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NM OIL CONSERVATION
ARTESIA DISTRICT

Form 3160-3
(March 2012)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No. NMNM025527A

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

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

1b. Type of Well: ☐ Oil Well ☐ Gas Well ☑ Other INJ-DIS ☑ Single Zone ☐ Multiple Zone

8. Lease Name and Well No. WDW-4 4 320715

2. Name of Operator HOLLYFRONTIER NAVAJO REFINING LLC 15694

9. API Well No. 30-015-44677

3a. Address 501 East Main Street Artesia NM 88210

3b. Phone No. *(include area code)* (575)746-5281

10. Field and Pool, or Exploratory Wildcat

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

At surface LOT N / 1217 FSL / 2443 FWL / LAT 32.815814 / LONG -104.250034

At proposed prod. zone LOT N / 1217 FSL / 2443 FWL / LAT 32.815814 / LONG -104.250034

11. Sec., T. R. M. or Blk. and Survey or Area SEC 23 / T17S / R27E / NMP

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

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) 1217 feet

16. No. of acres in lease 1400

17. Spacing Unit dedicated to this well 150

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 500 feet

19. Proposed Depth 11000 feet / 11000 feet

20. BLM/BIA Bond No. on file FED: NMB001503

21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3565 feet

22. Approximate date work will start* 03/01/2018

23. Estimated duration 65 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

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

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Lewis Dade / Ph: (575)746-5281	09/14/2017

Title: Environmental Specialist

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	02/09/2018

Title	Office
Supervisor Multiple Resources	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.

(Continued on page 2)

*(Instructions on page 2)

APPROVED WITH CONDITIONS

Approval Date: 02/09/2018

RWP - 2-9-18

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 1: 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.

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 collects this information to allow 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 Collection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

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Additional Operator Remarks

Location of Well

1. SHL: LOT N / 1217 FSL / 2443 FWL / TWSP: 17S / RANGE: 27E / SECTION: 23 / LAT: 32.815814 / LONG: -104.250034 (TVD: 11000 feet, MD: 11000 feet)
   BHL: LOT N / 1217 FSL / 2443 FWL / TWSP: 17S / RANGE: 27E / SECTION: 23 / LAT: 32.815814 / LONG: -104.250034 (TVD: 11000 feet, MD: 11000 feet)

BLM Point of Contact

Name: Priscilla Perez

Title: Legal Instruments Examiner

Phone: 5752345934

Email: pperez@blm.gov

Approval Date: 02/09/2018

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:	HollyFrontier Navajo Refining
LEASE NO.:	NM025527A
WELL NAME & NO.:	4 – WDW 4
SURFACE HOLE FOOTAGE:	1217'/S & 2443'/W
BOTTOM HOLE FOOTAGE	1217'/S & 2443'/W
LOCATION:	Sec. 23, T. 17 S, R. 27 E
COUNTY:	Eddy County

COA

H2S	◉ Yes	○ No	
Potash	◉ None	○ Secretary	○ R-111-P
Cave/Karst Potential	○ Low	○ Medium	◉ High
Variance	◉ None	○ Flex Hose	○ Other
Wellhead	◉ Conventional	○ Multibowl	○ Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP

A. Hydrogen Sulfide
A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the formation. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

B. CASING
HIGH CAVE/KARST- OPERATOR PROPOSE A CONTINGENCY CASING IF LOST CIRCULATION OCCURS WHILE DRILLING THE SURFACE HOLE. IF TOTAL LOSS OF CIRCULATION OCCURS AT CERTAIN DEPTH OPERATOR SHALL DRILL 20 INCH SURFACE HOLE AND PROCEED WITH CONTINGENCY PLAN.

1. The **13-3/8** inch surface casing shall be set at approximately **1680** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **Additional cement maybe required. Excess calculates to 6%.**

    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.

Operator shall filled 1/3rd casing with fluid while running production casing to maintain collapse safety factor.

2. The minimum required fill of cement behind the **9-5/8** inch production casing is: Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.
Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.**Additional cement maybe required. Excess calculates to 20%.**

b. Second stage above DV tool:Cement to surface. If cement does not circulate, contact the appropriate BLM office.**Additional cement maybe required. Excess calculates to 14%.**

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

C. PRESSURE CONTROL

1. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.

GENERAL REQUIREMENTS

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

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

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

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
   a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
   b. When the operator proposes to set surface casing with Spudder Rig
      - Notify the BLM when moving in and removing the Spudder Rig.
      - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
      - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

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

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

A. CASING

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

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

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

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

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

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

7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

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

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

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

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

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

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

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

    c. The tests shall be done by an independent service company utilizing a test plug. The results of the test shall be reported to the appropriate BLM office.

    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. 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.

f. 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. This test shall be performed prior to the test at full stack pressure.

g. 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. **WELL COMPLETION**

A NOI sundry with the completion procedure for this well shall be submitted and approved prior to commencing completion work. The procedure will be reviewed to verify that the completion proposal will allow the operator to:

1. **Properly evaluate the injection zone utilizing open hole logs, swab testing and/or any other method to confirm that hydrocarbons cannot be produced in paying quantities. This evaluation shall be reviewed by the BLM prior to injection commencing.**
2. **Restrict the injection fluid to the approved formation.**

If off-lease water will be disposed in this well, the operator shall provide proof of right-of-way approval.

E. 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.

Waste Minimization Plan (WMP)

In the interest of resource development, submission of additional well gas capture development plan information is deferred but may be required by the BLM Authorized Officer at a later date.

ZS 0203185

Navajo WDW-4 -- Contingency Plan During Surface Hole

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

3. Monitor torque and drag on drill string to determine if pipe is sticking

4. Try pumping cement into lost circulation zone and wait on cement.

5. After waiting on cement, drill out cement and continue drilling ~~17-1/2~~ 2011" surface hole.

6. If cementing lost circulation zone is unsuccessful, run 16" contingency surface casing string.

7. Run contingency 16", 84 lb/ft, STC casing to necessary depth to cover lost circulation zone.

8. Cement 16" casing using Class C cement.

   i. Pump at minimum 100% excess cement and make sure cement goes to surface.

   ii. Top off cement from surface using 1" if cement does not reach the surface.

Insure that cement has cured for a minimum of 24 hours prior to drilling out.

9. Install 16" casinghead and flange up to BOPs and drill to original surface casing depth of 1500 ft with 14-3/4" OD drilling bit (or 15" OD drilling bit if can be found)

10. Run and cement 13-3/8" surface casing to 1500 ft as planned.

Approval Date: 02/09/2018

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	HollyFrontier Navajo Refining
LEASE NO.:	NM0255527A
WELL NAME & NO.:	4 – WDW 4
SURFACE HOLE FOOTAGE:	1319'/S & 2493'/W
BOTTOM HOLE FOOTAGE	1217'/S & 2443'/W
LOCATION:	Section 23, T. 17 S., R. 27 E., NMPM
COUNTY:	Eddy County, New Mexico

TABLE OF CONTENTS

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

☐ **General Provisions**
☐ **Permit Expiration**
☐ **Archaeology, Paleontology, and Historical Sites**
☐ **Noxious Weeds**
☒ **Special Requirements**
- Cave/Karst
- Watershed
- Range

☐ **Construction**
- Notification
- Topsoil
- Closed Loop System
- Federal Mineral Material Pits
- Well Pads
- Roads

☐ **Road Section Diagram**
☐ **Production (Post Drilling)**
- Well Structures & Facilities

☐ **Interim Reclamation**
☐ **Final Abandonment & Reclamation**

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

Cave and Karst Conditions of Approval for APDs

** Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

Cave/Karst Surface Mitigation

The following stipulations will be applied to minimize impacts during construction, drilling and production.

Construction:
In the advent that any underground voids are opened up during construction activities, construction activities will be halted and the BLM will be notified immediately.

No Blasting:
No blasting will be utilized for pad construction. The pad will be constructed and leveled by adding the necessary fill and caliche.

Pad Berming:
The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.

- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g. caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised. (Any access road crossing the berm cannot be lower than the berm height.)

Tank Battery Liners and Berms:
Tank battery locations and all facilities will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing, or equivalent, to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

Leak Detection System:
A method of detecting leaks is required. The method could incorporate gauges to measure loss, situating values and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present. Leak detection plan will be submitted to BLM for approval.

Automatic Shut-off Systems:
Automatic shut off, check values, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

Cave/Karst Subsurface Mitigation

The following stipulations will be applied to protect cave/karst and ground water concerns:

Rotary Drilling with Fresh Water:
Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

Directional Drilling:
Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

Lost Circulation:
ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

Abandonment Cementing:
Upon well abandonment in high cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

Pressure Testing:
Annual pressure monitoring will be performed by the operator on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

The operator must contact the allotment holder prior to construction to identify the location of the pipeline. The operator must take measures to protect the pipeline from compression or other damages. If the pipeline is damaged or

compromised in any way near the proposed project as a result of oil and gas activity, the operator is responsible for repairing the pipeline immediately. The operator must notify the BLM office (575-234-5972) and the private surface landowner or the grazing allotment holder if any damage occurs to structures that provide water to livestock.

- The entire well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The berm shall be maintained through the life of the well and after interim reclamation has been completed.
- Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion.

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation. The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

G. ON LEASE ACCESS ROADS

Road Width
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

Surfacing
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

Crowning
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching
Ditching shall be required on both sides of the road.

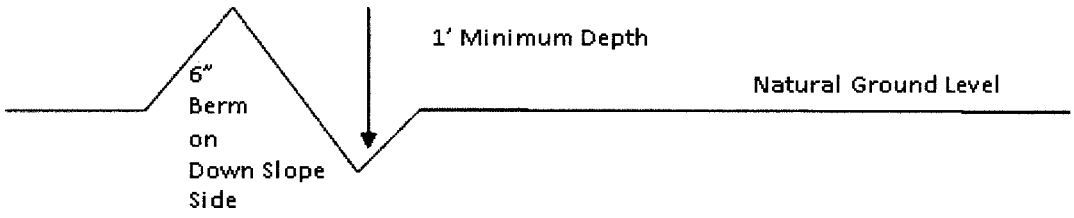
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



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Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$\text{400 foot road with 4\% road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

Cattle guards

An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattle guards that are in place and are utilized during lease operations.

