

State of Colorado
Energy & Carbon Management Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203
Phone: (303) 894-2100 Fax: (303) 894-2109



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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
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 #: 4185 Initial Form 27 Document #: 1981599

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: TANK BATTERY	Facility ID: 446441	API #: _____	County Name: WELD
Facility Name: HSR SARCHET 7-33A & 8-33A BATTERY	Latitude: 40.188376	Longitude: -104.774008	
** correct Lat/Long if needed: Latitude: 40.188470		Longitude: -104.774072	
QtrQtr: NENE	Sec: 33	Twp: 3N	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 approximately 480 feet (ft) northwest, surface water approximately 140 ft north, buildings approximately 450 ft northwest, and groundwater approximately 10 ft below ground surface (bgs).

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	GROUNDWATER	See attached data	Groundwater Samples/Lab Results
Yes	SOILS	100' N-S x 140' E-W x 8' bgs (max)	2 Excavations in 2007 and 4 Excavations in 2018; Soil Samples/Lab 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.

In November 2007, due to human error, the partially-buried produced water sump overflowed at the Sarchet 7, 8-33A, spilling approximately 10 barrels (bbbls) of produced water within the earthen containment berm. A vacuum truck was used to recover approximately 7 bbbls of produced water. The petroleum hydrocarbon impacted soil was excavated from the release area and from an area north of the water sump where historical impacts associated with the broken concrete sump was discovered.

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):

In December 2007, seventeen soil samples were collected from the base and sidewalls of the two excavations and submitted for laboratory analysis of total petroleum hydrocarbons (TPH). Laboratory analytical results indicated that the TPH concentrations were in full compliance with Energy & Carbon Management Commission (ECMC) formerly known as 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 excavations. 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, ECMC rule changes.

Proposed Groundwater Sampling

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

On December 13, 2007, one groundwater sample (GW01) was collected from the base of the southern excavation for laboratory analysis of BTEX. Laboratory analytical results for groundwater sample GW01 indicated that the benzene and total xylenes concentrations exceeded the ECMC Table 910-1 allowable levels at 56 micrograms per liter ($\mu\text{g/L}$) and 7,700 $\mu\text{g/L}$, respectively. 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 February 2008.

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):

Groundwater monitoring wells, MW14R, MW23R, and MW30 were installed in the First Quarter 2024 to establish point-of-compliance (POC). A summary of the soil sample results is provided in Table 2 and soil boring logs are provided as Attachment B. Replacement groundwater monitoring wells MW05R4, MW11R2, MW12R, MW17R, MW20R, MW21R, and MW24R were installed in the First Quarter 2024; however, these wells were abandoned in the Second Quarter 2024 after groundwater monitoring wells MW05R3, MW11R, MW12, MW17, MW20, MW21, and MW24 were found intact.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 18
Number of soil samples exceeding 915-1 11
Was the areal and vertical extent of soil contamination delineated? Yes
Approximate areal extent (square feet) 7320

NA / ND

-- Highest concentration of TPH (mg/kg) 8100
NA Highest concentration of SAR _____
BTEX > 915-1 No
Vertical Extent > 915-1 (in feet) 8

Groundwater

Number of groundwater samples collected 1012
Was extent of groundwater contaminated delineated? Yes
Depth to groundwater (below ground surface, in feet) 10
Number of groundwater monitoring wells installed 57
Number of groundwater samples exceeding 915-1 379

-- Highest concentration of Benzene (µg/l) 13400
-- Highest concentration of Toluene (µg/l) 6430
-- Highest concentration of Ethylbenzene (µg/l) 903
-- Highest concentration of Xylene (µg/l) 7700
NA Highest concentration of Methane (mg/l) _____

Surface Water

0 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?

Groundwater impacts were detected in the adjoining agricultural field west of the tank battery.

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? Yes

SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

In November 2007, approximately 215 cubic yards of impacted soil were excavated 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 current groundwater table due to seasonal fluctuations.

