

# State of Colorado Oil and Gas Conservation Commission

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



Document Number:

402225858

Receive Date:

Report taken by:

## 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: KERR MCGEE OIL & GAS ONSHORE LP		Operator No: 47120	<b>Phone Numbers</b>
Address: P O BOX 173779			
City: DENVER	State: CO	Zip: 80217-3779	
Contact Person: Phillip Hamlin		Email: Phil_Hamlin@oxy.com	
			Phone: (970) 336-3500
			Mobile: (970) 515-1161

### PROJECT, PURPOSE & SITE INFORMATION

#### PROJECT INFORMATION

Remediation Project #: 9106

Initial Form 27 Document #: 2143456

#### 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 type="checkbox"/> Other   |

#### SITE INFORMATION

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

Facility Type: SPILL OR RELEASE	Facility ID: 439681	API #:	County Name: WELD
Facility Name: SPILL/RELEASE POINT		Latitude: 40.040113	Longitude: -104.872339
		** correct Lat/Long if needed: Latitude:	Longitude:
QtrQtr: SWNE	Sec: 22	Twp: 1N	Range: 67W 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? 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

A building is located approximately 1,075 feet east-northeast of the release location. Livestock holding pens are located approximately 900 feet southeast and 1,020 feet northeast of the release location.

# 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	See attached data	Groundwater sampling and laboratory analysis
Yes	SOILS	58' (E-W) x 40' (N-S) x 10' bgs	Excavation, soil sampling, and laboratory analysis

## INITIAL ACTION SUMMARY

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

On October 30, 2014, historical impacts were discovered during tank battery reconstruction activities at the Albert Sack Unit 1 production facility, and excavation activities were initiated. Groundwater was encountered in the excavation area at approximately 10 feet below ground surface (bgs). The COGCC has issued Spill/Release Point ID 439681 for this release.

## 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 were collected as described in the Initial Form 27 (Document No. 2143456), and a previous eForm 27-Supplemental Update (Document No. 401563094). Based on the data presented, impacted soils in the excavation area were remediated to be in full compliance with COGCC standards.

### Proposed Groundwater Sampling

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

14 temporary monitoring wells (BH01 - BH12, BH05R, BH11R) were installed between April 2 and October 12, 2015, and quarterly groundwater monitoring was initiated. These wells were later abandoned in 2018 for the construction of a new production facility. Following construction activities, 11 replacement monitoring wells (BH01R, BH02R, BH05R2, BH08R - BH10R, BH11R2, BH12R, BH13 - BH15) were installed between March 12 and 18, 2019. Groundwater samples were collected from the replacement monitoring wells on March 25 and 28, 2019, and all of the wells except BH05R2 were subsequently abandoned per landowner request. Quarterly groundwater sampling for BTEX is ongoing at well BH05R2. Additional replacement monitoring wells will be installed, pending landowner access. Temporary monitoring well locations are illustrated on Figure 1. Groundwater analytical data is presented in Table 1. The laboratory reports for the previous three quarters of groundwater monitoring are provided as Attachment A.

### 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 15  
Number of soil samples exceeding 910-1 5  
Was the areal and vertical extent of soil contamination delineated? Yes  
Approximate areal extent (square feet) 1020

### NA / ND

-- Highest concentration of TPH (mg/kg) 1908  
NA Highest concentration of SAR             
BTEX > 910-1 Yes  
Vertical Extent > 910-1 (in feet) 10

### Groundwater

Number of groundwater samples collected 146  
Was extent of groundwater contaminated delineated? Yes  
Depth to groundwater (below ground surface, in feet) 8'  
Number of groundwater monitoring wells installed 25  
Number of groundwater samples exceeding 910-1 46

-- Highest concentration of Benzene (µg/l) 3140  
-- Highest concentration of Toluene (µg/l) 1400  
-- Highest concentration of Ethylbenzene (µg/l) 839  
-- Highest concentration of Xylene (µg/l) 9310  
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?

Impacted groundwater has historically been detected in off-site temporary groundwater monitoring wells BH09, BH09R, and BH11R.

☐ 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?

Hydrocarbon impacted groundwater remains at the site. The existing temporary groundwater monitoring well (BH05R2) will continue to be sampled on a quarterly basis and submitted for laboratory analysis of BTEX. The remaining monitoring wells have been destroyed or abandoned. Additional replacement temporary groundwater monitoring wells will be installed to further assess the extent of remaining groundwater impacts, pending landowner access.

