

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
**APPLICATION FOR PERMIT TO DRILL OR REENTER**

1a. Type of work: <input type="checkbox"/> DRILL <input type="checkbox"/> REENTER 1b. Type of Well: <input type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other 1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		5. Lease Serial No.  6. If Indian, Allottee or Tribe Name  7. If Unit or CA Agreement, Name and No.  8. Lease Name and Well No.
2. Name of Operator		9. API Well No.
3a. Address	3b. Phone No. (include area code)	10. Field and Pool, or Exploratory
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface At proposed prod. zone		11. Sec., T. R. M. or Blk. and Survey or Area
14. Distance in miles and direction from nearest town or post office*		12. County or Parish  13. State
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
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
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
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)

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| 1. Well plat certified by a registered surveyor.<br>2. A Drilling Plan.<br>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).<br>5. Operator certification.<br>6. Such other site specific information and/or plans as may be requested by the BLM. |
|---|---|

25. Signature	Name (Printed/Typed)	Date
Title		
Approved by (Signature)	Name (Printed/Typed)	Date
Title		Office

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

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



## INSTRUCTIONS

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

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

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

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

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

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

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

## NOTICES

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

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

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

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

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

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

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

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

## Additional Operator Remarks

### Location of Well

1. SHL: NWSW / 1654 FSL / 957 FWL / TWSP: 8S / RANGE: 90W / SECTION: 36 / LAT: 39.312871 / LONG: -107.39573 ( TVD: 0 feet, MD: 0 feet )  
PPP: SESW / 747 FSL / 2772 FEL / TWSP: 8S / RANGE: 90W / SECTION: 36 / LAT: 39.310469 / LONG: -107.390193 ( TVD: 3275 feet, MD: 3600 feet )  
BHL: SESW / 747 FSL / 2772 FEL / TWSP: 8S / RANGE: 90W / SECTION: 36 / LAT: 39.310469 / LONG: -107.390193 ( TVD: 5185 feet, MD: 5608 feet )

### BLM Point of Contact

Name: Larry Sandoval  
Title: Field Manager  
Phone: 9708769004  
Email: lsandoval@blm.gov

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## **Review and Appeal Rights**

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

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## APPENDIX

### CONDITIONS OF APPROVAL

#### **Applications for Permit to Drill Two Replacement Injection Wells (WC9-D2 and WC9-D3) Wolf Creek Unit, Pitkin County, Colorado DOI-BLM-CO-N040-2019-0073-SCX3**

##### **Surface-Use Conditions of Approval**

The following surface-use COAs, developed by the WRNF and reviewed by the BLM-CRVFO, shall be implemented, where applicable and feasible, to reduce impacts from activities associated with the Proposed Actions of drilling and operating two replacement injection wells. These COAs are in addition to all stipulations attached to the Federal lease. Wording and numbering of these COAs may differ from those included in the Wolf Creek Storage Wells Project Categorical Exclusion Decision Memo published by the WRNF on May 17, 2019. In cases of discrepancies, the following COAs supersede earlier versions.

1. To comply with this Section 390 CX, Category 3, drilling of wells WC9-D2 and WC9-D3 shall be initiated before **December 3, 2020**, the fifth anniversary of the WRNF decision finalizing and approving the FEIS.
2. Administrative Notification. The Operator shall notify the US Forest Service representative at least 48 hours prior to initiation of construction. If requested by the US Forest Service representative, the Operator shall schedule a pre-construction meeting, including key Operator and contractor personnel, to ensure that any unresolved issues are fully addressed prior to initiation of surface-disturbing activities or placement of production facilities. The US Forest Service representative shall notify other users within the project area of upcoming activities.
3. Vehicle Washing. Any construction or operational vehicles traveling between the Project Area and outside areas shall be power-washed off WRNF before entering the Forest to remove noxious weeds.
4. Road Closures. Regularly scheduled seasonal closures to public access on Four Mile Road and NFSR 300 shall be maintained by the Operator during the initial project stages. Gate closures shall be maintained, and signage shall be installed to inform the public.

Use of and being within 500 feet of NFSR 321, and 321.1B will be prohibited to protect public health and safety during commercial natural gas operations associated with natural gas well drilling and well maintenance activities.

5. Staging Area. The area for staging personnel and equipment on NFS lands shall be used during the drilling and completions operations only; and personnel shall not stage there past this time to minimize human presence in the area.
6. Road Maintenance and Dust Abatement. Road maintenance and dust abatement shall be performed as needed and per the current RMNG Road Use Permit (approved February 5, 2019).
  - a. Roads shall be crowned, ditched, surfaced, drained with culverts and/or water dips, and constructed to BLM/US Forest Service Gold Book standards. The Operator shall provide timely year-round road maintenance and cleanup on the access roads. A regular schedule for maintenance shall include, but not be limited to, blading, ditch and culvert cleaning, road surface replacement, and dust abatement. When rutting within the traveled way becomes greater than 6 inches, blading and/or gravelling shall be conducted as approved by the US Forest Service. Construction and other activities shall be minimized and avoided when the pad is muddy.

- b. Per the current Road Use Permit - Appendix D Commensurate Share calculations, approximately 860 tons of aggregate replacement will be accomplished in 2019. This quantity may be deferred until 2020 depending on road and traffic conditions.

Surface Rock Replacement (SRR) quantities for this project shall be calculated based on estimated and actual vehicle type and count (provided by the Operator). Replacement shall be accomplished in 2020.

- c. Some SRR and dust abatement applications shall be coordinated with Garfield County Road and Bridge.
  - d. Per the Road Use Permit, an updated 2019 Operations and Maintenance Plan shall be provided by RMNG.
  - e. Per Clause II. A. Annual Operating Plan of the Road Use Permit of the approved Operations and Maintenance Plan includes a Traffic Control Plan (TCP). The TCP will be supplemented with a Temporary Traffic Control Plan/Sign Plan (TTCP) as outlined in the Road Use Permit Supplemental Pages Addition E – as amended. The required communications plan and emergency action plan are included in RMNG’s site-specific Emergency Response Plan.
  - f. The Operator shall implement dust abatement measures as needed to prevent fugitive dust from vehicular traffic, equipment operations, or wind events. The US Forest Service may direct the Operator to change the level and type of treatment (watering or application of various dust agents, surfactants, and road surfacing material) if dust abatement measures are observed to be insufficient to prevent fugitive dust.
7. Requirement for 5-year Spud Date Timing. The approval of APDs for wells identified in this document was categorically excluded from further NEPA analysis through Section 390 (b)(3) of the Energy Policy Act of 2005. This subsection specifically states for category #3: *“Drilling an oil or gas well within a developed field for which an approved land use plan or any environmental document prepared pursuant to NEPA analyzed such drilling as a reasonably foreseeable activity, as long as such plan or document was approved within 5 years prior to the date of spudding the well.”* If the well has not been spudded by December 3, 2020, this APD will be suspended, and the Operator shall cease all operations related to preparing to drill the well.
8. Drilling. Closed-loop drilling systems shall be used to avoid using temporary pits on location.
9. Drill Cuttings Management. Cuttings generated from the planned well bores shall be worked through a shaker system on the drill rig, mixed with a drying agent, if necessary, and transported to an approved commercial disposal facility. All drilling mud/water shall also be hauled off-site to an approved commercial disposal facility.
10. Excavated Materials/Soils. Any excavated and/or stockpiled material/soils shall not be placed in a natural drainage or where flood hazards exist or surface runoff could leave the site. Any excavated material/soil, including topsoil, shall be stockpiled and used for revegetation of disturbed areas.
11. Stormwater. Construction and post-construction activities shall adhere to the project’s Stormwater Management Plan (SWMP), which specifies erosion protection and silt retention measures.
- Where determined necessary by the US Forest Service, erosion protection and silt retention shall be provided by the construction of silt catchment dams, installation of culverts or drainage dips, placement of surface rock on approaches to stream crossings, and placement of surface rock along road reaches within 100 feet of stream channels.

12. Water Impoundment. The existing water impoundment on the well pad shall function to capture surface runoff during and after well development activities. Sediment shall be removed from this impoundment after well development activities are complete.
13. Spills. The RMNG Wolf Creek Storage Field's compliance with the Spill Prevention, Control, and Countermeasure Plan (SPCC) as set forth by CFR 112, is documented in the July 2018 SPCC Plan. Section 112.8(b) addresses Facility Drainage requirements, which are also included in the July 2018 SPCC Plan for this location.
14. Waste Management. Solid waste management and sanitation cleanup shall occur every day at the site of operations. Generated garbage shall be collected in bear-proof containers approved by the US Forest Service. Trash shall be removed weekly, and the containers shall be removed at the end of the project.
15. Reclamation. Specific measures to follow during interim reclamation are described below.
  - a. Reclamation Plans. The plan shall contain the following components: detailed reclamation plans, which include contours and indicate irregular rather than smooth contours as appropriate for visual and ecological benefit; timeline for drilling completion, interim reclamation earthwork, and seeding; soil test results and/or a soil profile description; amendments to be used; soil treatment techniques such as roughening, pocking, and terracing; erosion control techniques such as hydromulch, blankets/matting, and wattles; and visual mitigations if in a sensitive area.
  - b. Deadline for Revegetation. Revegetation of any disturbance shall be determined with the input and direction of the US Forest Service Botanist. Seeding shall be performed following well development activities before permanent snowfall. The Operator shall implement an intensive reclamation and weed control program beginning the first growing season after well completion.

Reclamation, including seeding, of temporarily disturbed areas (e.g., berms) shall be completed within 30 days following completion of construction. Any such area on which construction is completed prior to December 1 shall be seeded during the remainder of the early winter season instead of during the following spring, unless US Forest Service approves otherwise based on weather.

The deadlines for seeding described above are subject to extension upon approval of the US Forest Service based on season, timing limitations, or other constraints on a case-by-case basis. If the US Forest Service approves an extension for seeding, the Operator may be required to stabilize the reclaimed surfaces using hydromulch, erosion matting, or other method until seeding is conducted.
  - c. Notification. If requested by the US Forest Service representative, the Operator shall contact the US Forest Service representative by telephone or email approximately 72 hours before reclamation and reseeding begin. This will allow the US Forest Service representative to schedule a pre-reclamation field visit if needed to ensure that all parties are in agreement and provide time for adjustments to the plan before work is initiated.
  - d. Seedbed Preparation. For cut-and-fill slopes, initial seedbed preparation shall consist of backfilling and recontouring to achieve the configuration specified in the reclamation plan. For compacted areas, initial seedbed preparation shall include ripping to a minimum depth of 18 inches, with a maximum furrow spacing of 2 feet. Where practicable, ripping shall be conducted in two passes at perpendicular directions. Following final contouring, the backfilled or ripped surfaces shall be covered evenly with topsoil.

f. Soil Testing. If directed by the US Forest Service, the Operator shall conduct soil testing prior to reseeded to identify if and what type of soil amendments may be required to enhance revegetation success. At a minimum, the soil tests shall include texture, pH, organic matter, sodium adsorption ratio (SAR), cation exchange capacity (CEC), alkalinity/salinity, and basic nutrients (nitrogen, phosphorus, potassium [NPK]). Depending on the outcome of the soil testing, the US Forest Service may require the Operator to submit a plan for soil amendment. Any requests to use soil amendments not directed by the US Forest Service shall be submitted to the US Forest Service for approval.

g. Seed Mixes. A seed mix consistent with US Forest Service standards in terms of species and seeding rate for the specific habitat type shall be used on all NFS lands affected by the project (see Attachment 1 of the letter provided to operators dated September 9, 2014).

The seed shall contain no prohibited or restricted noxious weed seeds and shall contain no more than 0.5 percent by weight of other weed seeds. The seed may contain up to 2.0 percent of “other crop” seed by weight, including the seed of other agronomic crops and native plants; however, a lower percentage of other crop seed is recommended. Seed tags or other official documentation shall be submitted to US Forest Service at least 14 days before the date of proposed seeding for acceptance. Seed that does not meet the above criteria shall not be applied to public lands.

h. Seeding Procedures. Seeding shall be conducted no more than 24 hours following completion of final seedbed preparation.

Where practicable, seed shall be installed by drill-seeding to a depth of 0.25 to 0.5 inch. Where drill-seeding is impracticable, seed may be installed by broadcast-seeding at twice the drill-seeding rate, followed by raking or harrowing to provide 0.25 to 0.5 inch of soil cover or by hydroseeding and hydromulching. Hydroseeding and hydromulching shall be conducted in two separate applications to ensure adequate contact of seeds with the soil.

If revegetation is unsuccessful, the Operator shall implement subsequent reseeds until revegetation standards are met.

i. Mulch. Mulch shall be applied within 24 hours following completion of seeding. Mulch may consist of either hydromulch or of certified weed-free straw or certified weed-free native grass hay crimped into the soil. NOTE: Mulch is not required in areas where erosion potential mandates use of a biodegradable erosion-control blanket (straw matting).

j. Erosion Control. The pad shall be protected against erosion with the use of water bars or other BMPs approved by the US Forest Service. Additional BMPs such as biodegradable wattles, weed-free straw bales, or silt fences shall be employed as necessary to reduce transport of sediments into the drainages. The US Forest Service may, in areas with high erosion potential, require the use of hydromulch or biodegradable blankets/matting to ensure adequate protection from slope erosion and offsite transport of sediments and to improve reclamation success.

k. Site Protection. The pad may be fenced to US Forest Service standards to exclude livestock grazing for the first two growing seasons or until seeded species are firmly established, whichever comes later. The seeded species will be considered firmly established when at least 50 percent of the new plants are producing seed. The US Forest Service will approve the type of fencing.

1. **Monitoring.** The Operator shall conduct annual monitoring surveys of the site categorized as “operator reclamation in progress” and shall submit an annual monitoring report of the site, including a description of the monitoring methods used, to the US Forest Service by **December 31** of each year. The annual monitoring report shall document whether attainment of reclamation objectives appears likely. If one or more objectives appear unlikely to be achieved, the report shall identify appropriate corrective actions. Upon review and approval of the report by the US Forest Service, the Operator shall be responsible for implementing the corrective actions or other measures specified by the US Forest Service.
  
16. **Weed Control.** The Operator shall regularly monitor and promptly control noxious weeds or other undesirable plant species as set forth in the Glenwood Springs Field Office *Noxious and Invasive Weed Management Plan for Oil and Gas Operators*, dated March 2007. A Pesticide Use Proposal (PUP) must be approved by the US Forest Service prior to the use of herbicides. Annual weed monitoring reports and Pesticide Application Records (PARs), including GPS data in accordance with the February 27, 2014, letter to Operators, shall be submitted to US Forest Service by **December 1**.
  
17. **Bald and Golden Eagles.** It shall be the responsibility of the Operator to comply with the Bald and Golden Eagle Protection Act (Eagle Act) with respect to “take” of either eagle species. Under the Eagle Act, “take” includes to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, and disturb. “Disturb” means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle; (2) a decrease in its productivity by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior. Avoidance of eagle nest sites, particularly during the nesting season, is the primary and preferred method to avoid a take. Any oil or gas construction, drilling, or completion activities planned within 0.5 mile of a bald or golden eagle nest, or other associated activities greater than 0.5 miles from a nest that may disturb eagles, should be coordinated with the US Forest Service project lead, US Forest Service wildlife biologist, and the USFWS representative to the BLM Field Office at 970-243-2778 x28.
  
