NM OIL CONSERVATION
ARTESIA DISTRICT
OCT 23 2019
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Form 3160-3
(June 2015)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM121940

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

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

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

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

8. Lease Name and Well No.
GREASEWOOD FEDERAL
3H
326248

2. Name of Operator
MARSHALL & WINSTON INCORPORATED

9. API Well No.
30-005-64341

3a. Address	3b. Phone No. *(include area code)*	10. Field and Pool, or Exploratory
6 Desta Drive, Suite 3100 Midland TX 79705	(432)684-6373	ROUND TANK / SAN ANDRES

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface SESE / 600 FSL / 400 FEL / LAT 33.024941 / LONG -104.078066
At proposed prod. zone SESE / 20 FSL / 400 FEL / LAT 33.008627 / LONG -104.077983

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 12 / T15S / R28E / NMP

14. Distance in miles and direction from nearest town or post office*	12. County or Parish	13. State
16 miles	CHAVES	NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
400 feet	2560	160

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
580 feet	3100 feet / 8947 feet	FED: NMB000807

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
3718 feet	09/01/2019	30 days

24. Attachments

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

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

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Stormi Davis / Ph: (918)491-4339	07/15/2019

Title
Regulatory Analyst

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Ruben J Sanchez / Ph: (575)627-0250	10/21/2019

Title	Office
Assistant Field Manager, Lands & Minerals	ROSWELL

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

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

APPROVED WITH CONDITIONS

Approval Date: 10/21/2019

(Continued on page 2)

*(Instructions on page 2)

RWP 10-23-19

Online

AFMSS

U.S. Department of the Interior
Bureau of Land Management

Application for Permit to Drill

APD Package Report

Date Printed: 10/21/2019 05:35 PM

APD ID: 10400042987
APD Received Date: 07/15/2019 03:59 PM
Operator: MARSHALL & WINSTON INCORPO

Well Status: AAPD
Well Name: GREASEWOOD FEDERAL
Well Number: 3H

APD Package Report Contents

- Form 3160-3 : Error Generating Form

- Operator Certification Report

- Application Report
- Application Attachments
  -- Well Plat: 1 file(s)

- Drilling Plan Report
- Drilling Plan Attachments
  -- Blowout Prevention Choke Diagram Attachment: 1 file(s)
  -- Blowout Prevention BOP Diagram Attachment: 1 file(s)
  -- Casing Design Assumptions and Worksheet(s): 5 file(s)
  -- Hydrogen sulfide drilling operations plan: 1 file(s)
  -- Proposed horizontal/directional/multi-lateral plan submission: 2 file(s)
  -- Other Facets: 1 file(s)

- SUPO Report
- SUPO Attachments
  -- Existing Road Map: 1 file(s)
  -- New Road Map: 1 file(s)
  -- Attach Well map: 1 file(s)
  -- Water source and transportation map: 1 file(s)
  -- Well Site Layout Diagram: 1 file(s)

- PWD Report
- PWD Attachments
  -- None

- Bond Report
- Bond Attachments
  -- None

CONFIDENTIAL

AFMSS

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

Operator Certification Data Report

10/21/2019

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: Stormi Davis **Signed on:** 07/15/2019

Title: Regulatory Analyst

Street Address:

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

Phone: (918)491-4339

Email address: erich@kfoc.net

Field Representative

Representative Name: Todd Passmore

Street Address: 6 Desta Drive - Ste 3100

City: Midland **State:** TX **Zip:** 79705

Phone: (432)894-0165

Email address: tpassmore@mar-win.com

PECOS DISTRICT DRILLING
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Marshall & Winston Inc.**
LEASE NO.:	**NMNM-121940**
WELL NAME & NO.:	**Greasewood Federal 3H**
SURFACE HOLE FOOTAGE:	**0600' FSL & 0400' FEL**
BOTTOM HOLE FOOTAGE	**0020' FSL & 0400' FEL Sec. 13, T. 15 S., R 28 E.**
LOCATION:	**Section 12, T. 15 S., R 28 E., NMPM**
COUNTY:	**Chaves County, New Mexico**

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

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

☒ **Chaves and Roosevelt Counties**
Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
During office hours call (575) 627-0272.

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

2. 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. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. 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 is located, this does not include the dog house or stairway area.

4. **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

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.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

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.

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.

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

Possibility of lost circulation in the Queen and San Andres formations.

1. The **13-3/8** inch surface casing shall be set at approximately **225** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**

    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 is to include the lead cement slurry.

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

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

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

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

☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office.

4. 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.

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 53.

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M)** psi.

a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.

NOTE: BOP SPECS SHEET SHALL BE ON LOCATION FOR PETROLEUM TECHNICANS

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

    c. 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.

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

    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 if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

C. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

D. WASTE MATERIAL AND FLUIDS

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

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

JAM 090419

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	MARSHALL & WINSTON
LEASE NO.:	NMNM-121940
WELL NAME & NO.:	GREASEWOOD FEDERAL 3H
SURFACE HOLE FOOTAGE:	[600] ' F [S] L [400] ' F [E] L
LOCATION:	Section 12, T 15. S., R 28 E., NMPM
COUNTY:	Chaves County, New Mexico

1. GENERAL PROVISIONS

Approval of the APD does not warrant that any party holds equitable or legal title. Any request for a variance shall be submitted to the Authorized Officer on Sundry Notice (Form 3160-5).

For BLM's surface operating standards and guidelines, refer to: The Gold Book , Fourth Edition – Revised 2007. To obtain a copy free of charge contact the Roswell Field Office (575) 627-0272 or visit BLM on the web at:
http://www.blm.gov/wo/st/en/prog/energy/oil_and_gas/best_management_practices/gold_book.html
All construction, operations, and reclamation shall follow the Onshore Oil and Gas Operations as described in the 43 CFR part 3160.

The Operator shall submit a Sundry Notice (Form 3160-5) to the Bureau of Land Management, Roswell Field Office (address above) for approval prior to beginning any new surface-disturbing activities or operations that are not specifically addressed and approved by this APD.

A site facility diagram and a site security plan shall be filed no later than 60 calendar days following first production (Onshore Order 3, Section III, I. and 43 CFR 3162.7-5).

2. 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, 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).

3. JURISDICTIONAL WATERS of the U.S.

The operator shall obtain appropriate permits from the U.S. Army Corps of Engineers prior to discharge or dredge and fill material into waters of the United States in accordance with Section 404 of the Clean Water Act. Contact The U.S. Army Corps of Engineers regulatory New Mexico Branch Office, 4101 Jefferson Plaza NE, Albuquerque, NM 87109-3435 at (505) 342-3678 or Email: CESPA-RD-NM@usace.army.mil if you have questions.

4. ARCHAEOLOGICAL, PALEONTOLOGICAL & HISTORICAL SITES

In the event that any cultural resource (prehistoric and historic period buildings, sites, structures, objects, and landscapes) and/or paleontological resource is discovered on public or Federal land by the holder, or any person working on behalf of the holder, the holder shall immediately halt the disturbance within 100 feet of the post-review discovery. The holder shall contact the BLM Authorized Officer within 24 hours for instructions:

BLM Authorized Officer:
Ruben Sanchez
Assistant Field Manager, Lands & Minerals
575-627-0250

If BLM Authorized Officer is Unavailable:
Courtney Carlson
Archaeologist
575-627-0328

The BLM Authorized Officer will coordinate with the appropriate specialists to ensure that qualified professionals evaluate the discovery, and to decide appropriate actions to prevent the loss of significant cultural or scientific values. The holder shall be responsible for the costs of evaluation, reporting, excavation, treatment, and/or disposition. Project implementation shall not proceed within 100 feet of the location of the inadvertent discovery until the BLM has concluded the post-review discovery process, and the BLM Authorized Officer has provided the holder with a written notice to proceed.

5. HUMAN REMAINS AND OBJECTS OF CULTURAL PATRIMONY

In the event that project implementation results in the inadvertent discovery of Native American human remains, funerary objects, sacred objects, and/or objects of cultural patrimony, the holder shall immediately halt the disturbance within 300 feet of the inadvertent discovery. The holder shall contact the BLM Authorized Officer within 24 hours for instructions:

BLM Authorized Officer:
Ruben Sanchez
Assistant Field Manager, Lands & Minerals
575-627-0250

If BLM Authorized Officer is Unavailable:
Quinton Franzoy
Law Enforcement Officer
575-910-0778

The holder shall be held responsible for ceasing activity and protecting the inadvertent discovery as well as for the costs of protection, evaluation, reporting, excavation, treatment, and/or disposition of the inadvertent discovery. The BLM shall use the process identified in the Native American Graves Protection and Repatriation Act (NAGPRA) and in 43 CFR 10.4 to proceed

according to the rights of the culturally affiliated party, as applicable. Project implementation within 300 feet of the location of the inadvertent discovery may resume 30 days after BLM certifies the notification, or when a written Plan of Action following 43 CFR 10.3(b)(1) is approved. In either case, the BLM Authorized Officer will provide the holder with a written notice to proceed.

6. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations (access road and/or well pad). 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.

7. CAVE AND KARST

Any Cave or Karst feature discovered by the operator or by any person working on the operator's behalf shall immediately report the feature 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. During drilling, previously unknown cave and karst features could be encountered. If a void is encountered while drilling and a loss of circulation occurs, lost drilling fluids can directly contaminate groundwater recharge areas, aquifers, and groundwater quality. Drilling operations can also lead to sudden collapse of underground voids.

To mitigate or lessen the probability of impacts associated with the drilling and production of oil and gas wells in karst areas, the guidelines listed in Appendix 3, Practices for Oil and Gas Drilling and Production in Cave and Karst Areas, as approved in the Roswell Resource Management Plan Amendment of 1997, page AP3-4 through AP 3-7 shall be followed.

A more complete discussion of the impacts of oil and gas drilling can be found in the *Dark Canyon Environmental Impact Statement of 1993*, published by the U.S. Department of the Interior, Bureau of Land Management.

8. CONSTRUCTION

NOTIFICATION: The BLM shall administer compliance and monitor construction of the access road and well pad. Notify Natural Resource Specialist, Ricky Flores at (575) 627-0339 or the Roswell Field Office at (575) 627-0272 **at least three (3) working days prior to commencing construction of the access road and/or well pad.**

A complete copy of the *approved* APD and the attached Conditions of Approval (COAs) **shall be kept on the well's location** for reference upon inspections.

Construction over and/or immediately adjacent to existing pipelines shall be coordinated, and in accordance with, the relevant pipeline companies' policy.

Any trench left open for (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, an agency approved monitor shall walk the entire length of the open trench and remove all trapped fauna. The bottom surface of the trench will be disturbed a minimum of 2 inches in order to arouse any buried fauna. All fauna will be released a minimum of 100 yards from the trench.

For trenches left open for (8) hours or more, earthen escape ramps (built at nor more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench. Structures will also be authorized within the trench. Metal structures will not be authorized. Structures used as escape ramps will be placed at no more than a 30 degree slope and spaced no more than 500 feet apart.

9. TOPSOIL:

When saturated soil conditions exist on access roads or location, construction shall be halted until soil material dries out or is frozen sufficiently for construction to proceed without undue damage and erosion to soils, roads and locations.

