FORM 27 Rev 5/22

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203
Phone: (303) 894-2100 Fax: (303) 894-2109

Document Number: 403073882
Receive Date: 06/20/2022
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 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.
Closure request is not available for an Initial Site Investigation and Remediation Workplan.

OPERATOR INFORMATON

Name of Operator: KERR MCGEE OIL & GAS ONSHORE LP Operator No: 47120
Address: P O BOX 173779
City: DENVER State: CO Zip: 80217-3779
Contact Person: Gregory Hamilton Email: Gregory_Hamilton@oxy.com

Phone Numbers
Phone: (970) 336-3500
Mobile: (970) 515-1698

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 22660 Initial Form 27 Document #: 402980103

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.
- [X] 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: LOCATION Facility ID: 327165 API #: County Name: WELD
Facility Name: BUFFALO GARDENS U-62N68W 13NESE Latitude: 40.136514 Longitude: -104.945471
** correct Lat/Long if needed: Latitude: Longitude:
QtrQtr: NESE Sec: 13 Twp: 2N Range: 68W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE Facility ID: 481346 API #: County Name: WELD
Facility Name: Buffalo Gardens U #13-4J Historic Latitude: 40.137428 Longitude: -104.944472
** correct Lat/Long if needed: Latitude: Longitude:
QtrQtr: NESE Sec: 13 Twp: 2N Range: 68W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SC

Most Sensitive Adjacent Land Use Residential

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

The nearest occupied building is located approximately 70 feet east of the site.
Wetlands are located approximately 175 feet north of the site.
Surface water is located approximately 440 feet north of the site.
The nearest domestic water well is located approximately 690 feet northeast of the site.
A livestock holding pen is located approximately 1,225 feet north of the site.

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- [X] **E&P Waste**
  - [X] Produced Water
  - [X] Oil
  - [X] Condensate
  - [ ] Drilling Fluids
  - [ ] Drill Cuttings
- [ ] **Other E&P Waste**
  - [ ] Workover Fluids
  - [ ] Tank Bottoms
  - [ ] Pigging Waste
  - [ ] Rig Wash
  - [ ] Spent Filters
  - [ ] Pit Bottoms
  - [ ] Other (as described by EPA) _____
- [ ] **Non-E&P Waste** _____

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
No	GROUNDWATER	No impacts encountered	Groundwater sampling and laboratory analysis
Yes	SOILS	~140' (N-S) x ~120' (E-W) x 12' 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 December 13, 2021, a historical release of an unknown volume was discovered during reclamation activities at the previously decommissioned Buffalo Gardens U #13-4J Production Facility, and excavation activities were initiated. Groundwater has been encountered in various excavation areas at depths ranging from approximately 3.5 to 7.5 feet below ground surface (bgs). The initial confirmation soil samples collected from the excavation areas on December 15 through 30, 2022 were selected for waste characterization purposes and were submitted for laboratory analysis of the full Table 915-1 analytical suite, using COGCC-approved methods appropriate for detecting the target analytes. Analytical results indicated that soil impacts due to total petroleum hydrocarbons (TPH), benzene, 1,2,4- and 1,3,5-trimethylbenzene (TMB), polycyclic aromatic hydrocarbons (PAHs), select total metals (As, Ba, Cd, Pb, and/or Se), specific conductivity (EC), and/or sodium adsorption ratio (SAR) were present in the various excavation areas. The COGCC issued Spill/Release Point 481346 for this release (Form 19 Document No. 402897368). Excavation and site assessment activities are currently ongoing, and will be summarized in a forthcoming Form 27-Supplemental update. Soil and groundwater sample location and field screening data are presented in Table 1. The current excavation extents and associated soil and groundwater sample locations are illustrated on Figures 1 and 2.

PROPOSED SAMPLING PLAN

Proposed Soil Sampling

[X] Will soil samples be collected as part of this investigation? (Number, type (grab/composite), analyses, and locations of samples):

Soil samples have been collected from the base and sidewalls of various excavation areas during removal of the remaining infrastructure, at depths ranging from approximately 3 to 12 feet bgs. Based on the initial waste characterization results, subsequent confirmation soil samples have been submitted for laboratory analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), TMB, and TPH - gasoline range organics (GRO: C6-C10) by United States Environmental Protection Agency (USEPA) Method 8260D, TPH - diesel and oil range organics (DRO: C10-C28 & ORO: C28-C40) by USEPA Method 8015D, PAHs by USEPA Method 8270D, select total metals by USEPA Method 6020B, and/or EC and SAR by saturated paste method. Excavation and site assessment activities to address remaining soil impacts are currently ongoing. The current excavation extents and associated soil sample locations are illustrated on Figures 1 and 2. Soil analytical results are summarized in Tables 2 through 5.

Proposed Groundwater Sampling

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

Groundwater was encountered in various excavation areas at depths ranging from approximately 3.5 to 7.5 feet below ground surface (bgs). Three groundwater samples (GW01, GW02, and FL-GW01) were collected from the excavation areas and submitted for laboratory analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, 1,2,4- and 1,3,5-TMB by USEPA Method 8260D. Groundwater analytical results indicate that constituent concentrations in the three groundwater samples were in compliance with the COGCC Table 915-1 standards. The excavation groundwater sample locations are illustrated on Figures 1 and 2, and groundwater analytical data is presented in Table 6.

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):

Excavation and site assessment activities to address remaining soil impacts are currently ongoing, and will be summarized in a forthcoming Form 27-Supplemental update. The laboratory analytical reports for the samples collected since the previous Form 27-Initial was submitted (COGCC Document No. 402980103) was submitted are provided as Attachment A. The field notes and a photographic log are provided as Attachment B.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected: 85
Number of soil samples exceeeding 915-1: 48
Was the areal and vertical extent of soil contamination delineated? No
Approximate areal extent (square feet): 4600

NA / ND

-- Highest concentration of TPH (mg/kg): 831.2
-- Highest concentration of SAR: 26.4
BTEX > 915-1: Yes
Vertical Extent > 915-1 (in feet): 12

Groundwater

Number of groundwater samples collected: 3
Was extent of groundwater contaminated delineated? Yes
Depth to groundwater (below ground surface, in feet): 6
Number of groundwater monitoring wells installed: 0
Number of groundwater samples exceeding 915-1: 0

-- Highest concentration of Benzene (µg/l): 1.99
-- Highest concentration of Toluene (µg/l): 1.88
-- Highest concentration of Ethylbenzene (µg/l): 9.96
-- Highest concentration of Xylene (µg/l): 4.06
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?

Background soil samples BG01@4' - BG04@4', BG01@9' - BG04@9', BG05@5' - BG07@5', BH06@10', BH07@10, and BG08@11' - BG10@11' were collected from native material adjacent to the excavation areas. The background soil samples were submitted for laboratory analysis of the Soil Suitability for Reclamation Parameters and Table 915-1 metals using standard methods appropriate for detecting the target analytes in Table 915-1. Analytical results for the background soil samples are presented in Tables 4 and 5.

☐ 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?

Impacted soil remains at the site. Excavation and site assessment activities to address remaining soil impacts are currently ongoing and will be summarized in a forthcoming Form 27-Supplemental update.

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.

To-date, approximately 860 cubic yards of impacted material have been removed from the excavation areas and transported to the Front Range Landfill in Erie, Colorado for disposal; approximately 20 cubic yards of impacted material have been removed from the excavation areas and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado for recycling; approximately 10 cubic yards of impacted material have been removed from the excavation areas and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado for recycling. Following the collection of groundwater samples, approximately 2,186 barrels of groundwater have been removed from the excavation areas via vacuum truck, for sidewall stability and backfilling purposes, and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado for recycling. Excavation and site assessment activities to address remaining soil impacts are currently ongoing and will be summarized in a forthcoming Form 27-Supplemental update.

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.

Impacted soil remains at the site. Excavation and site assessment activities to address remaining soil impacts are currently ongoing and will be summarized in a forthcoming Form 27-Supplemental update. Estimated time to attain NFA is TBD, based on the extent of impacted soil.

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) 890
  - 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

- ____ 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.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Approved Reporting Schedule:

[X] 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

[X] Other Project status update

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 Colorado Oil and Gas Conservation 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:

To-date, approximately 20 cubic yards of impacted material have been removed from the excavation areas and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado for recycling; approximately 10 cubic yards of impacted material have been removed from the excavation areas and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado for recycling. To-date, approximately 2,186 barrels of groundwater have been removed from the excavation areas via vacuum truck and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado for recycling.

Volume of E&P Waste (solid) in cubic yards 890

E&P waste (solid) description Impacted soil

COGCC Disposal Facility ID #, if applicable: 149007

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

Volume of E&P Waste (liquid) in barrels 2186

E&P waste (liquid) description Groundwater

COGCC Disposal Facility ID #, if applicable: 434766

Non-COGCC 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? No

Does the previous reply indicate consideration of background concentrations?

Does Groundwater meet Table 915-1 standards? Yes

Is additional groundwater monitoring to be conducted?

Operator shall comply with the COGCC 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.

Following the completion of excavation and assessment activities, the site will be restored to its pre-release grade and the site will be reclaimed in accordance with COGCC 1000 Series Reclamation Rules.

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 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. 12/14/2021

Actual Spill or Release date, or date of discovery. 12/13/2021

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 12/13/2021

Proposed site investigation commencement. 12/13/2021

Proposed completion of site investigation.

REMEDIAL ACTION DATES

Proposed start date of Remediation. 12/13/2021

Proposed date of completion of Remediation.

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

Excavation and site assessment activities to address remaining soil impacts are currently ongoing and will be summarized in a forthcoming Form 27-Supplemental update. Form 27-Supplemental updates will continue to be submitted to the COGCC on a quarterly basis.

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

Signed: Gregory Hamilton Title: Environmental Consultant

Submit Date: 06/20/2022 Email: Gregory_Hamilton@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: Candice (Nikki) Graber Date: 07/11/2022

Remediation Project Number: 22660

Condition of Approval

COA Type	Description
	Due to high density of housing development around the area Operator may conduct partial backfill as appropriate.

1 COA

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
403073882	FORM 27-SUPPLEMENTAL-SUBMITTED
403074053	PHOTO DOCUMENTATION
403074056	ANALYTICAL RESULTS
403074060	SOIL SAMPLE LOCATION MAP
403074075	SOIL SAMPLE LOCATION MAP
403074077	ANALYTICAL RESULTS
403074083	SOIL SAMPLE LOCATION MAP

Total Attach: 7 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)