

**Montana Board of Oil and Gas Conservation  
Environmental Assessment**

**Operator:** Continental Resources, Inc.  
**Well Name/Number:** Mackie 1-19H  
**Location:** SE SW Section 19T27N R55E  
**County:** Richland, **MT;** **Field (or Wildcat)** W/C (Bakken Formation Horizontal)

**Air Quality**

(possible concerns)

Long drilling time: No, 30 to 40 days drilling time.

Unusually deep drilling (high horsepower rig): No, triple derrick drilling rig to drill a single lateral Bakken formation horizontal well, 19,741'MD/9,709'TVD.

Possible H2S gas production: Slight chance H2S gas production.

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

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: No special concerns – using triple derrick rig to drill a single lateral Bakken formation horizontal well, 19,741'MD/9,709'TVD.

**Water Quality**

(possible concerns)

Salt/oil based mud: Yes, freshwater and freshwater mud system on surface hole, oil based invert mud system on mainhole and saltwater for the horizontal lateral hole.

High water table: None anticipated.

Surface drainage leads to live water: No, closest drainages are unnamed ephemeral tributary drainages to Twomile Creek, about 1/16 of a mile to the north and about 1/8 of a mile to the southwest from this location. Twomile Creek is about 3/4 of a mile to the east northeast from this location.

Water well contamination: No, closest water wells nearby are about 1/4 of a mile to the south and 1.125 miles to the northeast from this location. Water well depths are as follows: northeast well is 72' deep and the south well is 140' deep. Surface casing will be drilled with freshwater, steel casing will be set and cement to surface from 1370'.

Porous/permeable soils: No, sandy clay soils.

Class I stream drainage: No Class I stream drainages in the area of review.

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: 1370' of surface casing cemented to surface adequate to protect freshwater zones.

## Soils/Vegetation/Land Use

(possible concerns)

Stream crossings: No, stream crossings anticipated. Crossing only ephemeral drainages.

High erosion potential: No, moderate cut, up to 18.7' and moderate fill, up to 10.3' required.

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

Unusually large wellsite: No, 500'X270' location size required.

Damage to improvements: No, surface use is grassland.

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: Will use existing county road, #326. About 421' of new access road will be built into this location, off county road, #326. About 10,311' of existing trail will be upgraded for heavy trucks. Drill cutting will be disposed of in the lined reserve pit. Oil based drilling fluids will be recycled. Reserve pit fluids will be recycled and/or haul to a commercial SWD disposal. Lined reserve pit will be backfilled when dry. No special concerns.

## Health Hazards/Noise

(possible concerns)

Proximity to public facilities/residences: Closest residences, none within a 1 mile radius from this location.

Possibility of H2S: Slight chance of H2S.

Size of rig/length of drilling time: Triple drilling rig/short 30 to 40 days drilling time.

Mitigation:

Proper BOP equipment

Topographic sound barriers

H2S contingency and/or evacuation plan

Special equipment/procedures requirements

Other: \_\_\_\_\_

Comments: Operational BOP and adequate surface casing will mitigate any problems that may occur. No concerns.

## 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

Conflict with game range/refuge management: No

Threatened or endangered Species: Species identified as threatened by the USFWS are Pallid Sturgeon, Interior Lease Tern, Piping Plover and Whooping Crane. Species listed as candidate species are the Greater Sage Grouse and Sprague's Pipit. NH tracker website for this Township and Range lists five (5) species of concern. They are the Townsend's Big-eared Bat, Eastern Red Bat, Great Blue Heron, Piping Plover and the Whooping Crane.

Mitigation:

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

Comments: Federal minerals will be intersected by the horizontal lateral. BLM will do on site EA. Private surface lands at the surface location. There maybe 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.

### 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: Federal minerals will be intersected by the horizontal lateral. BLM will on site EA. Private surface lands at the surface location. There maybe 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 Board of Oil & Gas has no jurisdiction over private surface lands.

### Social/Economic

(possible concerns)

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

Comments: No concerns

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### Remarks or Special Concerns for this site

Well is a single lateral Bakken formation horizontal well, 19,741'MD/9,709'TVD.

### Summary: Evaluation of Impacts and Cumulative effects

No long term impact 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: January 7, 2012

Other Persons Contacted:

Montana Bureau of Mines and Geology, GWIC website  
  
(Name and Agency)  
Richland County water wells  
(subject discussed)  
January 7, 2012  
(date)

Montana Natural Heritage Program Website (FWP)  
(Name and Agency)  
Heritage State Rank= S1, S2, S3, T27N R55E  
(subject discussed)  
  
January 7, 2012  
(date)

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