

State of Colorado  
Energy & Carbon Management Commission1120 Lincoln Street, Suite 801, Denver, Colorado 80203  
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Report taken by:

Laurel Anderson

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

## PROJECT, PURPOSE &amp; SITE INFORMATION

## PROJECT INFORMATION

Remediation Project #: 10192 Initial Form 27 Document #: 401276606

## 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: SPILL OR RELEASE	Facility ID: 449643	API #: _____	County Name: WELD
Facility Name: SPILL/RELEASE POINT	Latitude: 40.132073	Longitude: -104.793805	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: SESE	Sec: 17	Twp: 2N	Range: 66W 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

Water well located approximately 400 feet (ft) northwest, surface water and wetlands located approximately 520 ft south, livestock located approximately 1,050 ft west, building located approximately 320 ft southeast, and groundwater encountered at a depth of approximately 13 ft below ground surface (bgs).

## 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 submitted for laboratory analysis
Yes	SOILS	50ft N-S x 26ft E-W x 15ft bgs	Soil submitted for 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.

Historical impacts were encountered beneath the oil tank at the Nesmith 15-17 tank battery. The volume of the release is unknown. The petroleum hydrocarbon impacted soil was excavated. Groundwater was encountered in the excavation at approximately 13 ft bgs. A groundwater sample (GW01) was collected and submitted for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX). Laboratory analytical results received on March 7, 2017, indicated petroleum hydrocarbon impact to groundwater.

### 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 ):

Between March 6 and 16, 2017, 9 soil samples were collected from the excavation sidewalls and submitted for laboratory analysis of BTEX, total petroleum hydrocarbons (TPH), pH, and specific conductivity (EC). Laboratory analytical results indicated that BTEX, TPH, and EC concentrations and levels were in compliance with the Energy and Carbon Management Commission (ECMC) Table 910-1 allowable levels at the lateral extent of the excavation. Sidewall soil samples N01@10', N02@10', N03@10', E01@10', S01@10', and W02@10' exceeded the ECMC allowable level for pH at levels ranging from 9.02 standard units (su) to 9.56 su. However, these samples were collected below the root zone (depth greater than 3 ft bgs), so no further excavation was necessary.

#### Proposed Groundwater Sampling

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

On March 6, 2017, groundwater sample GW01 was collected from the excavation for laboratory analysis of BTEX. Laboratory analytical results indicated that the benzene concentration in GW01 exceeded the ECMC Table 910-1 allowable level at 1,680 micrograms per liter (µg/L). The general site layout, excavation dimensions, and excavation groundwater sample location are depicted on the Site Map provided as Figure 1. The excavation groundwater sample analytical results are summarized in Table 1.

#### 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 9  
Number of soil samples exceeding 915-1 3  
Was the areal and vertical extent of soil contamination delineated? Yes  
Approximate areal extent (square feet) 1300

### NA / ND

-- Highest concentration of TPH (mg/kg) 5050  
NA Highest concentration of SAR             
BTEX > 915-1 Yes  
Vertical Extent > 915-1 (in feet) 10

### Groundwater

Number of groundwater samples collected 275  
Was extent of groundwater contaminated delineated? No  
Depth to groundwater (below ground surface, in feet) 13  
Number of groundwater monitoring wells installed 15  
Number of groundwater samples exceeding 915-1 103

-- Highest concentration of Benzene (µg/l) 11500  
ND Highest concentration of Toluene (µg/l)             
-- Highest concentration of Ethylbenzene (µg/l) 3800  
-- Highest concentration of Xylene (µg/l) 10000  
NA Highest concentration of Methane (mg/l)           

### Surface Water

0 Number of surface water samples collected  
           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?

☐ 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?

Additional point of compliant groundwater monitoring wells will be installed cross-gradient from well MW10 and up gradient of wells MW02 and MW03.

## 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.

Based on excavation groundwater samples exceeding ECMC Table 910-1 allowable levels, approximately 400 barrels of impacted groundwater were removed from the excavation and transported to a licensed injection facility for disposal using a vacuum truck. Impacted soil was excavated into the capillary and phreatic zones to address potential hydrocarbon impacts that may have been present below the current groundwater table due to seasonal fluctuations. Approximately 410 cubic yards of impacted soil were excavated and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado for recycling. The general site layout and excavation footprint are depicted on the Site Map provided as Figure 1.

## 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.

While backfilling the excavation, 5 gallons of MicroBlaze®, a bioremediation amendment, and 140 pounds of COGAC®, a carbon-based bioremediation product designed to capture and degrade petroleum hydrocarbons via chemical oxidation and passive bio-stimulation, were applied to the clean backfill in a series of lifts in the capillary and phreatic horizons. The excavation area was restored to its pre-release grade, and the Kerr-McGee facility was reconstructed.

## 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) 410  
Name of Licensed Disposal Facility or COGCC Facility ID # 149007  
No Excavate and onsite remediation  
\_\_\_\_\_ Land Treatment  
\_\_\_\_\_ Bioremediation (or enhanced bioremediation)  
\_\_\_\_\_ Chemical oxidation  
\_\_\_\_\_ Other \_\_\_\_\_

## Groundwater Remediation Summary

Yes Bioremediation ( or enhanced bioremediation )  
Yes Chemical oxidation  
No Air sparge / Soil vapor extraction  
Yes Natural Attenuation  
Yes Other Groundwater Removal,  
MicroBlaze® Application, and  
COGAC® Application \_\_\_\_\_

## 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 monitoring wells MW01 through MW15 are sampled on a quarterly basis for the full list of analytes for groundwater in Table 915-1. Cross-gradient and historically compliant groundwater monitoring well MW09 was established as a representative background sample for calculating the inorganic parameters in Table 915-1. Based on a comparison to updated background concentrations, point-of-compliance (POC) monitoring well MW15 is below the Table 915-1 standards for inorganic constituents and full POC has been achieved at the site. The monitoring well locations are depicted on Figure 1. The Groundwater Elevation Contour Map generated using the September 2023 survey data is provided as Figure 2. The groundwater analytical results are summarized in Table 1, and the laboratory analytical reports for the June 2023 and September 2023 groundwater monitoring events are attached.

Additional point of compliant groundwater monitoring wells will be installed cross-gradient from well MW10 and up gradient of wells MW02 and MW03.

Groundwater monitoring will continue on a quarterly basis until a No Further Action status request is warranted.

## REMEDIATION 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

### Adequacy of Operator's General Liability Insurance and Financial Assurance

Describe the adequacy of the Operator's general liability insurance and Financial Assurance to fully address the anticipated costs of Remediation, including the estimated remaining cost for this project (below).

If this information has been provided on a Form 27 within the last 12 months, provide the Document Number of that form.

KMOG has sufficient insurance and bonding to fully address the anticipated costs of Remediation, including the remaining estimated costs for this project. KMOG currently has over 40 million in bonds with the ECMC. The cost for remediation is a preliminary estimate only, costs may change upwards or downward based on site-specific information. KMOG makes no representation or guarantees as to the accuracy of the preliminary estimate.

Operator anticipates the remaining cost for this project to be: \$ 65000

### 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:

The petroleum hydrocarbon impacted soil was transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado, for recycling.

Volume of E&P Waste (solid) in cubic yards 410

E&P waste (solid) description Petroleum hydrocarbon impacted soil

COGCC Disposal Facility ID #, if applicable: 149007

Non-COGCC Disposal Facility:

Volume of E&P Waste (liquid) in barrels 400

E&P waste (liquid) description Petroleum hydrocarbon impacted groundwater

COGCC Disposal Facility ID #, if applicable: 159443

Non-COGCC Disposal Facility:

## REMEDIATION COMPLETION REPORT

### REMEDIATION 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?

Does the previous reply indicate consideration of background concentrations?

Does Groundwater meet Table 915-1 standards? No

Is additional groundwater monitoring to be conducted? Yes

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.

The facility was reconstructed and the site was restored to pre-release grade. The site will be reclaimed in accordance with ECMC 1000 Series Reclamation 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 provide the seed mix? \_\_\_\_\_

If YES, does the seed mix comply with local soil conservation district recommendations? \_\_\_\_\_

Did the local soil conservation district provide the seed mix? \_\_\_\_\_

### SITE RECLAMATION DATES

Proposed date of commencement of Reclamation. \_\_\_\_\_

Proposed date of completion of Reclamation. \_\_\_\_\_

## 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. 03/07/2017

Actual Spill or Release date, or date of discovery. 03/07/2017

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 03/06/2017

Proposed site investigation commencement. 03/07/2017

Proposed completion of site investigation. 12/01/2020

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 03/06/2016

Proposed date of completion of Remediation. \_\_\_\_\_

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**

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

Signed: Phil Hamlin

Title: Senior Environmental Rep.

Submit Date: 09/29/2023

Email: Phillip\_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: Laurel Anderson

Date: 01/03/2024

Remediation Project Number: 10192

**COA Type****Description**

	Per COA on Doc #403355670: "Operator shall fully populate the implementation schedule in accordance with Rule 913.d on the next Form 27.
	Operator is directed to provide the most recent date of surface owner notification/consultation on the next Form 27 Subsequent report.
	<p>Per COA on Doc #403355670: "In accordance with Rule 910.b.(4) additional monitoring wells are required to define the horizontal extent of impacts to groundwater. More than one well may be required to obtain point of compliance. The monitoring well(s) shall be installed within 45 days. Operator shall install monitoring wells to properly characterize groundwater (upgradient and within the potential source zone in addition to cross- and downgradient)."</p> <p>Monitoring wells were required to be installed by August 27, 2023. Operator is out of compliance with previous conditions of approval and Rule 910.b.(4).</p>
	<p>ECMC does not approve the use of MW09 as a background groundwater monitoring well as naphthalene has been reported in groundwater. Additionally, ECMC does not approve the use of historic high concentrations for use as the background threshold for inorganic analytes in groundwater.</p> <p>Operator shall collect background groundwater samples from non-impacted groundwater monitoring wells to establish background conditions. Background groundwater samples must be analyzed on a quarterly basis for Table 915-1 Organic Compounds in Groundwater (benzene, toluene, ethylbenzene, xylenes, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene) in addition to the Groundwater Inorganic Parameters (total dissolved solids, chloride, sulfate) to ensure groundwater has not been impacted.</p>
4 COAs	

**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**

403529087	INVESTIGATION/REMEDIATION WORKPLAN (SUPPLEMENTAL)
403530026	ANALYTICAL RESULTS
403536292	GROUND WATER ELEVATION MAP
403537051	ANALYTICAL RESULTS
403537214	SITE MAP
403643115	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 6 Files

**General Comments**

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

Total: 0 comment(s)