

State of Colorado
Energy & Carbon Management Commission1120 Lincoln Street, Suite 801, Denver, Colorado 80203
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Document Number:

404023891

Receive Date:

12/31/2024

Report taken by:

Grace Rollins

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 & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 9549 Initial Form 27 Document #: 200439143

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: PIT	Facility ID: 103144	API #: _____	County Name: WELD
Facility Name: HELGOTH HEIRS 1	Latitude: 40.117610	Longitude: -104.732555	
** correct Lat/Long if needed: Latitude: 40.117610		Longitude: -104.732555	
QtrQtr: SWSW	Sec: 24	Twp: 2N	Range: 66W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications CL

Most Sensitive Adjacent Land Use Crop Land

Is domestic water well within 1/4 mile? Yes

Is surface water within 1/4 mile? No

Is groundwater less than 20 feet below ground surface? Yes

Other Potential Receptors within 1/4 mile

The nearest domestic water well is located approximately 1,050 feet northwest of the release location.

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	54' (E-W) x 128' (N-S) x 25' bgs	Excavation, soil boring, 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.

Between March 13 and April 8, 2013, a Limited Phase II Site Assessment was conducted at the Helgoth Heirs Unit #1 production facility. Historical impacts to soil and groundwater were discovered during this investigation. The facility was subsequently abandoned, associated infrastructure was removed, and excavation activities were initiated. The Carbon and Energy Management Commission (ECMC) formerly known as Colorado Oil and Gas Conservation Commission (COGCC) issued Spill/Release Point ID 2232617 for this release.

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 during the Limited Phase II Site Assessment and subsequent excavation activities, as described in the Initial Form 27 (ECMC Document No. 2525951) and the associated Supplemental Remedial Report (ECMC Document No. 2525953). Based on the data presented, impacted soils remain in place at approximately 19 feet below ground surface (bgs) in the southern portion of the northern excavation area. The estimated extent of remaining soil impacts is illustrated on Figure 1.

Proposed Groundwater Sampling

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

Between March 13, 2013 and June 19, 2019, forty-six (46) temporary monitoring wells (SB01 - SB42, SB07R, SB08R, SB11R, SB13R) were installed to assess the extent of groundwater impacts and for remediation purposes. Quarterly groundwater sampling was initiated on January 13, 2014, and is ongoing at the thirty-one (32) monitoring wells remaining at the site (SB07R, SB08R, SB10, SB11R, SB13R, SB17 - SB43). Monitoring wells SB01 - SB06, SB09, SB12, and SB14 - SB16 were removed during excavation activities; monitoring wells SB07, SB08, SB11, and SB13 were historically dry or damaged, and were subsequently replaced. Groundwater analytical data is presented in Table 1, and the groundwater sample locations are illustrated on Figure 1. The laboratory analytical reports for the October 2024 groundwater monitoring event is provided as an attachment.

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 47

Number of soil samples exceeding 915-1 10

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

Approximate areal extent (square feet) 4930

Groundwater

Number of groundwater samples collected 745

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 22

Number of groundwater monitoring wells installed 47

Number of groundwater samples exceeding 915-1 233

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.

NA / ND

-- Highest concentration of TPH (mg/kg) 6700

NA Highest concentration of SAR

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 25

-- Highest concentration of Benzene (µg/l) 3340

-- Highest concentration of Toluene (µg/l) 5420

-- Highest concentration of Ethylbenzene (µg/l) 1980

-- Highest concentration of Xylene (µg/l) 23800

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.

Between July 29 and December 20, 2013, approximately 2,760 cubic yards of impacted material were excavated and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado.

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.

As described in the Supplemental Remedial Report (ECMC Document No. 2525953), impacted soil and groundwater remain at the site. A solar-powered light non-aqueous phase liquid (LNAPL) recovery system (Spill Buster) was installed in temporary monitoring well SB23, and LNAPL recovery activities were initiated on February 14, 2014. On March 4, 2014, passive LNAPL bailers were installed in wells SB21 and SB22, and bi-weekly LNAPL gauging, and recovery events were initiated to supplement Spill Buster LNAPL recovery activities. The Spill Buster and passive LNAPL bailers were re-deployed to various wells based on field observations and to optimize LNAPL removal. The Spill Buster was removed from the site on September 13, 2018, and manual LNAPL gauging, and recovery activities are ongoing. To-date, a total of approximately 3.1 barrels of LNAPL have been removed via Spill Buster operation and LNAPL bailing and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado. Quarterly groundwater monitoring is ongoing and will be continued until concentrations remain in compliance with the ECMC Table 915-1 standards. In the Second Quarter 2024, LNAPL bail down testing was performed at monitoring well SB21 and the results indicated a moderate LNAPL transmissivity of 2.18 ft²/day. Manual LNAPL bailing and use of absorbent socks appears to be sufficiently removing the available LNAPL in the well field and will continue. Additional bail down tests may be performed if sufficient LNAPL is present. Estimated time to attain NFA is TBD based on the groundwater concentrations, the extent of soil and groundwater impacts, and the efficacy of the selected remedial technologies.