Fence Requirement

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Construction Steps

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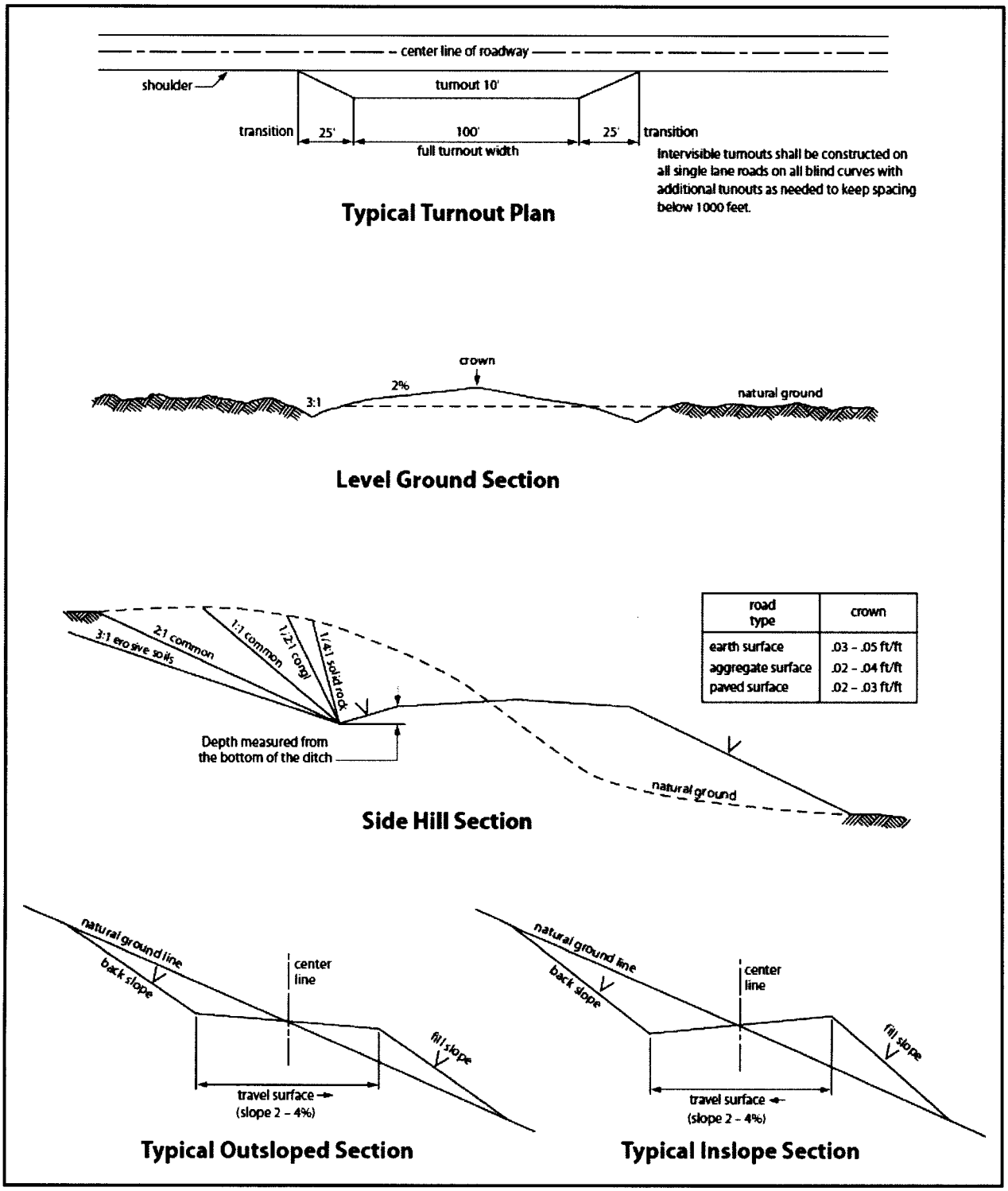

Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities
Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Exclosure Netting (Open-top Tanks)
Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

Chemical and Fuel Secondary Containment and Exclosure Screening
The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

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The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

Containment Structures

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

Painting Requirement
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

VIII. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

IX. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory

revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Mixture 4, for Gypsum Sites

The holder shall seed all the disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

Species	lb/acre
Alkli Sacaton (*Sporobolus airoides*)	1.5
DWS~ Four-wing saltbush (*Atriplex canescens*)	8.0

~DWS: DeWinged Seed

*Pounds of pure live seed:

Pounds of seed **x** percent purity **x** percent germination = pounds pure live seed

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	HollyFrontier Navajo Refining
LEASE NO.:	NM0255527A
WELL NAME & NO.:	4 – WDW 4
SURFACE HOLE FOOTAGE:	1319'/S & 2493'/W
BOTTOM HOLE FOOTAGE	1217'/S & 2443'/W
LOCATION:	Section 23, T. 17 S., R. 27 E., NMPM
COUNTY:	Eddy County, New Mexico

TABLE OF CONTENTS

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

☐ **General Provisions**
☐ **Permit Expiration**
☐ **Archaeology, Paleontology, and Historical Sites**
☐ **Noxious Weeds**
☒ **Special Requirements**
- Cave/Karst
- Watershed
- Range

☐ **Construction**
- Notification
- Topsoil
- Closed Loop System
- Federal Mineral Material Pits
- Well Pads
- Roads

☐ **Road Section Diagram**
☐ **Production (Post Drilling)**
- Well Structures & Facilities

☐ **Interim Reclamation**
☐ **Final Abandonment & Reclamation**

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

Cave and Karst Conditions of Approval for APDs

** Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

Cave/Karst Surface Mitigation

The following stipulations will be applied to minimize impacts during construction, drilling and production.

Construction:
In the advent that any underground voids are opened up during construction activities, construction activities will be halted and the BLM will be notified immediately.

No Blasting:
No blasting will be utilized for pad construction. The pad will be constructed and leveled by adding the necessary fill and caliche.

Pad Berming:
The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.

- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g. caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised. (Any access road crossing the berm cannot be lower than the berm height.)

Tank Battery Liners and Berms:
Tank battery locations and all facilities will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing, or equivalent, to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

Leak Detection System:
A method of detecting leaks is required. The method could incorporate gauges to measure loss, situating values and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present. Leak detection plan will be submitted to BLM for approval.

Automatic Shut-off Systems:
Automatic shut off, check values, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

Cave/Karst Subsurface Mitigation

The following stipulations will be applied to protect cave/karst and ground water concerns:

Rotary Drilling with Fresh Water:
Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

Directional Drilling:
Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

Lost Circulation:
ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

Abandonment Cementing:
Upon well abandonment in high cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

Pressure Testing:
Annual pressure monitoring will be performed by the operator on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

The operator must contact the allotment holder prior to construction to identify the location of the pipeline. The operator must take measures to protect the pipeline from compression or other damages. If the pipeline is damaged or

compromised in any way near the proposed project as a result of oil and gas activity, the operator is responsible for repairing the pipeline immediately. The operator must notify the BLM office (575-234-5972) and the private surface landowner or the grazing allotment holder if any damage occurs to structures that provide water to livestock.

- The entire well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The berm shall be maintained through the life of the well and after interim reclamation has been completed.
- Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion.

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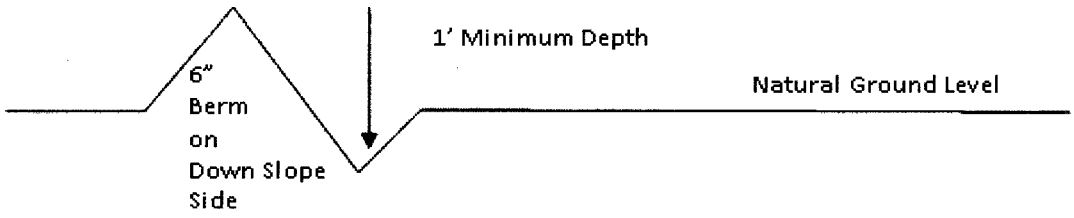

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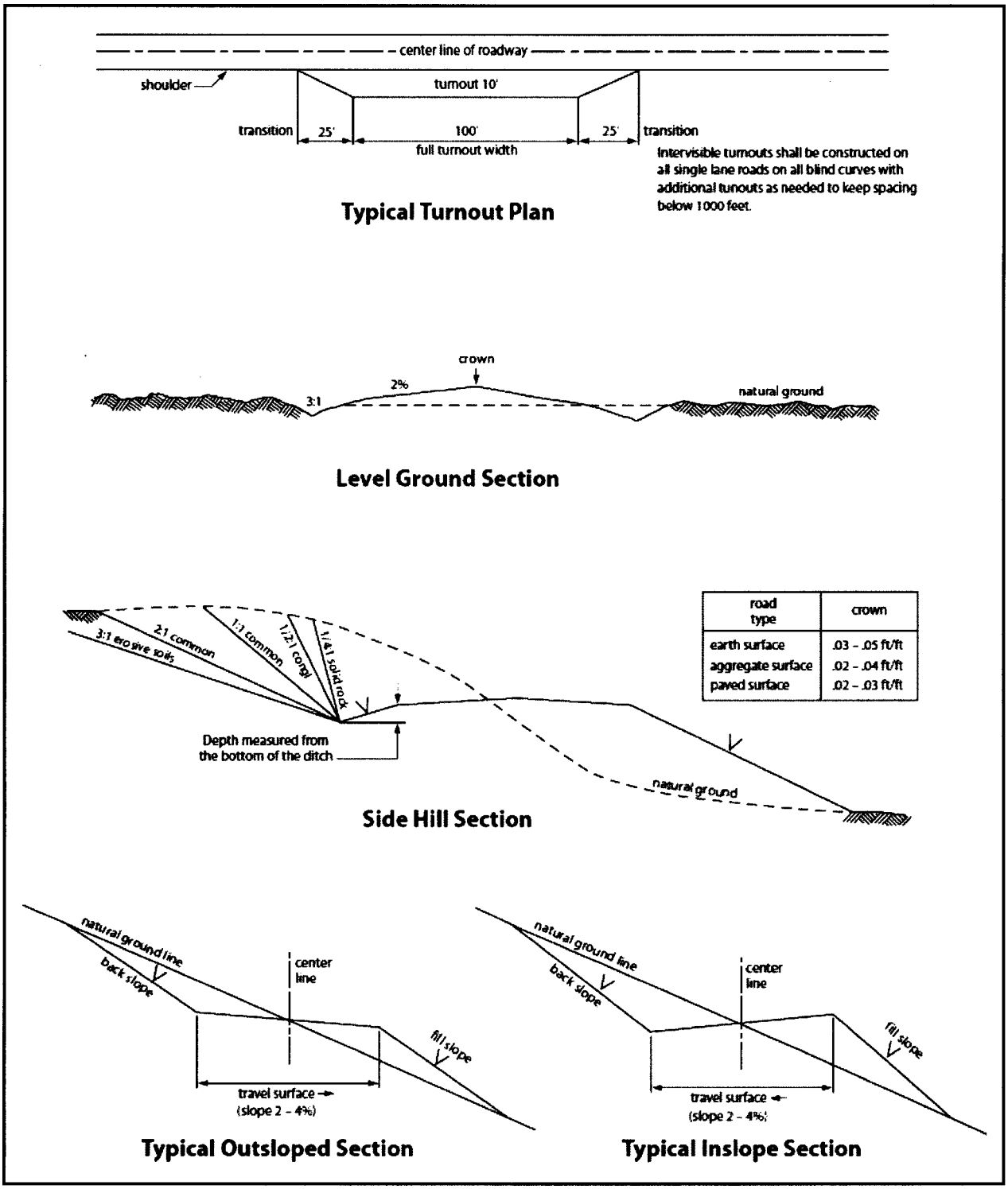

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IX. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory

revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Mixture 4, for Gypsum Sites

The holder shall seed all the disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

Species	lb/acre
Alkli Sacaton (*Sporobolus airoides*)	1.5
DWS~ Four-wing saltbush (*Atriplex canescens*)	8.0

~DWS: DeWinged Seed

*Pounds of pure live seed:

Pounds of seed **x** percent purity **x** percent germination = pounds pure live seed

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

rator Certification Data Report

02/09/2018

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: Lewis Dade **Signed on:** 08/16/2017

Title: Environmental Specialist

Street Address: 501 East Main Street

City: Artesia **State:** NM **Zip:** 88210

Phone: (575)746-5281

Email address: Lewis.Dade@hollyfrontier.com

Field Representative

Representative Name:

Street Address:

City: **State:** **Zip:**

Phone:

Email address:

APD ID: 10400015797 **Submission Date:** 09/14/2017

Operator Name: HOLLYFRONTIER NAVAJO REFINING LLC

Well Name: WDW-4 **Well Number:** 4

Well Type: INJECTION - DISPOSAL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400015797 **Tie to previous NOS?** **Submission Date:** 09/14/2017

BLM Office: CARLSBAD **User:** Lewis Dade **Title:** Environmental Specialist

Federal/Indian APD: FED **Is the first lease penetrated for production Federal or Indian?** FED

Lease number: NMNM025527A **Lease Acres:** 1400

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? NO **APD Operator:** HOLLYFRONTIER NAVAJO REFINING LLC

Operator letter of designation:

Operator Info

Operator Organization Name: HOLLYFRONTIER NAVAJO REFINING LLC

Operator Address: 501 East Main Street

Zip: 88210

Operator PO Box: P.O. Box 159

Operator City: Artesia **State:** NM

Operator Phone: (575)746-5281

Operator Internet Address:

Section 2 - Well Information

Well in Master Development Plan? NO **Mater Development Plan name:**

Well in Master SUPO? NEW **Master SUPO name:** WDW-4

Well in Master Drilling Plan? NEW **Master Drilling Plan name:** Drilling Plan for WDW-4

Well Name: WDW-4 **Well Number:** 4 **Well API Number:**

Field/Pool or Exploratory? Exploratory **Field Name:** WILDCAT **Pool Name:**

Is the proposed well in an area containing other mineral resources? USEABLE WATER

Operator Name: HOLLYFRONTIER NAVAJO REFINING LLC

Well Name: WDW-4 **Well Number:** 4

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: SINGLE WELL **Multiple Well Pad Name:** **Number:**

Well Class: VERTICAL **Number of Legs:** 1

Well Work Type: Drill

Well Type: INJECTION - DISPOSAL

Describe Well Type:

Well sub-Type: INJECTION - DISPOSAL

Describe sub-type:

Distance to town: **Distance to nearest well:** 500 FT **Distance to lease line:** 1217 FT

Reservoir well spacing assigned acres Measurement: 150 Acres

Well plat: CW22696607__17_1591__600S_20180125131339.pdf

CW22696607__17_1591__C102_20180125131404.pdf

Well work start Date: 03/01/2018 **Duration:** 65 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

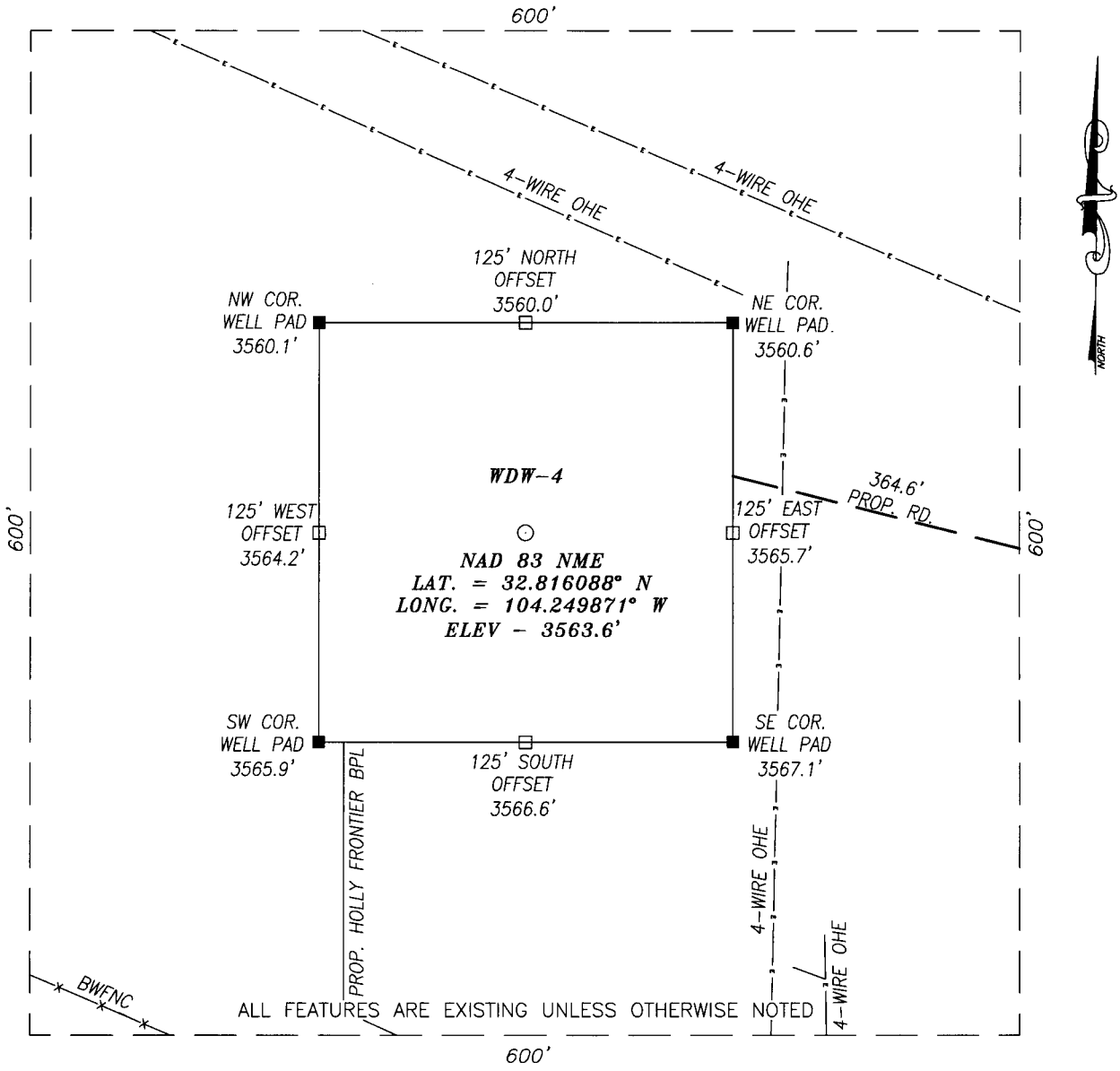
Datum: NAD83 **Vertical Datum:** NAVD88

Survey number:

	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	1217	FSL	2443	FWL	17S	27E	23	Lot N	32.815814	-104.250034	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 025527A	3565	11000	11000
BHL Leg #1	1217	FSL	2443	FWL	17S	27E	23	Lot N	32.815814	-104.250034	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 025527A	-7435	11000	11000

SECTION 23, TOWNSHIP 17 SOUTH, RANGE 27 EAST, N.M.P.M.,

EDDY COUNTY NEW MEXICO



DIRECTIONS TO LOCATION:
BEGINNING AT THE INTERSECTION OF HWY. 82 AND CRANE RD. GO NORTHERLY ON CRANE RD. MEANDERING NORTHERLY, EASTERLY, THEN WESTERLY FOR APPROX. 0.6 MI.; THEN GO LEFT (NORTHWESTERLY) ON CALICHE RD. FOR APPROX. 0.5 MI.; THEN GO LEFT (SOUTH) FOR APPROX. 0.3 MI.; THE PROPOSED WELL LIES APPROX. 450 FEET TO THE WEST.

100 0 100 200 Feet

Scale: 1"=100'

HARCROW SURVEYING, LLC
2314 W. MAIN ST, ARTESIA, N.M. 88210
PH: (575) 746-2158 FAX: (575) 746-2158
Texas Firm No. 10194089
c.harcrow@harcrowsurveying.com

HOLLY FRONTIER NAVAJO REFINING, LLC.

WDW-4
LOCATED 1319 FEET FROM THE SOUTH LINE AND 2493 FEET FROM THE WEST LINE OF SECTION 23, TOWNSHIP 17 SOUTH, RANGE 27 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO

SURVEY DATE: JANUARY 22, 2018		PAGE: 1 OF 1
DRAFTING DATE: JANUARY 23, 2018		
APPROVED BY: CH	DRAWN BY: JH	FILE: 17-1591

AFMSS

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

Drilling Plan Data Report

02/09/2018

APD ID: 10400015797 **Submission Date:** 09/14/2017

Operator Name: HOLLYFRONTIER NAVAJO REFINING LLC

Well Name: WDW-4 **Well Number:** 4

Well Type: INJECTION - DISPOSAL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	GRAYBURG	3565.8	1760	1760	SANDSTONE	USEABLE WATER	No
2	SAN ANDRES	-134.19999999999982	3700	3700		NONE	No
3	GLORIETA	-1214.199999999998	4780	4780		NONE	No
4	TUBB	-1314.199999999998	4880	4880		NONE	No
5	YESO	-2014.199999999998	5580	5580		NONE	No
6	ABO	-3234.2	6800	6800		NONE	No
7	WOLFCAMP	-4054.2	7620	7620		NONE	No
8	CISCO	-4874.2	8440	8440		NONE	No
9	CANYON	-5294.2	8860	8860		NONE	No
10	STRAWN	-5854.2	9420	9420		NONE	No
11	CHESTER	-5994.2	9560	9560		NONE	No
12	MISSISSIPPIAN	-6734.2	10300	10300		NONE	No
13	WOODFORD	-6744.2	10310	10310		NONE	No
14	DEVONIAN	-7344.2	10910	10910		NONE	Yes

Section 2 - Blowout Prevention

Operator Name: HOLLYFRONTIER NAVAJO REFINING LLC

Well Name: WDW-4 **Well Number:** 4

Pressure Rating (PSI): 5M **Rating Depth:** 1000

Equipment: A 21-1/4" annular BOP will be installed on the 20" conductor prior to drilling the surface hole. After running the 13-3/8" surface casing, a 13-3/8" 5,000# WP double BOP stack will be installed on the 13-3/8", 9-5/8" and 7" casings. Pressure tests will be conducted prior to drilling out under all casing strings. BOP controls will be installed prior to drilling under surface casing and will remain in use until completion of drilling operations. BOP's will be inspected and operated as recommended in Onshore Order #2.
Requesting Variance? NO

Variance request:

Testing Procedure: 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. BOP equipment will be tested at 1,000 feet prior to the H2S zone at a 5,000 pound per square inch (PSI) working pressure on initial installation and routinely thereafter (not to exceed a two-week period) between testing) and at any time a seal has been broken.

Choke Diagram Attachment:

ChokeManifold_08-04-2017.xls

BOP Diagram Attachment:

BOP_Configuration_08-04-2017.xls

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	CONDUCTOR	24	20.0	NEW	API	N	0	80	0	80	-7435	-7515	80	OTHER	129.33	OTHER - plain-end						
2	SURFACE	17.5	13.375	NEW	API	N	0	1500	0	1500	-7435	-8935	1500	K-55	54.5	STC	1.81	2.73	DRY	0	DRY	6.69
3	OTHER	12.25	9.625	NEW	API	N	0	5800	0	5800			5800	N-80	47	LTC	1.22	4.58	DRY	0	DRY	1.85
4	OTHER	12.25	7.0	NEW	API	N	0	10300	0	10300			10300	K-55	26	LTC	2.1	2.12	DRY	0	DRY	1.5
5	OTHER	12.25	9.625	NEW	API	N	5600	10400	5600	10400			4800	N-80	47	LTC	1.22	4.58	DRY	0	DRY	1.85

Casing Attachments

Operator Name: HOLLYFRONTIER NAVAJO REFINING LLC

Well Name: WDW-4 **Well Number:** 4

Casing Attachments

Casing ID: 1 **String Type:** CONDUCTOR

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Casing ID: 2 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Table_5___Well_Tubular_Information_07-31-2017.pdf

Casing ID: 3 **String Type:** OTHER - Protection Casing

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Table_5___Well_Tubular_Information_08-01-2017.pdf

Operator Name: HOLLYFRONTIER NAVAJO REFINING LLC

Well Name: WDW-4 **Well Number:** 4

Casing Attachments

Casing ID: 4 **String Type:** OTHER - Injection Tubing

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Table_5___Well_Tubular_Information_08-01-2017.pdf

Casing ID: 5 **String Type:** OTHER - Protection Casing

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Table_5___Well_Tubular_Information_08-01-2017.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
OTHER	Lead		0	0	0	0	0	0	0	none	none
CONDUCTOR	Lead		0	80	0	0	0	0	0	Ready mix	none
SURFACE	Lead		0	1300	607	1.8	12	1092	20	Lightweight Class A	none

Operator Name: HOLLYFRONTIER NAVAJO REFINING LLC

Well Name: WDW-4 **Well Number:** 4

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Tail		1300	1500	114	1.8	15	206	20	Class A	none
OTHER	Lead	5800	1500	5400	1117	1.8	12.5	2010	20	Lightweight Class H	none
OTHER	Tail		5400	5800	83	1.8	15	150	20	Class H	none
OTHER	Lead	5800	5800	10400	877	1.8	12.5	1578	20	Lightweight Class H	none
OTHER	Tail		10000	10400	96	1.8	16	173	20	Class H	none

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: Blowout preventers, annular preventers, closed loop circulating system

Describe the mud monitoring system utilized: The closed loop circulating system will have four gas monitors at mud mixing tanks, at pits, at return tanks

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
80	11000	WATER-BASED MUD	8.5	8.9	66.7	0.12	9	25	2999	10	None

Operator Name: HOLLYFRONTIER NAVAJO REFINING LLC

Well Name: WDW-4 **Well Number:** 4

Section 6 - Test, Logging, Coring

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

Surface Borehole
(80' – 1,500') Gamma Ray/Induction Resistivity/Spontaneous Potential/Formation Density/ Compensated Neutron/Caliper/
Four Arm Caliper

Protection Borehole
(1,500' – 10,400') Gamma Ray/Laterolog Resistivity/Formation Density/ Compensated Neutron/Caliper/Sonic/Mineralogy (~100' over cored interval)
Four Arm Caliper

Injection Borehole
(10,400' – 11,000') Gamma Ray/Laterolog Resistivity/Formation Density/ Compensated Neutron/Caliper/Sonic/Borehole Image/Mineralogy
Four Arm Caliper

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

CALIPER,CNL,DIL,GR,SONIC,SP

Coring operation description for the well:

Confining Zone
(9,700' – 10,200') 4" Diameter x 30' Long Conventional Core

Injection Interval
(10,200' – 10,700') 4" Diameter x 60' Long Conventional Core

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 4763 **Anticipated Surface Pressure:** 2343

Anticipated Bottom Hole Temperature(F): 176

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? NO

Hydrogen sulfide drilling operations plan:

Operator Name: HOLLYFRONTIER NAVAJO REFINING LLC

Well Name: WDW-4 **Well Number:** 4

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Other proposed operations facets description:

No directional drilling, this is a vertical well.

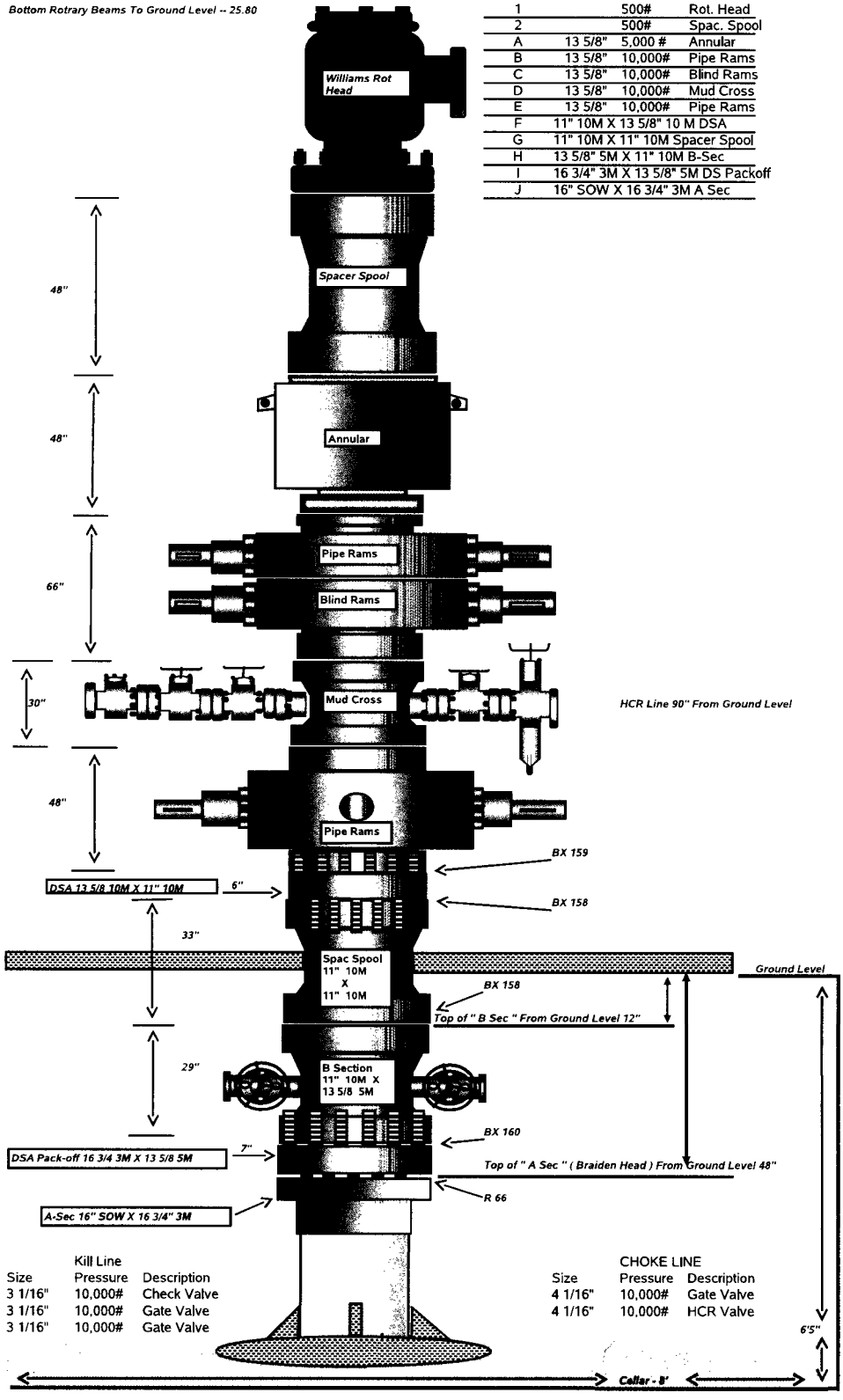
Other proposed operations facets attachment:

Other Variance attachment:

Pickering 1-18

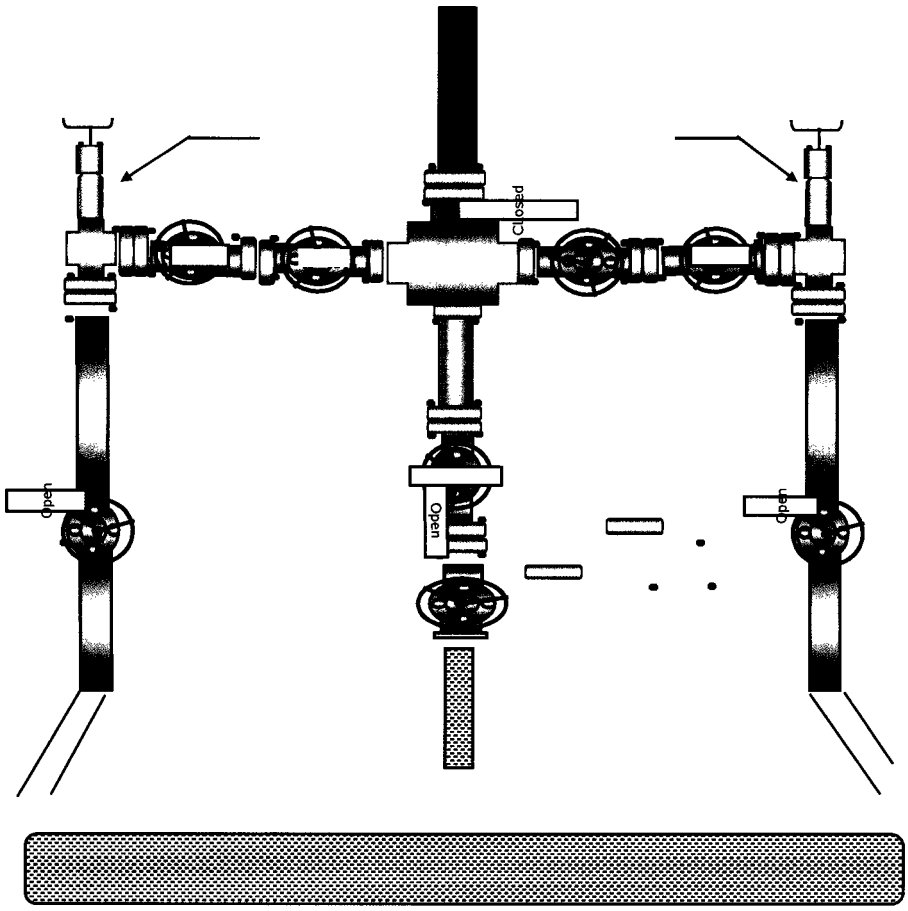
Chesapeak Operating, Inc.

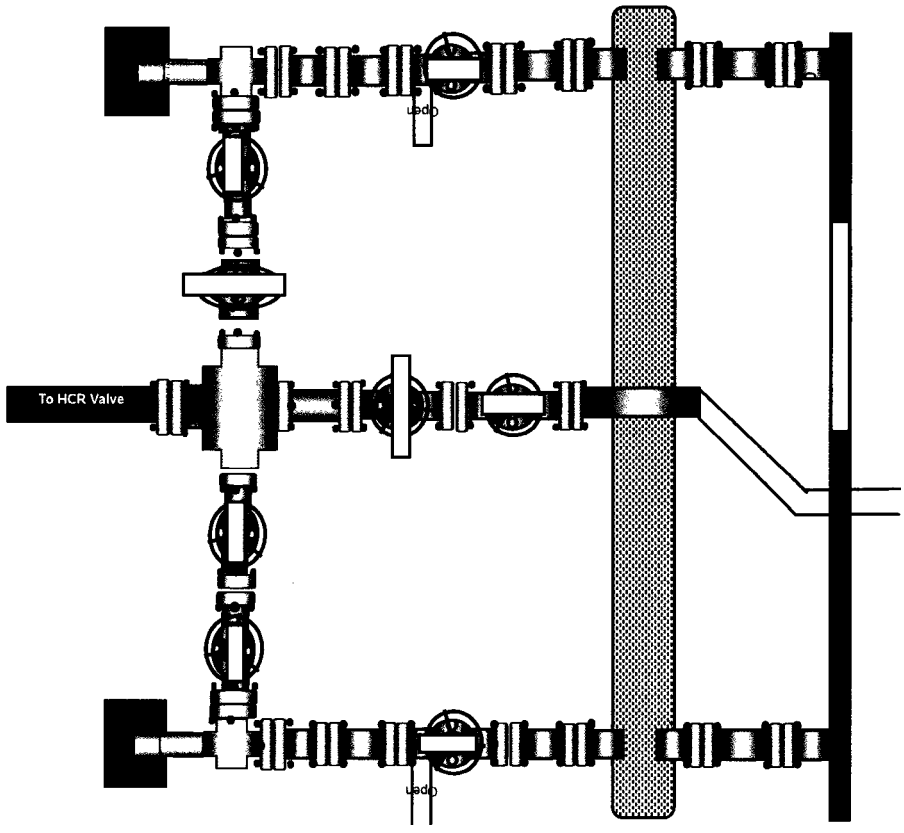
	Size	Pressure	Description
1		500#	Rot. Head
2		500#	Spac. Spool
A	13 5/8"	5,000 #	Annular
B	13 5/8"	10,000#	Pipe Rams
C	13 5/8"	10,000#	Blind Rams
D	13 5/8"	10,000#	Mud Cross
E	13 5/8"	10,000#	Pipe Rams
F	11" 10M X 13 5/8" 10 M DSA		
G	11" 10M X 11" 10M Spacer Spool		
H	13 5/8" 5M X 11" 10M B-Sec		
I	16 3/4" 3M X 13 5/8" 5M DS Packoff		
J	16" SOW X 16 3/4" 3M A Sec		

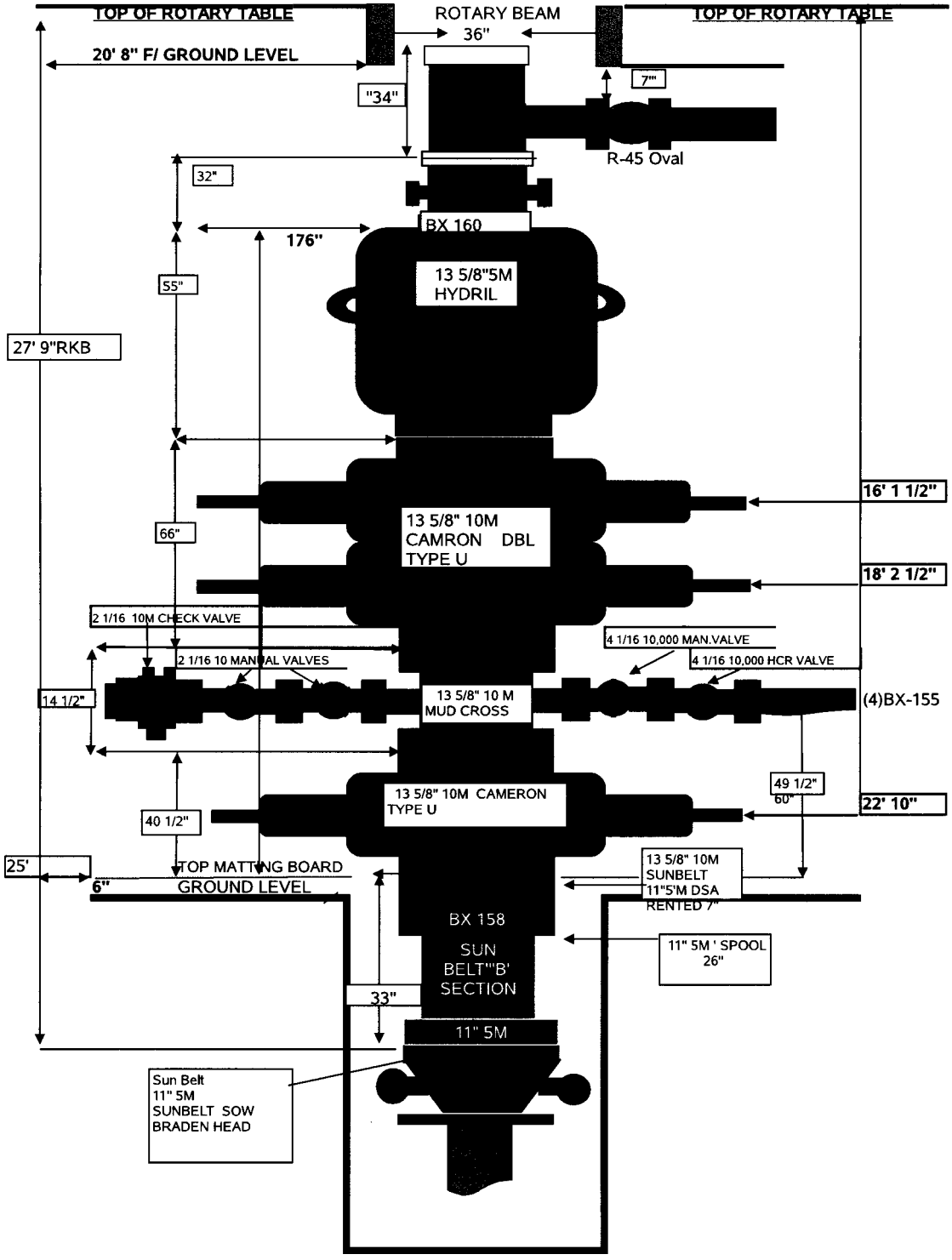


Kill Line		
Size	Pressure	Description
3 1/16"	10,000#	Check Valve
3 1/16"	10,000#	Gate Valve
3 1/16"	10,000#	Gate Valve

CHOKE LINE		
Size	Pressure	Description
4 1/16"	10,000#	Gate Valve
4 1/16"	10,000#	HCR Valve


Closed
Open
Open
Open


To HCR Valve


TOP OF ROTARY TABLE
ROTARY BEAM
36"
TOP OF ROTARY TABLE
20' 8" F/ GROUND LEVEL
"34"
7"
R-45 Oval
32"
BX 160
176"
13 5/8"5M
HYDRIL
55"
27' 9"RKB
16' 1 1/2"
13 5/8" 10M
CAMRON DBL
TYPE U
66"
18' 2 1/2"
2 1/16 10M CHECK VALVE
4 1/16 10,000 MAN.VALVE
2 1/16 10 MANUAL VALVES
4 1/16 10,000 HCR VALVE
14 1/2"
13 5/8" 10 M
MUD CROSS
(4)BX-155
49 1/2"
60"
13 5/8" 10M CAMERON
TYPE U
22' 10"
40 1/2"
25'
TOP MATTING BOARD
6"
GROUND LEVEL
13 5/8" 10M
SUNBELT
11"5'M DSA
RENTED 7"
BX 158
SUN
BELT"'B'
SECTION
11" 5M ' SPOOL
26"
33"
11" 5M
Sun Belt
11" 5M
SUNBELT SOW
BRADEN HEAD

#	6	5	1	4	8	3	0			

TABLE 5

WELL TUBULAR INFORMATION
HOLLYFRONTIER NAVAJO REFINING LLC
WASTE DISPOSAL WELL NO. 4
ARTESIA, NEW MEXICO

Ref	Section	Outside Diameter (in)	Depth Interval (feet BGL)	Material	Collapse Resistance (psi)	Internal Yield (psi)	Tensile Strength (lbs)	Body Yield (lbs)	Max. External Press (psi)	Max. Internal Press (psi)	Maximum Tensile Load (lbs)	Safety Factor Collapse	Safety Factor Burst	Safety Factor Tension
	Conductor	20	0 - 80	129.33 ppf; 0.625" wall, Welded	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1	Surface Casing	13⅜	0 - 1500	54.5 ppf, K-55, ST&C	1,130	2,730	547,000	853,000	624	1,000	81,750	1.81	2.73	6.69
2	Protection	9⅝	0 - 10,400	47 ppf, N-80, LT&C	4,760	6,870	905,000	1,086,000	3,894	1,500	488,800	1.22	4.58	1.85
3	Injection Tubing	7	0 - 10,300	26 ppf, K-55, LT&C	4,320	4,980	401,000	415,000	2,057	2,348	267,800	2.10	2.12	1.50

References:

1. Maximum external pressure after cementing 16.4 ppg cement with fresh water inside. Assumed gradient equal to 8.0 ppg (16.4-8.4). Maximum internal pressure during pressure test at 1000 psi excluding external pressure.

2. Maximum external pressure after cementing 15.6 ppg cement with fresh water inside. Assumed gradient equal to 7.2 (15.6-8.4) ppg. Maximum internal pressure during pressure test at 1500 psi excluding external pressure.

