



DEPARTMENT of ENVIRONMENT and NATURAL RESOURCES  
 Minerals & Mining Program  
 2050 West Main, Suite #1, Rapid City, SD 57702-2493  
 Telephone: 605-773-4201, FAX: 605-394-5317

FORM 2  
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OCT 31 2014

DEPT OF ENVIRONMENT & NATURAL  
 RESOURCES - RAPID CITY

State of South Dakota  
 Department of Environment  
 and Natural Resources

APPLICATION FOR PERMIT TO DRILL

Type of work:	Type of well:
<input checked="" type="checkbox"/> Drill New Well <input type="checkbox"/> Reenter Well <input type="checkbox"/> Drill Directional Well	<input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Injection
<input type="checkbox"/> Other: _____	<input type="checkbox"/> Other: _____

Name and Address of Operator:	Telephone:
GeoSouthern Energy Corporation 1425 Lake Front Circle The Woodlands, Texas 77380	281-363-9161

Name and Address of Surface Owner:  
 Johnson Ranch, LLP 12478 Bob's Place Buffalo, SD 57720

Name and Address of Drilling Contractor and Rig Number:  
 Ensign United States Drilling; 1700 Broadway - Suite 777; Denver CO 80290. Rig #93

Surface Location of well: Qtr-Qtr, Sec, Twp, Rge, County, feet from nearest lines of section, and latitude and longitude (if available):  
 NENE Sec 9, T21N, R5E, Harding County, SD, 660' FNL & 660' FEL; Lat 45°48'13.34 Long 103° 30'11.42

If Directional, top of pay and bottom hole location from nearest lines of section:  
 N/A

Acres in Spacing (Drilling) Unit:	Description of Spacing Unit:
Wildcat- 40 acres	NENE Sec 9

Well Name and Number:	Elevation:	Field and Pool, or Wildcat:	Proposed Depth and Formation:
Johnson Trust #1	2947.69	Wildcat	9,800' Deadwood Formation

Size of Hole:	Size of Casing:	Weight per Foot:	Depth:	Cementing Program (amount, type, yield, additives)	Top of Cement:
1) 12-1/4"	9-5/8"	36	2000	Lead: 600 sks "C" + 1% CaCl2 11.5# 2.85yld Tail: 280 sks Type III + 1% CaCl2 14.2# 1.46yld	Surface
2)					1500'
3) 8-3/4"	5-1/2"	23	9800	Lead: 940sks Poz:TypeIII:Gel+10%NaCl;11.5# 2.7yld Tail: 800sks Thermal35+10%NaCl; 15.6# 1.63 yld	Surface
4)					6500'

Describe Proposed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). Use additional page(s) if appropriate.  
 Drill 12-1/4" hole with a freshwater mud system to approximately 2000ft, set 9-5/8" surface casing and cement to surface. Drill 8-3/4" hole with an oil-based mud system to 9,800' MD/TVD. Side-wall cores to be taken in Red River formation ("B", "C", and "D"). Open hole logs will be run. If productive well, run 5-1/2" production casing to TD and cement to surface. Depending on hole conditions, this may be accomplished through use of 2-stage cement job with diverter tool. All drilling fluids and cuttings will be contained in a pit lined with 12-mil plastic. All liquids will be disposed of in an approved method, the liner and cuttings will be buried in place. The estimated start date for location construction is 11/15/14. The estimated start date for drill is 12/15/14.  
 Pit Liner Specifications: 12-mil woven reinforced high-density polyethylene liner

I hereby certify that the foregoing as to any work or operation performed is a true and correct report of such work or operation.

	Hallie Bler	Sr. Land Analyst	10/28/2014
Signature	Name (Print)	Title	Date

FOR OFFICE USE ONLY

Approved By:	Title: Administrator Minerals Mining Program	
Permit No.: 2060	API No.: 40 063 20772	Date Issued: 11/3/2014
Conditions, if any, on attached page.		