Topsoil shall be stripped following removal of vegetation during construction of well pads, pipelines, roads, or other surface facilities. This shall include all growth medium - at a minimum, the upper 2-6 inches of soil - but shall also include stripping of any additional topsoil present at a site, such as indicated by color or texture. Stripping depth may be specified during the onsite inspection. Stripped topsoil shall be stored separately from subsoil or other excavated material and replaced prior to interim seedbed preparation. No topsoil shall be stripped when soils are moisture-saturated or frozen below the stripping depth.

The topsoil will not be used to construct the containment structures or earthen dikes that are on the outside boundaries of the constructed well pad, tanks, and storage facilities.

Each construction area is site specific as to topsoil depth. It is the operator's responsibility to ensure that topsoil, caliche, or spoils are not mixed together.

(**Pads**): topsoil will be stripped and stored in separate piles from the spoils pile. They can be stored on opposite or adjacent sides. If topsoil and spoils must be stored on the same pad side together they shall be no closer than toe to toe, not overlapping. Each pile shall be kept within 30 feet of the pad's side. 100% of the topsoil will be used for both interim and final reclamation. 100% of topsoil will be respread over the disturbed areas during reclamation.

(**Roads**): topsoil shall be stripped in such a way to follow the road's edge outside of the surfacing or drivable area. During final reclamation, after removal of surface material and re-contouring, 100% of topsoil will be respread over the disturbed areas during reclamation. Vegetation in the topsoil will help hold re-seeding, moisture content, and reduce erosion.

10. WELL PAD SURFACING:

The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational need. Surfacing of the well pad is not required. If the operator elects to surface the well pad, the surfacing material will be required to be removed at the time of reclamation.

Cattleguards

An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s). Any existing cattle guard(s) on the access road 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 guard(s) that are in place and are utilized during lease operations. Gates or cattle guards on public lands will not be locked or closed to public use unless closure is specifically determined to be necessary and is authorized in writing by the authorized officer. A gate shall be constructed and fastened securely to H-braces.

Fence Requirement

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

11. PRODUCTION:

Storage

Fiberglass storage tanks are ***not*** permitted for the storage of production.

Placement of Production Facilities

Production facilities should be placed on the well pad to allow for maximum interim reclamation and re-vegetation of the well location.

Containment Structures

All production facilities shall have a lined containment structure large enough to contain **110% of the largest Tank (PLUS) 24 hours of production** (43 CFR 3162.5-1) ***Environmental Obligations***, unless more stringent protective requirements are deemed necessary by the Authorized Officer.

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, **OIL GREEN** (Standard Environmental Color Chart June 2008).

Completion Report

In accordance with 43 CFR 3160, Form 3160-4 (Well Completion or Re-completion Report and Log) must be submitted to the Bureau of Land Management, Roswell Field Office within 30 days after completion of the well or producer. Copies of all open hole and cased hole logs, core descriptions, core analyses, well test data, geologic summaries, sample descriptions, formation test reports, stimulation reports, directional survey (if applicable), and all other surveys or data obtained and compiled during the drilling, completion, and/or work over operations, shall be included with Form 3160-4.

12. INTERIM RECLAMATION:

Reclamation earthwork for interim and/or final reclamation shall be completed within 6 months of well completion or well plugging (weather permitting), and shall consist of: 1) backfilling pits, 2) re-contouring and stabilizing the well site, access road, cut/fill slopes, drainage channels, utility and pipeline corridors, and all other disturbed areas, to approximately the original contour, shape, function, and configuration that existed before construction (any compacted backfilling activities shall ensure proper spoils placement , settling, and stabilization, 3) surface ripping, prior to topsoil placement, to a depth of 18-24 inches deep on 18-24 inch centers to reduce compaction, 4) final grading and replacement of all topsoil so that no topsoil's remains in the stockpile, 5) seeding in accordance with reclamation portions of the APD and these COA's.

Any subsequent re-disturbance of interim reclamation shall be reclaimed within six (6) months by the same means described above.

Prior to conducting interim reclamation, <u>the operator is required to:</u>

- Submit a Sundry Notices and Reports on Wells (Notice of Intent), Form 3160-5, prior to conducting interim reclamation.

- Contact BLM at least three (3) working days prior to conducting any interim reclamation activities, and prior to seeding.

During reclamation, the removal of caliche is important to increasing the success of re-vegetating the site. Removed caliche may be used in road repairs, fire walls or for building other roads and locations. In addition, 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 re-vegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be re-vegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

Use a certified noxious weed-free seed mixture. Use seed tested for viability and purity in accordance with State law(s) within nine months prior to purchase. Use a commercial seed

mixture certified or registered and tagged in accordance with State law(s). Make the seed mixture labels available for BLM inspection.

13. SEED MIX:

SEE ATTACHED SEED MIX.

WELL NAME	ECOSITE (ACCESS ROAD)	ECOSITE (PAD)
GREASEWOOD Federal 3H	SHALLOW SD-3	SHALLOW SD-3

14. FINAL ABANDONMENT:

A. Upon abandonment of the well a Notice of Intent for Plug and Abandonment describing plugging procedures. Followed within 30 days you shall file with this office, a Subsequent Report of Abandonment (Form 3160-5). To be included with this report is where the plugs were placed; volumes of cement used and well bore schematic as plugged.

B. On private surface/federal mineral estate land the reclamation procedures on the road and well pad shall be accomplished in accordance with the Private Surface Land Owner agreements and a copy of the release is to be submitted upon abandonment.

C. The Operator shall promptly plug and abandoned each newly completed, re-completed or producing well which is not capable of producing in paying quantities. No well may be temporarily abandoned for more than 30 days without prior approval from this office. When justified by the Operator, BLM may authorize additional delays, no one of which may exceed an additional 12 months. Upon removal of drilling or producing equipment form the site of a well which is to be permanently abandoned, the surface of the lands disturbed shall be reclaimed in accordance with an approved Notice of Intent for final reclamation.

D. Final reclamation shall include: the removal of all solid waste, trash, surfacing materials, storage facilities and all other related equipment, flow lines, and meter housing, power poles, guy wires, and all other related power materials. All disturbed areas, i.e. cuts and fills, shall be re-contoured to their original surroundings. 100% of topsoil shall be used to resurface all disturbed areas including access roads. A label of the seed mix used shall be submitted with the Final Abandonment Notice (FAN) for review once reclamation is complete.

15. PIPELINE PROTECTION REQUIREMENT:

Precautionary measures shall be taken by the operator during construction of the access road to protect existing pipelines that the access road will cross over. An earthen berm; 2 feet high by 3 feet wide and 14 feet across the access road travelway (2' X 3' X 14'), shall be constructed over existing pipelines. The operator shall be held responsible for any damage to existing pipelines. If the pipeline is ruptured and/or damaged the operator shall immediately cease construction operations and repair the pipeline. The operator shall be held liable for any unsafe construction operations that threaten human life and/or cause the destruction of equipment.

16. WILDLIFE PROTECTION MEASURES – Best Management Practices (BMPs)

COA/Stipulation for above ground pipelines

- All pipelines laid on the surface will have sloped dirt berms built over them every 100 yards to allow reptiles, amphibians, small mammals, ground-dwelling birds and their broods access over them. Dirt berms should be no less than 12 inches in width and extend over all surface pipelines within the Right of Way. Berms should be maintained for the life of the project.

Wildlife Mortality - General
The operator will notify the Bureau of Land Management (BLM) authorized officer and nearest Fish and Wildlife Service (FWS) Law Enforcement office within 24 hours, if the operator discovers a dead or injured federally protected species (i.e., migratory bird species, bald or golden eagle, or species listed by the FWS as threatened or endangered) in or adjacent to a pit, trench, tank, exhaust stack, or fence. (If the operator is unable to contact the FWS Law Enforcement office, the operator must contact the nearest FWS Ecological Services office.)

1. **Closed top tanks are required for any containment system.**

All tanks are required to have a closed top tank.

2. **Chemical and Fuel Secondary Containment Systems**

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. Closed-top tanks are required for any secondary containment systems.

3. **Open-Vent Exhaust Stacks**

Open-Vent Exhaust Stack Exclosures – 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. Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

17. WASTE, HAZARDOUS AND SOLID:

Waste materials produced during all phases of operation will be disposed of promptly in an approved manner so it will not impact the air, soil, water, vegetation or animals. "Waste" means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes and equipment. All liquid waste, completion fluids and drilling products associated with oil and gas operations will be contained and then removed and deposited in an approved disposal site. Portable toilets will remain on site throughout well pad construction, drilling and reclamation.

The operator and contractors shall ensure that all use, production, storage, transportation and disposal of hazardous materials, solid wastes and hazardous wastes associated with the drilling, completion and production of this well will be in accordance with all applicable existing or hereafter promulgated federal, state and local government rules, regulations and guidelines. All project related activities involving hazardous materials will be conducted in a manner to minimize potential environmental impacts. A file will be maintained onsite containing current Safety Data Sheets (SDS) for all chemicals, compounds and/or substances which are used in the course of construction, drilling, completion and production operations.

18. SURFACE WATER AND GROUNDWATER PROTECTION MEASURES – Best Management Practices (BMPs)\

A containment structure or earthen dike shall be constructed and maintained around the north, west, and south outside boundary of the well pad. The containment structure or earthen dike shall be constructed two (2) feet high (the containment structure or earthen dike can be constructed higher than the two (2) feet high minimum). The containment structure or earthen dike is required so that if an oilfield waste contaminant or product contaminant were leaked, spilled, and or released upon the well pad the oilfield waste contaminant or product contaminant shall be contained in order to prevent the contaminant from entering into the ephemeral drainage located to the west and downslope of the well pad location.

AFMSS

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

Application Data Report

10/21/2019

APD ID: 10400042987 **Submission Date:** 07/15/2019

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

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

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400042987 **Tie to previous NOS?** N **Submission Date:** 07/15/2019

BLM Office: ROSWELL **User:** Stormi Davis **Title:** Regulatory Analyst

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

Lease number: NMNM121940 **Lease Acres:** 2560

Surface access agreement in place? **Allotted?** **Reservation:**

Agreement in place? NO **Federal or Indian agreement:**

Agreement number:

Agreement name:

Keep application confidential? YES

Permitting Agent? YES **APD Operator:** MARSHALL & WINSTON INCORPORATED

Operator letter of designation:

Operator Info

Operator Organization Name: MARSHALL & WINSTON INCORPORATED

Operator Address: 6 Desta Drive, Suite 3100

Zip: 79705

Operator PO Box:

Operator City: Midland **State:** TX

Operator Phone: (432)684-6373

Operator Internet Address: sroberts@mar-win.com

Section 2 - Well Information

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

Well in Master SUPO? NO **Master SUPO name:**

Well in Master Drilling Plan? NO **Master Drilling Plan name:**

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** ROUND TANK **Pool Name:** SAN ANDRES

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

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

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

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: HORIZONTAL **Number of Legs:** 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: EXPLORATORY (WILDCAT)

Describe sub-type:

Distance to town: 16 Miles **Distance to nearest well:** 580 FT **Distance to lease line:** 400 FT

Reservoir well spacing assigned acres Measurement: 160 Acres

Well plat: Greasewood_Federal_3H_C102_20190827090308.pdf

Well work start Date: 09/01/2019 **Duration:** 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: 19-580 **Reference Datum:**

Wellbore	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	600	FSL	400	FEL	15S	28E	12	Aliquot SESE	33.024941	-104.078066	CHAVES	NEW MEXICO	NEW MEXICO	F	NMNM 121940	3718	0	0
KOP Leg #1	600	FSL	400	FEL	15S	28E	12	Aliquot SESE	33.024941	-104.078066	CHAVES	NEW MEXICO	NEW MEXICO	F	NMNM 121940	981	2737	2737
PPP Leg #1	100	FNL	400	FEL	15S	28E	13	Aliquot NENE	33.02304	-104.07801	CHAVES	NEW MEXICO	NEW MEXICO	F	NMNM 121940	508	3710	3210

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
PPP Leg #1	100	FNL	400	FEL	15S	28E	13	Aliquot NENE	33.02304	-104.07801	CHAVES	NEW MEXICO	NEW MEXICO	F	NMNM 121940	508	3710	3210
EXIT Leg #1	100	FSL	400	FEL	15S	28E	13	Aliquot SESE	33.00885	-104.07799	CHAVES	NEW MEXICO	NEW MEXICO	F	NMNM 121940	618	8865	3100
BHL Leg #1	20	FSL	400	FEL	15S	28E	13	Aliquot SESE	33.008627	-104.077983	CHAVES	NEW MEXICO	NEW MEXICO	F	NMNM 121940	618	8947	3100

AFMSS

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

Drilling Plan Data Report

10/21/2019

APD ID: 10400042987 **Submission Date:** 07/15/2019

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

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

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	---	3718	0	0		NONE	N
2	TOP OF SALT	3468	250	250		NONE	N
3	BASE OF SALT	2928	790	790		NONE	N
4	YATES	2880	838	838		NONE	N
5	QUEEN	2150	1568	1568		NONE	N
6	SAN ANDRES	1352	2366	2366		NATURAL GAS,OIL	Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 3M **Rating Depth:** 12000

Equipment: A 3M system will be installed according to Onshore Order #2. No flex hose will be used.

Requesting Variance? NO

Variance request:

Testing Procedure: BOP/BOPE will be tested by an independent service company to 250 psi low and 3000 psi high. The System may be upgraded to a higher pressure but still tested to the working pressure stated. If the system is upgraded all the components installed will be functional and tested.

Choke Diagram Attachment:

Greasewood_Federal_3H_BOP_3M_Schematic_20190626103611.pdf

BOP Diagram Attachment:

Greasewood_Federal_3H_BOP_3M_Schematic_20190626103625.pdf

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	225	0	225			225	H-40	48	ST&C	8.56	11.56	DRY	6.35	DRY	6.35
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	1250	0	1250			1250	J-55	40	LT&C	2.4	7.5	DRY	6.5	DRY	6.5
3	PRODUCTION	8.75	5.5	NEW	API	N	0	8947	0	3100			8947	HCP-110	17	OTHER - GBCD	6.58	8.17	DRY	5.75	DRY	5.75

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Greasewood_Federal_3H_Casing_Assumptions_20190627120701.pdf

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

Casing Attachments

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Greasewood_Federal_3H_Casing_Assumptions_20190627120712.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

5.5_17_HCP110_Data_Sheet_20190624095035.pdf

Greasewood_Federal_3H_Casing_Assumptions_20190627120728.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	225	250	1.34	14.8	335	100	Class C	Calcium Chloride
INTERMEDIATE	Lead		0	1250	230	1.97	12.9	453	50	Class C	KolSeal
INTERMEDIATE	Tail		0	1250	200	1.34	14.8	268	50	Class C	Calcium Chloride

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Lead		0	8947	400	2.63	11.5	1052	50	Class C	Kol Seal
PRODUCTION	Tail		0	8947	1700	1.31	14	2227	50	Class C	Kol Seal

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: Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times

Describe the mud monitoring system utilized: PVT/Pason/Visual Monitoring

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
1250	3100	OTHER : Cut Brine	10	10.5							
225	1250	OTHER : BRINE	8.7	9							
0	225	OTHER : FRESH WATER	9	9.6							

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

Section 6 - Test, Logging, Coring

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

None planned

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

DS,GR,MUDLOG

Coring operation description for the well:

None planned

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 1800 **Anticipated Surface Pressure:** 1093.8

Anticipated Bottom Hole Temperature(F): 105

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Greasewood_Federal_Lease_H2S_Contingency_Plan_20190624103432.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Greasewood_Federal_3H_Directional_Survey_20190624100231.pdf

Greasewood_Federal_3H_AC_Report_20190626151525.pdf

Other proposed operations facets description:

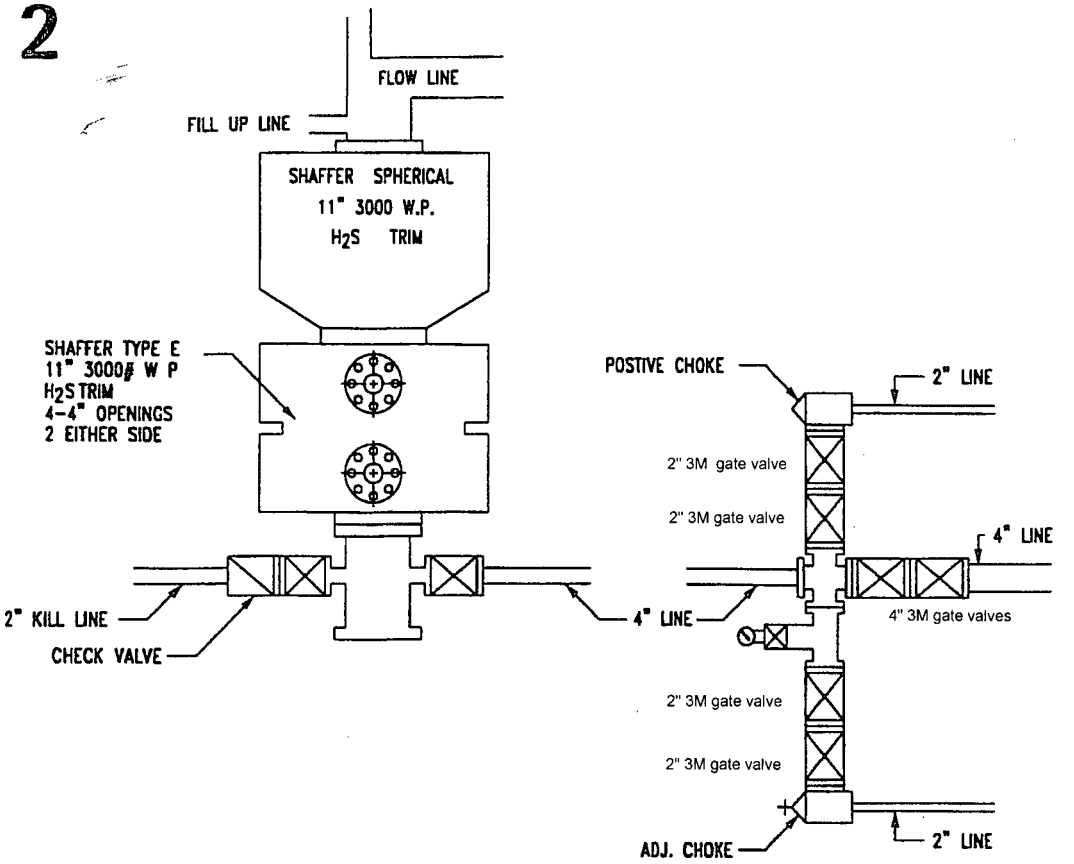
Gas Capture Plan attached

Other proposed operations facets attachment:

Greasewood_Federal_3H_GCP_20190626150456.pdf

Other Variance attachment:

RIG 2


FLOW LINE
FILL UP LINE
SHAFFER SPHERICAL
11" 3000 W.P.
H_2S TRIM
SHAFFER TYPE E
11" 3000# W P
H_2S TRIM
4-4" OPENINGS
2 EITHER SIDE
2" KILL LINE
CHECK VALVE
4" LINE
POSTIVE CHOKE
2" LINE
2" 3M gate valve
2" 3M gate valve
4" LINE
4" 3M gate valves
2" 3M gate valve
2" 3M gate valve
ADJ. CHOKE
2" LINE

Greasewood Federal 3H

Casing Assumptions

Interval	Length	Casing Size	Weight (#/ft)	Grade	Thread	Condition	Hole Size	TVD (ft)
Surface	225	13-3/8"	48	H-40	STC	New	17-1/2"	225
Intermediate	1250	9-5/8"	40	J-55	LTC	New	12-1/4"	1250
Production	8947	5-1/2"	17	HPC-110	GBCD	New	8-3/4"	3100

Mud Type	Mud Weight Hole Control	Fluid Loss
FW	9.0 - 9.6	NC
Brine	8.7 - 9.0	NC
CB	10.0 - 10.5	NC

Anticipated Mud Weight (ppg)	Max Pore Pressure (psi)	Collapse (psi)	Burst (psi)	Body Tensile Strength	Joint Tensile Strength
9.6	112	740	1730	352000	352000
9.0	1310	2570	3950	520000	520000
10.1	1689	8580	10640	445000	445000

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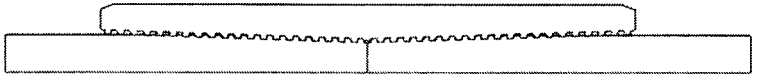

SEMI PREMIUMCONNECTIONS
FIELD TESTED. FIELD PROVEN.

Precision Connections BK
5.5 in. 17 lb/ft HC-P110 with 6.05 in. Coupling OD

Pipe Body

Nominal OD	5.500	inches
Nominal Weight	17.00	lb/ft
Wall Thickness	0.304	inches
Plain End Weight	16.87	lb/ft
Drift	4.767	inches
Nominal ID	4.892	inches
Grade	HC-P110	
Min Yield	110,000	lbf/in²
Min Tensile	125,000	lbf/in²
Critical Section Area	4.962	in²
Pipe Body Yield Strength	546	kips
Min Internal Yield Pressure	10,640	psi
Collapse Pressure	8,730	psi

Connection

Coupling OD	6.050	inches
Coupling Length	8.250	inches
Make Up Loss	4.125	inches
Critical Section Area	6.031	in²
Internal Pressure Rating	100%	
External Pressure Rating	100%	
Tension Efficiency	100%	
Connection Strength	546	kips
Compression Efficiency	100%	
Uniaxial Bend Rating	83.4	° / 100 ft
Min Make Up Torque	4,450	ft-lbs
Yield Torque	17,100	ft-lbs

v1.2 7/26/2018

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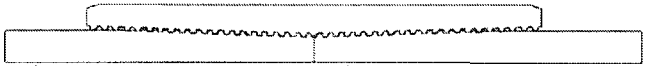


SEMI PREMIUMCONNECTIONS

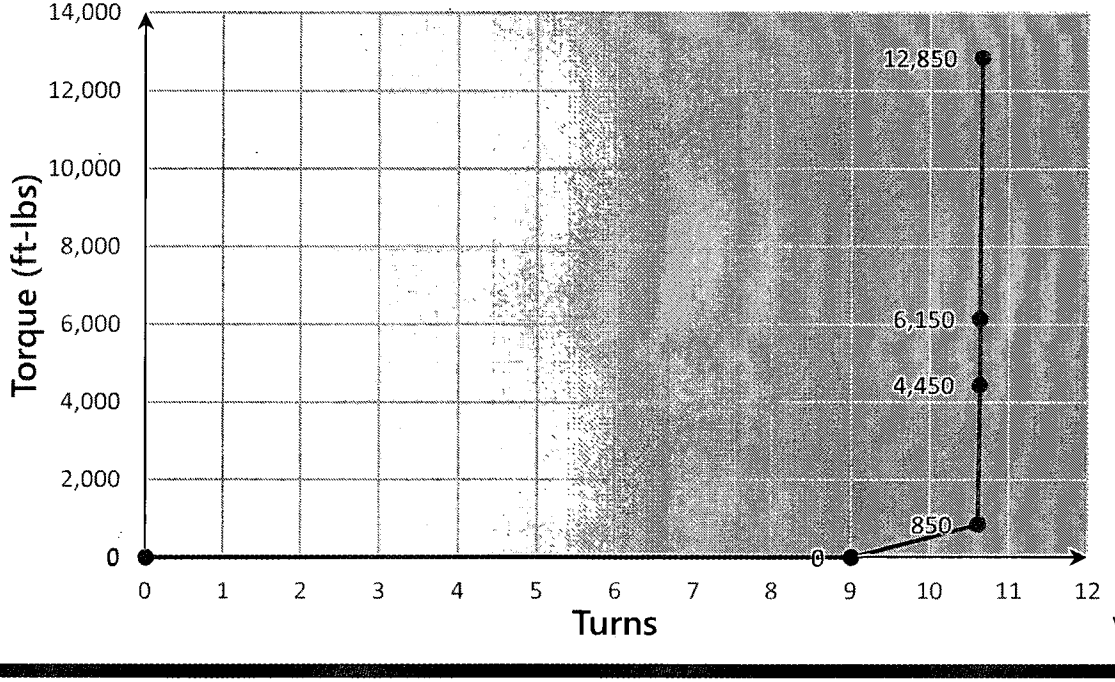
FIELD TESTED. FIELD PROVEN.

