

# Montana Board of Oil and Gas Conservation Environmental Assessment

**Operator:** Kraken Operating, LLC  
**Well Name/Number:** Bert 4 #1H  
**Location:** NE NW Section 4 T26N R52E  
**County:** Richland, MT; Field (or Wildcat) Wildcat

## Air Quality

(possible concerns)

Long drilling time: No, 20-25 days drilling time.

Unusually deep drilling (high horsepower rig): Triple derrick rig to drill a single lateral horizontal Bakken Formation test, 12,113'MD/8,044'TVD.

Possible H2S gas production: Slight chance H2S gas from Mississippian Formations.

In/near Class I air quality area: Yes, closest Class I air quality area in the area of review is the Fort Peck Indian Reservation, about 3 miles to the north from this location.

Air quality permit for flaring/venting (if productive): Yes, DEQ air quality permit required under 75-2-211.

Mitigation:

- Air quality permit (AQB review)
- Gas plants/pipelines available for sour gas
- Special equipment/procedures requirements
- Other: \_\_\_\_\_

Comments: Triple derrick drilling rig to drill a single lateral horizontal Bakken Formation test, 12,113'MD/8,044'TVD. If there is an existing pipeline for associated gas/H2S gas in the area and gas can be gathered or if no gathering system nearby associated gas/H2S gas can be flared under Board Rule 36.22.1220.

## Water Quality

(possible concerns)

Salt/oil based mud: Yes to intermediate string hole to be drilled with oil based invert (75/25 – 80/20) drilling fluids. Horizontal lateral will be drilled with oil based invert (75/25 – 80/20) drilling fluids. Surface casing hole will use freshwater and freshwater mud system, Rule 36.22.1001.

High water table: No high water table anticipated.

Surface drainage leads to live water: Yes, surface drainage does lead to live water. Closest drainages are Renz Creek, about 1/4 of a mile to the southwest and an unnamed ephemeral tributary drainage to the Missouri River about 1/4 of a mile to the east from this location. The Missouri River is about 1.5 miles to the northwest from this location.

Water well contamination: Closest water wells are about 1/2 of a mile to the southeast, about 3/4 of a mile to the southwest, about 3/4 of a mile to the northwest, about 7/8 of a mile to the southwest, about 7/8 of a mile to the east and about 1 mile to the southwest from this location. Depth of these stock and domestic water wells range from 36' to 210'. This well will drill surface casing hole with freshwater and freshwater drilling fluids to 1500' (Rule 36.22.1001) and will run 1500' of steel surface casing and cement it to surface to protect groundwater.

Porous/permeable soils: No, sandy clay soils.

Class I stream drainage: Yes, the only Class I stream drainage is the Missouri River in the area of review, about 2.5 miles to the north from this location.

Mitigation:

- Lined reserve pit
- Adequate surface casing
- Berms/dykes, re-routed drainage
- Closed mud system
- Off-site disposal of liquids** (in approved facility)
- Other: Lined cuttings pit for cutting disposal on the wellsite, 16 mill pit liner will be used.

Comments: 1500' surface casing well below freshwater zones in adjacent water wells. Also, covering Fox Hills aquifer, Rule 36.22.1001. Adequate surface casing and BOP equipment to prevent any problems (BOP's 5,000 psig annular, pipe and blind rams) rule 36.22.1014.

### Soils/Vegetation/Land Use

(possible concerns)

Stream crossings: None anticipated.

High erosion potential: No, high erosion potential on this location. Location needs a moderate cut, up to 10.0' and no fill, 0.0', required.

Loss of soil productivity: None, location to be restored after drilling well, if nonproductive. If productive unused portion of drillsite will be reclaimed.

Unusually large wellsite: No, large well site 430'X400', single well location for the Bert 4 #1H.

Damage to improvements: Slight, surface use is cultivated land.

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

Other \_\_\_\_\_

Comments: Access will be over existing State Highway #480. Operator will construct, about 649" of new access road into this location from the existing State Highway #480. Oil based invert drilling fluids will be recycled. Completion fluids will be trucked to a Class II disposal. Operator will utilize a closed loop mud system. Cuttings and mud solids will be disposed of in the lined cuttings pit and solidified on the wellsite. Liner will be a 16 mil impervious synthetic liner. No concerns.

### Health Hazards/Noise

(possible concerns)

Proximity to public facilities/residences: Closest residences are about 1/2 of a mile to the southeast, about 5/8 of a mile to the northeast, about 3/4 of a mile to the northeast and about 3/4 of a mile to the from this location. Closest town is Poplar, Montana about 9.5 miles to the northwest from this location.

Possibility of H2S: Slight chance H2S gas from Mississippian Formations.

Size of rig/length of drilling time: Triple drilling rig 20 to 25 days drilling time.

Mitigation:

Proper BOP equipment

Topographic sound barriers

H2S contingency and/or evacuation plan

Special equipment/procedures requirements

Other: H2S training and equipment standard for the area.

Comments: Adequate surface casing cemented to surface with a working BOP stack should mitigate any problems, (BOP's 5,000psig annular, pipe and blind rams) rule 36.22.1014.

### Wildlife/recreation

(possible concerns)

Proximity to sensitive wildlife areas (DFWP identified): None identified.  
Proximity to recreation sites: None identified.  
Creation of new access to wildlife habitat: No, none.  
Conflict with game range/refuge management: No, none.  
Threatened or endangered Species: Species identified as threatened or endangered are the Pallid Sturgeon, Interior Least Tern, Whooping Crane and Piping Plover. Candidate species are the Sprague's Pipit and the Greater Sage Grouse. NH tracker website indicates three (3) species of concern in this area, Townsend's Big-eared Bat, Sprague's Pipit and the Sage Thrasher.

Mitigation:

- Avoidance (topographic tolerance/exception)
- Other agency review (DFWP, federal agencies, DSL)
- Screening/fencing of pits, drillsite
- Other: \_\_\_\_\_

Comments: This is 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 are discovered at this location. The Montana Board of Oil and Gas has no jurisdiction over private surface lands. No concerns.

### **Historical/Cultural/Paleontological**

(possible concerns)

Proximity to known sites: None identified.

Mitigation

- avoidance (topographic tolerance, location exception)
- other agency review (SHPO, DSL, federal agencies)
- Other: \_\_\_\_\_

Comments: This is private cultivated surface lands. There may be possible historical/cultural/paleontological sites that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to his desires to preserve these sites or not, if they are found during construction of the wellsite. The Montana Board of Oil and Gas has no jurisdiction over private surface lands. No concerns.

### **Social/Economic**

(possible concerns)

- Substantial effect on tax base
- Create demand for new governmental services
- Population increase or relocation

Comments: Wildcat well. No concerns.

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### **Remarks or Special Concerns for this site**

Single lateral horizontal Bakken Formation well test, 12,113'MD/8,044'TVD.

### **Summary: Evaluation of Impacts and Cumulative effects**

No long term impacts expected. Some short term impacts will occur.

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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.

Prepared by (BOGC):  /s/ Steven Sasaki  
(title:)  Chief Field Inspector

Date:  July 24, 2013

Other Persons Contacted:  
Bureau of Mines and Geology, GWIC website  
(Name and Agency)  
Water wells in Richland County, Montana  
(subject discussed)  
July 24, 2013  
(date)

US Fish and Wildlife, Region 6 website  
(Name and Agency)  
ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES MONTANA  
COUNTIES, Richland County  
(subject discussed)  
July 24, 2013  
(date)

Montana Natural Heritage Program Website  
(Name and Agency)  
Heritage State Rank= S1, S2, S3 T26N R52E  
(subject discussed)  
July 24, 2013  
(date)

Montana Cadastral Website  
(Name and Agency)  
Surface Ownership and surface use Section 4T26N R52E  
(subject discussed)  
July 24, 2013  
(date)

If location was inspected before permit approval:  
Inspection date: \_\_\_\_\_  
Inspector: \_\_\_\_\_  
Others present during inspection: \_\_\_\_\_