

State of Colorado  
Oil and Gas Conservation Commission

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

PROJECT, PURPOSE & SITE INFORMATION

**PROJECT INFORMATION**  
Remediation Project #: 9339 Initial Form 27 Document #: 200437905

**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: LOCATION	Facility ID: 322653	API #: _____	County Name: WELD
Facility Name: MILLER-66N67W 11SESE	Latitude: 40.496090	Longitude: -104.853649	
	** correct Lat/Long if needed: Latitude: 40.496567	Longitude: -104.852823	
QtrQtr: SESE	Sec: 11	Twp: 6N	Range: 67W
	Meridian: 6	Sensitive Area? Yes	

**SITE CONDITIONS**

General soil type - USCS Classifications SC      Most Sensitive Adjacent Land Use Rural Residential Properties in place to the NE and SE

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

Is groundwater less than 20 feet below ground surface? Yes

**Other Potential Receptors within 1/4 mile**

Two rural residential properties, One domestic well 1/4 mile west and cross gradient

**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
No	GROUNDWATER	Not Impacted	Quarterly Sampling - NFA Issued
Yes	SOILS	Unknown	Not yet determined.

**INITIAL ACTION SUMMARY**

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

Two limited subsurface investigations (LSI) were conducted at the Site between November 2014 and April 2015 during which sixteen soil borings were advanced. To allow for representative groundwater sampling, eleven of the borings were completed as temporary piezometers. Benzene, toluene, ethylbenzene, and total xylene (BTEX) concentrations were either not detected at or above laboratory reporting limits or were reported below their respective COGCC Table 910-1 concentration levels in groundwater samples collected from all eleven piezometers. Hydrocarbon impacted soils were encountered in one soil boring advanced on the east side of the former compressor building. Concrete slabs, building foundations, and buried utilities prohibited excavation of the impacted soils with a backhoe. Subsequently, excavation was attempted utilizing an air knife and vacuum truck on January 18, 2016. This excavation attempt was unsuccessful due to buried concrete debris encountered on the east side of the former compressor building.

On January 21, 2016, three groundwater monitoring wells were installed adjacent to the former compressor building. Groundwater was encountered at approximately 13 feet to 14 feet below ground surface (bgs) and flow direction was to the west/northwest. Quarterly groundwater sampling activities were conducted between January 2016 and August 2017. BTEX concentrations were reported below their respective COGCC Table 910-1 concentration levels for four consecutive sampling events from October 2016 through August 2017. The COGCC issued No Further Action for groundwater at the Site on December 1, 2017.

**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 ):

Following removal of the items and materials described in the Operator Comments section of this Form 27, Great Western proposes to conduct excavation activities to further investigate and remediate the impacted source area soil. Impacted soils will either be excavated for disposal or treated onsite. Characterization/confirmation soil samples will be collected from the walls of the excavation and analyzed for TPH- Gasoline Range Organics (GRO) and TPH- Diesel Range Organics (DRO). Confirmation soil samples will also be analyzed for BTEX. The number and location of soil samples shall be appropriate to assess horizontal and vertical extent of impact and confirm remediation. If necessary, Chemically Oxygenated Granular Activated Carbon (COGAC™) will be applied to the groundwater at the base of the excavation and thoroughly mixed in prior to backfill with clean overburden and imported material. The excavation activities are planned to commence within 90 days of approval of this Form 27.

**Proposed Groundwater Sampling**

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

Following backfill of the excavation, Great Western proposes to sample the three existing groundwater monitoring wells for BTEX analysis. If BTEX concentrations are reported below COGCC Table 910-1 concentration levels, Great Western will request closure of this remediation project. If BTEX concentrations are reported above COGCC Table 910-1 concentration levels, Great Western proposes to continue to sample the wells on a quarterly schedule until four consecutive quarters of analytical results below COGCC Table 910-1 concentration levels for BTEX are obtained. Monitoring wells will remain in place until project closure, at which time they will be abandoned in accordance with State standards. Please refer to attached Figure 1 for an illustration of the monitoring well locations at the Site.

**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 0

Number of soil samples exceeding 910-1         

Was the areal and vertical extent of soil contamination delineated? No

Approximate areal extent (square feet)         

### NA / ND

         Highest concentration of TPH (mg/kg)         

         Highest concentration of SAR         

         BTEX > 910-1         

         Vertical Extent > 910-1 (in feet)         

### Groundwater

Number of groundwater samples collected 0

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet)         

Number of groundwater monitoring wells installed 3

Number of groundwater samples exceeding 910-1         

--          Highest concentration of Benzene (µg/l)         

--          Highest concentration of Toluene (µg/l)         

--          Highest concentration of Ethylbenzene (µg/l)         

--          Highest concentration of Xylene (µg/l)         

--          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?

Please refer to the Proposed Soil and Groundwater Sampling sections in the Site Investigation Plan tab of this Form 27 for a description of the proposed site investigation.

# 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.

Great Western will either dig and haul or treat any soils onsite that exceed Table 910-1 concentration levels.

## 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.

Please refer to the Proposed Soil Sampling section in the Site Investigation Plan tab of this Form 27 for a description of how remediation of existing impacts to soil and potential impacts to groundwater are to be accomplished.

## 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

- \_\_\_\_\_ 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 Proposed Groundwater Sampling section in the Site Investigation Plan tab of this Form 27 for a description of the proposed monitoring plan.

# REMEDIATION PROGRESS UPDATE

## PERIODIC REPORTING

**Frequency:**  Quarterly  Semi-Annually  Annually  Other Remediation Progress Report

**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? \_\_\_\_\_

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? 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 Site will be kept as free of all noxious weeds as practicable and will be reclaimed following the completion of remediation activities in accordance with the COGCC 1000 series rules.

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. \_\_\_\_\_

Actual Spill or Release date, if known. \_\_\_\_\_

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 03/03/2017

Date of commencement of Site Investigation. 02/01/2020

Date of completion of Site Investigation. \_\_\_\_\_

### REMEDIAL ACTION DATES

Date of commencement of Remediation. 02/01/2020

Date of completion of Remediation. \_\_\_\_\_

### SITE RECLAMATION DATES

Date of commencement of Reclamation. \_\_\_\_\_

Date of completion of Reclamation. \_\_\_\_\_

### OPERATOR COMMENT

To satisfy requirements summarized in the COGCC's Field Inspection Form (Document #691201173) submitted on October 15, 2019, Great Western plans to remove and properly dispose of the oily material on top of the concrete pad, the chemical storage containers, trash, noxious weeds, and the concrete pads prior to December 1, 2019.

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: 10/21/2019

Email: j davidson@gwogco.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: 10/22/2019

Remediation Project Number: 9339

### COA Type

### Description

	Operator shall submit a Form 27 Supplemental Report within 45 days of performing this environmental investigation.
	On the Form 27 Supplemental Report, specify the amount (volume or mass) and name brand of groundwater amendment added to the excavation. Attach the SDS for any additives applied to the excavation or injected at the site.

### 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

402212705	FORM 27-SUPPLEMENTAL-SUBMITTED
402215467	GROUND WATER SAMPLE LOCATION

Total Attach: 2 Files

### General Comments

### User Group

### Comment

### Comment Date

		Stamp Upon Approval
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Total: 0 comment(s)