

State of Colorado
Energy & Carbon Management Commission

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403892461
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Report taken by:
Steven Arauza

Site Investigation and Remediation Workplan (Initial 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 ECOM 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 INFORMATION

| | | |
|---------------------------------------|-------------------------------------|------------------------|
| Name of Operator: CAERUS PICEANCE LLC | Operator No: 10456 | Phone Numbers |
| Address: 1001 17TH STREET #1600 | | Phone: (970) 778-2314 |
| City: DENVER State: CO Zip: 80202 | | Mobile: (970) 778-2314 |
| Contact Person: Jake Janicek | Email: jjanicek@caerusoilandgas.com | |

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 37499 Initial Form 27 Document #: 403892461

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.
- 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

No Multiple Facilities

| | | | |
|--|---------------------|------------------------|---|
| Facility Type: SPILL OR RELEASE | Facility ID: 487210 | API #: _____ | County Name: RIO BLANCO |
| Facility Name: ELU J14 | Latitude: 39.700811 | Longitude: -108.136767 | |
| ** correct Lat/Long if needed: Latitude: _____ | | Longitude: _____ | |
| QtrQtr: NESW | Sec: 14 | Twp: 4S | Range: 96W Meridian: 6 Sensitive Area? No |

SITE CONDITIONS

General soil type - USCS Classifications GM Most Sensitive Adjacent Land Use Rangeland
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? No

Other Potential Receptors within 1/4 mile

A monitoring well owned by Hunter Ridge Energy Services is located approximately 625 feet 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 |
|--------------|----------------|------------------|---------------------------------------|
| UNDETERMINED | SOILS | To be determined | 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 June 29, 2024, Caerus discovered an underground flowline leak at the ELU J14 FED #23B-14-496 wellhead (API: 05-103-12374). The well was immediately shut-in and the release was reported via Energy & Carbon Management Commission (ECMC) Form 19 Document 403840754 to open Spill/Release Point ID 487210.

On July 15, 2024, an initial site investigation was conducted to characterize potential soil impacts at the point of release (POR). Prior to investigative activities, the flowline was trenched and the POR was exposed. Using hand tools, six soil samples were collected: one from directly beneath the POR at 4 feet below ground surface (bgs), one from the base of the excavation at 3 feet bgs, and four from the sidewalls of the excavation at 2 to 4 feet bgs. Analytical results indicate all samples are compliant with Table 915-1 Residential Soil Screening Levels (RSSLs) except for total petroleum hydrocarbons (TPH), electrical conductivity (EC), sodium adsorption ratio (SAR), arsenic, and hexavalent chromium. See the attached Report of Work Completed (ROWC) for details.

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):

Additional soil sampling will be completed to delineate the horizontal and vertical extent of soil impacts. Prior to additional sampling, Caerus requests that all future samples associated with this project only be analyzed for those analytes (TPH, EC, and SAR) that soil samples collected on 7/15/2024 exhibited exceedances for. A Pathway to Groundwater Determination is provided in the "Operator Comments" Section of this form. Plans for how Caerus plans to address arsenic and hexavalent chromium concentrations are detailed in the "Remediation Summary" section of this form.

Proposed Groundwater Sampling

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

[Empty text box for groundwater sampling details]

Proposed Surface Water Sampling

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

[Empty text box for surface water sampling details]

Additional Investigative Actions

Additional alternative investigative actions described in attached Site Investigation Plan (summary):

Historical background soil data was referenced for comparison to native levels of arsenic. See attached ROWC for additional details.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 6
Number of soil samples exceeding 915-1 6
Was the areal and vertical extent of soil contamination delineated? No
Approximate areal extent (square feet) 100

NA / ND

-- Highest concentration of TPH (mg/kg) 1052
-- Highest concentration of SAR 20.5
BTEX > 915-1 No
Vertical Extent > 915-1 (in feet) 4

Groundwater

Number of groundwater samples collected 0
Was extent of groundwater contaminated delineated? Yes
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?

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?

See Proposed Sampling section and the attached ROWC for details.

REMEDIAL ACTION PLAN

SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

The failed portion of flowline (wellhead line) was replaced.

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.

Although elevated levels of arsenic are present in the release area, analytical results of background samples collected in support of previous remedial investigations at the Location indicate these results are comparable to native levels. A background soil boring with sample intervals from 10 to 40 feet bgs indicate arsenic values ranging from 2.67 to 5.84 milligrams per kilogram (mg/kg). All samples collected during the initial site assessment on 7/15/2024 were within this range. Based on site specific background conditions, Caerus requests an alternative allowable limit for arsenic of 5.84 in accordance with Table 915-1 Footnote 1.

Although hexavalent chromium concentrations exceeding ECMC Table 915-1 RSSLs are present in the investigation area, the reported concentrations are between the laboratory Method Detection Limit (MDL) of 0.255 mg/kg and the Reported Detection Limit (RDL) of 1.0 mg/kg. Analytical results between the MDL and RDL are considered estimated values due to equipment capabilities. Based on this limitation of laboratory analysis and reporting, Caerus requests consideration of Table 915-1 Footnote 9 to substitute the RDL of 1.0 mg/kg as an alternative screening level for hexavalent chromium. Please see the "Operator Comments" Section of this form for further discussion on the laboratory's use of MDL versus RDL.

Assuming the proposed requests are approved, TPH, EC, and SAR are the remaining constituents of concern detected in the investigation area exceeding Table 915-1 RSSLs or alternative allowable limits. Once impacts have been delineated, Caerus will submit a remediation plan via Supplemental Form 27.

See Proposed Sampling section and the attached ROWC for additional details.

Soil Remediation Summary

In Situ

Ex Situ

_____ Bioremediation (or enhanced bioremediation)

_____ Excavate and offsite disposal

_____ Chemical oxidation

_____ If Yes: Estimated Volume (Cubic Yards) _____

_____ Air sparge / Soil vapor extraction

_____ Name of Licensed Disposal Facility or ECMC Facility ID # _____

_____ Natural Attenuation

_____ Excavate and onsite remediation

_____ Other _____

_____ 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:

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

Other Request to open Remediation Project

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 in the 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: \$ 15000

WASTE DISPOSAL INFORMATION

Was E&P waste generated as part of this remediation? No

Describe beneficial use, if any, of E&P Waste derived from this remediation project:

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

E&P waste (solid) description _____

ECMC Disposal Facility ID #, if applicable: _____

Non-ECMC Disposal Facility: _____

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

E&P waste (liquid) description _____

ECMC Disposal Facility ID #, if applicable: _____

Non-ECMC Disposal Facility: _____

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.

Any disturbance will be returned to the active working surface of the well pad for continued operation. When the site is decommissioned at a later date, it will be reclaimed in accordance with 1000 Series regulations.

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. _____

Actual Spill or Release date, or date of discovery. _____

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 06/29/2024

Proposed site investigation commencement. 07/15/2024

Proposed completion of site investigation. _____

REMEDIAL ACTION DATES

Proposed start date of Remediation. 11/01/2024

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

Due to the estimated depth to groundwater of greater than 100 feet bgs and the calculated value of one barrel of produced water being released, Caerus requests to compare results of release investigation to Table 915-1 RSSLs as no reasonable pathway to groundwater appears to exist. See the attached ROWC for additional details.

Additional work on this project is not anticipated to start until later in 2024 or in 2025 due to operational considerations regarding plans to address multiple remediations at the Location. Therefore, Caerus is requesting a Semi-Annual Reporting Schedule.

This form is being submitted to open a remediation project number. Caerus will submit a closure request for Spill/Release ID 487210 via Form 19 with notification to continue investigation under the new remediation project.

Method Detection Limits or MDLs are the lower level of a range from which a given laboratory can actually detect a substance with their equipment. The more accurate and usable part of this range is known as the Reporting Detection Limit (RDL), also known as Practical Quantitation Limits (PQL). The MDL value is statistically determined and represents what can be identified as being possibly present by a specific instrument but cannot be measured accurately. Most laboratories have set the RDL or PQL to be 2 to 5 times above the MDL so that the results can be consistently reproduced in a manner that results in an almost 100% confidence level. This level of confidence allows the laboratory to report results to the customer that are both accurate, precise, and reliable as opposed to reporting just the MDL which only allows the laboratory to confirm that a given substance exists via a piece of equipment used to measure it.

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: 09/26/2024

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: 10/24/2024

Remediation Project Number: 37499

COA Type

Description

| | |
|--------|--|
| | Per Rule 913.b.(2), the Operator will conduct sampling and analysis of soil, and groundwater--if encountered, to determine the horizontal and vertical extent of any contamination in excess of the cleanup concentrations in Table 915-1 for soil and groundwater. The Operator shall analyze samples for the approved analyte list and shall compare analytical results for site investigation samples to the Table 915-1 Residential Soil Screening Level Concentrations. |
| | Operator shall collect soil samples from areas most likely to be impacted and shall collect an appropriate number of representative soil samples to delineate the horizontal and vertical extents of contamination, per Rule 915.e.(2).B. |
| | Comply with COGCC Rule 1105 flowline abandonment requirements, including notification and verification requirements. |
| 3 COAs | |

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

| | |
|-----------|---|
| 403892461 | INVESTIGATION/REMEDATION WORKPLAN (INITIAL) |
| 403896789 | SITE INVESTIGATION REPORT |
| 403935059 | ANALYTICAL RESULTS |
| 403935062 | ANALYTICAL RESULTS |
| 403935063 | ANALYTICAL RESULTS |
| 403935064 | ANALYTICAL RESULTS |
| 403935065 | ANALYTICAL RESULTS |
| 403969040 | FORM 27-INITIAL-SUBMITTED |

Total Attach: 8 Files

General Comments

| User Group | Comment | Comment Date |
|-------------------|--|---------------------|
| Environmental | Based on the information provided, the Operator's request for a reduced analyte suite of TPH, EC, and SAR is conditionally approved. | 10/24/2024 |
| Environmental | Based on the information provided for site-specific background samples, the Operator's request to establish an alternative allowable level 5.84 mg/kg for arsenic is conditionally approved per Table 915-1, Footnote 1. | 10/24/2024 |
| Environmental | Based on the information provided for laboratory data limits, the Operator's request to establish an alternative allowable level of 1.0 mg/kg for hexavalent chromium is conditionally approved per Table 915-1, Footnote 9. | 10/24/2024 |
| Environmental | Based on the information provided under Operator Comment, the Operator's request for a semi-annual reporting schedule is conditionally approved. | 10/24/2024 |

Total: 4 comment(s)