44	5.86	70.15	-74.06	-110.40	118.02	107.10	10.92	10.806	
1,700.00	1,699.35	1,708.68	1,683.14	5.80	6.29	69.97	-81.70	-120.88	129.37	117.72	11.65	11.105	
1,800.00	1,799.29	1,790.67	1,781.64	6.17	6.63	69.82	-89.34	-131.35	140.72	128.41	12.31	11.431	
1,900.00	1,899.23	1,909.97	1,880.15	6.53	7.14	69.69	-96.98	-141.83	152.07	138.96	13.11	11.599	
2,000.00	1,999.17	1,989.38	1,978.65	6.89	7.48	69.58	-104.62	-152.31	163.42	149.66	13.76	11.874	
2,100.00	2,099.11	2,088.73	2,077.15	7.25	7.90	69.48	-112.26	-162.79	174.78	160.28	14.49	12.061	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	Percussion Petroleum, LLC	Local Co-ordinate Reference:	Well 07H
Project:	Eddy County, NM	TVD Reference:	RKB=17' @ 3500.00usft (Silver Oak 1)
Reference Site:	Lakewood Federal	MD Reference:	RKB=17' @ 3500.00usft (Silver Oak 1)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	07H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	WBDS_SQL_2
Reference Design:	Plan #3	Offset TVD Reference:	Reference Datum

Offset Design Lakewood Federal - 08H - OH - Plan#4													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IGRF													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
2,200.00	2,199.05	2,177.02	2,163.77	7.61	8.31	67.36	-126.07	-172.03	189.06	173.96	15.10	12.523		
2,300.00	2,298.98	2,260.32	2,242.65	7.98	8.76	62.45	-151.22	-180.51	210.17	194.60	15.57	13.497		
2,340.50	2,339.46	2,291.92	2,271.50	8.13	8.95	60.08	-163.73	-183.62	221.16	205.46	15.70	14.084		
2,350.00	2,348.95	2,299.16	2,278.01	8.16	8.99	59.27	-166.82	-184.33	223.93	208.20	15.73	14.238		
2,400.00	2,398.71	2,336.85	2,311.23	8.35	9.23	55.38	-184.23	-187.93	238.62	222.77	15.84	15.062		
2,450.00	2,447.86	2,373.91	2,342.72	8.55	9.49	52.04	-203.46	-191.35	253.26	237.34	15.93	15.901		
2,500.00	2,496.04	2,410.43	2,372.48	8.77	9.76	49.18	-224.37	-194.60	267.60	251.61	15.99	16.735		
2,550.00	2,542.88	2,446.48	2,400.50	9.00	10.04	46.73	-246.84	-197.68	281.42	265.38	16.04	17.545		
2,600.00	2,588.01	2,482.13	2,426.76	9.26	10.34	44.65	-270.76	-200.57	294.55	278.46	16.09	18.305		
2,650.00	2,631.10	2,517.42	2,451.26	9.55	10.67	42.88	-296.01	-203.28	306.85	290.71	16.15	19.003		
2,700.00	2,671.82	2,550.00	2,472.46	9.88	10.98	41.43	-320.63	-205.64	318.23	302.07	16.16	19.691		
2,750.00	2,709.86	2,587.14	2,494.88	10.24	11.36	40.13	-350.12	-208.15	328.55	312.22	16.33	20.116		
2,800.00	2,744.92	2,621.66	2,513.98	10.65	11.74	39.09	-378.79	-210.31	337.79	321.30	16.49	20.490		
2,850.00	2,776.75	2,655.99	2,531.24	11.10	12.14	38.24	-408.40	-212.27	345.86	329.17	16.69	20.721		
2,900.00	2,805.10	2,690.19	2,546.65	11.61	12.56	37.57	-438.87	-214.05	352.72	335.75	16.97	20.790		
2,950.00	2,829.75	2,724.27	2,560.18	12.16	12.99	37.07	-470.10	-215.62	358.33	341.01	17.32	20.693		
3,000.00	2,850.52	2,758.27	2,571.81	12.75	13.44	36.72	-502.02	-217.00	362.66	344.91	17.75	20.434		
3,050.00	2,867.24	2,792.21	2,581.52	13.39	13.90	36.52	-534.51	-218.18	365.68	347.41	18.27	20.015		
3,100.00	2,879.80	2,826.13	2,589.30	14.06	14.38	36.47	-567.51	-219.15	367.40	348.51	18.89	19.450		
3,150.00	2,888.09	2,860.05	2,595.12	14.76	14.87	36.55	-600.91	-219.92	367.79	348.19	19.60	18.762		
3,200.00	2,892.06	2,894.00	2,598.97	15.49	15.38	36.78	-634.63	-220.48	366.86	346.45	20.42	17.969		
3,213.90	2,892.39	2,900.00	2,599.45	15.69	15.46	36.85	-640.62	-220.56	366.40	345.79	20.61	17.777		
3,258.89	2,892.90	2,944.04	2,600.95	16.37	16.13	36.99	-672.79	-220.87	365.49	343.95	21.55	16.964		
3,267.16	2,893.00	2,940.47	2,601.02	16.49	16.08	36.99	-681.05	-220.91	365.54	343.94	21.59	16.930		
3,278.30	2,893.13	2,951.61	2,601.10	16.66	16.25	36.98	-692.19	-220.97	365.58	343.76	21.82	16.752		
3,300.00	2,893.38	2,973.32	2,601.27	17.00	16.58	36.98	-713.89	-221.09	365.65	343.37	22.27	16.416		
3,400.00	2,894.52	3,073.32	2,602.03	18.59	18.17	36.94	-813.89	-221.63	365.95	341.54	24.42	14.987		
3,500.00	2,895.67	3,173.32	2,602.80	20.23	19.81	36.90	-913.88	-222.16	366.26	339.62	26.64	13.748		
3,600.00	2,896.81	3,273.32	2,603.56	21.92	21.50	36.87	-1,013.88	-222.70	366.56	337.64	28.92	12.673		
3,700.00	2,897.96	3,373.32	2,604.32	23.64	23.22	36.83	-1,113.87	-223.23	366.87	335.61	31.26	11.738		
3,800.00	2,899.10	3,473.32	2,605.09	25.39	24.97	36.80	-1,213.87	-223.77	367.17	333.55	33.62	10.920		
3,900.00	2,900.25	3,573.31	2,605.85	27.16	26.74	36.76	-1,313.86	-224.31	367.48	331.46	36.02	10.202		
4,000.00	2,901.39	3,673.31	2,606.61	28.95	28.53	36.72	-1,413.86	-224.84	367.79	329.34	38.44	9.567		
4,100.00	2,902.54	3,773.31	2,607.38	30.76	30.34	36.69	-1,513.85	-225.38	368.09	327.21	40.88	9.004		
4,200.00	2,903.68	3,873.31	2,608.14	32.58	32.16	36.65	-1,613.85	-225.92	368.40	325.06	43.33	8.501		
4,300.00	2,904.83	3,973.31	2,608.90	34.41	33.99	36.62	-1,713.84	-226.45	368.70	322.91	45.80	8.051		
4,400.00	2,905.98	4,073.31	2,609.67	36.24	35.83	36.58	-1,813.84	-226.99	369.01	320.74	48.27	7.644		
4,500.00	2,907.12	4,173.31	2,610.43	38.09	37.67	36.55	-1,913.83	-227.52	369.32	318.56	50.76	7.276		
4,600.00	2,908.27	4,273.31	2,611.19	39.94	39.52	36.51	-2,013.83	-228.06	369.62	316.38	53.25	6.942		
4,700.00	2,909.41	4,373.31	2,611.96	41.80	41.38	36.48	-2,113.82	-228.60	369.93	314.19	55.74	6.637		
4,800.00	2,910.56	4,473.31	2,612.72	43.66	43.24	36.44	-2,213.82	-229.13	370.24	312.00	58.24	6.357		
4,900.00	2,911.70	4,573.31	2,613.48	45.52	45.11	36.41	-2,313.81	-229.67	370.54	309.80	60.74	6.100		
5,000.00	2,912.85	4,673.31	2,614.25	47.39	46.98	36.37	-2,413.81	-230.21	370.85	307.61	63.24	5.864		
5,100.00	2,913.99	4,773.31	2,615.01	49.27	48.86	36.34	-2,513.80	-230.74	371.16	305.41	65.75	5.645		
5,200.00	2,915.14	4,873.30	2,615.77	51.14	50.73	36.30	-2,613.80	-231.28	371.47	303.21	68.26	5.442		
5,300.00	2,916.28	4,973.30	2,616.54	53.02	52.61	36.27	-2,713.79	-231.82	371.77	301.01	70.77	5.253		
5,400.00	2,917.43	5,073.30	2,617.30	54.90	54.50	36.23	-2,813.79	-232.35	372.08	298.80	73.28	5.078		
5,500.00	2,918.57	5,173.30	2,618.07	56.79	56.38	36.20	-2,913.78	-232.89	372.39	296.60	75.79	4.914		
5,600.00	2,919.72	5,273.30	2,618.83	58.67	58.27	36.16	-3,013.78	-233.42	372.70	294.40	78.30	4.760		
5,700.00	2,920.87	5,373.30	2,619.59	60.56	60.15	36.13	-3,113.77	-233.96	373.00	292.20	80.81	4.616		
5,800.00	2,922.01	5,473.30	2,620.36	62.45	62.04	36.09	-3,213.77	-234.50	373.31	290.00	83.31	4.481		
5,900.00	2,923.16	5,573.30	2,621.12	64.34	63.93	36.06	-3,313.76	-235.03	373.62	287.80	85.82	4.353		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Wellbenders Anticollision Report



Company: Percussion Petroleum, LLC
Project: Eddy County, NM
Reference Site: Lakewood Federal
Site Error: 0.00 usft
Reference Well: 07H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #3

Local Co-ordinate Reference: Well 07H
TVD Reference: RKB=17' @ 3500.00usft (Silver Oak 1)
MD Reference: RKB=17' @ 3500.00usft (Silver Oak 1)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: WBDS_SQL_2
Offset TVD Reference: Reference Datum

Offset Design Lakewood Federal - 08H - OH - Plan #4													Offset Site Error: 0.00 usft
Survey Program: 0-MWD+GRF													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Between Centres (usft)	Between Ellipses (usft)					
6,000.00	2,924.30	5,673.30	2,621.88	66.23	65.83	36.02	-3,413.76	-235.57	373.93	285.60	88.33	4.233	
6,100.00	2,925.45	5,773.30	2,622.65	68.13	67.72	35.99	-3,513.75	-236.11	374.24	283.40	90.84	4.120	
6,200.00	2,926.59	5,873.30	2,623.41	70.02	69.62	35.95	-3,613.75	-236.64	374.55	281.21	93.34	4.013	
6,300.00	2,927.74	5,973.30	2,624.17	71.91	71.51	35.92	-3,713.74	-237.18	374.86	279.01	95.85	3.911	
6,400.00	2,928.88	6,073.30	2,624.94	73.81	73.41	35.89	-3,813.74	-237.72	375.17	276.82	98.35	3.815	
6,500.00	2,930.03	6,173.30	2,625.70	75.71	75.31	35.85	-3,913.73	-238.25	375.47	274.62	100.85	3.723	
6,600.00	2,931.17	6,273.29	2,626.46	77.61	77.20	35.82	-4,013.72	-238.79	375.78	272.43	103.35	3.636	
6,700.00	2,932.32	6,373.29	2,627.23	79.51	79.10	35.78	-4,113.72	-239.32	376.09	270.24	105.85	3.553	
6,800.00	2,933.46	6,473.29	2,627.99	81.40	81.00	35.75	-4,213.71	-239.86	376.40	268.06	108.35	3.474	
6,900.00	2,934.61	6,573.29	2,628.75	83.30	82.90	35.72	-4,313.71	-240.40	376.71	265.87	110.84	3.399	
7,000.00	2,935.75	6,673.29	2,629.52	85.21	84.80	35.68	-4,413.70	-240.93	377.02	263.69	113.34	3.327	
7,100.00	2,936.90	6,773.29	2,630.28	87.11	86.71	35.65	-4,513.70	-241.47	377.33	261.50	115.83	3.258	
7,200.00	2,938.05	6,873.29	2,631.04	89.01	88.61	35.61	-4,613.69	-242.01	377.64	259.33	118.32	3.192	
7,300.00	2,939.19	6,973.29	2,631.81	90.91	90.51	35.58	-4,713.69	-242.54	377.95	257.15	120.81	3.129	
7,400.00	2,940.34	7,073.29	2,632.57	92.81	92.41	35.55	-4,813.68	-243.08	378.26	254.97	123.29	3.068	
7,500.00	2,941.48	7,173.29	2,633.33	94.72	94.32	35.51	-4,913.68	-243.61	378.57	252.80	125.78	3.010	
7,600.00	2,942.63	7,273.29	2,634.10	96.62	96.22	35.48	-5,013.67	-244.15	378.88	250.63	128.26	2.954	
7,700.00	2,943.77	7,373.29	2,634.86	98.53	98.13	35.45	-5,113.67	-244.69	379.20	248.46	130.74	2.900	
7,800.00	2,944.92	7,473.29	2,635.62	100.43	100.03	35.41	-5,213.66	-245.22	379.51	246.29	133.22	2.849	
7,900.00	2,946.06	7,573.29	2,636.39	102.34	101.94	35.38	-5,313.66	-245.76	379.82	244.12	135.69	2.799	
8,000.00	2,947.21	7,673.28	2,637.15	104.24	103.84	35.34	-5,413.65	-246.30	380.13	241.96	138.17	2.751	
8,100.00	2,948.35	7,773.28	2,637.92	106.15	105.75	35.31	-5,513.65	-246.83	380.44	239.80	140.64	2.705	
8,200.00	2,949.50	7,873.28	2,638.68	108.05	107.65	35.28	-5,613.64	-247.37	380.75	237.64	143.11	2.661	
8,300.00	2,950.64	7,973.28	2,639.44	109.96	109.56	35.24	-5,713.64	-247.91	381.06	235.49	145.58	2.618	
8,400.00	2,951.79	8,073.28	2,640.21	111.87	111.47	35.21	-5,813.63	-248.44	381.37	233.33	148.04	2.576	
8,500.00	2,952.94	8,173.28	2,640.97	113.77	113.37	35.18	-5,913.63	-248.98	381.69	231.18	150.51	2.536	
8,505.67	2,953.00	8,178.96	2,641.01	113.88	113.48	35.18	-5,919.30	-249.01	381.70	231.06	150.65	2.534 SF	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



Wellbenders Anticollision Report



Company: Percussion Petroleum, LLC
Project: Eddy County, NM
Reference Site: Lakewood Federal
Site Error: 0.00 usft
Reference Well: 07H
Well Error: 0.00 usft
Reference Wellbore OH
Reference Design: Plan #3

Local Co-ordinate Reference: Well 07H
TVD Reference: RKB=17' @ 3500.00usft (Silver Oak 1)
MD Reference: RKB=17' @ 3500.00usft (Silver Oak 1)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: WBDS_SQL_2
Offset TVD Reference: Reference Datum

