

State of Colorado Oil and Gas Conservation Commission

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Receive Date:

08/20/2021

Report taken by:

RICK ALLISON

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.

Closure request is not available for an Initial Site Investigation and Remediation Workplan.

OPERATOR INFORMATION

Name of Operator: <u>GREAT WESTERN OPERATING COMPANY LLC</u>	Operator No: <u>10110</u>	Phone Numbers
Address: <u>1001 17TH STREET #2000</u>		Phone: <u>(720) 595-2132</u>
City: <u>DENVER</u>	State: <u>CO</u>	Zip: <u>80202</u>
Contact Person: <u>Jason Davidson</u>	Email: <u>j davidson@gwp.com</u>	Mobile: <u>()</u>

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 16684 Initial Form 27 Document #: 402595065

PURPOSE INFORMATION

- ☐ Rule 913.c.(1): Pit or Cuttings Trench closure.
- ☐ Rule 913.c.(2): Buried or partially buried vessel closure, which will be by removal.
- ☐ Rule 913.c.(3): Remediation of Spill and Releases pursuant to Rule 912.
- ☐ Rule 913.c.(4): Land treatment of Oily Waste pursuant to Rule 905.e.
- ☐ Rule 913.c.(5): Closure of Centralized E&P Waste Management Facilities pursuant to Rule 907.h.
- ☐ Rule 913.c.(6): Remediation of impacted Groundwater pursuant to Rule 915.e.(3).D, and the contaminant concentrations in Table 915-1.
- ☐ Rule 913.c.(7): Investigation and remediation of natural gas in soil or Groundwater.
- ☐ Rule 913.c.(8): When requested by the Director due to any potential risk to soil, Groundwater, or surface water.
- ☒ Rule 913.c.(9): Decommissioning of Oil and Gas Facilities.
- ☐ Rule 913.g: Changes of Operator.
- ☐ Rule 915.b: Request to leave elevated inorganics in situ.
- ☐ Other: _____

SITE INFORMATION

No Multiple Facilities

Facility Type: <u>LOCATION</u>	Facility ID: <u>333033</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>GREAT WESTERN-66N67W 27SWSW</u>		Latitude: <u>40.453510</u>	Longitude: <u>-104.887820</u>
		** correct Lat/Long if needed: Latitude: <u>40.453852</u>	Longitude: <u>-104.887576</u>
QtrQtr: <u>SWSW</u>	Sec: <u>27</u>	Twp: <u>6N</u>	Range: <u>67W</u>
		Meridian: <u>6</u>	Sensitive Area? <u>Yes</u>

SITE CONDITIONS

General soil type - USCS Classifications GW

Most Sensitive Adjacent Land Use Agricultural

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 Great Western 66N67W (Pad 8) O&G facility & the Great Western 27-14 wellhead are surrounded by vacant land. There's an agricultural field to the north/northeast, a pond 330' east, wetlands 120' southeast, & another pond 130' southeast. Groundwater may be encountered at less than 5' below ground surface. There are residential properties in place ~ 500' west & a pond 665' further west. There are riparian areas in place 750' and 1,075' southwest & the Cache La Poudre River is in place 980' west/southwest. The 500 foot Aquatic Native Species Conservation Water High Priority Habitat buffer is mapped 580' west of the facility & a ½ mile Bald Eagle Roost Site buffer is mapped 1,110' west of the facility. There are no domestic water wells constructed within a ¼ mile of the facility. There were no additional sensitive areas or wildlife habitats identified within a ¼ mile of the facility. See the attached Figures 1 and 2 for an illustration of the location of the Site.

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- | | | |
|--|--|--|
| <input checked="" type="checkbox"/> E&P Waste | <input type="checkbox"/> Other E&P Waste | <input type="checkbox"/> Non-E&P Waste |
| <input checked="" type="checkbox"/> Produced Water | <input type="checkbox"/> Workover Fluids | |
| <input checked="" type="checkbox"/> Oil | <input type="checkbox"/> Tank Bottoms | |
| <input checked="" 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
No	GROUNDWATER	Not impacted	Groundwater Sampling
No	SOILS	Excavated	Excavation/Confirmation 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.

Great Western proposes to conduct closure of the Great Western 66N67W (Pad 8) oil and gas facility. There are 5 wells associated with the Great Western 66N67W facility. The Great Western 27-23, 27-13, 27-24, and 27-53 wells were P&Ad between 2016 and 2020. The flowlines associated with all 5 wells were removed on 7/20/2020. Plugging and abandonment of the Great Western 27-14 well is scheduled to commence on 2/7/2021 and be completed by 2/9/2021. Partially buried vessel removal activities, tank battery closure activities, and cut and cap activities are planned to commence on 2/15/2021 and be completed by 3/12/2021. Great Western will conduct site investigation activities, field screening, and confirmation sampling activities during closure in accordance with COGCC 900 Series Rules. Discrete soil and groundwater samples will be collected and analyzed pursuant to Rule 915, following the general sample collection guidance in Rule 915.e.(2) and Rule 915.e.(3). All waste generated during the closure activities will be managed and disposed of at Waste Connections Inc. in accordance with Rules 905 and 906.

