

State of Colorado Energy & Carbon Management Commission

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Receive Date:

09/27/2023

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 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 INFORMATION

Name of Operator: CAERUS PICEANCE LLC	Operator No: 10456	Phone Numbers
Address: 1001 17TH STREET #1600		
City: DENVER State: CO Zip: 80202		
Contact Person: Andy Verbonitz	Email: averbonitz@caerusoilandgas.com	
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PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 26973 Initial Form 27 Document #: 403263381

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: Q2-Q3 2023 - Status Update to Remediation Project Number (RPN) 26973

SITE INFORMATION

Yes Multiple Facilities

Facility Type: SPILL OR RELEASE	Facility ID: 483351	API #:	County Name: RIO BLANCO
Facility Name: Yellow Creek Fed. Condensate Tank	Latitude: 40.007417	Longitude: -108.370334	
** correct Lat/Long if needed: Latitude:		Longitude:	
QtrQtr: SESE	Sec: 34	Twp: 1N	Range: 98W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SM Most Sensitive Adjacent Land Use NON-CROP Rangeland

Is domestic water well within 1/4 mile? No Is surface water within 1/4 mile? Yes

Is groundwater less than 20 feet below ground surface? No

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	SOILS	50x70x20	Soil Sampling/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.

Please refer to Spill/Release Point ID Number 483351 for initial emergency response actions taken. Please refer to Colorado Oil and Gas Conservation Commission (COGCC) RPN 26973 for information in regards to the initial investigative actions completed.

On May 4, 2023, three investigative confirmation soil samples 20230504-YCF 34-44-1-(SB01-N)@2-3, 20230504-YCF 34-44-1-(SB01-N)@6, and 20230504-YCF 34-44-1-(SB01-N)@8-8.5 were collected from one pothole advanced within the northeast end of the investigation area to an approximate depth of 8 feet below ground surface (bgs) where bedrock refusal was encountered. The soil was characterized by visually inspecting the soil and field screening the soil head space using a handheld photoionization detector (PID) to monitor for the presence or absence of volatile organic compounds (VOCs).

From June 26 through 29, 2023, a subsurface investigation was conducted in effort to delineate the previously observed impacts using a SMICO 2800 track mounted drilling rig equipped with solid stem auger and air coring capabilities. A total of nine soil borings were advanced to total depths ranging from 21.5 feet bgs to 35 feet bgs in and immediately surrounding the earthen secondary containment. Soil borings were advanced and field screened as described above in 5-foot intervals to each boring terminus. A total of 19 soil samples were submitted during the subsurface investigation.

On August 31, 2023, two site-specific background soil borings were completed to total depths of 32.5 feet bgs west of the pad location in native soil per COGCC Rule 915.e.(2). Seven samples were submitted from each boring.

All soil samples were analyzed under a previously approved reduced suite in Document Number (DN) 403263381 for comparison to Protection of Groundwater Soil Screening Concentrations (PGSSLCs).

See the attached report of work completed (ROWC) for additional 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):

Caerus will remove all impacted material beneath and within the earthen secondary containment through mechanical excavation. Based on the subsurface drilling assessment surrounding the earthen secondary containment completed between June 26 and June 29, 2023, vertical and lateral delineation of the condensate fluids released from Tank #1 has been achieved. Caerus will schedule the source removal activities to coincide with the installation of a lined secondary containment located in a different area of the Site so that all tanks and production equipment are removed to allow for safe and efficient removal of the defined plume.

See "Remediation Summary" for comparability of confirmation samples to site-specific background concentrations.

See attached ROWC for additional details.

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 see the "Proposed Soil Sampling" and "Remediation Summary" sections which detail additional investigative actions.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 19

Number of soil samples exceeding 915-1 19

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

Approximate areal extent (square feet) 3500

NA / ND

-- Highest concentration of TPH (mg/kg) 2024

NA Highest concentration of SAR

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 17

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?

☒ Were background samples collected as part of this site investigation?

One produced water sample [20230411-YCFSOURCE-(YCF34-44-1-T)] was collected from the center tank [AIRS ID: 1030369001] at the pad location on April 11, 2023 (site-specific waste characterization).

Eight site-specific background soil samples were collected on May 4, 2023 from four boring locations from non-impacted native soil for the purpose of establishing background soil concentrations for Table 915-1 analytes per COGCC Rule 915.e.(2).D.

On August 31, 2023, a soil suitability drilling investigation was performed to further establish native soil concentrations in accordance with COGCC Rule 915.e.(2). D. Two site-specific background soil borings were completed within the Rentsac channery loan soil unit to total depths of 32.5 feet bgs west of the pad location in native undisturbed soils. A total of 14 soil samples were collected from the two site-specific background borings. Soil samples were submitted at every 5-foot interval and each boring terminus.

☐ 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?

Please see the "Proposed Soil Sampling" and "Remediation Summary" sections which detail additional investigative actions.

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 was result of a tank overflow. The associated well was shut-in and a vac truck recovered standing fluids and drew down fluid levels within the tank. The malfunctioning ball valve and faulty tank overflow alarm wiring were both replace to prevent a future release.

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.

Carry over from "Proposed Soil Sampling" section:

A reduced suite for all future investigative confirmation samples to include total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, total xylenes (BTEX), 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene is requested. A discussion of potential pathways to groundwater and further justification for reduced suite relief is detailed in the "Operator Comments" of this form per COGCC Rule 915, Footnote 7.

