

# State of Colorado Oil and Gas Conservation Commission

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403099828

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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 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	<b>Phone Numbers</b>
Address: 1001 17TH STREET #1600		
City: DENVER State: CO Zip: 80202		
Contact Person: Jake Janicek	Email: jjanicek@caerusoilandgas.com	
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### PROJECT, PURPOSE & SITE INFORMATION

#### PROJECT INFORMATION

Remediation Project #: 22200 Initial Form 27 Document #: 402865895

#### 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: Closure Request of decommissioned two historic earthen pits (117250).

#### SITE INFORMATION

No Multiple Facilities

Facility Type: PIT	Facility ID: 117250	API #: _____	County Name: RIO BLANCO
Facility Name: T-73-11-G	Latitude: 39.894595	Longitude: -108.241746	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: SENE	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? No

Is groundwater less than 20 feet below ground surface? No

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

NA

## 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) No waste was identified during closure work

### DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
No	SOILS	NA	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.

See Colorado Oil and Gas Conservation Commission (COGCC) Document Number 403099828 for initial actions completed associated with the two historic earthen pits (Facility ID:117250) and the pre-decommissioning investigative sampling of the off-location flowline. One soil sample was collected from each historic earthen pit location along with one sample from soil beneath where the line associated with the injection well (Facility ID 159164 and API # 103-08181) will be abandoned immediately west of the PCU T73-11G pad location.

On August 11 and 12, 2022, an investigative drilling assessment was completed to delineate the sodium absorption ratio (SAR) exceedance previously identified during the initial investigative sampling event associated with the abandoned historic earthen production pit (Facility ID:117250) located on the southern end of the Site. A total of five assessment borings were advanced to depths ranging from 13 feet below ground surface (bgs) to 17 feet bgs. The five assessment borings were advanced as follows; S.PIT-C was advanced within center of the former pit, and boring location S.PIT-N, S.PIT-E, S.PIT-S, and S. PIT-W were advanced approximately 15 feet in each cardinal direction of the former pit location.

The attached Report of Work Completed (ROWC) details the soil characterization and subsequent activities and results associated with the administrative closure of the two earthen pits at PCU T73-11G (Facility ID: 230514) along with pre-decommissioning investigative sampling of the off-location flowline.

### 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 ):

#### 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 15

Number of soil samples exceeding 915-1 15

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

Approximate areal extent (square feet) 300

**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

**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.

**NA / ND**

ND Highest concentration of TPH (mg/kg)

-- Highest concentration of SAR 15.4

BTEX &gt; 915-1 No

Vertical Extent &gt; 915-1 (in feet) 17

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)

**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?**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, there is no known source.

**REMEDIAL ACTION 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.

Remediation is not necessary on this project.

All impacts soil associated with the two historic earthen pit locations (Facility ID:117250) and the pre-decommissioning investigative sampling of the off-location flowline are confirmed within background concentrations of nearby locations PCU T75X-3G1 (Facility ID: 335695) and PCU 297-11A (Location ID: 335946). The elevated pH, SAR, and arsenic concentrations are addressed below.

Caerus requests that the negligible SAR exceedances associated with the sampling of the soil within the historic earthen south pit and below the flowline to be abandoned should be considered by the Director under COGCC Rule 915.e.2(C). This request is due to the fact that all SAR concentrations with respect to the COGCC Table 915-1 CCs are within background concentrations found at the nearby pad location PICENACE CREEK UNIT-62S97W3NESE (T75X-3G1) (Facility ID: 335695). Although these soil samples were collected from a geographical distance range of 1.18 to 1.41 miles from two separate boring locations northwest of the PCU T73-11G, the soils at the PCU T75X-3G1 are representative of the same soil complex, Redcreek-Rentsac, per COGCC GISOnline Soil Survey (NRCS) as the PCU T73-11G. All of the elevated SAR values at the PCU T73-11G with respect to the COGCC Table 915-1 should be considered naturally occurring within the local area and corresponding soil complex.

Please see the attached ROWC for more specific investigative sampling details.

See "Operator Comments" addressing elevated pH and arsenic concentrations to values be considered as naturally occurring.

## **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.

No groundwater was encountered or observed during investigative assessment activities.

## REMEDATION PROGRESS UPDATE

### PERIODIC REPORTING

#### Approved Reporting Schedule:

☒ Quarterly☐ Semi-Annually☐ Annually☐ Other

Closure Request to Decommissioning of Two Historic Earthen Pits.

#### ☐ Request Alternative Reporting Schedule:

☐ Semi-Annually☐ Annually☒ Other

Oil and Gas Facility Decommissioning Notification per COGCC Rule 911.a.(4) and 913.c.(9).

#### 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.

Until Caerus submits a Financial Assurance Plan required by Rule 702, due September 15, 2022, the bond covering the remediation of these pits (2) and wellhead flowline (1) will be covered under 20130021.

Operator anticipates the remaining cost for this project to be: \$ 0

### 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 5

E&P waste (liquid) description Hydro-vac rinsate mixed with impacts soils

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

Non-COGCC Disposal Facility: Greenleaf Environmental Services

## REMEDATION COMPLETION REPORT

### REMEDATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? Yes

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? Yes

Does the previous reply indicate consideration of background concentrations? Yes

Does Groundwater meet Table 915-1 standards? Yes

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 pit and flowline locations will be returned to grade with suitable material in preparation for final reclamation activities pursuant to the COGCC 1000 series rules.

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? No

If YES, does the seed mix comply with local soil conservation district recommendations? \_\_\_\_\_

Did the local soil conservation district provide the seed mix? No

### 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). 11/19/2021

Proposed site investigation commencement. 11/19/2021

Proposed completion of site investigation. 08/11/2022

### REMEDIAL ACTION DATES

Proposed start date of Remediation. \_\_\_\_\_

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

In order to address the elevated pH concentration in all investigative soil samples collected from the two earthen pit bottoms and soil beneath the off location flowline, Caerus requests that these values be considered as naturally occurring. Although these pH values range from 8.41 to 9.61 which are elevated with respect to the COGCC Table 915-1 CC criteria of 8.3, these elevated values should not be considered elevated as a result of the byproduct of the historic leachate of the historic production pit water and/or production water. Based on produced water quality data collected from the Black Sulfur Facility (BSF) which represents produced water generated at the PCU T73-11G location, the soil pH value is greater than the produced water's pH value generated at the Site. The pH value of the produced water sample collected from the outlet at the BSF collected on September 14, 2021, was 6.81. Based on the pH value of the produced water sample, Caerus believes the elevated pH values in the confirmation soils samples are not associated with the operation of the two historic earthen production pits or off location flowline and are not a result of oil and gas production activities but are rather naturally occurring background concentrations within the area.

To address the elevated arsenic concentrations that exceed the COGCC Table 915-1 RSSLCs, Caerus requests the Director to evaluate the exceedances per COGCC Table 915-1 footnote 11 (1.25X background concentrations for metals). Caerus requests that all confirmation soil sample arsenic exceedances be considered within background concentrations observed in background soil sample BACKGROUND 6 found at the PICEANCE CREEK UNIT-62S97W11NESE (PCU 297-11A) (Location ID: 335946) located immediately southeast of the Site (0.16 miles). The arsenic concentrations of all confirmation samples are within 1.25x the background soil sample BACKGROUND 6 (6.5 mg/kg) collected at the PCU 297-11A location. Caerus requests that all arsenic exceedances within 1.25X of background levels be considered naturally occurring. These background samples collected at the PCU 297-11A are representative of the same soil complex, Redcreek-Rentsac, per COGCC GISOnline Soil Survey (NRCS) as the PCU T73-11G.

Caerus requests the Director for a "No Further Action" Designation associated with the decommissioning of the two historic earthen pit locations (Facility ID:117250) at the USA PICEANCE CREEK-62S97W/11SENE (Location ID: 315260) pad location under COGCC RN 22200. The off location flowline associated with the former disposal well (Facility ID:159164, API# 103-08181) will be closed under a separate Form 27 submittal once the flowline is properly abandoned and additional screening occurs to confirm for the presence or absence of impacts to soil.

Once the COGCC approves our closure work associated with the former production pits associated with this Form 27, the final reclaim work associated with the PCU T73-11G can begin. At which time, the off location flowline mentioned above will also be decommissioned and abandoned in place.

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

Signed: Dustin Held

Title: Sr. Consultant, Geologist

Submit Date: 09/22/2022

Email: dustin.held@wsp.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: John Heil

Date: 09/28/2022

Remediation Project Number: 22200

## Condition of Approval

### COA Type

### Description

	Based on a review of the information provided, it appears that no further action is necessary at this time and COGCC approves the closure request. Should conditions at the site indicate contaminant concentrations in soils exceeding COGCC standards, or, if groundwater is found to be significantly impacted, further investigation and/or remediation activities may be required at the site.
1 COA	

## 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

403099828	FORM 27-SUPPLEMENTAL-SUBMITTED
403173732	SITE INVESTIGATION REPORT

Total Attach: 2 Files

## General Comments

### User Group

### Comment

### Comment Date

		Stamp Upon Approval
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Total: 0 comment(s)