

State of Colorado
Oil and Gas Conservation Commission

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Report taken by:
CHRIS CANFIELD

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
Address: <u>P O BOX 173779</u>		
City: <u>DENVER</u>	State: <u>CO</u>	Zip: <u>80217-3779</u>
Contact Person: <u>Phillip Hamlin</u>	Email: <u>Phillip_Hamlin@oxy.com</u>	
		Phone: <u>(970) 336-3500</u>
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PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 9106 Initial Form 27 Document #: 2143456

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>439681</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>SPILL/RELEASE POINT</u>	Latitude: <u>40.040113</u>	Longitude: <u>-104.872339</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>SWNE</u>	Sec: <u>22</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 Crop Land

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

Retention ponds are located approximately 940 feet southeast and 1,000 feet west of the release location. A creek is located approximately 1,080 feet southeast of the release location. The nearest domestic water well is located approximately 1,110 feet east of the release location. Multiple buildings and livestock holding pens are located within ¼ mile of the release location.

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 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
Yes	GROUNDWATER	See attached data	Groundwater sampling and laboratory analysis
Yes	SOILS	58' (E-W) x 40' (N-S) x 10' bgs	Excavation, 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 October 30, 2014, historical impacts were discovered during tank battery reconstruction activities at the Albert Sack Unit 1 production facility, and excavation activities were initiated. Groundwater was encountered in the excavation area at approximately 10 feet below ground surface (bgs). The COGCC issued Spill/Release Point ID 439681 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 as described in the Initial Form 27 (COGCC Document No. 2143456), and a previous Form 27-Supplemental update (COGCC Document No. 401563094). Based on the data presented, impacted soils in the excavation area were remediated to be in full compliance with the COGCC Table 910-1 standards.

Proposed Groundwater Sampling

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

Between April 2, 2015 and January 11, 2021, a total of forty-one (41) temporary groundwater monitoring wells were installed to further assess the extent of groundwater impacts and for remediation purposes. All monitoring wells, with the exception of BH05R2 and BH16, were temporarily abandoned for spring agricultural and seeding considerations during the First Quarter 2021. Groundwater samples are collected from the temporary monitoring wells on a quarterly basis and have been analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX). Quarterly groundwater monitoring was initiated on April 14, 2015 and is ongoing at existing monitoring wells BH05R2 and BH16. Groundwater analytical data is presented in Table 1. The groundwater sample locations are illustrated on Figure 1. The laboratory analytical reports for the previous two quarters of groundwater monitoring are 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):

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 15
Number of soil samples exceeding 910-1 5
Was the areal and vertical extent of soil contamination delineated? Yes
Approximate areal extent (square feet) 1020

NA / ND

-- Highest concentration of TPH (mg/kg) 1908
NA Highest concentration of SAR
BTEX > 910-1 Yes
Vertical Extent > 910-1 (in feet) 10

Groundwater

Number of groundwater samples collected 206
Was extent of groundwater contaminated delineated? Yes
Depth to groundwater (below ground surface, in feet) 8'
Number of groundwater monitoring wells installed 41
Number of groundwater samples exceeding 910-1 58

-- Highest concentration of Benzene (µg/l) 3140
-- Highest concentration of Toluene (µg/l) 1400
-- Highest concentration of Ethylbenzene (µg/l) 839
-- Highest concentration of Xylene (µg/l) 9310
NA Highest concentration of Methane (mg/l)

Surface Water

0 Number of surface water samples collected
0 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?

Impacted groundwater has historically been detected in off-site temporary groundwater monitoring wells BH09, BH09R, BH09R2, BH11R, and BH11R3.

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?

Hydrocarbon-impacted groundwater remains at the site. The temporary groundwater monitoring wells will continue to be sampled on a quarterly basis and submitted for laboratory analysis of BTEX, naphthalene, 1,2,4- and 1,3,5-trimethylbenzene (TMB), chloride, sulfate, and total dissolved solids, (TDS) until concentrations remain in full compliance with the COGCC Table 915-1 standards for four consecutive quarters. Access is currently being considered.

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.

Between October 30 and November 14, 2014, approximately 500 cubic yards of impacted material were excavated and transported to the Front Range Landfill in Erie, Colorado for disposal. Approximately 80 barrels of impacted groundwater were removed from the excavation area via vacuum truck and transported to a licensed disposal facility.

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 soils in the excavation area have been remediated to be in full compliance with the COGCC Table 910-1 standards. Prior to backfilling, approximately 264 pounds of OxPure® activated carbon were added to the excavation to mitigate remaining hydrocarbon impacts in groundwater. Air sparge / enhanced fluid recovery (AS/EFR) were selected as remedial technologies to address remaining soil and groundwater impacts. Bi-weekly mobile AS/EFR events were conducted at the site between October 19, 2016 and January 26, 2018, under an approved USEPA Underground Injection Control (UIC) permit application. A total of approximately 233 barrels of impacted groundwater were removed during AS/EFR activities. In January 2018, quarterly groundwater monitoring and AS/EFR events were suspended, pending the construction of a well pad and production facility at this location. Tank battery reconstruction activities were completed in February 2019 and replacement temporary monitoring wells were subsequently installed. Quarterly groundwater monitoring is ongoing and will be continued until concentrations remain in full compliance with the COGCC Table 915-1 standards for four consecutive quarters. Additional remedial activities may be evaluated, as necessary, to address remaining groundwater impacts. Estimated time to attain NFA is TBD based on the groundwater concentrations, the extent of impacted groundwater, and the efficacy of the selected remedial technologies.

Soil Remediation Summary

In Situ

Ex Situ

_____ Bioremediation (or enhanced bioremediation)

Yes _____ Excavate and offsite disposal

_____ Chemical oxidation

If Yes: Estimated Volume (Cubic Yards) _____ 500

_____ 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

Yes _____ Air sparge / Soil vapor extraction

Yes _____ Natural Attenuation

Yes _____ Other _____
Groundwater removal, OxPure®
activated carbon application,
enhanced fluid 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 April 2, 2015 and January 11, 2021, a total of 41 temporary groundwater monitoring wells (BH01 - BH16, BH01R, BH02R, BH05R, BH08R - BH15R, BH01R2, BH02R2, BH05R2, BH08R2 - BH15R2, BH02R3, BH10R3, and BH11R3) were installed to further assess the extent of groundwater impacts and for remediation purposes. All monitoring wells, with the exception of BH05R2 and BH16, were temporarily abandoned for spring agricultural and seeding considerations during the First Quarter 2021. Access is currently being considered. Temporary groundwater monitoring wells will be sampled on a quarterly basis and submitted for laboratory analysis of BTEX, naphthalene, TMB, chloride, sulfate, and TDS until concentrations remain in full compliance with the COGCC Table 915-1 standards for four consecutive quarters. Kerr-McGee will continue to evaluate points-of-compliance (POC) for Table 915-1 on a quarterly basis, based on the site-specific local background concentrations. The current and former temporary monitoring well locations are illustrated on Figure 1, and a potentiometric surface contour map for the First Quarter 2021 is presented as Figure 2. Well completion logs for the temporary monitoring wells are provided as Attachment B.

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:

NA

Volume of E&P Waste (solid) in cubic yards 500

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

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: Front Range Landfill - Erie, Colorado

Volume of E&P Waste (liquid) in barrels 313

E&P waste (liquid) description Hydrocarbon-impacted groundwater

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: Licensed 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 has been restored to its pre-release grade. Kerr-McGee's production facility infrastructure remains on 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. _____

Actual Spill or Release date, if known. _____

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 10/30/2014

Date of commencement of Site Investigation. 10/30/2014

Date of completion of Site Investigation. _____

REMEDIAL ACTION DATES

Date of commencement of Remediation. 10/30/2014

Date of completion of Remediation. _____

SITE RECLAMATION DATES

Date of commencement of Reclamation. _____

Date of completion of Reclamation. _____

OPERATOR COMMENT

The extent of groundwater impacts has been fully delineated based on Table 910-1 standards as of the January 2021 groundwater monitoring event. 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: Phillip Hamlin

Title: Senior Environmental Rep

Submit Date: 03/26/2021

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: CHRIS CANFIELD

Date: 04/02/2021

Remediation Project Number: 9106

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.

<u>Att Doc Num</u>	<u>Name</u>
402635213	FORM 27-SUPPLEMENTAL-SUBMITTED
402635424	GROUND WATER SAMPLE LOCATION
402635425	GROUND WATER ELEVATION MAP
402635427	ANALYTICAL RESULTS
402635428	ANALYTICAL RESULTS
402637908	LOGS
402640228	OTHER

Total Attach: 7 Files

General Comments

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

Total: 0 comment(s)