

FORM
2

Rev
08/13

State of Colorado

Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203
Phone: (303) 894-2100 Fax: (303) 894-2109



Document Number:

400959573

APPLICATION FOR PERMIT TO:

☒ Drill ☐ Deepen ☐ Re-enter ☐ Recomplete and Operate

TYPE OF WELL OIL ☒ GAS ☐ COALBED ☐ OTHER _____

Refiling ☐

Date Received:

01/05/2016

ZONE TYPE SINGLE ZONE ☒ MULTIPLE ZONES ☐ COMMINGLE ZONES ☐

Sidetrack ☐

Well Name: Castle

Well Number: 0780 2-17H20

Name of Operator: SANDRIDGE EXPLORATION & PRODUCTION LLC

COGCC Operator Number: 10598

Address: 123 ROBERT S KERR AVE

City: OKLAHOMA CITY

State: OK

Zip: 73102

Contact Name: Kimberly Rodell

Phone: (303)942-0506

Fax: ()

Email: krodell@upstreampm.com

RECLAMATION FINANCIAL ASSURANCE

Plugging and Abandonment Bond Surety ID: 20150119

WELL LOCATION INFORMATION

QtrQtr: NWNW Sec: 17 Twp: 7N Rng: 80W Meridian: 6

Latitude: 40.584244

Longitude: -106.404447

Footage at Surface: 187 feet FNL/FSL FNL 743 feet FEL/FWL FWL

Field Name: NORTH PARK HORIZONTAL
NIOBRARA

Field Number: 60120

Ground Elevation: 8149

County: JACKSON

GPS Data:

Date of Measurement: 11/19/2015 PDOP Reading: 1.6 Instrument Operator's Name: Chad Meiers

If well is ☐ Directional ☒ Horizontal (highly deviated) **submit deviated drilling plan.**

Footage at Top of Prod Zone: FNL/FSL FNL 921 FNL 789 FNL 300 FSL 990 FNL 300 FSL 990 FNL 300 FSL 990
Sec: 17 Twp: 7N Rng: 80W Sec: 20 Twp: 7N Rng: 80W

LOCATION SURFACE & MINERALS & RIGHT TO CONSTRUCT

Surface Ownership: ☒ Fee ☐ State ☐ Federal ☐ Indian

The Surface Owner is: ☒ is the mineral owner beneath the location.
(check all that apply) ☒ is committed to an Oil and Gas Lease.

☒ has signed the Oil and Gas Lease.

☐ is the applicant.

The Mineral Owner beneath this Oil and Gas Location is: ☒ Fee ☐ State ☐ Federal ☐ Indian

The Minerals beneath this Oil and Gas Location will be developed by this Well: Yes

The right to construct the Oil and Gas Location is granted by: oil and gas lease

Surface damage assurance if no agreement is in place:

Surface Surety ID:

LEASE INFORMATION

Using standard QtrQtr, Sec, Twp, Rng format, describe one entire mineral lease that will be produced by this well (Describe lease beneath surface location if produced. Attach separate description page or map if necessary.)

T7N R80W Sec. 17: N2

Total Acres in Described Lease: 320 Described Mineral Lease is: ☒ Fee ☐ State ☐ Federal ☐ Indian

Federal or State Lease # _____

Distance from Completed Portion of Wellbore to Nearest Lease Line of described lease: 0 Feet

CULTURAL DISTANCE INFORMATION

Distance to nearest:

Building: 2819 Feet
Building Unit: 2830 Feet
High Occupancy Building Unit: 5280 Feet
Designated Outside Activity Area: 5280 Feet
Public Road: 723 Feet
Above Ground Utility: 473 Feet
Railroad: 5280 Feet
Property Line: 743 Feet

INSTRUCTIONS:

- All measurements shall be provided from center of the Proposed Well to nearest of each cultural feature as described in Rule 303.a.(5).
- Enter 5280 for distance greater than 1 mile.
- Building - nearest building of any type. If nearest Building is a Building Unit, enter same distance for both.
- Building Unit, High Occupancy Building Unit, and Designated Outside Activity Area - as defined in 100-Series Rules.