Offset Design Lakewood Federal - 09H - OH - Plan#2													Offset Site Error: 0.00 usft
Survey Program: 0-MWD+HGRF													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-110.92	-14.30	-37.40	40.04				
100.00	100.00	100.00	100.00	0.15	0.15	-110.92	-14.30	-37.40	40.04	39.74	0.30	134.576	
200.00	200.00	200.00	200.00	0.51	0.51	-110.92	-14.30	-37.40	40.04	39.03	1.01	39.469 CC, ES	
300.00	300.00	304.79	294.90	0.87	0.92	-111.32	-17.08	-43.76	47.25	45.47	1.78	26.584	
400.00	400.00	405.37	393.73	1.22	1.27	-111.75	-21.39	-53.60	58.05	55.57	2.48	23.432	
500.00	500.00	505.96	492.56	1.58	1.68	-112.04	-25.69	-63.45	68.86	65.67	3.19	21.598	
600.00	599.99	606.51	591.43	1.92	2.08	68.15	-30.00	-73.30	79.33	75.45	3.89	20.412	
700.00	699.96	707.02	690.34	2.26	2.49	69.39	-34.30	-83.15	89.19	84.61	4.58	19.475	
800.00	799.90	807.51	789.26	2.60	2.90	70.94	-38.61	-93.00	98.80	93.52	5.28	18.696	
900.00	899.84	908.01	888.18	2.95	3.32	72.21	-42.92	-102.86	108.47	102.47	6.00	18.087	
1,000.00	999.78	991.50	987.10	3.30	3.66	73.27	-47.23	-112.71	118.18	111.53	6.65	17.765	
1,100.00	1,099.72	1,109.00	1,086.03	3.65	4.14	74.18	-51.54	-122.56	127.93	120.49	7.44	17.203	
1,200.00	1,199.65	1,209.49	1,184.95	4.01	4.56	74.95	-55.85	-132.42	137.70	129.54	8.16	16.874	
1,300.00	1,299.59	1,309.99	1,283.87	4.36	4.97	75.62	-60.16	-142.27	147.49	138.61	8.89	16.597	
1,400.00	1,399.53	1,389.52	1,382.79	4.72	5.30	76.21	-64.47	-152.12	157.31	147.77	9.54	16.493	
1,500.00	1,499.47	1,489.02	1,481.71	5.08	5.71	76.73	-68.77	-161.98	167.13	156.87	10.26	16.285	
1,600.00	1,599.41	1,588.53	1,580.64	5.44	6.12	77.19	-73.08	-171.83	176.97	165.98	10.99	16.103	
1,700.00	1,699.35	1,688.03	1,679.56	5.80	6.53	77.60	-77.39	-181.68	186.82	175.10	11.72	15.944	
1,800.00	1,799.29	1,787.54	1,778.48	6.17	6.94	77.97	-81.70	-191.54	196.68	184.23	12.45	15.803	
1,900.00	1,899.23	1,887.04	1,877.40	6.53	7.35	78.31	-86.01	-201.39	206.54	193.37	13.17	15.677	
2,000.00	1,999.17	1,986.55	1,976.33	6.89	7.76	78.61	-90.32	-211.24	216.41	202.51	13.90	15.564	
2,100.00	2,099.11	2,086.05	2,075.25	7.25	8.17	78.89	-94.63	-221.10	226.29	211.66	14.63	15.463	
2,200.00	2,199.05	2,185.56	2,174.17	7.61	8.58	79.14	-98.93	-230.95	236.17	220.81	15.36	15.371	
2,300.00	2,298.98	2,285.07	2,273.09	7.98	8.99	79.38	-103.24	-240.80	246.06	229.96	16.10	15.287	
2,340.50	2,339.46	2,325.37	2,313.16	8.13	9.15	79.47	-104.99	-244.79	250.06	233.67	16.39	15.255	
2,350.00	2,348.95	2,334.82	2,322.56	8.16	9.19	79.41	-105.40	-245.73	250.99	234.53	16.46	15.247	
2,400.00	2,398.71	2,384.49	2,371.94	8.35	9.40	79.75	-107.55	-250.65	255.40	238.56	16.84	15.166	
2,450.00	2,447.86	2,433.75	2,420.91	8.55	9.60	81.05	-109.68	-255.53	259.18	241.94	17.24	15.033	
2,500.00	2,496.04	2,482.23	2,469.10	8.77	9.80	83.20	-111.78	-260.33	262.65	244.98	17.66	14.868	
2,550.00	2,542.88	2,529.44	2,516.04	9.00	10.00	86.05	-113.86	-265.00	266.33	248.21	18.12	14.699	
2,600.00	2,588.01	2,576.15	2,562.30	9.26	10.20	89.04	-118.29	-269.62	270.81	252.19	18.62	14.545	
2,650.00	2,631.10	2,624.24	2,609.38	9.55	10.42	91.98	-126.79	-274.34	276.18	257.00	19.18	14.401	
2,700.00	2,671.82	2,673.86	2,657.03	9.88	10.66	94.84	-139.68	-279.13	282.38	262.58	19.80	14.264	
2,750.00	2,709.86	2,725.17	2,704.96	10.24	10.93	97.59	-157.32	-283.96	289.30	268.83	20.47	14.131	
2,800.00	2,744.92	2,778.36	2,752.76	10.65	11.22	100.23	-180.07	-288.81	296.81	275.62	21.19	14.005	
2,850.00	2,776.75	2,833.58	2,799.95	11.10	11.56	102.75	-208.31	-293.62	304.76	282.80	21.95	13.883	
2,900.00	2,805.10	2,891.00	2,845.92	11.61	11.95	105.12	-242.36	-298.33	312.95	290.22	22.73	13.765	
2,950.00	2,829.75	2,950.80	2,889.92	12.16	12.39	107.34	-282.55	-302.87	321.19	297.65	23.54	13.647	
3,000.00	2,850.52	3,013.07	2,931.06	12.75	12.91	109.40	-329.06	-307.15	329.25	304.89	24.36	13.514	
3,050.00	2,867.24	3,077.92	2,968.30	13.39	13.52	111.28	-381.96	-311.07	336.91	311.70	25.21	13.365	
3,100.00	2,879.80	3,145.33	3,000.44	14.06	14.23	112.97	-441.07	-314.51	343.91	317.83	26.08	13.186	
3,150.00	2,888.09	3,215.23	3,026.24	14.76	15.04	114.47	-505.93	-317.34	350.03	323.03	27.01	12.962	
3,200.00	2,892.06	3,287.41	3,044.44	15.49	15.95	115.74	-575.70	-319.43	355.05	327.06	27.99	12.686	
3,213.90	2,892.39	3,307.85	3,047.99	15.69	16.22	116.05	-595.82	-319.87	356.22	327.95	28.27	12.599	
3,267.16	2,893.00	3,387.52	3,054.95	16.49	17.30	116.86	-675.12	-320.88	358.58	329.05	29.52	12.146	
3,278.30	2,893.13	3,400.34	3,055.12	16.66	17.48	116.86	-687.26	-320.95	358.61	328.78	29.83	12.021	
3,300.00	2,893.38	3,421.37	3,055.41	17.00	17.78	116.86	-708.96	-321.07	358.63	328.21	30.42	11.789	
3,400.00	2,894.52	3,521.37	3,056.74	18.59	19.25	116.89	-808.95	-321.61	358.71	325.48	33.23	10.794	
3,500.00	2,895.67	3,621.37	3,058.06	20.23	20.79	116.91	-908.94	-322.15	358.80	322.64	36.16	9.922	
3,600.00	2,896.81	3,721.37	3,059.39	21.92	22.39	116.94	-1,008.93	-322.69	358.88	319.70	39.18	9.160	
3,700.00	2,897.96	3,821.37	3,060.72	23.64	24.03	116.96	-1,108.92	-323.23	358.97	316.70	42.27	8.492	
3,800.00	2,899.10	3,921.37	3,062.04	25.39	25.71	116.99	-1,208.91	-323.77	359.06	313.64	45.41	7.906	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	Percussion Petroleum, LLC	Local Co-ordinate Reference:	Well 07H
Project:	Eddy County, NM	TVD Reference:	RKB=17' @ 3500.00usft (Silver Oak 1)
Reference Site:	Lakewood Federal	MD Reference:	RKB=17' @ 3500.00usft (Silver Oak 1)
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	07H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	WBDS_SQL_2
Reference Design:	Plan #3	Offset TVD Reference:	Reference Datum

Offset Design Lakewood Federal - 09H - OH - Plan#2													Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IGRF													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance				Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
3,900.00	2,900.25	4,021.37	3,063.37	27.16	27.42	117.02	-1,308.90	-324.31	359.14	310.54	48.60	7.389		
4,000.00	2,901.39	4,121.36	3,064.69	28.95	29.16	117.04	-1,408.89	-324.85	359.23	307.40	51.83	6.931		
4,100.00	2,902.54	4,221.36	3,066.02	30.76	30.92	117.07	-1,508.88	-325.39	359.31	304.23	55.08	6.523		
4,200.00	2,903.68	4,321.36	3,067.35	32.58	32.69	117.09	-1,608.87	-325.94	359.40	301.04	58.36	6.158		
4,300.00	2,904.83	4,421.36	3,068.67	34.41	34.48	117.12	-1,708.86	-326.48	359.49	297.83	61.66	5.830		
4,400.00	2,905.98	4,521.36	3,070.00	36.24	36.28	117.14	-1,808.85	-327.02	359.57	294.60	64.97	5.534		
4,500.00	2,907.12	4,621.36	3,071.33	38.09	38.10	117.17	-1,908.84	-327.56	359.66	291.36	68.30	5.266		
4,600.00	2,908.27	4,721.36	3,072.65	39.94	39.92	117.19	-2,008.83	-328.10	359.75	288.10	71.64	5.021		
4,700.00	2,909.41	4,821.36	3,073.98	41.80	41.75	117.22	-2,108.82	-328.64	359.83	284.84	75.00	4.798		
4,800.00	2,910.56	4,921.36	3,075.31	43.66	43.59	117.24	-2,208.81	-329.18	359.92	281.56	78.36	4.593		
4,900.00	2,911.70	5,021.36	3,076.63	45.52	45.43	117.27	-2,308.79	-329.72	360.01	278.28	81.72	4.405		
5,000.00	2,912.85	5,121.36	3,077.96	47.39	47.28	117.29	-2,408.78	-330.26	360.09	274.99	85.10	4.231		
5,100.00	2,913.99	5,221.36	3,079.28	49.27	49.14	117.32	-2,508.77	-330.81	360.18	271.70	88.48	4.071		
5,200.00	2,915.14	5,321.36	3,080.61	51.14	51.00	117.35	-2,608.76	-331.35	360.27	268.40	91.86	3.922		
5,300.00	2,916.28	5,421.36	3,081.94	53.02	52.86	117.37	-2,708.75	-331.89	360.35	265.10	95.25	3.783		
5,400.00	2,917.43	5,521.36	3,083.26	54.90	54.73	117.40	-2,808.74	-332.43	360.44	261.79	98.65	3.654		
5,500.00	2,918.57	5,621.36	3,084.59	56.79	56.60	117.42	-2,908.73	-332.97	360.53	258.48	102.04	3.533		
5,600.00	2,919.72	5,721.36	3,085.92	58.67	58.47	117.45	-3,008.72	-333.51	360.61	255.17	105.44	3.420		
5,700.00	2,920.87	5,821.36	3,087.24	60.56	60.34	117.47	-3,108.71	-334.05	360.70	251.86	108.84	3.314		
5,800.00	2,922.01	5,921.36	3,088.57	62.45	62.22	117.50	-3,208.70	-334.59	360.79	248.54	112.24	3.214		
5,900.00	2,923.16	6,021.36	3,089.90	64.34	64.10	117.52	-3,308.69	-335.13	360.88	245.23	115.65	3.120		
6,000.00	2,924.30	6,121.36	3,091.22	66.23	65.98	117.55	-3,408.68	-335.67	360.96	241.91	119.05	3.032		
6,100.00	2,925.45	6,221.36	3,092.55	68.13	67.87	117.57	-3,508.67	-336.22	361.05	238.59	122.46	2.948		
6,200.00	2,926.59	6,321.36	3,093.88	70.02	69.75	117.60	-3,608.66	-336.76	361.14	235.27	125.87	2.869		
6,300.00	2,927.74	6,421.36	3,095.20	71.91	71.64	117.62	-3,708.65	-337.30	361.23	231.95	129.28	2.794		
6,400.00	2,928.88	6,521.36	3,096.53	73.81	73.53	117.65	-3,808.64	-337.84	361.31	228.62	132.69	2.723		
6,500.00	2,930.03	6,621.36	3,097.85	75.71	75.42	117.67	-3,908.63	-338.38	361.40	225.30	136.10	2.655		
6,600.00	2,931.17	6,721.36	3,099.18	77.61	77.31	117.70	-4,008.62	-338.92	361.49	221.98	139.51	2.591		
6,700.00	2,932.32	6,821.36	3,100.51	79.51	79.20	117.72	-4,108.61	-339.46	361.58	218.66	142.92	2.530		
6,800.00	2,933.46	6,921.36	3,101.83	81.40	81.09	117.75	-4,208.60	-340.00	361.66	215.33	146.33	2.472		
6,900.00	2,934.61	7,021.36	3,103.16	83.30	82.99	117.77	-4,308.59	-340.54	361.75	212.01	149.74	2.416		
7,000.00	2,935.75	7,121.36	3,104.49	85.21	84.88	117.80	-4,408.58	-341.08	361.84	208.69	153.15	2.363		
7,100.00	2,936.90	7,221.36	3,105.81	87.11	86.78	117.82	-4,508.57	-341.63	361.93	205.37	156.56	2.312		
7,200.00	2,938.05	7,321.36	3,107.14	89.01	88.67	117.85	-4,608.56	-342.17	362.02	202.04	159.97	2.263		
7,300.00	2,939.19	7,421.36	3,108.47	90.91	90.57	117.87	-4,708.54	-342.71	362.11	198.72	163.39	2.216		
7,400.00	2,940.34	7,521.36	3,109.79	92.81	92.47	117.90	-4,808.53	-343.25	362.19	195.40	166.80	2.171		
7,500.00	2,941.48	7,621.36	3,111.12	94.72	94.37	117.92	-4,908.52	-343.79	362.28	192.08	170.20	2.129		
7,600.00	2,942.63	7,721.36	3,112.45	96.62	96.27	117.95	-5,008.51	-344.33	362.37	188.76	173.61	2.087		
7,700.00	2,943.77	7,821.36	3,113.77	98.53	98.16	117.97	-5,108.50	-344.87	362.46	185.44	177.02	2.048		
7,800.00	2,944.92	7,921.36	3,115.10	100.43	100.06	118.00	-5,208.49	-345.41	362.55	182.12	180.43	2.009		
7,900.00	2,946.06	8,021.36	3,116.42	102.34	101.97	118.02	-5,308.48	-345.95	362.64	178.80	183.84	1.973		
8,000.00	2,947.21	8,121.36	3,117.75	104.24	103.87	118.05	-5,408.47	-346.49	362.73	175.48	187.25	1.937		
8,100.00	2,948.35	8,221.36	3,119.08	106.15	105.77	118.07	-5,508.46	-347.04	362.81	172.16	190.65	1.903		
8,200.00	2,949.50	8,321.36	3,120.40	108.05	107.67	118.10	-5,608.45	-347.58	362.90	168.85	194.06	1.870		
8,300.00	2,950.64	8,421.36	3,121.73	109.96	109.57	118.12	-5,708.44	-348.12	362.99	165.53	197.46	1.838		
8,400.00	2,951.79	8,521.36	3,123.06	111.87	111.48	118.15	-5,808.43	-348.66	363.08	162.21	200.87	1.808		
8,500.00	2,952.94	8,621.36	3,124.38	113.77	113.38	118.17	-5,908.42	-349.20	363.17	158.90	204.27	1.778		
8,505.67	2,953.00	8,627.03	3,124.46	113.88	113.49	118.17	-5,914.09	-349.23	363.18	158.71	204.46	1.776 SF		

Company: Percussion Petroleum, LLC
Project: Eddy County, NM
Reference Site: Lakewood Federal
Site Error: 0.00 usft
Reference Well: 07H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #3

Local Co-ordinate Reference: Well 07H
TVD Reference: RKB=17' @ 3500.00usft (Silver Oak 1)
MD Reference: RKB=17' @ 3500.00usft (Silver Oak 1)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: WBDS_SQL_2
Offset TVD Reference: Reference Datum

Reference Depths are relative to RKB=17' @ 3500.00usft (Silver Oak 1) Coordinates are relative to: 07H

