

State of Colorado
Oil and Gas Conservation Commission

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Report taken by:
Candice (Nikki) Graber

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: <u>KERR MCGEE OIL & GAS ONSHORE LP</u>	Operator No: <u>47120</u>	Phone Numbers Phone: <u>(970) 336-3500</u> Mobile: <u>()</u>
Address: <u>P O BOX 173779</u>		
City: <u>DENVER</u> State: <u>CO</u> Zip: <u>80217-3779</u>		
Contact Person: <u>Phillip Hamlin</u> Email: <u>Phillip_Hamlin@oxy.com</u>		

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: Closure of remediation project

SITE INFORMATION

Yes Multiple Facilities

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

Facility Type: <u>SPILL OR RELEASE</u>	Facility ID: <u>478864</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>SPILL/RELEASE POINT</u>	Latitude: <u>40.076460</u>	Longitude: <u>-104.787821</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>SWSW</u>	Sec: <u>4</u>	Twp: <u>1N</u>	Range: <u>66W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

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 1/4 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. Soil sample analytical data is presented in Table 1, and the soil sample locations are illustrated on Figure 1.

Proposed Groundwater Sampling

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

On December 14, 2020 through January 18, 2021, 3 groundwater samples (GW01 - GW03) were collected from the excavation area and submitted for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX). Additionally, sample GW03 was analyzed for naphthalene, 1,2,4- and 1,3,5-trimethylbenzene (TMB), total dissolved solids (TDS), chloride, and sulfate. Analytical results indicated that BTEX concentrations in samples GW01 and GW02 exceeded COGCC standards. Analytical results indicated that the BTEX, naphthalene, and TMB concentrations in sample GW03 were in compliance with COGCC standards. Quarterly groundwater monitoring was initiated on July 26, 2022, at temporary monitoring wells BH01 - BH11 and was continued at monitoring wells BH01 and BH03 - BH11 for four consecutive quarters. Groundwater analytical data is presented in Table 2. The excavation groundwater sample location is illustrated on Figure 1. The monitoring well locations are illustrated on Figures 2 - 5.

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):

Laboratory analytical reports for the previous four quarters of groundwater monitoring are provided as Attachment A.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

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

NA / ND

-- 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 44
Was extent of groundwater contaminated delineated? Yes
Depth to groundwater (below ground surface, in feet) 8
Number of groundwater monitoring wells installed 11
Number of groundwater samples exceeding 915-1 10

-- 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?

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 for recycling. Approximately 27 cubic yards of impacted material were hydro-excavated and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado for recycling. Approximately 1,635 barrels of groundwater were removed from the excavation via vacuum truck and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado for recycling.

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. 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. Prior to backfilling, approximately 990 pounds of OxPure® activated carbon were added to the excavation to mitigate potentially remaining hydrocarbon impacts to groundwater. Based on the analytical data presented herein, remediation is complete at this site and Kerr-McGee is requesting a No Further Action (NFA) determination for this release.

Soil Remediation Summary

In Situ

_____ Bioremediation (or enhanced bioremediation)
 _____ Chemical oxidation
 _____ Air sparge / Soil vapor extraction
 _____ Natural Attenuation
 _____ Other _____

Ex Situ

Yes _____ Excavate and offsite disposal
 _____ If Yes: Estimated Volume (Cubic Yards) _____ 7077
 _____ Name of Licensed Disposal Facility or COGCC Facility ID # _____ 149007
 _____ Excavate and onsite remediation
 _____ 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 _____ 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, and was removed from the quarterly groundwater monitoring program under an approved reduction request (COGCC Document No. 402882691). The 10 existing temporary monitoring wells (BH01 and BH03 - BH11) were sampled on a quarterly basis and submitted for laboratory analysis of Table 915-1 constituents. Analytical results for the groundwater samples collected from the temporary monitoring wells indicate that the BTEX, naphthalene, and TMB concentrations were in compliance with the COGCC Table 915-1 standards for four consecutive quarters. Cross-gradient and historically compliant groundwater monitoring well BH03 was selected as the site-specific background location for comparison to inorganic groundwater standards in Table 915-1. Based on a comparison to site-specific background concentrations, inorganic constituents in the site monitoring wells were in compliance with the Table 915-1 standards during the Second Quarter 2022 monitoring event, with exception to the TDS and sulfate concentrations in BH04. However, the elevated inorganic concentrations in this monitoring well appear to be related to runoff from an adjacent drainage ditch associated with a new residential development and access road being built at this location, and/or the activated carbon amendment that was added to the groundwater within the excavation area. As such, Kerr-McGee is requesting a No Further Action (NFA) determination for this site. Temporary groundwater monitoring well locations and quarterly groundwater elevation contour maps are illustrated on Figures 2 through 5. Well completion logs for the temporary monitoring wells are provided as Attachment B.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Approved Reporting Schedule:

