

## Montana Board of Oil and Gas Conservation Environmental Assessment

**Operator:** EOG Resources, Inc.  
**Well Name/Number:** Leo No. 2-18H  
**Location:** NW NW Section 18 T25N R53E  
**County:** Richland, MT; **Field (or Wildcat)** Wildcat

### Air Quality

(possible concerns)

Long drilling time: No, 25-35 days drilling time.

Unusually deep drilling (high horsepower rig): Triple derrick rig, 1000 HP, to drill to 13,793'MD/9192'TVD.

Possible H<sub>2</sub>S gas production: Slight

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 rule 75-2-211.

Mitigation:

Air quality permit (AQB review)

Gas plants/pipelines available for sour gas

Special equipment/procedures requirements

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

Comments: Gas pipeline system in the area to take associated gas.

### Water Quality

(possible concerns)

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

High water table: No high water table anticipated.

Surface drainage leads to live water: No, closest drainage is an unnamed ephemeral tributary drainage to West Charley Creek, about just west of this location and also north about 1/8 mile from this location..

Water well contamination: No, nearby water wells are shallow in depth. Closest water wells are about 1/4 of a mile to the northwest and 1/2 to 5/8 of a mile to the northeast and southeast from this location. Depth of these wells are 100' and less. Surface casing will be drilled with freshwater, casing set to 1046' and cemented back to surface.

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

Class I stream drainage No, Class I stream drainages.

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: 1046' surface casing well below freshwater zones in adjacent water wells. Also, covering Base of the Fox Hills aquifer. Surface hole will be drilled with freshwater and freshwater muds to 1046'+. Steel surface casing will be run and cemented to surface from 1046'.

### Soils/Vegetation/Land Use

(possible concerns)

Steam crossings: None anticipated.  
 High erosion potential: No, location will require moderate cut, up to 13.7' and moderate fill, up to 10.4', required.  
 Loss of soil productivity: Slight, location to be restored after drilling well if well is nonproductive. If productive unused portion of wellsite will be reclaimed.  
 Unusually large wellsite: No, location is a large wellsite, 230'X450' in size.  
 Damage to improvements: Slight, surface use is a cultivated field.  
 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: Requires DEQ General Permit for Storm Water Discharge Associated with Construction Activity, under ARM 17.30.1102(28).  
 Comments: Access will be over existing county gravel roads, #314. About 395' of new access road will be built off the existing county road into this location. Oil based invert drilling fluids will be recycled. Freshwater surface hole cuttings will be buried on site. Oil based drill cuttings will be buried in the lined reserve pit. Completion pit fluids will be hauled to a permitted Class II saltwater disposal. Pit will be backfilled when dry. No concerns.

### Health Hazards/Noise

(possible concerns)  
 Proximity to public facilities/residences: Residences about 3/8 of a mile to the north, 1/2 of a mile to the northeast and 5/8 of a mile to the southeast from this location.  
 Possibility of H2S: Yes possible.  
 Size of rig/length of drilling time: Triple drilling rig 25 to 35 days drilling time.  
 Mitigation:  
 Proper BOP equipment  
 Topographic sound barriers  
 H2S contingency and/or evacuation plan  
 Special equipment/procedures requirements  
 Other: \_\_\_\_\_  
 Comments: Adequate surface casing cemented to surface with working BOP stack should mitigate any problems. Noise should not be a problems, sufficient distance from residence to rig should mitigate this.

### Wildlife/recreation

(possible concerns)  
 Proximity to sensitive wildlife areas (DFWP identified): None identified in the area.  
 Proximity to recreation sites: None identified in the area.  
 Creation of new access to wildlife habitat: None  
 Conflict with game range/refuge management: None  
 Threatened or endangered Species: Threatened or endangered species listed in Richland county by USFW service are Pallid Sturgeon, Piping Plover, Interior Lease Tern and Whooping Crane.  
 Mitigation:  
 Avoidance (topographic tolerance/exception)  
 Other agency review (DFWP, federal agencies, DSL)  
 Screening/fencing of pits, drillsite

Other: \_\_\_\_\_  
Comments: Private cultivated surface land. No concerns.

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**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: Private cultivated surface lands.

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**Social/Economic**

(possible concerns)  
 Substantial effect on tax base  
 Create demand for new governmental services  
 Population increase or relocation  
Comments: Additional development well in this spacing unit Section 18. No concerns.

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**Remarks or Special Concerns for this site**

13,793' MD/9192'TVD single lateral horizontal Bakken formation development well. This the second well in this spacing unit.

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

No long term impacts expected, only 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: May 28, 2010

Other Persons Contacted:

\_\_\_\_\_  
\_\_\_\_\_  
(Name and Agency)  
Montana Bureau of Mines and Geology, Groundwater Information Center website.

(subject discussed)

Water wells in Richland County \_\_\_\_\_

(date)

May 28, 2010

US Fish and Wildlife, Region 6 website

(Name and Agency)

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

(subject discussed)

May 28, 2010 \_\_\_\_\_

(date)

If location was inspected before permit approval:

Inspection date: \_\_\_\_\_

Inspector: \_\_\_\_\_

Others present during inspection: \_\_\_\_\_