

State of Colorado
Energy & Carbon Management Commission

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Report taken by:
Laurel Anderson

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 ECOM 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
Address: <u>P O BOX 173779</u>		Phone: <u>(713) 350-4906</u>
City: <u>DENVER</u> State: <u>CO</u> Zip: <u>80217-3779</u>		Mobile: <u>()</u>
Contact Person: <u>Ariana Ochoa</u>	Email: <u>Ariana_Ochoa@oxy.com</u>	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 16278 Initial Form 27 Document #: 402575099

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: <u>WELL</u>	Facility ID: _____	API #: <u>123-10185</u>	County Name: <u>WELD</u>
Facility Name: <u>ELLANORA M ACKERSON GAS UNIT</u>	Latitude: <u>40.075906</u>	Longitude: <u>-104.853925</u>	
2		** correct Lat/Long if needed: Latitude: _____ Longitude: _____	
QtrQtr: <u>SWSE</u>	Sec: <u>2</u>	Twp: <u>1N</u>	Range: <u>67W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

Facility Type: <u>SPILL OR RELEASE</u>	Facility ID: <u>479697</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>Ackerson, Ellanora M GU 2</u>	Latitude: <u>40.075916</u>	Longitude: <u>-104.853929</u>	
		** correct Lat/Long if needed: Latitude: _____ Longitude: _____	
QtrQtr: <u>SWSE</u>	Sec: <u>2</u>	Twp: <u>1N</u>	Range: <u>67W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

SITE CONDITIONS

General soil type - USCS Classifications SM

Most Sensitive Adjacent Land Use Agriculture and
Surface Water

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

Brantner Ditch located approximately 100 feet (ft) west; Water well located approximately 750 ft west-northwest; Occupied buildings approximately 750 ft west-northwest; Groundwater at approximately 8 ft below ground surface (ft bgs).

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- | | | |
|--|--|--|
| <input checked="" type="checkbox"/> E&P Waste | <input type="checkbox"/> Other E&P Waste | <input type="checkbox"/> Non-E&P Waste |
| <input checked="" type="checkbox"/> Produced Water | <input type="checkbox"/> Workover Fluids | _____ |
| <input checked="" type="checkbox"/> Oil | <input type="checkbox"/> Tank Bottoms | |
| <input checked="" type="checkbox"/> Condensate | <input type="checkbox"/> Pigging Waste | |
| <input type="checkbox"/> Drilling Fluids | <input type="checkbox"/> Rig Wash | |
| <input type="checkbox"/> Drill Cuttings | <input type="checkbox"/> Spent Filters | |
| | <input type="checkbox"/> Pit Bottoms | |
| | <input type="checkbox"/> Other (as described by EPA) | _____ |

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
No	GROUNDWATER	No impacts encountered.	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.

On March 16, 2021, historically impacted soil was discovered in the wellhead excavation following the cut and cap of the Ackerson Ellanora M GU 2 wellhead and excavation activities were conducted. The ECMC issued Spill/Release Point ID 479697 for this release. Non-impacted groundwater was encountered in the excavation at approximately 8 feet below ground surface (bgs).

Wellhead plugging and abandonment activities, including the removal of the associated flowline, were completed between March 22, 2021 and April 12, 2021. Soil investigation details were submitted in the Form 27 Supplemental report dated April 18, 2022 (Document No. 402974682) which was approved by the ECMC on April 18, 2021 with one condition of approval (COA) that stated that four quarters of groundwater monitoring be conducted. No additional soil investigation was required and the ECMC agreed at the time that all soils met Table 915-1 standards, as submitted and approved in the Remediation Completion Summary section of the form. Therefore, no further soil investigation is required at this site as previous investigation activities complied with the approved requirements at the time the work was completed.

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 (ECMC Document No. 402974682). Based on the data presented, impacted soils in the excavation area were removed vertically. Per the COA issued by the ECMC on April 14, 2023 for document no. 403312119, the lateral extents of impact were defined by soil samples collected from monitoring wells MW02, MW03, MW04, and MW05. Current soil conditions at this site are in compliance with ECMC Table 915-1 standards and/or within range of site-specific background levels. The final excavation extent is illustrated on Figure 1.

Proposed Groundwater Sampling

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

Non-impacted groundwater was encountered in the wellhead cut and cap excavation at approximately 8 feet bgs. On February 22, 2021, one groundwater sample was collected from the wellhead excavation for Table 915-1 analyses. One background groundwater sample was collected on April 8, 2021 and submitted for Table 915-1 inorganic parameters. Based on the laboratory analytical results and the comparison to the background concentrations of inorganic parameters, groundwater concentrations for all samples were in full compliance with ECMC Table 915-1 allowable levels. The excavation groundwater sample location and the background groundwater sample location are depicted on Figure 1. The groundwater sample analytical results are summarized in Table 2.

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

Number of soil samples collected 7

Number of soil samples exceeding 915-1 6

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

Approximate areal extent (square feet) 225

NA / ND

ND Highest concentration of TPH (mg/kg) _____

-- Highest concentration of SAR 4.08

BTEX > 915-1 No

Vertical Extent > 915-1 (in feet) 11

Groundwater

Number of groundwater samples collected 11

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 3

Number of groundwater monitoring wells installed 5

Number of groundwater samples exceeding 915-1 0

ND Highest concentration of Benzene (µg/l) _____

ND Highest concentration of Toluene (µg/l) _____

ND Highest concentration of Ethylbenzene (µg/l) _____

ND Highest concentration of Xylene (µg/l) _____

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?

Were background samples collected as part of this site investigation?