Torque Data Sheet - Precision Connections BK

5.5 in. 17 lb/ft HC-P110 with 6.05 in. Coupling OD

Min Make Up Torque	4,450	ft-lbs	Max Operating Torque	14,550	ft-lbs
Max Make Up Torque	12,850	ft-lbs	Yield Torque	17,100	ft-lbs
Optimum Torque	6,150	ft-lbs			

Representative Torque Turn Graph



v1.2 7/26/2018

Marshall & Winston, Inc.

reasewood Fed #3H
haves County, New Mexico
ob No: WT-19-***
ig: Stoneham 6

Aim Directional Servic

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	0.00	
2	2737.64	0.00	0.00	2737.64	0.00	0.00	0.000	0.00	0.00	KOP: 12°/100' @ 2737.64' MD
3	3497.72	91.21	179.62	3215.00	-487.53	3.27	12.000	179.62	487.54	Hold: 91.21° Inc, 179.62° Azm
4	8947.02	91.21	179.62	3100.00	-5935.50	39.80	0.000	0.00	5935.63	TD @ 8947.02' MD/3100.00' TVD

DESIGN TARGET DETAILS							
lame	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BHL - Greasewood Fed #3H	3100.00	-5935.50	39.80	730770.30	619614.50	33° 0' 31.058 N	104° 4' 40.738 W

PROJECT DETAILS: Chaves County, New Mexico

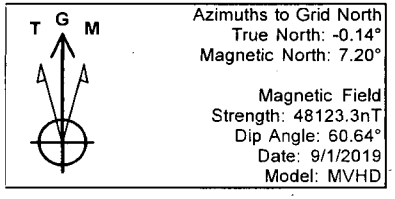
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level

SITE DETAILS: Greasewood Federal #3H

Site Centre Northing: 736705.80
Easting: 619574.70

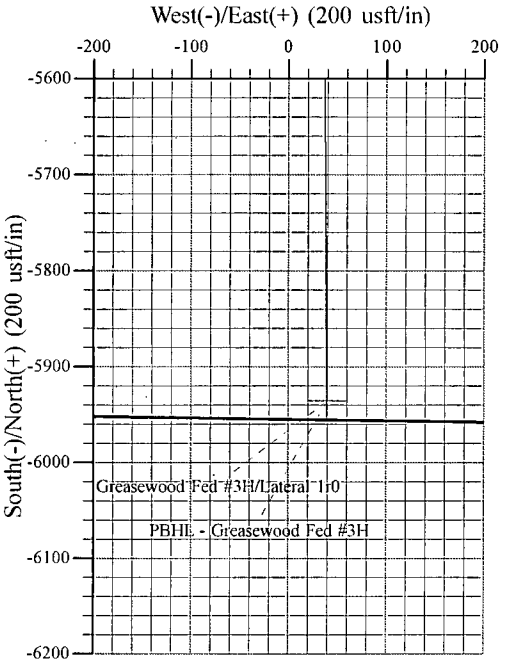
Positional Uncertainity: 0.00
Convergence: 0.14
Local North: Grid

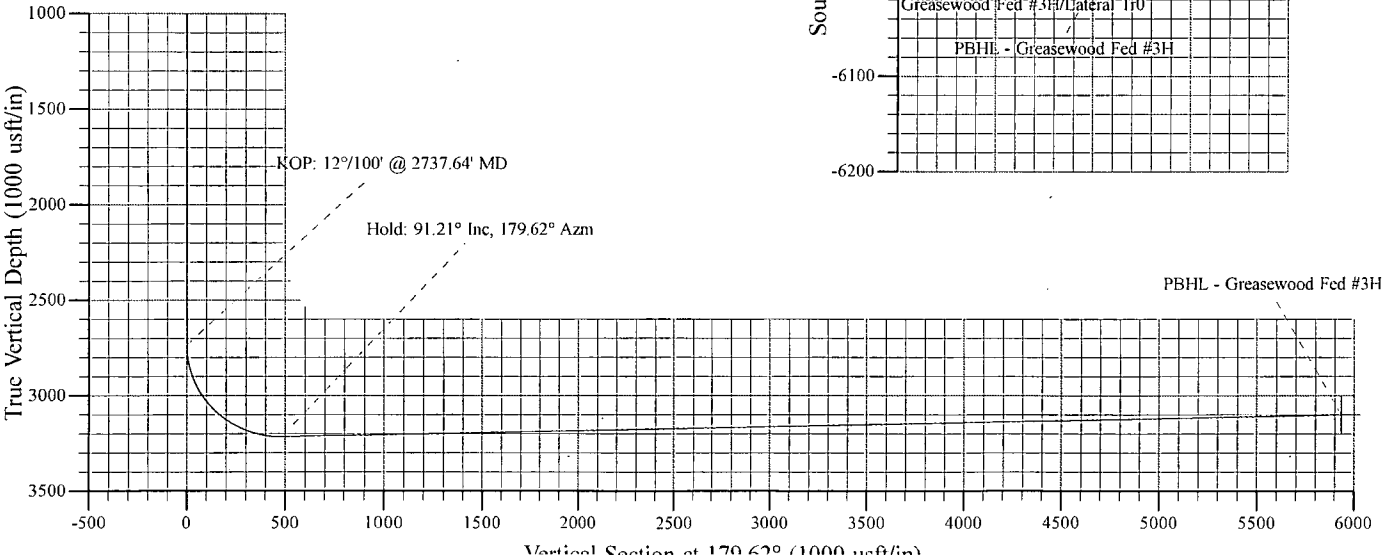


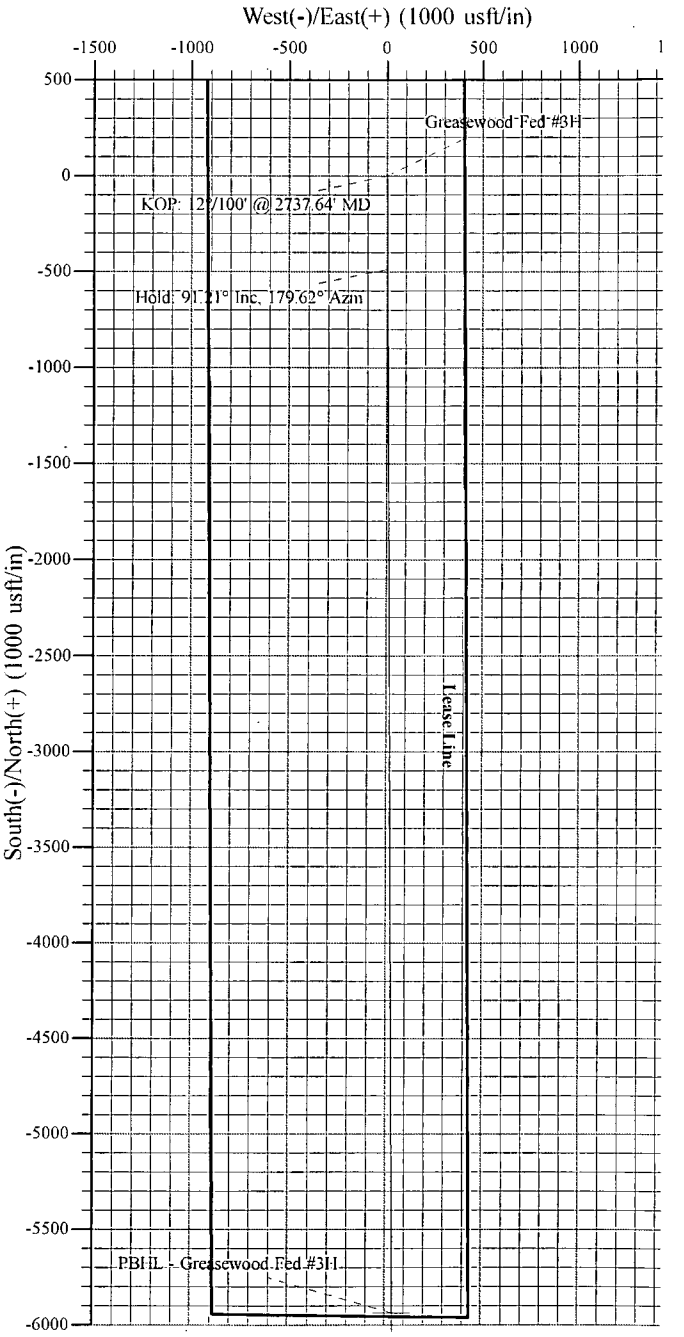
Azimuths to Grid North
True North: -0.14°
Magnetic North: 7.20°

Magnetic Field
Strength: 48123.3nT
Dip Angle: 60.64°
Date: 9/1/2019
Model: MVHD

Drawn By: PBR
Date Created: 05/28/19
Date Revised: 05/28/19
File: Marshall & Winston - Greasewood Fed #3H - Lateral 1r0.wpc







Survey Report

Company:	Marshall & Winston, Inc.	**Local Co-ordinate Reference:**	Site Greasewood Federal #3H
Project:	Chaves County, New Mexico	**TVD Reference:**	Well @ 3735.20usft (Stoneham 6)
Site:	Greasewood Federal #3H	**MD Reference:**	Well @ 3735.20usft (Stoneham 6)
Well:	Greasewood Fed #3H	**North Reference:**	Grid
Wellbore:	Planning	**Survey Calculation Method:**	Minimum Curvature
Design:	Lateral 1r0	**Database:**	EDMRESTORED

Project Chaves County, New Mexico

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site Greasewood Federal #3H

Site Position:		**Northing:**	736,705.80 usft	**Latitude:**	33° 1' 29.789 N
From:	Map	**Easting:**	619,574.70 usft	**Longitude:**	104° 4' 41.036 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.14 °

Well Greasewood Fed #3H

Well Position	**+N/-S**	0.00 usft	**Northing:**	736,705.80 usft	**Latitude:**	33° 1' 29.789 N
	+E/-W	0.00 usft	**Easting:**	619,574.70 usft	**Longitude:**	104° 4' 41.036 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,718.20 usft

Wellbore Planning

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	MVHD	9/1/2019	7.34	60.64	48,123.34656110

Design Lateral 1r0

Audit Notes:

Version:		**Phase:**	PROTOTYPE	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	179.62

Survey Tool Program Date 5/28/2019

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	8,946.37	Lateral 1r0 (Planning)	MWD+HDGM	OWSG MWD + HDGM

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.000
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.000	0.000	0.000
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.000	0.000	0.000
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.000	0.000	0.000
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.000	0.000	0.000
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.000	0.000	0.000
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.000	0.000	0.000
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.000	0.000	0.000
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.000	0.000	0.000
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.000	0.000	0.000

Survey Report

Company:	Marshall & Winston, Inc.	**Local Co-ordinate Reference:**	Site Greasewood Federal #3H
Project:	Chaves County, New Mexico	**TVD Reference:**	Well @ 3735.20usft (Stoneham 6)
Site:	Greasewood Federal #3H	**MD Reference:**	Well @ 3735.20usft (Stoneham 6)
Well:	Greasewood Fed #3H	**North Reference:**	Grid
Wellbore:	Planning	**Survey Calculation Method:**	Minimum Curvature
Design:	Lateral 1r0	**Database:**	EDMRESTORED

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.000	0.000	0.000
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.000	0.000	0.000
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.000	0.000	0.000
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.000	0.000	0.000
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.000	0.000	0.000
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.000	0.000	0.000
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.000	0.000	0.000
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.000	0.000	0.000
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.000	0.000	0.000
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.000	0.000	0.000
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.000	0.000	0.000
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.000	0.000	0.000
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.000	0.000	0.000
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.000	0.000	0.000
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.000	0.000	0.000
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.000	0.000	0.000
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.000	0.000	0.000
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.000	0.000	0.000
2,737.64	0.00	0.00	2,737.64	0.00	0.00	0.00	0.000	0.000	0.000
KOP: 12°/100' @ 2737.64' MD									
2,750.00	1.48	179.62	2,750.00	-0.16	0.00	0.16	12.000	12.000	0.000
2,775.00	4.48	179.62	2,774.96	-1.46	0.01	1.46	12.000	12.000	0.000
2,800.00	7.48	179.62	2,799.82	-4.07	0.03	4.07	12.000	12.000	0.000
2,825.00	10.48	179.62	2,824.51	-7.97	0.05	7.97	12.000	12.000	0.000
2,850.00	13.48	179.62	2,848.97	-13.16	0.09	13.16	12.000	12.000	0.000
2,875.00	16.48	179.62	2,873.11	-19.62	0.13	19.62	12.000	12.000	0.000
2,900.00	19.48	179.62	2,896.89	-27.34	0.18	27.34	12.000	12.000	0.000
2,925.00	22.48	179.62	2,920.23	-36.29	0.24	36.29	12.000	12.000	0.000
2,950.00	25.48	179.62	2,943.07	-46.45	0.31	46.45	12.000	12.000	0.000
2,975.00	28.48	179.62	2,965.34	-57.79	0.39	57.79	12.000	12.000	0.000
3,000.00	31.48	179.62	2,987.00	-70.28	0.47	70.29	12.000	12.000	0.000
3,025.00	34.48	179.62	3,007.96	-83.89	0.56	83.89	12.000	12.000	0.000
3,050.00	37.48	179.62	3,028.19	-98.58	0.66	98.58	12.000	12.000	0.000
3,075.00	40.48	179.62	3,047.62	-114.30	0.77	114.31	12.000	12.000	0.000
3,100.00	43.48	179.62	3,066.20	-131.03	0.88	131.03	12.000	12.000	0.000
3,125.00	46.48	179.62	3,083.88	-148.70	1.00	148.70	12.000	12.000	0.000
3,150.00	49.48	179.62	3,100.62	-167.27	1.12	167.27	12.000	12.000	0.000
3,175.00	52.48	179.62	3,116.35	-186.69	1.25	186.69	12.000	12.000	0.000
3,200.00	55.48	179.62	3,131.05	-206.91	1.39	206.91	12.000	12.000	0.000
3,225.00	58.48	179.62	3,144.67	-227.87	1.53	227.87	12.000	12.000	0.000
3,250.00	61.48	179.62	3,157.18	-249.51	1.67	249.52	12.000	12.000	0.000
3,275.00	64.48	179.62	3,168.53	-271.78	1.82	271.79	12.000	12.000	0.000
3,300.00	67.48	179.62	3,178.71	-294.61	1.98	294.62	12.000	12.000	0.000
3,325.00	70.48	179.62	3,187.67	-317.95	2.13	317.95	12.000	12.000	0.000

Survey Report

Company:	Marshall & Winston, Inc.	**Local Co-ordinate Reference:**	Site Greasewood Federal #3H
Project:	Chaves County, New Mexico	**TVD Reference:**	Well @ 3735.20usft (Stoneham 6)
Site:	Greasewood Federal #3H	**MD Reference:**	Well @ 3735.20usft (Stoneham 6)
Well:	Greasewood Fed #3H	**North Reference:**	Grid
Wellbore:	Planning	**Survey Calculation Method:**	Minimum Curvature
Design:	Lateral 1r0	**Database:**	EDMRESTORED

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
3,350.00	73.48	179.62	3,195.40	-341.72	2.29	341.72	12.000	12.000	0.000
3,375.00	76.48	179.62	3,201.88	-365.86	2.45	365.87	12.000	12.000	0.000
3,400.00	79.48	179.62	3,207.08	-390.31	2.62	390.32	12.000	12.000	0.000
3,425.00	82.48	179.62	3,211.00	-415.00	2.78	415.00	12.000	12.000	0.000
3,450.00	85.48	179.62	3,213.62	-439.85	2.95	439.86	12.000	12.000	0.000
3,475.00	88.48	179.62	3,214.94	-464.82	3.12	464.83	12.000	12.000	0.000
3,497.72	91.21	179.62	3,215.00	-487.53	3.27	487.54	11.997	11.997	0.000
Hold: 91.21° Inc, 179.62° Azm									
3,500.00	91.21	179.62	3,214.95	-489.81	3.28	489.82	0.000	0.000	0.000
3,600.00	91.21	179.62	3,212.84	-589.79	3.95	589.80	0.000	0.000	0.000
3,700.00	91.21	179.62	3,210.73	-689.76	4.63	689.78	0.000	0.000	0.000
3,800.00	91.21	179.62	3,208.62	-789.74	5.30	789.76	0.000	0.000	0.000
3,900.00	91.21	179.62	3,206.51	-889.72	5.97	889.74	0.000	0.000	0.000
4,000.00	91.21	179.62	3,204.40	-989.69	6.64	989.71	0.000	0.000	0.000
4,100.00	91.21	179.62	3,202.29	-1,089.67	7.31	1,089.69	0.000	0.000	0.000
4,200.00	91.21	179.62	3,200.18	-1,189.64	7.98	1,189.67	0.000	0.000	0.000
4,300.00	91.21	179.62	3,198.07	-1,289.62	8.65	1,289.65	0.000	0.000	0.000
4,400.00	91.21	179.62	3,195.96	-1,389.59	9.32	1,389.62	0.000	0.000	0.000
4,500.00	91.21	179.62	3,193.85	-1,489.57	9.99	1,489.60	0.000	0.000	0.000
4,600.00	91.21	179.62	3,191.74	-1,589.54	10.66	1,589.58	0.000	0.000	0.000
4,700.00	91.21	179.62	3,189.63	-1,689.52	11.33	1,689.56	0.000	0.000	0.000
4,800.00	91.21	179.62	3,187.52	-1,789.49	12.00	1,789.53	0.000	0.000	0.000
4,900.00	91.21	179.62	3,185.40	-1,889.47	12.67	1,889.51	0.000	0.000	0.000
5,000.00	91.21	179.62	3,183.29	-1,989.45	13.34	1,989.49	0.000	0.000	0.000
5,100.00	91.21	179.62	3,181.18	-2,089.42	14.01	2,089.47	0.000	0.000	0.000
5,200.00	91.21	179.62	3,179.07	-2,189.40	14.68	2,189.45	0.000	0.000	0.000
5,300.00	91.21	179.62	3,176.96	-2,289.37	15.35	2,289.42	0.000	0.000	0.000
5,400.00	91.21	179.62	3,174.85	-2,389.35	16.02	2,389.40	0.000	0.000	0.000
5,500.00	91.21	179.62	3,172.74	-2,489.32	16.69	2,489.38	0.000	0.000	0.000
5,600.00	91.21	179.62	3,170.63	-2,589.30	17.36	2,589.36	0.000	0.000	0.000
5,700.00	91.21	179.62	3,168.52	-2,689.27	18.03	2,689.33	0.000	0.000	0.000
5,800.00	91.21	179.62	3,166.41	-2,789.25	18.70	2,789.31	0.000	0.000	0.000
5,900.00	91.21	179.62	3,164.30	-2,889.22	19.37	2,889.29	0.000	0.000	0.000
6,000.00	91.21	179.62	3,162.19	-2,989.20	20.04	2,989.27	0.000	0.000	0.000
6,100.00	91.21	179.62	3,160.08	-3,089.18	20.71	3,089.25	0.000	0.000	0.000
6,200.00	91.21	179.62	3,157.97	-3,189.15	21.38	3,189.22	0.000	0.000	0.000
6,300.00	91.21	179.62	3,155.86	-3,289.13	22.05	3,289.20	0.000	0.000	0.000
6,400.00	91.21	179.62	3,153.75	-3,389.10	22.73	3,389.18	0.000	0.000	0.000
6,500.00	91.21	179.62	3,151.64	-3,489.08	23.40	3,489.16	0.000	0.000	0.000
6,600.00	91.21	179.62	3,149.53	-3,589.05	24.07	3,589.13	0.000	0.000	0.000
6,700.00	91.21	179.62	3,147.42	-3,689.03	24.74	3,689.11	0.000	0.000	0.000
6,800.00	91.21	179.62	3,145.31	-3,789.00	25.41	3,789.09	0.000	0.000	0.000
6,900.00	91.21	179.62	3,143.20	-3,888.98	26.08	3,889.07	0.000	0.000	0.000

Survey Report

Company:	Marshall & Winston, Inc.	**Local Co-ordinate Reference:**	Site Greasewood Federal #3H
Project:	Chaves County, New Mexico	**TVD Reference:**	Well @ 3735.20usft (Stoneham 6)
Site:	Greasewood Federal #3H	**MD Reference:**	Well @ 3735.20usft (Stoneham 6)
Well:	Greasewood Fed #3H	**North Reference:**	Grid
Wellbore:	Planning	**Survey Calculation Method:**	Minimum Curvature
Design:	Lateral 1r0	**Database:**	EDMRESTORED

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
7,000.00	91.21	179.62	3,141.09	-3,988.96	26.75	3,989.04	0.000	0.000	0.000
7,100.00	91.21	179.62	3,138.98	-4,088.93	27.42	4,089.02	0.000	0.000	0.000
7,200.00	91.21	179.62	3,136.87	-4,188.91	28.09	4,189.00	0.000	0.000	0.000
7,300.00	91.21	179.62	3,134.76	-4,288.88	28.76	4,288.98	0.000	0.000	0.000
7,400.00	91.21	179.62	3,132.65	-4,388.86	29.43	4,388.96	0.000	0.000	0.000
7,500.00	91.21	179.62	3,130.54	-4,488.83	30.10	4,488.93	0.000	0.000	0.000
7,600.00	91.21	179.62	3,128.43	-4,588.81	30.77	4,588.91	0.000	0.000	0.000
7,700.00	91.21	179.62	3,126.32	-4,688.78	31.44	4,688.89	0.000	0.000	0.000
7,800.00	91.21	179.62	3,124.21	-4,788.76	32.11	4,788.87	0.000	0.000	0.000
7,900.00	91.21	179.62	3,122.10	-4,888.73	32.78	4,888.84	0.000	0.000	0.000
8,000.00	91.21	179.62	3,119.99	-4,988.71	33.45	4,988.82	0.000	0.000	0.000
8,100.00	91.21	179.62	3,117.87	-5,088.69	34.12	5,088.80	0.000	0.000	0.000
8,200.00	91.21	179.62	3,115.76	-5,188.66	34.79	5,188.78	0.000	0.000	0.000
8,300.00	91.21	179.62	3,113.65	-5,288.64	35.46	5,288.76	0.000	0.000	0.000
8,400.00	91.21	179.62	3,111.54	-5,388.61	36.13	5,388.73	0.000	0.000	0.000
8,500.00	91.21	179.62	3,109.43	-5,488.59	36.80	5,488.71	0.000	0.000	0.000
8,600.00	91.21	179.62	3,107.32	-5,588.56	37.47	5,588.69	0.000	0.000	0.000
8,700.00	91.21	179.62	3,105.21	-5,688.54	38.14	5,688.67	0.000	0.000	0.000
8,800.00	91.21	179.62	3,103.10	-5,788.51	38.81	5,788.64	0.000	0.000	0.000
8,900.00	91.21	179.62	3,100.99	-5,888.49	39.48	5,888.62	0.000	0.000	0.000
8,947.02	91.21	179.62	3,100.00	-5,935.50	39.80	5,935.63	0.000	0.000	0.000
TD @ 8947.02' MD/3100.00' TVD - PBHL - Greasewood Fed #3H									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL - Greasewood F - plan hits target center - Point	0.00	0.00	3,100.00	-5,935.50	39.80	730,770.30	619,614.50	33° 0' 31.058 N	104° 4' 40.738 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
2738	2738	0	0	KOP: 12°/100' @ 2737.64' MD
3498	3215	-488	3	Hold: 91.21° Inc, 179.62° Azm
8947	3100	-5935	40	TD @ 8947.02' MD/3100.00' TVD

Checked By: _____ Approved By: _____ Date: _____

APD ID: 10400042987 **Submission Date:** 07/15/2019

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

Well Type: OIL WELL **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:

Greasewood_Federal_3H_Existing_Roads_20190626151400.pdf

Existing Road Purpose: ACCESS,FLUID TRANSPORT **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:

Greasewood_Federal_3H_Access_Roads_20190626151553.pdf

New road type: RESOURCE

Length: 3663 Feet **Width (ft.):** 25

Max slope (%): 2 **Max grade (%):** 2

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 15

New road access erosion control: Road construction requirements and regular maintenance would alleviate potential impacts to the access road from water erosion damage.

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: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

Turnout? N

Access surfacing type: OTHER

Access topsoil source: BOTH

Access surfacing type description: Native caliche

Access onsite topsoil source depth: 6

Offsite topsoil source description: Material will be obtained from BLM caliche pit in SWNE Section 34-T15S-R29E or BLM pit in SENE Section 1-T16S-R30E

Onsite topsoil removal process: The top 6 inches of topsoil is pushed off and stockpiled along the side of the location. An approximate 150' X 150' area is used within the proposed well site to remove caliche. Subsoil is removed and stockpiled within the pad site to build the location and road. Then subsoil is pushed back in the hole and caliche is spread accordingly across proposed access road.

Access other construction information:

Access miscellaneous information:

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

Drainage Control

New road drainage crossing: OTHER

Drainage Control comments: Proposed access road will be crowned and ditched and constructed of 6 inch rolled and compacted caliche. Water will be diverted where necessary to avoid ponding, maintain good drainage, and to be consistent with local drainage patterns.

Road Drainage Control Structures (DCS) description: The ditches will be 3' wide with 3:1 slopes

Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

Greasewood_Federal_3H_1_MILE_MAP_20190624101336.pdf

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

Submit or defer a Proposed Production Facilities plan? DEFER

Estimated Production Facilities description: Battery will include 250# 2-phase separator, 6' x 20' Heater treater, 4 500bbl steel tanks and 3 500 bbl fiberglass tanks set on the north or south side of location.

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

Section 5 - Location and Types of Water Supply

Water Source Table

Water source type: OTHER

Describe type: BRINE WATER

Water source use type: INTERMEDIATE/PRODUCTION CASING

Source latitude:

Source longitude:

Source datum:

Water source permit type: PRIVATE CONTRACT

Water source transport method: TRUCKING

Source land ownership: PRIVATE

Source transportation land ownership: OTHER

Describe transportation land ownership:

Water source volume (barrels): 20000

Source volume (acre-feet): 2.577862

Source volume (gal): 840000

Water source type: OTHER

Describe type: FRESH WATER

Water source use type: STIMULATION

OTHER

Describe use type: ROAD & PAD CONSTRUCTION

SURFACE CASING

Source latitude:

Source longitude:

Source datum:

Water source permit type: PRIVATE CONTRACT

Water source transport method: TRUCKING

Source land ownership: PRIVATE

Source transportation land ownership: OTHER

Describe transportation land ownership:

Water source volume (barrels): 250000

Source volume (acre-feet): 32.223274

Source volume (gal): 10500000

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

Water source and transportation map:

Greasewood_Federal_3H_Water_Source_Map_20190624102927.pdf

Water source comments: Water source transportation land ownership is a mixture of Federal, State and County.

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:

Section 6 - Construction Materials

Using any construction materials: YES

Construction Materials description: On site caliche will be used for construction if sufficient. In the event insufficient quantities of caliche are available onsite, caliche will be trucked in from BLM's caliche pit in SWNE Section 34-T15S-R29E or SENE Section 1-T16S-R30E.

Construction Materials source location attachment:

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: Drilling fluids and cuttings

Amount of waste: 4000 barrels

Waste disposal frequency : One Time Only

Safe containment description: All drilling fluids will be stored safely and disposed of properly

Safe containmant attachment:

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

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

Disposal type description:

Disposal location description: Trucked to an approved disposal facility

Waste type: SEWAGE

Waste content description: Human waste and grey water

Amount of waste: 1000 gallons

Waste disposal frequency : One Time Only

Safe containment description: Waste material will be stored safely and disposed of properly

Safe containmant attachment:

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

Disposal type description:

Disposal location description: Trucked to an approved disposal facility.

Waste type: GARBAGE

Waste content description: Miscellaneous trash

Amount of waste: 500 pounds

Waste disposal frequency : One Time Only

Safe containment description: Trash produced during drilling and completion operations will be collected in a trash container and disposed of properly

Safe containmant attachment:

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

Disposal type description:

Disposal location description: Trucked to an approved disposal facility

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

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? YES

Description of cuttings location Cuttings will be stored in roll off bins

Cuttings area length (ft.) **Cuttings area width (ft.)**

Cuttings area depth (ft.) **Cuttings area volume (cu. yd.)**

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

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

Greasewood_Federal_3H_Wellpad_Layout_20190624103043.pdf

Comments:

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: During construction proper erosion control methods will be used to control erosion, runoff and siltation of the surrounding area.

Drainage/Erosion control reclamation: Proper erosion control methods will be used on the area to control erosion, runoff and siltation of the surrounding area

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

Well pad proposed disturbance (acres): 3.673095
Road proposed disturbance (acres): 2.085055
Powerline proposed disturbance (acres): 0
Pipeline proposed disturbance (acres): 0
Other proposed disturbance (acres): 0

Total proposed disturbance: 5.75815

Well pad interim reclamation (acres): 0
Road interim reclamation (acres): 0
Powerline interim reclamation (acres): 0
Pipeline interim reclamation (acres): 0
Other interim reclamation (acres): 0
Total interim reclamation: 0

Well pad long term disturbance (acres): 3.673095
Road long term disturbance (acres): 2.085055
Powerline long term disturbance (acres): 0
Pipeline long term disturbance (acres): 0
Other long term disturbance (acres): 0

Total long term disturbance: 5.75815

Disturbance Comments:

Reconstruction method: The areas planned for interim reclamation will then be recontoured to the original contour if feasible, or if not feasible, to an interim contour that blends with the surrounding topography as much as possible. Where applicable, the fill material of the well pad will be backfilled into the cut to bring the area back to the original contour. The interim cut and fill slopes prior to re-seeding will not be steeper than a 3:1 ratio, unless the adjacent native topography is steeper. Note: Constructed slopes may be much steeper during drilling, but will be recontoured to the above ratios during interim reclamation.
Topsoil redistribution: Topsoil will be evenly respread and aggressively revegetated over the entire disturbed area not needed for all-weather operations
Soil treatment: To seed the area, the proper BLM seed mixture, free of noxious weeds, will be used. Final seedbed preparation will consist of contour cultivating to a depth of 4 to 6 inches within 24 hours prior to seeding, dozer tracking, or other imprinting in order to break the soil crust and create seed germination micro-sites.
Existing Vegetation at the well pad: Shinnery oak; topsoil is sandy.

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road: Refer to "Existing Vegetation at the well pad'

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline: N/A

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances: N/A

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:

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

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:**

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: No invasive species present. Standard regular maintenance to maintain a clear location and road.

Weed treatment plan attachment:

Monitoring plan description: Identify areas supporting weeds prior to construction; prevent the introduction and spread of weeds from construction equipment during construction; and contain weed seeds and propagules by preventing segregated topsoil from being spread to adjacent areas. No invasive species present. Standard regular maintenance to maintain a clear location and road.

