

State of Colorado  
Energy & Carbon Management Commission1120 Lincoln Street, Suite 801, Denver, Colorado 80203  
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Document Number:

403937751

Receive Date:

12/05/2024

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 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 INFORMATION

Name of Operator: CAERUS PICEANCE LLC	Operator No: 10456	Phone Numbers
Address: 1001 17TH STREET #1600		Phone: (970) 640-6919
City: DENVER	State: CO	Zip: 80202
Contact Person: Blair Rollins	Email: brollins@qb-energy.com	Mobile: (970) 640-6919

## PROJECT, PURPOSE &amp; SITE INFORMATION

## PROJECT INFORMATION

Remediation Project #: 19200 Initial Form 27 Document #: 402614523

## 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

Yes Multiple Facilities

Facility Type: PIT	Facility ID: 277362	API #: _____	County Name: GARFIELD
Facility Name: UNOCAL 16-11D	Latitude: 39.526128	Longitude: -108.124417	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: SENE	Sec: 17	Twp: 6S	Range: 96W Meridian: 6 Sensitive Area? No

  

Facility Type: LOCATION	Facility ID: 335825	API #: _____	County Name: GARFIELD
Facility Name: N. Parachute MF H17 696	Latitude: 39.527149	Longitude: -108.123650	
** correct Lat/Long if needed: Latitude: 39.527343		Longitude: -108.123475	
QtrQtr: Lot 7	Sec: 17	Twp: 6S	Range: 96W Meridian: 6 Sensitive Area? No

## **SITE CONDITIONS**

General soil type - USCS Classifications SC

Most Sensitive Adjacent Land Use Riparian

Is domestic water well within 1/4 mile? Yes

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**

A domestic water well is located approximately 750 feet to the west and Parachute Creek is located approximately 920 feet to the west.

## 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	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 3, 2011, a transducer failed during frac operations allowing pressure to spike. The water was sent to an emergency tank; however, the pump was not shut off quickly enough which resulted in the release of 15 barrels (bbls) of produced water. The release was confined to the Location's working surface and 10 bbls of water were recovered via hydro vacuum truck. The release was reported via Energy & Carbon Management Commission (ECMC) Form 19 Document 2214280. Form 27 Document 402614523 was later submitted to open Remediation Project 19200. Form 27 Document 403640417 approved a reduced analyte list of total petroleum hydrocarbons (TPH), electrical conductivity (EC), sodium adsorption ratio (SAR), pH, and hexavalent chromium and approved an alternative allowable limit for hexavalent chromium of 1.0 milligrams per kilogram (mg/kg). See the attached Report of Work Completed (ROWC) for site investigation details to date.

### 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 ):

Analytical results of soil sampling to date indicate values of TPH and pH exceeding ECMC Table 915-1 Residential Soil Screening Levels (RSSLs) remain undelineated horizontally to the east. Caerus will advance additional soil borings as needed to delineate the extent of TPH and pH impacts. Prior to additional investigation, Caerus requests an updated reduced analyte suite of TPH and pH for all future investigations. See the attached ROWC for details regarding background soil sampling and investigation sampling completed within the third quarter of 2024.

#### Proposed Groundwater Sampling

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

Groundwater is not expected to be encountered. If groundwater is encountered, Caerus will attempt to collect a representative groundwater sample for laboratory analysis.

#### 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      43

#### NA / ND

--      Highest concentration of TPH (mg/kg)      5540

Number of soil samples exceeding 915-1 43

-- Highest concentration of SAR 53.9

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

BTEX > 915-1 No

Approximate areal extent (square feet) 2500

Vertical Extent > 915-1 (in feet) 21

#### Groundwater

Number of groundwater samples collected 0

Highest concentration of Benzene (µg/l)

Was extent of groundwater contaminated delineated? Yes

Highest concentration of Toluene (µg/l)

Depth to groundwater (below ground surface, in feet)

Highest concentration of Ethylbenzene (µg/l)

Number of groundwater monitoring wells installed

Highest concentration of Xylene (µg/l)

Number of groundwater samples exceeding 915-1

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?

In July 2021, four background soil samples were collected to characterize native levels of soil suitability for reclamation (SSR) constituents of concern at the Location. On August 27, 2024, five additional background soil samples were collected from comparable, nearby, non-impacted soil to establish native levels of inorganic at the Location. See the attached ROWC for details.

☐ 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.

### REMEDIAL ACTION PLAN

Does this Supplemental Form 27A include changes to a previously approved Remedial Action Plan? Yes

#### SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

Additional excavation efforts will be required to remove the source associated with this remediation project. Prior to excavation activities, Caerus proposes additional soil borings to delineate the extent of impacts associated with the historic pit. Once delineation is complete, Caerus proposes excavation of remaining impacts up to the delineation points. Additional soil borings may be advanced if field screening and observations indicate impacted soil.

#### REMEDICATION 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.

See the ROWC associated with Form 27 Document 403711094 for site investigation details prior to August 2024.

On August 26, 2024, drilling activities to delineate the extent of confirmed soil impacts were completed. Using a track-mounted solid stem drill rig, two soil borings (SB16 and SB17) were advanced to a total depth of 31 and 17 feet bgs, respectively. A total of 6 soil samples were collected, with three being collected from each boring. Additionally, five background samples were collected from comparable, nearby, non-impacted soil to establish native levels of inorganics at the Location. Soil samples were characterized using visual and olfactory observations and field-screened for volatile organic compounds with a photoionization detector (PID). Analytical results of delineation soil samples indicate concentrations of TPH, EC, SAR, and pH exceeding Table 915-1 RSSLs. Analytical results of background soil samples indicate native values of EC, SAR, pH, and arsenic elevated above Table 915-1 RSSLs. See the attached ROWC for details.

#### Soil Remediation Summary

☐ In Situ

☒ Ex Situ

Bioremediation ( or enhanced bioremediation )

Yes Excavate and offsite disposal

\_\_\_\_\_ Chemical oxidation  
\_\_\_\_\_ Air sparge / Soil vapor extraction  
\_\_\_\_\_ Natural Attenuation  
\_\_\_\_\_ Other \_\_\_\_\_

If Yes: Estimated Volume (Cubic Yards) \_\_\_\_\_ 14

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.

Groundwater is not anticipated to be encountered as part of this investigation. In the event that groundwater is encountered, Caerus will attempt to collect a representative sample for analysis of ECMC Table 915-1 standards.

## 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 Q3 and Q4 2024 Semi-Annual REM Status Update

### 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: \$ 75000

### 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:

No beneficial use.

Volume of E&P Waste (solid) in cubic yards 14

E&P waste (solid) description Hydrocarbon impacted soil

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility: Greenleaf Environmental Services

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 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. 06/03/2011

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 06/03/2011

Proposed site investigation commencement. 07/28/2021

Proposed completion of site investigation. 05/01/2025

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 07/28/2021

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**

This form has been submitted to provide a Q3 and Q4 2024 Semi-Annual Reporting Status Update to Remediation Project 19200.

Based on statistical results of site specific background samples, Caerus requests consideration of ECMC Table 915-1 Footnote 1 to remove EC and SAR as constituents of concern for the project, as all values are well within the range established by the statistical analysis of background samples. Additionally, Caerus requests consideration of Footnote 1 to establish an alternative level of 9.69 for pH. Prior to additional investigation, Caerus requests an updated reduced analyte suite of TPH and pH for all future investigations. See the attached ROWC for details.

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: 12/05/2024

Email: brollins@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: Steven Arauza

Date: 01/08/2025

Remediation Project Number: 19200

## **COA Type**

## **Description**

	<p>Note: The ECMC does not concur with the request to use the Upper Outlier Limit (UOL) of 9.688 to establish an alternative allowable level for pH, because the UOL significantly exceeds the range observed in site-specific field samples (7.73-8.83).</p> <p>A comparison of the documented exceedances (8.83-11.7) to the range observed in site-specific background samples (8.36-8.83) indicates that the exceedances observed exceed background conditions established by site-specific background samples.</p> <p>Based on information provided for site-specific background samples (doc #404017891), the Operator's request to establish an alternative allowable limit for pH is approved under the condition below:</p> <p>The alternative allowable level for pH for this remediation project is 8.83, based on site-specific background levels.</p>
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.

<b><u>Att Doc Num</u></b>	<b><u>Name</u></b>
403937751	INVESTIGATION/REMEDATION WORKPLAN (SUPPLEMENTAL)
403937799	ANALYTICAL RESULTS
403937801	ANALYTICAL RESULTS
404017891	SITE INVESTIGATION REPORT
404051393	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 5 Files

## **General Comments**



<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
Environmental	<p>Based on information provided for site-specific background samples (doc #404017891), the Operator's request for relief from consideration of EC and SAR as contaminants of concern is conditionally approved per Table 915-1, Footnote 1 and Rule 915.e.(2).C.</p> <p>However, the ECMC does not concur with the use of the Upper Outlier Limit (UOL) for each analyte, 23.757 mmhos/cm for EC and 136.283 for SAR, because they significantly exceed the range observed in site-specific field samples (0.171-12.1 mmhos/cm for EC and 1.23-68.3 for SAR).</p> <p>A comparison of the documented exceedances (4.34-12.4 mmhos/cm for EC and 7.60-53.9 for SAR) to the range observed in site-specific background samples (4.61-12.1 mmhos/cm for EC and 9.02-68.3 for SAR) indicates that the exceedances observed are comparable to background conditions.</p>	01/08/2025
Environmental	Based on the information provided, the Operator's request for a reduced analyte suite of TPH and pH is conditionally approved with an alternative allowable pH of 8.83, based on documented site-specific background levels.	01/08/2025

Total: 2 comment(s)