

State of Colorado Oil and Gas Conservation Commission

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Receive Date:

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Report taken by:

Candice (Nikki) Graber

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: SRC ENERGY INC	Operator No: 10311	Phone Numbers Phone: (970) 4755220 Mobile: ()
Address: 1675 BROADWAY SUITE 2600		
City: DENVER	State: CO Zip: 80202	
Contact Person: Dave Castro	Email: dcastro@srcenergy.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 11394

Initial Form 27 Document #: 401653263

PURPOSE INFORMATION

- | | |
|--|--|
| <input type="checkbox"/> 901.e. Sensitive Area Determination | <input checked="" 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 checked="" type="checkbox"/> Other Impact extent determination update and plan forward |

SITE INFORMATION

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

Facility Type: SPILL OR RELEASE	Facility ID: 455029	API #:	County Name: WELD
Facility Name: Stephens 7-11 PWV removal		Latitude: 40.419674	Longitude: -104.814520
		** correct Lat/Long if needed: Latitude: 40.419674	Longitude: -104.814520
QtrQtr: nene	Sec: 7	Twp: 5n	Range: 66w Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SM

Most Sensitive Adjacent Land Use crop land

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

SITE INVESTIGATION PLAN

TYPE OF WASTE:

☒ E&P Waste

☐ Other E&P Waste

☐ Non-E&P Waste

☒ Produced Water

☐ Workover Fluids

☐ Oil

☐ Tank Bottoms

☐ Condensate

☐ Pigging Waste

☐ Drilling Fluids

☐ Rig Wash

☐ Drill Cuttings

☐ Spent Filters

☐ Pit Bottoms

☐ Other (as described by EPA)

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	GROUNDWATER	100' x 25'	sampling
Yes	SOILS	< 15'	soil sampling

INITIAL ACTION SUMMARY

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

Partially buried produced water vault was removed, impacted soils beneath it were hauled to North Weld Landfill, and the pit was backfilled. Tasman Geosciences was brought in to install MWs at the site for groundwater impact extent determination, in which 18 new MWs were installed at the site, on top of the 4 that were existing there from the previous operator. After multiple rounds of step-out MWs, the extents of the groundwater impact have been defined.

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):

There were 4 existing MWs at the location from the previous operator. 18 new MWs were installed by Tasman Geosciences in the process of determining the extents of groundwater impact. 17 of those new MWs had soil samples collected from the bores and tested for BTEX/DRO/GRO. The 1 MW that installed at the source through the pit that was backfilled with clean dirt did not have soil samples collected. All soil results are included in Tasman's site assessment report that is attached with this document.

Proposed Groundwater Sampling

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

There were 4 existing MWs at the location from the previous operator. 18 new MWs were installed by Tasman Geosciences in the process of determining the extents of groundwater impact. Groundwater samples were collected from all 22 MWs and tested for BTEX. All groundwater results are included in Tasman's site assessment report that is attached with this document.

Proposed Surface Water Sampling

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

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 21
Number of soil samples exceeding 910-1 1
Was the areal and vertical extent of soil contamination delineated? Yes
Approximate areal extent (square feet) 30

NA / ND

-- Highest concentration of TPH (mg/kg) 457
NA Highest concentration of SAR
BTEX > 910-1 Yes
Vertical Extent > 910-1 (in feet) 6

Groundwater

Number of groundwater samples collected 22
Was extent of groundwater contaminated delineated? Yes
Depth to groundwater (below ground surface, in feet) 7'
Number of groundwater monitoring wells installed 18
Number of groundwater samples exceeding 910-1 8

-- Highest concentration of Benzene (µg/l) 3750
ND Highest concentration of Toluene (µg/l)
-- Highest concentration of Ethylbenzene (µg/l) 116
-- Highest concentration of Xylene (µg/l) 1890
NA Highest concentration of Methane (mg/l)

Surface Water

0 Number of surface water samples collected
 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?

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

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

☒ Is further site investigation required?

Now that groundwater impact extents have been defined, SRC plans to have groundwater sampled for BTEX again from all 22 MWs in late September 2018 to see what effect, if any, natural attenuation has at this site. If SRC is not satisfied with those results, we will look to move forward with an active remediation plan to be determined and submitted for approval on another Supplemental Form 27 at that time.

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.

Contaminated soil from the excavation was removed and hauled to North Weld Landfill in Ault.

REMEDICATION 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.

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Soil Remediation Summary

☐ In Situ

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

☒ Ex Situ

Yes _____ Excavate and offsite disposal
If Yes: Estimated Volume (Cubic Yards) _____ 35
Name of Licensed Disposal Facility or COGCC Facility ID # _____
No _____ Excavate and onsite remediation
_____ Land Treatment
_____ Bioremediation (or enhanced bioremediation)
_____ Chemical oxidation
_____ Other _____

Groundwater Remediation Summary

☐ _____ Bioremediation (or enhanced bioremediation)
☐ _____ Chemical oxidation
☐ _____ Air sparge / Soil vapor extraction
Yes _____ Natural Attenuation
Yes _____ Other Active remediation is possible, but dependent on the late September '18 groundwater sample results. _____

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.

Now that groundwater impact extents have been defined, SRC plans to have groundwater sampled for BTEX again from all 22 MWs in late September 2018 to see what effect, if any, natural attenuation has at this site. If SRC is not satisfied with those results, we will look to move forward with an active remediation plan to be determined and submitted for approval on another Supplemental Form 27 at that time.

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? _____

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? _____

Does the previous reply indicate consideration of background concentrations? _____

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? No _____

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 pit excavation has been backfilled with clean soil.

Is the described reclamation complete? Yes _____

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. _____

Actual Spill or Release date, if known. _____

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 03/20/2018

Date of commencement of Site Investigation. 06/07/2018

Date of completion of Site Investigation. _____

REMEDIAL ACTION DATES

Date of commencement of Remediation. _____

Date of completion of Remediation. _____

SITE RECLAMATION DATES

Date of commencement of Reclamation. _____

Date of completion of Reclamation. _____

OPERATOR COMMENT

This SF27 is to notify COGCC that groundwater impact extents have now been defined at the site and SRC plans to re-sample groundwater from all 22 MWs in late September to see if natural attenuation is a viable means of remediation. Further action will depend upon those results. All sample results, site figures, and lab reports are within Tasman's Site Assessment Summary attached to this document. Regarding groundwater direction flow on Figure 4, Tasman did confirm that contrary to assumption based on the contour lines, flow is indeed towards the northwest. Once they installed the wells to the southeast, the potentiometric map became more defined and confirmed this, according to Tasman Geosciences. They have a few sites with other operators where the groundwater flow direction changes during the year due to seasonal fluctuations and irrigation water.

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

Signed: Dave Castro

Title: Sr. Env. Specialist

Submit Date: 09/04/2018

Email: dcastro@srcenergy.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: Candice (Nikki) Graber

Date: 09/06/2018

Remediation Project Number: 11394

COA Type

Description

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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

401747600	FORM 27-SUPPLEMENTAL-SUBMITTED
401747698	ANALYTICAL RESULTS

Total Attach: 2 Files

General Comments

User Group

Comment

Comment Date

Environmental	Operator shall provide monitoring report and analytical data for all 22 monitoring wells as well as action plan, if needed, on Supplemental Form 27 no later than December 1, 2018. Operator is directed to update the groundwater monitoring program on the Remediation Action Plan tab with the next Form 27 Supplemental Report at that time.	09/06/2018
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Total: 1 comment(s)