

State of Colorado  
Energy & Carbon Management Commission

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Report taken by:  
John Heil

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) 778-2314
City: DENVER State: CO Zip: 80202		Mobile: (970) 778-2314
Contact Person: Jake Janicek	Email: jjanicek@qb-energy.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 35478 Initial Form 27 Document #: 403770903

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: Fourth Quarter (Q4) 2024 Status Update to Remediation Project Number (RPN) 35478

SITE INFORMATION

Yes Multiple Facilities

Facility Type: SPILL OR RELEASE	Facility ID: 486871	API #: _____	County Name: GARFIELD
Facility Name: Puckett 44C-25 Historical Impacts	Latitude: 39.488369	Longitude: -108.161608	
	** correct Lat/Long if needed: Latitude: 39.488410	Longitude: -108.161592	
QtrQtr: SESE	Sec: 25	Twp: 6S	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? No  
Is groundwater less than 20 feet below ground surface? No

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

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# SITE INVESTIGATION PLAN

## TYPE OF WASTE:

- |  |  |  |
|--|--|--|
| <input checked="" type="checkbox"/> E&P Waste      | <input type="checkbox"/> Other E&P Waste             | <input type="checkbox"/> Non-E&P Waste |
| <input checked="" 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 type="checkbox"/> Other (as described by EPA) | _____                                  |

## DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
UNDETERMINED	SOILS	To be Determined	Field Observations and Lab 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 November 18, 2024, drilling and confirmation sampling activities continued at the Site to delineate the vertical extents of impacts. One boring was advanced in the center of the current excavation footprint. Due to this positioning, the drilling began at 10 feet (ft) below ground surface (bgs) and was advanced to a total depth of approximately 41 ft bgs. The lithology consisted of a siliceous oil shale, crystalline limestone, very fine-grained sandstone, and was terminated in a siliceous oil shale. Upon completion of the boring, the crew waited for approximately one hour prior to backfilling to identify the presence or absence of water. Using an oil-water interface probe, the geologist observed no water downhole. The borehole was backfilled with bentonite and was logged and screened in five-foot intervals by the geologist.

All collected soils and bedrock were field characterized for the presence or absence of hydrocarbon odors or staining via visual and olfactory senses and were field screened using a photoionization detector (PID) to detect the presence or absence of volatile organic compounds (VOCs). Three samples [20241118-PUCKETT 44C-25-(SB01)@19-21, 20241118-PUCKETT 44C-25-(SB01)@29-31, and 20241118-PUCKETT 44C-25-(SB01)@39-41] were submitted for laboratory analysis of the full ECMC Table 915-1 constituents.

Please see the attached report of work completed (ROWC) for details regarding soil sampling activities, accompanying 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 ):

Please see the "Operator Comments" section of this form for Caerus's request to the Director to evaluate analytes under ECMC Table 915-1 Residential Soil Screening Level Concentrations (RSSLCs), in accordance with ECMC Table 915-1, Footnote 7. Additionally, Caerus is requesting relief of TPH as a contaminant of concern (COC), specifically oil range organics (ORO) and diesel range organics (DRO). Upon the ECMC Directors approval of Caerus's relief requests a site investigation plan will be proposed.

Please see the attached ROWC for an in depth discussion of analytical results.

### 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 ):

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

### Soil

Number of soil samples collected 3  
Number of soil samples exceeding 915-1 3  
Was the areal and vertical extent of soil contamination delineated? No  
Approximate areal extent (square feet) 5250

### NA / ND

-- Highest concentration of TPH (mg/kg) 1641  
ND Highest concentration of SAR \_\_\_\_\_  
BTEX > 915-1 Yes  
Vertical Extent > 915-1 (in feet) 41

### 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?

For comparison to background soil conditions, a total of four site specific background soil samples were collected from four nearby, undisturbed native areas in accordance with ECMC 915.e.(2).D on June 11, 2024. These background samples were submitted for analysis of Electrical Conductivity (EC), Sodium Adsorption Ratio (SAR), pH, hot water-soluble Boron, and ECMC Table 915-1 constituents.

Please see ECMC DN 403868883 for more information regarding the collection of the site-specific background samples, a discussion of analytical results, and supporting figures.

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 "Operator Comments" section of this form.

## 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 being considered historical, a source cannot 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.

Once impacts are delineated, a remediation plan will be presented to the ECMC.

## 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:

Quarterly     Semi-Annually     Annually     Other \_\_\_\_\_

### Request Alternative Reporting Schedule:

Semi-Annually     Annually     Other

Due to extended winter conditions, Caerus does not anticipate conducting any work on this location until summer of 2025. Therefore, Caerus requests that the reporting frequency for this project be reduced.

