

# State of Colorado Oil and Gas Conservation Commission

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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.

Refer to Rules 340, 905, 906, 907, 908, 909, and 910

### OPERATOR INFORMATION

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

### PROJECT, PURPOSE & SITE INFORMATION

#### PROJECT INFORMATION

Remediation Project #: 12024

Initial Form 27 Document #: 401814675

#### PURPOSE INFORMATION

- |  |  |
|--|--|
| <input type="checkbox"/> 901.e. Sensitive Area Determination                                       | <input checked="" type="checkbox"/> 909.c.(5), Rule 910.b.(4): Remediation of impacted ground water        |
| <input type="checkbox"/> 909.c.(1), Rule 905: Pit or PW vessel closure                             | <input type="checkbox"/> Rule 909.e.(2)A.: Notice completion of remediation in accordance with Rule 909.b. |
| <input checked="" type="checkbox"/> 909.c.(2), Rule 906: Spill/Release Remediation                 | <input type="checkbox"/> Rule 909.e.(2)B.: Closure of remediation project                                  |
| <input type="checkbox"/> 909.c.(3), Rule 907.e.: Land treatment of oily waste                      | <input type="checkbox"/> Rule 906.c.: Director request   |
| <input type="checkbox"/> 909.c.(4), Rule 908.g.: Centralized E&P Waste Management Facility closure | <input type="checkbox"/> Other   |

#### SITE INFORMATION

N Multiple Facilities ( in accordance with Rule 909.c. )

Facility Type: SPILL OR RELEASE	Facility ID: 456515	API #:	County Name: WELD
Facility Name: SPILL/RELEASE POINT		Latitude: 40.262042	Longitude: -104.905178
		** correct Lat/Long if needed: Latitude: 40.262042	Longitude: -104.905178
QtrQtr: NENE	Sec: 5	Twp: 3N	Range: 67W Meridian: 6 Sensitive Area? Yes

#### SITE CONDITIONS

General soil type - USCS Classifications SP

Most Sensitive Adjacent Land Use Cropland

Is domestic water well within 1/4 mile? No

Is surface water within 1/4 mile? No

Is groundwater less than 20 feet below ground surface? Yes

#### Other Potential Receptors within 1/4 mile

Wetlands are located approximately 360 ft northeast.

# 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 Samples/Laboratory Analytical Results
Yes	SOILS	45' (N-S) x 29' (E-W) x 15' bgs	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 August 3, 2018, while rebuilding the WCR Properties 41-5/Spaur 1-5 tank battery, historical impacts were discovered beneath the separators. Based on the groundwater analytical results from sample GW01, a release was reported to the COGCC, and a Form 19 Initial with Supplemental (COGCC Document No. 401726857) was submitted on August, 8, 2018. Site diagrams indicating sample locations, and analytical reports, were previously provided as attachments in a Form 27 Initial (COGCC Document No. 401814675) on November 7, 2018.

## 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 August 3, 2018 and August 9, 2018, impacted soils were excavated. Soil grab samples were collected from each wall of the separator excavation. The soil samples were field screened for volatile organic compounds using a photoionization detector (PID). All soil samples were submitted to Origins Laboratory in Denver, Colorado, for analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX), total petroleum hydrocarbons (TPH) - gasoline range organics (GRO) by USEPA Method 8260C, TPH - diesel range organics and residual range organics (DRO and RRO, respectively) by USEPA Method 8015, electrical conductivity (EC), and pH. Laboratory analytical results for all soil samples indicate that BTEX, TPH, EC, and pH levels are in full compliance with COGCC Table 910-1 allowable concentrations.

### Proposed Groundwater Sampling

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

On August 6, 2018, one groundwater sample (GW01) was collected from the excavation and submitted to Origins Laboratory in Denver, Colorado, for analysis of BTEX by USEPA 8260. The laboratory analytical results indicate that sample GW01 exceeded the COGCC Table 910-1 allowable levels for benzene at 2010 ug/L. On August 7, 2018 an additional groundwater sample (GW02) was collected from the excavation and submitted to Origins Laboratory in Denver, CO for analysis of BTEX by USEPA 8260. The laboratory analytical results indicate that sample GW02 exceeded the COGCC Table 910-1 allowable levels for benzene at 5.2 ug/L.

### 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 9

Number of soil samples exceeding 910-1 2

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

Approximate areal extent (square feet) 1305

### NA / ND

-- Highest concentration of TPH (mg/kg) 4678

NA Highest concentration of SAR

BTEX > 910-1 Yes

Vertical Extent > 910-1 (in feet) 15

### Groundwater

Number of groundwater samples collected 88

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 9'

Number of groundwater monitoring wells installed 11

Number of groundwater samples exceeding 910-1 19

-- Highest concentration of Benzene (µg/l) 3410

-- Highest concentration of Toluene (µg/l) 1.85

-- Highest concentration of Ethylbenzene (µg/l) 747

-- Highest concentration of Xylene (µg/l) 3020

NA Highest concentration of Methane (mg/l)

### Surface Water

0 Number of surface water samples collected

Number of surface water samples exceeding 910-1

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?

☐ 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 460 cubic yards of soil were taken to the Front Range Regional Landfill in Erie, Colorado and approximately 120 cubic yards were taken to the Kerr-McGee Land Treatment Facility in Weld County, Colorado. Minimal groundwater was encountered in the excavation and, therefore, not removed.

## 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.

While backfilling the excavation, 200 pounds of COGAC™, a carbon-based groundwater remediation product, was applied to the clean backfill to mitigate remaining hydrocarbon impacts in groundwater. The safety data sheet for COGAC was provided in a previously submitted F27s (COGCC Document No. 402447871).

## 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) \_\_\_\_\_ 580

Name of Licensed Disposal Facility or COGCC Facility ID # \_\_\_\_\_

\_\_\_\_\_ Excavate and onsite remediation

\_\_\_\_\_ Land Treatment

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

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

\_\_\_\_\_ Other \_\_\_\_\_

## Groundwater Remediation Summary

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

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

No \_\_\_\_\_ Air sparge / Soil vapor extraction

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

Yes \_\_\_\_\_ Other Chemically Oxygenated  
Granular Activated Carbon  
(COGAC™) 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.

In November of 2018 and March of 2019, eight groundwater monitoring wells (MW01 - MW08) were installed. In October of 2019, three additional groundwater monitoring wells (MW09 - MW11) were installed in order to establish a downgradient point of compliance. The groundwater samples were submitted for BTEX by United States Environmental Protection Agency Method 8260D through the November 2020 monitoring event. Per the January 15, 2021 rule changes, groundwater samples were submitted for the full list of analytes for groundwater in Table 915-1 as of the February 2021 monitoring event. A groundwater elevation contour map from the August 10, 2020, November 10, 2020, and February 17, 2021 sampling events are provided as Figures 1 - 3. Groundwater sample analytical results are summarized in Table 1, and the laboratory reports are provided in Attachment A.

Cross-gradient and historically compliant groundwater monitoring well MW07 was selected from the First 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, point-of-compliance (POC) monitoring wells MW10 and MW11 were above the Table 915-1 standard for inorganic parameters during the First 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 sampling will continue until concentrations remain in full compliance with the COGCC Table 915-1 standards for four consecutive quarters.

## REMEDIATION PROGRESS UPDATE

### PERIODIC REPORTING

Frequency: ☐ Quarterly ☐ Semi-Annually ☒ Annually ☐ Other \_\_\_\_\_

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:

Approximately 120 cubic yards of petroleum hydrocarbon impacted soil was transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado for recycling.

Volume of E&P Waste (solid) in cubic yards \_\_\_\_\_ 580

E&P waste (solid) description \_\_\_\_\_ Petroleum hydrocarbon impacted soil

COGCC Disposal Facility ID #, if applicable: \_\_\_\_\_

Non-COGCC Disposal Facility: Front Range Landfill, Erie, CO and  
Kerr-McGee Land Treatment Facility  
in Weld County, CO

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

E&P waste (liquid) description \_\_\_\_\_

COGCC Disposal Facility ID #, if applicable: \_\_\_\_\_

Non-COGCC Disposal Facility: \_\_\_\_\_

## REMEDIATION COMPLETION REPORT

### REMEDIATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? No \_\_\_\_\_

Do all soils meet Table 910-1 standards? Yes \_\_\_\_\_

Does the previous reply indicate consideration of background concentrations? No \_\_\_\_\_

Are the only residual soil impacts pH, SAR, or EC at depths greater than 3 feet below ground surface? \_\_\_\_\_

Does Groundwater meet Table 910-1 standards? No \_\_\_\_\_

Is additional groundwater monitoring to be conducted? Yes \_\_\_\_\_

## 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 was restored to its pre-release grade. The Kerr-McGee production facility remains at this site.

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 approve the seed mix? \_\_\_\_\_

If NO, does the seed mix comply with local soil conservation district recommendations? \_\_\_\_\_

## IMPLEMENTATION SCHEDULE

### **PRIOR DATES**

Date of Surface Owner notification/consultation, if required. 08/07/2018

Actual Spill or Release date, if known. \_\_\_\_\_

### **SITE INVESTIGATION DATES**

Date of Initial Actions described in Site Investigation Plan (start date). 08/03/2018

Date of commencement of Site Investigation. 08/03/2018

Date of completion of Site Investigation. 11/01/2019

### **REMEDIAL ACTION DATES**

Date of commencement of Remediation. 08/03/2018

Date of completion of Remediation. \_\_\_\_\_

### **SITE RECLAMATION DATES**

Date of commencement of Reclamation. \_\_\_\_\_

Date of completion of Reclamation. \_\_\_\_\_

### **OPERATOR COMMENT**

This form has been prepared to update the COGCC on groundwater remediation progress at this location via COGCC's rule 913.e. (2) and (3). Groundwater monitoring wells will be sampled on a quarterly basis and submitted for laboratory analysis until concentrations remain in full compliance with the COGCC Table 915-1 standards for four consecutive quarters. As approved in COGCC document No. 402236848, subsequent Form 27 Supplemental documents will be submitted on an annual basis as a groundwater monitoring report update.

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

Signed: Phil Hamlin

Title: Sr. Env. Rep.

Submit Date: \_\_\_\_\_

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: \_\_\_\_\_

Date: \_\_\_\_\_

Remediation Project Number: 12024

### **COA Type**

### **Description**

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## **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**

402653229	GROUND WATER ELEVATION MAP
402653232	GROUND WATER ELEVATION MAP
402653235	GROUND WATER ELEVATION MAP
402653236	ANALYTICAL RESULTS
402653237	ANALYTICAL RESULTS

Total Attach: 5 Files

## **General Comments**

### **User Group**

### **Comment**

### **Comment Date**

		Stamp Upon Approval
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Total: 0 comment(s)