

State of Colorado  
Energy & Carbon Management Commission1120 Lincoln Street, Suite 801, Denver, Colorado 80203  
Phone: (303) 894-2100 Fax: (303) 894-2109

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403847219

Receive Date:

07/29/2024

Report taken by:

Taylor Robinson

## 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 ECOM 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: Phillip Hamlin	Email: Phillip_Hamlin@oxy.com	Mobile: ( )

## PROJECT, PURPOSE &amp; SITE INFORMATION

## PROJECT INFORMATION

Remediation Project #: 10503 Initial Form 27 Document #: 401395702

## 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: Request for No Further Action

## SITE INFORMATION

No Multiple Facilities

Facility Type: SPILL OR RELEASE	Facility ID: 451306	API #:	County Name: WELD
Facility Name: Thompson 13-33	Latitude: 40.349113	Longitude: -104.905567	
** correct Lat/Long if needed: Latitude:		Longitude:	
QtrQtr: SWSW	Sec: 33	Twp: 5N	Range: 6W Meridian: 6 Sensitive Area? Yes

## SITE CONDITIONS

General soil type - USCS Classifications SM

Most Sensitive Adjacent Land Use Agriculture and Residential

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

Surface water and an area with wetland characteristics are located approximately 800 feet west of the site.  
The nearest occupied building is located approximately 330 feet west-southwest of the site.  
A livestock holding pen is located approximately 400 feet southwest of the site.

## 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	43' (E-W) x 16' (N-S) x 4' 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.

In June 2017, a dump line with a corrosion hole was encountered while investigating a surface stain at the Thompson 13-33 tank battery facility, and excavation activities to address impacted soils were conducted. The volume of the release is unknown. Groundwater was intermittently encountered in the excavation area at approximately 4 feet below ground surface (bgs). The ECMC issued Spill/Release Point ID 451306 for this release. Soil sample analytical data is presented in Tables 1 and 2. The excavation soil and groundwater sample locations are illustrated on Figures 1 and 2.

### 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 from the dump line excavation area as described in a previous Form 27-Supplemental Update (ECMC Document No. 403426473). Based on the data presented, impacted soils in the excavation area were remediated to be in full compliance with the ECMC Table 910-1 standards. In August 2017, additional soil sampling was conducted to determine if impacts were present associated with the partially-buried produced water vessel (PWV) at the site, as described in a previous Form 27-Supplemental Update (ECMC Document No. 403426473). Laboratory analytical results indicated that concentrations in the PWV soil samples were in full compliance with ECMC Table 910-1 standards. For additional details, please refer to the Sump Closure Report submitted to the ECMC on January 22, 2018.

#### Proposed Groundwater Sampling

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

In 2018 and 2019, a total of nine (9) temporary groundwater monitoring wells (MW01 - MW08, MW06R) were installed to further assess the extent of groundwater impacts. Quarterly groundwater monitoring was initiated on June 22, 2018 and was continued until concentrations remained in compliance with Table 915-1 standards for four consecutive quarters. Groundwater analytical data is presented in Table 3, and the groundwater sample locations are illustrated on Figures 1 and 2. The laboratory analytical reports for the previous four 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 13

Number of soil samples exceeding 915-1 3

Was the areal and vertical extent of soil contamination delineated? Yes

Approximate areal extent (square feet) 690

### Groundwater

Number of groundwater samples collected 158

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 7

Number of groundwater monitoring wells installed 9

Number of groundwater samples exceeding 915-1 17

### 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.

### NA / ND

-- Highest concentration of TPH (mg/kg) 3795

NA Highest concentration of SAR

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 4

-- Highest concentration of Benzene (µg/l) 1320

-- Highest concentration of Toluene (µg/l) 273

-- Highest concentration of Ethylbenzene (µg/l) 60.8

-- Highest concentration of Xylene (µg/l) 800

NA Highest concentration of Methane (mg/l)

## 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.

In June 2017, approximately 110 cubic yards of impacted material were excavated and transported to the Buffalo Ridge Landfill in Keenesburg, Colorado for disposal. Approximately 150 barrels of impacted groundwater were removed from the dump line excavation via vacuum truck and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado for recycling.