18. **Raptor Nesting.** To protect nesting raptors, a survey shall be conducted prior to construction, drilling, or completion activities that are to begin during the raptor nesting season (February 1 to August 15). The survey shall include all potential nesting habitat within specified buffer distances (0.25 mile or 0.5 mile, depending on the species) of a well pad, access road, pipeline, or other surface facility. Results of the survey shall be submitted to the US Forest Service. If a raptor nest is located within the buffer widths specified above, a 60-day raptor nesting TL will be applied by the US Forest Service to preclude initiation of construction, drilling, and completion activities. The Operator is responsible for complying with the Migratory Bird Treaty Act (MBTA), which prohibits the “take” of birds or of active nests (those containing eggs or young), including nest failure caused by human activity (see COA for Migratory Birds).

NOTE: Surveys for the boreal owl, flammulated owl, goshawk, and other nesting raptors should be carried out in all areas within ½ mile of the proposed location to document potential impacts and potential measures to reduce impacts.

In the vicinity of the well pad, any individual tree that may be cut shall be checked for nesting birds prior to cutting. If nesting birds are present, the tree(s) shall not be cut until the young birds have fledged.

19. Migratory Birds – General. It shall be the responsibility of the Operator to comply with the MBTA with respect to “take” of migratory bird species, which includes injury and direct mortality resulting from human actions not intended to have such result. To minimize the potential for the take of a migratory bird, the Operator shall take reasonable steps to prevent use by birds of fluid-containing tanks, cellars, or other container associated with well development. Liquids in tanks, cellars, or other container —whether placed or accumulating from precipitation—may pose a risk to birds as a result of ingestion, absorption through the skin, or interference with buoyancy and temperature regulation.
- In addition, oil slicks and oil sheens shall be promptly skimmed off the fluid surface. All mortality or injury to birds shall be reported immediately to the US Forest Service project lead and to the USFWS representative to the BLM Field Office at 970-243-2778 x28 and visit <http://www.fws.gov/mountain-prairie/contaminants/oilpits.htm>.
20. Cones/Grates (Exhaust Stacks). The Operator shall equip all exhaust stacks on operation equipment with screens to keep out bats and nesting birds, which could include US Forest Service Sensitive species.
21. Escape Ramps (Open Cellars and Tanks). The Operator shall construct and maintain cellars and open-top tanks to exclude livestock, wildlife, and humans (except authorized personnel) and, in the event of inadvertent entry, to escape from these areas. At a minimum, the Operator shall construct and maintain escape ramps, ladders, or other methods of avian and terrestrial wildlife escape from each cellar and open-top tank. Ramps shall be secured and properly positioned to allow wildlife to escape.
22. Range Management. Range improvements (fences, gates, reservoirs, pipelines, etc.) shall be avoided during development of natural gas resources to the maximum extent possible. If range improvements are damaged during development, the Operator shall be responsible for repairing or replacing the damaged range improvements. If a new or improved access road bisects an existing livestock fence, a steel frame gate(s) or a cattleguard with associated bypass gate shall be installed across the roadway to control grazing livestock.
23. Cultural Education/Discovery. All persons in the area who are associated with this project shall be informed that if anyone is found disturbing historic, archaeological, or scientific resources, including collecting artifacts, the person or persons shall be subject to prosecution.

If subsurface cultural values are uncovered during operations, all work in proximity to the resource shall cease and the Authorized Officer with the US Forest Service notified immediately. The Operator shall take any additional measures requested by the US Forest Service to protect discoveries until they can be adequately evaluated by the permitted archaeologist. Within 48 hours of the discovery, the State Historic Preservation Office (SHPO) and consulting parties will be notified of the discovery and consultation will begin to determine an appropriate mitigation measure. The US Forest Service, in cooperation with the Operator, will ensure that the discovery is protected from further disturbance until mitigation is completed. Operations may resume at the discovery site upon receipt of written instructions and authorization by the Authorized Officer.

Pursuant to 43 CFR 10.4(g), the Operator shall notify the Authorized Officer, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony on Federal land. Further, pursuant to 43 CFR 10.4 (c) and (d), the Operator shall stop activities in proximity to the discovery that could adversely affect the discovery. The Operator shall make a reasonable effort to protect the human remains, funerary items, sacred objects, or objects of cultural patrimony for a period of thirty days after written notice is provided to the Authorized Officer, or until the Authorized Officer has issued a written notice to proceed, whichever occurs first.

Antiquities, historic ruins, prehistoric ruins, and other cultural or paleontological objects of scientific interest that are outside the authorization boundaries but potentially affected, either directly or indirectly, by the Proposed Actions shall also be included in this evaluation or mitigation. Impacts that occur to such resources as a result of the authorized activities shall be mitigated at the Operator's cost, including the cost of consultation with Native American groups.

Any person who, without a permit, injures, destroys, excavates, appropriates or removes any historic or prehistoric ruin, artifact, object of antiquity, Native American remains, Native American cultural item, or archaeological resources on public lands is subject to arrest and penalty of law (16 USC 433, 16 USC 470, 18 USC 641, 18 USC 1170, and 18 USC 1361).

24. Visual Resources. Production facilities shall be placed to avoid or minimize visibility from travel corridors, and other sensitive observation points—unless directed otherwise by the US Forest Service due to other resource concerns.

All permanent surface equipment shall use the same architectural design. Aboveground facilities shall be painted a natural color selected to minimize contrast with adjacent vegetation or rock outcrops. If the facility is located in an area with Spruce and Fir as the dominant species adjacent to the structures, Federal Color 34052 shall be used. If the facility is located in an area with Aspen and Oak as the dominant species adjacent to the structures, Federal Color 34095 shall be used.

25. Noise Abatement for Generators and Pumps. US Forest Service's objective for noise abatement is to reduce noise impacts to the existing solitude that is typical on US Forest Service-leased lands, and particularly to reduce impacts that could have an adverse impact on wildlife.

Noise control techniques to be considered for such production-related equipment shall include, but not be limited to, enclosure within a sound-insulated structure, installation of an improved muffler system, some combination of these, or potentially the use of electrical power. Methods for safe ventilation of sound-insulated buildings shall be a key consideration in building design to avoid open doors or windows that defeat the intended noise controls. Any noise-abating structure shall use the same US Forest Service-approved color as used on other production facilities on the pad.

If the US Forest Service determines that noise from operations is excessive, the Operator may be required to suspend use of the generator/pump or implement additional noise abatement measures.

26. Fire Prevention: The Operator shall take measures to prevent and suppress fire in the project area and adjacent lands used or traversed in connection with operations. The Operator is responsible for ensuring that prevention, detection, pre-suppression, and suppression activities are conducted in accordance with Federal laws and regulations. The Operator shall provide all necessary firefighting tools and equipment at the project site and shall maintain the tools and equipment in a serviceable condition and readily accessible for use in fire suppression. The Operator shall take such additional fire prevention and suppression measures as may be required by the US Forest Service Authorized Officer based on weather or other conditions affecting fire incidence and control.

27. Hydraulic Fracturing: Effects of hydraulic fracturing were not analyzed for the Wolf Creek Storage Wells Project. Therefore, hydraulic fracturing is not authorized. If hydraulic fracturing is deemed necessary at a later date, additional analysis will be required.

28. Remote Telemetry. To minimize additional human presence and ensure safety, the Operator shall use remote telemetry to monitor the wells and associated infrastructure.

29. Dogs. No dogs shall be allowed on-site or in vehicles traveling between the Project Area and outside areas. The Operator shall be responsible for ensuring all personnel abide by this requirement, including subcontractors and delivery vendors.

30. Firearms. Project employees shall be prohibited from carrying firearms.

## BUREAU OF LAND MANAGEMENT

Colorado River Valley Field Office  
2300 River Frontage Road  
Silt, CO 81652

### **Downhole (Drilling) Conditions of Approval Two Applications for Permit to Drill Replacement Injection Wells**

Operator: Rocky Mountain Natural Gas LLC  
Lease Number: COC07498  
Pad: Wolf Creek 9  
Surface Location: Pitkin County, Section 36, T8S, R90W

1. Twenty-four hours *prior* to (a) spudding, (b) conducting BOPE tests, (c) cementing/running casing strings, and (d) within 24 hours *after* spudding please leave message on the following contact number: 970-876-9064.

The BLM CRVFO inspectors are Marlan Deaton, Ed Fancher, Greg Rios, Alex Provstgaard, Brandon Jamison, and Jennifer Robinson.

Please contact one of the following petroleum engineers with emergency, drilling or completion issues: Bob Hartman at (970) 589-6735, bhartman@blm.gov, Stephen Garcia at (970) 456-2138, sbgarcia@blm.gov, or Rachel Knell at (970) 876-9033, rknell@blm.gov.

2. A CRVFO petroleum engineer shall be contacted for a verbal approval prior to commencing remedial work, sidetracking operations, plugging operations on newly drilled boreholes, changes within the drilling plan, changes to the well design, changes or variances to the BOPE, deviating from conditions of approval, and conducting other operations not specified within the APD. Contact the petroleum engineer for verbal approvals (contact information above).
3. If a well control issue or failed test (e.g. kick, blowout, water flow, casing failure, or a bradenhead pressure increase) arises during drilling or completions operations, the petroleum engineer shall be notified within 24 hours from the time of the event. IADC/Driller's Logs and Pason Logs (mud logs) shall be forwarded to CRVFO – Petroleum Engineer, 2300 River Frontage Road, Silt, CO 81652 within 24 hours of a well control event.
4. The BOPE shall be tested and conform to Onshore Order No. 2 for a 3M system and recorded in the IADC/Driller's log.
5. Air and/or mist drilling requires BLM petroleum engineers notification and approval.
6. Flexible choke lines shall meet or exceed the API SPEC 16C requirements. Flexible choke lines shall have flanged connections and configured to the manufacturer's specifications. The flexible choke lines shall be anchored in a safe and workmanlike manner. At minimum, all connections shall be effectively anchored in place for safety of the personal on location. Manufacturer specifications shall be kept with the drilling rig at all times and immediately supplied to the Authorized Officer (AO) or inspector upon request. Specifications at a minimum shall include acceptable bend radius, heat range, anchoring, and the working pressure. All flexible choke lines shall be free of gouges, deformations, and as straight/short as possible.

7. Chronologic drilling progress reports must be emailed directly to the BLM Colorado River Valley Field Office petroleum engineers on a daily basis. Reports shall include daily mud reports, details of casing that has been run and its cementing, water flows, lost circulation zones, hydrocarbon shows and other information that describes drilling conditions.
8. An electrical/mechanical mud monitoring equipment shall be function tested prior to drilling out the surface casing shoe. As a minimum, this equipment shall include a pit volume totalizer, stroke counter, and flow sensor.
9. A gas buster shall be functional and all flare lines effectively anchored in place, prior to drilling out the surface casing shoe. The discharge of the flare lines shall be a minimum of 100 feet from the wellhead and targeted at bends. The panic line shall be a separate line (not open inside the buffer tank) and effectively anchored. All lines shall be downwind of the prevailing wind direction and directed into a flare pit, which cannot be the reserve pit. The flare system shall use an automatic ignition. Where noncombustible gas is likely or expected to be vented, the system shall be provided supplemental fuel for ignition and maintain a continuous flare.
10. On the first well drilled on this pad, a triple combo open-hole log shall be run from the base of the surface borehole to surface and from TD to bottom of surface casing shoe. This log shall be submitted within 48 hours in .las and .pdf format to: CRVFO – Petroleum Engineer, 2300 River Frontage Road, Silt, CO 81652. Contact 970-876-9000 for clarification.
11. Submit the (a) mud/drilling log (e.g. Pason disc), (b) driller’s event log/operations summary report, (c) production test volumes, (d) directional survey, and (e) Pressure Integrity Test results within 30 days of completed operations (i.e. landing tubing) per 43 CFR 3160-9 (a).
12. Notify the BLM Petroleum Engineer two weeks prior to commencing completion operations.
13. Whether the well is completed as a dry hole or as a producer, “Well Completion and Recompletion Report and Log” (Form 3160-4) will be submitted not later than 30 days after completion of the well or after completion of operations being performed, in accordance with 43 CFR 3164. In accordance with 43-CFR 3162.4(b) submit a complete set of electrical/mechanical logs in .LAS format with standard Form 3160-4, Well Completion or Recompletion Report and Log.
14. Not later than the 5th business day after any well begins production on which royalty is due anywhere on a lease site or allocated to a lease site, or resumes production in the case of a well which has been off production for more than 90 days, the operator shall notify the authorized officer by letter or sundry notice, Form 3160-5, or orally to be followed by a letter or sundry notice, of the date on which such production has begun or resumed. If the well is completed for production, the AO will be notified when the well is placed in a producing status. Such notification may be sent by telegram or other written communication, not later than five (5) days following the date on which the well is placed on production.
15. A schematic facilities diagram as required by 43 CFR 3162.7-5 (b.9. d.), and shall be submitted to the appropriate District Office within sixty (60) days of installation or first production, whichever occurs first. All site security regulations as specified in Onshore Oil & Gas Order No. 3 shall be adhered to. All product lines entering and leaving hydrocarbon storage tanks will be effectively sealed in accordance with 43 CFR 3162.7-5 (b. 4).
16. All off-lease storage, off-lease measurement, or commingling on-lease or off-lease will have prior written approval from the AO.
17. “Sundry Notice and Report on Wells” (Form 3160-5) will be filed for approval for all changes of plans and other operations in accordance with 43 CFR 3162.3-2.

18. **Water Use.** The purpose of this COA is to assist the BLM in ensuring that water depletions associated with Federal oil and gas development activities are adequately covered by the USFWS Programmatic Biological Opinion for the four endangered Colorado River fishes.

The Operator shall provide the volumes of fresh water and reused/recycled water used during project development using the following table. The volumes per well shall be identified by each development phase (construction, drilling, and completion) and by activity (e.g., dust abatement, pipeline hydrostatic testing, drilling, and completion operations). The water volumes shall be identified in an attachment to the BLM Form 3160-4, "Well Completion or Recompletion Report and Log" (completion report) submitted to the BLM Field Office. All volumes are to be reported in barrels per well.

The Operator shall submit the total volume of water used during construction of a pad with the first well completion report of the pad. Volumes of water used for subsequent activities (drilling and completing an additional well on the pad, dust abatement) shall be included in subsequent completion reports.

