

State of Colorado  
Energy & Carbon Management Commission

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Document Number:  
403902874  
Receive Date:  
09/13/2024

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 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	<b>Phone Numbers</b>
Address: 1001 17TH STREET #1600		Phone: (970) 285-2925
City: DENVER State: CO Zip: 80202		Mobile: (970) 640-6919
Contact Person: Blair Rollins	Email: brollins@caerusoilandgas.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 27775 Initial Form 27 Document #: 403326528

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: 2Q & Q3 2024 Status Update to Remediation Project Number (RPN) 27775

SITE INFORMATION

Yes Multiple Facilities

Facility Type: PIT	Facility ID: 117251	API #:	County Name: RIO BLANCO
Facility Name: PICEANCE CREEK UNIT 68-11	Latitude: 39.886142	Longitude: -108.245544	
** correct Lat/Long if needed: Latitude:		Longitude:	
QtrQtr: SWSE	Sec: 11	Twp: 2S	Range: 97W Meridian: 6 Sensitive Area? Yes

Facility Type: UIC DISPOSAL	Facility ID: 159173	API #:	County Name: RIO BLANCO
Facility Name: PCU T68X-11G	Latitude: 39.885470	Longitude: -108.244510	
** correct Lat/Long if needed: Latitude:		Longitude:	
QtrQtr: SWSE	Sec: 11	Twp: 2S	Range: 97W Meridian: 6 Sensitive Area? Yes

Facility Type: WELL	Facility ID: _____	API #: 103-05185	County Name: RIO BLANCO
Facility Name: PICEANCE CREEK UNIT T68X-11G	Latitude: 39.885470	Longitude: -108.244510	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: SWSE	Sec: 11	Twp: 2S	Range: 97W Meridian: 6 Sensitive Area? Yes

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Facility Type: LOCATION	Facility ID: 314334	API #: _____	County Name: RIO BLANCO
Facility Name: PICEANCE CREEK UNIT-62S97W 11SWSE	Latitude: 39.885542	Longitude: -108.244494	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: SWSE	Sec: 11	Twp: 2S	Range: 97W Meridian: 6 Sensitive Area? Yes

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Facility Type: NONFACILITY	Facility ID: 431140	API #: _____	County Name: RIO BLANCO
Facility Name: PCU 68-11 injection line 431140	Latitude: 39.890623	Longitude: -108.251488	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: SWSE	Sec: 11	Twp: 2S	Range: 97W Meridian: 6 Sensitive Area? Yes

### SITE CONDITIONS

General soil type - USCS Classifications OH Most Sensitive Adjacent Land Use 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

#### **Other Potential Receptors within 1/4 mile**

It appears as if the permitted water wells populated within a quarter mile of the project area on the COGIS database, including the one on the PCU T68X-11G pad, are gas wells that were permitted by a previous operator through the DWR to allow them to use production water in a variety of ways. The submittal of this form includes the determination by the submitter that they are not domestic water wells.

# SITE INVESTIGATION PLAN

## TYPE OF WASTE:

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> E&P Waste       | <input checked="" type="checkbox"/> Other E&P Waste   | <input type="checkbox"/> Non-E&P Waste |
| <input type="checkbox"/> Produced Water  | <input type="checkbox"/> Workover Fluids  | _____                                  |
| <input type="checkbox"/> Oil             | <input type="checkbox"/> Tank Bottoms   |  |
| <input 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 checked="" type="checkbox"/> Other (as described by EPA) Historic impacts associated with oil & gas production have been confirmed |  |

## DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	SOILS	To be determined	Field investigation and 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 see documents associated with ECMC RPN 27775 for a list of activities completed prior to June 26, 2024.

Between June 26 and 27, and July 15 through 18, 2024, an investigative assessment was completed which included the advancement of the one investigative soil boring immediately adjacent to the decommissioned production well, along with the advancement of four investigative soil borings within the former separator/dehydration footprint to determine the vertical extent of previously documented impacts at the Site. The five investigative borings were advanced to total depths ranging from 20 to 30 feet below ground surface (bgs). Soils and bedrock were characterized and field screened by a geologist in 5 foot intervals for the presence or absence of hydrocarbon impacts via visual and olfactory senses, as well as using a photo-ionization detector (PID) to screen for volatile organic compounds (VOCs). Confirmation samples were collected at every 10 foot interval including the boring terminus for laboratory submittal. 11 investigative confirmation soil/bedrock samples were collected within the former separator/dehydration footprint and submitted under previously reduced suite in DN 403470573. Three investigative confirmation soil/bedrock samples were collected from the boring advanced adjacent the decommissioned production well and submitted under ECMC approved reduced analytical suite in DN 403624224. The analytical results of the 14 confirmation samples were evaluated under ECMC Protection of Groundwater Soil Screening Level Concentrations (PGSSLCs).

Please see the attached report of work completed (ROWC) for additional investigative sampling details, supporting figures, and a discussion of the analytical results.

## 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 ):

The vertically defined impacts to soil and bedrock associated with the former wellhead, associated equipment, and former pit will be physically removed using an excavator. Please see the "Remediation Summary" section of this form for more information of the purposed sampling plan.

The attached ROWC includes additional details and supporting figures.

### 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 of this form for additional details based on work completed between June 26 and July 18, 2024.

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

### Soil

Number of soil samples collected 14

Number of soil samples exceeding 915-1 14

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

Approximate areal extent (square feet) 2500

### NA / ND

--            Highest concentration of TPH (mg/kg) 8413

--            Highest concentration of SAR 27

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 29

### 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?

Please see ECMC Document 403470573 for this information.

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 of this form for additional details based on work completed between June 26 and July 18, 2024.

## 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.

Since the impacts are considered historical, no source can be identified.

### 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.

In accordance with ECMC Rule 913.b.(2), Caerus plans to mechanically excavate the ECMC Table 915-1 exceedances observed at the decommissioned production well, the former separator/dehydration footprint, and the western most historic pit location. The areas of removal encompass previous advanced borings [ECMC DNs 403470573 and 403624224] and the supplemental boring locations that were advanced adjacent to the former wellhead [20240716-PCU T86X-11G SWD-(SB02)] and surrounding the former separator/dehydration footprint on the western edge of the pad surface [20240627-PCU T68X-11G SWD-(SB01), 20240627-PCU T68X-11G SWD-(SB03), 20240627-PCU T68X-11G SWD-(SB04), and 20240627-PCU T68X-11G SWD-(SB05)]. Field screening will be completed concurrently with the source removal to confirm all impacts associated with the three areas of concern have been removed. Once all impacts are confirmed removed discrete confirmation samples will be collected for laboratory submittal. The approximate area of impact is estimated to be between 2,852 cubic yards (cy) and 4,990 cy. All impacted material will be transported to Wray Gulch Disposal Facility for disposal once approval is granted. The areas where physical removal is proposed are shown on Figure 4 of the attached ROWC.

**Soil Remediation Summary**

In Situ

Ex Situ

- \_\_\_\_\_ Bioremediation ( or enhanced bioremediation )
- \_\_\_\_\_ Chemical oxidation
- \_\_\_\_\_ Air sparge / Soil vapor extraction
- \_\_\_\_\_ Natural Attenuation
- \_\_\_\_\_ Other \_\_\_\_\_

- \_\_\_\_\_ 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:

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 2Q & Q3 2024 Status Update to RPN 27775

## 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: \$ 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 5

E&P waste (liquid) description Hydrovac rinseate mixed with impacted soils

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.

Any excavations will be backfilled to the existing grade of the pad surface.

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. \_\_\_\_\_

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 05/01/2023

Proposed site investigation commencement. 05/01/2023

Proposed completion of site investigation. 07/08/2024

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 05/05/2025

Proposed date of completion of Remediation. 08/01/2025

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

Caerus requests approval to evaluate the success of this remediation project under ECMC RSSLCs in accordance with Table 915-1, Footnote 7 and the reasons listed below support that there is no pathway for communication to groundwater associated with this project.

1) Caerus believes there is no direct pathway for communication to groundwater at this Site as no groundwater or saturated soils were encountered or was groundwater observed to be pooling or infiltrating any of the borings during the advancement of the delineation drilling activities completed between June 26 and July 18, 2024.

2) A United States Geologic Survey (USGS) observation well, SC00209715AAC, was identified on a Colorado Department of Natural Resources (DNR) webmap search. This monitoring well is located approximately 1 mile southwest of the Site at approximately 275 feet lower elevation. Depth to groundwater at this location is approximately 500 feet bgs.

3) Two ephemeral drainage streams are located approximately 0.20 miles west and 0.50 miles east of the Site running from the northeast to the southwest towards Piceance Creek (approximately 2.35 miles southwest of Site). These ephemeral streams provide seasonal drainage for the Greasewood Gulch area and only have surface flow during extreme weather and snow melt events.

Prior to the start of additional Site activities, Caerus requests the Director for individual reduced analytical suites for the production well, the former separator/dehydration footprint, and the former historic pit location (western most) in accordance with ECMC Rule 915.e.(2).C. as outlined below.

- In accordance with ECMC Rule 915.e.(2).C., Caerus requests all future decommissioned production well confirmation soil samples be analyzed for specific COCs of hexavalent chromium and TPH.
- In accordance with ECMC Rule 915.e.(2).C., Caerus requests all future confirmation soil samples collected associated with the former separator/dehydration footprint to be analyzed for specific COCs including, SAR, TPH, ethylbenzene, total xylenes, 1,2,4-TMB, 1,3,5-TMB, 2-methylnaphthalene, and naphthalene.
- In accordance with ECMC Rule 915.e.(2).C., Caerus request all future confirmation soil samples associated with pit sample 20230510-PCU T68X-11G SWD-(FC-PIT-W)@4 be analyzed for specific COC of SAR only.

The site maps and analytical reports associated with previously identified impacts that are referenced in this document and attached ROWC can be referenced in ECMC DNs 403470573 and 403624224. Table 1 of the attached ROWC summarizes all soil analytical results collected to date under RPN 27775.

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

Signed: Blair Rollins

Title: Environmental Specialist

Submit Date: 09/13/2024

Email: brollins@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: 11/14/2024

Remediation Project Number: 27775

## COA Type

## Description

	Based on the information provided the Operator's request for a reduced analyte suite of hexavalent chromium and TPH for future decommissioned production well samples is approved under the following condition:  In addition to the requested analytes, the Operator will continue to analyze these samples for naphthalene, due to documented Table 915-1 exceedances in SB02.
1 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

403902874	FORM 27-SUPPLEMENTAL-SUBMITTED
403919021	SITE INVESTIGATION REPORT

Total Attach: 2 Files

## General Comments

## User Group

## Comment

## Comment Date

Environmental	Based on the information provided the Operator's request for a reduced analyte suite of SAR-only for samples collected from the former pit area is conditionally approved.	11/14/2024
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Environmental	Based on the information provided the Operator's request for a reduced analyte suite of SAR, TPH, ethylbenzene, total xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 2-methylnaphthalene, and naphthalene for samples collected from the former separator/dehydration footprint area is conditionally approved.	11/14/2024
Environmental	Based on the information provided under Operator Comment, the Operator's request to use the Table 915-1 Residential Soil Screening Level concentrations is conditionally approved.	11/14/2024

Total: 3 comment(s)