

# State of Colorado Oil and Gas Conservation Commission

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



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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: (970) 336-3500 Mobile: (970) 515-1161
Address: P O BOX 173779		
City: DENVER	State: CO Zip: 80217-3779	
Contact Person: Phillip Hamlin	Email: Phillip_Hamlin@oxy.com	

### PROJECT, PURPOSE & SITE INFORMATION

#### PROJECT INFORMATION

Remediation Project #: 15868 Initial Form 27 Document #: 402471008

#### 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: Monitoring well reduction request

#### SITE INFORMATION

Yes Multiple Facilities

Facility Type: LOCATION	Facility ID: 318080	API #:	County Name: WELD
Facility Name: ADDIE M. KING GAS UNIT-61N66W 4SWSW	Latitude: 40.076140	Longitude: -104.788210	
** correct Lat/Long if needed: Latitude: 40.076460		Longitude: -104.787821	
QtrQtr: SWSW	Sec: 4	Twp: 1N	Range: 66W Meridian: 6 Sensitive Area? Yes
Facility Type: SPILL OR RELEASE	Facility ID: 478864	API #:	County Name: WELD
Facility Name: SPILL/RELEASE POINT	Latitude: 40.076460	Longitude: -104.787821	
** correct Lat/Long if needed: Latitude:		Longitude:	
QtrQtr: SWSW	Sec: 4	Twp: 1N	Range: 66W Meridian: 6 Sensitive Area? Yes

## **SITE CONDITIONS**

General soil type - USCS Classifications CL

Most Sensitive Adjacent Land Use Non-Crop Land

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**

The nearest domestic water well is located approximately 200 feet northeast of the release location. Surface water is located approximately 1,250 feet north-northeast of the release location. Multiple buildings are located within ¼ mile 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	234' (E-W) x 128' (N-S) x 12' bgs	Excavation, 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.

On December 7, 2020, historical impacts were discovered during abandonment activities at the King Addie M GU 1 production facility, and excavation activities were initiated. Groundwater was encountered in the excavation area at approximately 10.5 feet below ground surface (bgs). The COGCC issued Spill/Release Point ID 478864 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 as described in a previous Form 27-Supplemental update (COGCC Document No. 402606935). Based on the data presented, impacted soils in the excavation area were remediated to be in full compliance with the COGCC Table 910-1 standards. Based on the date of discovery and initiation of excavation activities (December 7 2020), the COGCC Table 910-1 soil standards have been applied to the soil analytical results at this location.

#### Proposed Groundwater Sampling

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

On July 12 and 13, 2021, eleven (11) temporary groundwater monitoring wells (BH01 - BH11) were installed to further assess the extent of potentially remaining groundwater impacts. Quarterly groundwater monitoring was initiated on July 26, 2020, and is ongoing at the ten (10) monitoring wells remaining at the site. Monitoring well BH02 was noted as destroyed on October 29, 2021. Groundwater analytical data is presented in Table 1, and the temporary groundwater monitoring well locations are illustrated on Figure 1. The laboratory analytical report for the Fourth Quarter 2021 groundwater monitoring event is provided as Attachment A.

#### 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

NA / ND

Number of soil samples collected 136

Number of soil samples exceeding 915-1 52

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

Approximate areal extent (square feet) 20200

-- Highest concentration of TPH (mg/kg) 8474

-- Highest concentration of SAR 12.25

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 12

#### Groundwater

Number of groundwater samples collected 24

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 9'

Number of groundwater monitoring wells installed 11

Number of groundwater samples exceeding 915-1 11

-- Highest concentration of Benzene (µg/l) 426

ND Highest concentration of Toluene (µg/l)

-- Highest concentration of Ethylbenzene (µg/l) 956

-- Highest concentration of Xylene (µg/l) 16200

NA 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?

Soil exceeding COGCC standards extended laterally beyond the lease boundary. Laboratory analytical results indicate that impacted soils in the excavation area have been remediated to be in full compliance with the COGCC Table 910-1 standards.

☐ 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?

The 10 existing temporary groundwater monitoring wells (BH01, BH03 - BH11) will continue to be sampled on a quarterly basis and submitted for laboratory analysis of Table 915-1 constituents. Kerr-McGee is requesting the removal of destroyed temporary monitoring well BH02 from the groundwater monitoring program, as described in the "Groundwater Monitoring" section of this document.

### 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 December 7, 2020 and February 3, 2021, a total of approximately 7,077 cubic yards of impacted material were removed from the site. Approximately 5,950 cubic yards of impacted material were excavated and transported to the Buffalo Ridge Landfill in Keenesburg, Colorado for disposal. Approximately 1,100 cubic yards of impacted material were excavated and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado. Approximately 27 cubic yards of impacted material were hydro-excavated and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado. Approximately 1,635 barrels of impacted groundwater were removed from the excavation via vacuum truck and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado.

#### 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.

Laboratory analytical results indicate that impacted soils in the excavation area have been remediated to be in full compliance with the COGCC Table 910-1 standards. Prior to backfilling, approximately 990 pounds of OxPure® activated carbon were added to the excavation to mitigate potentially remaining hydrocarbon impacts to groundwater. Quarterly groundwater monitoring is ongoing and will be continued until concentrations remain in compliance with the COGCC Table 915-1 standards. Additional remedial activities may be evaluated, as necessary, to address potentially remaining groundwater impacts. Estimated time to attain NFA is TBD based on the groundwater concentrations, the extent of impacted groundwater, and the efficacy of the selected remedial technologies.

#### Soil Remediation Summary

☐ In Situ

☒ Ex Situ

<input type="checkbox"/> Bioremediation ( or enhanced bioremediation )	<input type="checkbox"/> Yes	Excavate and offsite disposal
<input type="checkbox"/> Chemical oxidation	<input type="checkbox"/> If Yes: Estimated Volume (Cubic Yards)	7077
<input type="checkbox"/> Air sparge / Soil vapor extraction	<input type="checkbox"/> Name of Licensed Disposal Facility or COGCC Facility ID #	149007
<input type="checkbox"/> Natural Attenuation	<input type="checkbox"/> Excavate and onsite remediation	
<input type="checkbox"/> Other	<input type="checkbox"/> Land Treatment	
	<input type="checkbox"/> Bioremediation (or enhanced bioremediation)	
	<input type="checkbox"/> Chemical oxidation	
	<input type="checkbox"/> Other	

### **Groundwater Remediation Summary**

<input type="checkbox"/> No	Bioremediation ( or enhanced bioremediation )
<input type="checkbox"/> No	Chemical oxidation
<input type="checkbox"/> No	Air sparge / Soil vapor extraction
<input type="checkbox"/> Yes	Natural Attenuation
<input type="checkbox"/> Yes	Other      Groundwater removal, OxPure® activated carbon 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.

On July 12 and 13, 2021, 11 temporary groundwater monitoring wells (BH01 - BH11) were installed to further assess the extent of potentially remaining groundwater impacts. Monitoring well BH02 was noted as destroyed on October 29, 2021. Based on groundwater analytical results below COGCC standards during the 3Q2021 sampling event, and points-of-compliance (POC) maintained based on the remaining groundwater monitoring well locations, Kerr-McGee is requesting the removal of destroyed temporary monitoring well BH02 from the groundwater monitoring program. The 10 existing temporary monitoring wells (BH01, BH03 - BH11) 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 BH01 was selected from the Fourth Quarter 2021 monitoring event as a background location for comparison to inorganic groundwater standards in Table 915-1. Based on a comparison to site-specific background concentrations, monitoring wells BH03 - BH07, and BH11 were above COGCC standards for the inorganic constituents in Table 915-1 during the Fourth Quarter 2021 monitoring event. Kerr-McGee will continue to evaluate POC for Table 915-1 standards on a quarterly basis, based on the site-specific local background concentrations. The temporary monitoring well locations are illustrated on Figure 1, and a potentiometric surface contour map for the Fourth Quarter 2021 is presented as Figure 2. Well completion logs for the temporary monitoring wells are provided as Attachment B.

## REMEDATION 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 Monitoring well reduction request

### 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 1,100 cubic yards of hydrocarbon-impacted soil were transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado, for recycling. Approximately 27 cubic yards of hydrocarbon-impacted soil slurry were transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado, for recycling. Approximately 1,635 barrels of hydrocarbon-impacted groundwater were transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado, for recycling.

Volume of E&P Waste (solid) in cubic yards 7077

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

COGCC Disposal Facility ID #, if applicable: 149007

Non-COGCC Disposal Facility: Buffalo Ridge Landfill - Keenesburg, Colorado

Volume of E&P Waste (liquid) in barrels 1635

E&P waste (liquid) description Hydrocarbon-impacted groundwater

COGCC Disposal Facility ID #, if applicable: 434766

Non-COGCC Disposal Facility:

## REMEDATION COMPLETION REPORT

### REMEDATION 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? 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 has been restored to its pre-release grade. Kerr-McGee will conduct reclamation activities in accordance with COGCC 1000 Series Rules.

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. 12/14/2020

Actual Spill or Release date, or date of discovery. 12/07/2020

### **SITE INVESTIGATION DATES**

Date of Initial Actions described in Site Investigation Plan (start date). 12/07/2020

Proposed site investigation commencement. 12/07/2020

Proposed completion of site investigation. \_\_\_\_\_

### **REMEDIAL ACTION DATES**

Proposed start date of Remediation. 12/07/2020

Proposed date of completion of Remediation. \_\_\_\_\_

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 groundwater analytical results below COGCC standards during the 3Q2021 sampling event, and POC maintained based on the remaining groundwater monitoring well locations, Kerr-McGee is requesting the removal of destroyed temporary monitoring well BH02 from the groundwater monitoring program. The remaining temporary groundwater monitoring wells (BH01, BH03 - BH11) will continue to be sampled on a quarterly basis and submitted for laboratory analysis of Table 915-1 constituents. Based on the previously approved reporting frequency, Kerr-McGee will continue to provide annual Form 27-Supplemental updates for this site. The Project Implementation Summary is provided as Attachment C.

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: \_\_\_\_\_

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: \_\_\_\_\_

Date: \_\_\_\_\_

Remediation Project Number: 15868

**COA Type****Description**

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**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**

402882732	LOGS
402882735	SITE MAP
402882736	GROUND WATER ELEVATION MAP
402882739	ANALYTICAL RESULTS
402882742	IMPLEMENTATION SCHEDULE
402882746	ANALYTICAL RESULTS

Total Attach: 6 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)