

State of Colorado  
Oil and Gas Conservation Commission

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Report taken by:  
Kari Oakman

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	Mobile: ( )
Contact Person: Jason Davidson	Email: j davidson@gwp.com	

PROJECT, PURPOSE & SITE INFORMATION

**PROJECT INFORMATION**  
Remediation Project #: 10344 Initial Form 27 Document #: 401312875

**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: 336384	API #: _____	County Name: WELD
Facility Name: STANLEY OLSON-62N68W 14SWNE	Latitude: 40.141470	Longitude: -104.966310	
	** correct Lat/Long if needed: Latitude: 40.141467	Longitude: -104.965974	
QtrQtr: SWNE	Sec: 14	Twp: 2N	Range: 68W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SC      Most Sensitive Adjacent Land Use Agriculture  
Is domestic water well within 1/4 mile? Yes      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

Oil and gas operations in place directly south. Rural residential properties in place 1,100 feet to the northeast, east, and southeast.

# 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
Yes	GROUNDWATER	N Area: 130'x75', S Area: 55'x30'	Site Investigation Activities
Yes	SOILS	N Area: 35'x25', S Area: 25'x25'	Site Investigation Activities

## INITIAL ACTION SUMMARY

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

Soil and groundwater impacts were discovered during initial subsurface investigation activities associated with due diligence. A subsurface investigation was attempted on 7/5/17; however, shallow groundwater was encountered at 1 foot to 2 feet bgs from irrigation activities in the area, which prohibited the investigation. A Supplemental Form 27 proposing to postpone the investigation until late-fall/early-winter 2017 was approved on 8/17/17. A limited subsurface investigation was conducted on 12/6-7/17 to delineate hydrocarbon-impacted soil and groundwater at the site. 29 soil borings were advanced with a Geoprobe and 3 monitoring wells were installed. An additional limited subsurface investigation was conducted on 3/13/18 to further delineate source area impacts. 3 soil borings were advanced and 1 additional monitoring well was installed. 20 discreet soil samples were collected during the limited subsurface investigations conducted on 12/6-7/17 and 3/13/18. The samples were analyzed for total petroleum hydrocarbons (TPH)- gasoline range organics (GRO) and TPH- diesel range organics (DRO). Groundwater samples were collected on 12/7/17, 1/18/18, 3/26/18, and 6/21/18. 1 additional monitoring well (MW-4) was installed during the limited subsurface investigation conducted on 3/13/18. Groundwater samples were collected from MW-4 on 3/26/18 and 6/21/18. All samples were analyzed for benzene, toluene, ethylbenzene, and total xylene (BTEX).

## 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 ):

### Proposed Groundwater Sampling

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

Please refer to the Groundwater Monitoring section under the Remedial Action Plan tab of this Form 27 for a description of the proposed groundwater sampling activities.

### 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? Yes

Approximate areal extent (square feet) 1500

### NA / ND

NA Highest concentration of TPH (mg/kg)           

NA Highest concentration of SAR           

BTEX > 910-1 No

Vertical Extent > 910-1 (in feet) 12

### Groundwater

Number of groundwater samples collected 12

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 3'

Number of groundwater monitoring wells installed 12

Number of groundwater samples exceeding 910-1 1

-- Highest concentration of Benzene (µg/l) 1820

ND Highest concentration of Toluene (µg/l)           

-- Highest concentration of Ethylbenzene (µg/l) 243

-- Highest concentration of Xylene (µg/l) 3240

NA Highest concentration of Methane (mg/l)           

### Surface Water

0 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?

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.

Great Western plans to excavate impacted soils identified during prior site investigations in the area beneath Anadarko's gas metering equipment to the north of the former separators and in the area beneath and to the north of the east production tank at the southeast corner of the Site. Great Western will either dig and haul or treat any soils onsite that exceed Table 910-1 concentration levels. If onsite treatment is determined to be the selected remediation technology, Great Western will submit an additional supplemental Form 27 summarizing the planned approach. Remediation activities are planned to commence between late-fall 2020/winter 2021 when groundwater levels return to their natural levels and following Anadarko's removal of their gas metering equipment.

## 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.

Between April 1 and 9, 2019, Remington excavated approximately 580 cubic yards of hydrocarbon-impacted source area soil from the surface to approximately 6 feet to 9 feet bgs for onsite landfarm treatment with chemical oxidizer. Source removal by excavation was conducted, based on visual and olfactory observations, field soil screening, and laboratory analysis. Six excavation confirmation soil samples (1 base and 5 sidewall) and 9 landfarm confirmation soil samples (3 from each lift) were collected during excavation and treatment activities and submitted for laboratory analysis of BTEX, TPH-GRO, and TPH-DRO. Concentrations of BTEX, TPH-GRO, and TPH-DRO were all reported either below laboratory reporting limits or below COGCC Table 910-1 concentrations levels, except for sample SWSE-07, collected from the south sidewall at 7 feet bgs. Concentrations of benzene, TPH-GRO, and TPH-DRO were all reported above their respective Table 910-1 concentration levels. Excavation did not progress further south in the area of sample SWSE-07 due to the presence of Anadarko's gas meter equipment and associated buried utilities. This area will be addressed during future remediation efforts. To treat the dissolved phase contamination, 2,600 pounds of Chemically Oxidized Granular Activated Carbon (COGAC™) was applied to the bottom of the excavation prior to backfill with the treated soil. Following backfill, a trench was dug to 8 feet bgs in the southeast corner of the excavation and 1,000 pounds of Granular Activated Carbon (GAC) were applied to the base of the trench to build a permeable barrier wall between the clean excavation and source material left in place to the south, beneath Anadarko's gas meter equipment.

## Soil Remediation Summary

In Situ

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

Ex Situ

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

## Groundwater Remediation Summary

- Yes 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.

Groundwater at the Site has been sampled for BTEX analysis on a quarterly schedule since December 7, 2017. Monitoring wells MW-1 and MW-4 were destroyed during excavation activities in April 2019. Replacement monitoring well MW-4R was installed on May 30, 2019. Ten additional monitoring wells (MW-5 to MW-14) were installed during site investigation activities at the Site on April 21, 2020. Monitoring well MW-13 was installed as a replacement well for MW-1. Monitoring well MW-2 was destroyed during removal of buried utilities at the Site. Great Western plans to re-install a replacement well at a later date. The ten new wells will be sampled, along with MW-1 and MW-4R, on a quarterly schedule and will be analyzed for BTEX. The next quarterly sampling event is planned for mid-October 2020. Groundwater monitoring will continue on a quarterly schedule until four consecutive quarters of analytical results below 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 the attached Groundwater Monitoring Report for a detailed summary of the July 9, 2020 groundwater monitoring activities conducted at the Site.

# 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? \_\_\_\_\_

Is additional groundwater monitoring to be conducted? \_\_\_\_\_

## 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.

If necessary, the site will be reclaimed in accordance with COGCC 1000 series rules.

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 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. 06/22/2017

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

## SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 07/05/2017

Date of commencement of Site Investigation. 12/06/2017

Date of completion of Site Investigation. 04/21/2020

## REMEDIAL ACTION DATES

Date of commencement of Remediation. 04/01/2019

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

## SITE RECLAMATION DATES

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

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

## OPERATOR COMMENT

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: 07/30/2020

Email: j davidson@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: CHRIS CANFIELD

Date: 08/10/2020

Remediation Project Number: 10344

## 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

402456553	FORM 27-SUPPLEMENTAL-SUBMITTED
402456561	MONITORING REPORT

Total Attach: 2 Files

## General Comments

### User Group

### Comment

### Comment Date

		Stamp Upon Approval
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Total: 0 comment(s)