Caerus will remove all impacted material beneath and within the earthen secondary containment through mechanical excavation. Based on the subsurface drilling assessment surrounding the earthen secondary containment competed between June 26 and June 29, 2023, vertical and lateral delineation of the condensate fluids released from Tank #1 in the subsurface has been achieved. Caerus will schedule the source removal activities to coincide with installation of a lined secondary containment located in a different area of the pad location so that all tanks and production equipment are removed to allow for safe and efficient removal of the defined plume.

See "Operator Comments" section for further relief justification per Rule 915.e.(2).C (site-specific water characterization) of pH along with justification for relief of arsenic per COGCC Rule 915, Footnote 11.

Please see attached ROWC for further justification and supporting analytical data.

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 COGCC 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.

If groundwater is observed during investigation activities, a representative sample will be collected and substituted for COGCC Table 915-1 for water.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Approved Reporting Schedule:

☒ Quarterly ☐ Semi-Annually ☐ Annually ☐ Other Q2-Q3 2023 - Status Update to RPN 26973

☐ 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 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: \$ 50000

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

COGCC Disposal Facility ID #, if applicable:

Non-COGCC Disposal Facility:

Volume of E&P Waste (liquid) in barrels 20

E&P waste (liquid) description Hydro-vac rinseate mixed with impacted soils

COGCC Disposal Facility ID #, if applicable: 426582

Non-COGCC Disposal Facility: Greenleaf Environmental

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 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.

Any disturbances associated with the release will be returned to grade with suitable material pursuant to the COGCC 1000 Series Regulation.

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. 11/23/2022

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 11/23/2022

Proposed site investigation commencement. 12/28/2022

Proposed completion of site investigation. 07/10/2023

REMEDIAL ACTION DATES

Proposed start date of Remediation. 10/30/2023

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

Carry over from "Remediation Summary" section:

Per COGCC Rule 915, Footnote 11, Caerus requests relief of arsenic as a contaminant of concern (COC). The arsenic concentrations in all confirmation soil samples collected to date range from 2.48 milligrams per kilogram (mg/kg) to 14.1 mg/kg which is within 1.25X the largest arsenic concentration site-specific background sample 20230504-YCFBG-(YCF 34-44-1-E)@2 which reported a concentration of 13.1 mg/kg. Site-specific background concentrations of soil collected at the location from the same "comparable" soil unit Rentsac channery loam range from 1.80 mg/kg to 13.1 mg/kg. Arsenic concentrations are similar throughout the vertical soil profile for both investigative and background samples with the exception of the two outlier values of 14.1 mg/kg and 13.1 mg/kg.

Per COGCC Rule 915.e.(2).C (site-specific waste characterization) Caerus requests relief of pH as a COC. The pH result (7.32) standard unit (SU) in produced water sample 20230411-YCFSOURCE-(YCF 34 4 4-1-T) collected from comingled water (condensate/produced water) representative of the waste stream that would have impacted the soils associated with the remediation project, was less than all confirmation soil pH results collected to date ranging from 8.33 SU to 9.79 SU. This indicates that the constituent is not found within the above-mentioned waste stream at the levels indicative of the impacted area. Additionally, reported pH soil values from all assessment data are within similar values of all reported pH soil values from site-specific background samples (pH range from 6.26 SU to 9.49 SU). Additionally, the documented exceedances with respect to background values within the impacted area will be mechanically removed per the remediation strategy.

Caerus believes that a pathway to groundwater from soil identified beneath the point of release (POR) location does not exist and requests relief concerning this subject per COGCC Table 915-1 Footnote 7 and due to the following reasons:

- 1) The vertical distance between the POR location and the anticipated static water table depth. The static water table depth is estimated to be 190 feet below pad surface based on documents associated with a permitted water well (never completed based on records) approximately 3.71 miles to the southwest and identified by DWR Permit# 245811-. The vertical distance between the assumed static water level and the POR location is approximately 165 feet associated with this remediation project.
- 2) No groundwater was/has been observed infiltrating, pooling, or standing within any of the soil boring and/or pothole location during site investigation activities.
- 3) The nearest sensitive receptor (180 feet northeast) is an unnamed tributary to Yellow Creek which the United States Geological Survey (USGS) map symbol detailed on the topo map provided on COGCC GISOnline indicates it is an intermittent stream. However, based on local knowledge and field observations, this tributary is better characterized as ephemeral, as it rarely flows except in extreme weather events, exceptional groundwater elevation increases manifested through natural springs, and/or rain/snow melt events. There is no observable standing water within the immediate area and any resulting appreciable groundwater elevation increase would have been observed in the excavation associated with this remediation project. Any impacts to surface and/or groundwater would have been observed during the initial release investigation sampling.
- 4) There are no known springs or headwater tributaries flowing/seeping from the unnamed tributary downgradient of the release location.

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

Signed: Andy Verbonitz

Title: EHS Specailst

Submit Date: 09/27/2023

Email: averbonitz@caerusoilandgas.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: Steven Arauza

Date: 10/11/2023

Remediation Project Number: 26973

COA Type

Description

0 COA	
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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.

Att Doc Num

Name

403409563	INVESTIGATION/REMEDIATION WORKPLAN (SUPPLEMENTAL)
403543035	SITE INVESTIGATION REPORT
403557372	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 3 Files

General Comments

User Group

Comment

Comment Date

Environmental	Based on the assessment provided under Operator Comment, the Operator's request to utilize the Table 915-1 Residential Soil Screening Levels is conditionally approved.	10/11/2023
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Environmental	Based on the information provided for soil samples (doc #403543035), the Operator's request for a reduced analyte suite of total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, total xylenes (BTEX), 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene is conditionally approved.	10/11/2023
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Total: 2 comment(s)