

State of Colorado  
Energy & Carbon Management Commission

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Document Number:  
403852284  
Receive Date:  
08/29/2024

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 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 &amp; GAS ONSHORE LP</u>	Operator No: <u>47120</u>	<b>Phone Numbers</b>
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>DJRemediation_Forms@oxy.com</u>	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 16127 Initial Form 27 Document #: 402535560

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>LOCATION</u>	Facility ID: <u>318890</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>ELLANORA M ACKERSON GAS UNIT-61N67W 2SWE</u>	Latitude: <u>40.075906</u>	Longitude: <u>-104.853925</u>	
** correct Lat/Long if needed: Latitude: <u>40.075374</u>		Longitude: <u>-104.854371</u>	
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>479714</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>Ackerson Ellanora M GU 2</u>	Latitude: <u>40.075374</u>	Longitude: <u>-104.854371</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

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 40 feet (ft) west; Water wells approximately 650 ft northwest and 1,000 ft north-northeast; Occupied buildings located approximately 700 ft northwest; Agriculture approximately 275 ft north.

## **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	TBD	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.

Decommissioning activities at the Ackerson Ellanora M GU 2 Facility were completed on March 19 and April 8, 2021. Groundwater was encountered during excavation activities. Visual inspection and field screening of soils at one aboveground storage tank (AST), one produced water vessel (PWV), one meter house, one separator, and potholes were conducted following removal activities. Soil samples AST01@5", PWV-E01' @2.5', PWV-B01@4', Flowline01@4', and Flowline02@4' were submitted for laboratory analysis of full list Table 915-1 constituents including benzene, toluene, ethylbenzene, xylenes (BTEX), 1,2,4- and 1,3,5-trimethylbenzenes (TMBs), naphthalene, total petroleum hydrocarbons (TPH)-gasoline range organics (GRO), TPH diesel range organics (DRO), and TPH-oil range organics (ORO), Table 915-1 polycyclic aromatic hydrocarbons (PAHs), pH, electrical conductivity (EC), sodium adsorption ratio (SAR), boron and Table 915-1 metals to determine if a release occurred. Laboratory analytical results for AST03@6"-WP, AST04@6"-WP, PH08@6"-WP, PWV01-S01@2-WP, SEP01-Inlet@6"-WP and SEP02-Inlet@6"-WP indicated that TPH, TMBs, naphthalene, benzo (a)anthracene, 1-methylnaphthalene, 2-methylnaphthalene, arsenic, barium, cadmium, and selenium impacts exceeding ECMC Table 915-1 allowable levels were present at the former facility. As such, a Form 19 Initial/Supplemental Spill/Release Report (Document No. 402644557) was submitted on April 1, 2021 and the ECMC issued Spill/Release Point ID 479714. The soil sample locations are depicted on Figure 1. The PID readings and soil sample results are summarized in Table 1 and Table 2, respectively.

## 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 ):

Between April 7, 2021 and March 22, 2022, excavation activities were conducted to address remaining soil impacts at the former facility location and confirmation soil samples were collected from the base and sidewalls of the final extents of the excavations at depths ranging from 5 ft bgs to 15 ft bgs. The confirmation soil samples were submitted for laboratory analysis of the approved site-specific waste profile developed at the time of excavation, including BTEX, TMBs, TPH, PAHs, EC, SAR, pH, boron, and/or select Table 915-1 metals using ECMC-approved methods. Analytical results indicated that constituent concentrations in the soil samples collected from the final excavation extent were in compliance with the ECMC Table 915-1 standards or within 1.25 times background levels for Table 915-1 metals. The PID readings and soil sample results are summarized in Table 1 and Table 2, respectively.

### Proposed Groundwater Sampling

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

On April 7 and April 8, 2021, groundwater samples were collected from the AST, PWV, and separator excavations 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, groundwater samples PWV-GW01 and Separator-GW01 exceeded the ECMC Table 915-1 allowable levels for benzene, 1,2,4-trimethylbenzene, chloride ion, and/or sulfate ion. 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

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 ):

On March 19, 2021, visual inspections and field screening of soils were conducted at three sidewall locations within the PWV excavation and four potholes at the facility. Based on the inspection and screening results, hydrocarbon-impacted soils were not observed at the soil screening locations. As a result, no soil samples were submitted for laboratory analysis from these areas in accordance with the ECMC Operator Guidance. A photographic log is attached.

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

### Soil

Number of soil samples collected 114

Number of soil samples exceeding 915-1 76

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

Approximate areal extent (square feet) 7700

### NA / ND

-- Highest concentration of TPH (mg/kg) 2071.7

-- Highest concentration of SAR 9.94

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 17

### Groundwater

Number of groundwater samples collected 3

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet) 5

Number of groundwater monitoring wells installed 0

Number of groundwater samples exceeding 915-1 2

-- Highest concentration of Benzene (µg/l) 142

ND Highest concentration of Toluene (µg/l)           

-- Highest concentration of Ethylbenzene (µg/l) 38.5

-- Highest concentration of Xylene (µg/l) 304

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?

Two background soil samples (Native-BG03@8' and Native-BG04@12') were collected from the native material outside of the facility excavation. Four background soil samples (BGE, BGN, BGS, BG01@8') were collected from the native material outside of the Ackerson Ellanora M GU 2 wellhead excavation (Remediation No. 16278). Background soil samples were submitted for laboratory analysis of EC, SAR, pH, boron, and/or 915-1 metals. Laboratory analytical results indicated pH, SAR, boron, arsenic, barium, and selenium are naturally high in the native soil. Background soil sample analytical results are summarized in Table 2.

One background groundwater sample (GWBG01) was also collected and submitted for Table 915-1 inorganic parameters. Background groundwater analytical results are summarized in Table 3.

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 impacts. The proposed well locations are depicted on Figure 2.

Per the conditions of approval (COAs) issued by the ECMC on July 12, 2024 to the Form 27 Supplemental dated April 4, 2024 (Document No. 403526279), a minimum of one soil sample will be collected from each soil boring during monitoring well installation. The soil samples will be submitted for laboratory analysis of full list Table 915-1 constituents. Soil samples will be collected from the interval exhibiting the highest degree of impacts in the unsaturated zone or, in the absence of apparent impacts, from directly above the water table. Additional soil samples will be collected from beneath the previous excavation extent and/or the interval in which organic compounds were previously detected in soil.

Groundwater monitoring well installation within 45 days of the prior Form 27 Supplemental approval, as requested in a COA to Document No. 403526279) was not feasible due to access and driller availability. KMOG will notify the EPS via email at least 48 hours prior to monitoring well installation once access and scheduling allows.

## 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 700 CY of impacted soil was transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado for recycling. Approximately 10,844 CY of impacted soil was transported to the Front Range Landfill in Erie, Colorado for disposal. Approximately 320 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. The excavation areas were backfilled and contoured to match pre-existing conditions.

## 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 data indicate that impacted soil in the excavation areas has been removed and all remaining soil at the extent of the excavations is in compliance with the ECMC Table 915-1 standards or within 1.25 times background levels for Table 915-1 metals. Groundwater was encountered in the facility excavations.

Groundwater monitoring wells will be installed to delineate the dissolved-phase impacts. Per the COAs issued by the ECMC on July 12, 2024 to the Form 27 Supplemental dated April 4, 2024 (Document No. 403526279), a minimum of one soil sample will be collected from each soil boring during monitoring well installation. The soil samples will be submitted for laboratory analysis of full list Table 915-1 constituents. Soil samples will be collected from the interval exhibiting the highest degree of impacts in the unsaturated zone or, in the absence of apparent impacts, from directly above the water table. Additional soil samples will be collected from beneath the previous excavation extent and/or the interval in which organic compounds were previously detected in soil.

## Soil Remediation Summary

In Situ

Ex Situ

\_\_\_\_\_ Bioremediation ( or enhanced bioremediation )

Yes \_\_\_\_\_ Excavate and offsite disposal

\_\_\_\_\_ Chemical oxidation

If Yes: Estimated Volume (Cubic Yards) \_\_\_\_\_ 11864

\_\_\_\_\_ Air sparge / Soil vapor extraction

Name of Licensed Disposal Facility or ECMC Facility ID # \_\_\_\_\_ 149007

\_\_\_\_\_ Natural Attenuation

No \_\_\_\_\_ 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.

Groundwater monitoring wells will be installed to delineate the dissolved-phase impacts. A COA issued by the ECMC on July 12, 2024 to the Form 27 Supplemental dated April 4, 2024 (Document No. 403526279), states that additional analyses should be analyzed in groundwater in addition to the full list Table 915-1 constituents in groundwater; however, additional assessment is needed to finalize the groundwater monitoring scope of work. Following well installation and additional assessment activities, a final monitoring scope of work will be submitted in a subsequent Form 27 Supplemental report for ECMC review and approval.

# 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 Management 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: \$ 20000

## 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 700 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  11864

E&P waste (solid) description Impacted Soil

ECMC Disposal Facility ID #, if applicable:  149007

Non-ECMC Disposal Facility: Front Range Landfill in Erie, CO (10844 CY) and Buffalo Ridge Landfill in Keenesburg, CO (320 CY)

Volume of E&P Waste (liquid) in barrels  20087

E&P waste (liquid) description Impacted Water

ECMC Disposal Facility ID #, if applicable:  434766

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? No

Is additional groundwater monitoring to be conducted? Yes

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. 03/29/2021

Actual Spill or Release date, or date of discovery. 03/29/2021

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 03/19/2021

Proposed site investigation commencement. 03/19/2021

Proposed completion of site investigation. 01/12/2025

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 03/19/2021

Proposed date of completion of Remediation. 06/30/2026

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**

Groundwater monitoring wells will be installed to delineate the dissolved-phase impacts. Per the conditions of approval (COAs) issued by the ECMC on July 12, 2024 to the Form 27 Supplemental dated April 4, 2024 (Document No. 403526279), a minimum of one soil sample will be collected from each soil boring during monitoring well installation. The soil samples will be submitted for laboratory analysis of full list Table 915-1 constituents. Soil samples will be collected from the interval exhibiting the highest degree of impacts in the unsaturated zone or, in the absence of apparent impacts, from directly above the water table. Additional soil samples will be collected from beneath the previous excavation extent and/or the interval in which organic compounds were previously detected in soil.

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A COA issued by the ECMC on July 12, 2024 to the Form 27 Supplemental dated April 4, 2024 (Document No. 403526279), states that additional analyses should be analyzed in groundwater in addition to the full list Table 915-1 constituents in groundwater; however, additional assessment is needed to finalize the groundwater monitoring scope of work. Following well installation and additional assessment activities, a final monitoring scope of work will be submitted in a subsequent Form 27 Supplemental report for ECMC review and approval.

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: 08/29/2024

Email: DJRemediation\_Forms@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: Candice (Nikki) Graber

Date: 10/31/2024

Remediation Project Number: 16127

**COA Type****Description**

	Operator has proposed completion of site investigation 5 months after the 45 days COA applied to Document #403526279.  ECMC approves the proposed remediation work plan. However ECMC does not approve the proposed schedule. The Operator shall implement the proposed work plan upon approval of this Form 27, or propose a site specific timeline for implementation including reasons for specific dates selected.
	Only impacts below Residential Screening Levels may be addressed through groundwater sampling.
2 COAs	

**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**

403852284	INVESTIGATION/REMEDATION WORKPLAN (SUPPLEMENTAL)
403852290	SOIL SAMPLE LOCATION MAP
403852292	PHOTO DOCUMENTATION
403896932	ANALYTICAL RESULTS
403897253	SITE MAP
403978510	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 6 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)