

State of Colorado
Oil and Gas Conservation Commission

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



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KRIS NEIDEL

Site Investigation and Remediation Workplan (Supplemental Form)

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. However, this shall not preclude the Operator from taking immediate action to protect public health or safety, the environment, wildlife, or livestock.

This Form 27 describes site conditions as currently understood by the Operator; approval of this Form 27 by COGCC is based on the site conditions accurately described herein; any changes in site conditions identified during or subsequent to the performance of the approved workplan may necessitate additional investigation or remediation which shall be described on a supplemental Form 27.

This Form 27 is intended to provide basic information regarding the proposed site investigation and remediation actions, but the workplan may be more fully described in attached documentation.

Refer to Rules 340, 905, 906, 907, 908, 909, and 910

OPERATOR INFORMATION

Name of Operator: SANDRIDGE EXPLORATION & PRODUCTION LLC	Operator No: 10598	Phone Numbers Phone: (405) 429-5745 Mobile: (405) 651-6853
Address: 123 ROBERT S KERR AVE		
City: OKLAHOMA CITY State: OK Zip: 73102		
Contact Person: Matt Church Email: mchurch@sandridgeenergy.com		

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION
Remediation Project #: 13743 Initial Form 27 Document #: 402073369

PURPOSE INFORMATION

<input type="checkbox"/> 901.e. Sensitive Area Determination	<input type="checkbox"/> 909.c.(5), Rule 910.b.(4): Remediation of impacted ground water
<input type="checkbox"/> 909.c.(1), Rule 905: Pit or PW vessel closure	<input type="checkbox"/> Rule 909.e.(2)A.: Notice completion of remediation in accordance with Rule 909.b.
<input checked="" type="checkbox"/> 909.c.(2), Rule 906: Spill/Release Remediation	<input type="checkbox"/> Rule 909.e.(2)B.: Closure of remediation project
<input type="checkbox"/> 909.c.(3), Rule 907.e.: Land treatment of oily waste	<input type="checkbox"/> Rule 906.c.: Director request
<input type="checkbox"/> 909.c.(4), Rule 908.g.: Centralized E&P Waste Management Facility closure	<input type="checkbox"/> Other

SITE INFORMATION N Multiple Facilities (in accordance with Rule 909.c.)

Facility Type: SPILL OR RELEASE	Facility ID: 324757	API #:	County Name: JACKSON
Facility Name: Mutual Pad 01-17H	Latitude: 40.584359	Longitude: -106.404626	
** correct Lat/Long if needed: Latitude:		Longitude:	
QtrQtr: NWNW	Sec: 17	Twp: 7N	Range: 80W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SM Most Sensitive Adjacent Land Use Hay Meadow

Is domestic water well within 1/4 mile? No Is surface water within 1/4 mile? Yes

Is groundwater less than 20 feet below ground surface? Yes

Other Potential Receptors within 1/4 mile

The Mutual Ditch is located adjacent to the west edge of the pad and is currently in use. The irrigation ditch is approximately 60 feet west of the spill, outside the well pad containment berm. Grizzly Creek is approximately 2,300 feet east of the spill location.

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- | | | |
|---|--|---|
| <input checked="" type="checkbox"/> E&P Waste | <input type="checkbox"/> Other E&P Waste | <input checked="" type="checkbox"/> Non-E&P Waste |
| <input type="checkbox"/> Produced Water | <input type="checkbox"/> Workover Fluids | Contaminated groundwater |
| <input checked="" type="checkbox"/> Oil | <input type="checkbox"/> Tank Bottoms | _____ |
| <input type="checkbox"/> Condensate | <input type="checkbox"/> Pigging Waste | |
| <input type="checkbox"/> Drilling Fluids | <input type="checkbox"/> Rig Wash | |
| <input type="checkbox"/> Drill Cuttings | <input type="checkbox"/> Spent Filters | |
| | <input type="checkbox"/> Pit Bottoms | |
| | <input type="checkbox"/> Other (as described by EPA) | _____ |

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
UNDETERMINED	GROUNDWATER	Approximately 48 inches bgs	Hand auger to depth and step out delineation
Yes	SOILS	Approximately 200 square feet	Hand auger and step out delineation

INITIAL ACTION SUMMARY

Description of initial action or emergency response measures take to abate, investigate, and/or remediate impacts associated with E&P Waste.

A Form 27 Supplemental Report 402093377 closure requests was submitted on 10/11/2019. A summary of investigation and remediation actions performed is included in Attachment C of this Form 27 Supplemental Report. The COGCC has requested further action of quarterly sampling of groundwater. In response, SandRidge will install monitoring wells at the location for quarterly monitoring.

PROPOSED SAMPLING PLAN

Proposed Soil Sampling

Will soil samples be collected as part of this investigation? (Number, type (grab/composite), analyses, and locations of samples):

Soil samples will be collected from each boring location during the installation of monitoring wells. Grab samples will be collected in 2 foot intervals (or less) and screened with a PID for VOC concentrations. Depending upon VOC detection and potential concentration a soil sample may be collected and submitted to the laboratory and analyzed for BTEX and TPH (DRO & GRO).

