FORM 27 Rev 5/22

State of Colorado
Energy & Carbon Management Commission

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Report taken by: Alexander Ahmadian

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 INFORMATON

Name of Operator: KERR MCGEE OIL & GAS ONSHORE LP Operator No: 47120
Address: P O BOX 173779
City: DENVER State: CO Zip: 80217-3779
Contact Person: Phil Hamlin Email: Phillip_Hamlin@oxy.com

Phone Numbers
Phone: (970) 336-3500
Mobile: ( )

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 4235 Initial Form 27 Document #: 1982488

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.
- [X] 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.
- [X] 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: LOCATION Facility ID: 327225 API #: County Name: WELD
Facility Name: HSR-FAUST-63N66W 21SWSW Latitude: 40.204970 Longitude: -104.789280
** correct Lat/Long if needed: Latitude: 40.205604 Longitude: -104.786186
QtrQtr: SWSW Sec: 21 Twp: 3N Range: 66W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications: CL
Most Sensitive Adjacent Land Use: Surface Water and 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

Surface water approximately 50 feet (ft) east and groundwater approximately 3 ft below ground surface (bgs).

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- [X] **E&P Waste**
  - [X] Produced Water
  - [X] Oil
  - [ ] Condensate
  - [ ] Drilling Fluids
  - [ ] Drill Cuttings
- [ ] **Other E&P Waste**
  - [ ] Workover Fluids
  - [ ] Tank Bottoms
  - [ ] Pigging Waste
  - [ ] Rig Wash
  - [ ] Spent Filters
  - [ ] Pit Bottoms
  - [ ] Other (as described by EPA) _____
- [ ] **Non-E&P Waste** _____

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	GROUNDWATER	See attached data	Groundwater Sampling/Laboratory Analysis
Yes	SOILS	75' N-S x 40' E-W x 8' bgs (max)	Soil Sampling/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 February 2008, petroleum hydrocarbon impacted soil was encountered while field crews were tying new wells into the HSR-Faust 13-21A, HSR-Poe 12 -21A, HSR-Simons 14-21A tank battery. The release was caused by a hole in the side of the partially-buried produced water sump. The petroleum hydrocarbon impacted soil was excavated.

PROPOSED SAMPLING PLAN

Proposed Soil Sampling

[X] Will soil samples be collected as part of this investigation? (Number, type (grab/composite), analyses, and locations of samples):

On February 21 and 22, 2008, eight soil samples were collected from the excavation sidewalls and submitted for laboratory analysis of total petroleum hydrocarbons (TPH). Laboratory analytical results indicated that the TPH concentrations were in full compliance with the Colorado Oil and Gas Conservation Commission (COGCC) sensitive area allowable level of 1,000 milligrams per kilogram (mg/kg) at the lateral extent of the excavation. The soil samples were not analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) as the samples were collected prior to the April 1, 2009, COGCC rule changes. The excavation footprint is depicted on the Site Map provided as Figure 1. Please refer to the Form 27 submitted to the COGCC on May 14, 2008, for additional details.

Proposed Groundwater Sampling

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

On February 21, 2008, one groundwater sample (GW01) was collected from the open excavation for laboratory analysis of BTEX. Laboratory analytical results for groundwater sample GW01 indicated that the benzene concentration exceeded the COGCC Table 910-1 allowable level at 600 micrograms per liter (µg/L). The excavation groundwater sample location is depicted on Figure 1. The groundwater sample analytical results are summarized in Table 1.

Groundwater monitoring has been performed on a quarterly basis since May 2008.

Proposed Surface Water Sampling

[X] Will surface water samples be collected as part of this investigation? (Number, analyses, and locations of samples):

On February 22, 2008, two surface water samples were collected from the irrigation ditch and submitted for laboratory analysis of BTEX. The laboratory analytical results indicated the surface water samples were less than the laboratory reporting limit of 1.0 µg/L for BTEX. Please refer to the Form 27 submitted to the COGCC on May 14, 2008, for additional details.

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: 8
Number of soil samples exceeeding 915-1: 0
Was the areal and vertical extent of soil contamination delineated? Yes
Approximate areal extent (square feet): 2175

NA / ND

-- Highest concentration of TPH (mg/kg): 870
NA Highest concentration of SAR:
BTEX > 915-1: No
Vertical Extent > 915-1 (in feet): 4

Groundwater

Number of groundwater samples collected: 382
Was extent of groundwater contaminated delineated? Yes
Depth to groundwater (below ground surface, in feet): 5
Number of groundwater monitoring wells installed: 14
Number of groundwater samples exceeding 915-1: 70

-- Highest concentration of Benzene (µg/l): 1700
-- Highest concentration of Toluene (µg/l): 220
-- Highest concentration of Ethylbenzene (µg/l): 140
-- Highest concentration of Xylene (µg/l): 410
NA Highest concentration of Methane (mg/l):

Surface Water

2 Number of surface water samples collected
0 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?

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.

Approximately 415 cubic yards of petroleum hydrocarbon impacted soil were removed from the excavation and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado, for recycling. The impacted soil was excavated into the capillary and phreatic zones to address potential hydrocarbon impacts that may have been present below the groundwater table due to past seasonal fluctuations. The general site layout and excavation footprint are depicted on the Site Map attached 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.

Prior to backfilling, ten gallons of MicroBlaze®, a concentrated solution of facultative microbes, nutrients, and surfactants designed to bioremediate petroleum hydrocarbons, were applied to the groundwater and exposed smear zone soil in the open excavation. Additional remedial options are under evaluation.

Per a condition of approval (COA) from the COGCC in the Form 27 supplemental approval dated May 9, 2023, two additional monitoring wells (MW13 and MW14) were installed up-gradient and cross-gradient from monitoring well MW12 on June 5, 2023. An additional well was not required in the down-gradient direction as existing monitoring well MW07 provides down-gradient delineation from MW12. The new monitoring wells have been developed and were sampled on June 16, 2023. The analytical results are pending and will be provided in a subsequent Form 27 supplemental report. The locations of the newly installed wells are depicted on Figure 1. The boring and well construction logs are attached.

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) 415
  - 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)
- No — Chemical oxidation
- No — Air sparge / Soil vapor extraction
- Yes — Natural Attenuation
- Yes — Other MicroBlaze® 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 MW04 and MW07 through MW12 were previously sampled on a quarterly basis for the full list of analyses for groundwater in Table 915-1 through May 2023. Cross-gradient and historically compliant groundwater monitoring wells MW09 and MW10 were established as representative background samples for calculating the inorganic parameters in Table 915-1. The monitoring well locations are depicted on Figure 1. The Groundwater Elevation Contour Map generated using the May 2023 survey data is provided as Figure 2. The groundwater analytical results are summarized in Table 1, and the laboratory analytical report for the May 2023 groundwater monitoring event is attached.

On May 9, 2023, the COGCC approved Kerr-McGee's request to remove the inorganic constituents in Table 915-1 from the ongoing quarterly monitoring program.

Groundwater monitoring for Table 915-1 organic constituents will continue on a quarterly basis at monitoring wells MW01 through MW04 and MW07 through MW14 until a No Further Action status request is warranted.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Approved Reporting Schedule:

[X] Quarterly [ ] Semi-Annually [ ] Annually [ ] Other

[X] **Request Alternative Reporting Schedule:**

[ ] Semi-Annually [X] 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: [X] 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 Colorado Oil and Gas Conservation 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: $ 45000

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 415

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 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

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? Yes

Does the previous reply indicate consideration of background concentrations? No

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 site was restored to its pre-release grade. The Kerr-McGee production facility remains at the site.

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. 02/14/2008

Actual Spill or Release date, or date of discovery. 02/14/2008

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 02/21/2008

Proposed site investigation commencement. 02/21/2008

Proposed completion of site investigation. 11/27/2018

REMEDIAL ACTION DATES

Proposed start date of Remediation. 02/21/2008

Proposed date of completion of Remediation. 11/30/2025

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: 06/29/2023 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: Alexander Ahmadian Date: 07/26/2023

Remediation Project Number: 4235

COA Type	Description
0 COA	

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
403424130	INVESTIGATION/REMEDIATION WORKPLAN (SUPPLEMENTAL)
403431043	LOGS
403431045	ANALYTICAL RESULTS
403449502	SITE MAP
403449503	GROUND WATER ELEVATION MAP
403476998	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 6 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)