FORM 27 Rev 5/22

State of Colorado
Oil and Gas Conservation Commission

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Document Number: 403252915
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 INFORMATON

Name of Operator: KERR MCGEE OIL & GAS ONSHORE LP Operator No: 47120

Phone Numbers

Address: P O BOX 173779 Phone: (970) 515-1698
City: DENVER State: CO Zip: 80217-3779 Mobile: ( )
Contact Person: Gregory Hamilton Email: Gregory_Hamilton@oxy.com

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 20436 Initial Form 27 Document #: 402787685

PURPOSE INFORMATION

- [ ] Rule 913.c.(1): Pit or Cuttings Trench closure.
- [X] Rule 913.c.(2): Buried or partially buried vessel closure, which will be by removal.
- [X] 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.
- [X] 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.
- [X] 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: LOCATION Facility ID: 323198 API #: County Name: WELD
Facility Name: BIERIG-UPRR-64N66W 35SENE Latitude: 40.270239 Longitude: -104.737533
** correct Lat/Long if needed: Latitude: 40.269559 Longitude: -104.737545
QtrQtr: SENE Sec: 35 Twp: 4N Range: 66W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SM
Most Sensitive Adjacent Land Use Irrigation Canal and Agriculture
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

SITE INVESTIGATION PLAN

TYPE OF WASTE:

[X] **E&P Waste**	[ ] **Other E&P Waste**	[ ] **Non-E&P Waste**
[X] Produced Water	[ ] Workover Fluids	_____
[X] Oil	[ ] Tank Bottoms	
[X] 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 Samples/Laboratory Analytical Results
Yes	SOILS	See attached data.	Soil Samples/Laboratory 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 closure of one aboveground storage tank (AST), one produced water vessel (PWV), one separator, one meter house, and one emission control device (ECD) at the Berig 17-35 & UP42-35 1 O SA Facility and the remediation efforts associated with the Berig 17-35 flowline release. The AST, PWV, separator, meter house, and ECD were permanently removed. Assessment activities began on July 29, 2021. Soil assessment activities were conducted in accordance with COGCC Rule 911.a. A photo log is included as an attachment.

On July 28, 2021, a release daylighting from the subsurface at the Berig 17-35 location was discovered. The impacted soil was discovered while performing a pressure test of the oil dumpline between the separator and the tank at the facility. The release has been controlled. Approximately 3 gallons of oil were released during the pressure test. The release was reported to the COGCC in the Form 19 Initial dated July 29, 2021 (Document No. 402732214). The volume of the release is unknown. The impacted soil was excavated.

PROPOSED SAMPLING PLAN

Proposed Soil Sampling

[X] Will soil samples be collected as part of this investigation? (Number, type (grab/composite), analyses, and locations of samples):

Between July 29, 2021 and June 2, 2022, soil samples were collected from the facility excavation (see Figure 1). The soil samples were field screened for total volatile organic compounds using a photoionization detector (PID). Based on PID readings, select soil samples were submitted for laboratory analysis in accordance with COGCC Rule 911.a. The impacted soil was excavated. Analytical results indicated soil was in full compliance with Table 915-1 standards, or below background, at the extents of the excavation. The PID readings and soil sample results are summarized in Tables 1 and 2, respectively. The laboratory reports are attached.

Proposed Groundwater Sampling

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

On July 29, 2021, four groundwater samples were collected from the facility excavation and flowline potholes and submitted for Table 915-1 analyses. One background groundwater sample was also collected and submitted for Table 915-1 inorganic parameters. Based on the laboratory analytical results, samples GW01 and GW03 exceeded the COGCC Table 915-1 allowable levels for benzene, toluene, xylenes, 1,2,4-trimethylbenzene, and/or 1,3,5-trimethylbenzene. The excavation groundwater sample and background sample locations are depicted on Figure 1. The groundwater sample analytical results are summarized in Table 3.

Proposed Surface Water Sampling

[X] Will surface water samples be collected as part of this investigation? (Number, analyses, and locations of samples):

On August 12, 2021, six ditch water samples (Ditch-01 through Ditch-06) and one surface water sample (SW-01) were collected and submitted for Table 915-1 organic parameters. Results were compared to COGCC Table 915-1 allowable levels for groundwater. All ditch water sample results were non-detect. Toluene was detected in surface water sample SW-01; however, the concentration of 2.57 ug/L is well below the Table 915-1 allowable level for groundwater of 560 ug/L. The surface water sample locations are depicted on Figure 1B. The surface water analytical results are presented in Table 4 and the laboratory report is attached.