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) _____ 2760
_____ 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

No _____ Bioremediation (or enhanced bioremediation)

No _____ Chemical oxidation

No _____ Air sparge / Soil vapor extraction

Yes _____ Natural Attenuation

Yes _____ Other _____ LNAPL recovery

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.

Between March 13, 2013 and June 19, 2019, a total of 46 temporary monitoring wells (SB01 - SB42, SB07R, SB08R, SB11R, SB13R) were installed to assess the extent of groundwater impacts and for remediation purposes. Monitoring wells SB01 - SB06, SB09, SB12, and SB14 - SB16 were subsequently removed during excavation activities; monitoring wells SB07, SB08, SB11, and SB13 were historically dry or damaged, and were subsequently replaced. The 32 existing temporary groundwater monitoring wells (SB07R, SB08R, SB10, SB11R, SB13R, SB17 - SB43) will continue to be sampled on a quarterly basis and submitted for laboratory analysis of Table 915-1 constituents. Upgradient and historically compliant groundwater monitoring well SB38 was selected from the Third Quarter 2024 monitoring event as the site-specific local background location for comparison to inorganic standards in Table 915-1. Based on a comparison to site-specific background concentrations, the chloride concentrations in monitoring wells SB10, SB18, SB19, and SB24 were above Table 915-1 standards during the Fourth Quarter 2024 monitoring event. Kerr-McGee will continue to evaluate POC for Table 915-1 standards on a quarterly basis, based on site-specific local background concentrations. An additional monitoring well, SB43, was installed in Fourth Quarter 2024, cross-gradient of SB39. When attempting to develop and sample the groundwater at SB43, the well was dry. The groundwater monitoring well locations are illustrated on Figure 1, and a potentiometric surface contour map for the Fourth Quarter 2024 groundwater monitoring event is presented as Figure 2. A soil boring log for SB43 is provided as an attachment. An analytical report for the Fourth Quarter 2024 groundwater monitoring event is provided as an attachment. Soil analytical data from a sample collected during the SB43 well installation at 21 ft bgs is provided as an attachment.

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: \$ 150000

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 2,760 cubic yards of impacted soil were transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado, for recycling. Approximately 3.1 barrels of LNAPL have been transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado, for recycling.

Volume of E&P Waste (solid) in cubic yards 2760

E&P waste (solid) description Hydrocarbon-impacted soil

ECMC Disposal Facility ID #, if applicable: 149007

Non-ECMC Disposal Facility:

Volume of E&P Waste (liquid) in barrels 3

E&P waste (liquid) description LNAPL

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 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. 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. _____

Actual Spill or Release date, or date of discovery. _____

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 03/13/2013

Proposed site investigation commencement. 03/13/2013

Proposed completion of site investigation. 03/13/2025

REMEDIAL ACTION DATES

Proposed start date of Remediation. 07/29/2013

Proposed date of completion of Remediation. 03/13/2026

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: Phillip Hamlin

Title: Senior Environmental Rep

Submit Date: 12/31/2024

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: Grace Rollins

Date: 02/21/2025

Remediation Project Number: 9549

COA Type**Description**

	<p>ECMC does not approve the Operator's proposal to continue manual LNAPL bailing and use of absorbent socks as the primary remedial strategy to address LNAPL. Operator has been reporting "manual LNAPL gauging and recovery activities are ongoing" as the sole means of LNAPL remediation since the removal of the LNAPL removal system on September 13, 2018 (Form 27 Doc. # 402005417, submitted 05/30/2019).</p> <p>Based on a review of the LNAPL gauged within monitoring wells following the removal of the LNAPL removal system, a consistent and significant decrease in LNAPL thickness has not been observed across the site.</p> <p>Operator shall evaluate existing data and propose additional remedial options consistent with the Interstate Technology Regulatory Council (ITRC) recommendations on the subsequent Form 27. If the Operator believes any additional testing is required, the specific tests and timing of those tests shall also be proposed on the subsequent Supplemental Form 27.</p>
	<p>ECMC notes that impacted soil remains in situ and is in contact with groundwater. Operator shall propose additional remedial options to further assess and remediate impacted soil to current ECMC standards/Table 915-1 on the subsequent Supplemental Form 27.</p>
	<p>Operator shall expand the standalone implementation schedule to include anticipated timelines and metrics for evaluation of remediation progress on the subsequent Supplemental Form 27.</p>
3 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**

404023891	FORM 27-SUPPLEMENTAL-SUBMITTED
404044537	ANALYTICAL RESULTS
404044539	GROUND WATER ELEVATION MAP
404044542	SITE MAP
404044546	IMPLEMENTATION SCHEDULE
404044628	ANALYTICAL RESULTS
404044633	ANALYTICAL RESULTS
404044637	ANALYTICAL RESULTS
404044650	LOGS

Total Attach: 9 Files

General Comments

User Group

Comment

Comment Date

		Stamp Upon Approval
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Total: 0 comment(s)