

CHECKLIST ENVIRONMENTAL ASSESMENT

Proposed Action: Approve Drilling Permit (Form 22)

Project/Well Name: Mulder 22-15 #4H

Operator: Kraken Operating, LLC

Location: Section 27 28N 58E NENW

County: Roosevelt **MT;** **Field (or Wildcat):** Wildcat

Proposed Project Date: 6/15/2019

I. DESCRIPTION OF ACTION

Triple derrick rig 20,813' MD/9,942' TVD Bakken Formation horizontal well test. Surface casing to be set at 2,000'.

II. PROJECT DEVELOPMENT

1. PUBLIC INVOLVEMENT, AGENCIES, GROUPS OR INDIVIDUALS CONTACTED

Montana Bureau of Mines and Geology, GWIC website (Roosevelt County Wells).

US Fish and Wildlife, Region 6 website

ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES MONTANA COUNTIES, Roosevelt County

Montana Natural Heritage Program Website (FWP)

Heritage State Rank= S1, S2, S3, T28N R58E

Montana Cadastral Website

Surface Ownership and surface use Section 27 T28N R58E

Montana Department of Natural Resources MEPA Submittal

2. ALTERNATIVES CONSIDERED

No Action Alternative: The proposed well would not be drilled.

Action Alternative: Kraken Operating, LLC would have permission to drill the well

III. IMPACTS ON THE PHYSICAL ENVIRONMENT

3. AIR QUALITY

Long drilling time: No, normal drilling time 25 to 35 days.
Unusually deep drilling (high horsepower rig): No.

Possible H₂S gas production: Yes, slight H₂S possible from Mississippian Formations.
In/near Class I air quality area: No Class I air quality area in area of review.
Air quality permit for flaring/venting (if productive): Yes, DEQ air quality permit required under 75-2-211. AQB review.

Comments: No special concerns – Using triple derrick rig 20,650' MD/9,930' TVD Bakken Formation horizontal well test. If there are no gas gathering systems nearby, associated gas can be flared under Board Rule 36.22.1220.

4. WATER QUALITY

Salt/oil based mud: Yes, intermediate casing string hole will be drilled with oil based invert drilling fluids. Horizontal lateral will be drilled with salt based drilling fluids. Surface casing will be drilled with freshwater and freshwater mud system.

High water table: No.

Surface drainage leads to live water: No, an unnamed ephemeral drainage is located about 2/5 of a mile to the northeast. Shotgun Creek is located 2/5 of a mile to the southwest.

Water well contamination: GWIC lists two city water wells 3/10 of a mile to the south, these wells are 160' and 140' deep. A monitoring well exists 2/5 of a mile to the east and is 18' deep. A stockwater well exists 2/5 of a mile to the southeast and is 147' deep. A monitoring well exists 1/2 mile to the southeast and is 18' deep. A monitoring well exists 2/5 of a mile to the southeast and is 13' deep. 4 Geotech wells exist 1/2 of a mile to the southwest and two are 121' deep and the other two are 111' deep. Three monitoring wells are located 7/10 of a mile to the southwest. Depths of these wells are 30' and two are 20'. A stockwater well exists 7/10 of a mile to the south- southwest and is 153' deep. Another stockwater well is 7/10 of a mile to the south- southeast and is 120' deep. A domestic water well exists 3/10 of a mile to the northwest and is 45' deep. Another domestic water well is 2/5 of a mile to the northwest and is 40' deep. Another domestic water well is 1/5 of a mile to the north and is 9' deep. An unused well is located 3/10 of a mile to the northeast and is 5' deep.

Porous/permeable soils: No, Sandy clay.

Class I stream drainage: None nearby.

Groundwater vulnerability area: No.

Mitigation:

Lined cuttings pit:

Adequate surface casing

Berms/dykes, re-routed drainage

Closed mud system

Off-site disposal of solids/liquids (in approved facility)

Comments: Steel surface casing will be run and cemented to surface to protect ground water. (Rule 36.22.1001).

5. SOILS/VEGETATION/LAND USE

Vegetation: Grassland.

Stream crossings: None anticipated.

High erosion potential: No, location requires a small cut of 8.3' and small fill of 4.9'.

Loss of soil productivity: No, if it is a dry hole the location will be reclaimed, if well is a producer the location will be downsized to accommodate only production equipment, rest of location will be reclaimed.

Unusually large wellsite (Describe dimensions): Large wellsite to accommodate four wells, 475' X 484'.

Damage to improvements: Slight, surface use is grassland.

Conflict with existing land use/values:

Mitigation

- Avoid improvements (topographic tolerance)
- Exception location requested
- Stockpile topsoil
- Stream Crossing Permit (other agency review)
- Reclaim unused part of wellsite if productive
- Special construction methods to enhance reclamation

Access Road: Access will be off Highway 2 and Road 1007. A new road of about 109' will be built into location.

Drilling fluids/solids: No pit listed on permit.

6. HEALTH HAZARDS/NOISE

Proximity to public facilities/residences: An occupied dwelling exists about 1,000' to the north, which is less than ¼ a mile from the proposed location and requires drilling permit notification to the residence under ARM 36.22.620. Bainville, MT is located about 7/10 of a mile to the southwest.

Possibility of H2S: Yes, slight H2S possible from Mississippian Formations.

Size of rig/length of drilling time: Triple derrick rig, 25-35 days drilling time.

Mitigation:

- Proper BOP equipment
- Topographic sound barriers
- H2S contingency and/or evacuation plan
- Special equipment/procedures requirements
- Other:

7. WILDLIFE/RECREATION

Sage Grouse: No.

Proximity to sensitive wildlife areas (DFWP identified): None.

Proximity to recreation sites: None.

Creation of new access to wildlife habitat: None.

Conflict with game range/refuge management: None.

Threatened or endangered Species: Species listed as threatened or endangered in Roosevelt County are: Pallid Sturgeon, Piping Plover, Interior Least Tern, Whooping Crane, Red Knot, and Northern Long-eared Bat. The Montana Natural Heritage Program site lists nine (9) species of concern: Eastern Red Bat, Hoary Bat, Little Brown Myotis, LeConte's Sparrow, Nelson's Sparrow, Bobolink, Whooping Crane, Iowa Darter, and the Northern Pearl Dace.

Mitigation:

- Avoidance (topographic tolerance/exception)
- Other agency review (DFWP, federal agencies, DNRC Trust Lands)
- Screening/fencing of pits, drillsite
- Other:

Comments: Private surface lands. There may be species of concern that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to what he would like done, if a species of concern is discovered at this location. The Board of Oil & Gas has no jurisdiction over private surface lands. No concerns.

IV. IMPACTS ON THE HUMAN POPULATION

8. HISTORICAL/CULTURAL/PALEONTOLOGICAL

Proximity to known sites: None.

Mitigation

- avoidance (topographic tolerance, location exception)
- other agency review (SHPO, DNRC Trust Lands, federal agencies)

Other:

9. SOCIAL/ECONOMIC

Substantial effect on tax base

- Create demand for new governmental services
- Population increase or relocation

Comments: No concerns.

IV. SUMMARY

No long term impacts expected. Some short term impacts will occur, but can be mitigated.

I conclude that the approval of the subject Notice of Intent to Drill (does/**does not**) constitute a major action of state government significantly affecting the quality of the human environment, and (does/**does not**) require the preparation of an environmental impact statement.

EA Checklist
Prepared By:

Name: John Gizicki
Title: Compliance Specialist

Date: 05/23/19