<b>Well Name/No.:</b>		<b>API No.:</b>			
<b>County:</b>		<b>Well Pad:</b>			
<b>Operator:</b>					
<b>Activity</b>	<b>Water Use (barrels)</b>				
	<b>Construction</b>	<b>Drilling</b>		<b>Completion</b>	
	<b>Fresh</b>	<b>Fresh</b>	<b>Reused/ Recycled</b>	<b>Fresh</b>	<b>Reused/ Recycled</b>
Road/Pipeline/Pad Dust Abatement					
Pipeline Hydrostatic Testing					
Cementing					
Mud					
Acid Wash/ Hydraulic Fracturing					

<b>List of Wells</b>	
<b>Pad</b>	<b>Proposed Wells</b>
Wolf Creek 9	WC9-D2
	WC9-D3



## 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:** Jessica Donahue

**Signed on:** 12/27/2018

**Title:** Regulatory Supervisor

**Street Address:** 1801 Broadway, Suite 1200

**City:** Denver

**State:** CO

**Zip:** 80202

**Phone:** (303)595-7624

**Email address:** Jessica.Donahue@oxbow.com

## Field Representative

**Representative Name:**

**Street Address:**

**City:**

**State:**

**Zip:**

**Phone:**

**Email address:**

**APD ID:** 10400038752

**Submission Date:** 02/08/2019

Highlighted data reflects the most recent changes

**Operator Name:** ROCKY MOUNTAIN NATURAL GAS LLC

**Well Name:** WOLF CREEK UNIT

**Well Number:** 9-D3

[Show Final Text](#)

**Well Type:** INJECTION - STORAGE

**Well Work Type:** Drill

## Section 1 - General

**APD ID:** 10400038752

**Tie to previous NOS?**

**Submission Date:** 02/08/2019

**BLM Office:** COLORADO RIVER VALLEY (GLENWOOD)  
**Federal/Indian APD:** FED

**User:** Jessica Donahue

**Title:** Regulatory Supervisor

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

**Lease number:** COC0007498

**Lease Acres:** 2200

**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:** ROCKY MOUNTAIN NATURAL GAS LLC

**Operator letter of designation:**

## Operator Info

**Operator Organization Name:** ROCKY MOUNTAIN NATURAL GAS LLC

**Operator Address:** 1515 WYNKOOP ST., SUITE 500

**Zip:** 80202

**Operator PO Box:**

**Operator City:** DENVER

**State:** CO

**Operator Phone:** (303)566-3511

**Operator Internet Address:**

## Section 2 - Well Information

**Well in Master Development Plan?** NO

**Master Development Plan name:**

**Well in Master SUPO?** NO

**Master SUPO name:**

**Well in Master Drilling Plan?** NO

**Master Drilling Plan name:**

**Well Name:** WOLF CREEK UNIT

**Well Number:** 9-D3

**Well API Number:**

**Field/Pool or Exploratory?** Field and Pool

**Field Name:** WOLF CREEK

**Pool Name:**

**Is the proposed well in an area containing other mineral resources?** NONE

**Operator Name:** ROCKY MOUNTAIN NATURAL GAS LLC

**Well Name:** WOLF CREEK UNIT

**Well Number:** 9-D3

**Describe other minerals:**

**Is the proposed well in a Helium production area?** N    **Use Existing Well Pad?** YES    **New surface disturbance?** N

**Type of Well Pad:** MULTIPLE WELL

**Multiple Well Pad Name:** WOLF    **Number:** 9  
CREEK UNIT

**Well Class:** DIRECTIONAL

**Number of Legs:** 1

**Well Work Type:** Drill

**Well Type:** INJECTION - STORAGE

**Describe Well Type:**

**Well sub-Type:** INJECTION - STORAGE

**Describe sub-type:**

**Distance to town:** 11 Miles

**Distance to nearest well:** 15 FT

**Distance to lease line:** 1638 FT

**Reservoir well spacing assigned acres Measurement:** 640 Acres

**Well plat:** Wolf\_Creek\_\_9\_D3\_Well\_Plat\_02\_07\_19\_20190207180715.pdf

**Well work start Date:** 06/03/2019

**Duration:** 25 DAYS

### Section 3 - Well Location Table

**Survey Type:** RECTANGULAR

**Describe Survey Type:**

**Datum:** NAD83

**Vertical Datum:** NAVD88

**Survey number:**

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
SHL Leg #1	165 4	FSL	957	FWL	8S	90W	36	Aliquot NWS W	39.31287 1	- 107.3957 3	PITKI N	COL ORA DO	SIXT H PRIN	F	COC00 07498	101 63	0	0
KOP Leg #1	165 4	FSL	957	FWL	8S	90W	36	Aliquot NWS W	39.31287 1	- 107.3957 3	PITKI N	COL ORA DO	SIXT H PRIN	F	COC00 07498	946 3	700	700
PPP Leg #1	747	FSL	277 2	FEL	8S	90W	36	Aliquot SESW	39.31046 9	- 107.3901 93	PITKI N	COL ORA DO	SIXT H PRIN	F	COC00 07498	688 8	360 0	327 5

**Operator Name:** ROCKY MOUNTAIN NATURAL GAS LLC

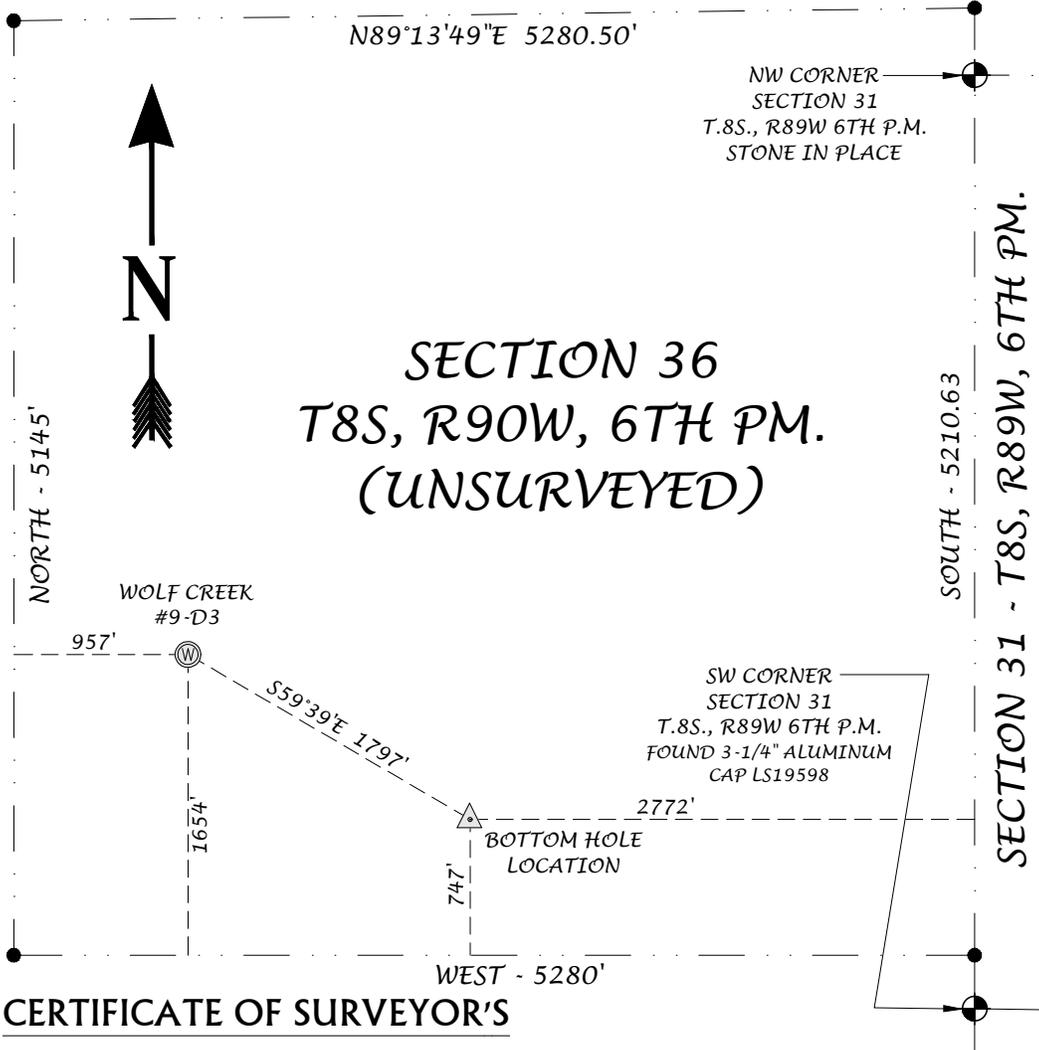
**Well Name:** WOLF CREEK UNIT

**Well Number:** 9-D3

	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
EXIT Leg #1	747	FSL	277 2	FEL	8S	90W	36	Aliquot SESW	39.31046 9	- 107.3901 93	PITKI N	COL ORA DO	SIXT H PRIN	F	COC00 07498	497 8	560 8	518 5
BHL Leg #1	747	FSL	277 2	FEL	8S	90W	36	Aliquot SESW	39.31046 9	- 107.3901 93	PITKI N	COL ORA DO	SIXT H PRIN	F	COC00 07498	497 8	560 8	518 5

# WELL LOCATION PLAT

TOWNSHIP 8 SOUTH, RANGE 90 WEST OF THE 6TH P.M.



**WELL NAME**  
WOLF CREEK #9-D3

**GENERAL LOCATION**  
NW1/4SW1/4, SECTION 36  
T. 8 S., R. 90 W., 6TH P.M.  
PITKIN COUNTY

**SURFACE LOCATION**  
1654' NORTH OF SOUTH LINE  
957' EAST OF WEST LINE

**SURFACE WELL LOCATION**  
NAD83  
LAT: 39°18'46.34"(N)  
LONG: 107°23'44.66"(W)  
LAT: 39.312871  
LONG: 107.395739  
PDOP = 1.7

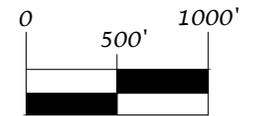
**GROUND ELEVATION**  
10163.9-NAVD88 DATUM  
**BOTTOM HOLE LOCATION**  
747' NORTH OF SOUTH LINE  
2772' WEST OF EAST LINE

**BOTTOM HOLE LOCATION**  
NAD83  
LAT: 39°18'37.69"(N)  
LONG: 107°23'24.69"(W)  
LAT: 39.310469  
LONG: 107.390193

## CERTIFICATE OF SURVEYOR'S

I, RODNEY P. KISER, DO HEREBY CERTIFY THAT THIS WELL LOCATION PLAT WAS PREPARED FROM AVAILABLE RECORDS, MAPS, FIELD STAKING AND LOCATION INFORMATION TAKEN DURING A FIELD SURVEY MADE UNDER MY DIRECTION AND IT CORRECTLY SHOWS THE LOCATION OF THE SURFACE WELL LOCATION.

- LATITUDES AND LONGITUDES ARE BASED ON NAD83, NGS CONTROL POINTS ROSEBUD, Q158 AND N158.
- WELL MEASUREMENTS ARE 90° FROM SECTION LINES.
- CURRENT SURFACE LAND USE: EXISTING WELL PAD WOLF CREEK #9, SURROUNDED BY U.S. PUBLIC LANDS.



SCALE: 1" = 1000'

**TRUE NORTH**  
COLORADO  
A LAND SURVEYING AND MAPPING COMPANY

**BLACK HILLS ENERGY**  
SECTION 36, TOWNSHIP 8 SOUTH, RANGE 90 WEST OF 6TH P.M.  
COUNTY OF PITKIN, STATE OF COLORADO



### TRUE NORTH COLORADO, LLC.

A LAND SURVEYING AND MAPPING COMPANY  
PO BOX 614 - 529 S WILD HORSE DRIVE  
NEW CASTLE, COLORADO 81647  
(970) 984-0474  
www.truenorthcolorado.com

PROJECT NO: 2017-216

DATE: February 7, 2019

DRAWN  
RPK  
SURVEYED  
LDV

SHEET  
3 OF 6

**APD ID:** 10400038752

**Submission Date:** 02/08/2019

Highlighted data reflects the most recent changes

**Operator Name:** ROCKY MOUNTAIN NATURAL GAS LLC

**Well Name:** WOLF CREEK UNIT

**Well Number:** 9-D3

[Show Final Text](#)

**Well Type:** INJECTION - STORAGE

**Well Work Type:** Drill

## Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	WASATCH	10163	0	0	SANDSTONE	USEABLE WATER	No
2	WILLIAMS FORK	9478	685	685	SANDSTONE,COAL	NATURAL GAS,OIL	No
3	CAMEO	6768	3395	3742	SANDSTONE	NATURAL GAS,OIL	No
4	CAMEO COAL	6044	4119	4533	COAL	NATURAL GAS,OIL,COAL	No
5	ROLLINS	5643	4520	4942	SANDSTONE	NATURAL GAS,OIL	No
6	MANCOS	5518	4645	5069	SHALE	NATURAL GAS,OIL	No
7	COZZETTE	5178	4985	5409	SANDSTONE	NATURAL GAS,OIL	Yes

## Section 2 - Blowout Prevention

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

**Rating Depth:** 3000

**Equipment:** Eleven (11) Inch Double Gate Hydraulic BOP with Eleven (11) Inch Annular Preventer. The Blow-Out Preventer will be equipped as follows: 1. One (1) blind ram (above) 2. One (1) pipe ram (below) 3. Drilling spool with two (2) side outlets (choke side 3-inch minimum, kill side 2-inch minimum) 4. 3-inch diameter choke line 5. Two (2) choke line valves (3-inch minimum) 6. Kill line (2-inch minimum) 7. Two (1) manual choke 8. Two (2) kill line valves, one of which will be a check valve 9. Upper and lower kelly cock valves with handles available 10. Safety valve(s) & subs to fit all drill string connections in use 11. Inside BOP or float sub available 12. Pressure gauge on choke manifold 13. Fill-up line above the uppermost preventer

**Requesting Variance?** NO

**Variance request:**

**Testing Procedure:** Annular Preventer At a minimum, the Annular Preventer will be pressure tested to 50% of the 3000# BOP working pressure for a period of ten (10) minutes or until provisions of the test are met, whichever is longer. At a minimum, the above pressure test will be performed: 1. When the annular preventer is initially installed; 2. Whenever any seal subject to test pressure is broken; 3. Following related repairs; and 4. At thirty (30) day intervals. In addition, the annular preventer will be functionally operated at least weekly. Blow-Out Preventer At a minimum, the BOP, choke manifold, and related equipment will be pressure tested to 500 psi greater than the MASP (if isolated from the surface casing by a test plug), or to 70% of the internal yield strength of the surface casing (if the BOP is not isolated from the casing by a test plug). Pressure will be maintained for a period of at least ten (10) minutes or until the requirements of the test are met, whichever is longer. At a minimum, the above pressure test will be performed: 1. When the BOP is initially installed; 2. Whenever any seal subject to test pressure is broken; 3. Following related repairs; and 4. At thirty (30) day intervals. In addition, the pipe and blind rams will be activated each trip, but not more than once each day. All BOP drills and tests will be recorded in the IADC

**Operator Name:** ROCKY MOUNTAIN NATURAL GAS LLC

**Well Name:** WOLF CREEK UNIT

**Well Number:** 9-D3

driller's log.

**Choke Diagram Attachment:**

3M\_BOP\_20181127193518.pdf

**BOP Diagram Attachment:**

3M\_BOP\_20181127193502.pdf

**Section 3 - Casing**

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF	
1	CONDUCTOR	26	20.0	NEW	API	N	0	60	0	60			60	H-40	40	N/A							
2	SURFACE	13.5	9.625	NEW	API	N	0	1200	0	1200	10163		1200	J-55	36	LTC	3.6	2.95	DRY	9.12	DRY	13.05	
3	PRODUCTION	8.75	7.0	NEW	API	N	0	5608	0	5185	10163		5608	HCP-110	29	OTHER - TTN	4.11	9.41	DRY	5.71	DRY	5.71	

**Casing Attachments**

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

Wolf\_Creek\_9\_D2\_SurfCsg\_20181129192519.pdf

**Operator Name:** ROCKY MOUNTAIN NATURAL GAS LLC

**Well Name:** WOLF CREEK UNIT

**Well Number:** 9-D3

**Casing Attachments**

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

Wolf\_Creek\_9\_D3\_SurfCsg\_20190227202409.pdf

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

TTNY\_7.00\_29.0\_\_HCP\_110\_20190208155406.pdf

Wolf\_Creek\_9\_D3\_Calculations\_for\_Casing\_\_20190225203308.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
CONDUCTOR	Lead		0	60	163	2.03	12.3	327		Class 3	N/A

SURFACE	Lead		0	1200	345	1.7	12.8	586.5		HLC 50/50 Poz/G	JB Pozmix, Halliburton Gel, Silicalite, Halad-344, HR-601
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**Operator Name:** ROCKY MOUNTAIN NATURAL GAS LLC

**Well Name:** WOLF CREEK UNIT

**Well Number:** 9-D3

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Lead		1100	3542	192	1.91	12.7	367	0	65/35 POZ/G HLC	JB Pozmix, Halliburton Gel, Silicalite, Halad-344, HR-601
PRODUCTION	Tail		3542	5608	187	1.66	13.5	311	0	50/50 Poz G	JB Pozmix, Halliburton Gel, SSA-1, Silicalite, Gilsonite, Halad-344, Halad-413, HR-601, Super-CBL, Steel Seal, Tuf Plug, Pol-E-Flake

### 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 material(s) to maintain mud properties, control lost circulation and contain a blowout will be available at the well site during drilling operations.

