

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 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: Phil Hamlin | Email: Phillip_Hamlin@oxy.com | Mobile: () |

PROJECT, PURPOSE & 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) applicable standards at the time of excavation 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 at the time of excavation 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 applicable ECMC Table standards at the time of excavation 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? No

Approximate areal extent (square feet) 1300

Groundwater

Number of groundwater samples collected 304

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 915-1 175

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) 5050

NA Highest concentration of SAR

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 10

-- 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)

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?

Per the COA provided for the Form 27 Supplemental dated March 30, 2023 (Document No. 403355670), additional point of compliance groundwater monitoring wells will be installed cross-gradient from well MW10 and up gradient of wells MW02 and MW03. The additional monitoring wells are currently scheduled to be installed in second quarter 2024. Soil samples will be collected during monitoring well installation and will be submitted for laboratory analysis of the full ECMC Table 915-1 analytical suite.

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 applicable ECMC standards at the time of excavation, 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. 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

☒ Ex Situ

| | | |
|---|-----|---|
| _____ Bioremediation (or enhanced bioremediation) | Yes | Excavate and offsite disposal |
| _____ Chemical oxidation | | If Yes: Estimated Volume (Cubic Yards) _____ 410 |
| _____ Air sparge / Soil vapor extraction | | Name of Licensed Disposal Facility or ECMC Facility ID # _____ 149007 |
| _____ Natural Attenuation | No | Excavate and onsite remediation |
| _____ Other _____ | | _____ 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. Following the installation and sampling of an upgradient monitoring well, Table 915-1 inorganic constituents will be reevaluated at MW01 through MW15 to verify point of compliance. The monitoring well locations are depicted on Figure 1. The Groundwater Elevation Contour Map generated using the March 2024 survey data is provided as Figure 2. The groundwater analytical results are summarized in Table 1, and the laboratory analytical reports for the March 2024 groundwater monitoring events are attached.

Per the COA provided for the Form 27 Supplemental dated March 30, 2023 (Document No. 403355670), additional point of compliant groundwater monitoring wells will be installed cross-gradient from well MW10 and up gradient of wells MW02 and MW03. The additional monitoring wells are currently scheduled to be installed in second quarter 2024.

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

ECMC Disposal Facility ID #, if applicable: 149007

Non-ECMC Disposal Facility:

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

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

ECMC Disposal Facility ID #, if applicable: 159443

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?

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 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. 02/21/2024

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. 06/30/2024

REMEDIAL ACTION DATES

Proposed start date of Remediation. 03/06/2016

Proposed date of completion of Remediation. 12/31/2026

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

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: 03/28/2024

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: Laurel Anderson

Date: 07/10/2024

Remediation Project Number: 10192

COA Type**Description**

| | |
|-------|--|
| | <p>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>Additional point of compliance wells have been required by COA since 06/21/2022 (Doc #403000711). Operator has failed to comply with conditions of approval on Form 27 Doc Nos: 403000711, 403355670, 403529087 and 403629971.</p> <p>Note: COA on Doc #403355670 required the POC wells be installed by 8/27/2023. Operator remains out of compliance with previous conditions of approval and Rule 910.b.(4).</p> |
| 1 COA | |

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**

| | |
|-----------|--|
| 403724846 | INVESTIGATION/REMEDATION WORKPLAN (SUPPLEMENTAL) |
| 403729672 | ANALYTICAL RESULTS |
| 403731094 | ANALYTICAL RESULTS |
| 403731749 | SITE MAP |
| 403731750 | GROUND WATER ELEVATION MAP |
| 403849966 | FORM 27-SUPPLEMENTAL-SUBMITTED |

Total Attach: 6 Files

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

| | | |
|--|--|---------------------|
| | | Stamp Upon Approval |
|--|--|---------------------|

Total: 0 comment(s)