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	98	NA / ND --	Highest concentration of TPH (mg/kg) 1468
Number of soil samples exceeeding 915-1	37	NA / ND --	Highest concentration of SAR 421
Was the areal and vertical extent of soil contamination delineated?	Yes		BTEX > 915-1 Yes
Approximate areal extent (square feet)	19886		Vertical Extent > 915-1 (in feet) 13

Groundwater

Number of groundwater samples collected	4	NA / ND --	Highest concentration of Benzene (µg/l) 1480
Was extent of groundwater contaminated delineated?	No	NA / ND --	Highest concentration of Toluene (µg/l) 3070
Depth to groundwater (below ground surface, in feet)	5	NA / ND --	Highest concentration of Ethylbenzene (µg/l) 238
Number of groundwater monitoring wells installed	0	NA / ND --	Highest concentration of Xylene (µg/l) 4560
Number of groundwater samples exceeding 915-1	2	NA / ND NA	Highest concentration of Methane (mg/l)

Surface Water

7 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.

OTHER INVESTIGATION INFORMATION

☐ Were impacts to adjacent property or offsite impacts identified?

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

One tank battery soil background soil sample and two native soil background soil samples were collected for laboratory analysis of specific conductivity (EC), sodium adsorption ratio (SAR), pH, boron, and metals. Laboratory analytical results indicated arsenic is naturally high in the soil used to construct the tank battery and the native soil.

One background groundwater sample was also collected and submitted for Table 915-1 inorganic parameters. Laboratory analytical results indicated sulfate ion is naturally high in the native groundwater.

☐ 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?

Groundwater monitoring wells will be installed to delineate the dissolved-phase plume. The well installation scope of work will be provided in a subsequent Form 27 supplemental report.

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.

Approximately 22,828 bbls of impacted water and 140 CY of impacted soil were transported to the Aggregate Recycle Facility in Weld County, Colorado for recycling. Approximately 15,620 CY of impacted soil were transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado for recycling. Approximately 20 CY of impacted soil was transported to the Front Range Landfill in Erie, Colorado for disposal. Approximately 2,500 CY of impacted soil was transported to the Buffalo Ridge Landfill in Keenesburg, Colorado for disposal. Disposal records are kept on file and are available upon request.

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 impacted soil has been excavated and transported to a licensed disposal facility.

Groundwater monitoring wells will be installed to delineate the dissolved-phase plume. The well installation scope of work will be provided in a subsequent Form 27 supplemental report.

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) 18280
  - Name of Licensed Disposal Facility or COGCC Facility ID # 149007
- No 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.

Groundwater monitoring wells will be installed to delineate the dissolved-phase plume. The well installation scope of work will be provided in a subsequent Form 27 supplemental report.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Approved Reporting Schedule:

[X] 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

[X] Other Facility closure and flowline release investigation update report

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: $

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 22,828 bbls of impacted water and 140 CY of impacted soil were transported to the Aggregate Recycle Facility in Weld County, Colorado for recycling. Approximately 15,620 CY of impacted soil were transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado for recycling.

Volume of E&P Waste (solid) in cubic yards: 18280

E&P waste (solid) description: Impacted Soil

COGCC Disposal Facility ID #, if applicable: 149007

Non-COGCC Disposal Facility: Front Range Landfill in Erie, CO (20 CY); Buffalo Ridge Landfill in Keenesburg, CO (2,500 CY)

Volume of E&P Waste (liquid) in barrels: 22828

E&P waste (liquid) description: Impacted Water

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? 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? No

Is additional groundwater monitoring to be conducted? Yes

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 COGCC 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. 08/25/2021

Actual Spill or Release date, or date of discovery. 06/28/2021

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 06/28/2021

Proposed site investigation commencement. 06/28/2021

Proposed completion of site investigation. 12/31/2023

REMEDIAL ACTION DATES

Proposed start date of Remediation. 06/28/2021

Proposed date of completion of Remediation. 12/30/2027

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: Gregory Hamilton Title: Environmental Consultant

Submit Date: Email: Gregory_Hamilton@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: 20436

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
403282107	ANALYTICAL RESULTS
403286437	PHOTO DOCUMENTATION
403286835	SOIL SAMPLE LOCATION MAP

Total Attach: 3 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)