### 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 Q4 2024 Status Update to RPN 35478 \_\_\_\_\_

## 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: \$ 100000

## 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 852

E&P waste (solid) description Hydrocarbon impacted soils/bedrock

ECMC Disposal Facility ID #, if applicable: \_\_\_\_\_

Non-ECMC Disposal Facility: Greenleaf Environmental Services LLC

Volume of E&P Waste (liquid) in barrels 0

E&P waste (liquid) description \_\_\_\_\_

ECMC Disposal Facility ID #, if applicable: \_\_\_\_\_

Non-ECMC 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? \_\_\_\_\_

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 excavation associated with this project will be backfilled to match existing pad elevation.

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). 05/15/2024

Proposed site investigation commencement. 05/15/2024

Proposed completion of site investigation. 08/31/2025

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 08/23/2024

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

QB requests the Director to evaluate analytes under ECMC Table 915-1 Residential Soil Screening Level Concentrations (RSSLCs), in accordance with ECMC Table 915-1, Footnote 7. The reasonings are listed below:

- 1) As observed during investigative activities, moisture in the sandstone bedrock was encountered between depths of 30 - 37 feet bgs. From 37 - 41 feet bgs was an impermeable siliceous shale. When the hole was left open for approximately one hour after drilling to terminus no pooling water was observed within borehole (SB01).
- 2) The static water table depth is estimated to be approximately 234 ft bgs based on documents associated with the nearest active groundwater monitoring well approximately 2,360 ft to the west of the Site and identified by Department of Water Resources (DWR) Permit Number 271289.
- 3) Based on soils data provided by the Natural Resources Conservation Service (NRCS), both the well and the Site are positioned within the Parachute-Rhone Loams (5-30% slopes). Due to differences in surface elevation between the Site and monitoring well, the vertical distance between the assumed static water level and the approximate center of impacts at the Site is approximately 48 ft.
- 4) The nearest sensitive receptor is an unnamed ephemeral stream, positioned approximately 795 ft southeast of the site. Field observations and local knowledge suggest that this stream, which eventually feeds into Parachute Creek, rarely flows except during extreme weather events. There was no observable standing water within the immediate area and any resulting appreciable groundwater elevation increase would have been observed in the unnamed drainage or the subsurface investigative activities completed at the Site.

QB requests a relief of total petroleum hydrocarbons (TPH), specifically diesel range organics (DRO) and oil range organics (ORO), as contaminants of concern (COC) in accordance with ECMC Rule 915.e.(2)C. A summary of the reasonings are below, please see the attached ROWC for a more in depth discussion, and supporting statistical tables.

The primary range of organics observed in all the confirmation samples collected to date are DRO and ORO, which make up most of the percentage of total TPH (>99%) in all samples except [20240903-PUCKETT 44C-25-(WW)@9, 20240904-PUCKETT 44C-25-(NW)@11, and 20241002-PUCKETT 44C-25-(SW)@8.5] (DN 403868883). Based on operator process knowledge (Rule 915.e(2)C), the primary range of organics in these 3 samples is GRO and would more likely be connected to the historic impacts associated with the former partially buried vault (PBV). The primary contents of the PBV was produced water, which would more likely correspond to the gasoline range organics (GRO) rather than DRO and ORO in accordance with process knowledge Rule 915.e(2)C. The heightened concentrations of low range organics benzene, ethylbenzene, toluene, and total xylenes in these samples provides further support for this claim. The levels of GRO from these three samples are 3 to 4 orders of magnitude greater than in all other samples, suggesting a difference in source. Although total TPH exceedances increase with depth, this occurrence is likely related to native oil shale composition which contains high levels of DRO and ORO, as demonstrated throughout the advancement of borehole SB01 in the Uinta Formation which based on operator process knowledge contains basal oil shale beds (Rule 915.e(2)C as described in the attached ROWC.

With the approval to evaluate soil under the RSSLCs and removal of DRO and ORO as COCs, the remaining COCs to be addressed will include: GRO, Arsenic and Hexavalent Chromium. A detailed excavation plan will be presented to address the COCs following the Directors approval.

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: 05/29/2025

Email: jjanicek@qb-energy.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: John Heil

Date: 07/11/2025

Remediation Project Number: 35478

### COA Type

### Description

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
404080467	INVESTIGATION/REMEDATION WORKPLAN (SUPPLEMENTAL)
404196633	ANALYTICAL RESULTS
404196636	ANALYTICAL RESULTS
404215119	SITE INVESTIGATION REPORT
404276190	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 5 Files

### General Comments

User Group	Comment	Comment Date
Environmental	ECMC approves the request for the removal of DRO and ORO as COCs.	07/10/2025

Environmental	ECMC approves the request to evaluate analytes under ECMC Table 915-1 Residential Soil Screening Level Concentrations (RSSLCs),	04/28/2025
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Total: 2 comment(s)