

State of Colorado Oil and Gas Conservation Commission

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403198591

Receive Date:

12/22/2022

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 Phone: (970) 778-2314 Mobile: (970) 778-2314
Address: 1001 17TH STREET #1600		
City: DENVER	State: CO Zip: 80202	
Contact Person: Jake Janicek	Email: jjanicek@caerusoilandgas.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 25302 Initial Form 27 Document #: 403112417

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: 3Q Status Administrative Closure of Historic Pit and Facility Decommissioning.

SITE INFORMATION

Yes Multiple Facilities

Facility Type: PIT	Facility ID: 104876	API #:	County Name: RIO BLANCO
Facility Name: SAGEBRUSH HILLS 4504		Latitude: 39.896750	Longitude: -108.530633
		** correct Lat/Long if needed: Latitude:	Longitude:
QtrQtr: NENW	Sec: 8	Twp: 2S	Range: 99W Meridian: 6 Sensitive Area? Yes
Facility Type: WELL	Facility ID:	API #: 103-07527	County Name: RIO BLANCO
Facility Name: SAGEBRUSH HILLS II UNIT A 4504		Latitude: 39.896976	Longitude: -108.530441
		** correct Lat/Long if needed: Latitude:	Longitude:
QtrQtr: NENW	Sec: 8	Twp: 2S	Range: 99W Meridian: 6 Sensitive Area? Yes

Facility Type: LOCATION	Facility ID: 314907	API #:	County Name: RIO BLANCO
Facility Name: SAGEBRUSH HILLS II UNIT A-62S99W 8NENW		Latitude: 39.896740	Longitude: -108.530613
		** correct Lat/Long if needed: Latitude:	Longitude:
QtrQtr: NENW	Sec: 8	Twp: 2S	Range: 99W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SW Most Sensitive Adjacent Land Use Rangeland-BLM

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

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	TBD	Site Investigation/Laboratory Analytical

INITIAL ACTION SUMMARY

Description of initial action or emergency response measures take to abate, investigate, and/or remediate impacts associated with E&P Waste.

Between August 9 and 12, 2022, six assessment soil borings were advanced to delineate previously documented in-situ impacts identified in former pothole location PH02 associated with the historic pit (Pit ID 104876) at the Site. The assessment borings were advanced to depths ranging from 17 feet to 23 feet below ground surface (bgs). The assessment borings were advanced within the immediate areas where previously documented Table 915-1 exceedances were left in-situ in sub-surface soils. Soil boring location SBC was advanced directly adjacent to the former pothole where exceedances were previously identified (PH02), four soil borings (SBN, SNE, SBS, and SBW) were advanced in each cardinal direction of the pothole PH02, and one boring (SBNE) was advanced to the northwest of the pothole PH02 (Figure 2). Soil samples were field screened using a photoionization detector (PID) at 2-foot intervals as each pothole was advanced to terminus.

On August 16 and 17, 2022, 11 confirmation soil samples were collected from beneath the footprints of various former decommissioned oil and gas equipment locations at the SAGEBRUSH HILLS 4504 pad location. In order to assess the soil quality in the vicinity of the decommissioned production equipment, soils were field screened and confirmation soil samples were collected beneath the Tank, Meter Skid and Meter Skid Inlet, Separator, Separator Sales Line Header, Blow Down Riser, Flowline Inlet, Wellhead, Meter house, Off location Flowline, and a Flowline Riser located to the west of the 4504 pad. A total of 11 samples were collected from the footprints of decommissioned production equipment and were collected from depths ranging between ground surface and 8 feet bgs. All soil samples were field screened using a PID.

See the attached report of work completed (ROWC) for the additional details regarding investigative sampling associated with the historic pit and facility decommissioning.

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):

Additional soil borings will be advanced to define observed impacts associated with the initial characterization and subsequent investigative soil sampling. The assessment footprint will be expanded to encompass the entire pit boundary to laterally define the shallow chromium (VI) and EC impacts and vertically define the SAR impacts. Caerus plans to advance 15 soil borings within and surrounding the pit footprint. If vertical and/or lateral impacts are observed beyond the six outer borings advanced, then subsequent contingency soil borings will be advanced in each cardinal direction until impacts are defined.

See the "Operator Comments" section 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):

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 34

Number of soil samples exceeding 915-1 34

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

Approximate areal extent (square feet) 85068

NA / ND

-- Highest concentration of TPH (mg/kg) 224.0
2

-- Highest concentration of SAR 33.9

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 20

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?

Eight site-specific background soil samples were collected from two site-specific soil boring locations on undisturbed land to establish site-specific background concentrations for Table 915-1 analytes per COGCC Rule 915.e.(2).D. The background sampling activities can be referenced in the attached ROWC.

☐ 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 refer to the "Proposed Soil Sampling" section for 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.

Once the impacts are fully delineated a plan to remove the source will be addressed.

REMEDATION 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.

A remediation plan will be submitted once all historic pit impacts are delineated.

To date Caerus has advanced six soil borings within eastern footprint boundary of the historic pit in an attempt to define previously identified impacts. Caerus plans to expand the assessment footprint moving forward to encompass the entire pit boundary to laterally define the shallow chromium (VI) and EC impacts and vertically define the SAR impacts. Caerus plans to advance 15 soil borings within and surrounding the pit footprint. The proposed soil boring are depicted on Figure 5 of the attached ROWC.

