

State of Colorado Oil and Gas Conservation Commission

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Report taken by:

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.

Refer to Rules 340, 905, 906, 907, 908, 909, and 910

OPERATOR INFORMATION

Name of Operator: CAERUS PICEANCE LLC	Operator No: 10456	Phone Numbers
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@caerusoilandgas.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 15878

Initial Form 27 Document #: 402433873

PURPOSE INFORMATION

- | | |
|--|--|
| <input type="checkbox"/> 901.e. Sensitive Area Determination | <input type="checkbox"/> 909.c.(5), Rule 910.b.(4): Remediation of impacted ground water |
| <input type="checkbox"/> 909.c.(1), Rule 905: Pit or PW vessel closure | <input type="checkbox"/> Rule 909.e.(2)A.: Notice completion of remediation in accordance with Rule 909.b. |
| <input type="checkbox"/> 909.c.(2), Rule 906: Spill/Release Remediation | <input checked="" type="checkbox"/> Rule 909.e.(2)B.: Closure of remediation project |
| <input type="checkbox"/> 909.c.(3), Rule 907.e.: Land treatment of oily waste | <input type="checkbox"/> Rule 906.c.: Director request |
| <input type="checkbox"/> 909.c.(4), Rule 908.g.: Centralized E&P Waste Management Facility closure | <input type="checkbox"/> Other _____ |

SITE INFORMATION

N Multiple Facilities (in accordance with Rule 909.c.)

Facility Type: LOCATION	Facility ID: 335928	API #: _____	County Name: GARFIELD
Facility Name: SG E34 496	Latitude: 39.660280	Longitude: -108.160547	
** correct Lat/Long if needed: Latitude: 39.658465		Longitude: -108.161605	
QtrQtr: SWNW	Sec: 34	Twp: 4S	Range: 96W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications CL

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

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	9000 cubic yards	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.

Please see COGCC Document 402577375 for a description of activities completed prior to April of 2021.

On 4/21/2021 and 4/22/2021, all cuttings represented by soil samples 20201215– E34-496 (CUT02) and 20201215 – E34-496 (CUT05) referenced in the previous Form 27 (COGCC Document 402577375) associated with this remediation project were spread out into a thinner landfarm once all the cuttings verified as being compliant with COGCC Table 910-1 Concentration Levels were moved out of the way. The cuttings were spread out in a thinner format in order to promote increased volatilization.

On 4/29/2021, three soil samples (20210429-E34-496(CUT01), 20210429-E34-496(CUT02), and 20210429-E34-496(CUT03)) were collected from the landfarm. The samples were submitted for laboratory analysis of benzene as approved in the above-mentioned Form 27. Laboratory analytical results indicate that all three samples complied with the benzene Concentration Level listed in COGCC Table 910-1. Laboratory analytical results are attached and summarized in Table 1. Sample locations are depicted on the attached figure.

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 3

Number of soil samples exceeding 910-1 0

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

Approximate areal extent (square feet) 20000
0

NA / ND

NA Highest concentration of TPH (mg/kg)

NA Highest concentration of SAR

BTEX > 910-1 No

Vertical Extent > 910-1 (in feet) 0

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 910-1

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 910-1

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?

☐ 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.

No source removal is necessary.

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.

No further remediation is necessary.

In order to address the arsenic exceedances exhibited in the soil samples, Caerus is requesting consideration for the COGCC Table 910-1 Concentration Level for arsenic using Footnote 1 of Table 910-1. Caerus believes the request for this consideration is acceptable as arsenic results for all three samples collected on 5/20/2020 and referenced in the Initial Form 27 (COGCC Document 402433873) associated with this remediation project were below background concentrations of samples collected at the nearby M34-496 pad location (COGCC Location ID 335927). The attached document titled "M34-496 Background Data" details information on these background samples.

Please see the "Reclamation Planning" section of this form to review how Caerus plans to address EC, SAR, and pH exceedances in samples collected from these cuttings on 5/20/2020. These exceedances are presented in the Form 27 referenced above.

Soil Remediation Summary

☐ In Situ

_____ Bioremediation (or enhanced bioremediation)

_____ Chemical oxidation

_____ Air sparge / Soil vapor extraction

_____ Natural Attenuation

_____ Other _____

☒ Ex Situ

_____ No Excavate and offsite disposal

_____ If Yes: Estimated Volume (Cubic Yards) _____

_____ Name of Licensed Disposal Facility or COGCC Facility ID # _____

_____ Yes Excavate and onsite remediation

_____ Yes Land Treatment

_____ No Bioremediation (or enhanced bioremediation)

_____ No Chemical oxidation

_____ No 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.

REMEDATION PROGRESS UPDATE

PERIODIC REPORTING

Frequency: ☒ Quarterly ☐ Semi-Annually ☐ Annually ☐ Other _____

Report Type: ☐ Groundwater Monitoring ☐ Land Treatment Progress Report ☐ O&M Report
☐ Other _____

WASTE DISPOSAL INFORMATION

Was E&P waste generated as part of this remediation? _____

Describe beneficial use, if any, of E&P Waste derived from this remediation project:

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

E&P waste (solid) description _____

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____

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

E&P waste (liquid) description _____

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____

REMEDATION COMPLETION REPORT

REMEDATION COMPLETION SUMMARY

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

Do all soils meet Table 910-1 standards? No _____

Does the previous reply indicate consideration of background concentrations? _____

Are the only residual soil impacts pH, SAR, or EC at depths greater than 3 feet below ground surface? Yes _____

Does Groundwater meet Table 910-1 standards? Yes _____

Is additional groundwater monitoring to be conducted? No _____

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.

Due to these cuttings exhibiting elevated EC, SAR, and/or pH concentrations, all cuttings associated with this remediation plan will be left in situ per COGCC Rule 915.b. Specifically, they will be placed in the eastern cut slope of the auxiliary pad located to the southwest of the main E34-496 well pad as detailed on the engineered drawings included on the attached Reclamation Plan as Appendix 1. These drawings represent the current status of the pad location as well as detail what the pad will look like after Interim Reclamation and Final Reclamation activities are completed. A detailed reclamation plan compliant with Rule 915.b. has been attached to this form.

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 approve the seed mix? Yes _____

If NO, does the seed mix comply with local soil conservation district recommendations? Yes _____

IMPLEMENTATION SCHEDULE

PRIOR DATES

Date of Surface Owner notification/consultation, if required. _____

Actual Spill or Release date, if known. _____

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 05/20/2020

Date of commencement of Site Investigation. 05/20/2020

Date of completion of Site Investigation. 04/29/2021

REMEDIAL ACTION DATES

Date of commencement of Remediation. 05/20/2020

Date of completion of Remediation. 04/29/2021

SITE RECLAMATION DATES

Date of commencement of Reclamation. _____

Date of completion of Reclamation. _____

OPERATOR COMMENT

Only samples collected from 4/29/2021 are summarized in the "Sample Summary" section of this form.

Data collected from background soil sampling near the E34-496 pad location in 2010 is summarized in Table 2 and analytical reports are attached. Soil sampling locations are depicted on Figure 2.

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: _____

Email: jjanicek@caerusoilandgas.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: _____

Date: _____

Remediation Project Number: 15878

COA Type

Description

	<p>The condition of approval of document #402577375 indicated that background sampling may be required to address EC, pH, and SAR exceedances. Rule 915.b states that the Operator's request to leave materials with exceedances of EC, pH, and SAR in situ by submitting a Reclamation plan that includes soil analysis from adjacent undisturbed lands.</p> <p>Operator has not provided analytical data for purposes of establishing background soil conditions for pH, EC, and SAR pursuant to Rule 915.e.(2).D or the soil analysis requirement of Rule 915.b</p> <p>The Operator's request for no further action cannot be approved at this time. The Operator shall collect samples of comparable, nearby non-impacted native soil and analyze them for purposes of establishing background soil conditions of pH, EC, and SAR.</p>
	Hay, straw and mulch must be certified weed free.
	Approval/Passing of this Form is not an endorsement of the reclamation plan that has been attached/included; Location will need to meet 1000 series requirements in order to pass reclamation. If it is determined that reclamation is not progressing towards 1000 series standards, additional remedial efforts may be required; the reclamation plan should be updated based on the site's conditions, and implemented in order to ensure standards are met.

	Soils to be placed over the cutting material during reclamation efforts shall be done so in accordance with Rule 1003.e.(2); Operator shall implement Best Management Practices to ensure that topsoil is replaced and protected in such a manner as to prevent mixing with subsoils, impacted materials or other contaminants.
	As to any future remedial efforts requiring excavation: topsoil salvage, soil segregation and protection of soils shall be performed in accordance with Rule 1002.b and 1002.c.
	Reduced analyte suite of benzene-only was conditionally approved under doc #402577375 with the COA that the Operator address exceedances for arsenic, EC, pH, and SAR. This document indicated that additional sampling may be required to address the exceedances.

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.

<u>Att Doc Num</u>	<u>Name</u>
402679261	ANALYTICAL RESULTS
402679262	MAP
402679281	ANALYTICAL RESULTS
402679560	RECLAMATION PLAN
402679583	ANALYTICAL RESULTS
402720875	MAP
402720877	ANALYTICAL RESULTS
402720879	ANALYTICAL RESULTS

Total Attach: 8 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
Environmental	BACKGROUND SAMPLING NOT PROVIDED.	06/09/2021
Reclamation Specialist	Areas detailed in the attached map may or may not encompass the exact areas needed for production operations or the required interim reclamation area; future assessments regarding the size and extent of the areas needed for production and interim reclamation will be determined on the ground by reclamation staff during a field inspection.	06/07/2021
Environmental	Doc #402679583 documents background arsenic concentrations of 4.3 to 14 for a facility located approximately 0.4 miles SSW of subject pad (Location ID #335927)	05/19/2021
Environmental	Doc #402433881 (baseline cuttings samples) documents exceedances for arsenic (5.2-7), EC (5.2), pH (10.8), and SAR (12-18) as well as benzene.	05/19/2021

Total: 4 comment(s)