**Describe the mud monitoring system utilized:** We will monitor the mud system with pit level systems that transmit the data on location and remotely normally on PASON.

### 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
60	275	LSND/GEL	9	9.3							
275	1200	LSND/GEL	9	9.3							
1200	5185	LSND/GEL	9	10							

**Operator Name:** ROCKY MOUNTAIN NATURAL GAS LLC

**Well Name:** WOLF CREEK UNIT

**Well Number:** 9-D3

## Section 6 - Test, Logging, Coring

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

No production tests are planned for this well.

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

CALIPER,CBL,CNL/FDC,DS,DIL,GR,MUDLOG,SONIC,SP

**Coring operation description for the well:**

No coring is planned for this well

## Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 1560

**Anticipated Surface Pressure:** 419.29

**Anticipated Bottom Hole Temperature(F):** 140

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

**Describe:**

**Contingency Plans geohazards description:**

**Contingency Plans geohazards attachment:**

**Hydrogen Sulfide drilling operations plan required?** NO

**Hydrogen sulfide drilling operations plan:**

## Section 8 - Other Information

**Proposed horizontal/directional/multi-lateral plan submission:**

2019\_01\_31\_Wolf\_Creek\_9\_D3\_Directional\_Plan\_20190202073952.pdf

**Other proposed operations facets description:**

Rocky Mountain Natural Gas proposes to use either the attached Flare Trailer or will use a 25 foot vertical stack flare.

Average Wolf Creek Storage Field BHP during MAX(FALL time frame) storage inventory level for past 3 years was 1231.7 psia. Average Wolf Creek Storage Field BHP during LOWEST(SPRING time frame) storage inventory level for past 3 years was 1194.8 psia.

For the production casing, the 7" TTNV joint and body strength are the same.

**Other proposed operations facets attachment:**

Wolf\_Creek\_9\_D3\_CementLabs\_20190225202722.pdf

Wolf\_Creek\_Flare\_Drawing\_2019\_02\_27\_20190227192923.pdf

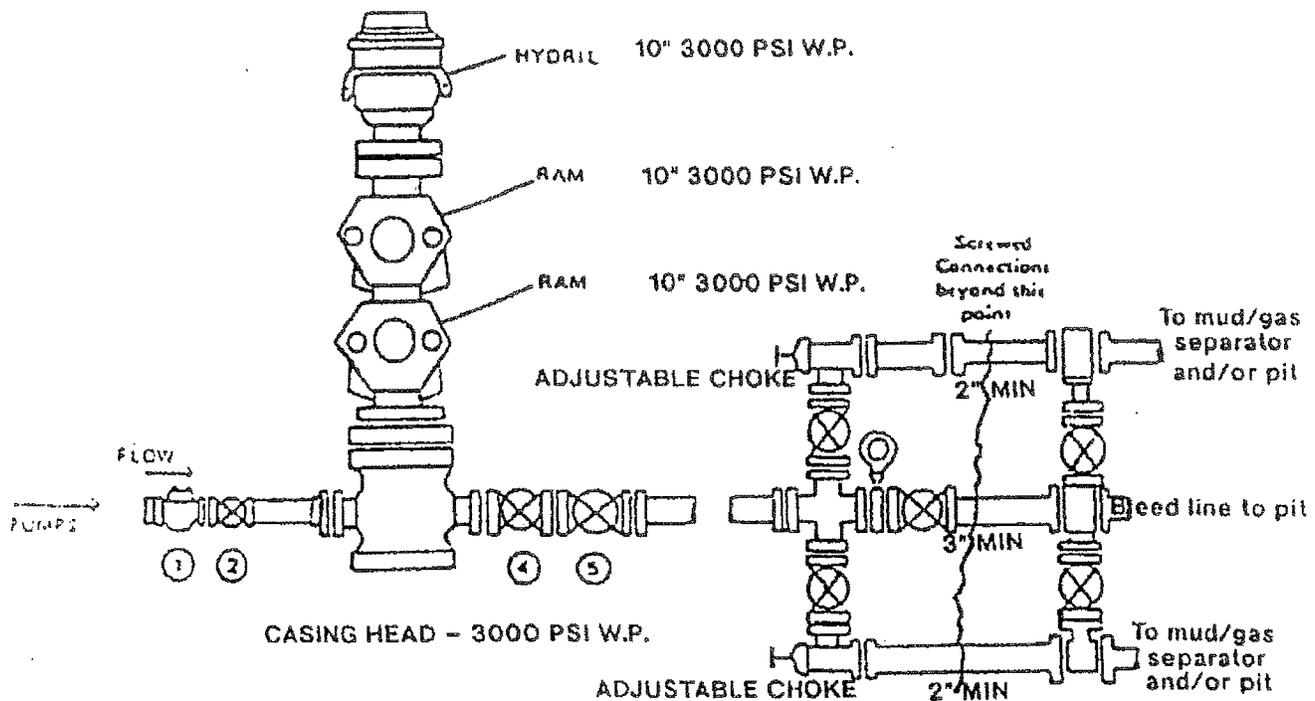
**Other Variance attachment:**



# MINIMUM BOP Requirements

3000 PSI W.P.

FILL LINE ABOVE THE UPPERMOST PREVENTER



## KILL LINE

- Valve #1 - Flanged check valve  
Full working pressure  
of BOP
- Valve #2 - Flanged, minimum 2"  
bore  
Full working pressure  
of BOP

## CHOKE LINE

- Valves #4 & 5 - Flanged minimum 3"  
bore,  
Full working pressure  
of BOP  
(Note: An HCR can  
be used instead of  
Valve # 5)

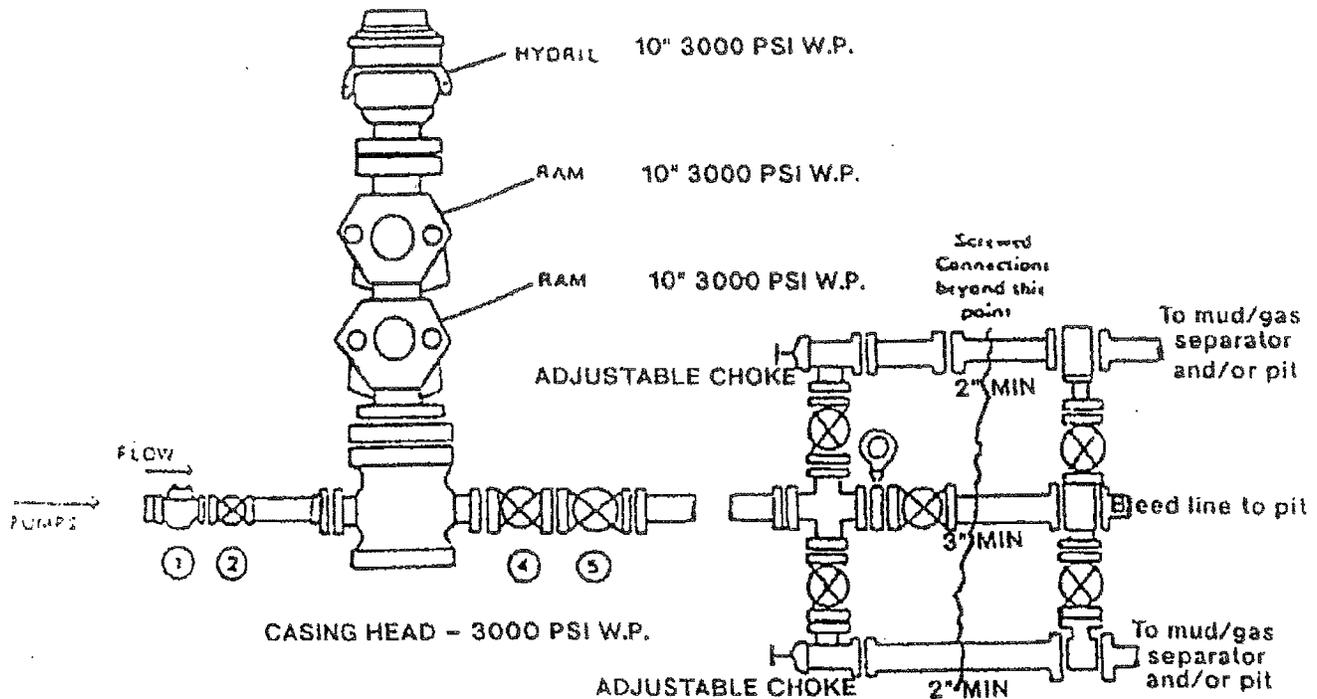
## GENERAL RULES AND RECOMMENDATIONS

- All lines to manifold are to be at right angles (90 deg.). No 45 deg. angles are to be used.
- Blind flanges are to be used for blanking.
- ALL studs and nuts are to be installed on all flanges.

# MINIMUM BOP Requirements

3000 PSI W.P.

FILL LINE ABOVE THE UPPERMOST PREVENTER



## KILL LINE

- Valve #1 - Flanged check valve  
Full working pressure  
of BOP
- Valve #2 - Flanged, minimum 2"  
bore  
Full working pressure  
of BOP

## CHOKE LINE

- Valves #4 & 5 - Flanged minimum 3"  
bore,  
Full working pressure  
of BOP  
(Note: An HCR can  
be used instead of  
Valve # 5)

## GENERAL RULES AND RECOMMENDATIONS

- All lines to manifold are to be at right angles (90 deg.). No 45 deg. angles are to be used.
- Blind flanges are to be used for blanking.
- ALL studs and nuts are to be installed on all flanges.

**1: Casing for the Wolf creek #9-D2**

Casing design Surface 13.5" hole

9.625 36#/ft J-55 ST&C Surface to 1200' MD and TVD Casing length 1200'.

New API Not a tapered string

Collaspse 3.60

Burst 2.95

Joint 9.12

Body 13.05

Figured Dry

**1: Casing for the Wolf creek #9-D3**

Casing design Surface 13.5" hole

9.625 36#/ft J-55 ST&C Surface to 1200' MD and TVD Casing length 1200'.

New API Not a tapered string

Collaspse 3.60

Burst 2.95

Joint 9.12

Body 13.05

Figured Dry

Material	Imperial	Metric
Yield Stress (min) (psi [kPa])	110,000	758,423
Yield Stress (max) (psi [kPa])	140,000	965,266
Tensile Stress (min) (psi [kPa])	125,000	861,845
Hardness (max) (HRC [HBW])	N/A	N/A
Pipe Body Data		
Outside Diameter, Nominal (in [mm])	7.000	177.80
Weight, Nominal (lbm/ft [kg/m])	29.00	43.16
Wall Thickness, Nominal (in [mm])	0.408	10.36
Inside Diameter, Nominal (in [mm])	6.184	157.07
API Drift Diameter (in [mm])	6.059	153.90
Alternate Drift Diameter (in [mm])	N/A	N/A
Cross Section, Nominal (sq.in. [mm <sup>2</sup> ])	8.449	5450.96
Pipe Performance		
Tensile Yield (lbf [N])	929,400	4,134,176
Internal Yield Pressure (psi [kPa])	11,220	77,359
Collapse Pressure (psi [kPa])	11,080	76,394
Hydrostatic Test Pressure (psi [kPa])	10,000	68,948
Connection Data		
Connection OD (in [mm])	7.875	200.03
Special Clearance OD (in [mm])	7.616	193.45
Connection ID (in [mm])	6.184	157.07
Coupling Length (min) (in [mm])	10.250	260.35
Make-up Loss (in [mm])	4.770	121.16
Threads per Inch (pitch [mm])	6.000	4.23
Torques (Make-Up, Operational, Yield)		
Minimum (lbf-ft [N.m])	12,600	17,080
Optimum (lbf-ft [N.m])	13,000	17,630
Maximum (lbf-ft [N.m])	14,400	19,520
Max Operational, 1.176 S.F. (lbf-ft [N.m])	26,800	36,340
Yield (lbf-ft [N.m])	N/A	N/A

**SIZE:** 7 in. [177.8]  
**WEIGHT:** 29 lbm/ft [43.16]  
**GRADE:** HCP-110  
**CONNECTION:** TTN Y  
**Gas Tight Seal**

Connection Performance	
Tensile Efficiency (% of pipe Body)	100%
Internal Yield Pressure (% of pipe Body)	100%
External yield pressure (% of pipe Body)	100%
Compression Efficiency (% of pipe Body)	100%
Bending rate, with sealability (°/100 ft)	20°



All connection performance and torque values are calculated (to be verified by testing).

**Inspection Criteria:** All the material is inspected to 5% Test notch inspection for OD/ID, Long/Trans and wall check per API/ASTM requirements though EMI/SEA.

**Note:** All the information provided is general data. This is not any kind of warranty/quality certificate. Tejas Tubular has the right to change this data at any time for product improvement. This is a non-controlled document. TTN Y and Tejas Tubular logo are marks of Tejas Tubular Products, Inc.

## Technical Support:

8799 North Loop East, Suite 300  
Houston, TX 77029

Local: 713-631-0071 • Toll Free: 1-800-469-7549  
connectionsupport@tejastubular.com

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[www.tejastubular.com](http://www.tejastubular.com)

Calculations for Casing Safety Factors - 7" production Casing Wolf Creek 9-D3

**7" 29 lbs/ft HCP(high collapse P) TTNV connection**

<b>Pipe Body Yield</b>	<b>929,400 lbf</b>
<b>Connection Yield</b>	<b>same as pipe body yield</b>
<b>Burst internal Yield</b>	<b>11,220 psi</b>
<b>Collaspe Presure</b>	<b>11,080 psi</b>

**For Production casing**

Burst Pressure Safety Factor = Casing Burst Pressure/(Max BHP-(TVD X Gas Gradient))

Gas Gradient Used 0.22 psi/ft TVD at next casing point – 5185' Casing burst pressure 11,220 psi

Burst Pressure Safety Factor =  $11220 / (2333 - (5185 \times 0.22))$

**Burst Pressure Safety Factor = 9.41**

Collapse Pressure Safety Factor = Casing Collapse Pressure/(Fluid Gradient X TVD of shoe)

Fluid Gradient 10 ppg mud = 0.52 psi/ft Casing Collapse Press = 11080 psi TVD shoe = 5185'

Collapse Pressure Safety Factor =  $11080 / (0.52 \times 5185)$

**Collapse Pressure Safety Factor = 4.11 (complete evacuation)**

Tension safety factors = Joint Strength ( pipe body or thread)/(length X casing weight per ft)

Pipe Body = 929,400 Joint Connection = 929,400 Length 5608' Casing Weight 29 lbs/ft.

For Joint Connection =  $929,400 / (5608 \times 29)$

**Safety Factor for tension in connection = 5.71 (in air)**

For Pipe Body =  $929,400 / (5608 \times 29)$

**Safety Factor for tension in pipe body = 5.71 (in air)**

# **Rocky Mountain Nat Gas LLC**

**Wolf Creek  
Wolf Creek  
Wolf Creek 9-D3**

**Wolf Creek 9-D3**

**Plan: Primary**

## **Standard Planning Report**

**30 January, 2019**

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Wolf Creek 9-D3, True North  
 Vertical (TVD) Reference: RKB @ 10175.00ft (Original Well Elev)  
 Section (VS) Reference: Slot - (0.00N, 0.00E)  
 Measured Depth Reference: RKB @ 10175.00ft (Original Well Elev)  
 Calculation Method: Minimum Curvature



DIRECTIONAL DRILLING SPECIALISTS

Project: Wolf Creek  
 Site: Wolf Creek  
 Well: Wolf Creek 9-D3  
 Wellbore: Wolf Creek 9-D3  
 Design: Primary

Azimuth to True North  
 Magnetic North 9.24°  
 Strength: 51292.65nT  
 Declination: 120.2019  
 Date: 12/20/19  
 Model: IGR2015



WELL DETAILS: Wolf Creek 9-D3

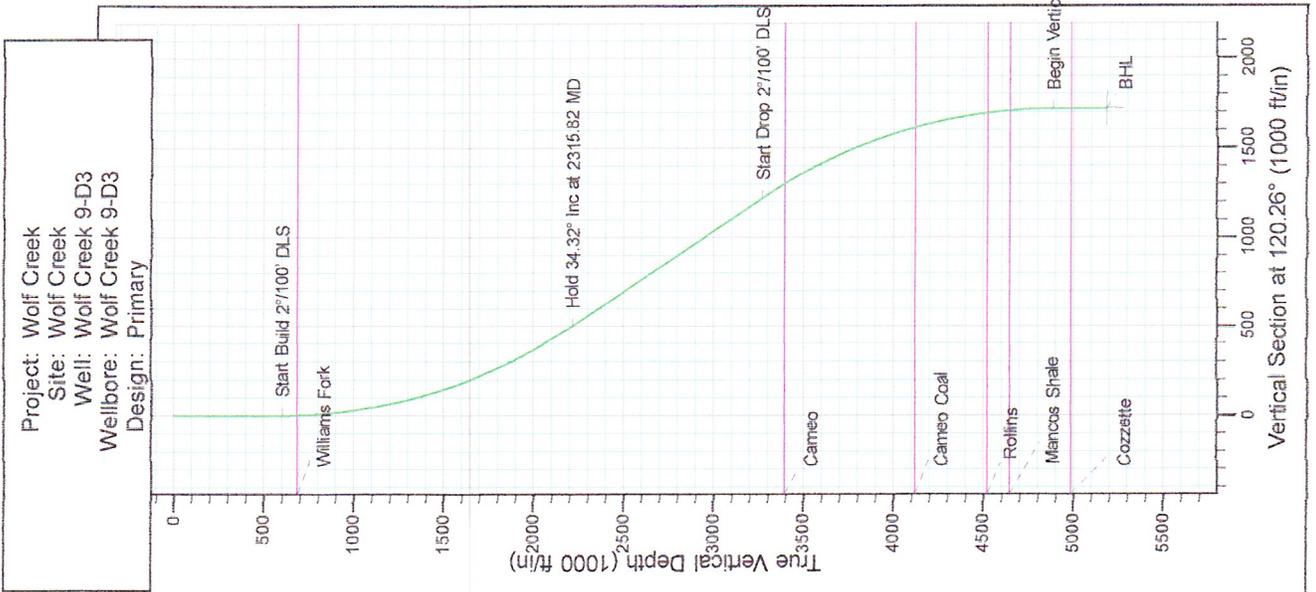
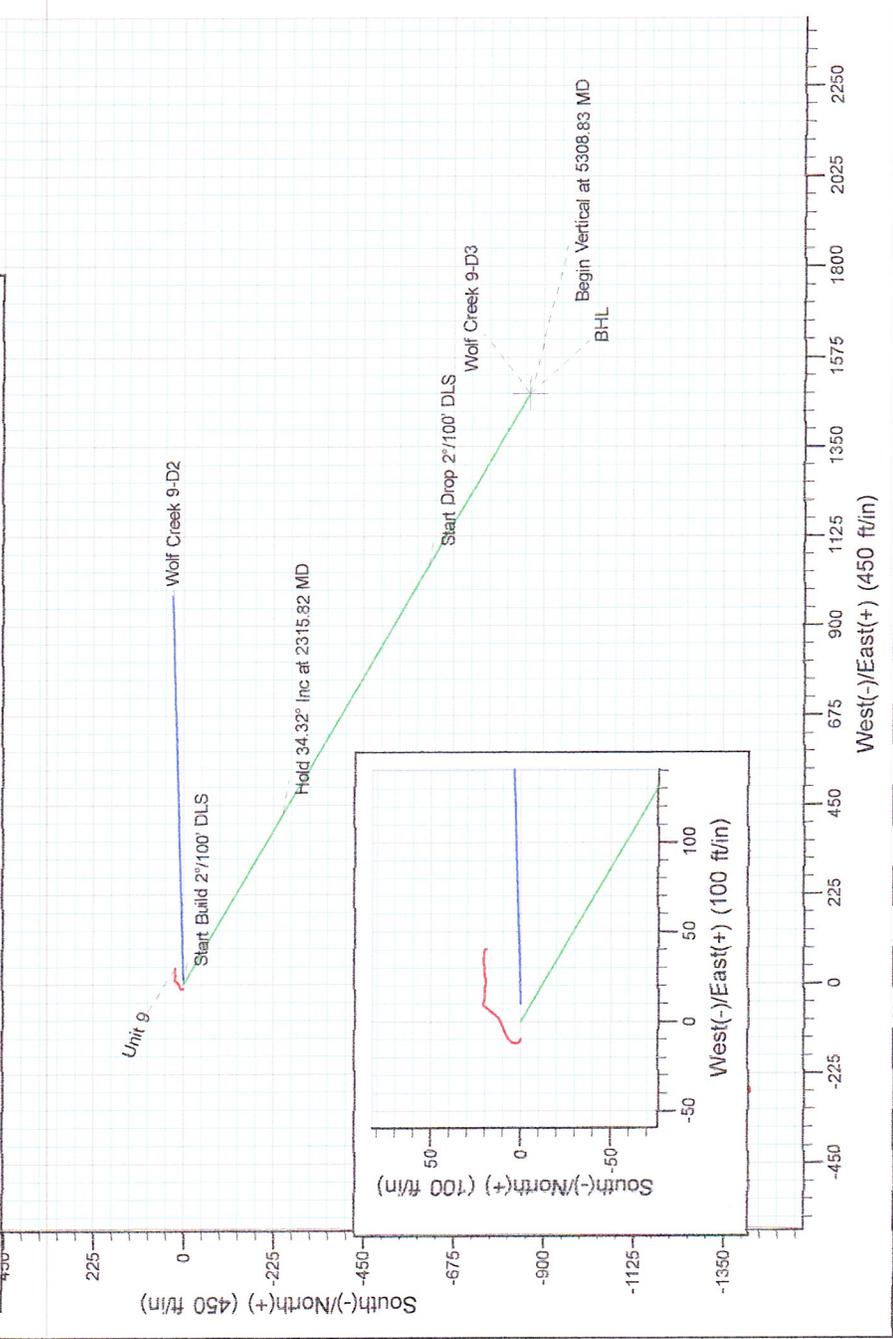
+N/S	0.00	+E/W	0.00	Northing	1544430.550	Ground Level:	10163.00	Longitude	-107.3955436
						Easting	2463754.203	Latitude	39.312845

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/S	+E/W	Dieg	TFace	Vsect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	Start Build 2 7/100' DLS
3	2315.82	34.32	120.26	2215.06	-251.26	430.72	2.00	120.26	498.65	Hold 34.32° Inc at 2315.82 MD
4	3503.01	34.32	120.26	3289.84	-514.07	1052.66	0.00	0.00	1218.68	Start Drop 2 7/100' DLS
5	5308.83	0.00	0.00	4885.00	-365.33	1483.39	2.00	180.00	1717.34	Begin Vertical at 5308.83 MD
6	9508.83	0.00	0.00	5185.00	-365.33	1483.39	0.00	0.00	1717.34	TD at 9508.83 MD

DESIGN TARGET DETAILS

Name	TVD	+N/S	+E/W	Northing	Easting	Latitude	Longitude	Shape
BHL	5185.00	-865.33	1483.39	1543534.458	2465219.211	39.310469	-107.350193	Point



Planning Report

<b>Database:</b>	Compass DB	<b>Local Co-ordinate Reference:</b>	Well Wolf Creek 9-D3
<b>Company:</b>	Rocky Mountain Nat Gas LLC	<b>TVD Reference:</b>	RKB @ 10175.00ft (Original Well Elev)
<b>Project:</b>	Wolf Creek	<b>MD Reference:</b>	RKB @ 10175.00ft (Original Well Elev)
<b>Site:</b>	Wolf Creek	<b>North Reference:</b>	True
<b>Well:</b>	Wolf Creek 9-D3	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wolf Creek 9-D3		
<b>Design:</b>	Primary		

<b>Project</b>	Wolf Creek		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Central Zone		

<b>Site</b>	Wolf Creek				
<b>Site Position:</b>		<b>Northing:</b>	1,543,047.456 usft	<b>Latitude:</b>	39.309031
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,463,450.728 usft	<b>Longitude:</b>	-107.396406
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	-1.20 °

<b>Well</b>	Wolf Creek 9-D3					
<b>Well Position</b>	<b>+N/-S</b>	1,389.13 ft	<b>Northing:</b>	1,544,430.550 usft	<b>Latitude:</b>	39.312845
	<b>+E/-W</b>	274.54 ft	<b>Easting:</b>	2,463,754.203 usft	<b>Longitude:</b>	-107.395436
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	10,163.00 ft	<b>Ground Level:</b>	10,163.00 ft

<b>Wellbore</b>	Wolf Creek 9-D3				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	1/29/2019	9.24	65.51	51,293

<b>Design</b>	Primary			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	120.26

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,315.82	34.32	120.26	2,215.06	-251.26	430.72	2.00	2.00	0.00	120.26	
3,593.01	34.32	120.26	3,269.94	-614.07	1,052.66	0.00	0.00	0.00	0.00	
5,308.83	0.00	0.00	4,885.00	-865.33	1,483.39	2.00	-2.00	0.00	180.00	
5,608.83	0.00	0.00	5,185.00	-865.33	1,483.39	0.00	0.00	0.00	0.00	BHL

Planning Report

<b>Database:</b>	Compass DB	<b>Local Co-ordinate Reference:</b>	Well Wolf Creek 9-D3
<b>Company:</b>	Rocky Mountain Nat Gas LLC	<b>TVD Reference:</b>	RKB @ 10175.00ft (Original Well Elev)
<b>Project:</b>	Wolf Creek	<b>MD Reference:</b>	RKB @ 10175.00ft (Original Well Elev)
<b>Site:</b>	Wolf Creek	<b>North Reference:</b>	True
<b>Well:</b>	Wolf Creek 9-D3	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wolf Creek 9-D3		
<b>Design:</b>	Primary		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Start Build 2°/100' DLS</b>										
700.00	2.00	120.26	699.98	-0.88	1.51	1.75	2.00	2.00	0.00	
800.00	4.00	120.26	799.84	-3.52	6.03	6.98	2.00	2.00	0.00	
900.00	6.00	120.26	899.45	-7.91	13.56	15.69	2.00	2.00	0.00	
1,000.00	8.00	120.26	998.70	-14.05	24.08	27.88	2.00	2.00	0.00	
1,100.00	10.00	120.26	1,097.47	-21.93	37.59	43.52	2.00	2.00	0.00	
1,200.00	12.00	120.26	1,195.62	-31.54	54.07	62.60	2.00	2.00	0.00	
1,300.00	14.00	120.26	1,293.06	-42.88	73.50	85.10	2.00	2.00	0.00	
1,400.00	16.00	120.26	1,389.64	-55.92	95.86	110.98	2.00	2.00	0.00	
1,500.00	18.00	120.26	1,485.27	-70.65	121.11	140.21	2.00	2.00	0.00	
1,600.00	20.00	120.26	1,579.82	-87.05	149.23	172.77	2.00	2.00	0.00	
1,700.00	22.00	120.26	1,673.17	-105.11	180.19	208.60	2.00	2.00	0.00	
1,800.00	24.00	120.26	1,765.21	-124.80	213.93	247.67	2.00	2.00	0.00	
1,900.00	26.00	120.26	1,855.84	-146.09	250.44	289.93	2.00	2.00	0.00	
2,000.00	28.00	120.26	1,944.94	-168.97	289.65	335.33	2.00	2.00	0.00	
2,100.00	30.00	120.26	2,032.39	-193.39	331.52	383.81	2.00	2.00	0.00	
2,200.00	32.00	120.26	2,118.11	-219.34	376.01	435.31	2.00	2.00	0.00	
2,300.00	34.00	120.26	2,201.97	-246.79	423.05	489.77	2.00	2.00	0.00	
2,315.82	34.32	120.26	2,215.06	-251.26	430.72	498.65	2.00	2.00	0.00	
<b>Hold 34.32° Inc at 2315.82 MD</b>										
2,400.00	34.32	120.26	2,284.59	-275.18	471.72	546.11	0.00	0.00	0.00	
2,500.00	34.32	120.26	2,367.18	-303.58	520.41	602.49	0.00	0.00	0.00	
2,600.00	34.32	120.26	2,449.78	-331.99	569.11	658.86	0.00	0.00	0.00	
2,700.00	34.32	120.26	2,532.37	-360.40	617.80	715.24	0.00	0.00	0.00	
2,800.00	34.32	120.26	2,614.96	-388.80	666.50	771.61	0.00	0.00	0.00	
2,900.00	34.32	120.26	2,697.56	-417.21	715.20	827.99	0.00	0.00	0.00	
3,000.00	34.32	120.26	2,780.15	-445.62	763.89	884.37	0.00	0.00	0.00	
3,100.00	34.32	120.26	2,862.74	-474.02	812.59	940.74	0.00	0.00	0.00	
3,200.00	34.32	120.26	2,945.34	-502.43	861.28	997.12	0.00	0.00	0.00	
3,300.00	34.32	120.26	3,027.93	-530.84	909.98	1,053.50	0.00	0.00	0.00	
3,400.00	34.32	120.26	3,110.53	-559.24	958.68	1,109.87	0.00	0.00	0.00	
3,500.00	34.32	120.26	3,193.12	-587.65	1,007.37	1,166.25	0.00	0.00	0.00	
3,593.01	34.32	120.26	3,269.94	-614.07	1,052.66	1,218.68	0.00	0.00	0.00	
<b>Start Drop 2°/100' DLS</b>										
3,600.00	34.18	120.26	3,275.72	-616.05	1,056.06	1,222.62	2.00	-2.00	0.00	
3,700.00	32.18	120.26	3,359.41	-643.63	1,103.33	1,277.34	2.00	-2.00	0.00	
3,800.00	30.18	120.26	3,444.97	-669.71	1,148.04	1,329.10	2.00	-2.00	0.00	
3,900.00	28.18	120.26	3,532.27	-694.27	1,190.15	1,377.85	2.00	-2.00	0.00	
4,000.00	26.18	120.26	3,621.23	-717.29	1,229.60	1,423.52	2.00	-2.00	0.00	
4,100.00	24.18	120.26	3,711.73	-738.72	1,266.34	1,466.06	2.00	-2.00	0.00	
4,200.00	22.18	120.26	3,803.65	-758.55	1,300.33	1,505.41	2.00	-2.00	0.00	
4,300.00	20.18	120.26	3,896.89	-776.75	1,331.54	1,541.54	2.00	-2.00	0.00	
4,400.00	18.18	120.26	3,991.34	-793.30	1,359.91	1,574.38	2.00	-2.00	0.00	
4,500.00	16.18	120.26	4,086.87	-808.18	1,385.42	1,603.91	2.00	-2.00	0.00	
4,600.00	14.18	120.26	4,183.38	-821.37	1,408.03	1,630.09	2.00	-2.00	0.00	
4,700.00	12.18	120.26	4,280.74	-832.86	1,427.72	1,652.88	2.00	-2.00	0.00	