DESIGNATED SETBACK LOCATION INFORMATION

Check all that apply. This location is within a: ☐ Buffer Zone
☐ Exception Zone
☐ Urban Mitigation Area

- Buffer Zone – as described in Rule 604.a.(2), within 1,000' of a Building Unit
- Exception Zone - as described in Rule 604.a.(1), within 500' of a Building Unit.
- Urban Mitigation Area - as defined in 100-Series Rules.

Pre-application Notifications (required if location is within 1,000 feet of a building unit):

Date of Rule 305.a.(1) Urban Mitigation Area Notification to Local Government: _____

Date of Rule 305.a.(2) Buffer Zone Notification to Building Unit Owners: _____

SPACING and UNIT INFORMATION

Distance from completed portion of proposed wellbore to nearest completed portion of offset wellbore permitted or completed in the same formation: 441 Feet

Distance from Completed Portion of Wellbore to Nearest Unit Boundary 300 Feet (Enter 5280 for distance greater than 1 mile.)

Federal or State Unit Name (if appl): _____ Unit Number: _____

SPACING & FORMATIONS COMMENTS

SandRidge has submitted an application, Docket 160100046, set for January, 2016 to create a 1,280 acre Drilling and Spacing Unit. Unit configuration is T7N R80W Sections 17 & 20: All.

OBJECTIVE FORMATIONS

Objective Formation(s)	Formation Code	Spacing Order Number(s)	Unit Acreage Assigned to Well	Unit Configuration (N/2, SE/4, etc.)
NIOBRARA	NBRR	531-22	1280	Sec. 17 & 20: All

DRILLING PROGRAM

Proposed Total Measured Depth: 16925 Feet

Distance from proposed wellbore to nearest existing or permitted wellbore belonging to another operator:

190 Feet (Including plugged wells)

Will a closed-loop drilling system be used? Yes

Is H₂S gas reasonably expected to be encountered during drilling operations at concentrations greater than or equal to 100 ppm? No (If Yes, attach an H₂S Drilling Operations Plan)

Will salt sections be encountered during drilling? No

Will salt based (>15,000 ppm Cl) drilling fluids be used? No

Will oil based drilling fluids be used? No

BOP Equipment Type: ☒ Annular Preventor ☒ Double Ram ☒ Rotating Head ☐ None

GROUNDWATER BASELINE SAMPLING AND MONITORING AND WATER WELL SAMPLING

Water well sampling required per Rule 609

DRILLING WASTE MANAGEMENT PROGRAM

Drilling Fluids Disposal: OFFSITE Drilling Fluids Disposal Methods: Commercial Disposal

Cuttings Disposal: OFFSITE Cuttings Disposal Method: Commercial Disposal

Other Disposal Description:

Beneficial reuse or land application plan submitted? No

Reuse Facility ID: _____ or Document Number: _____

CASING PROGRAM

Casing Type	Size of Hole	Size of Casing	Wt/Ft	Csg/Liner Top	Setting Depth	Sacks Cmt	Cmt Btm	Cmt Top
CONDUCTOR	26	16+1/4	42	0	90	189	90	0
SURF	12+1/4	9+5/8	36	0	2500	576	2500	0
1ST	8+3/4	5+1/2	20	0	16925	2981	16925	2300

☐ Conductor Casing is NOT planned

DESIGNATED SETBACK LOCATION EXCEPTIONS

Check all that apply:

- ☐ Rule 604.a.(1)A. Exception Zone (within 500' of Building Unit)
- ☐ Rule 604.b.(1)A. Exception Location (existing or approved Oil & Gas Location now within a Designated Setback as a result of Rule 604.a.)
- ☐ Rule 604.b.(1)B. Exception Location (existing or approved Oil & Gas Location is within a Designated Setback due to Building Unit construction after Location approval)
- ☐ Rule 604.b.(2) Exception Location (SUA or site-specific development plan executed on or before August 1, 2013)
- ☐ Rule 604.b.(3) Exception Location (Building Units constructed after August 1, 2013 within setback per an SUA or site-specific development plan)

GREATER WATTENBERG AREA LOCATION EXCEPTIONS

Check all that apply:

- ☐ Rule 318A.a. Exception Location (GWA Windows).
- ☐ Rule 318A.c. Exception Location (GWA Twinning).