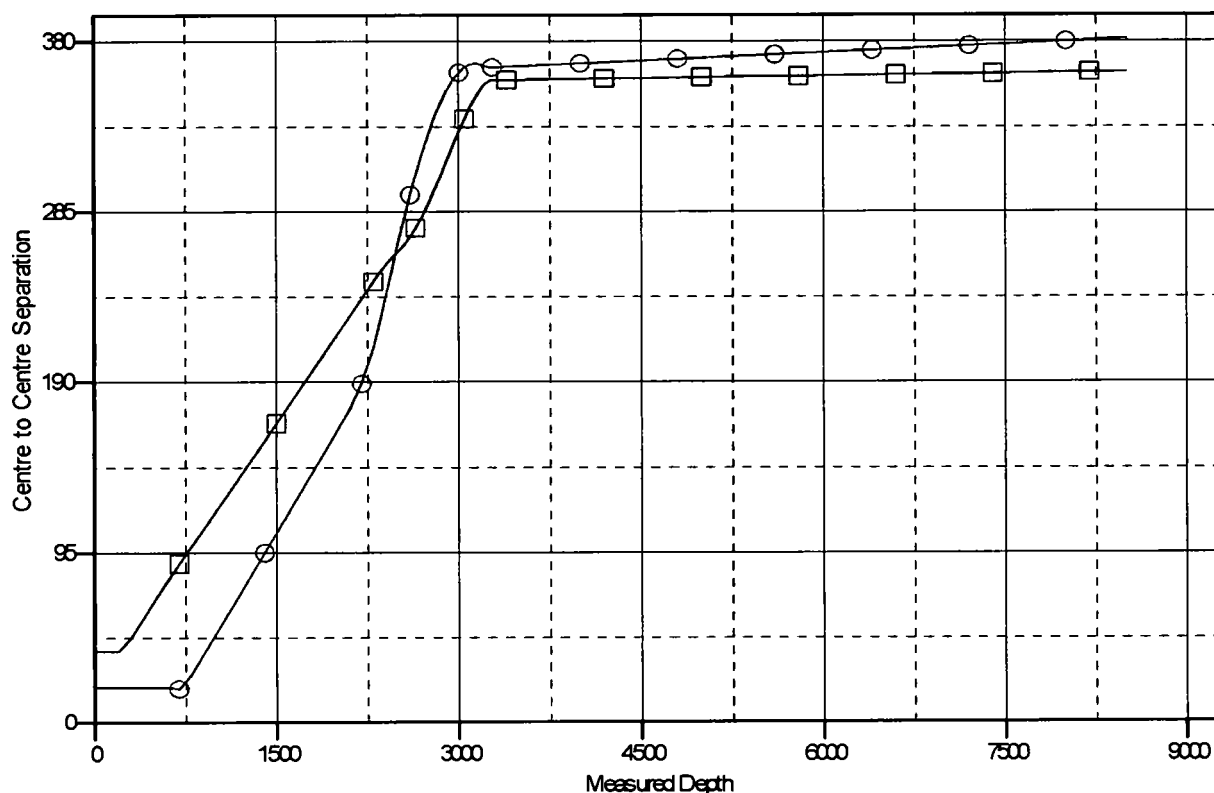
Offset Depths are relative to Offset Datum

Central Meridian is -104.333334

Coordinate System is US State Plane 1983, New Mexico Eastern Zone

Grid Convergence at Surface is: -0.07°

Ladder Plot



LEGEND

—■— OH, OH, Plan #2 VO —●— OH, OH, Plan #3 VO

Company: Percussion Petroleum, LLC
Project: Eddy County, NM
Reference Site: Lakewood Federal
Site Error: 0.00 usft
Reference Well: 07H
Well Error: 0.00 usft
Reference Wellbore: OH
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Local Co-ordinate Reference: Well 07H
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Output errors are at: 2.00 sigma
Database: WBDS_SQL_2
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Reference Depths are relative to RKB=17' @ 3500.00usft (Silver Oak 1) Coordinates are relative to: 07H

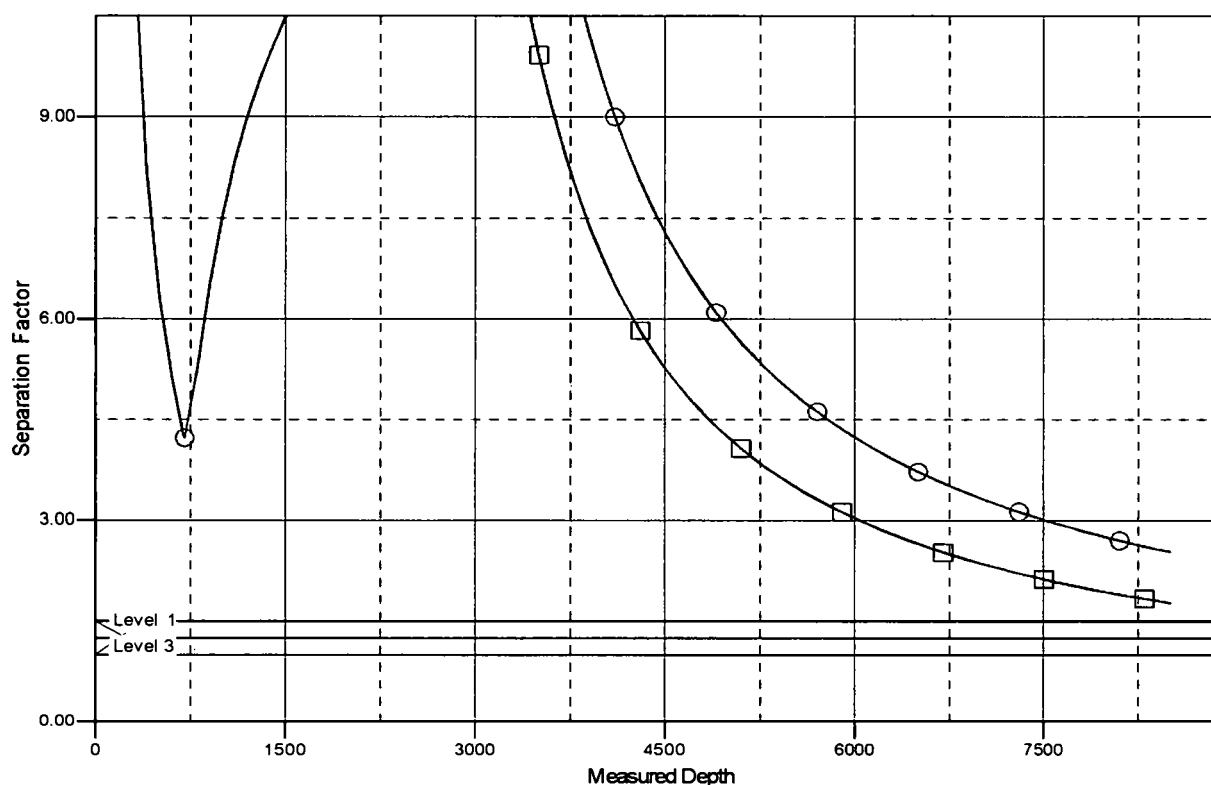
Offset Depths are relative to Offset Datum

Central Meridian is -104.333334

Coordinate System is US State Plane 1983, New Mexico Eastern Zone

Grid Convergence at Surface is: -0.07°

Separation Factor Plot



LEGEND

—□— 08H, OH, Plan #2 V0 —○— 08H, OH, Plan #1 V0

Percussion Petroleum Operating, LLC
Lakewood Federal Com 7H
SHL 580' FSL & 2317' FEL 27-19S-25E
BHL 20' FSL & 2346' FEL 34-19S-25E
Eddy County, NM

DRILL PLAN PAGE 1

Drilling Program

1. ESTIMATED TOPS

Formation/Lithology	TVD	MD	Contents
Quaternary caliche	000'	000'	water
Grayburg dolomite	613'	613'	hydrocarbons
San Andres dolomite	798'	798'	hydrocarbons
(KOP	2340'	2341'	hydrocarbons)
Glorieta silty dolomite	2358'	2359'	hydrocarbons
Yeso dolomite & goal	2513'	2518'	hydrocarbons
TD	2953'	8506'	hydrocarbons

2. NOTABLE ZONES

Yeso is the goal. Closest water well (RA 03304) is 3709' NW. Water bearing strata were found from 90' to 118' in the 130' deep well.

3. PRESSURE CONTROL

A 3000-psi 5000' rated BOP stack consisting of annular preventer and double (blind and pipe) ram will be used below surface casing to TD. See attached BOP and choke manifold diagrams.

Pressure tests will be conducted before drilling out from under all casing strings. Third party test crews will conduct all tests. All tests will be recorded for 10-minutes on low pressure (500 psi) and 10-minutes on high pressure (3000-psi). After BOP testing is complete, test casing (without test plug) to 2000-psi for 30 minutes. All tests will be charted on a plot. BOPs will be function tested every day.

Percussion Petroleum Operating, LLC
 Lakewood Federal Com 7H
 SHL 580' FSL & 2317' FEL 27-19S-25E
 BHL 20' FSL & 2346' FEL 34-19S-25E
 Eddy County, NM

DRILL PLAN PAGE 2

4. CASING & CEMENT

All casing will be API and new. A contingency plan is attached.

Hole O. D.	Set MD	Set TVD	Casing O. D.	Weight (lb/ft)	Grade	Joint	Collapse	Burst	Tension
12.25"	0' - 1279'	0' - 1279'	Surface 9.625"	36	J-55	LTC	1.125	1.125	1.8
8.75"	0' - 2625'	0' - 2610'	Prod. 1 7"	32	L-80	BTC	1.125	1.125	1.8
8.75"	2625' - 8506'	2610' - 2953'	Prod. 2 5.5"	17	L-80	BTC	1.125	1.125	1.8

Casing Name	Type	Sacks	Yield	Cu. Ft.	Weight	Blend
Surface	Lead	636	1.32	840	14.8	Class C + 2% CaCl + ¼ pound per sack celloflake
TOC = GL		100% Excess			Stop collar 10' above shoe with centralizer. One on 1st collar and every 4 th collar to GL.	
Production	Lead	495	1.97	975	12.6	65/65/6 Class C + 6% gel + 5% salt + ¼ pound per sack celloflake + 0.2% C41-P
	Tail	1433	1.32	1891	14.8	Class C + 2% CaCl + ¼ pound per sack celloflake
TOC = GL		50% Excess			Stop collar 10' above shoe with centralizer. One on 1st collar and every 10 collars to 1200' with 1 centralizer in 9.625" casing.	

5. MUD PROGRAM

An electronic/mechanical mud monitor with a minimum pit volume totalizer, stroke counter, and flow sensor will be used. All necessary mud products (LCM) will be on site to handle any abnormal hole condition that may be encountered while drilling this well. A closed loop system will be used.

Percussion Petroleum Operating, LLC
Lakewood Federal Com 7H
SHL 580' FSL & 2317' FEL 27-19S-25E
BHL 20' FSL & 2346' FEL 34-19S-25E
Eddy County, NM

DRILL PLAN PAGE 3

Type	Interval (MD)	lb/gal	Viscosity	Fluid Loss	Plastic Viscosity	Yield Point
fresh water/gel	0' - 1279'	8.4 - 9.2	36-42	NC	3-5	5-7
fresh water/cut brine	1279' - 2340'	8.3 - 9.2	28-30	NC	1	1
cut brine	2340' - 8506'	8.6 - 9.2	29-32	NC	4-5	6-10

6. CORES, TESTS, & LOGS

No core or drill stem test is planned.

A mud logger will be used from GL to TD. Samples will be collected every 10' in the lateral pay zone.

No electric logs are planned at this time.

7. DOWN HOLE CONDITIONS

No abnormal pressure or temperature is expected. Maximum expected bottom hole pressure is ≈ 1257 psi. Expected bottom hole temperature is $\approx 114^{\circ}$ F.

A Hydrogen Sulfide Drilling Operation Plan is attached.

8. OTHER INFORMATION

Anticipated spud date is upon approval. It is expected it will take ≈ 1 month to drill and complete the well.

St. Devote LLC has operating rights in NMNM-0504364B, NMNM-015921, and NMNM-031200. St. Devote LLC is a subsidiary of Percussion.

Contingency Planning – Lakewood Federal Area Wells

Prepared by Lelan J. Anders, Percussion Petroleum Operating, LLC.

INTRODUCTION:

This document is designed to address the issues that could arise at any time drilling horizontal Yeso wells. Percussion Petroleum Operating (PPO) is going to follow regularly used practices and procedures in order to drill the wells to TD and still keep them economical to operate.

SCENARIO:

If a complete loss of circulation occurs while drilling above 400 ft MD.

CORRECTIVE ACTIONS:

1. Pump an LCM sweep and attempt to regain circulation – if unsuccessful go to step 2
2. Continue drilling at attempt to seal off lost circulation zone with drill cuttings
 1. Monitor torque and drag on drill string to determine if pipe is sticking
 2. Have contingency plan to 'drill dry' – have plenty of water on hand and well control in place
 3. Continue to 'dry drill' until torque and drag dictate a different plan
3. If 'dry drilling' is unsuccessful – Run contingency surface casing string
 1. Ream out 12-1/4" open hole to 17-1/2" open hole
 2. Run contingency 13-3/8" 48# H-40, STC casing to no more than 400' MD
 3. Cement 13-3/8" casing using Class C cement
 - i. Pump at minimum 200% excess cement
 1. 400 sks 65/35/6 Class C Cement, 12.8 ppg, 1.87 yield, 10.15 gal/sk to be used on initial cement job.
 - ii. Top off cement from surface using 1" if necessary
 1. Top off will be 200 sks of 65/35/6 Class C Cement, 12.8 ppg, 1.87 yield, 10.15 gal/sk
 2. Second top off will be performed with same cement if needed.
 - iii. Insure that cement has cured for a minimum of 12 hours prior to drilling out
 4. Install 13-3/8" 3M wellhead and drill to surface casing depth with 12-1/4" OD bit
 5. Run and cement surface casing as planned



U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

SUPO Data Report

12/27/2018

APD ID: 10400032823

Submission Date: 08/20/2018

Highlighted data
reflects the most
recent changes

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 7H

Show Final Text

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Lake_7H_Road_Map_20180806134652.pdf

Existing Road Purpose: ACCESS

Row(s) Exist? NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

Lake_7H_New_Road_Map_20180806134721.pdf

New road type: RESOURCE

Length: 981.4

Feet

Width (ft.): 30

Max slope (%): 0

Max grade (%): 1

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 14

New road access erosion control: Crowned and ditched

New road access plan or profile prepared? NO

New road access plan attachment:

Access road engineering design? NO

Access road engineering design attachment:

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 7H

Access surfacing type: OTHER

Access topsoil source: ONSITE

Access surfacing type description: Caliche

Access onsite topsoil source depth: 8

Offsite topsoil source description:

Onsite topsoil removal process: Grader

Access other construction information: No culvert, cattle guard, or vehicle turn out is needed. Drainage crossing will be low style with no culvert. No upgrade is needed.

Access miscellaneous information:

Number of access turnouts:

Access turnout map:

Drainage Control

New road drainage crossing: OTHER

Drainage Control comments: Crowned and ditched

Road Drainage Control Structures (DCS) description: None

Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

Additional Attachment(s):

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

Lake_7H_Well_Map_20180806134939.pdf

Existing Wells description:

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: A 369.2' long 4" O D. HDPE flow line will be laid on the surface south 15' and west 354.2' to a central tank battery on the proposed 10H/11H pad. Maximum operating pressure will be 100 psi. A 369' long overhead raptor safe 3-phase power line will be built south to an existing power line.