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):

Up to 18 discrete soil samples will be collected for field screening and at least 8 discrete soil samples will be collected for laboratory analysis. Soil samples will be analyzed for benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, and Total Volatile Petroleum Hydrocarbons (TVPH [C6-C10]) by EPA Method 8260 and Total Extractable Petroleum Hydrocarbons (TEPH [C10-C36]) by EPA Method 8015. Analytical results for TVPH and TEPH will be added together to calculate Total Petroleum Hydrocarbons (TPH). In addition, the soil sample from the base of the partially buried produced water vessel will be analyzed for the Soil Suitability for Reclamation parameters; Electrical Conductivity (EC), Sodium Absorption Ratio (SAR), and pH by Saturated Paste Method, and boron by Hot Water Soluble Soil Extract Method.

Proposed Groundwater Sampling

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

Up to 2 test pits will be excavated to a depth of approximately 5-6 feet adjacent to the water vault and separators. If groundwater is encountered within the test pits or a pathway to groundwater is observed, ground water samples will be collected and will be submitted to an accredited laboratory for analysis of BTEX, naphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene by EPA Method 8260.

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 3
Number of soil samples exceeding 915-1 0
Was the areal and vertical extent of soil contamination delineated? Yes
Approximate areal extent (square feet) 0

NA / ND

NA Highest concentration of TPH (mg/kg) _____
NA Highest concentration of SAR _____
BTEX > 915-1 No
Vertical Extent > 915-1 (in feet) 0

Groundwater

Number of groundwater samples collected 0
Was extent of groundwater contaminated delineated? Yes
Depth to groundwater (below ground surface, in feet) 0
Number of groundwater monitoring wells installed _____
Number of groundwater samples exceeding 915-1 _____

NA Highest concentration of Benzene (µg/l) _____
NA Highest concentration of Toluene (µg/l) _____
NA Highest concentration of Ethylbenzene (µg/l) _____
NA Highest concentration of Xylene (µg/l) _____
NA Highest concentration of Methane (mg/l) _____

Surface Water

0 Number of surface water samples collected
0 Number of surface water samples exceeding 915-1
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?

Please refer to the Operator Comments section under the Submit Tab of this Form 27.

☐ 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?

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.

Please refer to the Facility Closure Report submitted with the COGCC approved Supplemental Form 27 Document Number 402689106 for a detailed summary of the source removal activities conducted at the Site.

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.

Please refer to the Facility Closure Report submitted with the COGCC approved Supplemental Form 27 Document Number 402689106 for a detailed summary of the remediation activities conducted at the Site.

Soil Remediation Summary

☐ In Situ

☐ Ex Situ

_____ Bioremediation (or enhanced bioremediation)

_____ Excavate and offsite disposal

_____ Chemical oxidation
_____ Air sparge / Soil vapor extraction
_____ Natural Attenuation
_____ Other _____

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

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

Please refer to the Facility Closure Report submitted with the COGCC approved Supplemental Form 27 Document Number 402689106 for a detailed summary of the groundwater sampling activities conducted at the Site.

REMEDATION PROGRESS UPDATE

PERIODIC REPORTING

Approved Reporting Schedule:

☐ Quarterly ☐ Semi-Annually ☐ Annually ☐ Other _____

☐ Request Alternative Reporting Schedule:

☐ Semi-Annually ☐ Annually ☐ Other _____

Rule 913.e:

After initial approval of a Form 27, the Operator will provide quarterly update reports in a Supplemental Form 27 to document progress of site investigation and remediation, unless an alternative reporting schedule has been requested by the Operator and approved by the Director. The Director may request a more frequent reporting schedule based on site-specific conditions.

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: _____

REMEDATION COMPLETION REPORT

REMEDATION COMPLETION SUMMARY

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

If YES:

☐ Compliant with Rule 913.h.(1).

☐ Compliant with Rule 913.h.(2).

☐ Compliant with Rule 913.h.(3).

Do all soils meet Table 915-1 standards? No _____

Does the previous reply indicate consideration of background concentrations? _____

Does Groundwater meet Table 915-1 standards? Yes _____

Is additional groundwater monitoring to be conducted? _____

Operator shall comply with the COGCC 1000-Series Reclamation Requirements for all impacted and disturbed areas.

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.

Great Western has conducted the appropriate reclamation of the land and soil affected by the facility in accordance with COGCC 1000-Series Rules. All disturbed areas have been reclaimed as nearly as practical to their original condition or their designated final land use. All areas compacted by oil and gas operations have been cross-ripped, topsoil has been applied to all disturbed areas, and reseeding with a native grass species consistent with the Natural Resource Conservation Service (NRCS) recommended seed mix for the area will be applied in the Fall 2021. Inspections will take place periodically in accordance with COGCC and Colorado Department of Public Health and Environment (CDPHE) requirements. The site will be monitored to identify areas of poor growth and the presence of noxious weeds. These areas will be reseeded as needed and weed control measures will be implemented in compliance with the Colorado Noxious Weed Act. Great Western will ensure that erosion and sedimentation controls are implemented as necessary before and after seeding operations, as detailed in the Stormwater Management Plan.

Is the described reclamation complete? No _____

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

☐ Interim

☐ Final

Did the Surface Owner provide the seed mix? Yes _____

If YES, does the seed mix comply with local soil conservation district recommendations? Yes _____

Did the local soil conservation district provide the seed mix? _____

SITE RECLAMATION DATES

Proposed date of commencement of Reclamation. 07/12/2021

Proposed date of completion of Reclamation. 10/01/2021

IMPLEMENTATION SCHEDULE

Per Rule 913.d.(2): Any change from the approved implementation schedule will be requested at least 14 days in advance, and the Operator may not make the change without the Director's approval.

PRIOR DATES

Date of Surface Owner notification/consultation, if required. 02/02/2021

Actual Spill or Release date, or date of discovery. _____

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 02/07/2021

Proposed site investigation commencement. 02/15/2021

Proposed completion of site investigation. 06/23/2021

REMEDIAL ACTION DATES

Proposed start date of Remediation. 02/15/2021

Proposed date of completion of Remediation. 02/17/2021

Per Rule 913.d.(2): Any change from the approved implementation schedule will be requested at least 14 days in advance, and the Operator may not make the change without the Director's approval.

☐ Change from approved implementation schedule per Rule 913.d.(2).

Basis for change in implementation schedule:

OPERATOR COMMENT

On June 23, 2021, additional samples were collected at Great Western's Pad 8 facility to further investigate the potential of a release in the vicinity of confirmation soil sample SS4 near the northeast condensate above ground storage tank, as required by the COGCC as a Condition of Approval in the Supplemental Form 27 document number 402689106. Using a hand auger, one additional confirmation soil sample (SS4-3) was collected from 3 feet below ground surface (bgs) and was submitted to Origins Laboratory, Inc. (Origins) in Denver, Colorado for analysis of the full COGCC Table 915-1 analytical suite. One background sample (BG2-2) was also collected from 2 feet bgs to the north of the facility and submitted to Origins for analysis of metals and soil suitability for reclamation parameters. Arsenic was reported at a concentration of 1.54 milligrams per kilogram (mg/kg) in confirmation soil sample (SS4-3), which is above the Table 915-1 Residential Soil Screening Level (RSSL) of 0.68 mg/kg. However, arsenic was reported at a higher concentration of 2.26 mg/kg in the background soil sample (BG2-2), indicating that the arsenic concentration reported in the confirmation soil sample (SS4-3) are representative of naturally occurring background levels. EC, SAR and boron were also reported above their respective Table 915-1 RSSLs in the background sample (BG2-2).

To horizontally delineate the elevated naphthalene concentrations reported for soil sample SS4-1 (2.36 mg/kg), two surficial soil samples were collected and submitted to Origins for analysis of naphthalene. Soil sample SS9-1 was collected from 11 feet north of SS4-1 and soil sample SS10-1 was collected from 13 feet east of SS4-1. Both samples were collected from 0-6 inches bgs. Naphthalene concentrations were not reported above the laboratory reporting limits in either sample (SS9-1 and SS10-1).

Please refer to the attached and revised Tables 1, 2, and 4 and Figure 3 for soil sample locations and updated analytical results. Great Western respectfully requests that the COGCC grant closure for remediation project number 16684.

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

Signed: Jason Davidson

Title: Senior EHS Specialist

Submit Date: 08/20/2021

Email: jdavidson@gwp.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: RICK ALLISON

Date: 08/24/2021

Remediation Project Number: 16684

Condition of Approval

COA Type

Description

	Closure request removed, No Further Action is not granted and Remediation Remains Open. Benzo(a)anthracene concentration of 0.0714 mg/kg in soil sample SS43- exceeds the Groundwater SSL in Table 915-1 of 0.011 mg/kg. Operator will collect additional soil and/or groundwater samples at location SS\$ to demonstrate the groundwater pathway is incomplete. Operator shall submit a Form 27 Supplemental with additional soil and/or groundwater samples within 90 days (by November 22, 2021).
1 COA	

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.

<u>Att Doc Num</u>	<u>Name</u>
402756209	FORM 27-SUPPLEMENTAL-SUBMITTED
402756212	ANALYTICAL RESULTS
402756213	ANALYTICAL RESULTS
402756214	ANALYTICAL RESULTS
402756215	SOIL SAMPLE LOCATION MAP
402786769	ANALYTICAL RESULTS

Total Attach: 6 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
		Stamp Upon Approval

Total: 0 comment(s)