RULE 502.b VARIANCE REQUEST

☐ Rule 502.b. Variance Request from COGCC Rule or Spacing Order Number _____

OTHER LOCATION EXCEPTIONS

Check all that apply:

- ☐ Rule 318.c. Exception Location from Rule or Spacing Order Number _____
- ☐ Rule 603.a.(2) Exception Location (Property Line Setback).

ALL exceptions and variances require attached Request Letter(s). Refer to applicable rule for additional required attachments (e.g. waivers, certifications, SUAs).

OPERATOR COMMENTS AND SUBMITTAL

Comments

The distance from the completed portion of the proposed wellbore to nearest wellbore permitted or completed in the same formation was measured to the proposed Castle 0780 1-17H20. The distance from the proposed wellbore to nearest existing or permitted wellbore belonging to another operator was taken from the Evans 7-80 17-1, API No. 05-057-06439, currently owned and operated by Red Willow Production LLC. There are multiple leases that cover this location. The horizontal wellbore crosses this lease line and will conform to the proposed Drilling and Spacing Unit and its setbacks. This permit is being submitted with a revised Oil and Gas Location Assessment.

This application is in a Comprehensive Drilling Plan _____ No _____ CDP #: _____

Location ID: 324757

Is this application being submitted with an Oil and Gas Location Assessment application? _____ Yes _____

I hereby certify all statements made in this form are, to the best of my knowledge, true, correct, and complete.

Signed: _____ Print Name: Kimberly Rodell

Title: Permit Agent Date: 1/5/2016 Email: krodell@upstreampm.com

Operator must have a valid water right or permit allowing for industrial use or purchased water from a seller that has a valid water right or permit allowing for industrial use, otherwise an application for a change in type of use is required under Colorado law. Operator must also use the water in the location set forth in the water right decree or well permit, otherwise an application for a change in place of use is required under Colorado law. Section 37-92-103(5), C.R.S. (2011).

Based on the information provided herein, this Application for Permit-to-Drill complies with COGCC Rules and applicable orders and is hereby approved.

COGCC Approved:  Director of COGCC Date: 2/17/2016

Expiration Date: 02/16/2018

API NUMBER

05 057 06546 00

Conditions Of Approval

All representations, stipulations and conditions of approval stated in the Form 2A for this location shall constitute representations, stipulations and conditions of approval for this Form 2 Permit-to-Drill and are enforceable to the same extent as all other representations, stipulations and conditions of approval stated in this Permit-to-Drill.

COA Type

Description

	1) Operator shall comply with the most current revision of the Northwest Notification Policy.
	2) Operator shall provide cement coverage from the production casing shoe (5+1/2" First String) to a minimum of 200' above the surface casing shoe to provide full isolation of the Coalmont Formation. Verify production casing cement coverage with a cement bond log. Changed First String cement top from a null value to 2300' (200' above proposed surface casing shoe depth of 2500').

Best Management Practices

<u>No</u>	<u>BMP/COA Type</u>	<u>Description</u>
1	Drilling/Completion Operations	One of the first wells drilled on the pad will be logged with open-hole Resistivity Log and Gamma Ray Log from the kick-off point into the surface casing. All wells on the pad will have a cement bond log with gamma-ray run on production casing (or on intermediate casing if production liner is run) into the surface casing. The horizontal portion of every well will be logged with a measured-while-drilling gamma-ray log. The Form 5, Completion Report, for each well on the pad will list all logs run and have those logs attached. The Form 5 for a well without open-hole logs shall clearly state "No open-hole logs were run" and shall clearly identify (by API#, well name & number) the well in which open-hole logs were run.