Planning Report

<b>Database:</b>	Compass DB	<b>Local Co-ordinate Reference:</b>	Well Wolf Creek 9-D3
<b>Company:</b>	Rocky Mountain Nat Gas LLC	<b>TVD Reference:</b>	RKB @ 10175.00ft (Original Well Elev)
<b>Project:</b>	Wolf Creek	<b>MD Reference:</b>	RKB @ 10175.00ft (Original Well Elev)
<b>Site:</b>	Wolf Creek	<b>North Reference:</b>	True
<b>Well:</b>	Wolf Creek 9-D3	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wolf Creek 9-D3		
<b>Design:</b>	Primary		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,800.00	10.18	120.26	4,378.84	-842.62	1,444.46	1,672.27	2.00	-2.00	0.00
4,900.00	8.18	120.26	4,477.56	-850.66	1,458.23	1,688.21	2.00	-2.00	0.00
5,000.00	6.18	120.26	4,576.77	-856.95	1,469.02	1,700.71	2.00	-2.00	0.00
5,100.00	4.18	120.26	4,676.36	-861.50	1,476.82	1,709.73	2.00	-2.00	0.00
5,200.00	2.18	120.26	4,776.20	-864.29	1,481.60	1,715.27	2.00	-2.00	0.00
5,300.00	0.18	120.26	4,876.17	-865.33	1,483.38	1,717.32	2.00	-2.00	0.00
5,308.83	0.00	0.00	4,885.00	-865.33	1,483.39	1,717.34	2.00	-2.00	0.00
<b>Begin Vertical at 5308.83 MD</b>									
5,400.00	0.00	0.00	4,976.17	-865.33	1,483.39	1,717.34	0.00	0.00	0.00
5,500.00	0.00	0.00	5,076.17	-865.33	1,483.39	1,717.34	0.00	0.00	0.00
5,600.00	0.00	0.00	5,176.17	-865.33	1,483.39	1,717.34	0.00	0.00	0.00
5,608.83	0.00	0.00	5,185.00	-865.33	1,483.39	1,717.34	0.00	0.00	0.00
<b>TD at 5608.83</b>									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
BHL	0.00	0.00	5,185.00	-865.33	1,483.39	1,543,534.459	2,465,219.211	39.310469	-107.390193
- hit/miss target									
- Shape									
- plan hits target center									
- Point									

Casing Points									
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")					
60.00	60.00	Conductor	20	26					
1,200.00	1,195.62	9 5/8" Casing	9-5/8	13-1/2					
5,603.83	5,180.00	7" Casing	7	8-3/4					

Formations									
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)				
685.01	685.00	Williams Fork		0.00					
3,741.85	3,395.00	Cameo		0.00					
4,533.39	4,119.00	Cameo Coal		0.00					
4,942.83	4,520.00	Rollins		0.00					
5,068.55	4,645.00	Mancos Shale		0.00					
5,408.83	4,985.00	Cozzette		0.00					

## Planning Report

<b>Database:</b>	Compass DB	<b>Local Co-ordinate Reference:</b>	Well Wolf Creek 9-D3
<b>Company:</b>	Rocky Mountain Nat Gas LLC	<b>TVD Reference:</b>	RKB @ 10175.00ft (Original Well Elev)
<b>Project:</b>	Wolf Creek	<b>MD Reference:</b>	RKB @ 10175.00ft (Original Well Elev)
<b>Site:</b>	Wolf Creek	<b>North Reference:</b>	True
<b>Well:</b>	Wolf Creek 9-D3	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wolf Creek 9-D3		
<b>Design:</b>	Primary		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
600.00	600.00	0.00	0.00	Start Build 2°/100' DLS
2,315.82	2,215.06	-251.26	430.72	Hold 34.32° Inc at 2315.82 MD
3,593.01	3,269.94	-614.07	1,052.66	Start Drop 2°/100' DLS
5,308.83	4,885.00	-865.33	1,483.39	Begin Vertical at 5308.83 MD
5,608.83	5,185.00	-865.33	1,483.39	TD at 5608.83

Cement: This is a Halliburton Listing of additives for each slurry along with strengths

**HALLIBURTON**

**CEMENT TEST/ADDITIVE REPORT  
HALLIBURTON ENERGY SERVICES**

Below are the cement blends and compressive strengths for slurries that will be used.

**SURFACE STRING: 12.8 PPG ROCKIES LT**

**Inkom**

Type III Cement	#/sk	94.0
EX-1	%bwoc	1.0
Cal-Seal	%bwoc	1.0
Gilsonite	#/sk	3.0
Versaset	%bwoc	0.3
D-Air 3000	#/sk	0.25
Poly Flake *	#/sk	0.25

\* denotes material not used in testing.

<b>Tap</b> Water	gal/sk	10.64
Mix Water Temp	°F	68
Density	#/gal	12.8
Yield	ft <sup>3</sup> /sk	1.96

### UCA COMPRESSIVE STRENGTH TEST

Pressure:	700	psi
Temperature:	95	°F

242	psi	12 hours
451	Psi	24 hours
733	Psi	48 hours
869	Psi	72 hours

Set Time:	50	Psi	4:44
WOC:	500	Psi	26:25

**PRODUCTION STRING LEAD: 12.7 PPG HLC CEMENT**

**Inkom**

Type G Cement	#/sk	61.1
JB Pozmix	#/sk	24.675
Halliburton Gel	%bwoc	8.0
Silicalite	#/sk	4.0
Halad-344	%bwoc	0.1
HR-601	%bwoc	0.6

City Water	gal/sk	10.18
Mix Water Temp	°F	78
Density	#/gal	12.7
Yield	ft3/sk	1.91

**UCA COMPRESSIVE STRENGTH TEST**

Pressure:	3000	psi
Temperature:	293	°F

658	psi	12 hours
603	Psi	24 hours
649	Psi	48 hours

Set Time:	50	Psi	2:44
WOC:	500	Psi	3:20

**PRODUCTION STRING TAIL SLURRY: 13.5 PPG 50/50 POZ CEMENT**

**SLURRY COMPOSITION**

**Inkom**

Type G Cement	#/sk	47.0
JB Pozmix	#/sk	35.25
Halliburton Gel	%bwoc	2.0
SSA-1	%bwoc	20.0
Silicalite	#/sk	3.0
Gilsonite	#/sk	8.0
Halad-344	%bwoc	0.4
Halad-413	%bwoc	0.3
HR-601	%bwoc	0.35
Super-CBL	%bwoc	0.2
Steel Seal	%bwoc	0.3

Tuf Plug *	#/sk	1.0
Pol-E-Flake	#/sk	0.25

City Water	gal/sk	7.27
Mix Water Temp	°F	68
Density	#/gal	13.5
Yield	ft3/sk	1.66

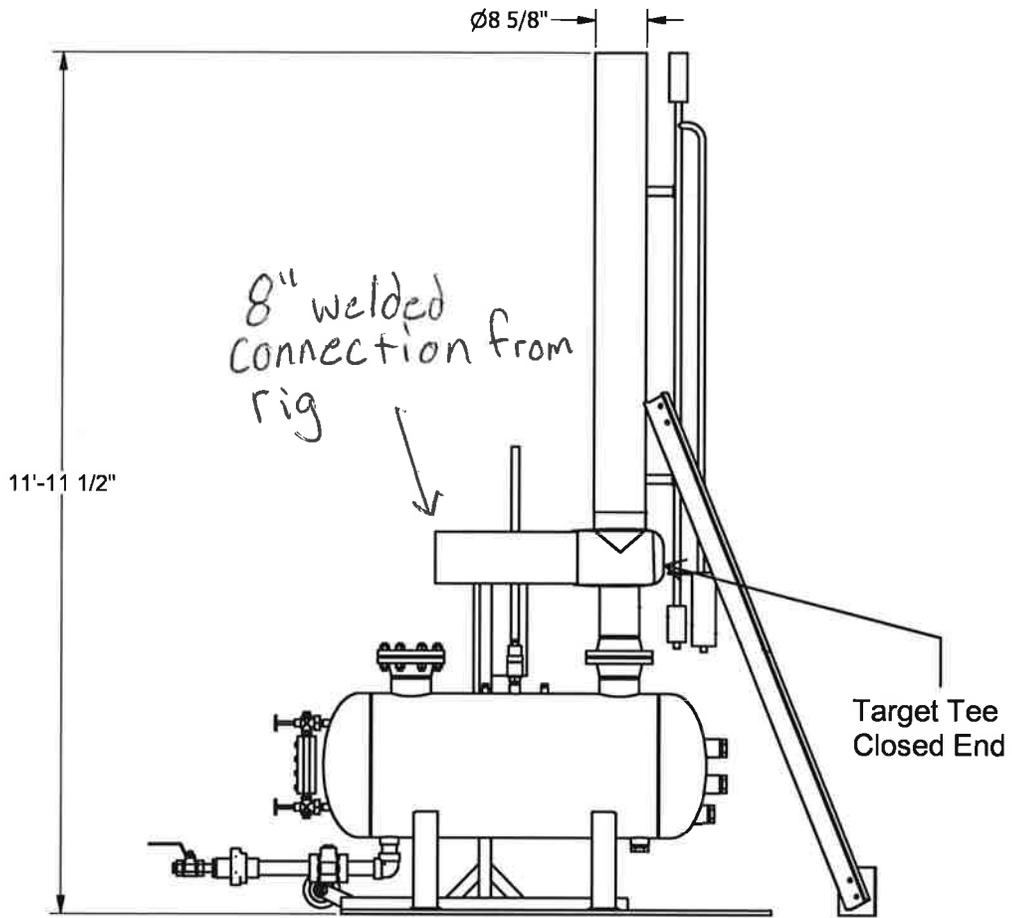
**UCA COMPRESSIVE STRENGTH TEST**

Pressure:	3000	psi
Temperature:	271	°F

606	psi	12 hours
680	Psi	24 hours
995	Psi	48 hours

Set Time:	50	Psi	4:17
WOC:	500	Psi	7:54

This report is based on sound engineering practices, but because of variable well conditions and other information which must be relied upon, Halliburton makes no warranty, express or implied, as to the accuracy of the data or of any calculations or opinions expressed herein. You agree that Halliburton shall not be liable for any loss or damage whether due to negligence or otherwise arising out of or in connection with such data, calculation or opinions.



APD ID: 10400038752

Submission Date: 02/08/2019

Highlighted data  
reflects the most  
recent changes

Operator Name: ROCKY MOUNTAIN NATURAL GAS LLC

Well Name: WOLF CREEK UNIT

Well Number: 9-D3

[Show Final Text](#)

Well Type: INJECTION - STORAGE

Well Work Type: Drill

## Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Map\_from\_GWS\_to\_Pad\_9\_02\_25\_19\_20190226200838.pdf

Existing Road Purpose: ACCESS

Row(s) Exist? YES

**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? NO

## Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

Wolf\_Creek\_9\_WellsWithin1Mile\_V3\_20190223084913.pdf

**Operator Name:** ROCKY MOUNTAIN NATURAL GAS LLC

**Well Name:** WOLF CREEK UNIT

**Well Number:** 9-D3

**Existing Wells description:**

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

**Submit or defer a Proposed Production Facilities plan?** DEFER

**Estimated Production Facilities description:** 2 storage tanks, 1 separator, 1 communications building

## Section 5 - Location and Types of Water Supply

### Water Source Table

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

**Describe type:**

**Source latitude:**

**Source datum:**

**Water source permit type:** OTHER

**Permit Number:**

**Source land ownership:** PRIVATE

**Water source transport method:** TRUCKING

**Source transportation land ownership:** STATE

**Water source volume (barrels):** 30000

**Source volume (gal):** 1260000

**Water source type:** MUNICIPAL

**Source longitude:**

**Source volume (acre-feet):** 3.866793

**Water source and transportation map:**

Wolf\_Creek\_HaulingRoutes\_V4\_20190223085350.pdf

**Water source comments:** Water will be purchased from the City of Rifle.

**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:**

**Operator Name:** ROCKY MOUNTAIN NATURAL GAS LLC

**Well Name:** WOLF CREEK UNIT

**Well Number:** 9-D3

**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

**Construction Materials description:** Rocky Mountain Natural gas will expand the graveled surface of the pad to include the 0.012 acres of proposed new disturbance. Gravel will be purchased from United Pit Gravel in Carbondale, CO.

**Construction Materials source location attachment:**

### Section 7 - Methods for Handling Waste

**Waste type:** GARBAGE

**Waste content description:** Garbage, trash, and other waste materials will be collected in a portable, self-contained and fully enclosed trash cage during drilling and completion operations. Upon completion of operations (or as needed) the accumulated trash will be disposed of at an authorized sanitary landfill. No trash will be burned on location or placed in the reserve pit.

**Amount of waste:**

**Waste disposal frequency :** One Time Only

**Safe containment description:** Portable, self-contained fully enclosed trash cage

**Safe containmant attachment:**

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

**Disposal type description:**

**Disposal location description:** Glenwood Springs, CO

**Waste type:** SEWAGE

**Waste content description:** Self-contained, chemical toilets will be provided for human waste disposal.

**Amount of waste:**

**Waste disposal frequency :** Weekly

**Safe containment description:** Self-contained, chemical toilets

**Safe containmant attachment:**

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

**Operator Name:** ROCKY MOUNTAIN NATURAL GAS LLC

**Well Name:** WOLF CREEK UNIT

**Well Number:** 9-D3

**Disposal type description:**

**Disposal location description:** Glenwood Springs, CO

**Waste type:** DRILLING

**Waste content description:** Drill cuttings and drilling fluids

**Amount of waste:** 2770 barrels

**Waste disposal frequency :** One Time Only

**Safe containment description:** Freshwater cuttings will be contained on location in a three-sided bin until hauled offsite for commercial disposal.

**Safe containmant attachment:**

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

**Disposal type description:**

**Disposal location description:** Drilling fluids will be hauled to Greenleaf Environmental Services, a licensed, commercial disposal facility in Debeque, CO.

### Reserve Pit

**Reserve Pit being used?** NO

**Temporary disposal of produced water into reserve pit?**

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

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

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

**Reserve pit liner**

**Reserve pit liner specifications and installation description**

### Cuttings Area

**Cuttings Area being used?** NO

**Are you storing cuttings on location?** YES

**Description of cuttings location** Freshwater cuttings will be contained on location in a three-sided bin until hauled offsite for commercial disposal.

**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**

**Operator Name:** ROCKY MOUNTAIN NATURAL GAS LLC

**Well Name:** WOLF CREEK UNIT

**Well Number:** 9-D3

## Section 8 - Ancillary Facilities

**Are you requesting any Ancillary Facilities?:** NO

**Ancillary Facilities attachment:**

**Comments:**

## Section 9 - Well Site Layout

**Well Site Layout Diagram:**

Wolf\_Creek\_9\_D3\_Rig\_Layout\_02\_07\_19\_20190207190404.pdf

**Comments:** As shown on the attached Rig Layout, Rocky Mountain Natural Gas proposes to place multiple wells on the existing single well pad and will require a new disturbance (0.012 acres) outside the Limits of Disturbance to this location. This will include expanding the graveled surface of the pad to allow for the drilling rig to complete these two wells on this single pad.

## Section 10 - Plans for Surface Reclamation

**Type of disturbance:** New Surface Disturbance

**Multiple Well Pad Name:** WOLF CREEK UNIT

**Multiple Well Pad Number:** 9

**Recontouring attachment:**

**Drainage/Erosion control construction:** Location may include sediment traps, diversion ditch, berm, and rock armouring. The pad will be graveled to create soil stability.

**Drainage/Erosion control reclamation:** The BMPs mentioned will function as long-term berms during the life of the well.

<b>Well pad proposed disturbance (acres):</b> 0.012	<b>Well pad interim reclamation (acres):</b> 0	<b>Well pad long term disturbance (acres):</b> 0
<b>Road proposed disturbance (acres):</b> 0	<b>Road interim reclamation (acres):</b> 0	<b>Road long term disturbance (acres):</b> 0
<b>Powerline proposed disturbance (acres):</b> 0	<b>Powerline interim reclamation (acres):</b> 0	<b>Powerline long term disturbance (acres):</b> 0
<b>Pipeline proposed disturbance (acres):</b> 0	<b>Pipeline interim reclamation (acres):</b> 0	<b>Pipeline long term disturbance (acres):</b> 0
<b>Other proposed disturbance (acres):</b> 0	<b>Other interim reclamation (acres):</b> 0	<b>Other long term disturbance (acres):</b> 0
<b>Total proposed disturbance:</b> 0.012	<b>Total interim reclamation:</b> 0	<b>Total long term disturbance:</b> 0

**Disturbance Comments:** The existing pad will be increased slightly to accommodate multiple wells, adding approximately 520 square feet.

**Reconstruction method:** The pad will remain as-is for the life of the well. Once all wells on the pad are plugged and abandoned, all manmade structures will be removed from the site by means of backhoe, bulldozer, skidsteer or other appropriate heavy machinery. As applicable, compaction alleviation, restoration and revegetation of the site shall be performed to the same standards as established under COGCC Rule 1003. Structures that will be disposed of properly, may include, but are not limited to; wooden stakes used to secure wattles and straw bales, and other temporary BMPs, and/or waste associated with operations on site. This includes any trash left behind on location such as pipe fittings, used lumber and miscellaneous items that have been discarded. Gravel, road base and large cobbles installed on site for surface stabilization controls will be removed. Disposal and/or reuse method of gravel will be left to the discretion of the operator.

**Operator Name:** ROCKY MOUNTAIN NATURAL GAS LLC

**Well Name:** WOLF CREEK UNIT

**Well Number:** 9-D3

Temporary fencing put in place during operations will be retained until the final reclamation vegetation has been approved. Existing fence lines, historic fence lines, or wildlife friendly exclusionary fence lines, within the designated area of the site will be installed, repaired, replaced, or removed as agreed to by Black Hills and the Forest Service. The location surface shall be re-contoured to emulate the surrounding land's topography. To alleviate soil compaction, the substrate will be cross ripped to a depth of 18 inches. Cross-ripping will take place when the soil moisture is below 35 percent of field capacity. Cross-ripping is specified by the COGCC under the 1000 Series rules. Salvaged topsoil will then be evenly distributed across the entire disturbed area. To ensure a proper seed bed has been established, the soil may then be tilled or disked until is appropriately prepared. If site conditions are not conducive to drill seeding, disking or harrowing will be the final topsoil preparation prior to broadcast or hydroseeding. A rougher seed bed is more desirable for a good seed-to-soil contact and improved seedling emergence. As directed by the Forest Service, the operator shall implement measures following seedbed preparation (when broadcast-seeding or hydroseeding is to be used) to create small depressions to enhance capture of moisture and establishment of seeded species. Moisture retention will be accomplished by surfacing roughening and land forming. Drill seeding will be performed at a depth of 0.25 to 0.5 inches (dependent upon the seed mixture). If drill seeded, a chain drag will be used to lightly cover the seed with soil to ensure good seed-to-soil contact. Seed will be applied through hand broadcasting, hydroseeding, or drill seeding. Drill seeding will be the preferred method using a rangeland seed drill with a seed release and agitation mechanism sufficient to allow seeds of various size and density to be planted at the proper seeding depth.

**Topsoil redistribution:** Topsoil will be redistributed along the entirety of the pad once final reclamation is taking place.

**Soil treatment:** Soil treatments are not currently anticipated. Should they be deemed necessary at the time of reclamation approval will be sought from the Authorized Officer prior to application.

**Existing Vegetation at the well pad:**

**Existing Vegetation at the well pad attachment:**

**Existing Vegetation Community at the road:**

**Existing Vegetation Community at the road attachment:**

**Existing Vegetation Community at the pipeline:**

**Existing Vegetation Community at the pipeline attachment:**

**Existing Vegetation Community at other disturbances:**

**Existing Vegetation Community at other disturbances attachment:**

**Non native seed used?** NO

**Non native seed description:**

**Seedling transplant description:**

**Will seedlings be transplanted for this project?** NO

**Seedling transplant description attachment:**

**Will seed be harvested for use in site reclamation?**

**Seed harvest description:**

**Seed harvest description attachment:**

**Operator Name:** ROCKY MOUNTAIN NATURAL GAS LLC

**Well Name:** WOLF CREEK UNIT

**Well Number:** 9-D3

## 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? YES**

**Existing invasive species treatment description:** Cheatgrass

**Existing invasive species treatment attachment:**

**Weed treatment plan description:** Invasive weeds will be monitored and treated by a certified professional.

**Weed treatment plan attachment:**

**Monitoring plan description:** Location will be monitored regularly in compliance with US Forest Service and BLM policies, as well as complying with stormwater regulations.

**Monitoring plan attachment:**

**Success standards:** Reclamation will be deemed successful when reclamation has reached 70%

**Pit closure description:** No pit will be on location.

**Pit closure attachment:**

**Operator Name:** ROCKY MOUNTAIN NATURAL GAS LLC

**Well Name:** WOLF CREEK UNIT

**Well Number:** 9-D3

## Section 11 - Surface Ownership

**Disturbance type:** WELL PAD

**Describe:**

**Surface Owner:** U.S. FOREST SERVICE

**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:** REGION 2

**USFS Forest/Grassland:** WHITE RIVER NF

**USFS Ranger District:** ASPEN-SOPRIS

**Disturbance type:** EXISTING ACCESS ROAD

**Describe:**

**Surface Owner:** U.S. FOREST SERVICE

**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:** REGION 2

**Operator Name:** ROCKY MOUNTAIN NATURAL GAS LLC

**Well Name:** WOLF CREEK UNIT

**Well Number:** 9-D3

**USFS Forest/Grassland:** WHITE RIVER NF

**USFS Ranger District:** ASPEN-SOPRIS

### Section 12 - Other Information

**Right of Way needed?** NO

**Use APD as ROW?**

**ROW Type(s):**

#### ROW Applications

**SUPO Additional Information:** Operator will perform representative soil sample(s) to be collected under existing dehydration building foot print and new dehydration building foot print. Operator will analyze soil sample(s) for exceedance limits specified in COGCC Table 910-1 and remediate any contaminated soil if necessary.

**Use a previously conducted onsite?** YES

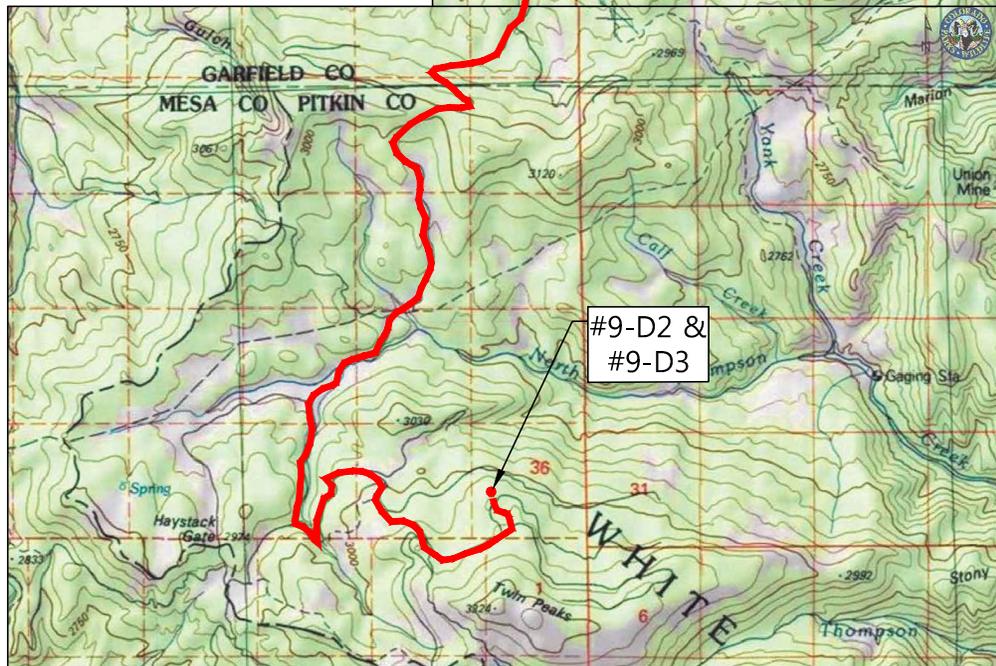
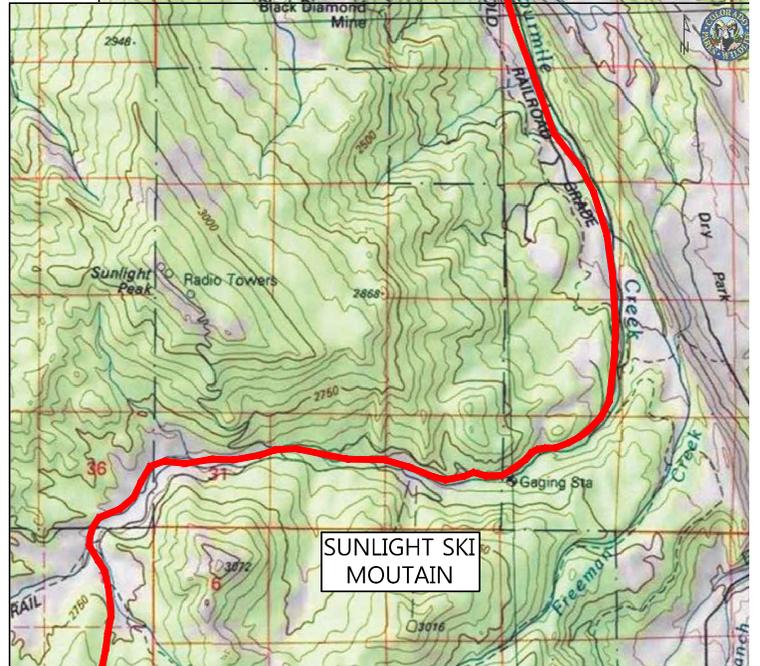
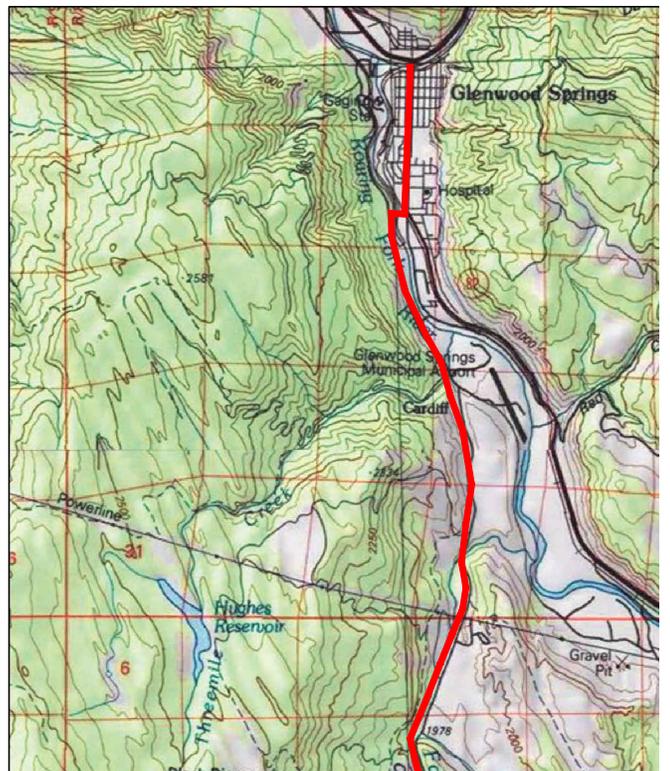
**Previous Onsite information:** September 24, 2018

#### Other SUPO Attachment



FROM GLENWOOD SPRINGS

GRAND AVE SOUTH TO MIDLAND AVENUE  
TO FOUR MILE ROAD (CR 117) TO  
SUNLIGHT SKI MOUNTAIN ABOUT 12± MILES  
TAKE RIGHT ONTO FOUR MILE ROAD  
(CR 117A) FOR 8± MILES  
TO "T" INTERSECTION WITH WEST DIVIDE ROAD  
GO LEFT OR CONTINUE ON FOUR MILE ROAD (CR117A)  
FOR 2± MILES TO FOREST SERVICE ROAD (TWIN PEAKS)  
TAKE A LEFT FOR 1/2± MILES TO A "T" INTERSECTION  
HEAD NORTH (LEFT) FOR APPROXIMATELY  
ONE-QUARTER MILE TO WOLF CREEK #9-D2 AND #9-D3.



