

State of Colorado Energy & Carbon Management Commission

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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: Erik_Mickelson@oxy.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 26499 Initial Form 27 Document #: 403263384

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 #: 123-35346	County Name: WELD
Facility Name: REI H 17-30D	Latitude: 40.229340	Longitude: -104.692140	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: NWNW	Sec: 17	Twp: 3N	Range: 65W Meridian: 6 Sensitive Area? Yes

Facility Type: WELL	Facility ID: _____	API #: 123-35347	County Name: WELD
Facility Name: REI H 17-21D	Latitude: 40.229210	Longitude: -104.692130	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: NWNW	Sec: 17	Twp: 3N	Range: 65W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SC

Most Sensitive Adjacent Land Use Range Land

Is domestic water well within 1/4 mile? No

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

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
UNDETERMINED	GROUNDWATER	TBD	Groundwater Samples/Laboratory Analytical Results
Yes	SOILS	TBD	Soil Samples/Laboratory Analytical Results

INITIAL ACTION SUMMARY

Description of initial action or emergency response measures taken to abate, investigate, and/or remediate impacts associated with E&P Waste.

During plugging and abandonment activities at the REI H 17-21D,30D wellheads, approximately 0.75 bbls of fluid daylighted from the subsurface adjacent to the wellhead. As such, a Form 19 Initial/Supplemental Spill/Release Report (Document No. 403330462) was submitted on February 27, 2023, and the ECOMC issued Spill/Release Point ID 483951. Following the release, one soil sample (SS01@0.5') was collected and submitted for analysis of full list Table 915-1 constituents. Laboratory analytical results indicated benzene, toluene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene (TMBs), naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, sodium adsorption ratio (SAR), pH, and barium impacts exceeding the ECOMC Table 915-1 allowable levels and/or background levels were present at the spill area.

Wellhead cut and cap operations were completed at the wellheads on March 22, 2023. Visual inspection and field screening of soils around the wellhead and associated pumping equipment were conducted following cut and cap operations. Soil samples B01@7' (REI H17-30D), N01@3' (REI H17-30D), E01@3' (REI H17-30D), and S01@3' (REI H17-30D) were submitted for analysis of full list Table 915-1 constituents. Sample B01@6'-WP (REI H17-21D) was submitted for reduced list constituents to determine if a release occurred. The flowlines were removed between March 22 and April 13, 2023, and soil samples were collected from where the flowline risers were disconnected from the wellhead [WH01-Riser@4' (REI H17-30D) and WH01-Riser@5'-WP (REI H17-21D)] and from the separator [SEP01-RISER@4' (REI H17-21D) and SEP01-RISER@4' (REI 17-30D)]. Sample WH01-Riser@4' (REI H17-30D) was submitted for analysis of full list Table 915-1 constituents. The other flowline samples were submitted for reduced list constituents to determine if a release occurred. Wellhead cut and cap and flowline soil samples were within the ECOMC Table 915-1 allowable levels and/or the analytical variability of background.

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 February 24 through June 23, 2023, excavation activities were conducted to address soil impacts at the spill area and seven confirmation soil samples were collected from the base and sidewalls of excavation area at approximately 2 feet below ground surface (ft bgs) and 1.5 ft bgs, respectively. Groundwater was not encountered in the excavation. The confirmation soil samples were submitted for laboratory analysis of BTEX, TMBs, TPH, naphthalene, Table 915-1 polycyclic aromatic hydrocarbons (PAHs), SAR, pH, boron, arsenic, barium, cadmium, copper, and selenium using COGCC-approved methods. Results indicated that arsenic and barium impacts exceeding the ECOMC Table 915-1 allowable level and background level are still present at the site. Excavation activities are ongoing. The wellhead excavation and flowline are depicted on Figures 1 and 2. The PID readings and soil sample results are summarized in Table 1 and Table 2, respectively, and the laboratory reports are attached.

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 or flowline removal 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):

During plugging and abandonment activities at the REI H 17-21D,30D wellheads, ten shallow soil vapor points (SVPs) were installed in the vicinity of the wellhead. The points were monitored on April 3, 2023. Methane was detected at five of the ten points with a GEM 5000 meter. Samples were collected and submitted to Isotech Laboratories for gas composition analysis. Sample results were received on April 14 and April 24, 2023 and indicated the presence of a trace concentration of thermogenic gas. The release was reported to the ECMC in the Form 19 Initial dated April 14, 2023 (Document No. 403373145) and Spill/Release ID 484287 was issued. The volume of the release is unknown. The original SVPs were abandoned during the wellhead excavation activities. Additional SVPs will be installed to continue the assessment once excavation activities are complete. The former SVPs are depicted on Figure 1. The field and analytical data from the April sampling event are included as an attachment.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 13

Number of soil samples exceeding 915-1 9

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

Approximate areal extent (square feet) 1520

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

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) 157.4

-- Highest concentration of SAR 8.47

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 2

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)

OTHER INVESTIGATION INFORMATION

☐ Were impacts to adjacent property or offsite impacts identified?