Production Facilities map:

Lake_7H_Production_Facilities_20180806135001.pdf

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 7H

Section 5 - Location and Types of Water Supply

Water Source Table

Water source use type: DUST CONTROL, DUST CONTROL, DUST CONTROL, DUST CONTROL, STIMULATION, STIMULATION, STIMULATION, STIMULATION, SURFACE CASING, SURFACE CASING, SURFACE CASING, SURFACE CASING

Water source type: GW WELL

Describe type:

Source longitude:

Source latitude:

Source datum:

Water source permit type: OTHER

Source land ownership: PRIVATE

Water source transport method: PIPELINE

Source transportation land ownership: PRIVATE

Water source volume (barrels): 10000

Source volume (acre-feet): 1.288931

Source volume (gal): 420000

Water source and transportation map:

Lake_7H_Water_Source_Map_20180806135132.pdf

Water source comments: Water will be piped via temporary 12,400' long surface 10" Kevlar lay flat pipelines (2) from Percussion's existing lined fresh water pond on its own land in NE4 26-19s-25e. Pipeline route will not be bladed or excavated. Route is all private.

New water well? NO

New Water Well Info

Well latitude:

Well Longitude:

Well datum:

Well target aquifer:

Est. depth to top of aquifer(ft):

Est thickness of aquifer:

Aquifer comments:

Aquifer documentation:

Well depth (ft):

Well casing type:

Well casing outside diameter (in.):

Well casing inside diameter (in.):

New water well casing?

Used casing source:

Drilling method:

Drill material:

Grout material:

Grout depth:

Casing length (ft.):

Casing top depth (ft.):

Well Production type:

Completion Method:

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 7H

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Construction Materials description: NM One Call (811) will be notified before construction starts. Percussion will move its two 3" poly surface lines north of the pad. Top 6" of soil and brush will be stockpiled northwest of the pad. V-door will face west. Closed loop drilling system will be used. Caliche will be hauled from existing caliche pits on private land. Arkland caliche pit is in NWNE 23-19s-25e. Seven Rivers caliche pit is in SWSW 6-20s-26e.

Construction Materials source location attachment:

Lake_7H_Construction_Methods_20180806135502.pdf

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: Drill cuttings, mud, salts, and other chemicals

Amount of waste: 1000 barrels

Waste disposal frequency : Daily

Safe containment description: Steel tanks

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** PRIVATE

Disposal type description:

Disposal location description: R360's state approved (NM-01-0006) disposal site at Halfway, NM

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

Reserve pit length (ft.) **Reserve pit width (ft.)**

Reserve pit depth (ft.) **Reserve pit volume (cu. yd.)**

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 7H

Are you storing cuttings on location? YES

Description of cuttings location Steel tanks on pad

Cuttings area length (ft.)

Cuttings area width (ft.)

Cuttings area depth (ft.)

Cuttings area volume (cu. yd.)

Is at least 50% of the cuttings area in cut?

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

Lake_7H_Well_Site_Layout_20180806135746.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance

Multiple Well Pad Name: LAKEWOOD FEDERAL COM

Multiple Well Pad Number: 7H

Recontouring attachment:

Lake_7H_Interim_Reclamation_Plan_20180806135804.pdf

Lake_7H_Recontour_Plat_20180806135815.pdf

Drainage/Erosion control construction: Crowned and ditched

Drainage/Erosion control reclamation: Harrowed on the contour

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 7H

Well pad proposed disturbance (acres): 1.98	Well pad interim reclamation (acres): 0.15	Well pad long term disturbance (acres): 1.83
Road proposed disturbance (acres): 0.66	Road interim reclamation (acres): 0	Road long term disturbance (acres): 0.66
Powerline proposed disturbance (acres): 0.25	Powerline interim reclamation (acres): 0.25	Powerline long term disturbance (acres): 0
Pipeline proposed disturbance (acres): 5.94	Pipeline interim reclamation (acres): 5.94	Pipeline long term disturbance (acres): 0
Other proposed disturbance (acres): 0	Other interim reclamation (acres): 0	Other long term disturbance (acres): 0
Total proposed disturbance: 8.83	Total interim reclamation: 6.34	Total long term disturbance: 2.49

Disturbance Comments:

Reconstruction method: Interim reclamation will be completed within 6 months of completing the well. Interim reclamation will consist of shrinking the well pad 0.15 acre by removing caliche and reclaiming 20' on the northwest side of the pad. This will leave 1.83 acres for the anchors, pump jacks, and tractor-trailer turn around. Disturbed areas will be contoured to match pre-construction grades. Soil and brush will be evenly spread over disturbed areas and harrowed on the contour. Disturbed areas will be seeded in accordance with surface owner's requirements.

Topsoil redistribution: Enough stockpiled topsoil will be retained to cover the remainder of the pad when the well is plugged. Once the well is plugged, then the rest of the pad and new road will be similarly reclaimed within 6 months of plugging. Noxious weeds will be controlled.

Soil treatment: None

Existing Vegetation at the well pad:

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road:

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline:

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances:

Existing Vegetation Community at other disturbances attachment:

Non native seed used? NO

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? NO

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 7H

Seed Management

Seed Table

Seed type:

Seed source:

Seed name:

Source name:

Source address:

Source phone:

Seed cultivar:

Seed use location:

PLS pounds per acre:

Proposed seeding season:

Seed Summary	
Seed Type	Pounds/Acre

Total pounds/Acre:

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name: Ryan

Last Name: Barber

Phone: (979)292-6279

Email: ryan@percussionpetroleum.com

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: To BLM standards

Weed treatment plan attachment:

Monitoring plan description: To BLM standards

Monitoring plan attachment:

Success standards: To BLM satisfaction

Pit closure description: No pit

Pit closure attachment:

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 7H

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland:

USFS Ranger District:

Fee Owner: Ross Ranch Inc

Fee Owner Address: P.O. Box 216 Lakewood NM 88254

Phone: (575)365-4797

Email:

Surface use plan certification: NO

Surface use plan certification document:

Surface access agreement or bond: Agreement

Surface Access Agreement Need description: To be provided

Surface Access Bond BLM or Forest Service:

BLM Surface Access Bond number:

USFS Surface access bond number:

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 7H

Disturbance type: NEW ACCESS ROAD

Describe:

Surface Owner: STATE GOVERNMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office: SANTA FE NM

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland:

USFS Ranger District:

Disturbance type: EXISTING ACCESS ROAD

Describe:

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland:

USFS Ranger District:

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 7H

Fee Owner: Ross Ranch Inc

Fee Owner Address: P.O. Box 216 Lakewood NM 88254

Phone: (575)365-4797

Email:

Surface use plan certification: NO

Surface use plan certification document:

Surface access agreement or bond: Agreement

Surface Access Agreement Need description: To be provided

Surface Access Bond BLM or Forest Service:

BLM Surface Access Bond number:

USFS Surface access bond number:

Disturbance type: OTHER

Describe: Pipeline

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland:

USFS Ranger District:

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 7H

Fee Owner: Ross Ranch Inc

Fee Owner Address: P.O. Box 216 Lakewood NM 88254

Phone: (575)365-4797

Email:

Surface use plan certification: NO

Surface use plan certification document:

Surface access agreement or bond: Agreement

Surface Access Agreement Need description: To be provided

Surface Access Bond BLM or Forest Service:

BLM Surface Access Bond number:

USFS Surface access bond number:

Disturbance type: OTHER

Describe: Power Line

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland:

USFS Ranger District:

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: LAKEWOOD FEDERAL COM

Well Number: 7H

Fee Owner: Ross Ranch Inc

Fee Owner Address: P.O. box 216 Lakewood NM 88254

Phone: (575)365-4797

Email:

Surface use plan certification: NO

Surface use plan certification document:

Surface access agreement or bond: Agreement

Surface Access Agreement Need description: To be provided

Surface Access Bond BLM or Forest Service:

BLM Surface Access Bond number:

USFS Surface access bond number:

Section 12 - Other Information

Right of Way needed? NO

Use APD as ROW?

ROW Type(s):

ROW Applications

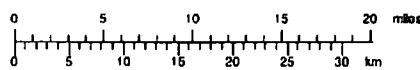
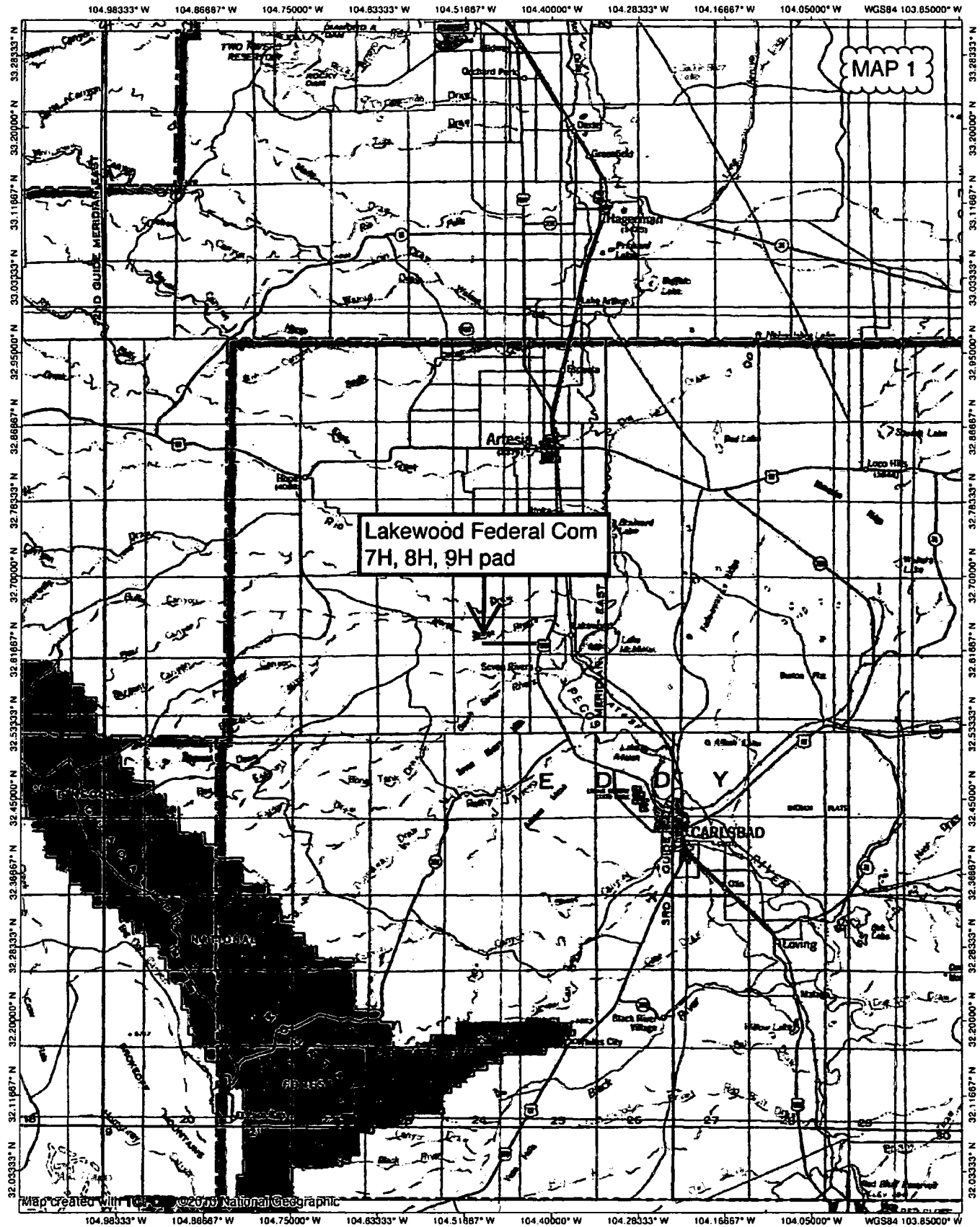
SUPO Additional Information:

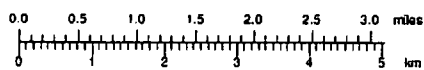
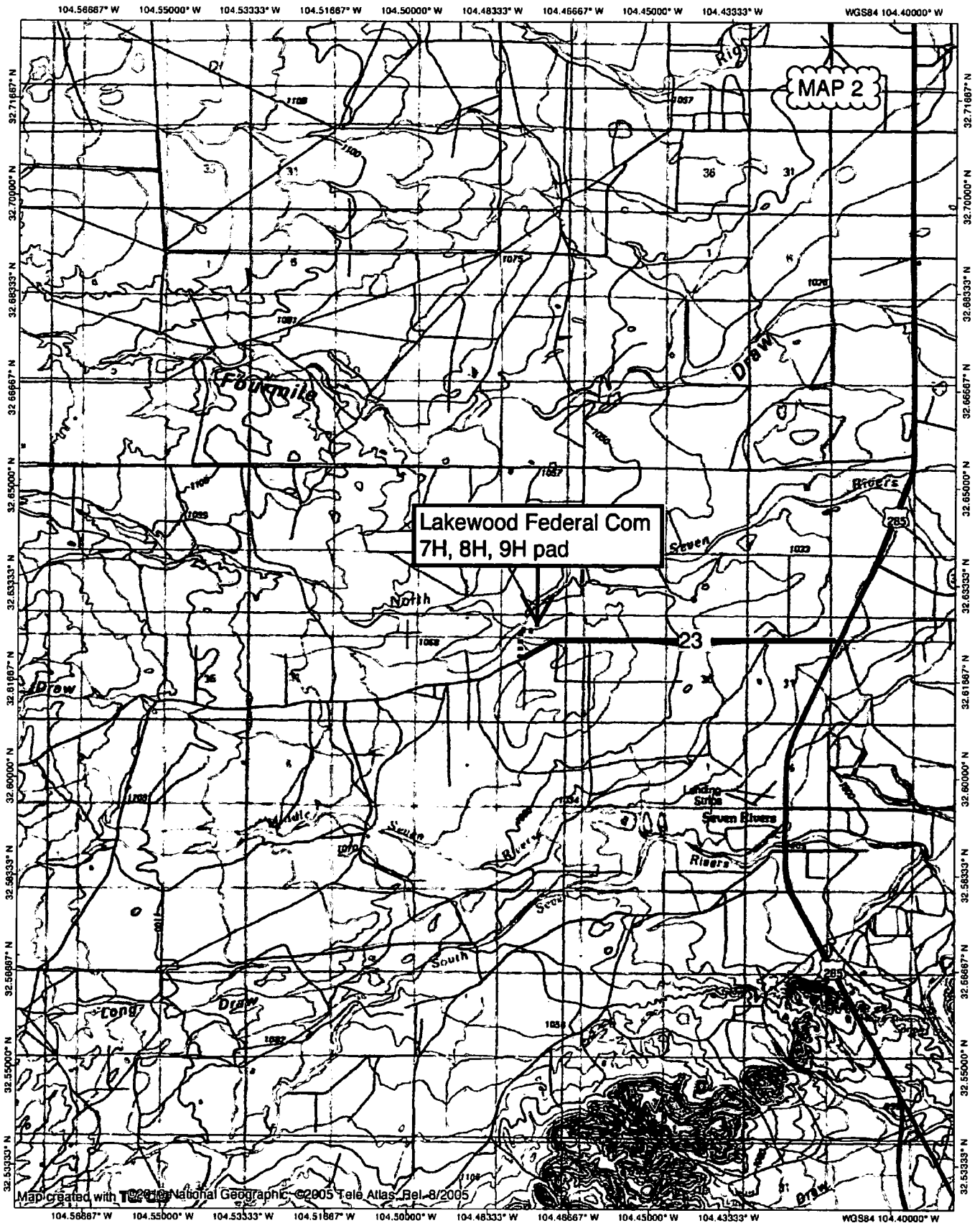
Use a previously conducted onsite? YES