Quarterly Semi-Annually Annually Other Final Report

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 NFA Request

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.

Operator anticipates the remaining cost for this project to be: \$ 0

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 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 Impacted groundwater

COGCC Disposal Facility ID #, if applicable: 434766

Non-COGCC Disposal Facility:

REMEDIATION COMPLETION REPORT

REMEDIATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? Yes

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. 07/13/2021

REMEDIAL ACTION DATES

Proposed start date of Remediation. 12/07/2020

Proposed date of completion of Remediation. 04/25/2022

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

As described, laboratory analytical data for the soil samples collected from the final lateral and vertical extents of the excavation area were 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. Laboratory analytical data for the groundwater samples collected from the temporary monitoring wells indicated that the BTEX, naphthalene, and TMB concentrations were in compliance with the COGCC Table 915-1 standards for four consecutive quarters. Based on a comparison to site-specific background concentrations, inorganic constituents in the site monitoring wells were in compliance with the Table 915-1 standards during the Second Quarter 2022 monitoring event, with exception to the TDS and sulfate concentrations in BH04. However, the elevated inorganic concentrations in this monitoring well appear to be related to runoff from an adjacent drainage ditch associated with a new residential development and access road being built at this location, and/or the activated carbon amendment that was added to the groundwater within the excavation area. Soil analytical results are summarized in Table 1; groundwater analytical results are summarized in Table 2. Excavation soil and groundwater sample locations are illustrated on Figure 1; temporary monitoring well locations and quarterly groundwater contour maps are illustrated on Figures 2 through 5. Laboratory analytical reports for the previous four quarters of groundwater monitoring are provided as Attachment A; temporary monitoring well completion logs are provided as Attachment B; a project implementation summary is provided as Attachment C. Based on the remediation activities completed at the site and the analytical results presented herein, Kerr-McGee is requesting an NFA determination for this location.

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: 06/22/2022

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: Candice (Nikki) Graber

Date: 07/11/2022

Remediation Project Number: 15868

Condition of Approval

COA Type

Description

	Operator shall abandon the monitoring wells in accordance with DWR regulations within 90 days of the approval of this Form 27.
	Based on the information presented, it appears that no further remedial action is necessary at this time and the COGCC approves the closure request. However, should future conditions at the site indicate contaminant concentrations in soils exceeding COGCC standards or if groundwater is found to be impacted, then further investigation and/or remediation activities may be required. The surface area disturbed by the remediation activity shall be reclaimed in accordance with the 1000 Series Reclamation Rules. For locations with active ongoing oil and gas operations, comply with Rule 1003 interim reclamation requirements and for locations that will no longer have active oil and gas operations, comply with Rule 1004 Final Reclamation requirements.
2 COAs	

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

403067510	FORM 27-SUPPLEMENTAL-SUBMITTED
403067586	LOGS
403067587	SOIL SAMPLE LOCATION MAP
403067588	GROUND WATER ELEVATION MAP
403067589	ANALYTICAL RESULTS
403067590	IMPLEMENTATION SCHEDULE
403067591	ANALYTICAL RESULTS
403067592	ANALYTICAL RESULTS

Total Attach: 8 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
		Stamp Upon Approval

Total: 0 comment(s)