To address the chromium (VI) and SAR soil impacts observed associated with the removal of production equipment, Caerus plans to scrape and/or excavate the areas which observed exceedances using heavy equipment and then re-collect soil samples to confirm if impacts were removed. All excavated soil will then be transported offsite for disposal to an approved disposal facility. Soil samples will be collected from Tank, Meter Skid and Meter Skid Inlet, Separator, Separator Sales Line Header, Blow Down Riser, and Flowline Inlet. A representative number of soil samples will be collected based on the extent of each assessment area.

Per COGCC Table 915-1 footnote 11, Caerus requests that the Director consider that all 40 arsenic exceedances to be considered within background concentrations observed in site-specific background soil sample 20220810-4504(SB-BG01)@20-22' found at the Site. The arsenic concentration of background soil sample 20220810-4504(SB-BG01)@20-22' (8.71 mg/kg) is within 1.25X of all 40 initial and subsequent investigative assessment and facility decommissioning confirmation soil samples collected at the Site.

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

See "Operator Comments" addressing the elevated pH concentrations to be evaluated 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.

Groundwater is not anticipated, if encountered, representative grab samples will be collected and analyzed under COGCC Table 915-1 for water.

REMEDATION PROGRESS UPDATE

PERIODIC REPORTING

Approved Reporting Schedule:

☒ Quarterly☐ Semi-Annually☐ Annually☐ Other

3Q Status Administrative Closure of Historic Pit and Facility Decommissioning.

☐ 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 11

E&P waste (liquid) description hydro-vac rinsate mixed with soil impacted with E&P waste

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? 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.

All disturbances within the interim reclaim will be reclaimed to match existing grade. When the site is decommissioned at a later date, it will be reclaimed in accordance with 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. 06/24/2022

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 06/24/2022

Proposed site investigation commencement. 08/10/2022

Proposed completion of site investigation. _____

REMEDIAL ACTION DATES

Proposed start date of Remediation. 06/24/2022

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 "Proposed Soil Sampling" section below.

Additional soil samples will be collected from beneath the footprints of seven former production equipment locations which exceeded Table 915-1. Prior to sample collection all areas which exceeded Table 915-1 will be scraped and/or excavated. A representative number of soil samples will be collected based on the extent of each assessment area.

Please see the attached ROWC for additional proposed sampling details.

Prior to any additional investigative activities, Caerus requests the Director for a reduced analyte suite of total petroleum hydrocarbons (TPH), chromium (VI), boron, EC and SAR for all future soil samples.

Carry over from "Remediation Summary" section below.

In order to address the elevated COGCC Table 915-1 Clean-up Concentrations (CCs) for pH that were exceeded by 17 of the 40 investigative assessment soil samples (initial, subsequent, and facility decommissioning) since project inception, Caerus requests that these elevated values be considered naturally occurring. Although the 17 of the 40 confirmation soil samples pH values range from 8.34 SU to 9.50 SU and are elevated with respect to the COGCC Table 915-1 CCs maximum range of 8.3, these elevated values should not be considered elevated as a result of oil and gas production activities associated with historic pit and former production equipment locations at the SAGEBRUSH HILLS 4504 location. Based on the site-specific background soil sample results, the highest background soil pH value is equal to the pH values of confirmation soil samples collected at the Site. The pH value exceedances of site-specific background soil samples collected from the Site range from 8.77 SU in site-specific background soil sample 20220810-4504(SB-BG01)@20-22' to 9.67 SU in site-specific background soil sample 20220810-4504(SB-BG01)@5-7'. The pH value collected from site-specific background soil boring sample 20220810-4504(SB-BG01)@5-7' (9.67 SU) indicates that the historic pit and on pad facility operation activities did not effectively increase the pH above the above the COGCC Table 915-1 CC of 8.3 SU. Based on the pH value (9.67 SU) of site-specific background soil sample 20220810-4504(SB-BG01)@5-7', Caerus believes the elevated pH values in the 17 confirmations soil samples are not associated with the historic pit and on pad facility operation activities and are not a result of oil and gas production activities but are rather naturally occurring background concentrations within the area.

Please see "Conclusions" section of the ROWC which addresses relief concerning assessment of potential pathways to groundwater. Caerus requests that the Director make a determination to continue evaluating the remediation success of this project using Residential Soil Screening Level Concentrations listed in Table 915-1.

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: 12/22/2022

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: Steven Arauza

Date: 01/03/2023

Remediation Project Number: 25302

COA Type

Description

	Address outstanding COA for liner disposal.
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

403198591	FORM 27-SUPPLEMENTAL-SUBMITTED
403269743	SITE INVESTIGATION REPORT

Total Attach: 2 Files

General Comments

User Group

Comment

Comment Date

Environmental	Based on the information provided for estimated depth to groundwater, the Operator's request to continue under the Table 915-1 Residential Soil Screening Levels is conditionally approved.	01/03/2023
Environmental	Based on the information provided, the Operator's request for a reduced analyte suite of TPH, chromium VI, boron, EC, and SAR is conditionally approved.	12/16/2022

Environmental	Based on the information provided, the Operator's request to consider elevated pH concentrations as naturally occurring, per Table 915-1 Footnote 1 is conditionally approved.	12/16/2022
Environmental	Based on the information provided, the Operator's request for consideration of arsenic exceedances as reflective of background conditions, per Table 915-1 Footnotes 1 & 11 is conditionally approved.	12/16/2022

Total: 4 comment(s)