

State of Colorado
Energy & Carbon Management Commission

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05/06/2025

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 ECMC 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 Phone: (720) 9294306 Mobile: ()
Address: P O BOX 173779		
City: DENVER	State: CO	Zip: 80217-3779
Contact Person: Erik Mickelson	Email: DJRemediation_Forms@oxy.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 33317 Initial Form 27 Document #: 403624610

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

Yes Multiple Facilities

Facility Type: LOCATION	Facility ID: 302691	API #: _____	County Name: WELD
Facility Name: CLIFFORD L-63N66W 3SWNW	Latitude: 40.256946	Longitude: -104.772234	
** correct Lat/Long if needed: Latitude: 40.255595		Longitude: -104.772597	
QtrQtr: SWNW	Sec: 3	Twp: 3N	Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE	Facility ID: 486821	API #: _____	County Name: WELD
Facility Name: Clifford 03-31 FAC Historic Release	Latitude: 40.255595	Longitude: -104.772597	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: SWNW	Sec: 3	Twp: 3N	Range: 66W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SC

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 940 feet west of the facility.
The nearest domestic water well is located approximately 980 feet to the west of the facility.
Surface water is located approximately 550 feet to the southeast of the facility.
An area with wetland characteristics is located approximately 310 feet southwest of the facility.

DENIED

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	SOILS	See attached data	Inspection/soil samples/laboratory analytical results

INITIAL ACTION SUMMARY

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

Tank battery decommissioning activities were conducted at the Clifford L 03-31 Production Facility location on May 15, 2024. Visual inspection and field screening of soils was conducted following tank battery decommissioning activities, and seven (7) confirmation soil samples were collected from the former separators (SEP), above-ground storage tank (AST), and partially-buried produced water vessels (PWV), and were submitted for laboratory analysis of the full Table 915-1 analytical suite using standard ECMC-approved methods. Laboratory analytical results indicated that soil impacts were present at sample location PWV1-B01@4' due to total petroleum hydrocarbons (TPH), 1,2,4- and 1,3,5- Trimethylbenzene (1,2,4- and 1,3,5-TMB), 1- and 2-Methylnaphthalene (1- and 2-M), and naphthalene (N), PWV2-B01@4' due to 1,3,5-TMB, 1-M and barium (Ba), and PWV2-S01@2' due to TPH concentrations exceeding ECMC Table 915-1 standards and site-specific background levels (x 1.25 for metals). As such, a Form 19-Initial/Supplemental Spill/Release Report (Document No. 403794953) was submitted on May 17, 2024, and the ECMC issued Spill/Release Point ID 486821. Analytical results indicated that constituent concentrations in the remaining confirmation soil samples were within ECMC Table 915-1 standards and/or site specific background levels, as described in the previous Form 27-Supplemental update submitted on August 22, 2024, (Document No. 403887770).

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):

On January 22, 2025 through March 4, 2025 excavation activities were initiated to address soil impacts at sample locations PWV1-B01@4', PWV2-B01@4', and PWV2-S01@2' and soil samples were collected from depths ranging from approximately 6 to 10 feet bgs. Based on the waste characterization results for sample PWV2-B01@4', soil samples collected from the PWV excavation area were submitted for analysis of BTEX, naphthalene, TPH, TMB, PAHs and select Table 915-1 metals (As, Ba, Cd, Pb and Ni), in accordance with the COA issued for a previous Form 27-Supplemental update (Document No. 403887770). Excavation and site assessment activities to address remaining soil impacts are ongoing and will be summarized in a forthcoming Form 27-Supplemental update.

Proposed Groundwater Sampling

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

Groundwater was encountered in the PWV excavation area at depths of approximately 10 feet bgs. On January 22, 2025, groundwater sample GW01 was collected and submitted for laboratory analysis of the full Table 915-1 analytical suite. Analytical results indicated that the benzene, 1,2,4- TMB, Chloride and Sulfate concentrations exceeded ECMC Table 915-1 groundwater standards. Pending the completion of excavation activities, temporary groundwater monitoring wells will be installed to fully define the extent and magnitude of the remaining groundwater impacts associated with sample location GW01.

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):

From January 22, 2025 through March 4, 2025 forty-one (41) soil samples were collected from the PWV excavation and submitted for laboratory analysis in accordance with the ECMC Operator Guidance document. The laboratory analytical reports are provided as Attachment A. The field notes and a photographic log are provided as Attachment B. Excavation and site assessment activities to address remaining soil impacts are ongoing and will be summarized in a forthcoming Form 27-Supplemental update.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 49

Number of soil samples exceeding 915-1 9

Was the areal and vertical extent of soil contamination delineated? No

Approximate areal extent (square feet) 8100

NA / ND

-- Highest concentration of TPH (mg/kg) 985

-- Highest concentration of SAR 0.921

BTEX > 915-1 No

Vertical Extent > 915-1 (in feet) 6

Groundwater

Number of groundwater samples collected 1

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 10

Number of groundwater monitoring wells installed 0

Number of groundwater samples exceeding 915-1 1

-- Highest concentration of Benzene (µg/l) 11.7

ND Highest concentration of Toluene (µg/l)

-- Highest concentration of Ethylbenzene (µg/l) 5.03

-- Highest concentration of Xylene (µg/l) 71

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?