☒ Were background samples collected as part of this site investigation?

Eight background soil samples (Native-BG01@3' through Native-BG04@3' and Native-BG01@6' through Native-BG04@6') were collected from native material adjacent to the REI H 17-21D, 30D wellheads cut and cap excavations. The background soil samples were submitted for laboratory analysis of pH, EC, SAR, boron, and metals using ECMC-approved methods. Laboratory analytical results indicate that arsenic and selenium are naturally high in the native soil. The background soil sample laboratory analytical results are summarized in Table 2.

☐ 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?

Excavation activities are ongoing. Confirmation soil sample results will be summarized in a subsequent Form 27 Supplemental report within 90 days following the completion of excavation activities.

The soil vapor investigation is ongoing. Plans are in place to install additional vapor points for monitoring stray soil gas once excavation activities are complete. Please refer to the Form 19 Initial dated April 14, 2023 (Document No. 403373145).

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.

Impacted soil from the spill area excavation will be removed and transported to a licensed disposal facility. Final disposal information will be provided upon completion of excavation activities. Disposal records will be kept on file and available upon request. The wellhead cut and cap excavation areas will be backfilled and contoured to match pre-existing conditions.

The soil vapor investigation is ongoing. Plans are in place to install additional vapor points for monitoring stray soil gas once excavation activities are complete. Please refer to the Form 19 Initial dated April 14, 2023 (Document No. 403373145).

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.

Laboratory data indicate that impacts exceeding the ECMC Table 915-1 allowable levels for barium remain in the spill area excavation. Excavation activities are ongoing. Groundwater was not encountered during wellhead cut and cap or flowline removal activities. Confirmation soil sample results will be summarized in a subsequent Form 27 Supplemental report within 90 days following the completion of excavation activities.

The soil vapor investigation is ongoing. Plans are in place to install additional vapor points for monitoring stray soil gas once excavation activities are complete. Please refer to the Form 19 Initial dated April 14, 2023 (Document No. 403373145).

Soil Remediation Summary

☐ In Situ

_____ Bioremediation (or enhanced bioremediation)

_____ Chemical oxidation

_____ Air sparge / Soil vapor extraction

_____ Natural Attenuation

_____ Other _____

☐ Ex Situ

_____ Excavate and offsite disposal

_____ If Yes: Estimated Volume (Cubic Yards) _____

_____ Name of Licensed Disposal Facility or COGCC Facility ID # _____

_____ Excavate and onsite remediation

_____ Land Treatment

_____ Bioremediation (or enhanced bioremediation)

_____ Chemical oxidation

_____ Other _____

Groundwater Remediation Summary

_____ Bioremediation (or enhanced bioremediation)

_____ Chemical oxidation

_____ Air sparge / Soil vapor extraction

_____ Natural Attenuation

_____ 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

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 Management 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: \$ 18500

WASTE DISPOSAL INFORMATION

Was E&P waste generated as part of this remediation? ☐

Describe beneficial use, if any, of E&P Waste derived from this remediation project:

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

E&P waste (solid) description

COGCC Disposal Facility ID #, if applicable:

Non-COGCC Disposal Facility:

Volume of E&P Waste (liquid) in barrels

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? ☐

Does the previous reply indicate consideration of background concentrations? ☐

Does Groundwater meet Table 915-1 standards? _____

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. 04/14/2023

Actual Spill or Release date, or date of discovery. 04/13/2023

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 02/24/2023

Proposed site investigation commencement. 02/24/2023

Proposed completion of site investigation. 10/01/2023

REMEDIAL ACTION DATES

Proposed start date of Remediation. 02/24/2023

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

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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: 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: 26499

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**

403503107	SOIL SAMPLE LOCATION MAP
403503109	SOIL SAMPLE LOCATION MAP
403503112	CORRESPONDENCE
403503113	ANALYTICAL RESULTS
403503116	PHOTO DOCUMENTATION
403503118	ANALYTICAL RESULTS
403506478	SOIL SAMPLE LOCATION MAP

Total Attach: 7 Files

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