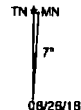
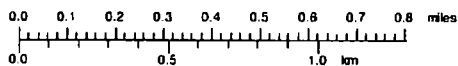
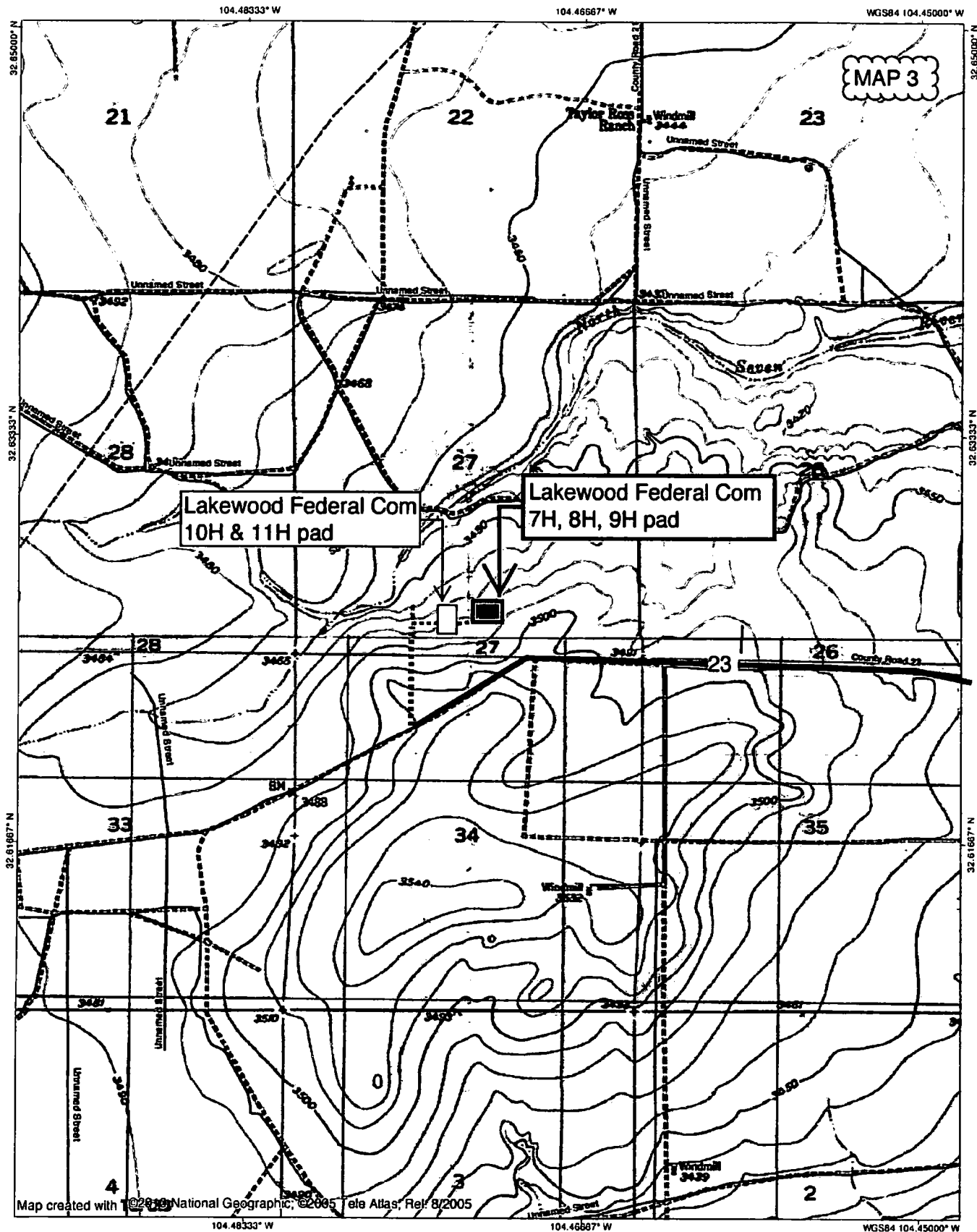
Previous Onsite Information: On-site inspection was held with Jessie Bassett (BLM) on April 3, 2018. Lone Mountain inspected the project area and submitted archaeology report NMCRIS-140197 on April 11, 2018.

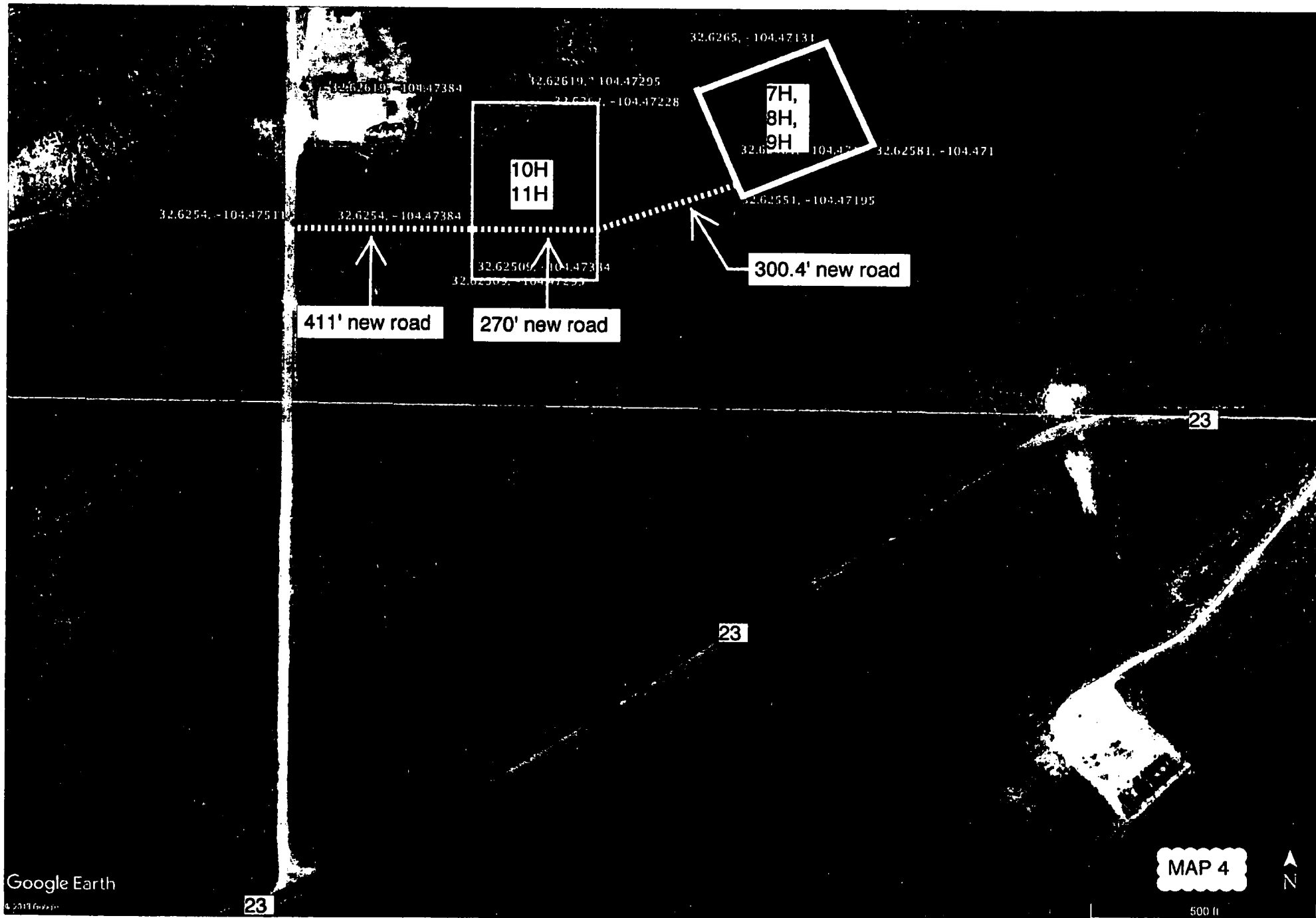
Other SUPO Attachment

Lake_7H_SUPO_20180806141205.pdf



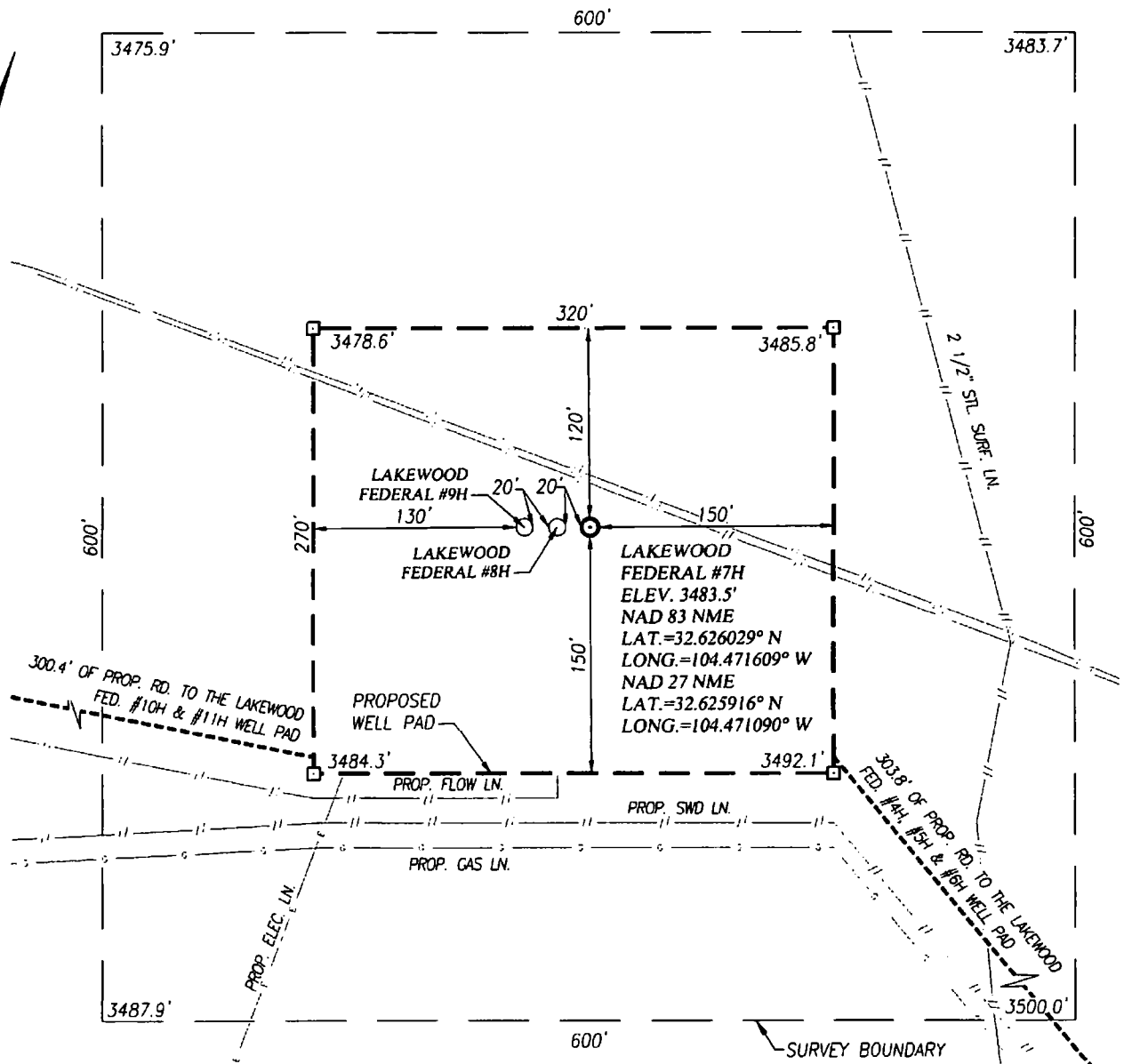




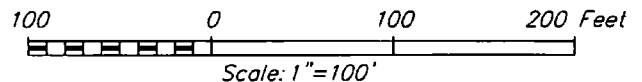


WELL SITE PLAN

MAP 5



NOTE:
SEE "TOPOGRAPHICAL AND ACCESS ROAD MAP"
FOR PROPOSED ROAD LOCATION.



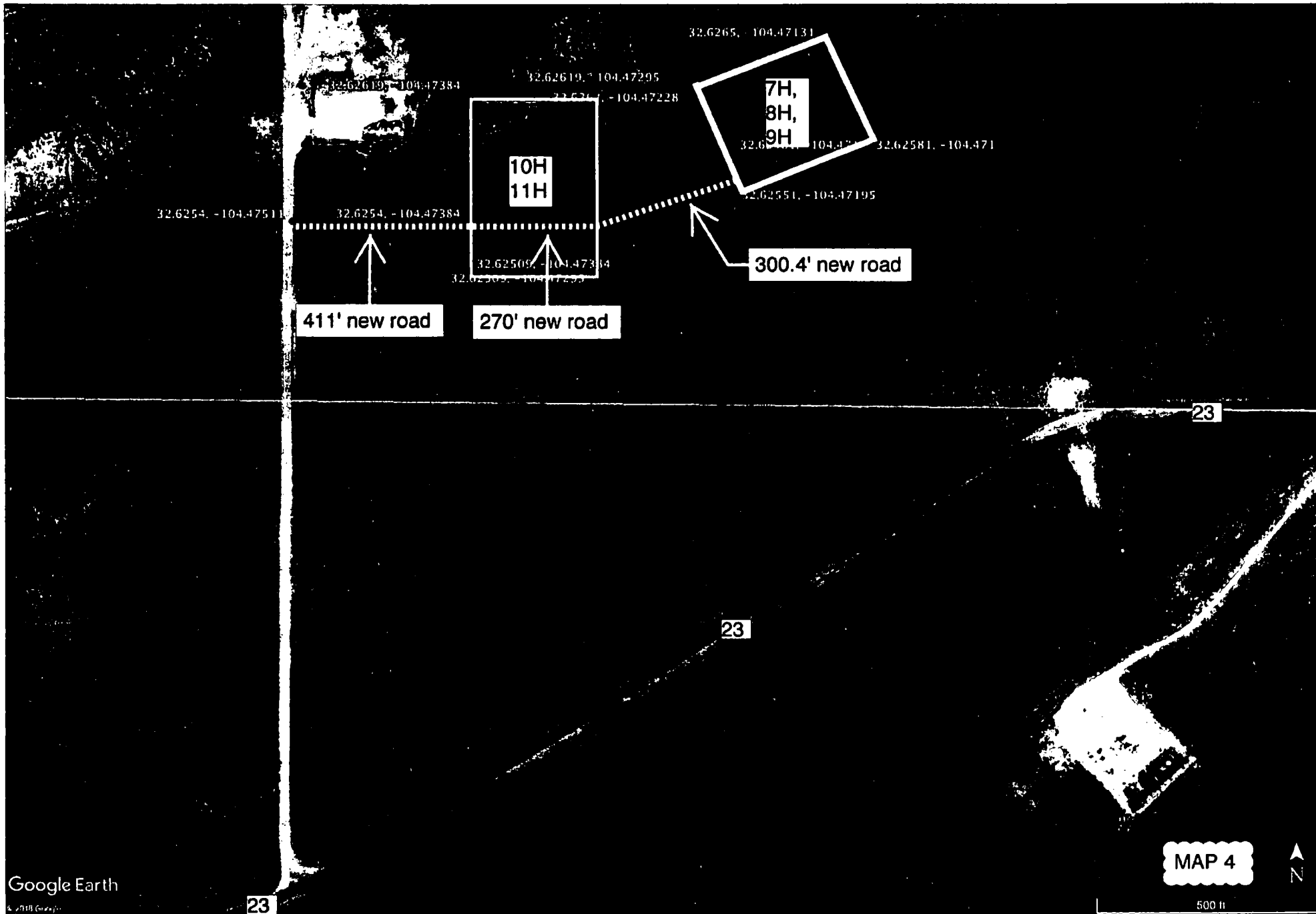
PERCUSSION PETROLEUM OPERATING, LLC

LAKWOOD FEDERAL #7H WELL LOCATED 580 FEET FROM
THE SOUTH LINE AND 2317 FEET FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO



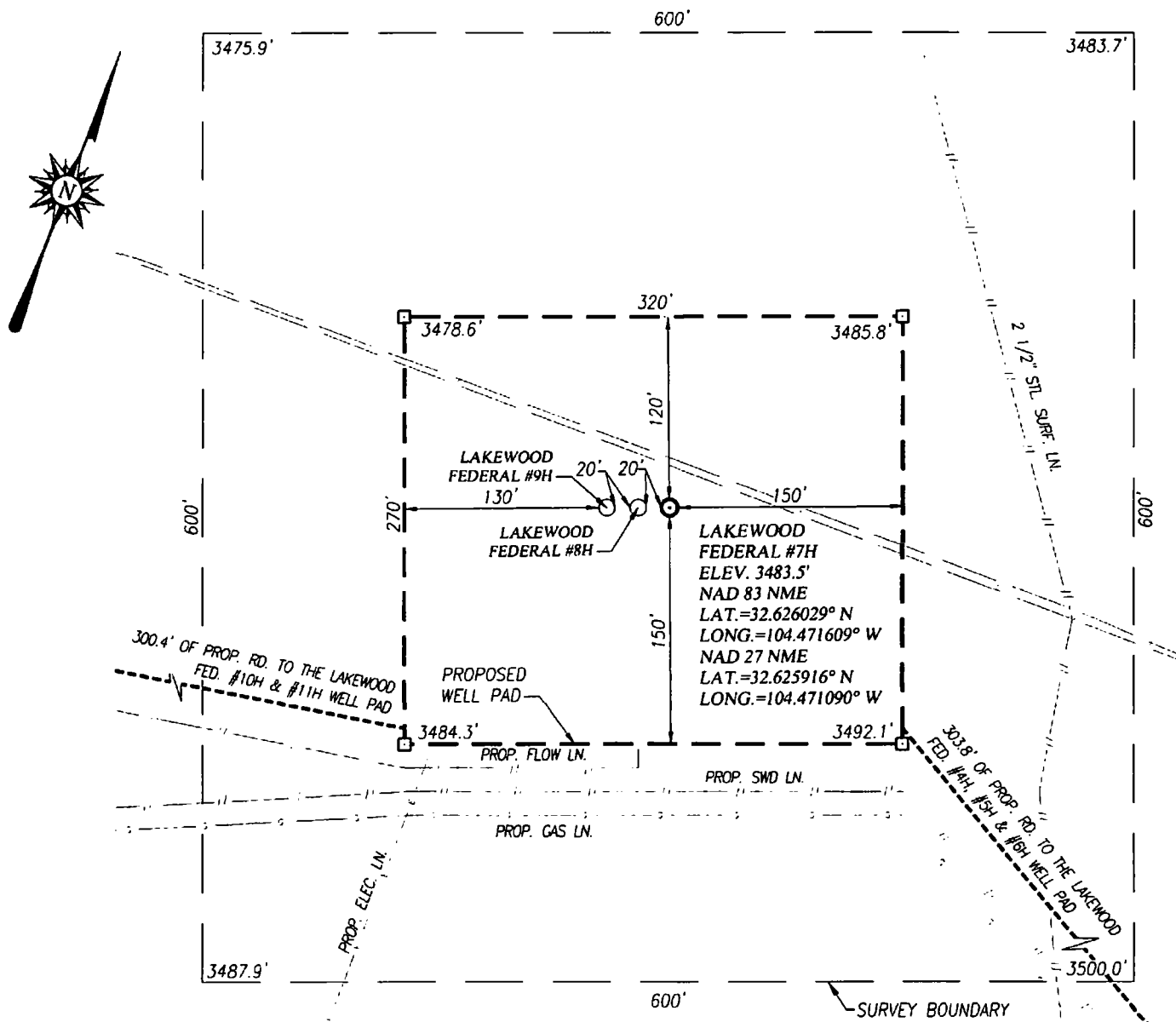
PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz
TBPLS# 10021000

Survey Date: 4/03/18	CAD Date: 5/02/18	Drawn By: ACK
W.O. No.: 18110403	Rev: 06/19/18	Rel. W.O.: 18110110
		Sheet 1 of 1

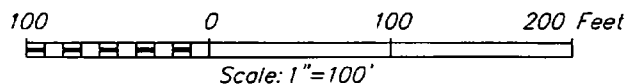


WELL SITE PLAN

MAP 5



NOTE:
SEE "TOPOGRAPHICAL AND ACCESS ROAD MAP"
FOR PROPOSED ROAD LOCATION.



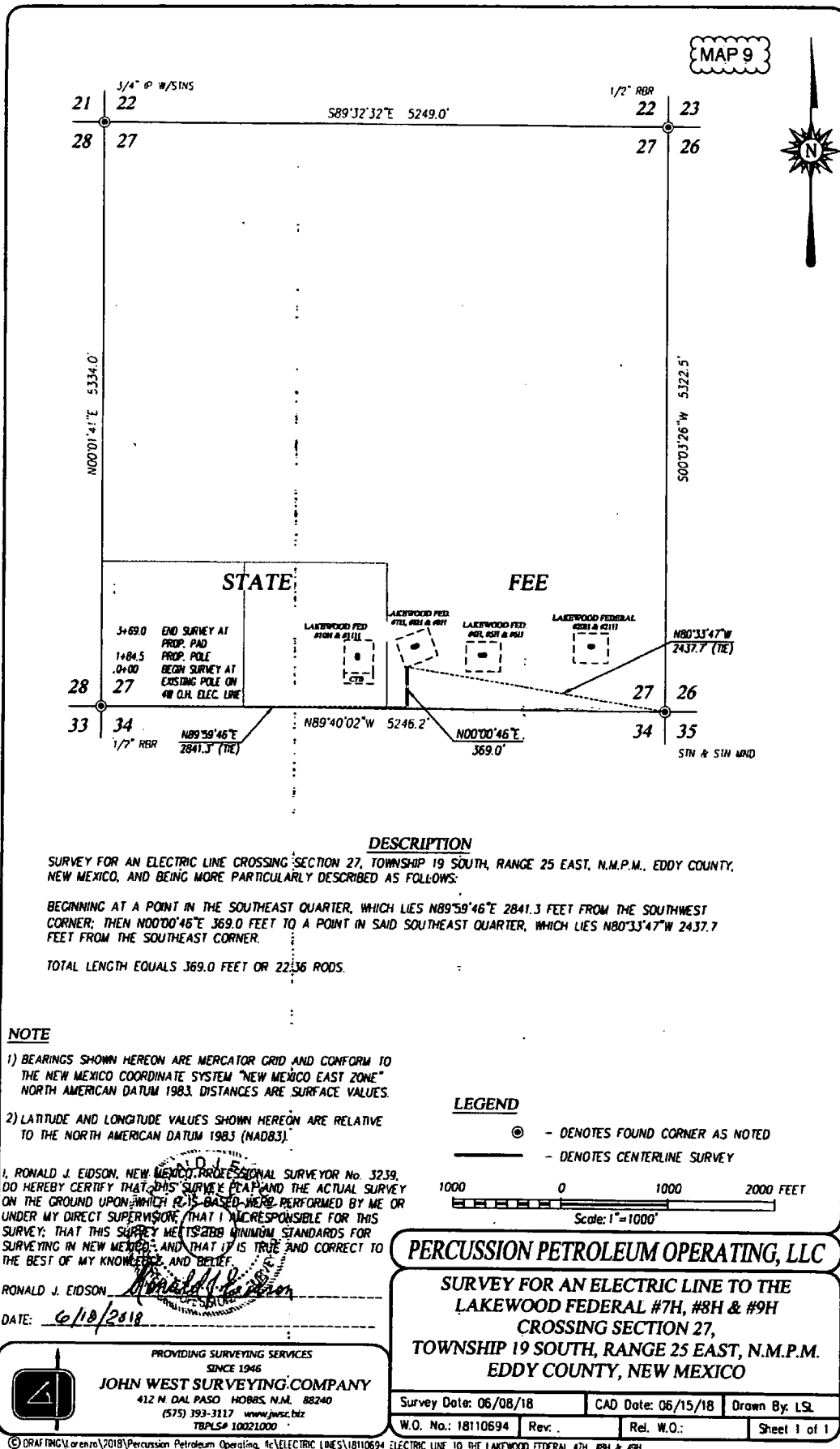
PERCUSSION PETROLEUM OPERATING, LLC

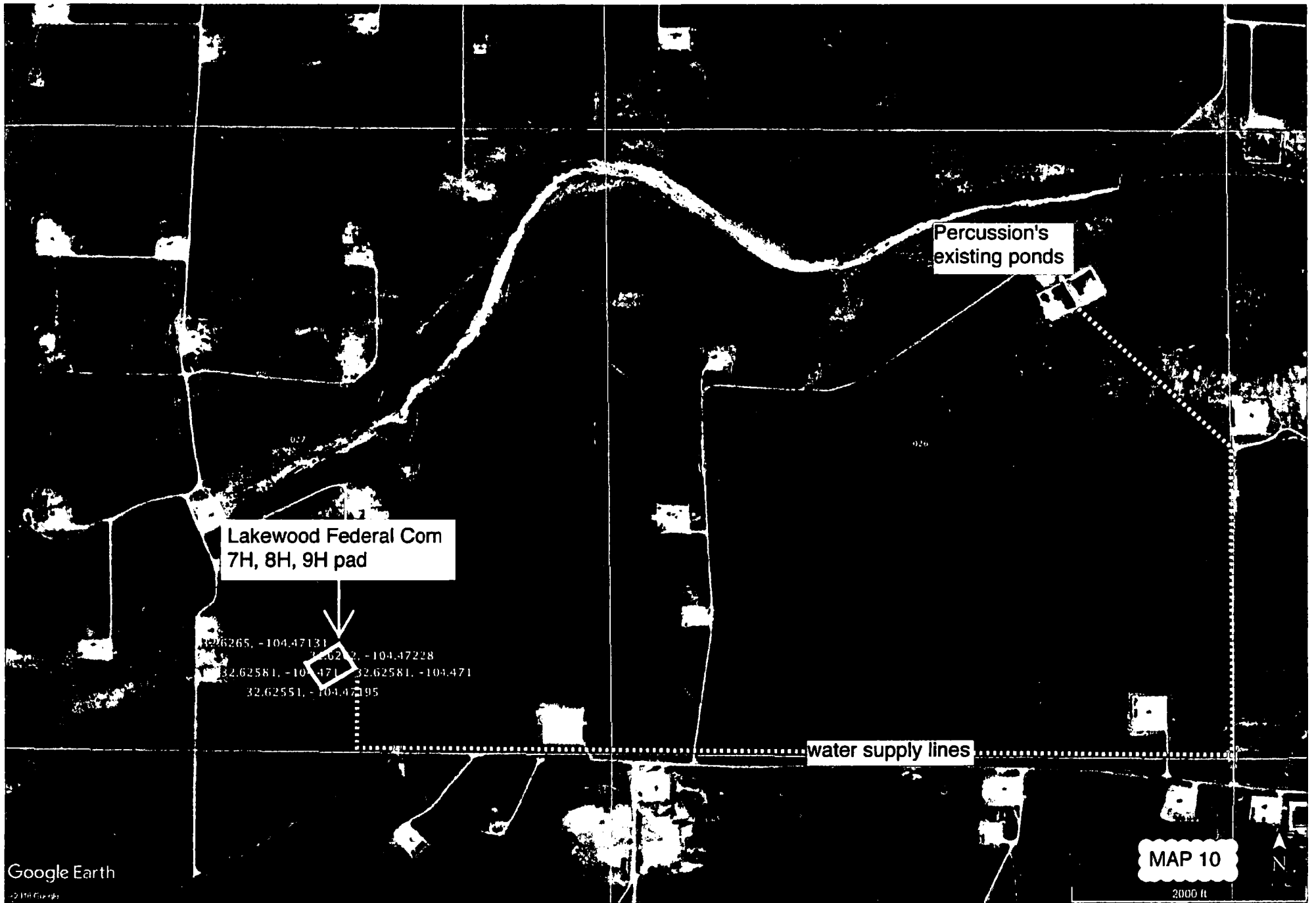
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THE SOUTH LINE AND 2317 FEET FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO



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W.O. No.: 18110403	Rev: 06/19/18	Rel. W.O.: 18110110
Sheet 1 of 1		





Percussion's
existing ponds

Lakewood Federal Corn
7H, 8H, 9H pad

32.6265, -104.47131
32.62581, -104.47131
32.62581, -104.47131
32.62551, -104.47131

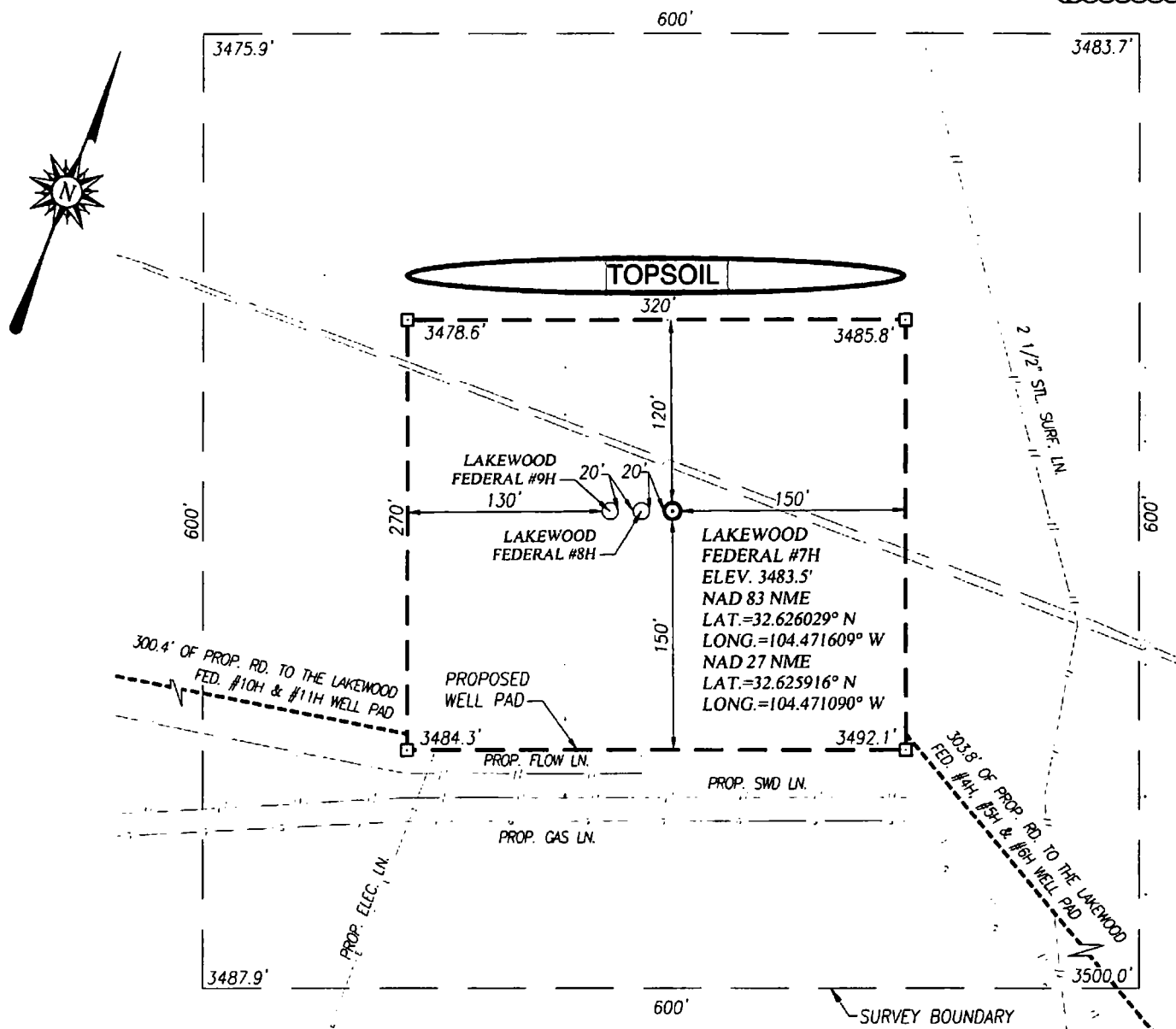
water supply lines

MAP 10

2000 ft

WELL SITE PLAN

MAP 11



NOTE:
SEE "TOPOGRAPHICAL AND ACCESS ROAD MAP"
FOR PROPOSED ROAD LOCATION.

100 0 100 200 Feet
Scale: 1"=100'

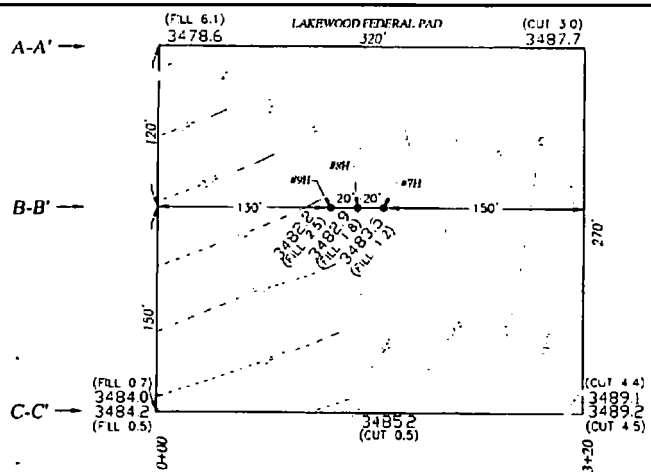
PERCUSSION PETROLEUM OPERATING, LLC

LAKEWOOD FEDERAL #7H WELL LOCATED 580 FEET FROM
THE SOUTH LINE AND 2317 FEET FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

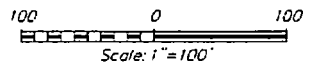
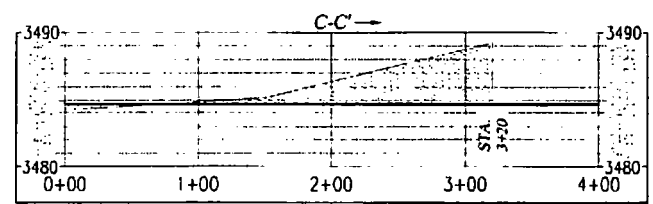
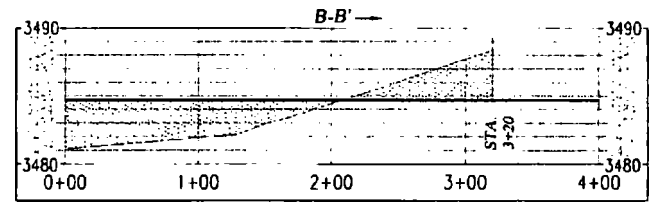
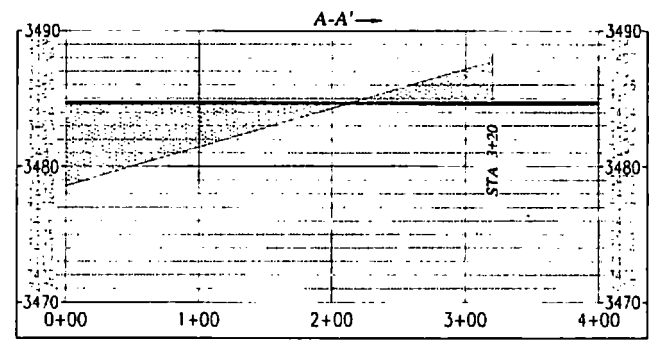


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TBPLS# 10021000

Survey Date: 4/03/18	CAD Date: 5/02/18	Drawn By: ACK
W.O. No.: 18110403	Rev: 06/19/18	Rel. W.O.: 18110110
		Sheet 1 of 1



MAP 12



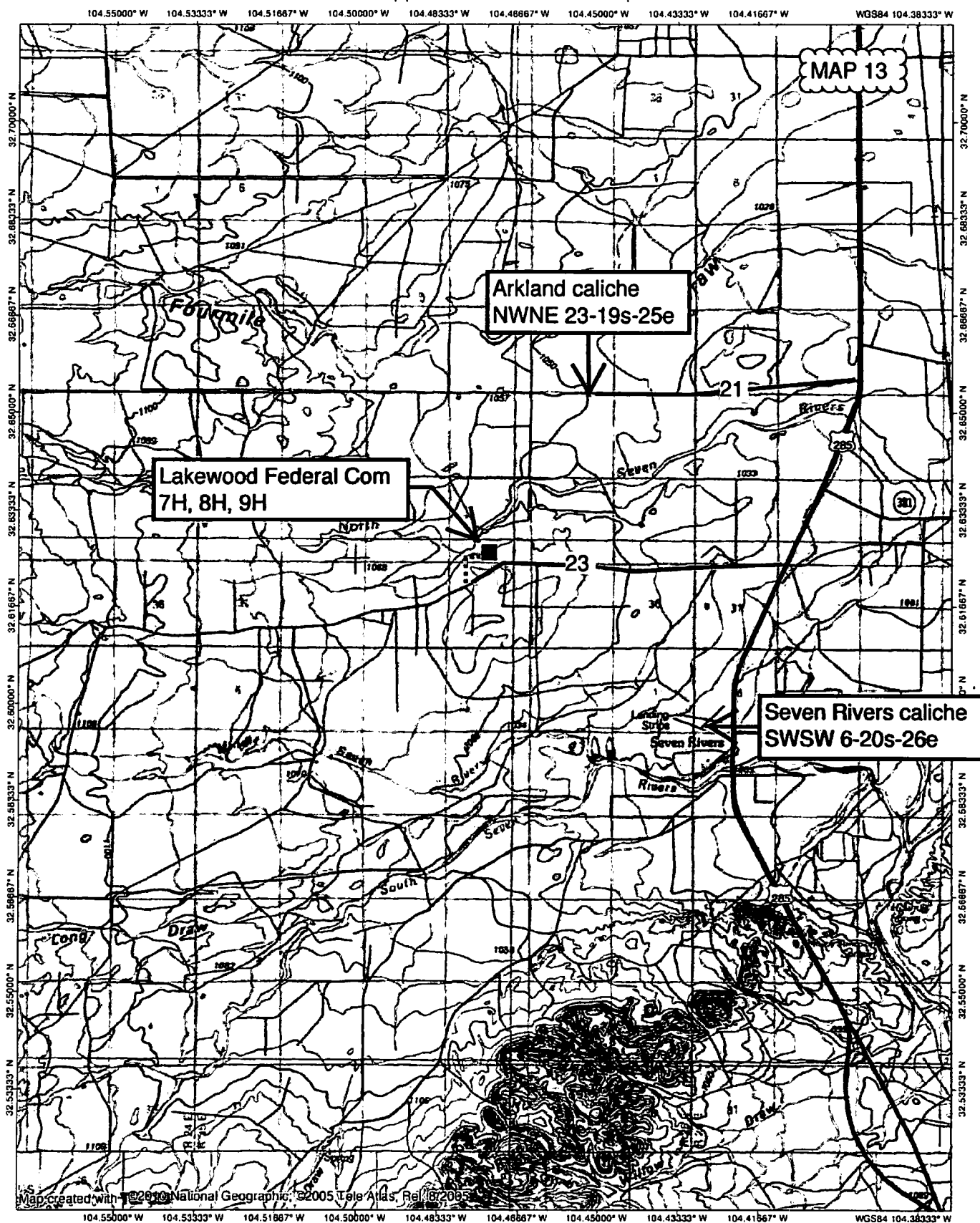
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JOHN WEST SURVEYING COMPANY
412 N. DAL PASO HOBBS, N.M. 88240
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TBPLS# 10021000

PERCUSSION PETROLEUM OPERATING, LLC

LAKWOOD FEDERAL #7H, #8H & #9H WELL PAD IN
SECTION 27, TOWNSHIP 19 SOUTH, RANGE 25 EAST,
N.M.P.M., EDDY COUNTY, NEW MEXICO

Survey Date: 2/21/18	CAD Date: 7/02/18	Drawn By: ACK
W.O. No.: 18130756	Rev:	Rel. W.O.: 18110403

Sheet 1 of 1



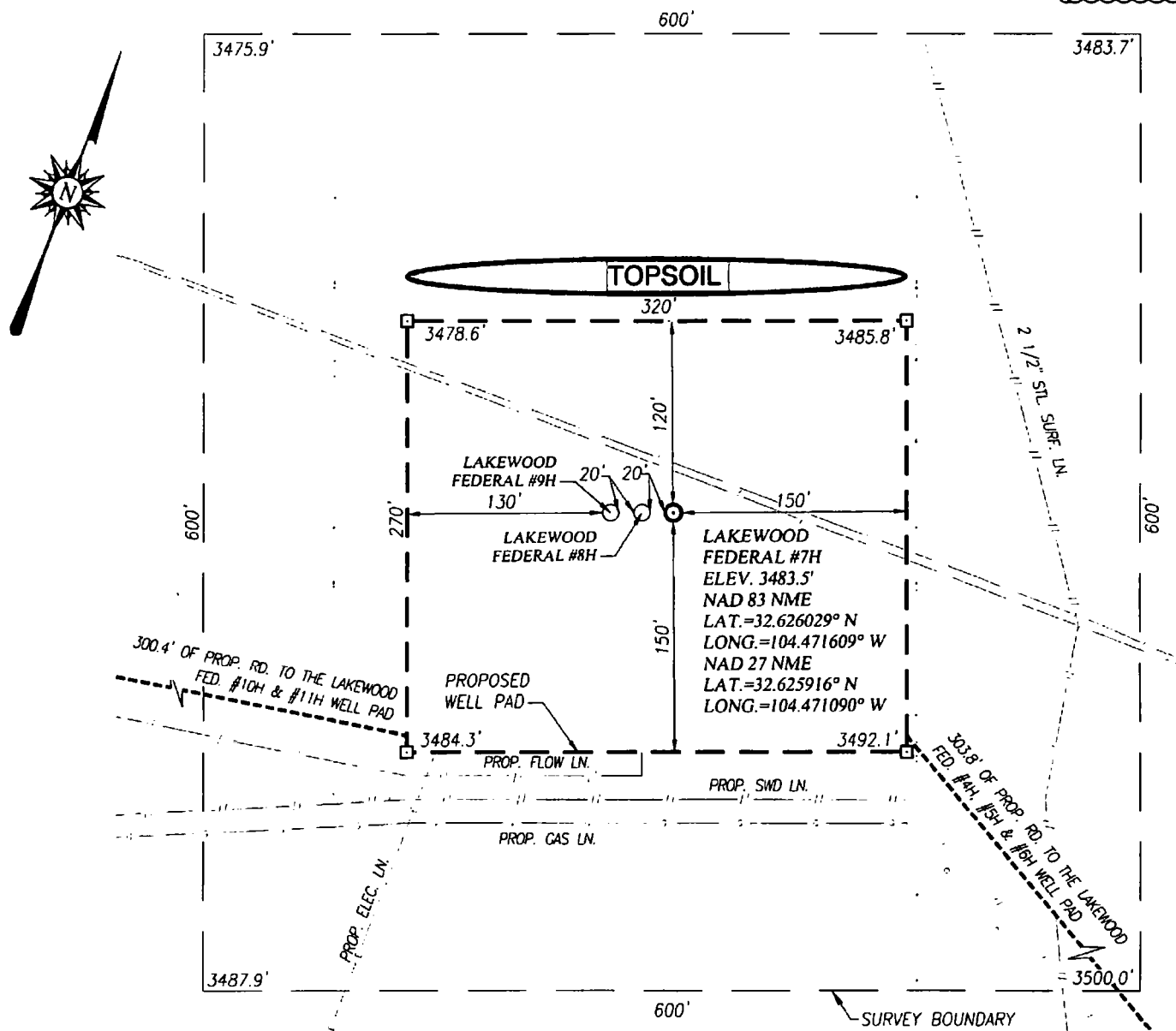
TN 411N

7.5°

07/28/17

WELL SITE PLAN

MAP 14



NOTE:
SEE "TOPOGRAPHICAL AND ACCESS ROAD MAP"
FOR PROPOSED ROAD LOCATION.

100 0 100 200 Feet
Scale: 1"=100'

PERCUSSION PETROLEUM OPERATING, LLC

LAKWOOD FEDERAL #7H WELL LOCATED 580 FEET FROM
THE SOUTH LINE AND 2317 FEET FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO



PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO HOBBS, N.M. 88240
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TBPLS# 10021000

Survey Date: 4/03/18	CAD Date: 5/02/18	Drawn By: ACK
W.O. No.: 18110403	Rev: 06/19/18	Rel. W.O.: 18110110
Sheet 1 of 1		

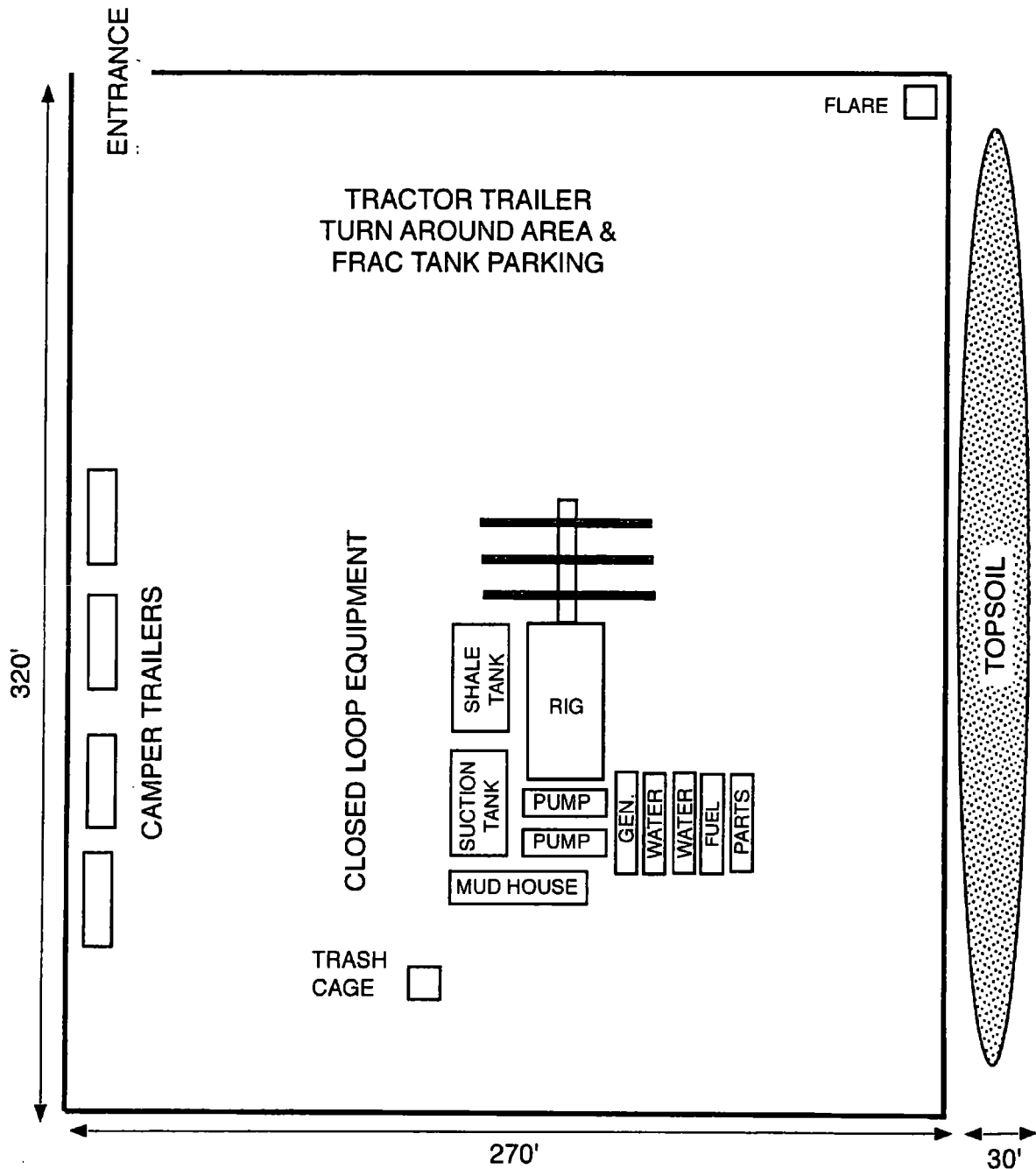
Percussion's
Lakewood Federal Com 7H
rig diagram

Prevailing Wind
out of South
or SSE



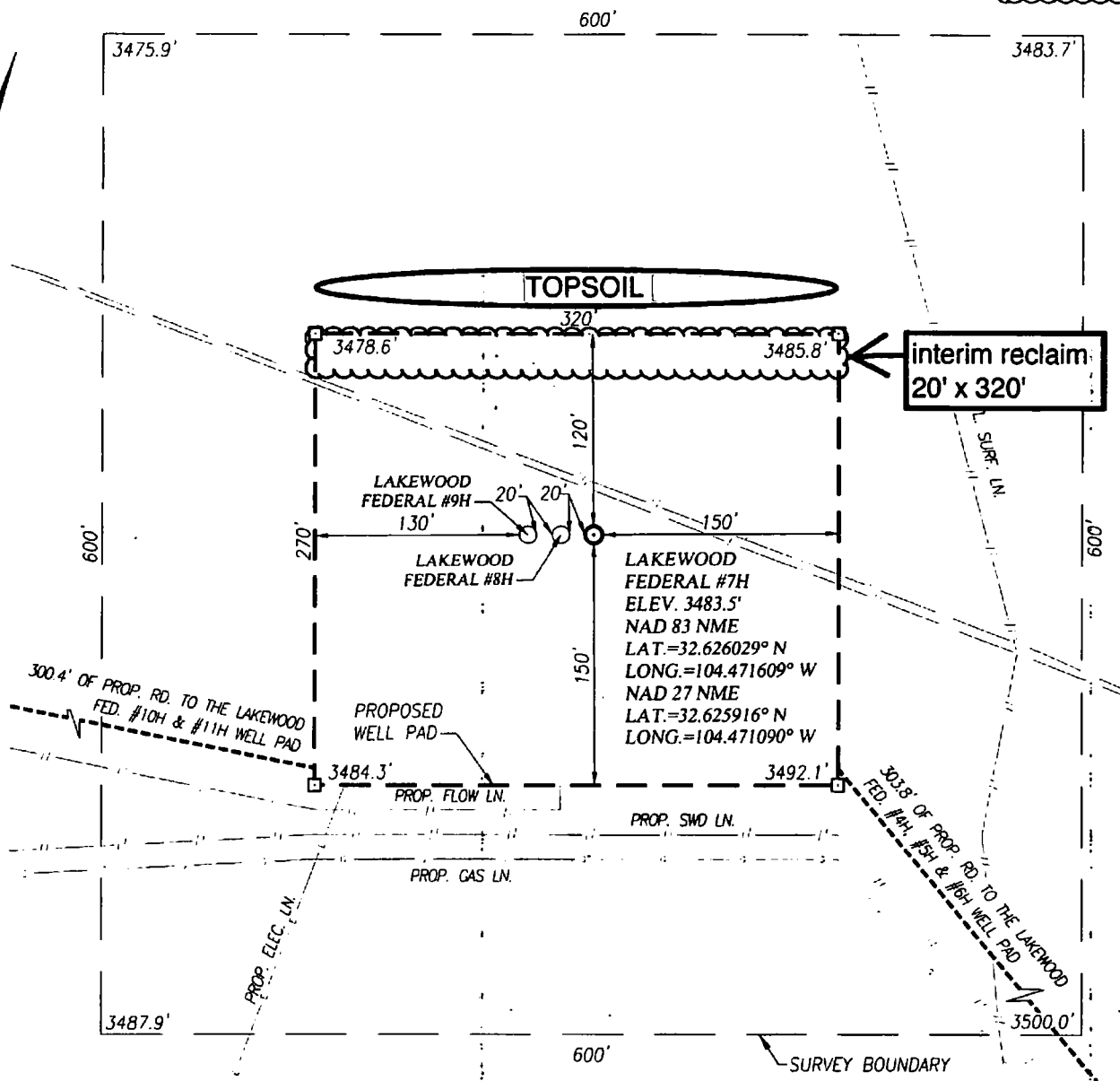
NORTH

1" = 50'

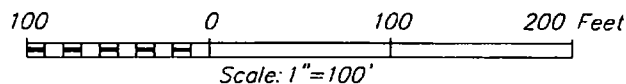


WELL SITE PLAN

MAP 15



NOTE:
SEE "TOPOGRAPHICAL AND ACCESS ROAD MAP"
FOR PROPOSED ROAD LOCATION.



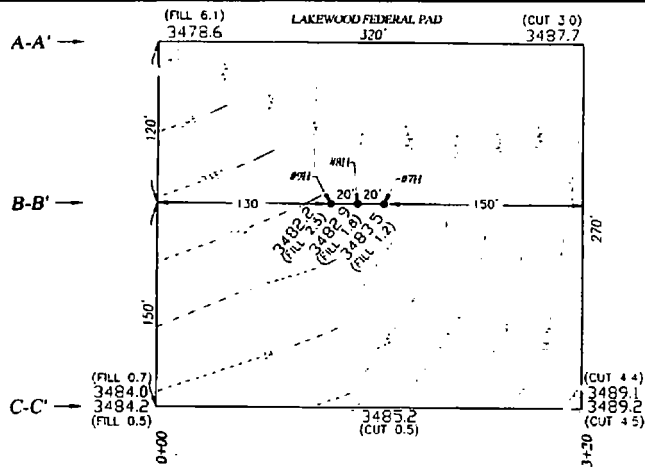
PERCUSSION PETROLEUM OPERATING, LLC

LAKWOOD FEDERAL #7H WELL LOCATED 580 FEET FROM
THE SOUTH LINE AND 2317 FEET FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

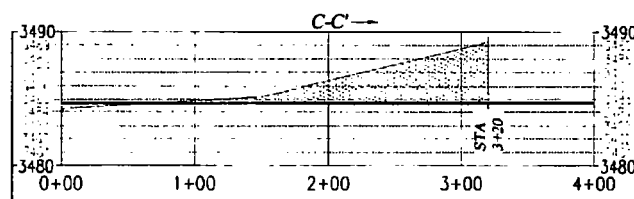
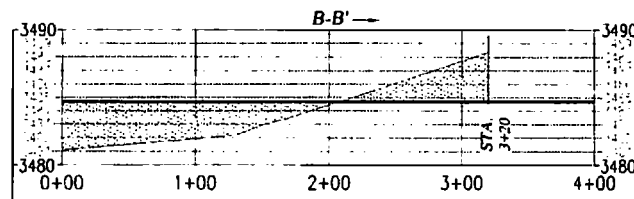
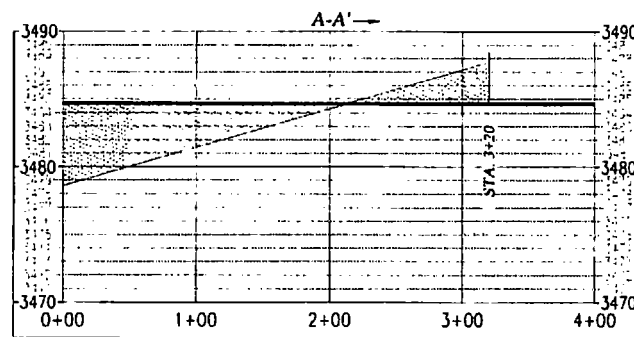


PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz
TBPLS# 10021000

Survey Date: 4/03/18	CAD Date: 5/02/18	Drawn By: ACK
W.O. No.: 18110403	Rev: 06/19/18	Rel. W.O.: 18110110
		Sheet 1 of 1



MAP 16



PERCUSSION PETROLEUM OPERATING, LLC

LAKWOOD FEDERAL #7H, #8H & #9H WELL PAD IN
SECTION 27, TOWNSHIP 19 SOUTH, RANGE 25 EAST,
N.M.P.M., EDDY COUNTY, NEW MEXICO

100 0 100
Scale: 1"=100'



PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO HOBBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz
TBPLS# 10021000

Survey Date: 2/21/18	CAD Date: 7/02/18	Drawn By: ACK
W.O. No.: 18130756	Rev: .	Rel. W.O.: 18110403
		Sheet 1 of 1

Percussion Petroleum Operating, LLC
Lakewood Federal Com 7H
SHL 580' FSL & 2317' FEL 27-19S-25E
Eddy County, NM

SURFACE PLAN PAGE 1

Surface Use Plan

1. ROAD DIRECTIONS & DESCRIPTIONS (See MAPS 1 - 5)

From the junction of US 82 & US 285 in Artesia...
Go South 15.6 miles on US 285 to the equivalent of Mile Post 53.6
Then turn right and go West 3.8 miles on paved County Road 23 (Rock Daisy)
Then turn right and go North 0.3 mon a caliche road
Then turn right and East cross-country 411' to the proposed 10H/11H pad
Cross 270' of the 10H/11H pad
Proceed Southeast 300.4' cross-country to the 7H/8H/9H pad

Non-county roads will be maintained as needed to Gold Book standards. This includes pulling ditches and preserving the crown. This will be done at least once a year, and more often as needed.

2. ROAD TO BE BUILT OR UPGRADED (See MAPS 4 & 5)

The 981.4' of new resource road will be crowned and ditched, have a 14' wide driving surface, and be surfaced with caliche. Maximum disturbed width = 30'. Maximum grade = 1%. Maximum cut or fill = 2'. No culvert, cattle guard, or vehicle turn out is needed. Drainage crossing will be low style with no culvert. No upgrade is needed.

3. EXISTING WELLS (See MAP 6)

Existing oil, gas, water, disposal, and P & A wells are within a mile. No injection well is within a mile radius.

Percussion Petroleum Operating, LLC
Lakewood Federal Com 7H
SHL 580' FSL & 2317' FEL 27-19S-25E
Eddy County, NM

SURFACE PLAN PAGE 2

4. PROPOSED PRODUCTION FACILITIES (See MAPS 7 - 9)

A 369.2' long $\approx 4"$ O D. HDPE flow line will be laid on the surface south 15' and west 354.2' to a central tank battery on the proposed 10H/11H pad. Maximum operating pressure will be <100 psi. A 369' long overhead raptor safe 3-phase power line will be built south to an existing power line.

5. WATER SUPPLY (See MAP 10)

Water will be piped via temporary $\approx 12,400'$ long surface 10" Kevlar lay flat pipelines (2) from Percussion's existing lined fresh water pond on its own land in NE4 26-19s-25e. Pipeline route will not be bladed or excavated. Route is all private.

6. CONSTRUCTION MATERIALS & METHODS (See MAPS 11 - 13)

NM One Call (811) will be notified before construction starts. Percussion will move its two 3" poly surface lines north of the pad. Top $\approx 6"$ of soil and brush will be stockpiled northwest of the pad. V-door will face west. Closed loop drilling system will be used. Caliche will be hauled from existing caliche pits on private land. Arkland caliche pit is in NWNE 23-19s-25e. Seven Rivers caliche pit is in SWSW 6-20s-26e.

7. WASTE DISPOSAL

All trash will be placed in a portable trash cage. It will be hauled to the Eddy County landfill. There will be no trash burning. Contents (drill cuttings, mud, salts, and other chemicals) of the mud tanks will be hauled to R360's state approved (NM-01-0006) disposal site at Halfway. Human waste will be disposed of in chemical toilets and hauled to the Artesia wastewater treatment plant.

Percussion Petroleum Operating, LLC
Lakewood Federal Com 7H
SHL 580' FSL & 2317' FEL 27-19S-25E
Eddy County, NM

SURFACE PLAN PAGE 3

8. ANCILLARY FACILITIES

There will be no airstrip or camp. Camper trailers will be on location for the company man, tool pusher, and mud logger.

9. WELL SITE LAYOUT (See MAP 14)

Also see Rig Layout diagram for depictions of the well pad, trash cage, access onto the location, parking, living facilities, and rig orientation.

10. RECLAMATION (See MAPS 15 & 16)

Interim reclamation will be completed within 6 months of completing the well. Interim reclamation will consist of shrinking the well pad 0.15 acre by removing caliche and reclaiming 20' on the northwest side of the pad. This will leave 1.83 acres for the anchors, pump jacks, and tractor-trailer turn around. Disturbed areas will be contoured to match pre-construction grades. Soil and brush will be evenly spread over disturbed areas and harrowed on the contour. Disturbed areas will be seeded in accordance with surface owner's requirements.

Enough stockpiled topsoil will be retained to cover the remainder of the pad when the well is plugged. Once the well is plugged, then the rest of the pad and new road will be similarly reclaimed within 6 months of plugging. Noxious weeds will be controlled. Land use will be:

30' x 981.4' road = 0.66 acre
30' x 369.4' flowline = 0.25 acre
30' x 369' power line = 0.25 acre
20' x 12,400' water line from pond = 5.69 acres
+ 270' x 320' well pad = 1.98 acres
8.83 acres short term
- 0.25 acre flowline
- 0.25 acre power line
- 5.69 acres water line from pond
- 0.15 acre interim reclamation on well pad
2.49 acres long term (0.66 ac. road + 1.83 ac. pad)

Percussion Petroleum Operating, LLC
Lakewood Federal Com 7H
SHL 580' FSL & 2317' FEL 27-19S-25E
Eddy County, NM

SURFACE PLAN PAGE 4

11. SURFACE OWNER

Most road and some flowline construction will be on NM State Land Office land (SESW Section 27 of 19s-25e). NMSLO address is P. O. Box 1148, Santa Fe NM 87504. Phone is 505 827-5763. Percussion will apply for easements.

Remaining road and flowline construction and all pad and power line construction will be on private land (SWSE 27-19s-25e) owned by Ross Ranch Inc. (P. O. Box 216, Lakewood NM 88254; (575) 365-4797). Percussion has an agreement with Ross.

12. OTHER INFORMATION

On-site inspection was held with Jessie Bassett (BLM) on April 3, 2018.

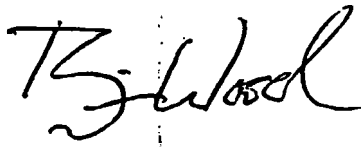
Lone Mountain inspected the project area and submitted archaeology report NMCRI-140197 on April 11, 2018.

Percussion Petroleum Operating, LLC
Lakewood Federal Com 7H
SHL 580' FSL & 2317' FEL 27-19S-25E
Eddy County, NM

SURFACE PLAN PAGE 5

CERTIFICATION

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U. S. C. 1001 for the filing of false statements. Executed this 4th day of August, 2018.



Brian Wood, Consultant
Permits West, Inc.
37 Verano Loop, Santa Fe, NM 87508
(505) 466-8120 FAX: (505) 466-9682

Cellular: (505) 699-2276

Field representative will be:
Lelan Anders, Operations Manager
Percussion Petroleum Operating, LLC
919 Milam, Suite 2475
Houston TX 77002
Office: (713) 429-1291
Mobile: (281) 908-1752



**U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT**

PWD Data Report

12/27/2018

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number:

Injection well name:

Assigned Injection well API number?

Injection well API number:

Injection well new surface disturbance (acres):

Minerals protection Information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:



**U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT**

Bond Info Data Report

12/27/2018

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB001424

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment: