

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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BOB CHESSON

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 GATHERING LLC	Operator No: 47121	Phone Numbers Phone: (970) 336-3500 Mobile: (970) 515-1604
Address: PO BOX 173779		
City: DENVER	State: CO Zip: 80217	
Contact Person: Chad Gililand	Email: Chad.Gililand@westernmidstream.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 9813 Initial Form 27 Document #: 200440140

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

No Multiple Facilities

Facility Type: SPILL OR RELEASE	Facility ID: 446222	API #: _____	County Name: ARAPAHOE
Facility Name: SPILL/RELEASE POINT		Latitude: 39.665314	Longitude: -104.453886
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: NENE	Sec: 32	Twp: 4S	Range: 63W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SM Most Sensitive Adjacent Land Use Crop Land

Is domestic water well within 1/4 mile? Yes Is surface water within 1/4 mile? No

Is groundwater less than 20 feet below ground surface? No

Other Potential Receptors within 1/4 mile

A livestock grazing area is located approximately 255 feet north of the release location. The nearest domestic water well is located approximately 490 feet north 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	125' (N-S) x 70' (E-W) x 35' bgs	Excavation, soil boring, 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 June 13, 2016, a release from a condensate dump line was discovered during routine operations at the Mitchell Compressor Station. The facility was shut-in, associated infrastructure was repaired, and excavation activities were initiated. Groundwater was not encountered during excavation activities. The COGCC issued Spill/Release Point ID 446222 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 from multiple excavation areas and from eight (8) exploratory soil borings, as described in the Initial Form 27 (COGCC Document No. 200440140). Following dump line repairs and excavation activities, impacted material was left in place adjacent to operational equipment pending facility decommissioning activities.

Proposed Groundwater Sampling

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

Between June 20, 2016 and June 3, 2021, forty-eight (48) temporary monitoring wells (BH02-16 - BH09-16, BH10-18 - BH18-18, BH19-20 - BH42-20, and BH43-21 - BH49-21) were installed to assess the extent of groundwater impacts and for remediation purposes. Quarterly groundwater monitoring was initiated on September 25, 2018 and is ongoing. Light non-aqueous phase liquid (LNAPL) has historically been detected in monitoring wells BH02-16 - BH07-16, BH09-16, BH11-18, BH15-18 - BH17-18, BH24-20, and BH29-20. Monitoring wells without LNAPL present are sampled on a quarterly basis and submitted for laboratory analysis of Table 915-1 constituents. Groundwater analytical data is presented in Table 1. Groundwater sample locations are illustrated on Figure 1. The laboratory analytical report for the Fourth Quarter 2021 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):

Subsurface modeling at the site indicates that additional assessment may be required to better understand the relationship of Spill/Release Point ID 446222 to the adjacent COGCC Remediation Project No. 31, which is managed by a third-party. Additional site assessment and remediation approaches are being considered.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 27

Number of soil samples exceeding 915-1 14

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

Approximate areal extent (square feet) 6300

NA / ND

-- Highest concentration of TPH (mg/kg) 3168

NA Highest concentration of SAR

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 35

Groundwater

Number of groundwater samples collected 261

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet) 35'

Number of groundwater monitoring wells installed 48

Number of groundwater samples exceeding 915-1 239

-- Highest concentration of Benzene (µg/l) 51000

-- Highest concentration of Toluene (µg/l) 14000

-- Highest concentration of Ethylbenzene (µg/l) 69600

-- Highest concentration of Xylene (µg/l) 46800

NA Highest concentration of Methane (mg/l)

Surface Water

0 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?

Groundwater impacted above COGCC standards has been detected in off-site temporary groundwater monitoring wells BH19-20 through BH22-20, BH27-20 through BH31-20, BH33-20, BH34-20, and BH41-20.

☐ 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?

Impacted soil and groundwater remain at the site. The 48 temporary groundwater monitoring wells will continue to be gauged to monitor LNAPL presence and thickness. The temporary monitoring wells without LNAPL present will continue to be sampled on a quarterly basis and submitted for laboratory analysis of Table 915-1 constituents. Eight (8) off-site monitoring wells (BH37-20 through BH40-20, BH44-21 through BH46-21, and BH49-21) installed west of the apparent source area continue to exhibit dry well conditions. Additional temporary groundwater monitoring wells may be installed to obtain downgradient point-of-compliance (POC). Assessment activities are ongoing in this area, to evaluate hydro-geologic conditions and determine if groundwater is present. Additionally, land access for installation of upgradient POC monitoring wells has not been approved, as Kerr-McGee has been unable to contact the adjacent landowner for several years. Remediation strategies to address remaining soil impacts are under evaluation.

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.

On June 13, 2016, approximately 170 cubic yards of impacted material were excavated and transported to the Republic Services Landfill in Commerce City, Colorado for disposal. Impacted soil remains at the site, and was previously inaccessible due to existing facility infrastructure necessary for compressor station operations. The facility was decommissioned in 2019 and 2020, and remediation strategies are under evaluation to address remaining impacted material.

REMEDIAL 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 soil and groundwater remain at the site. Following the initial groundwater monitoring event on August 9, 2016, LNAPL gauging and recovery activities were initiated and are currently ongoing. Two solar-powered LNAPL recovery systems (Spill Busters) were installed at the site on October 25, 2018, to supplement LNAPL recovery activities. To maximize LNAPL recovery, the Spill Busters have been deployed in temporary monitoring wells BH03-16, BH06-16, BH15-18, and BH17-18, based on the observed product thickness during LNAPL gauging activities. To-date, a total of approximately 45 barrels of LNAPL have been removed from select monitoring wells via hand-bailing and Spill Buster recovery activities. Quarterly groundwater monitoring is ongoing and will be continued until concentrations remain in compliance with the COGCC Table 915-1 standards. Remedial alternatives, including in-situ and ex-situ technologies, are being evaluated to address remaining soil and groundwater impacts. Estimated time to attain NFA is TBD based on the groundwater concentrations, the extent of remaining soil and groundwater impacts, and the efficacy of selected remedial technologies.

Soil Remediation Summary

<input type="checkbox"/> In Situ	<input checked="" type="checkbox"/> Ex Situ
_____ Bioremediation (or enhanced bioremediation)	Yes _____ Excavate and offsite disposal
_____ Chemical oxidation	_____ If Yes: Estimated Volume (Cubic Yards) _____ 170
_____ Air sparge / Soil vapor extraction	_____ Name of Licensed Disposal Facility or COGCC Facility ID # _____
_____ 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
_____ Yes	_____ Natural Attenuation
_____ Yes	_____ Other _____ LNAPL Recovery

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.

Between June 20, 2016 and June 3, 2021, 48 temporary monitoring wells (BH02-16 through BH09-16, BH10-18 through BH18-18, BH19-20 through BH42-20, BH43-21 through BH49-21) were installed to assess the extent of groundwater impacts and for remediation purposes. LNAPL gauging and recovery activities will be continued, and the temporary groundwater monitoring wells without LNAPL present 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 BH25-20 was selected from the Fourth Quarter 2021 monitoring event as the site-specific local background location for comparison to inorganic standards in Table 915-1. Based on a comparison to site-specific background concentrations, inorganic constituents were above the Table 915-1 standards in multiple POC monitoring wells 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. Groundwater sample 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. Additional temporary groundwater monitoring wells may be installed to obtain downgradient POC. Assessment activities are ongoing in the off-site area to the west of the apparent source area, to evaluate hydro-geologic conditions and determine if groundwater is present.

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

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:

NA

Volume of E&P Waste (solid) in cubic yards 170

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

COGCC Disposal Facility ID #, if applicable:

Non-COGCC Disposal Facility: Republic Services Landfill - Commerce City, Colorado

Volume of E&P Waste (liquid) in barrels 45

E&P waste (liquid) description LNAPL

COGCC Disposal Facility ID #, if applicable:

Non-COGCC Disposal Facility: Licensed 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? 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 has been restored to its pre-release grade. Kerr-McGee's compressor infrastructure remained on-site following the initial investigation activities completed in 2016, and was subsequently decommissioned in 2019 and 2020. 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.

Actual Spill or Release date, or date of discovery.

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 06/13/2016

Proposed site investigation commencement. 06/13/2016

Proposed completion of site investigation.

REMEDIAL ACTION DATES

Proposed start date of Remediation. 06/13/2016

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

Form 27 update reports will continue to be submitted to the COGCC on a quarterly basis until POC is established based on Table 915-1 standards. 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: Chad Gililand

Title: Staff Environmental Rep

Submit Date: 12/28/2021

Email: Chad.Gililand@westernmidstream.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: BOB CHESSON

Date: 12/28/2021

Remediation Project Number: 9813

Condition of Approval**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**

402910358	FORM 27-SUPPLEMENTAL-SUBMITTED
402910409	LOGS
402910412	SITE MAP
402910415	GROUND WATER ELEVATION MAP
402910416	ANALYTICAL RESULTS
402910417	IMPLEMENTATION SCHEDULE
402910419	ANALYTICAL RESULTS

Total Attach: 7 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)