SUNLIGHT SKI MOUNTAIN

#9-D2 & #9-D3

### BLACK HILLS ENERGY

ROAD MAP FROM GWS TO WELL PAD #9 WOLF CREEK  
COUNTIES OF GARFIELD & PITKIN, STATE OF COLORADO

# TRUE NORTH

COLORADO

A LAND SURVEYING AND MAPPING COMPANY



### TRUE NORTH COLORADO, LLC.

A LAND SURVEYING AND MAPPING COMPANY  
PO BOX 614 - 529 S. WILD HORSE  
NEW CASTLE, COLORADO 81647  
(970) 984-0474  
www.truenorthcolorado.com

PROJECT NO: 2017-216

DATE: FEBRUARY 25, 2019

DRAWN

RPK

SURVEYED

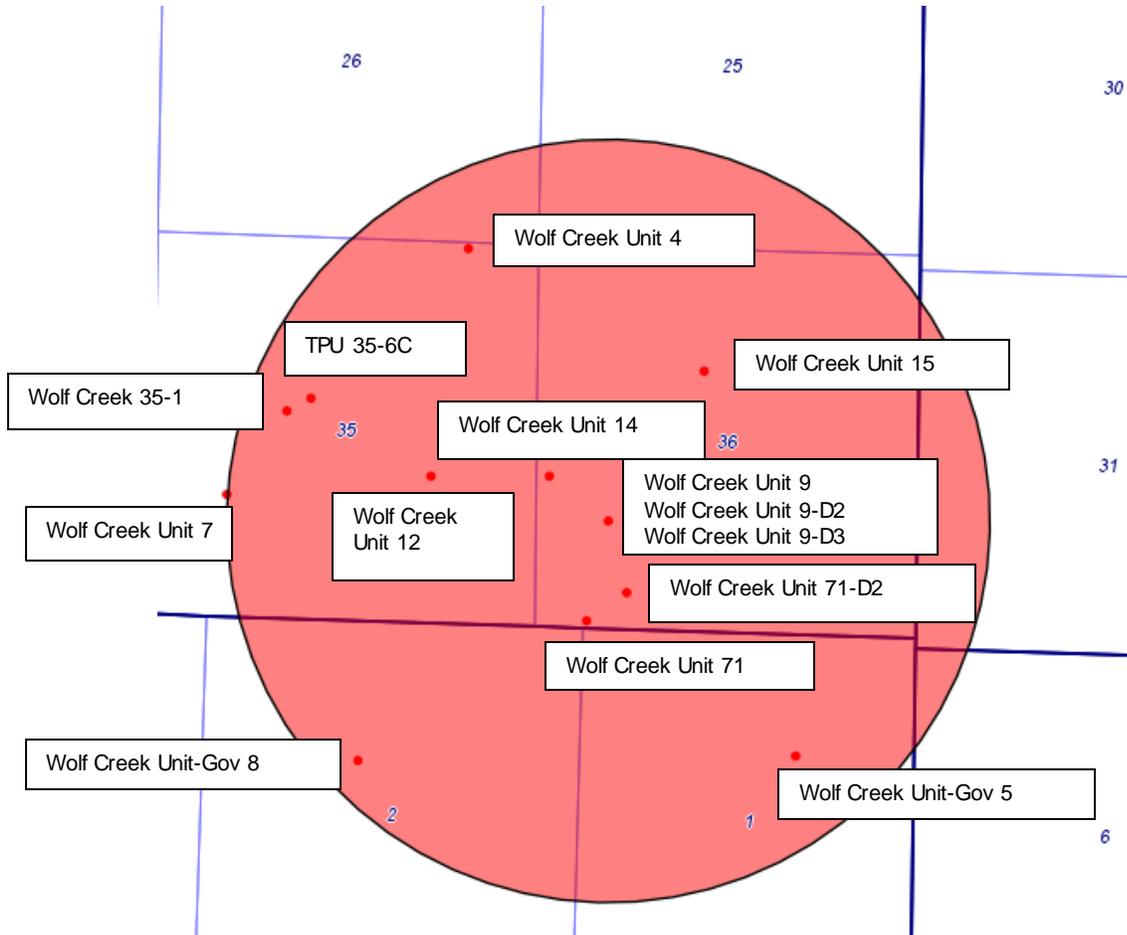
SHEET

1 OF 1

# Wolf Creek 9-D2 and 9-D3

## Wells Within 1 Mile

Township 8S Range 90W



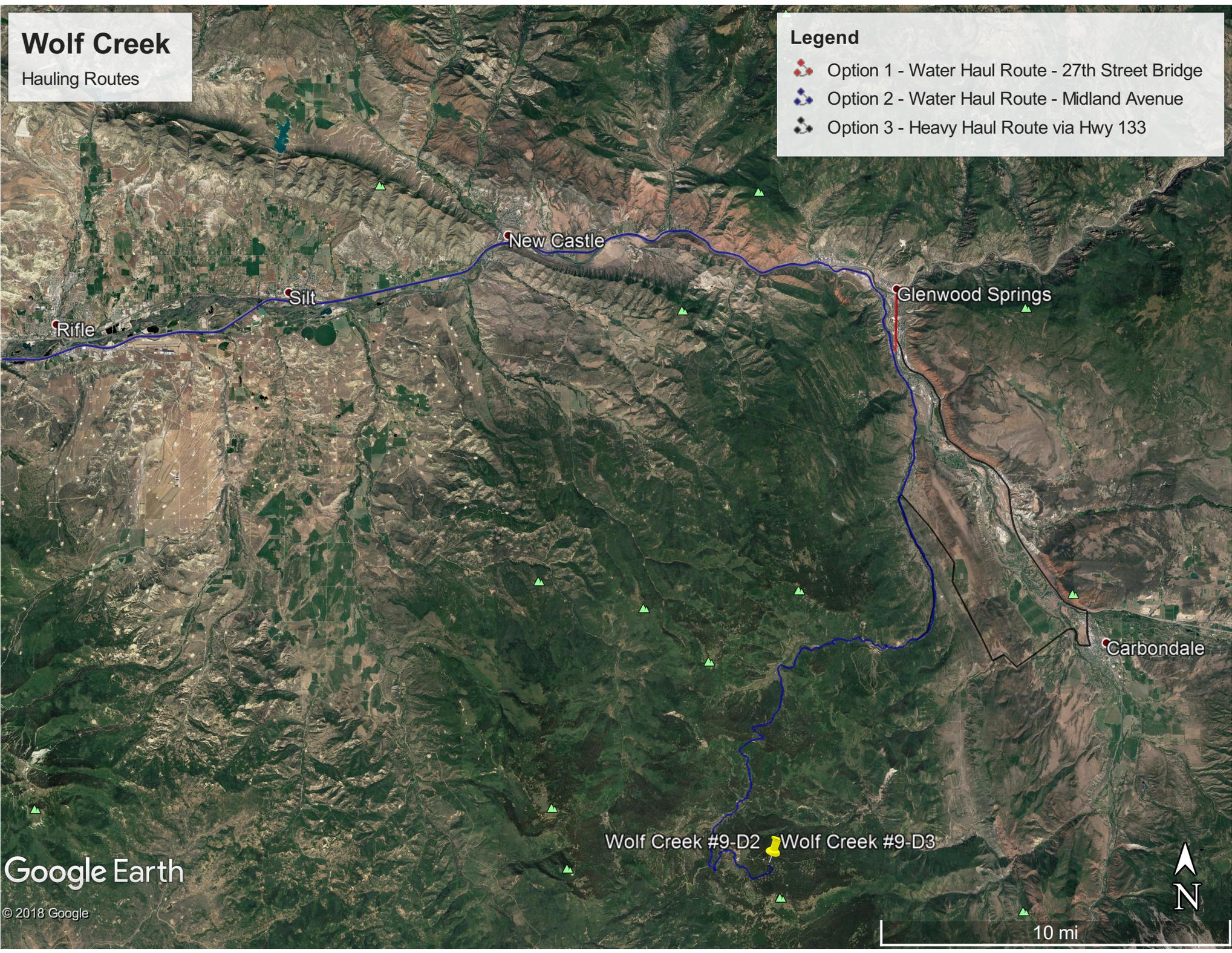
WELL DESCRIPTION	LOCATION	WELL INFORMATION			
<a href="#">05-097-05013, WOLF CREEK UNIT 4</a> ROCKY MTN NATURAL GAS LLC ADDBA BLACK HIL	SESE 26 8S -90W (6) 39.323046, - 107.402655	Sidetrack	Formation	TD	Status
		00	COZZ	489 7	AC
<a href="#">05-097-06005, WOLF CREEK UNIT 35-1</a> ROCKY MTN NATURAL GAS LLC ADDBA BLACK HIL	SENE 35 8S -90W (6) 39.316696, - 107.411319	Sidetrack	Formation	TD	Status
		00	COZZ	1094 2	AC
<a href="#">05-097-06007, WOLF CREEK UNIT 12</a> ROCKY MTN NATURAL GAS LLC ADDBA BLACK HIL	NWSE 35 8S -90W (6) 39.314367, - 107.404198	Sidetrack	Formation	TD	Status
		00	COZZ	481 1	AC
<a href="#">05-097-06010, TPU 35-6C</a> ENCANA OIL & GAS (USA) INC	SENE 35 8S -90W (6) 39.317205, - 107.410164	Sidetrack Formation TD Status AL			
<a href="#">05-097-06003, WOLF CREEK UNIT 9</a> ROCKY MTN NATURAL GAS LLC ADDBA BLACK HIL	NESW 36 8S -90W (6) 39.312845, - 107.395471	Sidetrack	Formation	TD	Status
		00	COZZ	503 5	AC
<a href="#">05-097-06008, WOLF CREEK UNIT 14</a> ROCKY MTN NATURAL GAS LLC ADDBA BLACK HIL	NWSW 36 8S -90W (6) 39.314483, - 107.398411	Sidetrack	Formation	TD	Status
		00	COZZ	505 0	AC
<a href="#">05-097-06009, WOLF CREEK UNIT 15</a> GASCO INC	SENE 36 8S -90W (6) 39.318625, - 107.390973	Sidetrack Formation TD Status DA			
<a href="#">05-097-06011, WOLF CREEK UNIT 71-D2</a> SOURCE GAS ENERGY SERVICES COMPANY	SESW 36 8S -90W (6) 39.31014, -107.39448	Sidetrack Formation TD Status AL			
<a href="#">05-097-40000, WOLF CREEK UNIT 71</a> ROCKY MTN NATURAL GAS LLC ADDBA BLACK HIL	SESW 36 8S -90W (6) 39.309031, - 107.396406	Sidetrack	Formation	TD	Status
		00	COZZ	512 5	AC
<a href="#">05-097-05067, WOLF CREEK UNIT-GOVT 5</a> ROCKY MTN NATURAL GAS LLC ADDBA BLACK HIL	SWNE 1 9S -90W (6) 39.304106, - 107.386001	Sidetrack	Formation	TD	Status
		00	COZZ	531 7	AC
<a href="#">05-097-06002, WOLF CREEK UNIT-GOV 8</a> ROCKY MTN NATURAL GAS LLC ADDBA BLACK HIL	SENE 2 9S -90W (6) 39.303493, - 107.407391	Sidetrack	Formation	TD	Status
		00	COZZ	525 9	AC

# Wolf Creek

Hauling Routes

## Legend

-  Option 1 - Water Haul Route - 27th Street Bridge
-  Option 2 - Water Haul Route - Midland Avenue
-  Option 3 - Heavy Haul Route via Hwy 133



Google Earth

© 2018 Google

Wolf Creek #9-D2   Wolf Creek #9-D3

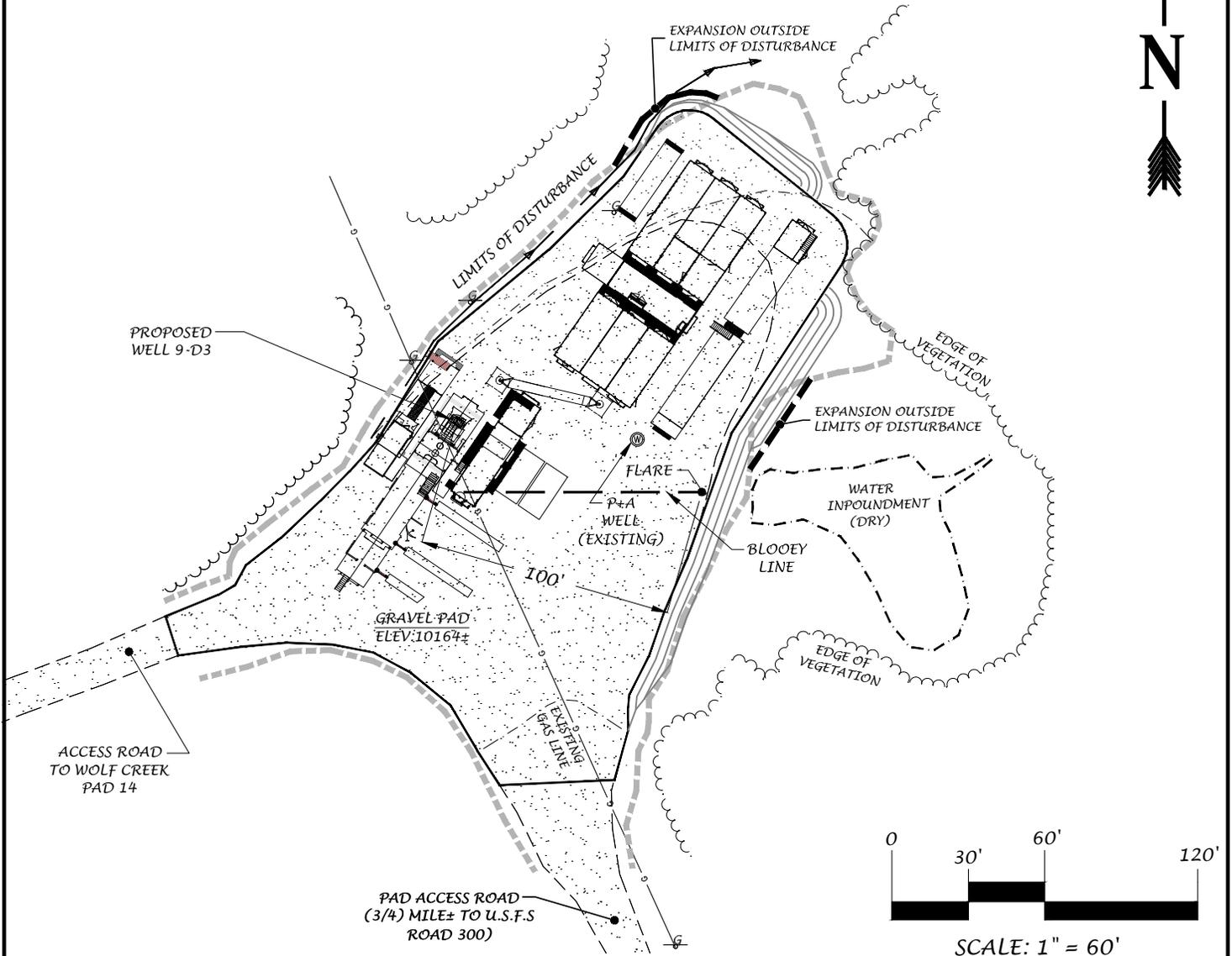
10 mi



# RIG LAYOUT

## WOLF CREEK #9-D3

NW1/4SW1/4 SECTION 36, TOWNSHIP 8 SOUTH,  
RANGE 90 WEST OF THE 6TH P.M.  
COUNTY OF PITKIN, STATE OF COLORADO



  
**TRUE NORTH**  
COLORADO  
A LAND SURVEYING AND MAPPING COMPANY  


**BLACK HILLS ENERGY**  
SECTION 36, TOWNSHIP 8 SOUTH, RANGE 90 WEST OF 6TH P.M.  
COUNTY OF PITKIN, STATE OF COLORADO



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NEW CASTLE, COLORADO 81647  
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www.truenorthcolorado.com

PROJECT NO: 2017-216	DRAWN RPK	SHEET 6 OF 6
DATE: February 7, 2019	SURVEYED LDV	

**Section 1 - General**

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

**Section 2 - Lined Pits**

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

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

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

### Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

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

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

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

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

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

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

### Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

**Injection well type:**

**Injection well number:**

**Injection well name:**

**Assigned injection well API number?**

**Injection well API number:**

**Injection well new surface disturbance (acres):**

**Minerals protection information:**

**Mineral protection attachment:**

**Underground Injection Control (UIC) Permit?**

**UIC Permit attachment:**

### **Section 5 - Surface Discharge**

**Would you like to utilize Surface Discharge PWD options? NO**

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:**

**PWD disturbance (acres):**

**Surface discharge PWD discharge volume (bbl/day):**

**Surface Discharge NPDES Permit?**

**Surface Discharge NPDES Permit attachment:**

**Surface Discharge site facilities information:**

**Surface discharge site facilities map:**

### **Section 6 - Other**

**Would you like to utilize Other PWD options? NO**

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:**

**PWD disturbance (acres):**

**Other PWD discharge volume (bbl/day):**

**Other PWD type description:**

**Other PWD type attachment:**

**Have other regulatory requirements been met?**

**Other regulatory requirements attachment:**



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

### Bond Information

Federal/Indian APD: FED

BLM Bond number: WYB000487

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: