

**PRIVATE MINERAL
NEGOTIATED AGREEMENT**

BETWEEN

MEADOW DEEP, LLC

AND

**U.S. FOREST SERVICE
COMANCHE NATIONAL GRASSLAND**

NEGOTIATED OPERATING CONDITIONS
Surface Protection, Rehabilitation and Operation

Cottonwood #1
6th P.M. T.34S., R.46W., Sec 28
660' FNL & 1980' FWL
Baca County, Colorado

CONSTRUCTION AND OPERATION

Uses not authorized are referenced in the Surface Use Plan of Operations (SUPO) **Exhibit A**). See this exhibit for maps and road specifications.

Reserve Pits are not authorized. In the event Cottonwood #1 proves up, an oil and gas pipeline will be authorized as an amendment under COM126, FLPMA Road Permit, and placed within the road right-of-way.

1. **Performance Bond** MEADOW DEEP, LLC agrees to deliver and maintain a bond in the amount of ~~fifteen thousand~~ ^{fifty thousand} dollars (\$50,000.00) See Exhibit A for referenced well site and associated improvements located on Forest Service Lands. The bond must identify well site location on the Comanche National Grassland. The bond will be maintained throughout the production phase and released at final abandonment/restoration of the well. The bond may not be cancelled without providing written notice to the Principal and the Forest Service.

2. **Seasonal Restrictions** Lesser Prairie Chicken (**March 1st-June 30th**) – No drilling or construction operations are permitted during the period from March 15 through June 30 annually .

3. All gasoline and deisel powered equipment must be **equipped with spark arresters** or mufflers approved by the Forest Service.

4. **Topsoil material** (minimum six inches) will be **removed from entire pad area**. This soil material will be stockpiled and saved for later distribution over recontoured site. **Caliche/gravel can be utilized to stabilize the pad area**. The cut and fillslopes will be constructed at 3:1 grade.

Meadow Deep, LLC
Private Mineral Negotiated Agreement

5. During the drilling phase the new access road will not be crowned and ditched. The road will be delineated with flagging/fencing to keep traffic to a single lane. **Maximum width of road surface will be 14 feet.**
6. **Cattle guards** must be installed with side wings. The fence on both sides of the cattle guard must be reinforced with wooden H bracing, utilizing five (5) inch diameter wooden posts.
7. All **equipment and vehicles** must be confined to the access road and pad.
8. **Sewage** will be confined to a chemically-treated portable unit on location. Burying of sewage will not be allowed.
9. A **trash cage** must be on location throughout all drilling, testing and completion activities. Burying trash or trash within the reserve pit will not be allowed.
10. **The operator must provide a manifest of all drilling compounds/additives utilized and copies of mud analysis from the drilling program.**
11. **Any hydrocarbons within the reserve pit must be removed immediately.** The pit must have overhead flagging or netting installed for wildlife protection, until all oil is removed. The U.S. Fish & Wildlife Service may assess a penalty for any migratory bird found within a pit. If oil is spotted (example stuck pipe) the oil must be recovered in frac tanks, not allowed in reserve pit.
12. **During the completion phase, all treatment fluids will be contained in steel frac tanks and hauled to a State approved disposal site. No completion fluids will be allowed in the reserve pit.**
13. **All hydrocarbons** produced during the completion testing will be contained in steel frac tanks and will be accountable to appropriate agencies.
14. **The operator must inform the Forest Service immediately in the event of any oil or hazardous spill, including salt water.**
15. For safety purposes, the **rat/mouse hole must be filled and compacted immediately after the rig is removed.**
16. Drilling **company signs** will be allowed on National Grassland system lands during the construction and drilling phase.
17. If subsurface **cultural/historic materials and/or paleontological resources** (fossils) are found during construction, the District Ranger must be notified immediately. **Construction must cease until the impact has been properly mitigated.**
18. **Notify the Forest Service at (719)-523-1702** forty eight hours in advance of any pad/road construction.

B. PRODUCING WELL

1. **Production facilities (including containment structures)** will be placed on cut and located a minimum of twenty feet from the toe of the backcut to allow adequate space between facilities and the restoration of the backslope to a 3:1 grade.
2. **Spill containment structures** must be installed around the oil tank battery, produced water tanks, and heater treaters. The spill containment must be constructed of steel construction, be impervious, hold one hundred and twenty (120) percent (%) of the capacity of the largest tank within the battery and be independent of the backcut. The steel containment walls must be buried a minimum of 6-8 inches below ground surface. The loadout line must remain inside the containment to alleviate spill contamination, unless the loadout line is installed on top of the containment and an inclosed spill containment structure is installed on end of loadout line. To preserve integrity of the containment the loadout line cannot go through the containment wall.
3. **Refer to conditions C-2, C-3, and C-4 for reclamation requirements.**
4. All areas on the **pad** which are not to be revegetated or which are not needed for facilities need to maintain a rut-free surface. Excessive rutting would precipitate the need to surface the pad area with gravel or caliche.
5. All **production facilities**, i.e. pump, pump house, storage tanks, treater, etc. **will be painted** with a semi-gloss paint. All facilities must be painted with Carlsbad Canyon color (refer to the attached **Exhibit C "Standard Environmental Color Sheet"**). The exception being that Occupation Health and Safety Act Rules and Regulations are to be complied with where special safety colors are required. **All facilities must be painted within six months of installation.**
6. The **heater treater** vent stack must be equipped with a triangle (pointed) mesh/wire screen to discourage the perching of birds on top of the vent stack; causing bird mortality from vented heat.
7. **All engines (including compressors) must be equipped with adequate mufflers.** In areas where there are **no noise sensitive areas (NSA's)**, decibel levels must not exceed **70 decibels (dB(A)) at a distance of 100 feet from the mufflers exhaust.** Noise levels near noise sensitive area (NSA's) such as a farm residence, school, campground must not exceed **55 decibels dB(A).** The nearest NSA is a ranch residence approximately **one mile** from project area. EPA guidelines suggest noise levels above 55 dB(A) are potentially significant with exposure to sensitive human populations.
8. Fence individual facilities, the pump jack (including well head), treater, tank battery with cattle tight fencing. The fence around tank battery must be constructed on the outside perimeter of the berms. See **Exhibit B** for Forest Service fencing specifications. Wooden H baces must bde constructed at all corners and a gate for access must be provided at each facility. Companies may choose to utilize steel panels or piping for fencing , these designs must be apporved by the Forest Service.
9. **Control of noxious weeds** that invade the well pad and access road is required. Treatment by the operator will meet Forest Service requirements and specifications for herbicide application. **Prior to application a pesticide use plan must be submitted to the Forest Service for approval.**

10. **Crowning and ditching the new access road will be required if maintenanc becomes inadequate.** Excessive rutting, drive arounds would precipitate this action (see attached Exhibit C) of a typical road cross section for specifications.

11. **Facility identification:** Individual well facilities (oil, gas,injection,saltwater) shall have a sign in legible condition until final abandonment. The sign will show the operator's name, well name and location (quarter section, township,range and footages from Section lines).

C. ABANDONED WELL

1. Colorado Oil and Gas Conservation Commission subsurface plugging/casing requirements will be implemented. A **permanent abandonment marker** inscribed with operator, well number, and location (quarter section, township, range) is required. This marker will be a minimum of 36 inches **below the surface level** so that it has 36 inches of soil cover after final reclamation. **Leave a small weep hole in welded top of casing. The hole serves as a seepage indicator.**

2. All disturbed areas will be **scarified and all caliche/gravel will be removed** from the location. The cut and fill slopes will be **recontoured to original contours**. The entire disturbed area will then be **backfilled with topsoil, landscaped, seeded, mulched, and fenced** to exclude livestock. On slopes greater than 4% waterbars (**contour ditches**) will be constructed on the contour at seventy-five (75) foot intervals beginning at the top of the disturbed slope. They should be at least on (1) foot deep, with approximately two (2) feet of drop per one hundred (100) feet and with the berm on the downhill side. The fence will remain in place until vegetation has been established. It will be removed prior to approval of final abandonment.

3. The following **seed mixture** is required for reclamation. **The seed must be certified. Proof of certification must be provided the Forest Service prior to seeding.**

Comanche National Grasslands Seed Mixtures Sandy Soils

Species	lbs/acre PLS	% of Mix
Sand dropseed	0.25	2.8%
Prairie sandreed grass	1.00	11.1%
Blackwell switchgrass	2.50	27.8%
Sand bluestem	1.00	11.1%
Indian grass	1.75	19.4%
Little bluestem	1.00	11.1%
Blue grama	0.50	5.6%
Western wheatgrass	1.00	11.1%
TOTALS	9.00#	100%

Loamy/Clay Soils

Species	lbs/acre PLS	% of Mix
Blue grama (Bouteloua gracilis v. Hachita)	1.00	9.77%
Galleta (Hilaria jamesii v. Viva)	1.50	14.64%
Side oats grama (Bouteloua curtipendula v. Vaughn)	2.50	23.40%
Sand dropseed (Sporobolus cryptandrus)	.25	3.30%
Western wheatgrass (Pascopyrum smithii v. Arriba)	3.00	29.36%
Green needlegrass (Stipa viridula v. Lodorm)	2.00	19.53%
TOTALS	10.25#	100%

Compacted areas must be ripped or disced prior to seeding.

Seeding conducted during **time period** of January 15 through April 15.

Drill seed on the contour at a **depth of one-half (1/2) inch**.

All disturbed areas will be **mulched at the rate of 20 tons of manure/acre or 2 tons/acre of native grass hay/straw**. The mulch must be crimped into the surface.

4. The operator may have to mow weeds the first year after vegetation is established. An alternative is to control weeds by chemical means. All herbicides are to be approved for use by the Forest Service and be applied by a certified applicator.

5. **Reclamation will be approved** (minimum timeframe of two growing seasons) when the established vegetative **cover is equal to 80% of the adjacent areas**. The operator's bond will not be released until the area has been successfully reclaimed.

MEADOW DEEP, LLC

USDA FOREST SERVICE

By: K. MUGAVERO
KEVIN MUGAVERO
Vice President of Operations

BY: Erin Connelly
Erin Connelly
Forest and Grassland Supervisor
Pike and San Isabel National Forests
Cimarron and Comanche National Grasslands

DATE: June 11, 2018

DATE: July 16, 2018

Exhibit A

Meadow Deep, LLC Proposed Cottonwood #1 Well

Surface Use Plan of Operations

1. DIRECTIONS & EXISTING ROADS (See Appendix 1)

From Campo, Colorado:

Go South 3.25 miles on US Highway 287 to County Road F.

Then turn right and go West 0.5 miles on dirt County Road F to cattle gate, just west of railroad tracks.

Continue through cattle gate onto two-track for 1.75 miles to second windmill, where road turns south.

Continue south from windmill for 0.5 miles; then turn left and go east 545 feet cross-country to the proposed pad.

Roads will be maintained to US Forest Service *Gold Book* standards. For short and long term maintenance, the existing road will be maintained by Meadow Deep LLC. For County Road F or roads considered as collector roads, the operator will defer to the county for maintenance determinations. If existing roads require reconstruction due to activity associated with this project, or if required by the Comanche National Grassland, the operator will upgrade existing non-county road(s) following the most recent *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (The Gold Book)* and BLM Handbook 9113 (et al). Water will be used for dust control.

2. ROADS TO BE BUILT OR UPGRADED (See Appendices 1& 2)

Meadow Deep will upgrade 2.25 miles of existing Forest Road 2484 and 2484B, from cattle gate on County Road F to junction of the start of the proposed well pad access road in Section 28. A further 545 of new road will be built from Forest Road 2484B to the proposed well location in Section 28. The **total 12,647.66'** of road will be **upgraded (12,102.66')** and **built (545)** to BLM Gold Book standards. Topsoil and brush will be windowed beside the road. Road will be crowned (≈ 0.04 ft/ft), ditched, and have a $\approx 14'$ wide running surface. Maximum disturbed road width will be 30'. Maximum cut or fill = 3'. Maximum grade = 15%. A 48"-60" culvert will be installed where forest road 2484 crosses the wash in Section 21.

3. EXISTING WELLS (See Appendix 1)

State records show 2 plugged and abandoned oil wells. There are no disposal, injection, or water wells within a mile.

4. PROPOSED PRODUCTION FACILITIES (See Appendices 1 & 2)

This Surface Use Plan is in support of Meadow Deep's Cottonwood #1 well pad and access road. Production facilities will be installed on the pad and will include a separator, dehydrator, meter run, and tank battery. Steel tanks will be used for oil storage and fiberglass tanks for produced water storage. Oil will be stored on-site and trucked to sales point. **The United States Forest Service will authorize an oil and gas pipeline for the transportation of oil and gas within the authorized road right-of-way as an amendment to COM126, FLPMA Road Permit.** Produced water will be stored on site and trucked to an appropriate disposal site, as needed. Meadow Deep will attempt to identify a commercial water disposal site once production levels have been determined.

Final facility layout will be determined after an on-site with USFS. All above ground structures, except those subject to safety requirements, will be painted covert green or other approved color within 90 days of installation. All production equipment will comply with Visual Resource Management requirements. No gas pipeline or power line will be required as produced gas will be used for lease operations. Excess gas will be vented.

5. WATER SUPPLY

Fresh water will be purchased from the City of Campo and trucked to the drill site. No water well will be drilled due to the proximity of a municipal water supply.

6. CONSTRUCTION NOTICES, MATERIALS, & METHODS (See Appendix 2)

Meadow Deep will notify the grazing lease operator(s) ≥ 10 business days before starting construction in order to avoid conflicts. Meadow Deep will not stop or delay construction unless directed by the authorized forest officer.

Colorado 811 and the Comanche National Grassland will be called at least 48 hours before construction starts. Construction for the Cottonwood 1 well pad and access road will take 3 weeks and will incorporate a Revegetation Plan.

The pad will be leveled with heavy equipment (e.g., bulldozer) to provide space and a level surface for vehicles and equipment. Only native excavated material will be used on the pad. Excavated materials from the cuts will be used for fill in order to level the pad. No additional materials will be required for construction of the pad.

Construction and maintenance activities will stop when the ground is frozen or soil is highly saturated. Activity will stop when construction equipment cause ruts in the soil 6" in depth.

Brush will be mulched and spread on bare dirt. The top 6" of soil will be bladed and piled around the northern perimeter of the pad. A silt trap will be built east of the topsoil pile.

Gravel for road construction will be sourced from the nearest existing gravel pit.

7. WASTE DISPOSAL (See Appendix 2)

~~A reserve pit will be used. This pit will be placed on the north side of the pad and will measure 75' wide x 100' long x 6' deep. The pit will be lined with bentonite to prevent seepage into surrounding soils and will be fenced to prevent wildlife from entering; escape ramps will be installed to allow entrapped wildlife to escape. Once drilling is complete the reserve pit will be buried in place and reclaimed. The United States Forest Service is not authorizing a reserve pit. A closed loop system will be utilized instead.~~

All trash will be placed in a portable metal trash cage. It will be hauled to an approved landfill. Human waste will be disposed of in chemical toilets. Toilets will be provided and maintained during all construction, drilling, and completion operations. Toilet contents will be hauled to a state approved dump station.

8. ANCILLARY FACILITIES (See Appendix 2)

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

9. WELL SITE LAYOUT

See Appendix 2-1 for depictions of the well pad, cage, access onto the location, parking, living facilities, and rig orientation.

10. RECLAMATION (See Appendix 2)

Once production equipment is installed, the pad will be reduced in size and unneeded areas will be reclaimed. Water bars will be installed in cut every $\approx 100'$ and skewed to drain on the pipeline route. Interim reclamation will consist of reclaiming the pipeline route and north and west side of the pad within 90 days of completing the well. Disturbed areas will be contoured to a natural topography. Soil and brush will be evenly spread over disturbed areas. Seeded areas will be ripped and harrowed $\geq 18"$ deep. Enough stockpiled topsoil will be retained to cover the remainder of the pad when the well is plugged. Amount will be determined by the % of area remaining after interim reclamation. (For example, if $\frac{1}{4}$ of the pad is interim reclaimed, then $\frac{3}{4}$ of the topsoil will remain for final reclamation). The US Forest Service will determine the area to be interim reclaimed after a "production facility" on site. The retained topsoil piles will be seeded and mulched. Once the well is plugged, then the remainder of the pad and road will be similarly reclaimed. Noxious weeds will be controlled.

Disturbance & Reclamation for Meadow Deep's project will be:

300 x 300' well site = 2.57 acres
30' x 12,647.66' road = 8.71 acre
Total Short Term = 11.28 acres
-0.93 acres interim pad reclamation
Total Long Term = 10.35 acres

Final reclamation will occur once the well has been plugged and will consist of removing all surface facilities and returning the surface topography of all reclaimed areas, including the pad and the 545' of access road between the pad and Forest Road 2484B, to their approximate, pre-disturbance grade. Reclaimed areas will be reseeded with an appropriate seed mix. Total final reclaimed area would be approximately 1.53 acres (1.14 acres for the pad and 0.39 acres for the road).

11. SURFACE OWNER (See Appendix 1)

All construction for Meadow Deep's well pad and water line will be on Comanche National Grassland federally-managed surface. The entirety of Meadow Deep's access road will begin and end on the grassland.

12. OTHER INFORMATION (See Appendix 3)

Section 28 is located within a known Lesser Prairie Chicken (LPC) habitat area. Meadow Deep's permitting agent, Permits West Inc., has made contact with staff at the Comanche National Grassland, Colorado Parks and Wildlife (CPW), and the Colorado Oil & Gas Conservation Commission (COGCC) in regards to surface restrictions and/or other conservation considerations in this area. According to recent wildlife surveys by CPW, there are currently no active leks within 2 miles of the proposed location. **Defer use between March 1st and July 15th.**

Meadow Deep, LLC
Cottonwood #1
660' FNL & 1980' FWL
Sec. 28, T. 34 S., R. 46 W.
Baca County, Colorado

PAGE 5

13. REPRESENTATION

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U. S. C. 1001 for the filing of false statements. Executed this 10th day of November, 2017.



Mike Deutsch, Project Director
Permits West, Inc.
37 Verano Loop, Santa Fe, NM 87508
(505) 466-8120

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Cottonwood #1
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Sec. 28, T. 34 S., R. 46 W.
Baca County, Colorado

PAGE 6