Proposed Groundwater Sampling

Will groundwater samples be collected as part of this investigation? (Number, analyses, and locations of samples):

A total of five (5) groundwater monitoring wells are proposed as part of the site investigation plan. Groundwater samples will be collected from each monitoring well following installation and sampled for BTEX, TPH (DRO&GRO), pH, and specific conductivity. Groundwater samples will be collected from the monitoring wells on a quarterly basis for at least four (4) consecutive quarters.

Proposed Surface Water Sampling

Will surface water samples be collected as part of this investigation? (Number, analyses, and locations of samples):

One (1) downstream surface water sample will be collected from the Mutual Ditch (located approximately 60 feet west of the spill area) on a quarterly basis when water is flowing, likely to occur in 2Q2020 and 3Q2020. Surface water will be analyzed for BTEX, TPH (DRO & GRO).

Additional Investigative Actions

Additional alternative investigative actions described in attached Site Investigation Plan (summary):

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 13
Number of soil samples exceeding 910-1 0
Was the areal and vertical extent of soil contamination delineated? No
Approximate areal extent (square feet) 800

NA / ND

-- Highest concentration of TPH (mg/kg) 37.4
-- Highest concentration of SAR 4.75
BTEX > 910-1 No
Vertical Extent > 910-1 (in feet) 6

Groundwater

Number of groundwater samples collected 6
Was extent of groundwater contaminated delineated? No
Depth to groundwater (below ground surface, in feet) 3'
Number of groundwater monitoring wells installed 0
Number of groundwater samples exceeding 910-1 2

-- Highest concentration of Benzene (µg/l) 2260
-- Highest concentration of Toluene (µg/l) 5540
-- Highest concentration of Ethylbenzene (µg/l) 992
-- Highest concentration of Xylene (µg/l) 3140
NA Highest concentration of Methane (mg/l)

Surface Water

2 Number of surface water samples collected
0 Number of surface water samples exceeding 910-1

If surface water is impacted, other agency notification may be required.

OTHER INVESTIGATION INFORMATION

Were impacts to adjacent property or offsite impacts identified?

Were background samples collected as part of this site investigation?

One (1) background surface water sample, SDE_M7_17_SW_00, was collected from the Mutual Ditch upstream of the Mutual 7-17 pad.

Was investigation derived waste (IDW) generated as part of this investigation?

Volume of solid waste (cubic yards) 915 Volume of liquid waste (barrels) 960

Is further site investigation required?

Wells will be completed to approximately 20 feet below ground surface (bgs), if possible. A confining layer is expected at approximately 19 – 20 feet bgs. Groundwater is anticipated will be encountered at approximately 7-10 feet bgs during 1Q2020. Groundwater elevation will likely increase as surface water infiltration occurs in 2Q2020 and is expected to be 3-5 feet bgs, based on previous excavations and borings conducted onsite. If the wells are completed to 20 feet bgs they will have a five (5) foot riser on top of a 15 foot screen to allow for seasonal groundwater fluctuations. Each well will be flush-mounted with the surface and have a cemented well cover with a lockable PVC cap to prevent surface infiltration. Following installation each monitoring well will be purged of at least three well volumes prior to collecting a groundwater sample. One (1) well will be installed near the most impacted location based off of previous field screening data. Four (4) additional groundwater monitoring wells will be installed in cardinal directions to evaluate the upgradient, downgradient, and cross-gradient site conditions. All purged groundwater will be containerized onsite until water quality analysis is received and constituents are verified to be below COGCC Table 910-1 acceptable concentrations. If so, water will be disposed of on the ground onsite. If not, a remedial action plan will be developed and correspondence will be pursued with the COGCC.

REMEDIAL ACTION PLAN

Does this Supplemental Form 27A include changes to a previously approved Remedial Action Plan? No _____

SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

SandRidge removed impacted material via dig and haul operations. During remedial excavation the failed flowline causing spilled oil was pressure tested, flushed and removed to the extent of the excavation eastern wall where no impacted soil remained and the flowline was capped. Work was completed by Session & Sons, LLC on June 24, 2019. All impacted soil waste was hauled via truck to Twin Enviro Landfill for disposal, located in Milner, Colorado. Water removed from the excavation was collected in frac tanks and hauled to NGL Water Solutions for disposal, located in Greely, Colorado. Manifests are provided in Attachment O and P of Form 27 Supplemental Report 402093377.

REMEDIATION SUMMARY

Describe how remediation of existing impacts to soil and groundwater is to be accomplished (i.e. summarize remedial action plan). Provide a brief narrative description including: technical justification, schedule for implementation, estimated time to attain NFA status, plus plans and specifications for the selected remedial action technology.

All post-remediation groundwater and soil sample results collected from the excavation were below Table 910-1 acceptable concentrations for organic constituents. Groundwater samples collected outside and surrounding the excavation were also below Table 910-1 acceptable concentrations for organic constituents. The COGCC has requested further groundwater monitoring as a COA for Form 27 Supplement Report 402093377. Installation of monitoring wells will be initiated in 1Q2020 and monitored quarterly during 2020.

Soil Remediation Summary

In Situ

- _____ Bioremediation (or enhanced bioremediation)
- _____ Chemical oxidation
- _____ Air sparge / Soil vapor extraction
- _____ Natural Attenuation
- _____ Other _____

Ex Situ

- _____ Excavate and offsite disposal
- _____ If Yes: Estimated Volume (Cubic Yards) _____
- _____ Name of Licensed Disposal Facility or COGCC Facility ID # _____
- _____ Excavate and onsite remediation
- _____ Land Treatment
- _____ Bioremediation (or enhanced bioremediation)
- _____ Chemical oxidation
- _____ Other _____

Groundwater Remediation Summary

- No _____ Bioremediation (or enhanced bioremediation)
- No _____ Chemical oxidation
- No _____ Air sparge / Soil vapor extraction
- No _____ Natural Attenuation
- No _____ Other _____

GROUNDWATER MONITORING

If groundwater has been impacted, describe proposed monitoring plan, including # of wells or sample points, monitoring schedule, analytical methods, points of compliance. Attach a groundwater monitoring location diagram.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Frequency: Quarterly Semi-Annually Annually Other _____

Report Type: Groundwater Monitoring Land Treatment Progress Report O&M Report

Other _____

WASTE DISPOSAL INFORMATION

Was E&P waste generated as part of this remediation? No _____

Describe beneficial use, if any, of E&P Waste derived from this remediation project:

Volume of E&P Waste (solid) in cubic yards _____

E&P waste (solid) description _____

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____

Volume of E&P Waste (liquid) in barrels _____

E&P waste (liquid) description _____

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____

REMEDIATION COMPLETION REPORT

REMEDIATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? No _____

Do all soils meet Table 910-1 standards? Yes _____

Does the previous reply indicate consideration of background concentrations? Yes _____

Are the only residual soil impacts pH, SAR, or EC at depths greater than 3 feet below ground surface? _____

Does Groundwater meet Table 910-1 standards? Yes _____

Is additional groundwater monitoring to be conducted? Yes _____

RECLAMATION PLAN

RECLAMATION PLANNING

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing.

The facility is presently in use and reclamation activities are not warranted at this time onsite.

Is the described reclamation complete? _____

Does the reclamation described herein constitute interim or final reclamation of the Oil and Gas Location?

Interim? Final?

Did the Surface Owner approve the seed mix? _____

If NO, does the seed mix comply with local soil conservation district recommendations? _____

IMPLEMENTATION SCHEDULE

PRIOR DATES

Date of Surface Owner notification/consultation, if required. 06/11/2019

Actual Spill or Release date, if known. _____

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 06/11/2019

Date of commencement of Site Investigation. 06/11/2019

Date of completion of Site Investigation. 06/24/2019

REMEDIAL ACTION DATES

Date of commencement of Remediation. 06/17/2019

Date of completion of Remediation. 06/26/2019

SITE RECLAMATION DATES

Date of commencement of Reclamation. _____

Date of completion of Reclamation. _____

OPERATOR COMMENT

Installation of monitoring wells will be initiated in 1Q2020 and monitored quarterly as requested by the COGCC.

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

Signed: Joel Mason

Title: Project Manager

Submit Date: 01/22/2020

Email: joel.mason@absarokasolutions.com

Based on the information provided herein, this Application for Site Investigation and Remediation Workplan complies with COGCC Rules and applicable orders and is hereby approved.

COGCC Approved: KRIS NEIDEL

Date: 02/12/2020

Remediation Project Number: 13743

COA Type**Description**

	Attachments referenced in Doc #402285867 shall be provided on a Supplemental F27.
	During sampling events when the ditch is flowing a sample from the ditch shall be collected and samples from monitoring wells will be collected and analyzed for BTEX and inorganics.
	Operator shall submit Remediation Progress/Groundwater Monitoring Reports on a quarterly schedule and within 45 days of the groundwater monitoring event.
	This Site Investigation and Remediation Workplan (Form 27) is conditionally approved; however, additional information or activities may be required during the course of the investigation.
	As discussed on February 12, 2020 while on location, the operator shall advance at least one soil boring in the foot print of the excavation, screening continuously the length of the boring for volatile organics. A soil sample shall be collected immediately above the shallow groundwater table and analyzed for BTEX, and TPH (GRO and DRO). This is in addition to the installation of the monitoring wells.

Attachment Check List

Upon approval, the approved Form 27 and all listed attachments will be indexed to the Remediation Project file. Only the approved Form 27 will also be indexed to the related Facilities.

Att Doc Num**Name**

402285583	FORM 27-SUPPLEMENTAL-SUBMITTED
402285863	MAP
402285867	OTHER
402285874	GROUND WATER SAMPLE LOCATION

Total Attach: 4 Files

General Comments**User Group****Comment****Comment Date**

		Stamp Upon Approval
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Total: 0 comment(s)