

State of Colorado Oil and Gas Conservation Commission

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Receive Date:

Report taken by:

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 INFORMATION

Name of Operator: KERR MCGEE OIL & GAS ONSHORE LP	Operator No: 47120	Phone Numbers Phone: (720) 929-4306 Mobile: ()
Address: P O BOX 173779		
City: DENVER	State: CO Zip: 80217-3779	
Contact Person: Erik Mickelson	Email: gregory_hamilton@oxy.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 24708 Initial Form 27 Document #: 403115154

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: WELL	Facility ID: _____	API #: 123-16837	County Name: WELD
Facility Name: THOMPSON 33-6A		Latitude: 40.251530	Longitude: -104.818320
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: NWSE	Sec: 6	Twp: 3N	Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: WELL	Facility ID: _____	API #: 123-24161	County Name: WELD
Facility Name: THOMPSON 25-6		Latitude: 40.251660	Longitude: -104.818350
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: NWSE	Sec: 6	Twp: 3N	Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: WELL	Facility ID: _____	API #: 123-24160	County Name: WELD
Facility Name: THOMPSON 24-6	Latitude: 40.251630	Longitude: -104.818220	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: NWSE	Sec: 6	Twp: 3N	Range: 66W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SM Most Sensitive Adjacent Land Use sand and gravel pit

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 615' W
 Surface Water: approximately 1300' S
 Wetlands: approximately 1000' SE
 Springs: none
 Livestock: none
 Occupied Building: approximately 680' SW
 High Priority Habitat (HPH): none

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) Thermogenic Gas

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	SOILS	TBD	Soil Vapor Samples/Lab 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.

This form has been prepared to summarize assessment activities conducted during the plugging and abandonment of the Thompson 25-6 wellhead and the permanent removal of the associated flowline. Assessment activities began on September 21, 2022. Soil assessment activities were conducted in accordance with ECMC Rule 911.a. A photo log is attached as Attachment B.

During plugging and abandonment activities at the Thompson 25-6 wellhead, five shallow soil vapor points (SVPs) were installed in the vicinity of the wellhead. On September 22, 2022, methane was detected with field screening equipment at SVP01 and SVP02. Eagle collected samples from three SVPs using IsoTubes™ and and IsoTube™ sampling manifold in conjunction with the pump on a GEM 5000. The samples were submitted to IsoTech for gas composition analysis. Results from the gas composition analysis were received from IsoTech on October 24, 2022 and indicated the presence of a trace concentration of thermogenic gas. The release was reported to the ECMC in the Form 19 Initial dated October 28, 2022 (Document No. 403210685). The volume of the release is unknown, and an investigation into the nature and source of the soil gas is on-going. The original soil vapor points were destroyed. New soil vapor points were installed in fourth quarter of 2022 to continue the assessment. The soil vapor points are depicted on Figure 4.

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):

From September 21 through November 8, 2022, excavation activities were conducted to address remaining soil impacts at the former wellhead location (ECMC Form 19i/s document No. 403182855) , and five (5) confirmation soil samples were collected from the base and sidewalls of the final excavation extent, at depths of approximately 10 and 6 feet bgs, respectively. Based on the analytical results for the waste characterization sample WH-B01@6', the confirmation soil samples were submitted for laboratory analysis of pH, electrical conductivity (EC), arsenic, and chromium (VI). Analytical results indicate that constituent concentrations in the soil samples collected from the final excavation extents were in compliance with the applicable COGCC Table 915-1 standards. Soil analytical results are summarized in Tables 2 through 5. The laboratory analytical reports are provided in Attachment A.

Proposed Groundwater Sampling

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

Groundwater was not encountered during wellhead cut and cap activities, flowline removal, or subsequent over-excavation activities.

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):

The soil vapor investigation is ongoing. On December 5, 2022, Eagle, LLC. (Eagle) installed 27 shallow soil vapor points (SVP01 through SVP27) to a depth of approximately 12 feet below ground surface (bgs). On December 7, 2022 and April 18, 2023, Eagle returned to the site to screen and sample the newly installed SVPs using IsoTubes™ and an IsoTube™ sampling manifold in conjunction with the pump on a Landtec GEM™5000 (GEM). Samples collected from SVP01 through SVP27 were submitted to Isotech Laboratories (Isotech) for gas composition and isotopic analysis. During the field screening events, methane was not detected by the GEM in any of the SVPs.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 20

Number of soil samples exceeding 915-1 1

Was the areal and vertical extent of soil contamination delineated? Yes

Approximate areal extent (square feet) 270

NA / ND

ND Highest concentration of TPH (mg/kg)

-- Highest concentration of SAR 5.37

BTEX > 915-1 No

Vertical Extent > 915-1 (in feet) 10

Groundwater

Number of groundwater samples collected 0

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet)

Number of groundwater monitoring wells installed

Number of groundwater samples exceeding 915-1

Highest concentration of Benzene (µg/l)

Highest concentration of Toluene (µg/l)

Highest concentration of Ethylbenzene (µg/l)

Highest concentration of Xylene (µg/l)

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?