## REMEDATION 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 dump line excavation area have been remediated to be in full compliance with the ECMC Table 910-1 standards. Laboratory analytical results indicated that concentrations in the PWV soil samples were in full compliance with ECMC Table 910-1 standards. Prior to backfilling, approximately 100 pounds of COGAC®, a carbon-based bioremediation product designed to capture and degrade petroleum hydrocarbons via chemical oxidation and passive bio-stimulation, were added to the excavation area to mitigate remaining hydrocarbon impacts in groundwater. Analytical results indicate that constituent concentrations in the groundwater samples collected from the temporary monitoring wells were in compliance with ECMC Table 915-1 standards for four consecutive quarters. Based on the analytical data presented herein, remediation is complete at this site and Kerr-McGee is requesting a No Further Action (NFA) determination for this location.

## Soil Remediation Summary

☐ In Situ

☒ Ex Situ

<input type="checkbox"/> Bioremediation ( or enhanced bioremediation )	<input type="checkbox"/> Yes	Excavate and offsite disposal
<input type="checkbox"/> Chemical oxidation	<input type="checkbox"/> If Yes: Estimated Volume (Cubic Yards)	110
<input type="checkbox"/> Air sparge / Soil vapor extraction	<input type="checkbox"/> Name of Licensed Disposal Facility or ECMC Facility ID #	
<input type="checkbox"/> Natural Attenuation	<input type="checkbox"/> No	Excavate and onsite remediation
<input type="checkbox"/> Other	<input type="checkbox"/> Land Treatment	
	<input type="checkbox"/> Bioremediation (or enhanced bioremediation)	
	<input type="checkbox"/> Chemical oxidation	
	<input type="checkbox"/> Other	

## Groundwater Remediation Summary

<input type="checkbox"/> Yes	Bioremediation ( or enhanced bioremediation )
<input type="checkbox"/> Yes	Chemical oxidation
<input type="checkbox"/> No	Air sparge / Soil vapor extraction
<input type="checkbox"/> Yes	Natural Attenuation
<input type="checkbox"/> Yes	Other Groundwater removal, 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.

In 2018 and 2019, 9 temporary groundwater monitoring wells (MW01 - MW08, MW06R) were installed to further assess the extent of groundwater impacts. The temporary groundwater monitoring wells were sampled on a quarterly basis and submitted for laboratory analysis of Table 915-1 constituents. Analytical results for the groundwater samples collected from the temporary monitoring wells indicate that the constituent concentrations (BTEX, naphthalene, TMB, Total Dissolved Solids (TDS), Chloride, and Sulfate) were in compliance with the ECMC Table 915-1 standards for four consecutive quarters. Cross-gradient and historically compliant groundwater monitoring well MW08 was selected as a background location for comparison to inorganic groundwater standards in Table 915-1. The temporary groundwater monitoring well locations and quarterly groundwater elevation contour maps are illustrated on Figures 3 through 6. Well completion logs for the temporary monitoring wells are provided as Attachment B.

## 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 NFA Request

### 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 Colorado Energy and Carbon Management Commission. 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: \$ 0

### 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:

Approximately 150 barrels of impacted groundwater were removed from the dump line excavation via vacuum truck and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado for recycling.

Volume of E&P Waste (solid) in cubic yards 110

E&P waste (solid) description Impacted soil

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility: Buffalo Ridge Landfill - Keenesburg, Colorado

Volume of E&P Waste (liquid) in barrels 150

E&P waste (liquid) description Impacted groundwater

ECMC Disposal Facility ID #, if applicable: 434766

Non-ECMC Disposal Facility:

## REMEDIATION COMPLETION REPORT

### REMEDIATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? Yes

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? No

Does the previous reply indicate consideration of background concentrations?

Does Groundwater meet Table 915-1 standards? Yes

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

Operator shall comply with the ECMC 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 site will be reclaimed in accordance with ECMC 1000 Series Reclamation Rules. Timeliness of reclamation initiation and completion will be subject to NFA, surface owner discretion and land use, and suitable ground conditions which allow for execution of surface reclamation activities so as to not cause unwarranted damages.

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? Yes

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

Did the local soil conservation district provide the seed mix? No

### SITE RECLAMATION DATES

Proposed date of commencement of Reclamation. 07/31/2024

Proposed date of completion of Reclamation. 08/31/2025

## 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. 06/27/2017

Actual Spill or Release date, or date of discovery. 06/27/2017

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 06/26/2017

Proposed site investigation commencement. 06/26/2017

Proposed completion of site investigation. 09/06/2018

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 06/27/2017

Proposed date of completion of Remediation. 06/14/2024

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

As of the June 2024 monitoring event, four quarters of Table 915-1 site-wide groundwater compliance have been achieved following the completion of remediation activities at this location. Guidance Document Rule 915.a states, "ECMC considers the Protection of Groundwater SSLs to be secondary to measured concentrations of Organic Compounds in Groundwater when Groundwater is in contact with or proximate to impacted soil. Operator may demonstrate that the Protection of Groundwater SSL for Organic Compounds or Metals in Soil does not apply by conducting Groundwater monitoring that demonstrates concentrations of Organic Compounds in Groundwater do not exceed the Cleanup Concentrations in Table 915-1 and Water Quality Control Commission ("WQCC") Regulation 41." Taking this guidance into consideration, saturated zone soil samples are not required to verify the protection of groundwater at the site due to confirmation that actual measured concentrations of the contaminants of concern in groundwater have remained within the ECMC Table 915-1 allowable levels for four consecutive quarters of monitoring. Based on the analytical data provided herein, assessment and remediation are complete, and Kerr-McGee is requesting an NFA determination for this location.

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: 07/29/2024

Email: Phillip\_Hamlin@oxy.com

Based on the information provided herein, this Application for Site Investigation and Remediation Workplan complies with ECMC Rules and applicable orders and is hereby approved.

ECMC Approved: Taylor Robinson

Date: 09/10/2024

Remediation Project Number: 10503

## COA Type

## Description

	Operator shall abandon the monitoring wells in accordance with DWR regulations within 90 days of the approval of this Form 27.
	Based on the information presented, it appears that no further action is necessary at this time and the ECMC approves the closure request. However, if future conditions at the site indicate contaminant concentrations in soils exceeding ECMC standards or if groundwater is found to be impacted, then further investigation and/or remediation activities may be required.  The surface area disturbed by the remediation activity shall be reclaimed in accordance with the 1000 Series Reclamation Rules. For locations with active ongoing oil and gas operations, comply with Rule 1003 interim reclamation requirements and for locations that will no longer have active oil and gas operations, comply with Rule 1004 Final Reclamation requirements.
2 COAs	

## ATTACHMENT 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

403847219	INVESTIGATION/REMEDIATION WORKPLAN (SUPPLEMENTAL)
403847723	ANALYTICAL RESULTS
403847731	LOGS
403847737	SOIL SAMPLE LOCATION MAP
403847740	SOIL SAMPLE LOCATION MAP
403847743	GROUND WATER ELEVATION MAP
403847744	GROUND WATER ELEVATION MAP
403847746	GROUND WATER ELEVATION MAP
403847747	GROUND WATER ELEVATION MAP
403847750	ANALYTICAL RESULTS
403915092	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 11 Files

Date Run: 9/10/2024 Doc [#403847219]

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## General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
Environmental	ECMC acknowledges that soils were in compliance with the ECMC Table 910-1 standards in 2017, which was prior to the Rule change requiring cleanup levels to be in compliance with Table 915-1.	09/10/2024

Total: 1 comment(s)