# 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.

Between October 30 and November 14, 2014, approximately 500 cubic yards of impacted soil were excavated and transported to the Front Range Landfill in Erie, Colorado for disposal. Approximately 80 barrels of impacted groundwater were removed from the excavation area via vacuum truck and transported to a licensed disposal facility.

## 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.

Laboratory data indicate that impacted soils in the excavation area have been remediated to be in full compliance with COGCC standards. Prior to backfilling, approximately 264 pounds of activated carbon were added to the groundwater within the excavation area to mitigate remaining hydrocarbon impacts in groundwater. Bi-weekly mobile air sparge / enhanced fluid recovery (AS/EFR) events were conducted at the site between October 19, 2016 and January 26, 2018. During this period, a total of approximately 233 barrels of impacted groundwater were removed during mobile AS/EFR events. Quarterly groundwater monitoring and AS/EFR events were placed on temporary hold, pending the construction of a new well pad and production facility at this location. Tank battery reconstruction activities were completed in February 2019 and replacement temporary monitoring wells were installed between March 12 and 18, 2019. Groundwater samples were collected from the replacement wells on March 25 and 28, 2019, and all of the wells except for BH05R2 were subsequently abandoned per landowner request. Quarterly groundwater monitoring is ongoing at well BH05R2, and additional replacement groundwater monitoring wells will be installed, pending landowner access. The replacement temporary groundwater monitoring wells will be sampled on a quarterly basis and submitted for laboratory analysis of BTEX until concentrations remain in full compliance with COGCC standards for four consecutive quarters. Potential remediation measures, including restarting mobile AS/EFR events, will be evaluated as necessary to address remaining groundwater impacts. Estimated time to attain NFA is TBD based on the groundwater concentrations, the extent of impacted groundwater, and the efficacy of the selected remedial technologies.

## 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) 500  
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

No Bioremediation ( or enhanced bioremediation )  
No Chemical oxidation  
Yes Air sparge / Soil vapor extraction  
Yes Natural Attenuation  
Yes Other Groundwater removal, activated carbon adsorption, enhanced fluid recovery

## 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.

Between April 2 and October 12, 2015, 14 temporary groundwater monitoring wells (BH01 - BH12, BH05R, BH11R) were installed at the site to assess the extent of groundwater impacts and/or for remediation purposes. These wells were subsequently abandoned on February 1, 2018, for the construction of a new production facility at this location. Tank battery construction activities were completed in February 2019, and replacement temporary monitoring wells were installed between March 12 and 18, 2019. Groundwater samples were collected from the replacement wells on March 25 and 28, 2019, and all of the wells except for BH05R2 were subsequently abandoned per landowner request. The existing temporary groundwater monitoring well (BH05R2) will continue to be sampled on a quarterly basis and submitted for laboratory analysis of BTEX. Additional replacement wells will be installed, pending landowner access, and will be sampled on a quarterly basis and submitted for laboratory analysis of BTEX until concentrations remain in full compliance with COGCC standards for four consecutive quarters. Groundwater sample locations are illustrated on Figure 1. Well completion logs for the temporary monitoring wells are provided as Attachment B.

## REMEDATION 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? Yes \_\_\_\_\_

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

NA

Volume of E&P Waste (solid) in cubic yards 500

E&P waste (solid) description Hydrocarbon impacted soil

COGCC Disposal Facility ID #, if applicable: \_\_\_\_\_

Non-COGCC Disposal Facility: Front Range Landfill - Erie, Colorado

Volume of E&P Waste (liquid) in barrels 313

E&P waste (liquid) description Hydrocarbon impacted groundwater

COGCC Disposal Facility ID #, if applicable: \_\_\_\_\_

Non-COGCC Disposal Facility: Licensed disposal facility

## REMEDATION COMPLETION REPORT

### REMEDATION 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.

The site has been restored to its pre-release grade, and a new Kerr-McGee production facility has been constructed at this location. Kerr-McGee will consult with the surface owner to determine reclamation specifics to properly conduct reclamation activities 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. \_\_\_\_\_

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

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 10/30/2014

Date of commencement of Site Investigation. 10/30/2014

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

### REMEDIAL ACTION DATES

Date of commencement of Remediation. 10/30/2014

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: ` Phillip Hamlin

Title: Senior Environmental Rep

Submit Date: `

Email: Phil\_Hamlin@oxy.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: \_\_\_\_\_

Date: \_\_\_\_\_

Remediation Project Number: 9106

### 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

402226025	LOGS
402226028	ANALYTICAL RESULTS
402226029	ANALYTICAL RESULTS
402228029	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)