

CHECKLIST ENVIRONMENTAL ASSESMENT

Proposed Action: Approve Drilling Permit (Form 22)

Project/Well Name: Eagle 4-9 #4H

Operator: Kraken Operating LLC

Location: LOT 2 Section 4 T25N R59E

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

Proposed Project Date: 10/30/2018

I. DESCRIPTION OF ACTION

Kraken Operating LLC plans to drill a horizontal oil well in the Bakken Formation 21,033' MD, 10,543' TVD. Three other oil wells will be drilled on this pad, the Eagle 4-9 #5H, Eagle 4-9 #3H, Eagle 4-9 #6H.

II. PROJECT DEVELOPMENT

1. PUBLIC INVOLVEMENT, AGENCIES, GROUPS OR INDIVIDUALS CONTACTED

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

US Fish and Wildlife, Region 6 website
ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES MONTANA
COUNTIES, Richland County

Montana Natural Heritage Program Website (FWP)
Heritage State Rank= S1, S2, S3, T25N R59E

Montana Cadastral Website
Surface Ownership and surface use Section 4 T25N R59E

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: 25-35 days drilling time.

Unusually deep drilling (high horsepower rig): Triple derrick drilling rig to drill a single lateral horizontal Bakken Formation test, 21,033' MD, 10,543' TVD

Possible H₂S gas production: Yes, slight H₂S possible from Mississippian Formations.

In/near Class I air quality area: No Class I air quality area nearby.

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 to drill to 21,033' MD, 10,543' TVD. If there isn't any gas gathering systems nearby, associated gas can be flared under Board Rule 36.22.1220.

4. WATER QUALITY

Salt/oil based mud: Yes, will drill with oil based invert drilling fluids for the intermediate casing hole. Horizontal hole will be drilled with saltwater. Surface casing hole will be drilled with freshwater and freshwater mud system, Rule 36.22.1001.

High water table: No high water table anticipated at this surface location.

Surface drainage leads to live water: No, closest drainage is an unnamed ephemeral drainage about 3/5 of a mile to the southeast from this drilling location. The Missouri River is about 2.3 miles to the northeast from this location.

Water well contamination: None, surface hole will be drilled with freshwater and freshwater drilling fluids to 2,050', steel surface casing will be run and cemented to surface from 2,050' to protect any ground and surface waters. Closest water wells from this location are an injection well about 3/5 of a mile to the west and is 260' deep.

Porous/permeable soils: No, sandy silty clay soils.

Class I stream drainage: Closest Class I stream drainage is the Missouri River, about 3.25 miles to the north from this location.

Groundwater vulnerability area: NA.

Mitigation:

Lined reserve pit

Adequate surface casing

Berms/dykes, re-routed drainage

Closed mud system

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

Other:

Comments: Steel surface casing will be run to 2,050' and cemented to surface to protect ground water. (Rule 36.22.1001).

5. SOILS/VEGETATION/LAND USE

Vegetation: Grassland.

Stream crossings: No stream crossings anticipated. Crossing only ephemeral drainages over existing county roads.

High erosion potential: Possible high erosion potential on moderate cut and small fill slopes, a moderate cut of up to 12.3' and a moderate fill of up to 11.5', required.

Loss of soil productivity: No, location to be restored after drilling, if nonproductive. If productive, unused portion of this drillsite will be reclaimed.

Unusually large wellsite (Describe dimensions): A large well site 500'X450' required for a four well pad, the Eagle 4-9 #5H, Eagle 4-9 #4H, Eagle 4-9 #3H, Eagle 4-9 #6H.

Damage to improvements: Slight surface use appears to be mix of cultivated and grass lands.

Conflict with existing land use/values: Slight.

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 over existing county road, #142. A new access of 2528' will be built into location.

Drilling fluids/solids: A closed loop system will be used for this well. The liquids will be hauled to a commercial disposal site and disposed. The cuttings will also be hauled to a commercial disposal site and disposed.

6. HEALTH HAZARDS/NOISE

Proximity to public facilities/residences: No residences within a 1/2-mile radius.

Possibility of H2S: Yes, slight from Mississippian Formations.

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

Mitigation:

Proper BOP equipment (Adequate surface casing cemented to surface, Rule 36.22.1001, with working BOP stack should mitigate any problems, (5,000 psig annular and double ram), Rule 36.22.1014.)

Topographic sound barriers

H2S contingency and/or evacuation plan

Special equipment/procedures requirements

Other:

7. WILDLIFE/RECREATION

Sage Grouse: NA

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

Proximity to recreation sites: None identified.

Creation of new access to wildlife habitat: No.

Conflict with game range/refuge management: No.

Threatened or endangered Species: Species identified as threatened or endangered are the Pallid Sturgeon, Interior Least Tern, Whooping Crane, Piping Plover, and the Northern Long-eared Bat. The Montana Natural Heritage Program lists three (3) species of concern: Whooping Crane, Northern Redbelly Dace, Iowa Darter.

Mitigation:

Avoidance (topographic tolerance/exception)

Other agency review (DFWP, federal agencies, DNRC Trust Lands)

Screening/fencing of pits, drillsite

Other:

Comments: Private cultivated 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 identified.

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: 10/05/18
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