3. Maximum external pressure pressure during APT assumes 10 ppg water in 7" x 9⅝" annulus with 1200 psi surface test pressure and 8.4 ppg fluid inside tubing. Maximum internal pressure = Hydrostatic pressure inside 7" tubing (9 ppg*0.052*10300') + Maximum Permitted Surface Injection Pressure (2080) - Minimum Expected Annulus Pressure (8.5*0.052*10300).

TABLE 5

WELL TUBULAR INFORMATION
HOLLYFRONTIER NAVAJO REFINING LLC
WASTE DISPOSAL WELL NO. 4
ARTESIA, NEW MEXICO

Ref	Section	Outside Diameter (in)	Depth Interval (feet BGL)	Material	Collapse Resistance (psi)	Internal Yield (psi)	Tensile Strength (lbs)	Body Yield (lbs)	Max. External Press (psi)	Max. Internal Press (psi)	Maximum Tensile Load (lbs)	Safety Factor Collapse	Safety Factor Burst	Safety Factor Tension
	Conductor	20	0 - 80	129.33 ppf; 0.625" wall, Welded	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1	Surface Casing	13⅜	0 - 1500	54.5 ppf, K-55, ST&C	1,130	2,730	547,000	853,000	624	1,000	81,750	1.81	2.73	6.69
2	Protection	9⅝	0 - 10,400	47 ppf, N-80, LT&C	4,760	6,870	905,000	1,086,000	3,894	1,500	488,800	1.22	4.58	1.85
3	Injection Tubing	7	0 - 10,300	26 ppf, K-55, LT&C	4,320	4,980	401,000	415,000	2,057	2,348	267,800	2.10	2.12	1.50

References:

1. Maximum external pressure after cementing 16.4 ppg cement with fresh water inside. Assumed gradient equal to 8.0 ppg (16.4-8.4). Maximum internal pressure during pressure test at 1000 psi excluding external pressure.

2. Maximum external pressure after cementing 15.6 ppg cement with fresh water inside. Assumed gradient equal to 7.2 (15.6-8.4) ppg. Maximum internal pressure during pressure test at 1500 psi excluding external pressure.

3. Maximum external pressure pressure during APT assumes 10 ppg water in 7" x 9⅝" annulus with 1200 psi surface test pressure and 8.4 ppg fluid inside tubing. Maximum internal pressure = Hydrostatic pressure inside 7" tubing (9 ppg*0.052*10300') + Maximum Permitted Surface Injection Pressure (2080) - Minimum Expected Annulus Pressure (8.5*0.052*10300).

TABLE 5

WELL TUBULAR INFORMATION
HOLLYFRONTIER NAVAJO REFINING LLC
WASTE DISPOSAL WELL NO. 4
ARTESIA, NEW MEXICO

Ref	Section	Outside Diameter (in)	Depth Interval (feet BGL)	Material	Collapse Resistance (psi)	Internal Yield (psi)	Tensile Strength (lbs)	Body Yield (lbs)	Max. External Press (psi)	Max. Internal Press (psi)	Maximum Tensile Load (lbs)	Safety Factor Collapse	Safety Factor Burst	Safety Factor Tension
	Conductor	20	0 - 80	129.33 ppf; 0.625" wall, Welded	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1	Surface Casing	13⅜	0 - 1500	54.5 ppf, K-55, ST&C	1,130	2,730	547,000	853,000	624	1,000	81,750	1.81	2.73	6.69
2	Protection	9⅝	0 - 10,400	47 ppf, N-80, LT&C	4,760	6,870	905,000	1,086,000	3,894	1,500	488,800	1.22	4.58	1.85
3	Injection Tubing	7	0 - 10,300	26 ppf, K-55, LT&C	4,320	4,980	401,000	415,000	2,057	2,348	267,800	2.10	2.12	1.50

References:

1. Maximum external pressure after cementing 16.4 ppg cement with fresh water inside. Assumed gradient equal to 8.0 ppg (16.4-8.4). Maximum internal pressure during pressure test at 1000 psi excluding external pressure.

2. Maximum external pressure after cementing 15.6 ppg cement with fresh water inside. Assumed gradient equal to 7.2 (15.6-8.4) ppg. Maximum internal pressure during pressure test at 1500 psi excluding external pressure.

3. Maximum external pressure pressure during APT assumes 10 ppg water in 7" x 9⅝" annulus with 1200 psi surface test pressure and 8.4 ppg fluid inside tubing. Maximum internal pressure = Hydrostatic pressure inside 7" tubing (9 ppg*0.052*10300') + Maximum Permitted Surface Injection Pressure (2080) - Minimum Expected Annulus Pressure (8.5*0.052*10300).

TABLE 5

WELL TUBULAR INFORMATION
HOLLYFRONTIER NAVAJO REFINING LLC
WASTE DISPOSAL WELL NO. 4
ARTESIA, NEW MEXICO

Ref	Section	Outside Diameter (in)	Depth Interval (feet BGL)	Material	Collapse Resistance (psi)	Internal Yield (psi)	Tensile Strength (lbs)	Body Yield (lbs)	Max. External Press (psi)	Max. Internal Press (psi)	Maximum Tensile Load (lbs)	Safety Factor Collapse	Safety Factor Burst	Safety Factor Tension
	Conductor	20	0 - 80	129.33 ppf; 0.625" wall, Welded	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1	Surface Casing	13⅜	0 - 1500	54.5 ppf, K-55, ST&C	1,130	2,730	547,000	853,000	624	1,000	81,750	1.81	2.73	6.69
2	Protection	9⅝	0 - 10,400	47 ppf, N-80, LT&C	4,760	6,870	905,000	1,086,000	3,894	1,500	488,800	1.22	4.58	1.85
3	Injection Tubing	7	0 - 10,300	26 ppf, K-55, LT&C	4,320	4,980	401,000	415,000	2,057	2,348	267,800	2.10	2.12	1.50

References:

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3. Maximum external pressure pressure during APT assumes 10 ppg water in 7" x 9⅝" annulus with 1200 psi surface test pressure and 8.4 ppg fluid inside tubing. Maximum internal pressure = Hydrostatic pressure inside 7" tubing (9 ppg*0.052*10300') + Maximum Permitted Surface Injection Pressure (2080) - Minimum Expected Annulus Pressure (8.5*0.052*10300).

APD ID: 10400015797 **Submission Date:** 09/14/2017

Operator Name: HOLLYFRONTIER NAVAJO REFINING LLC

Well Name: WDW-4 **Well Number:** 4

Well Type: INJECTION - DISPOSAL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

17_750_TOPO_RD_07-11-2017.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:

17_750_600S_08-09-2017.pdf

New road type: LOCAL

Length: 391.1 Feet **Width (ft.):** 20

Max slope (%): 1 **Max grade (%):** 1

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 10

New road access erosion control: gravel

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: HOLLYFRONTIER NAVAJO REFINING LLC

Well Name: WDW-4 **Well Number:** 4

Access surfacing type: GRAVEL

Access topsoil source: ONSITE

Access surfacing type description:

Access onsite topsoil source depth: 0

Offsite topsoil source description:

Onsite topsoil removal process: 0

Access other construction information:

Access miscellaneous information:

Number of access turnouts: **Access turnout map:**

Drainage Control

New road drainage crossing: CULVERT

Drainage Control comments: side drainage

Road Drainage Control Structures (DCS) description: drainage along edges

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:

Drawing_2_Area_of_Review_Map_08-01-2017.pdf

Existing Wells description:

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

Submit or defer a Proposed Production Facilities plan? DEFER

Estimated Production Facilities description: Defer

Section 5 - Location and Types of Water Supply

Water Source Table

Operator Name: HOLLYFRONTIER NAVAJO REFINING LLC

Well Name: WDW-4 **Well Number:** 4

Water source use type: DUST CONTROL, INTERMEDIATE/PRODUCTION CASING, OTHER, SURFACE CASING

Water source type: OTHER

Describe type:

Source longitude:

Source latitude:

Source datum:

Water source permit type: PRIVATE CONTRACT

Source land ownership: FEDERAL

Water source transport method: TRUCKING

Source transportation land ownership: COMMERCIAL

Water source volume (barrels): 5000

Source volume (acre-feet): 0.6444655

Source volume (gal): 210000

Water source and transportation map:

navajo_wdw_4_water_transport_08-09-2017.jpg

Water source comments:

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:**

Water well additional information:

State appropriation permit:

Additional information attachment:

Operator Name: HOLLYFRONTIER NAVAJO REFINING LLC

Well Name: WDW-4 **Well Number:** 4

Section 6 - Construction Materials

Construction Materials description: Gravel, 60-mm liner, matted boards across the well location (250- x 250-feet)

Construction Materials source location attachment:

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: Drill cuttings and drilling fluids

Amount of waste: 5000 barrels

Waste disposal frequency : Daily

Safe containment description: Closed containers for cuttings and fluids

Safe containmant attachment:

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

Disposal type description:

Disposal location description: R360 Environmental Solutions 5407 W. Carlsbad Hwy P.O. Box 38 Hobbs, NM 88241 Office: 575-393-1079

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

Are you storing cuttings on location? YES

Description of cuttings location Rolloff boxes

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

Operator Name: HOLLYFRONTIER NAVAJO REFINING LLC

Well Name: WDW-4 **Well Number:** 4

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:

General_Well_Site_plan_08-02-2017.pdf

Comments: Generalized layout attached. A more detailed well site layout will be provided closer to the drill date.

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance **Multiple Well Pad Name:**

Multiple Well Pad Number:

Recontouring attachment:

Drainage/Erosion control construction: Use of mats for spill control. Possible ring levy for drainage.

Drainage/Erosion control reclamation: Removal of mats and liner. Removal of levy if constructed.

Wellpad long term disturbance (acres): 0.25

Wellpad short term disturbance (acres): 1.25

Access road long term disturbance (acres): 0.125

Access road short term disturbance (acres): 0.125

Pipeline long term disturbance (acres): 0.027548209

Pipeline short term disturbance (acres): 0

Other long term disturbance (acres): 0

Other short term disturbance (acres): 0

Total long term disturbance: 0.40254822

Total short term disturbance: 1.375

Reconstruction method: Remove the liner and boards and lay down gravel.

Topsoil redistribution: None.

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:

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

Total pounds/Acre:

Seed Type	Pounds/Acre

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name: **Last Name:**

Operator Name: HOLLYFRONTIER NAVAJO REFINING LLC

Well Name: WDW-4 **Well Number:** 4

Phone: **Email:**

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: None.

Weed treatment plan attachment:

Monitoring plan description: None

Monitoring plan attachment:

Success standards: NA

Pit closure description: No pit

Pit closure attachment:

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

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: HOLLYFRONTIER NAVAJO REFINING LLC

Well Name: WDW-4 **Well Number:** 4

Disturbance type: NEW ACCESS ROAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

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:**

Section 12 - Other Information

Right of Way needed? NO **Use APD as ROW?**

ROW Type(s):

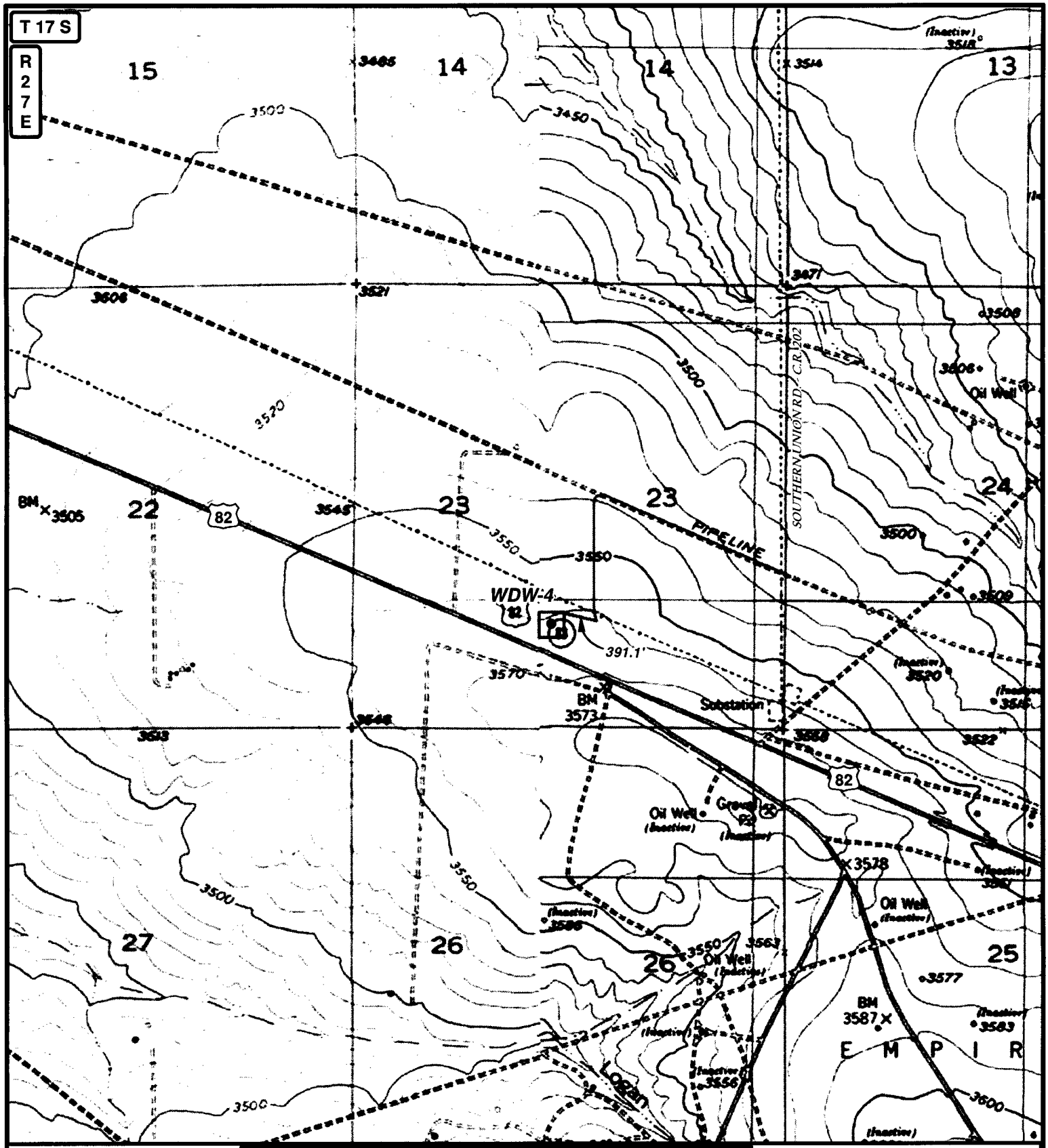
ROW Applications

SUPO Additional Information:

Use a previously conducted onsite? NO

Previous Onsite information:

Other SUPO Attachment



LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

WDW-4

SEC: 23	TWP: 17 S.	RGE: 27 E.	ELEVATION: 3565.8'
STATE: NEW MEXICO		COUNTY: EDDY	1217' FSL & 2443' FWL
W.O. # 17-750		LEASE: WDW	SURVEY: N.M.P.M

0 2,500 FEET

0 0.1 0.2 0.4 Miles

1 IN = 1,500 FT

LOCATION MAP | TOPO RD. | 6/20/2017 | S.A.

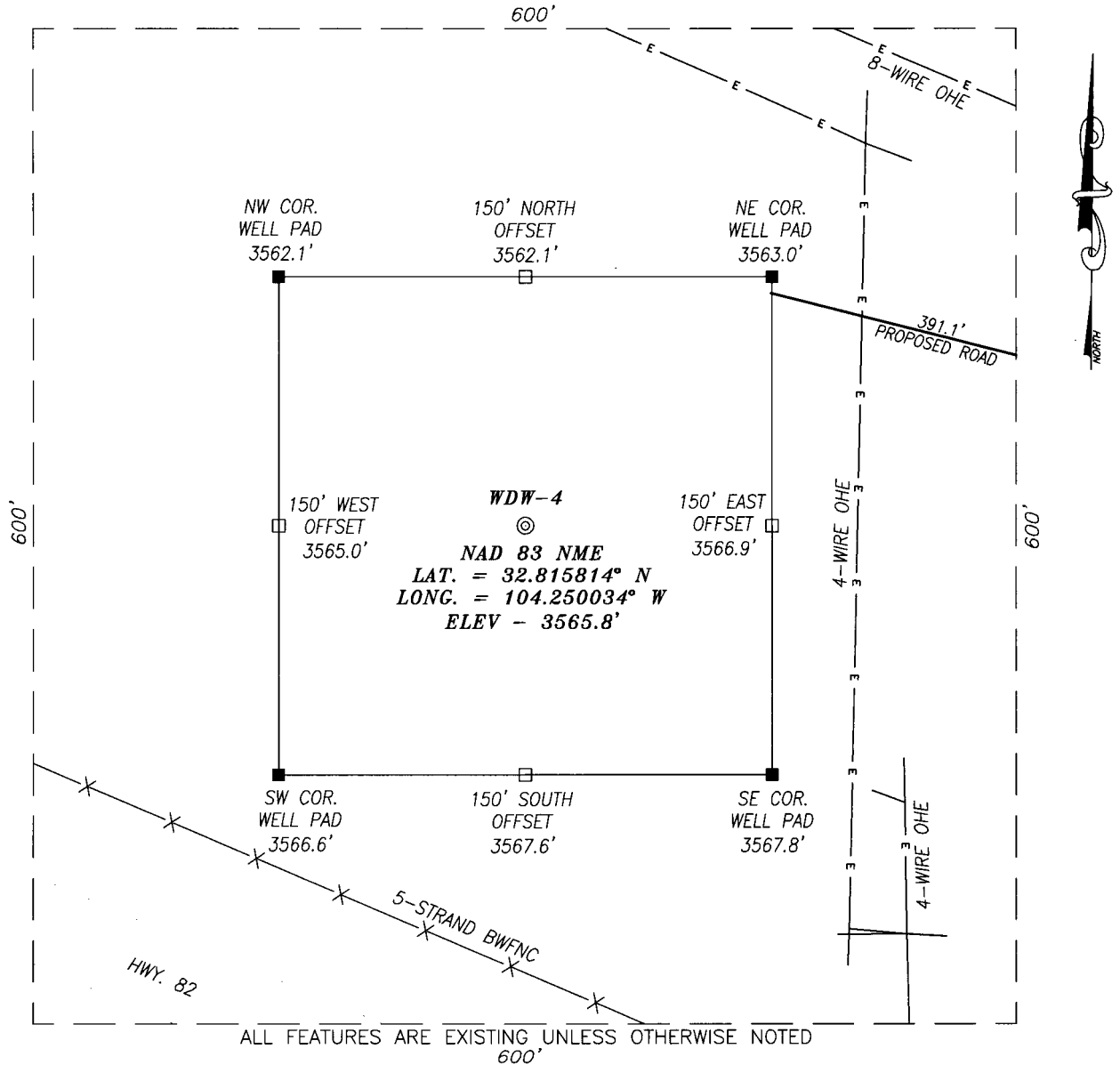
N

WSP USA INC.

HARCROW SURVEYING, LLC.
2314 W. MAIN ST, ARTESIA, NM 88210
PH: (575) 746-2158 FAX: (575) 746-2158
c.harcrow@harcrowsurveying.com

SECTION 23, TOWNSHIP 17 SOUTH, RANGE 27 EAST, N.M.P.M.,

EDDY COUNTY NEW MEXICO



DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF HWY. 82, AND C.R. 202 GO NORHTHELRY ON C.R. 202 APPROX. 0.6 MI.; THEN TURN LEFT (NORTHWEST) AT Y; GO APPROX. 0.5 MI.; THE TURN LEFT (SOUTH) AND GO APPROX. 0.3 MI. TO A PROPOSED ROAD; PROPOSED WELL LIES APPROX. 530 FEET TO THE RIGHT (WEST).

100 0 100 200 Feet

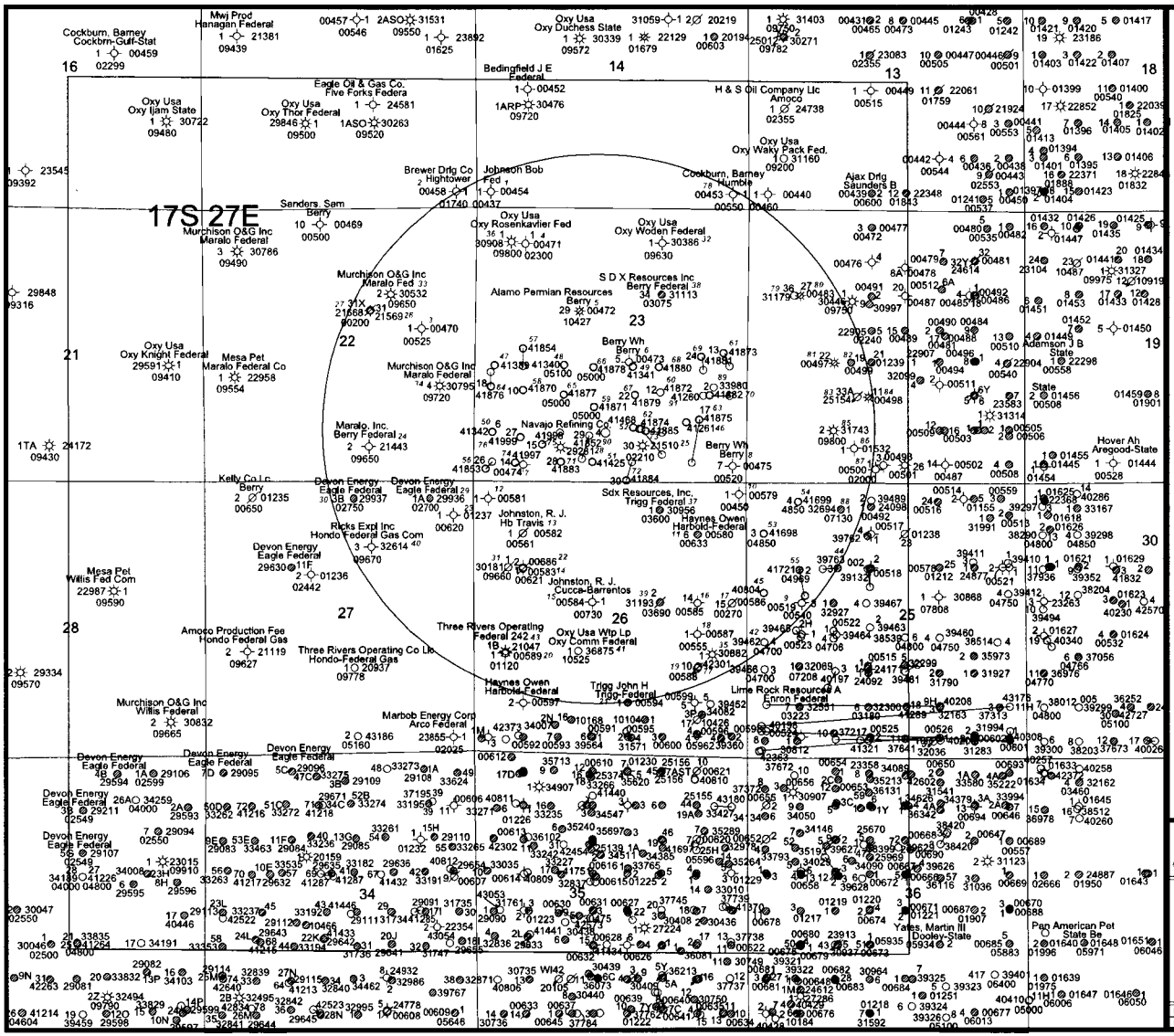
Scale:1"=100'

WSP USC INC.

WDW-4
LOCATED 1217 FEET FROM THE SOUTH LINE AND 2443 FEET FROM THE WEST LINE OF SECTION 23, TOWNSHIP 17 SOUTH, RANGE 27 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO

SURVEY DATE: JUNE 15, 2107		PAGE: 1 OF 1
DRAFTING DATE: JUNE 20, 2017		
APPROVED BY: CH	DRAWN BY: SA	FILE: 17-750

HARCROW SURVEYING, LLC
2314 W. MAIN ST, ARTESIA, N.M. 88210
PH: (575) 746-2158 FAX: (575) 746-2158
Texas Firm No. 10194089
c.harcrow@harcrowsurveying.com



N

LEGEND

- PERMITTED WELL
- DRY HOLE
- PLUGGED AND ABANDONED WELL
- GAS WELL
- OIL WELL
- OIL & GAS WELL
- ABANDONED GAS WELL
- ABANDONED OIL WELL
- ABANDONED OIL & GAS WELL
- INJECTION WELL
- PLUGGED & ABANDONED INJECTION WELL
- SALTWATER DISPOSAL WELL
- PLUGGED SALTWATER DISPOSAL WELL
- 1-MILE RADIUS AREA OF REVIEW
- 3-D SEISMIC SURVEY OUTLINE

SCALE (IN FEET)

0 1000 2000

Well Number — API Number — Map ID Number (see Table 1) — Total Depth of Well

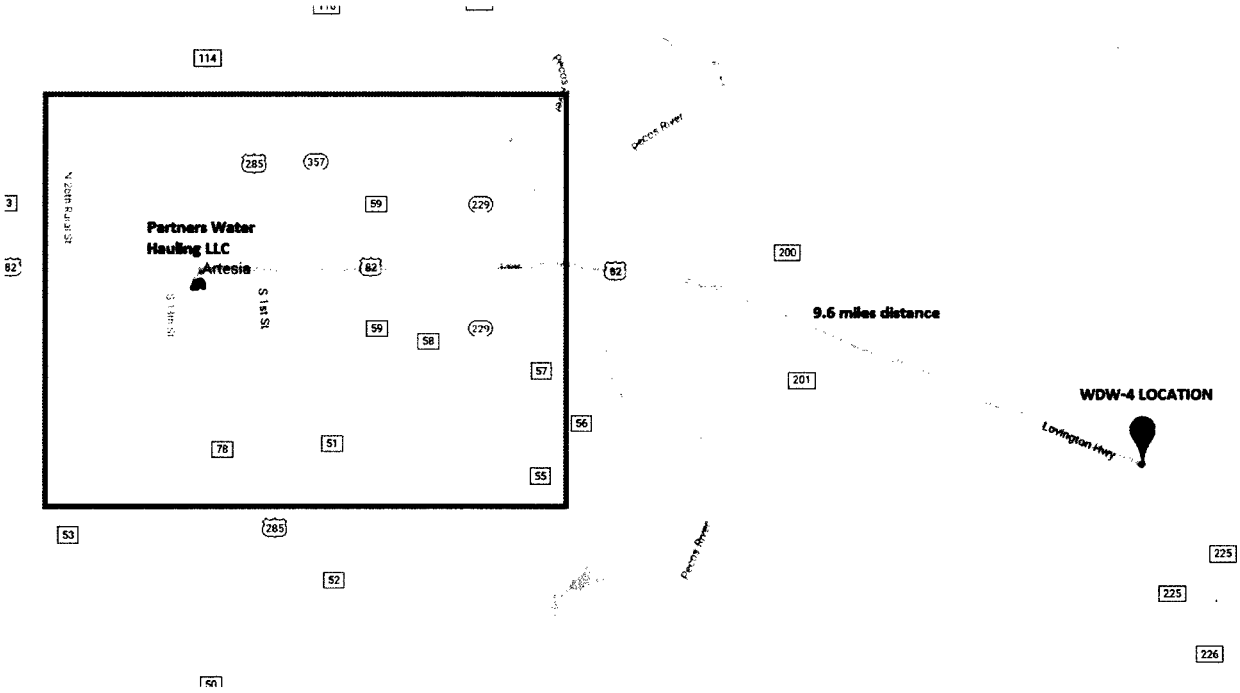
WSP | PARSONS BRINCKERHOFF

DRAWING 2

HOLLYFRONTIER NAVAJO REFINING LLC
ARTESIA, NEW MEXICO

AREA OF REVIEW MAP

DATE: 03/02/17	CHECKED BY: RM	JOB NO: 50904E	
DRAWN BY: WDD	APPROVED BY: GM	DWG NO:	


Partners Water
Hauling LLC
Artesia
9.6 miles distance
WDW-4 LOCATION
Lovington Hwy
Pecos River
S 1st St
114
285
357
59
229
82
58
57
56
55
78
51
53
52
200
201
225
226

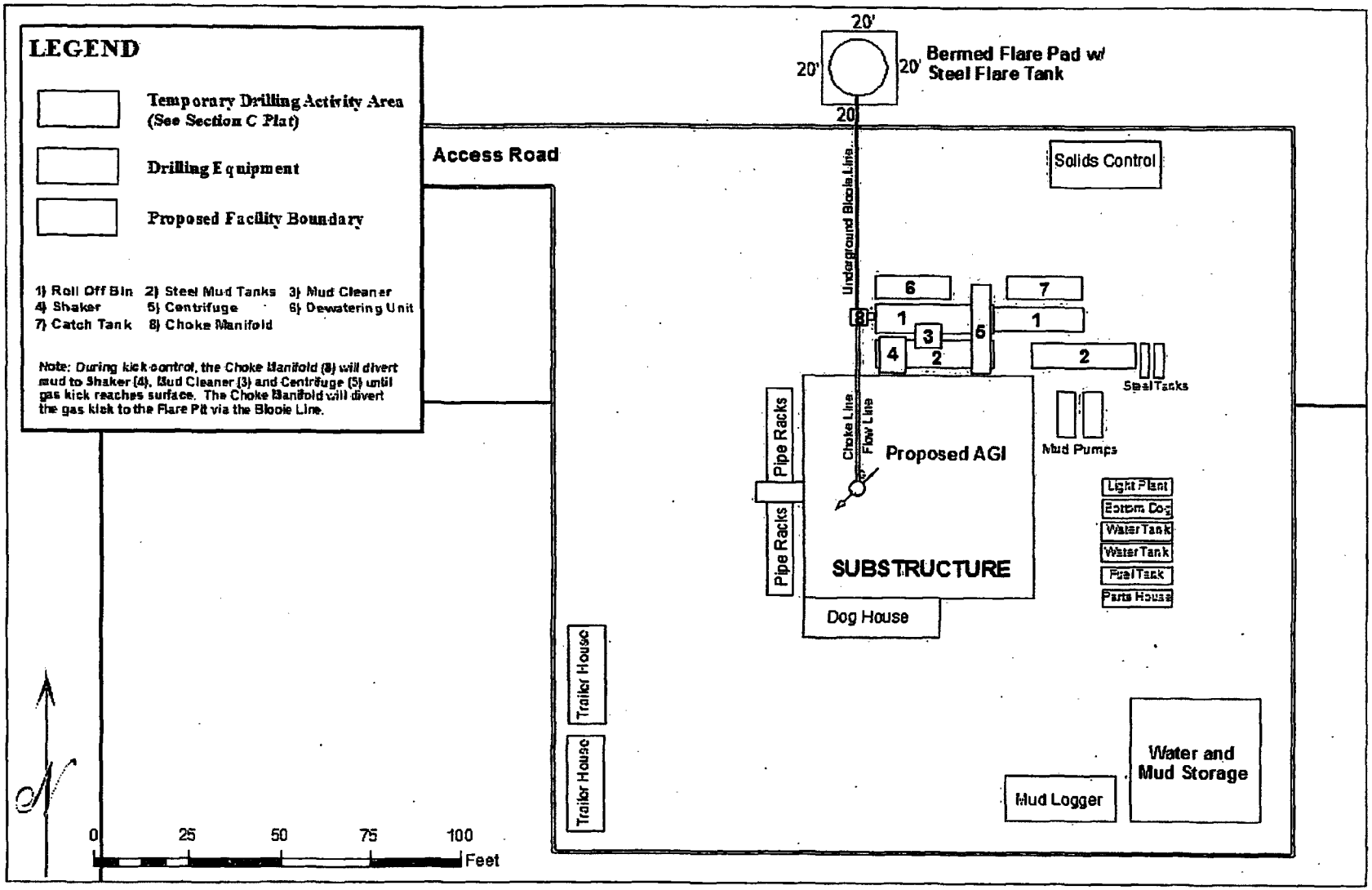


Figure 3: Rig Layout and Schematic with Closed Loop System

AFMSS

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

PWD Data Report
02/09/2018

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:

Decribe 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:

Decribe 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:

AFMSS

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

Bond Info Data Report

02/09/2018

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB001503

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: