

State of Colorado  
Oil and Gas Conservation Commission

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



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Report taken by:  
CHRIS CANFIELD

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: <u>KERR MCGEE OIL &amp; GAS ONSHORE LP</u>	Operator No: <u>47120</u>	<b>Phone Numbers</b>
Address: <u>P O BOX 173779</u>		
City: <u>DENVER</u>	State: <u>CO</u>	Phone: <u>(720) 929-6000</u>
	Zip: <u>80217-3779</u>	Mobile: <u>(720) 929-4306</u>
Contact Person: <u>Erik Mickelson</u>	Email: <u>Erik_Mickelson@oxy.com</u>	

PROJECT, PURPOSE & SITE INFORMATION

**PROJECT INFORMATION**  
Remediation Project #: 10875 Initial Form 27 Document #: 401466350

**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: <u>SPILL OR RELEASE</u>	Facility ID: <u>453126</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>SPILL/RELEASE POINT</u>	Latitude: <u>40.071457</u>	Longitude: <u>-104.983087</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>NENE</u>	Sec: <u>10</u>	Twp: <u>1N</u>	Range: <u>68W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

**SITE CONDITIONS**

General soil type - USCS Classifications CL 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**

A building is located approximately 795 feet north-northwest of the release location.

# 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	See attached data	Groundwater sampling and laboratory analysis
Yes	SOILS	98' (E-W) x 84' (N-S) x 14' 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 September 20, 2017, historical impacts were discovered during third-party maintenance operations at the CPC 41-10 #1, Champlin 31-10 #3, 32-10 #2, 42-10 #4 production facility. The facility was shut-in, affected infrastructure removed, and excavation activities were initiated. On November 6, 2017, groundwater was observed seeping into the excavation at approximately 13 feet below ground surface (bgs). Groundwater infiltration was not observed during subsequent excavation activities. On June 13, 2019, during abandonment of the adjacent production facility, additional excavation activities were initiated to the south of the 2017 excavation area. The COGCC has issued Spill/Release Point ID 453126 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 during the 2017 excavation activities, as described in the Initial Form 27. On June 13, 2019, additional soil samples were collected from the sidewalls and base of the 2019 excavation area at approximately 12 and 14 feet bgs, respectively. The base soil samples were submitted for laboratory analysis of BTEX, naphthalene, TPH-GRO by USEPA Method 8260C, TPH-DRO and ORO by USEPA Method 8015, EC, pH, and SAR. The sidewall soil samples were submitted for analysis of BTEX, naphthalene, and TPH. Analytical results indicate that constituent concentrations in the soil samples collected from the final extents of the 2017 and 2019 excavation areas were in full compliance with COGCC standards, except for the SAR in samples B15@14' and B16@14', which were collected below the root zone. Soil analytical data is presented in Table 1. The 2019 excavation soil sample locations are illustrated on Figure 1. The 2019 soil laboratory analytical report is provided in Attachment A.

### Proposed Groundwater Sampling

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

Between May 1, 2018 and March 1, 2019, nineteen (19) temporary monitoring wells (BH01 - BH19) were installed to further assess the extent of groundwater impacts. Quarterly groundwater monitoring was initiated on June 29, 2018, and is ongoing at the sixteen (16) monitoring wells remaining at the site. Wells BH01, BH03, and BH14 were destroyed during abandonment and re-grading activities at the adjacent production facility, and will be replaced pending landowner access. Groundwater samples are collected from the temporary monitoring wells on a quarterly basis and analyzed for BTEX. Groundwater analytical data is presented in Table 2, and the groundwater sample locations are illustrated on Figure 2. The laboratory analytical reports for the previous four quarters of groundwater monitoring are provided in 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 56  
Number of soil samples exceeding 910-1 19  
Was the areal and vertical extent of soil contamination delineated? Yes  
Approximate areal extent (square feet) 4590

### NA / ND

-- Highest concentration of TPH (mg/kg) 1825  
-- Highest concentration of SAR 16.65  
BTEX > 910-1 Yes  
Vertical Extent > 910-1 (in feet) 14

### Groundwater

Number of groundwater samples collected 89  
Was extent of groundwater contaminated delineated? Yes  
Depth to groundwater (below ground surface, in feet) 5'  
Number of groundwater monitoring wells installed 19  
Number of groundwater samples exceeding 910-1 32

-- Highest concentration of Benzene (µg/l) 176  
ND Highest concentration of Toluene (µg/l)             
-- Highest concentration of Ethylbenzene (µg/l) 48.7  
-- Highest concentration of Xylene (µg/l) 27.8  
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?

Soil impacted above COGCC standards extended laterally beyond the lease boundary. This soil was removed during excavation activities, as previously described. Impacted groundwater has been detected in off-site temporary groundwater monitoring wells BH02, BH04, BH05, BH06, BH09, BH10, and BH11.

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 16 existing temporary groundwater monitoring wells (BH02, BH04 - BH13, BH15 - BH19) will continue to 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. Replacement temporary groundwater monitoring wells will be installed to replace those destroyed during abandonment and re-grading activities at the adjacent production facility (BH01, BH03, BH14).

# 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 September 20 and November 9, 2017, approximately 1,390 cubic yards of impacted soils were excavated and transported to the Front Range Landfill in Erie, Colorado for disposal. On June 13, 2019, approximately 370 additional cubic yards of impacted soils were excavated and transported to the Front Range Landfill in Erie, Colorado for disposal.

## 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 2017 and 2019 excavation areas have been remediated to be in full compliance with COGCC standards, except for the SAR in samples B15@14' and B16@14', which were collected below the root zone. Quarterly groundwater monitoring is ongoing and will be continued until concentrations remain in full compliance with COGCC standards for four consecutive quarters. Additional potential remediation measures, including in-situ and ex-situ technologies, are currently under evaluation to address remaining hydrocarbon impacts in groundwater. 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

Ex Situ

\_\_\_\_\_ Bioremediation ( or enhanced bioremediation )

Yes Excavate and offsite disposal

\_\_\_\_\_ Chemical oxidation

If Yes: Estimated Volume (Cubic Yards) \_\_\_\_\_ 1760

\_\_\_\_\_ Air sparge / Soil vapor extraction

Name of Licensed Disposal Facility or COGCC Facility ID # \_\_\_\_\_

\_\_\_\_\_ Natural Attenuation

No Excavate and onsite remediation

\_\_\_\_\_ Other \_\_\_\_\_

\_\_\_\_\_ Land Treatment

\_\_\_\_\_ Bioremediation (or enhanced bioremediation)

\_\_\_\_\_ Chemical oxidation

\_\_\_\_\_ Other \_\_\_\_\_

## Groundwater Remediation Summary

No \_\_\_\_\_ Bioremediation ( or enhanced bioremediation )

No \_\_\_\_\_ Chemical oxidation

No \_\_\_\_\_ Air sparge / Soil vapor extraction

Yes \_\_\_\_\_ Natural Attenuation

No \_\_\_\_\_ 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.

Between May 1, 2018 and March 1, 2019, 19 temporary groundwater monitoring wells (BH01 - BH19) were installed at the site to further assess the extent of groundwater impacts. The 16 existing temporary groundwater monitoring wells (BH02, BH04 - BH13, BH15 - BH19) will continue to 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. Wells BH01, BH03, and BH14 were destroyed during abandonment and re-grading activities at the adjacent production facility, and will be replaced pending landowner access. Groundwater sample locations are illustrated on Figure 2, and a potentiometric surface contour map for the Third Quarter 2019 is presented as Figure 3. Well completion logs for the temporary monitoring wells are included as Attachment B.

## 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? 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 1760

E&P waste (solid) description Hydrocarbon impacted soils

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

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

Volume of E&P Waste (liquid) in barrels 0

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.

The site has been restored to its pre-release grade. 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. 09/22/2017

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

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 09/20/2017

Date of commencement of Site Investigation. 09/20/2017

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

### REMEDIAL ACTION DATES

Date of commencement of Remediation. 09/20/2017

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: Erik Mickelson

Title: Staff Environmental Rep

Submit Date: 11/15/2019

Email: Erik\_Mickelson@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: CHRIS CANFIELD

Date: 12/04/2019

Remediation Project Number: 10875

### COA Type

### Description

<u>COA Type</u>	<u>Description</u>

## 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>
402202729	FORM 27-SUPPLEMENTAL-SUBMITTED
402202892	ANALYTICAL RESULTS
402202897	ANALYTICAL RESULTS
402202900	ANALYTICAL RESULTS
402210576	SOIL SAMPLE LOCATION MAP
402214335	GROUND WATER SAMPLE LOCATION
402214340	GROUND WATER ELEVATION MAP
402214354	LOGS

Total Attach: 8 Files

## General Comments

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

Total: 0 comment(s)