Monitoring plan attachment:

Success standards: To maintain all disturbed areas as per Gold Book standards

Pit closure description: N/A

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

Pit closure attachment:

Section 11 - Surface Ownership

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:**

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:

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Section 12 - Other Information

Right of Way needed? YES **Use APD as ROW?** YES

ROW Type(s): 281001 ROW - ROADS

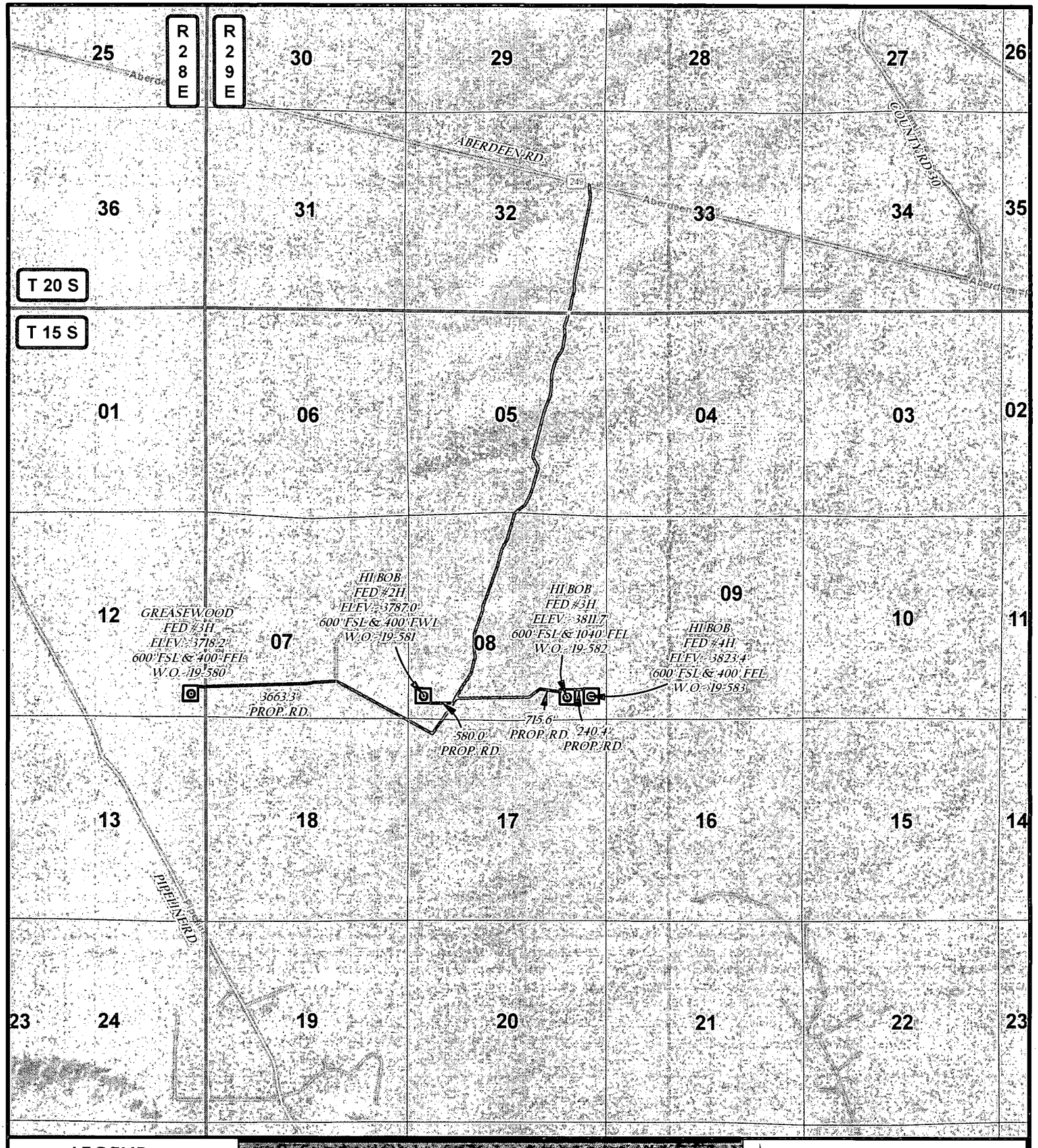
ROW Applications

SUPO Additional Information:

Use a previously conducted onsite? YES

Previous Onsite information: Onsite conducted 04/04/19 with BLM rep, Forrest Mayer and Marshall & Winston rep, Todd Passmore.

Other SUPO Attachment



LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

GREASEWOOD FEDERAL & HI BOB FEDERAL WELLS

SECTIONS: 8 & 12	TOWNSHIP: 15 S.	RANGES: 28 & 29 E.
STATE: NEW MEXICO	COUNTY: CHAVES	SURVEY: N.M.P.M
W.O. # 19-(580-583)	LEASE: GREASEWOOD FED / HI BOB FED	

0 2,500 5,000 7,500 10,000 FEET

0 0.275 0.55 1.1 Miles

1 IN = 4,000 FT

LOCATION OVERVIEW VICINITY 5/9/2019 J.H.

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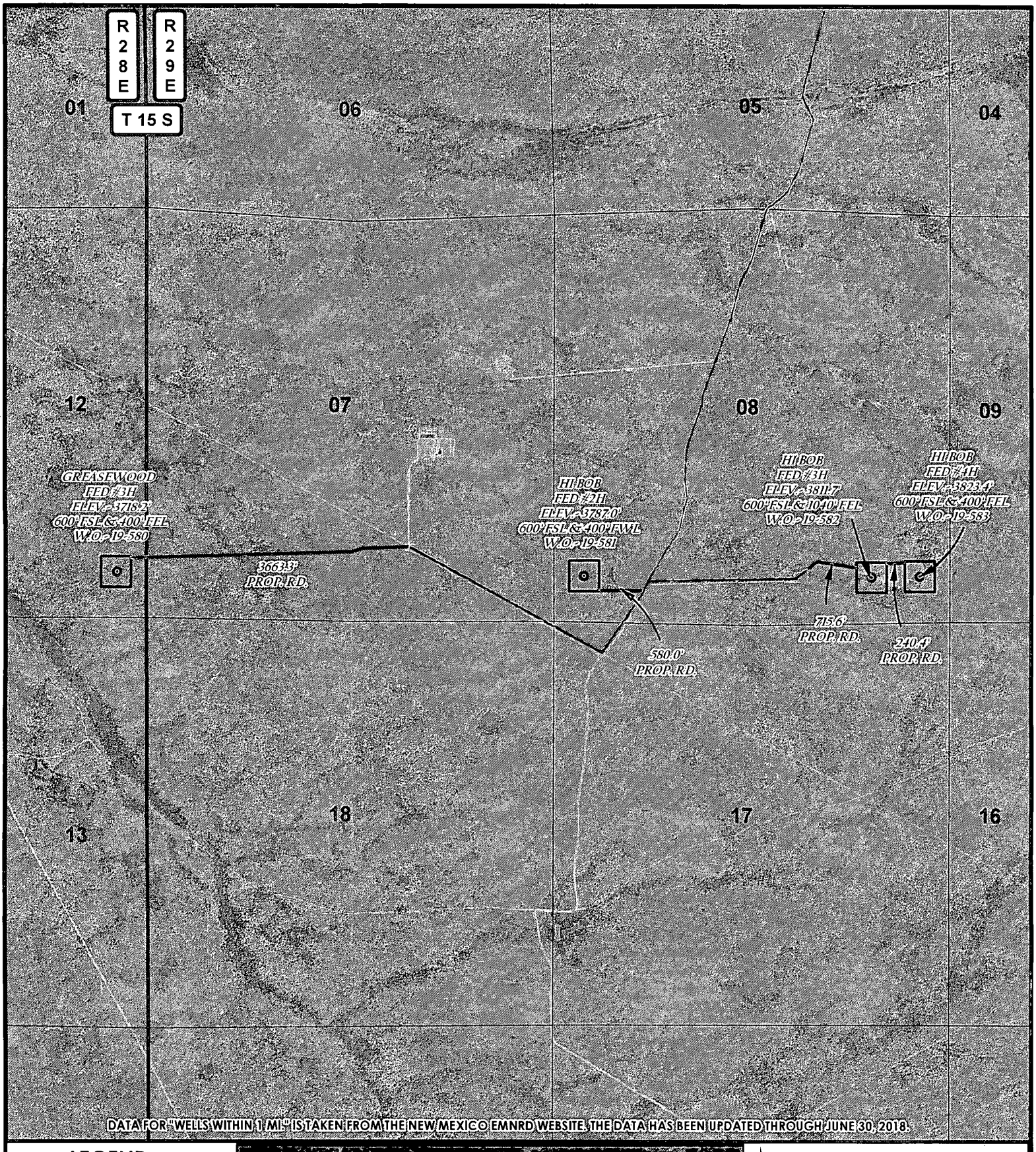

DATA FOR "WELLS WITHIN 1 MI." IS TAKEN FROM THE NEW MEXICO EMNRD WEBSITE. THE DATA HAS BEEN UPDATED THROUGH JUNE 30, 2018.

LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

GREASEWOOD FEDERAL & HI BOB FEDERAL WELLS

SECTIONS: 8 & 12	TOWNSHIP: 15 S.	RANGES: 28 & 29 E.
STATE: NEW MEXICO	COUNTY: CHAVES	SURVEY: N.M.P.M
W.O. # 19-(580-583)	LEASE: GREASEWOOD FED / HI BOB FED	

0 2,500 5,000 FEET

0 0.125 0.25 0.5 Miles

1 IN = 2,000 FT

LOCATION OVERVIEW IMAGERY 5/9/2019 J.H.

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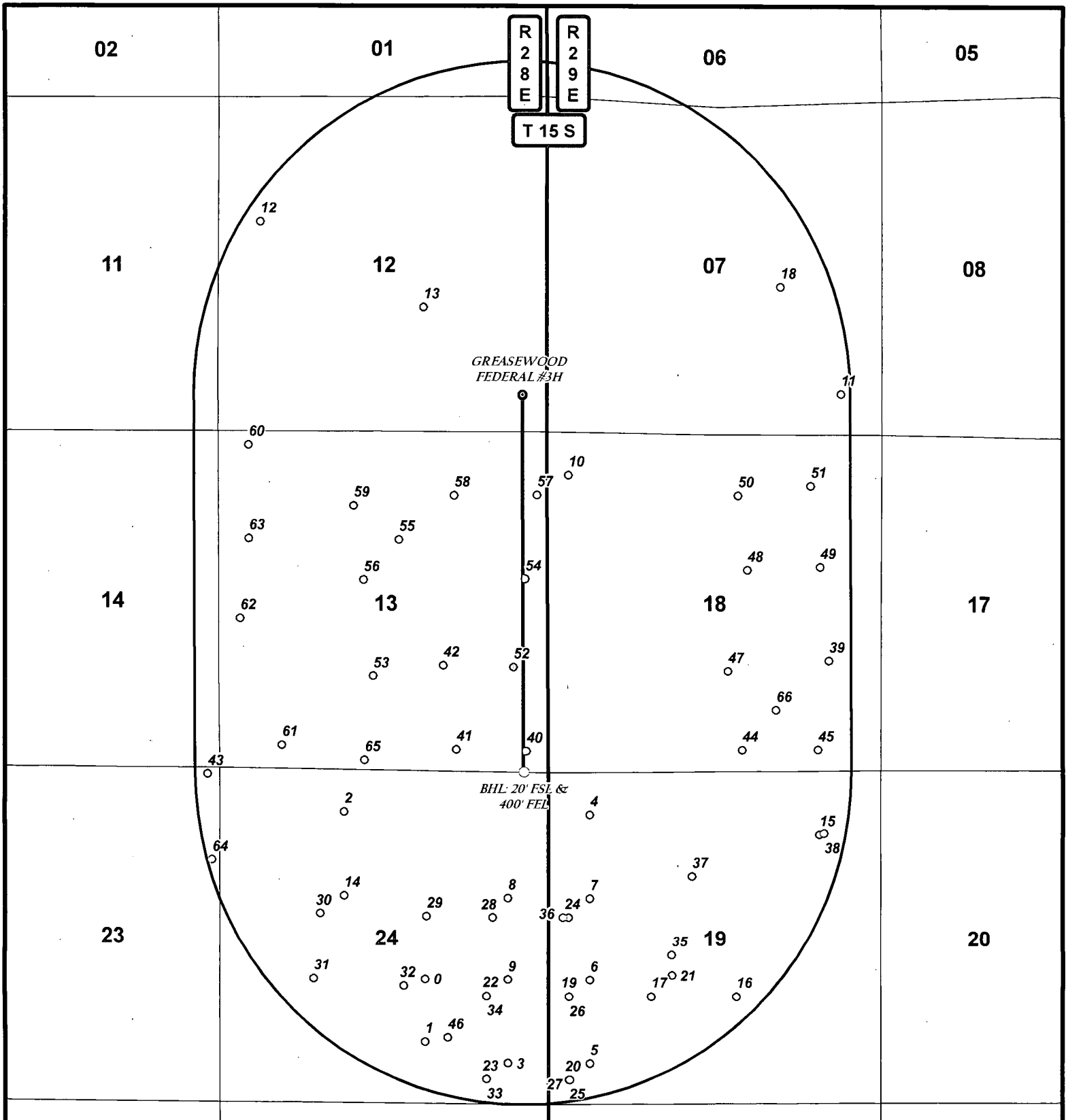

DATA FOR "WELLS WITHIN 1 MI." IS TAKEN FROM THE NEW MEXICO EMNRD WEBSITE. THE DATA HAS BEEN UPDATED THROUGH JUNE 30, 2018.