Four (4) background samples were collected from undisturbed native material adjacent to the Clifford L 03-31 Production Facility, at comparable depths and soil composition to the confirmation soil samples. Additionally, twelve (12) background samples were collected from undisturbed native material adjacent to the nearby Clifford L 03-18 Wellhead, at comparable depths and soil composition to the confirmation soil samples. The background soil samples were submitted for laboratory analysis of Table 915-1 metals and the Soil Suitability for Reclamation Parameters, using standard ECMC-approved methods appropriate for detecting the target analytes in Table 915-1, as described in a previous Form 27-Supplemental update (Document No. 403887770).

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?

Excavation and site assessment activities to address soil impacts at the former PWV locations are currently ongoing, and will be summarized in a forthcoming Form 27-Supplemental update. Soil samples collected from the PWV excavation area will be submitted for analysis of BTEX, naphthalene, TPH, TMB, PAHs and select Table 915-1 metals (As, Ba, Cd, Pb and Ni), in accordance with the COA issued for a previous Form 27-Supplemental update (Document No. 403887770).

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.

From May 15, 2024 through March 4, 2025, approximately 4280 cubic yards of impacted material have been removed from the produced water vessel excavation area and transported to the Buffalo Ridge Landfill in Keenesburg, Colorado for disposal. Following the collection of groundwater sample GW01, approximately 2420 barrels of groundwater were removed from the wellhead and flowline excavation areas, for sidewall stability and backfill management purposes, and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado for recycling.

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.

Analytical results indicate that impacted soil remains at sample locations PWV1-B01 @4', PWV2-B01 @4', and PWV2-S01 @2', as described in a previous Form 27-Supplemental update (Document No. 403887770). Excavation and site assessment activities to address soil impacts at the former PWV locations are currently pending, and will be summarized in a forthcoming Form 27-Supplemental update. Based on the waste characterization results for sample PWV2-B01 @4', future soil samples will be submitted for analysis of BTEX, naphthalene, TPH, TMB, PAHs and select Table 915-1 metals (As, Ba, Cd, Pb and Ni), in accordance with the COA issued for a previous Form 27-Supplemental update (Document No. 403887770).

Soil Remediation Summary

In Situ

Ex Situ

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

- Yes Excavate and offsite disposal
- _____ If Yes: Estimated Volume (Cubic Yards) _____ 4280
- _____ Name of Licensed Disposal Facility or ECMC Facility ID # _____
- No Excavate and onsite remediation
- _____ Land Treatment
- _____ Bioremediation (or enhanced bioremediation)
- _____ Chemical oxidation
- _____ Other _____

Groundwater Remediation Summary

- _____ 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 monitoring wells will be installed at the site to fully define the extent and magnitude of the remaining groundwater impacts associated with sample location GW01. The temporary groundwater monitoring wells will be sampled on a quarterly basis and submitted for laboratory analysis of Table 915-1 constituents. Groundwater monitoring well installation is currently pending completion of excavation and soil assessment activities. Subsequent to the completion of excavation activities to address remaining soil impacts, a figure illustrating the proposed locations of the temporary groundwater monitoring wells will be provided in a Form 27-Supplemental update.

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 Project status update _____

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: \$ 20000 _____

WASTE DISPOSAL INFORMATION

Was E&P waste generated as part of this remediation? No _____

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

Approximately 2420 barrels of groundwater were removed from the wellhead and flowline excavation areas, for sidewall stability and backfill management purposes, and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado for recycling.

Volume of E&P Waste (solid) in cubic yards _____ 4280

E&P waste (solid) description Impacted soil _____

ECMC Disposal Facility ID #, if applicable: _____

Non-ECMC Disposal Facility: Buffalo Ridge Landfill - Keenesburg, CO _____

Volume of E&P Waste (liquid) in barrels _____ 2420

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? 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? No _____

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 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 reseeded 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? Yes

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. _____

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. 11/21/2023

Actual Spill or Release date, or date of discovery. 05/17/2024

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 05/15/2024

Proposed site investigation commencement. 05/15/2024

Proposed completion of site investigation. 07/30/2025

REMEDIAL ACTION DATES

Proposed start date of Remediation. 12/31/2024

Proposed date of completion of Remediation. 07/30/2026

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

Excavation and site assessment activities to address remaining soil impacts are ongoing and will be summarized in a forthcoming Form 27-Supplemental update.

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

Signed: Erik Mickelson

Title: Environmental Lead

Submit Date: 05/06/2025

Email: DJRemediation_Forms@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: _____

Date: _____

Remediation Project Number: 33317

COA Type**Description**

0 COA	
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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**

404109596	FORM 27 DENIED
404118621	PHOTO DOCUMENTATION
404118622	SOIL SAMPLE LOCATION MAP
404118624	SOIL SAMPLE LOCATION MAP
404118632	ANALYTICAL RESULTS
404118634	ANALYTICAL RESULTS
404118635	ANALYTICAL RESULTS
404118636	ANALYTICAL RESULTS
404118637	ANALYTICAL RESULTS
404118638	ANALYTICAL RESULTS
404141914	ANALYTICAL RESULTS
404141915	ANALYTICAL RESULTS
404142127	SITE MAP
404142266	SOIL SAMPLE LOCATION MAP
404143347	ANALYTICAL DATA SUMMARY TABLE(S)
404297941	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 16 Files

General Comments**User Group****Comment****Comment Date**

Environmental	ECMC has denied this Form 27. The site-specific samples selected to be used as 'background' are within the excavation extents and/or were collected from areas on the former pad or access road. Additionally, The off-location samples selected to be used as 'background' were taken from over 2500' away in a different agricultural field. These samples are not representative of background conditions at the location.	07/29/2025
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Total: 1 comment(s)