Due to persistent benzene and total xylenes exceedances in multiple monitoring wells, additional impacted soil was excavated at the site. Between December 18 and 28, 2018, excavation commenced at the locations of destroyed monitoring well MW05R and temporary monitoring wells TMW03, TMW04, TMW06, TMW10, and TMW14, which had already been removed for the previous harvest season. The excavation dimensions were determined based on an estimation from the monitoring well boring logs and groundwater concentrations. The locations were dug to the extent of the impact based on field screening for volatile organic compounds using a photoionization detector and field observations. The 2018 excavations were designed to target saturated and smear zone impacts. Approximately 2,180 cubic yards of impacted soil were excavated and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado, for recycling.

The 2007 and 2018 excavation footprints are depicted on the Site Map provided as Figure 1.

REMEDICATION 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 the 2007 excavation, five gallons of MicroBlaze®, a concentrated solution of facultative microbes, nutrients, and surfactants designed to bioremediate petroleum hydrocarbons, were applied to the groundwater in the excavation.

While backfilling the 2018 excavations, 750 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.

Soil Remediation Summary

<input type="checkbox"/> In Situ	<input checked="" type="checkbox"/> Ex Situ
_____ Bioremediation (or enhanced bioremediation)	Yes _____ Excavate and offsite disposal
_____ Chemical oxidation	_____ If Yes: Estimated Volume (Cubic Yards) _____ 2395
_____ 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 MicroBlaze® Application (2007) and COGAC® Application (2018)

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, MW02R, MW05R3, MW10, MW11R, MW12, MW13, MW14R, MW15, MW17-MW22, MW23R, and MW24-MW30 are sampled on a quarterly basis for the full list of analyses for groundwater in Table 915-1. Kerr-McGee gained approval from the ECMC to remove groundwater monitoring wells MW03R, MW04R, MW09, and MW16 from the quarterly monitoring program in October 2022 (Document No. 403097066).

The groundwater concentrations at cross-gradient monitoring well MW09 from the Fourth Quarter 2021 groundwater monitoring event were used to establish a representative background for calculating the inorganic parameters in Table 915-1. Based on a comparison to background concentrations, POC monitoring wells MW17, MW19, MW27 and MW30 were above the Table 915-1 standards for inorganic constituents during the Fourth Quarter 2024 monitoring event. Kerr-McGee will continue to evaluate POC for Table 915-1 on a quarterly basis based on the site-specific local background concentrations. The monitoring well locations are depicted on Figure 1. The Groundwater Elevation Contour Map generated using the October 2024 survey data is provided as Figure 2. The groundwater analytical results are summarized in Table 1, and the laboratory analytical reports for the January 2024, April 2024, July 2024 and October 2024 groundwater monitoring events are attached.

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 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: \$ 100000

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 2395

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 0

E&P waste (liquid) description _____

ECMC Disposal Facility ID #, if applicable: _____

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. Timelines 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?

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. 11/27/2007

Actual Spill or Release date, or date of discovery. 11/27/2007

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 11/27/2007

Proposed site investigation commencement. 11/27/2007

Proposed completion of site investigation. 07/21/2020

REMEDIAL ACTION DATES

Proposed start date of Remediation. 11/27/2007

Proposed date of completion of Remediation. 07/31/2028

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:

Extending proposed date of completion of remediation from 7/31/2025 to 7/31/2028 to allow additional time to evaluate and implement remedial actions.

OPERATOR COMMENT

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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: 11/27/2024 _____

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: _____

Date: _____

Remediation Project Number: 4185 _____

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**

403982812	FORM 27-SUPPLEMENTAL-SUBMITTED
404009948	ANALYTICAL RESULTS
404009956	ANALYTICAL RESULTS
404009966	IMPLEMENTATION SCHEDULE
404009971	LOGS
404009978	SITE MAP
404009984	ANALYTICAL RESULTS
404009985	ANALYTICAL RESULTS
404009987	ANALYTICAL RESULTS
404009989	ANALYTICAL RESULTS
404009996	ANALYTICAL RESULTS
404010031	GROUND WATER ELEVATION MAP

Total Attach: 12 Files

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

Environmental	The Laboratory Analytical PDF attached to this form indicates it has been altered after lab delivery. ECMC has not conducted a complete technical review of this form, data, or attachments but is denying this form.	02/12/2025
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Total: 1 comment(s)