**DEPARTMENT OF ENVIRONMENT  
and NATURAL RESOURCES**

JOE FOSS BUILDING  
523 EAST CAPITOL  
PIERRE, SOUTH DAKOTA 57501-3182  
denr.sd.gov



**PERMIT CONDITIONS**

GSE: Johnson Trust #1  
21N-5E-9 NENE, Harding County

Permit: #2060  
API: 40 063 20772

Approval has been granted to drill this location as detailed on the attached Application for Permit to Drill (Form #2) with the following additional conditions:

1. This permit is conditioned on compliance with all applicable requirements of South Dakota Codified Laws 45-9 and Administrative Rules of South Dakota 74-12.
2. A 12-mil woven, reinforced high-density polyethylene liner must be used on all pits.
3. If drilling does not commence within one year from the issuance date, this permit will expire.
4. Surface runoff must be diverted around the drill site.
5. The surface hole must be drilled with fresh water.
6. Cement must be circulated to the ground surface on the surface casing.
7. If production casing (long string) is set:
  - A. The cement program submitted with the application shall be followed.
  - B. A cement bond log must be run and filed with the department within 60 days after completion of the well as required by Administrative Rules of South Dakota 74:12:02:12.
8. If the well is productive, only one formation may be produced, unless GeoSouthern Energy petitions the Board of Minerals and Environment to approve multiple completions or commingling in the wellbore.
9. Please notify this office prior to plugging or MIT so a witness can be on location. If plugging or MIT will occur after regular business hours, call Jeff Klenner at 605-929-1414.
10. If abandoned: Either a plugging plan must be submitted at least 7 days prior to plugging for the department's review and approval or the following plan must be followed:
  - A. If the entire production casing is left in the wellbore:
    1. A mechanical integrity test must be conducted to verify the integrity of the casing as required by rule 74:12:03:02(4)(b)(ii).
    2. All perforations must be isolated, either by squeeze cementing or placing a cast iron bridge plug, with a minimum of 20 feet of cement, above the perforations.
    3. A 100-foot plug, half in and half out of the base of the surface casing must be installed.
    4. A 25-foot cement plug at the top of the surface casing must be installed.
  - B. If a portion of the production casing is removed:
    1. All perforations must be isolated, either by squeeze cementing or placing a cast iron bridge plug, with a minimum of 20 feet of cement, above the perforations.
    2. A 100-foot cement plug, half in and half out of the top of the casing stub must be installed after the retrievable part of the production casing has been removed.
    3. A 100-foot cement plug, half in and half out of the top of any fresh water aquifer or salt zone encountered between the top of the casing stub and the base of the surface casing must be installed. Freshwater resources at this site include: Madison, Minnelusa, Minnekahta, and Inyan Kara.
    4. A 100-foot plug, half in and half out of the base of the surface casing must be installed.
    5. A 25-foot cement plug at the top of the surface casing must be installed.
    6. Heavy, mud-laden fluid must be placed between all plugs.

- C. Without production casing:
  - 1. 100-foot cement plugs, half in and half out of the top of any salt zones encountered and the following formations must be installed: Red River, Interlake, Madison, Minnelusa, Minnekahta, and Inyan Kara.
  - 2. A 100-foot cement plug, half in and half out of the base of the surface casing must be installed.
  - 3. A 25-foot cement plug at the top of the surface casing must be installed.
  - 4. Heavy, mud-laden fluid must be placed between all plugs.
- D. The casing string must be cut off at least three feet below the final ground surface contour. A plate with the name of the operator, well name and number, and legal location by quarter-quarter section, township and range must be welded to the casing stub. The location of the abandoned well must be surveyed with high resolution global positioning system equipment or other appropriate survey methods sufficient to accurately locate the well. Survey coordinates must be included in the final abandonment report.
- 11. Surface reclamation of the site must be completed within one year of plugging and abandoning the well.
- 12. Interim reclamation must be conducted on all areas disturbed by a well drilling operation and not needed for production operations within 12 months after the well is completed in accordance with Administrative Rules of South Dakota 74:12:03:07.
- 13. A washed set of sample cuttings (and cores, if cut) must be shipped, free of charge, to:

Derric Iles  
Geological Survey Program  
Akeley-Lawrence Science Center  
University of South Dakota  
414 E. Clark Street  
Vermillion, SD 57069-2390

- 14. Activities requiring approval from the department may not be initiated until proper approval has been obtained.