Total: 1 comment(s)

Applicable Policies and Notices to Operators

Policy
NW Colorado Notification Policy. http://cogcc.state.co.us/documents/reg/Policies/nw_notification_procedures.pdf
Notice Concerning Operating Requirements for Wildlife Protection. http://cogcc.state.co.us/documents/reg/Policies/Wildlife_Notice.pdf

Attachment Check List

<u>Att Doc Num</u>	<u>Name</u>
400959573	APD APPROVED
400964305	OffsetWellEvaluations Data
400964316	WELL LOCATION PLAT
400964326	DIRECTIONAL DATA
400964327	OTHER
400964335	DEVIATED DRILLING PLAN
400965753	DRILLING PLAN
400991356	OFFSET WELL EVALUATION
400991366	FORM 2 SUBMITTED

Total Attach: 9 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
Permit	Final review complete.	2/17/2016 11:48:33 AM
Engineer	Operator (Spence Laird) requested a change of the surface casing setting depth and cement volume via email on 2/11/2016, as follows: Please correct the surface casing depth to 2500' Top of cement – surface Estimated volume gauge hole + 50% excess Lead: 376 sx Halliburton SwiftCem @ 2.18 ft³/sk Tail: 200 sx Halliburton SwiftCem @ 1.76 ft³/sk Top Out (if needed): 100 sx @ 1.76 ft³/sk	2/17/2016 10:25:19 AM
Permit	With operator approval, revised top of production zone footages to the landing point footages indicated on the well location plat, entered approved spacing order and removed operator comment regarding top of production zone. Permit task passed.	2/11/2016 11:00:40 AM
Engineer	Offset Well Evaluation: COGCC evaluated a 1,500-foot buffer around the planned wellbore paths of ten proposed wells on this pad. The nine offset wells shown on the operator's offset well evaluation are within the 1,500-foot buffer. Offset mitigation is required for one of the nine wells shown below: Hebron #7-17H (057-06472), which	1/8/2016 11:12:25 AM

is listed first. The offset mitigation is only required for stimulation of the proposed wells Mutual 0780 2-8H (Form 2 #400958252) and Mutual 0780 3-8H (Form 2 #400958361).

Evaluated offset horizontal producing (PR) well Hebron #7-17H (057-06472), TD at 12181' and completed in the Niobrara Formation. First String intermediate casing cement coverage appears to extend above the surface casing shoe (set at 1046'), with adequate isolation of the Niobrara production zone (top perforation at 8062' and First String shoe at 7338'). The First String cement bond log (CBL) for this well was not run across the entire Coalmont Formation, and therefore cement quality and coverage is uncertain in the unlogged interval from 1232' to 4790'. A production liner is cemented across the Niobrara completion and up into the First String. Offset mitigation required because of the uncertain cement coverage in the lower portion of the Coalmont Formation for the Mutual 7-17H well.

Evaluated offset dry and abandoned (DA) well Evans 7-80 17-1 (05-057-06439), surface casing set at 313' and cemented to surface, well TD in Pierre Shale at 3886'. Cement plug set in open hole across Pierre Shale top at 3761' (50 sx from 3770' to 3600'). Other open hole plugs set in the Coalmont Formation to isolate coal seams (60 sx from 3550' to 3350', 30 sx from 3250' to 3100', and 120 sx from 2600' to 2275'). A kick-off plug was set for a sidetrack to core and set production casing (80 sx from 2300' to 2130'). The Sidetrack 01 was TD in Pierre Shale at 3860', with production casing set at the same depth and a top of cement at 2500'. Well was completed in the Coalmont Formation, but it did not produce (3540' top perforation). A CIBP was set in casing at 3490' with 2 sx cement on top. Production casing was cut and pulled at 2320'. A cement plug was set across the production casing stub (100 sx from 2420' to 2220'), an open-hole cement plug was set with 100 sx from 1400' to 1215', a cement plug was set across the surface casing shoe (100 sx from 400' to 220'), and 20 sx was set in the casing at surface. Well did not penetrate the Niobrara Formation, and the Coalmont Formation is adequately isolated. No offset mitigation required. This well plots within 150' of the wellbore path for the proposed Castle 0780 2-17H20 well (Form 2 #400959573). Anti-collision is not required because of vertical separation exceeding 150' (this well terminates in a shallower formation).

Evaluated offset DA well Townsell 7-80 8-1 (05-057-06440), surface casing set at 321' and cemented to surface, well TD in Pierre Shale at 4386'. Well was dry and abandoned. Cement plug set in open hole across Pierre Shale top at 4217' (134 sx from 4250' to 3850'). Other open hole plugs set in the Coalmont Formation to isolate coal seams (84 sx from 3650' to 3400', 84 sx from 2550' to 2300', 168 sx from 1850' to 1350', and 110 sx from 1200' to 950'). A kick-off plug was set for a sidetrack to core and set production casing (130 sx from 800' to 450'). Production casing was set at 2485' and cemented to surface in the Sidetrack 01 wellbore. The well was not completed. Cement plugs were set in the production casing (20 sx from 2440' to 2260', 15 sx from 1525' to 1395', 25 sx from 430' to 210' across surface casing shoe, and 10 sx at surface). Well did not penetrate the Niobrara Formation, and the Coalmont Formation is adequately isolated. No offset mitigation required.

Evaluated offset horizontal producing (PR) well Mutual #2-30H (057-06465), Sidetrack 01 wellbore TD at 10975' and completed in the Niobrara Formation. First String intermediate top of cement is 3170', with adequate isolation of the Niobrara production zone (top perforation at 7118' and First String shoe at 7090'). The First String cement coverage is lacking across the Coalmont Formation from 3170' to the surface casing shoe at 931'. A production liner is cemented across the Niobrara completion and up into the First String. Offset mitigation not required because of the wellbore orientation and lateral separation between wellbores (approximately 1,290' toe-to-toe for the proposed Castle 0780 1-17H20 well and this existing well). Mutual #2-30H is not within 1,500' of any other proposed wells on the pad, other than the Castle 0780 1-17H20 well.

Evaluated offset permitted (XX) well Mutual #03-19H (057-06470), which has not been drilled (confirmed by COGCC Field Inspection Report #200290286, dated 11/18/2010), and the well's Form 2 Application for Permit to Drill #1990947, expired on 6/17/2009. The design of this well would not meet current standards, which require full isolation of the Coalmont Formation. Any refile of a Permit to Drill for the

	<p>Mutual #03-19H well would require full isolation of the Coalmont Formation. No offset mitigation required because this well has an expired Permit to Drill, and the well was not drilled.</p> <p>Evaluated offset horizontal PR well Hebron #1-18H (057-06501), TD at 9994' and completed in the Niobrara Formation. First String cement coverage appears to extend above the surface casing shoe (set at 1054'), with adequate isolation of the Coalmont Formation and the Niobrara production zone (top perforation at 7441'). No offset mitigation required.</p> <p>Evaluated offset horizontal PR well Hebron #5-18H (057-06502), TD at 11408' and completed in the Niobrara Formation. First String cement coverage appears to extend above the surface casing shoe (set at 1028'), with adequate isolation of the Coalmont Formation and the Niobrara production zone (top perforation at 7161'). No offset mitigation required.</p> <p>Evaluated offset XX well Mutual #01-17H (057-06534) Form 2 Application for Permit to Drill # 400591335. The design of this well meets standards; no offset mitigation required.</p> <p>Evaluated offset XX well Hebron #01-18HR (057-06536) Form 2 Application for Permit to Drill # 400596809. The design of this well meets standards; no offset mitigation required.</p>		
Engineer	Operator provided an anti-collision report, attached to this form as "Other." Offset well(s) within 150' of this wellbore are operated by SandRidge as of 1/8/2016 (the same operator as this proposed well). Therefore, neither offset operator notice nor anti-collision BMPs are required by rule. Removed anti-collision BMP per operator agent request.	1/8/2016 11:12:10 AM	
Engineer	Offset water well check: COGCC evaluated offset water wells within one mile of this proposed well's surface hole location. This information was used in addition to locally-available geophysical logs and hydrogeologic information to evaluate the adequacy of the operator's proposed surface casing setting depth. The deepest water well within one mile is 101 feet.	1/8/2016 11:11:57 AM	
Engineer	The Coalmont Formation is considered a potential freshwater resource in the North Park Basin (CGS Ground Water Atlas of Colorado, 2003). The proposed surface casing setting depth of 2500' may or may not cover the entire formation. Minimum cement isolation standards are specified in Condition of Approval #2.	1/8/2016 11:11:38 AM	
Permit	Passed completeness.	1/7/2016 8:07:30 AM	
Permit	Returned to draft. Drilling plan attachment does not open.	1/6/2016 1:19:40 PM	

Total: 9 comment(s)