Six background soil samples were collected for laboratory analysis of pH, specific conductivity (EC), sodium adsorption ration (SAR), boron, and metals. Laboratory analytical results indicated that levels of arsenic, barium, cadmium, lead, and selenium are naturally high in the soil. Background soil analytical results are summarized in Table 1.

One background groundwater sample was also collected and submitted for Table 915-1 inorganic parameters. Background groundwater 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?

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 35 barrels of non-impacted water were removed from the site and transported to Aggregate Recycle Facility (ARF) in Weld County, Colorado, for recycling. Approximately 180 cubic yards of impacted soil were removed from the site and transported to Front Range Landfill in Erie, Colorado, for disposal. Disposal records are kept on file and 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.

On July 21 and July 28, 2023, five groundwater monitoring wells were installed in order to continue to monitor clean groundwater, as required by the COA issued by the ECMC for a previous Form 27-Supplemental (Document No. 402974682). One soil sample was collected from each soil boring and submitted for laboratory analysis of full list Table 915-1 analysis. Results indicated that SAR, pH, arsenic, and/or barium concentrations exceeding the Table 915-1 allowable levels and site-specific background levels were present at the MW03, MW04, and MW05 locations. However, all three monitoring wells are located approximately 20 to 30 feet outside of the final excavation extents that were in compliance with Table 915-1 allowable levels or background levels for SAR, pH, arsenic, and barium and the concentrations are, therefore, considered background levels. The soil analytical results are summarized in Table 1 and the laboratory reports are attached.

Quarterly groundwater monitoring of the newly-installed well network was initiated on August 9, 2023. Due to an issue with laboratory provided bottleware, 1-methylnaphthalene, 2-methylnaphthalene, and lead analyses could not be run from the initial sample volume provided. An additional sampling event was conducted on August 23, 2023 to obtain the additional volume. Analytical results from all monitoring wells indicated that all concentrations were within the ECMC Table 915-1 or Water Quality Control Commission (WQCC) allowable levels.

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) _____ 180
_____ Air sparge / Soil vapor extraction	_____ Name of Licensed Disposal Facility or ECMC Facility ID # _____
_____ Natural Attenuation	_____ Excavate and onsite remediation
_____ Other _____	_____ 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.

In July 2023, groundwater monitoring wells MW01 through MW05 were installed at the site. The soil boring logs and monitoring well completion diagrams are attached.

Groundwater monitoring wells MW01 through MW05 are now being sampled on a quarterly basis for benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, and lead, as approved in the Form 27 supplemental report dated February 10, 2023 (Document No. 403312119). Analytical results from the third quarter of 2023 indicated that all concentrations were within the ECMC Table 915-1 or WQCC allowable levels. The monitoring well locations are depicted on Figure 1. The Groundwater Elevation Contour Map generated using the August 9, 2023 survey data is provided as Figure 2. The groundwater analytical results are summarized in Table 2, and the laboratory analytical reports from the August 2023 groundwater monitoring events are attached.

Monitoring of clean groundwater will continue for three additional quarters. A No Further Action (NFA) request will be submitted after four quarters of compliant groundwater results have been received.

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 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: \$ 35000

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 35 barrels of non-impacted water were removed from the site and transported to Aggregate Recycle Facility (ARF), for recycling.

Volume of E&P Waste (solid) in cubic yards 180

E&P waste (solid) description Historically Impacted Soil

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility: Front Range Landfill in Erie, Colorado

Volume of E&P Waste (liquid) in barrels 0

E&P waste (liquid) description

ECMC Disposal Facility ID #, if applicable:

Non-ECMC 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? Yes

Is additional groundwater monitoring to be conducted? _____

Operator shall comply with the ECMC 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. 03/17/2021

Actual Spill or Release date, or date of discovery. 03/16/2021

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 02/22/2021

Proposed site investigation commencement. 02/22/2021

Proposed completion of site investigation. 07/28/2023

REMEDIAL ACTION DATES

Proposed start date of Remediation. 02/22/2021

Proposed date of completion of Remediation. 06/30/2024

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

Wellhead plugging and abandonment activities, including the removal of the associated flowline, were completed between March 22, 2021 and April 12, 2021. Soil investigation details were submitted in the Form 27 Supplemental report dated April 18, 2022 (Document No. 402974682) which was approved by the ECMC on April 18, 2021 with one condition of approval (COA) that stated that four quarters of groundwater monitoring be conducted. No additional soil investigation was required and the ECMC agreed at the time that all soils met Table 915-1 standards, as submitted and approved in the Remediation Completion Summary section of the form. Therefore, no further soil investigation is required at this site as previous investigation activities complied with the approved requirements at the time the work was completed.

I hereby certify all statements made in this form are to the best of my knowledge true, correct, and complete.

Signed: Ariana Ochoa

Title: Sr. HSE Advisor

Submit Date: 03/14/2024

Email: Ariana_Ochoa@oxy.com

Based on the information provided herein, this Application for Site Investigation and Remediation Workplan complies with ECMC Rules and applicable orders and is hereby approved.

ECMC Approved: Laurel Anderson

Date: 07/25/2024

Remediation Project Number: 16278

COA Type**Description**

COA Type	Description
0 COA	

ATTACHMENT 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
403564239	FORM 27-SUPPLEMENTAL-SUBMITTED
403574179	LOGS
403575818	ANALYTICAL RESULTS
403575819	SITE MAP
403575820	GROUND WATER ELEVATION MAP

Total Attach: 5 Files

General Comments

User Group	Comment	Comment Date
Environmental	Outstanding COAs have not been addressed, see all comments on Document #403810170.	07/25/2024

Total: 1 comment(s)