

State of Colorado Oil and Gas Conservation Commission

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Report taken by:

PETER GINTAUTAS

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

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 9266 Initial Form 27 Document #: 200437398

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: <u>SPILL OR RELEASE</u>	Facility ID: <u>442349</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>SPILL/RELEASE POINT</u>		Latitude: <u>40.103566</u>	Longitude: <u>-104.845464</u>
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: <u>SWSW</u>	Sec: <u>25</u>	Twp: <u>2N</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 Irrigation Ditch and Occupied Building

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

Water well approximately 350 feet (ft) northeast, surface water approximately 225 ft east, livestock approximately 390 ft southeast, building approximately 350 ft northeast, and excavation groundwater approximately 5 ft below ground surface (bgs).

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/Lab Analysis
Yes	SOILS	36ft x 35ft x 6ft bgs	Soil Samples/Lab 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.

During abandonment activities at the Harold R Mixon Gas Unit-62N67W/25SWSW tank battery, petroleum hydrocarbon impacted groundwater was encountered while removing a produced water sump. There were no indications that the dump lines or produced water sump were leaking. The volume of the release is unknown. Groundwater was encountered in the excavation at approximately 5 feet bgs. The petroleum hydrocarbon impacted soil was excavated.

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):

On July 1 and 2, 2015, at the time of the excavation, six confirmation sidewall soil samples (N01@4', E01@4', E02@4', S01@4', W01@4', and W02@4') were collected from the excavation and submitted for laboratory analysis of total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and total xylenes (BTEX), pH, and electrical conductivity (EC). Laboratory analytical results indicated that TPH, BTEX, pH, and EC levels were in full compliance with Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1 allowable levels at the excavation extent.

Proposed Groundwater Sampling

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

On July 1, 2015, one groundwater sample was collected and submitted for laboratory analysis BTEX. Laboratory analytical results received on July 2, 2015, indicated that benzene and total xylenes concentrations exceeded the COGCC allowable levels. The excavation groundwater sample location is depicted on Figure 1. The groundwater sample analytical results are summarized in Table 1.

Groundwater monitoring has been conducted on a quarterly basis since August 2015.

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 6

Number of soil samples exceeding 910-1 0

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

Approximate areal extent (square feet) 1260

NA / ND

-- Highest concentration of TPH (mg/kg) 81

NA Highest concentration of SAR

BTEX > 910-1 No

Vertical Extent > 910-1 (in feet) 0

Groundwater

Number of groundwater samples collected 113

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 2'

Number of groundwater monitoring wells installed 7

Number of groundwater samples exceeding 910-1 14

-- Highest concentration of Benzene (µg/l) 972

ND Highest concentration of Toluene (µg/l)

-- Highest concentration of Ethylbenzene (µg/l) 639

-- Highest concentration of Xylene (µg/l) 1840

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? Yes _____

SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

Approximately 280 cubic yards of impacted soil were removed from the excavation and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado, for disposal. The impacted soil was excavated into the capillary and phreatic zones to address potential hydrocarbon impacts that may have been present below the current groundwater table due to seasonal fluctuations. The general site layout and excavation footprint are depicted on the Site Map provided as Figure 1.

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, 100 pounds of COGAC®, a carbon-based bioremediation product designed to capture and degrade petroleum hydrocarbons via chemical oxidation and passive bio-stimulation, were applied to the open excavation.

Due to persistent, elevated benzene concentrations in monitoring well MW02R, Kerr-McGee contracted LT Environmental, Inc. (LTE) to design and implement an air sparge program to remediate the residual dissolved-phase BTEX impacts to groundwater. Kerr-McGee submitted an Underground Injection Control (UIC) Permit Application to Region 8 of the United States Environmental Protection Agency (USEPA) on April 5, 2019. The application was subsequently approved by the USEPA on May 7, 2019.

Installation of the full-scale AS system occurred in September 2019, and the system was started up on October 1, 2019. The system last ran on January 31, 2020; site-wide compliance was achieved in the February 2020 sampling event. The system is comprised of seven AS wells (AS01 through AS07) connected by a combination of surface and subsurface high-density polyethylene piping to a diesel-powered, tow-behind air compressor. The air compressor is an Atlas Copco XAS 185 capable of providing up to 185 cubic feet per minute (cfm). The remediation system included valves at all the AS wellheads to allow for uninterrupted flow control, measurement, and adjustment. The AS wells are depicted on the Site Map attached as Figure 1. The boring logs for AS01 through AS07 is included as an attachment.

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) _____ 280

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

Yes Bioremediation (or enhanced bioremediation)

Yes Chemical oxidation

No Air sparge / Soil vapor extraction

Yes Natural Attenuation

Yes Other 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.

Groundwater monitoring wells MW01 through MW06 are sampled on a quarterly basis and submitted for laboratory analysis of BTEX by USEPA Method 8260D. Groundwater monitoring will continue on a quarterly basis. The monitoring well locations are depicted on Figure 1. The Groundwater Elevation Contour Map generated using the May 2020 survey data is provided as Figure 2. The groundwater analytical results are summarized in Table 1, and the laboratory analytical reports for the August 2019, November 2019, February 2020, and May 2020 groundwater monitoring events are attached.

Groundwater monitoring will continue on a quarterly basis until a No Further Action status request is warranted.

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 280 cubic yards of petroleum hydrocarbon impacted soil were transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado.

Volume of E&P Waste (solid) in cubic yards _____ 280

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

COGCC Disposal Facility ID #, if applicable: _____ 149007

Non-COGCC Disposal Facility: _____

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? Yes _____

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 Kerr-McGee facility was deconstructed. The site was restored to its pre-release grade.

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. 07/02/2015

Actual Spill or Release date, if known. 07/02/2015

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 07/01/2015

Date of commencement of Site Investigation. 07/01/2015

Date of completion of Site Investigation. 08/11/2016

REMEDIAL ACTION DATES

Date of commencement of Remediation. 07/02/2015

Date of completion of Remediation.

SITE RECLAMATION DATES

Date of commencement of Reclamation.

Date of completion of Reclamation.

OPERATOR COMMENT

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

Signed: Phil Hamlin

Title: Senior Environmental Rep.

Submit Date: 07/23/2020

Email: Phil_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: PETER GINTAUTAS

Date: 07/27/2020

Remediation Project Number: 9266

COA Type

Description

	Submit reports of site investigation and progress of remediation including results of sampling and analysis on an annual basis or more often until remediation is closed.
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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.

<u>Att Doc Num</u>	<u>Name</u>
402440774	FORM 27-SUPPLEMENTAL-SUBMITTED
402440791	GROUND WATER ELEVATION MAP
402442788	ANALYTICAL RESULTS
402442792	LOGS
402443231	SITE MAP

Total Attach: 5 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
		Stamp Upon Approval

Total: 0 comment(s)