LEGEND

- WELL
- BOTTOMHOLE
- WELLS WITHIN 1 MI.
- 1 MI. BUFFER

GREASEWOOD FEDERAL #3H

SEC: 12	TWP: 15 S.	RGE: 28 E.	ELEVATION: 3718.2'
STATE: NEW MEXICO		COUNTY: CHAVES	600' FSL & 400' FEL
W.O. # 19-580	LEASE: GREASEWOOD FED		SURVEY: N.M.P.M

0 2,500 5,000 FEET

0 0.15 0.3 0.6 Miles

1 IN = 2,500 FT

1 MILE MAP 5/9/2019 J.H.

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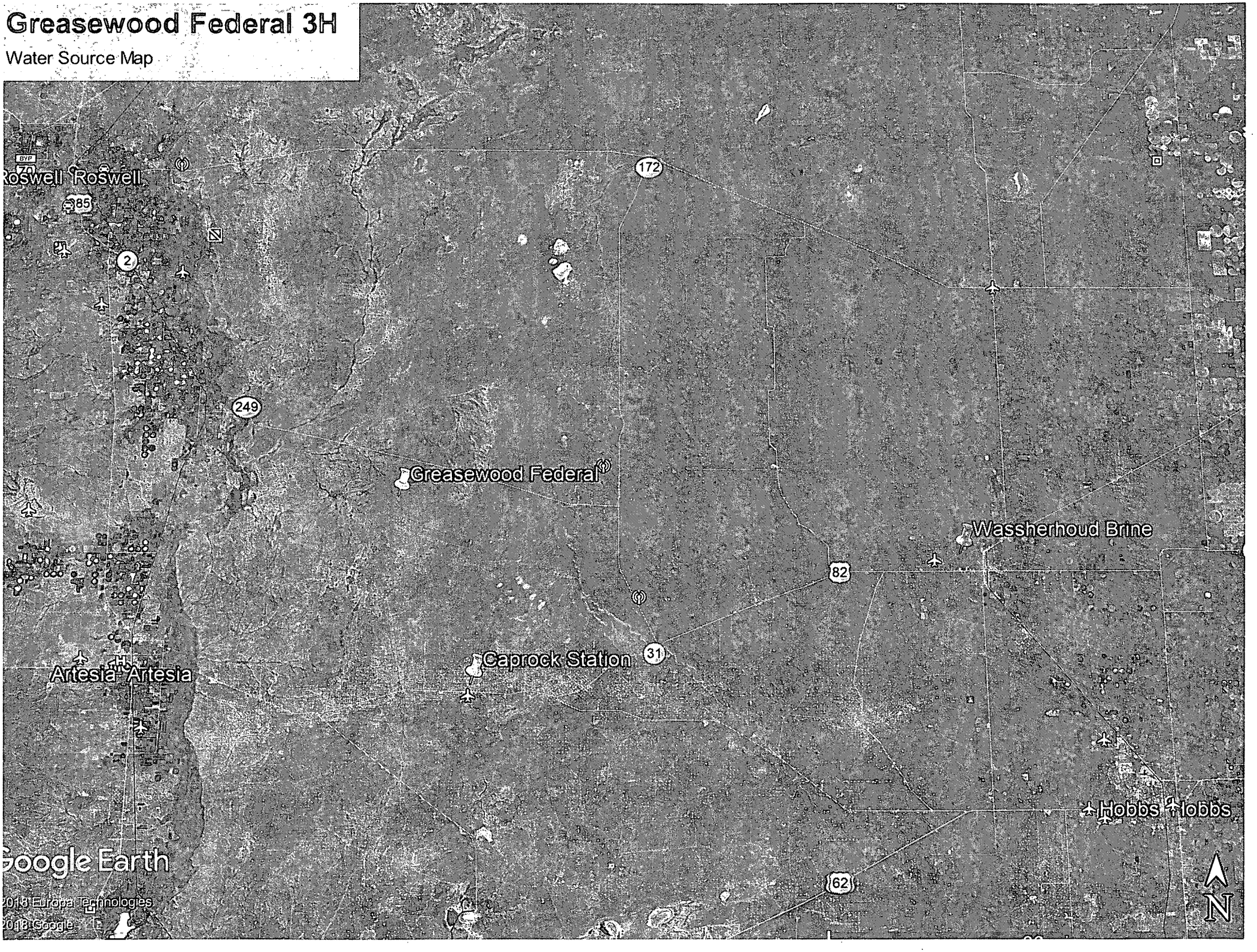
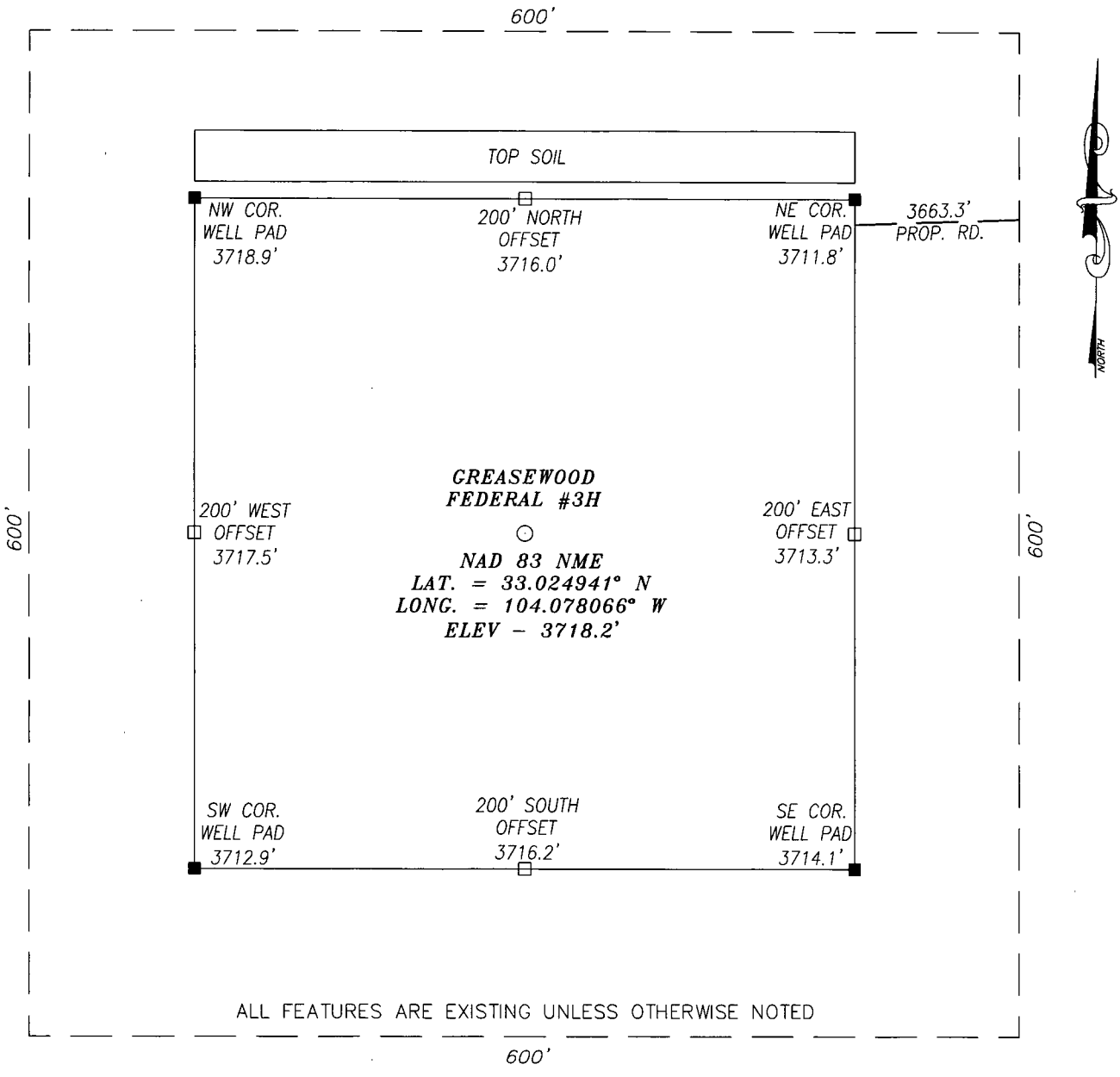
Greasewood Federal 3H

Water Source Map

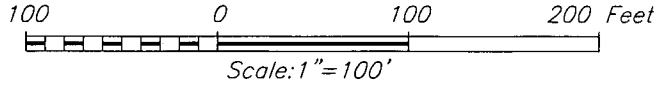


SECTION 12, TOWNSHIP 15 SOUTH, RANGE 28 EAST, N.M.P.M.,

CHAVES COUNTY NEW MEXICO



DIRECTIONS TO LOCATION:
BEGINNING AT THE INTERSECTION OF C.R. 30 AND ABERDEEN RD. GO WESTNORTHWEST ON ABERDEEN RD. FOR APPROX. 2.0 MI.; THEN GO LEFT (SOUTHERLY) ON CALICHE RD. FOR APPROX. 2.9 MI.; THEN GO RIGHT (WESTNORTHWEST) FOR APPROX. 0.5 MI. TO THE PROPOSED ROAD; THE PROPOSED WELL LIES APPROX. 3,890 FEET TO THE WEST.



Scale: 1"=100'

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MARSHALL & WINSTON, INC.

GREASEWOOD FEDERAL #3H
LOCATED 600 FEET FROM THE SOUTH LINE
AND 400 FEET FROM THE EAST LINE OF SECTION 12,
TOWNSHIP 15 SOUTH, RANGE 28 EAST, N.M.P.M.,
CHAVES COUNTY, NEW MEXICO

SURVEY DATE: APRIL 4, 2019		600S
DRAFTING DATE: MAY 8, 2019		PAGE: 1 OF 1
APPROVED BY: CH	DRAWN BY: JH	FILE: 19-580

AFMSS

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

PWD Data Report

10/21/2019

APD ID: 10400042987 **Submission Date:** 07/15/2019

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

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

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:

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

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 disturbance (acres): **PWD surface owner:**

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?

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

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):**

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

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

10/21/2019

APD ID: 10400042987 **Submission Date:** 07/15/2019

Operator Name: MARSHALL & WINSTON INCORPORATED

Well Name: GREASEWOOD FEDERAL **Well Number:** 3H

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

Highlighted data reflects the most recent changes

Show Final Text

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB000807

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: