FORM 27 Rev 5/22

State of Colorado
Energy & Carbon Management Commission

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Report taken by: Steven Arauza

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 ECMC 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: CAERUS PICEANCE LLC Operator No: 10456
Address: 1001 17TH STREET #1600
City: DENVER State: CO Zip: 80202
Contact Person: Jake Janicek Email: jjanicek@caerusoilandgas.com

Phone Numbers
Phone: (970) 778-2314
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PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 34378 Initial Form 27 Document #: 403690230

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: PG16 Dumpline Release Status update - Second Quarter (2Q) 2024

SITE INFORMATION

No Multiple Facilities

Facility Type: SPILL OR RELEASE Facility ID: 485970 API #: County Name: GARFIELD
Facility Name: PG16 Dumpline Release Latitude: 39.440253 Longitude: -108.001058
** correct Lat/Long if needed: Latitude: Longitude:
QtrQtr: SWNE Sec: 16 Twp: 7S Range: 95W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications OH
Most Sensitive Adjacent Land Use Agriculture
Is domestic water well within 1/4 mile? Yes
Is surface water within 1/4 mile? No
Is groundwater less than 20 feet below ground surface? No

Other Potential Receptors within 1/4 mile

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- [X] **E&P Waste**
  - [X] Produced Water
  - [ ] 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
Yes	SOILS	Undetermined	Soil sampling

INITIAL ACTION SUMMARY

Description of initial action or emergency response measures take to abate, investigate, and/or remediate impacts associated with E&P Waste.

Please reference the State of Colorado Energy and Carbon Management Commission (ECMC) Form 27 DN 403690230 for initial characterization work completed prior to 3/27/2024 under Remediation Project Number (PRN) 34378.

On March 27, 2024 Caerus contracted Western Slope Oilfield Services, Inc. (WCO) to assist in the advancement of four potholes (soil borings) using a hydro vacuum truck (hydro-vac). One soil boring was advanced immediately adjacent to the point of release (POR) location (SBC) to a total depth of 11.5 feet below ground surface (bgs) where hydro-vac refusal was encountered. Three subsequent soil borings were advanced to the west, south, and east cardinal direction of the POR location. Soils from each investigative soil boring were collected and field screened by a geologist at every 5-foot interval including the boring terminus. Pothole depths ranged from 10 feet bgs to 14 feet bgs. As vertical clearance was not determined at the POR location, only the terminus of the adjacent POR soil boring [20240327-PG16-(SBC)@11.5] was submitted for laboratory analysis of constituents listed under the approved reduced suite per ECMC DN 403690230.

See the attached report of work completed (ROWC) for further information regarding the subsequent investigative sampling activities, associated figures, and a discussion of the analytical results.

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):

Additional delineation efforts will be completed by Caerus using an environmental drill as vertical clearance at the POR was not able to be achieved via potholing. One soil boring will be advanced at the POR to vertical clearance. Once vertical clearance has been determined four additional perimeter soil borings will be advanced in each cardinal direction to the depth of POR vertical clearance. If soil impacts are observed in the perimeter soil borings, contingency step out soil borings will be advanced until lateral and vertical clearance is determined. Each soil boring will be logged and characterized at each 5-foot interval and soil samples will be collected for laboratory analysis at every 10-foot interval including the boring terminus. Proposed boring locations are shown on Figure 4 of the attached document.

Please see the "Operator Comments" section of this form for a continuation of this section.

Proposed Groundwater Sampling

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

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):

Please refer to the "Proposed Soil Sampling" section of this form for additional details on future delineation activities at the location.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected: 1

Number of soil samples exceeeding 915-1: 1

Was the areal and vertical extent of soil contamination delineated? No

Approximate areal extent (square feet): 900

NA / ND

-- Highest concentration of TPH (mg/kg): 5740

-- Highest concentration of SAR: 83.1

BTEX > 915-1: Yes

Vertical Extent > 915-1 (in feet): 11

Groundwater

Number of groundwater samples collected: 0

Was extent of groundwater contaminated delineated? No

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

Number of groundwater monitoring wells installed:

Number of groundwater samples exceeding 915-1:

Highest concentration of Benzene (µg/l):

Highest concentration of Toluene (µg/l):

Highest concentration of Ethylbenzene (µg/l):

Highest concentration of Xylene (µg/l):

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?

[X] Were background samples collected as part of this site investigation?

On March 27, 2024, a total of six site-specific background soil samples were collected from three nearby native locations to provide comparable data per ECMC Rule 915.e.(2). D. Site-specific background soil samples were collected via hand auger at depths ranging from 1 foot to 3 feet bgs. Samples were submitted for laboratory analysis of Table 915-1 metals, pH, boron (water soluble), and chromium (VI). Samples were collected per condition of approval in DN 403674005.

[ ] Was investigation derived waste (IDW) generated as part of this investigation?

Volume of solid waste (cubic yards):

Volume of liquid waste (barrels):

[X] Is further site investigation required?

Please refer to the "Proposed Soil Sampling" section of this form for additional details on future delineation activities at the location.

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.

The source is a failed dumpline. The dumpline will be replaced and brought back online.

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.

Once the impacts have been delineated, a remediation plan will be developed and presented in a future Form 27.

Soil Remediation Summary

☐ **In Situ**

_____ Bioremediation (or enhanced bioremediation)

_____ Chemical oxidation

_____ Air sparge / Soil vapor extraction

_____ Natural Attenuation

_____ Other _____

☐ **Ex Situ**

_____ Excavate and offsite disposal

If Yes: Estimated Volume (Cubic Yards) _____

Name of Licensed Disposal Facility or ECMC Facility ID # _____

_____ 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 PG16 Dumpline Release Status update - 2Q 2024

[ ] **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.

Per Rule 705.b, and in line with guidance laid out in the SBAP, Caerus has general liability insurance in the amount of $1M, and Caerus has umbrella insurance, which sits over the general liability insurance amount of $75M. The umbrella and general liability insurance covers property damage, bodily injury to third parties, and sudden or accidental pollution under a combined $76M.

Operator anticipates the remaining cost for this project to be: $ 80000

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:

None

Volume of E&P Waste (solid) in cubic yards 0

E&P waste (solid) description

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility:

Volume of E&P Waste (liquid) in barrels 35

E&P waste (liquid) description impacted soil mixed with hydrovac rinsate

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility: Greenleaf Environmental Services

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?

Does the previous reply indicate consideration of background concentrations?

Does Groundwater meet Table 915-1 standards?

Is additional groundwater monitoring to be conducted?

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.

There is currently nothing to reclaim. The excavation associated with the initial assessment was backfilled to match existing pad elevations.

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.

Actual Spill or Release date, or date of discovery. 01/30/2024

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 02/01/2024

Proposed site investigation commencement. 03/25/2024

Proposed completion of site investigation. 06/10/2024

REMEDIAL ACTION DATES

Proposed start date of Remediation.

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

Continued from "Proposed Soil Sampling" section:

Prior to any additional investigative work, Caerus requests to sample under a further reduced analytical suite to include sodium adsorption ratio (SAR), total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, total xylenes (BTEX), 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene.

Per ECMC Rule 915.e.(2).C (site-specific waste characterization) Caerus requests relief of arsenic as a contaminant of concern (COC). Although, arsenic was documented as an exceedance in all collected confirmation soil samples with values ranging from 4.36 milligrams per kilogram (mg/kg) to 12.2 mg/kg, these values are greater than the arsenic concentration [<0.00500 (milligrams per liter) mg/l] found in produced water sample 20240327-SPSOURCE-(PG16-T) that is representative of the waste stream that would have impacted the soils associated with this dumpline release.

Per ECMC Rule 915.e.(2).C (site-specific waste characterization) Caerus requests relief of barium as a COC. Although, barium was documented as an exceedance in all collected confirmation soil samples with values ranging from 373 mg/kg to 783 mg/kg, these values are greater than the barium concentration (96.3 mg/L) found in produced water sample 20240327-SPSOURCE-(PG16-T) that is representative of the waste stream that would have impacted the soils associated with this dumpline release.

Per ECMC Rule 915.e.(2).C (site-specific waste characterization) Caerus requests relief of pH as a COC. The pH result (6.91) standard units (SU) in produced water sample 20240327-SPSOURCE-(PG16-T) that is representative of the waste stream that would have impacted the soils associated with this dumpline release project, was less than that of confirmation soil sample 20240201-PG16-(POR)@7 collected from the point of release (POR) location with a pH value of 8.45 SU.

These produced water results indicates that the constituents mention in the "Remediation Summary" and paragraph above are not found within the waste stream at the levels indicative of the impacted area. Produced water sample 20240327-SPSOURCE-(PG16-T) location and associated laboratory analytical results are shown in Figure 3 of the attached ROWC.

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

Signed: Jake Janicek Title: EHS Specialist

Submit Date: 04/30/2024 Email: jjanicek@caerusoilandgas.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: Steven Arauza Date: 05/22/2024

Remediation Project Number: 34378

COA Type	Description
0 COA	

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
403754788	INVESTIGATION/REMEDIATION WORKPLAN (SUPPLEMENTAL)
403761743	SITE INVESTIGATION PLAN
403800074	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 3 Files

General Comments

User Group	Comment	Comment Date
Environmental	Comply with outstanding COAs.	05/22/2024
Environmental	Based on the information provided, the Operator's request for a reduced analyte suite of SAR, TPH, BTEX, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnapthalene, 2-methylnapthalene, and napthalene is conditionally approved.	05/22/2024

Total: 2 comment(s)