Background soil samples WH-BG01@3' - WH-BG04@3' and WH-BG01@6' - WH-BG04@6' were collected from native material adjacent to the wellhead cut and cap excavation. The background soil samples were submitted for laboratory analysis of the Soil Suitability for Reclamation Parameters and Metals using standard methods appropriate for detecting target analytes in Table 915-1. Analytical results for the background soil samples are presented in Tables 3 and 5.

☐ 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?

The soil vapor investigation is ongoing. Analytical results from the fourth quarter 2022 sampling event were received on January 9, 2023. Trace methane was detected in 12 of the samples ranging from 0.0003% to 0.0039%. Hydrocarbons in the C2 to C5 range were detected in eight SVP samples (SVP01, SVP03, SVP04, SVP08, SVP09, SVP12, SVP14, SVP17). Analytical results from the second quarter 2023 sampling event were received on May 17, 2023. Trace methane was detected in 12 of the samples ranging from 0.0003% to 0.0008%. Hydrocarbons in the C2 to C5 range were detected in seven SVP samples (SVP16, SVP17, SVP18, SVP19, SVP20, SVP21, SVP25). The Fourth Quarter 2022 and Second Quarter 2023 tabulated field data and laboratory analytical results are included as Tables 7 and 8, respectively. Historical field data and laboratory analytical results are included as Tables 1 through 6, respectively. The laboratory report from the fourth quarter 2022 and second quarter 2023 sampling event is attached.

An additional site-wide screening and sampling event is scheduled for third quarter 2023. A Form 27 supplemental will be submitted in the fourth quarter of 2023 presenting the findings of the ongoing assessment activities.

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.

The soil vapor investigation is ongoing. On December 5, 2022, Eagle installed 27 shallow soil vapor points (SVP01 through SVP27) to a depth of approximately 12 feet bgs.

On December 7, 2022 and April 18, 2023, Eagle returned to the site to screen and sample the newly-installed SVPs using IsoTubes™ and an IsoTube™ sampling manifold in conjunction with the pump on a Landtec GEM. Samples collected from SVP01 through SVP27 were submitted to Isotech for gas composition and isotopic analysis. During the field screening events, methane was not detected by the GEM in any of the SVPs.

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.

The soil vapor investigation is ongoing. Analytical results from the fourth quarter 2022 sampling event were received on January 9, 2023. Trace methane was detected in 12 of the samples ranging from 0.0003% to 0.0039%. Hydrocarbons in the C2 to C5 range were detected in eight SVP samples (SVP01, SVP03, SVP04, SVP08, SVP09, SVP12, SVP14, SVP17). Analytical results from the second quarter 2023 sampling event were received on May 17, 2023. Trace methane was detected in 12 of the samples ranging from 0.0003% to 0.0008%. Hydrocarbons in the C2 to C5 range were detected in seven SVP samples (SVP16, SVP17, SVP18, SVP19, SVP20, SVP21, SVP25). The Fourth Quarter 2022 and Second Quarter 2023 tabulated field data and laboratory analytical results are included as Tables 7 and 8, respectively. Historical field data and laboratory analytical results are included as Tables 1 through 6, respectively. The laboratory report from the fourth quarter 2022 and second quarter 2023 sampling event is attached.

An additional site-wide screening and sampling event is scheduled for third quarter 2023. A Form 27 supplemental will be submitted in the fourth quarter of 2023 presenting the findings of the ongoing assessment activities.

Soil Remediation Summary

☐ In Situ

☒ Ex Situ

_____ Bioremediation (or enhanced bioremediation)

Yes _____ Excavate and offsite disposal

_____ Chemical oxidation

_____ If Yes: Estimated Volume (Cubic Yards) _____ 20

_____ Air sparge / Soil vapor extraction

_____ Name of Licensed Disposal Facility or COGCC 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

No _____ Natural Attenuation

No _____ 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.

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 Wellhead Closure Update and Stray Gas Assessment

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 Energy and Carbon Conservation Commission. The cost for remediation is a preliminary estimate only, costs may change upwards or downwards 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: \$ 15500

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 20 cubic yards of impacted material were excavated and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado for recycling.

Volume of E&P Waste (solid) in cubic yards 20

E&P waste (solid) description 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? Yes

Does Groundwater meet Table 915-1 standards? Yes

Is additional groundwater monitoring to be conducted? _____

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 will be reclaimed in accordance with ECMC 1000 Series Reclamation Rules.

Is the described reclamation complete? _____

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. 06/08/2022

Actual Spill or Release date, or date of discovery. 09/29/2022

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 09/22/2022

Proposed site investigation commencement. 09/22/2022

Proposed completion of site investigation. 09/01/2023

REMEDIAL ACTION DATES

Proposed start date of Remediation. 09/22/2022

Proposed date of completion of Remediation. 12/31/2023

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

Based on the analytical and soil screening data provided herein, the soil remediation portion of the project is complete. The soil gas investigation is ongoing.

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: _____

Email: erik_mickelson@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: _____

Date: _____

Remediation Project Number: 24708

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**

403424929	OTHER
403424934	SITE MAP
403424937	SOIL SAMPLE LOCATION MAP
403424938	SOIL SAMPLE LOCATION MAP
403424939	OTHER
403424940	ANALYTICAL RESULTS
403467654	ANALYTICAL RESULTS

Total Attach: 7 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)