

State of Colorado Oil and Gas Conservation Commission

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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.

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

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 #: 14181

Initial Form 27 Document #: 402159698

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 checked="" type="checkbox"/> 909.c.(2), Rule 906: Spill/Release Remediation | <input 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: SPILL OR RELEASE	Facility ID: 466606	API #: _____	County Name: GARFIELD
Facility Name: L19-595 Dumpline		Latitude: 39.599413	Longitude: -108.106305
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: NWSW	Sec: 19	Twp: 5S	Range: 95W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications GM

Most Sensitive Adjacent Land Use Non-crop land

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	See maps	Laboratory analytical results

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 402349947 for information on activities completed prior to 8/4/2020.

Please see attached documentation for details on activities completed between 8/4/2020 and 8/27/2020.

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):

All future soil samples will be collected and analyzed per the approach proposed in the "Remediation Summary" section of this form.

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 30

Number of soil samples exceeding 910-1 30

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

Approximate areal extent (square feet) 10000
0

NA / ND

-- Highest concentration of TPH (mg/kg) 817

-- Highest concentration of SAR 30.9

BTEX > 910-1 No

Vertical Extent > 910-1 (in feet) 33

Groundwater

Number of groundwater samples collected 0

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet) 0'

Number of groundwater monitoring wells installed 0

Number of groundwater samples exceeding 910-1 0

NA Highest concentration of Benzene (µg/l)

NA Highest concentration of Toluene (µg/l)

NA Highest concentration of Ethylbenzene (µg/l)

NA Highest concentration of Xylene (µg/l)

NA Highest concentration of Methane (mg/l)

Surface Water

0 Number of surface water samples collected

0 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?

Background soil samples collected from the L19-595 pad location on 8/31/2011 are being used for comparison. Analytical results are included as Table 1 in the attached document. A map of where these samples were collected was included as an attachment on COGCC Document 402349947

☐ 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? Yes _____

SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

No further 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.

All remaining impacted soil (approximately 1,500 cubic yards) represented by soil sample 20200814-L19-595 (STOCK 02) will be mixed with soil represented by soil sample 20200814-L19-595 (STOCK 03). Following this mixing, three five-point composite samples will be collected from this newly created stockpile (approximately 3,000 cubic yards). All samples will be submitted for laboratory analysis of the reduced analyte suite (TPH, BTEX, EC, SAR, pH, and arsenic) approved via COGCC Document 402349947. If there is still remaining impacted soil after this procedure is complete, then it will be processed through a soil shredder machine which will be mobilized to the location. Please see Figure 3 of the attached document that shows the current position of this soil. The soil shredder will be utilized to volatilize all remaining hydrocarbons present in this soil. In order to determine if the shredder is adequately treating the soil, one five-point composite sample will be collected for every 500 cubic yards of material processed through the shredder. Each composite sample will be analyzed for the reduced analyte suite mentioned above.

In order to prepare the site for this approach and make room for the above-mentioned procedure, Caerus requests permission to place soil represented by soil samples 20200814-L19-595 (STOCK 01) and 20200814-L19-595 (STOCK 04) in the excavation associated with this project as backfill. Laboratory analytical results for these two samples indicated that both samples were compliant with COGCC Table 910-1 Concentration Levels for all analytes included in the above-mentioned reduced analyte suite or within background concentrations. Table 1 on the attached document summarizes these analytical results and the document also includes analytical reports. Figures 1 and 2 on the attached document depict the stockpile sampling locations and other pertinent site information.

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
_____ No Land Treatment
_____ No Bioremediation (or enhanced bioremediation)
_____ No Chemical oxidation
_____ Yes Other Soil Shredding and mixing _____

Groundwater Remediation Summary

_____ No Bioremediation (or enhanced bioremediation)
_____ No Chemical oxidation
_____ No Air sparge / Soil vapor extraction
_____ No 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

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? 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 _____ 73

E&P waste (liquid) description Mixture of impacted soil and hdyrovac
rinsate _____

COGCC Disposal Facility ID #, if applicable: _____ 426582

Non-COGCC Disposal Facility: _____

REMEDIATION COMPLETION REPORT

REMEDIATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? No _____

Do all soils meet Table 910-1 standards? _____

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? _____

Does Groundwater meet Table 910-1 standards? _____

Is additional groundwater monitoring to be conducted? _____

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.

The northern part of the pad will be reclaimed and seeded per COGCC rules regarding reclamation.

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). 08/08/2019

Date of commencement of Site Investigation. 08/08/2019

Date of completion of Site Investigation. 11/13/2019

REMEDIAL ACTION DATES

Date of commencement of Remediation. 08/26/2019

Date of completion of Remediation. _____

SITE RECLAMATION DATES

Date of commencement of Reclamation. _____

Date of completion of Reclamation. _____

OPERATOR COMMENT

The "Sample Summary" section detailed on Page 3 of 6 of this form includes only the sample data from soil samples collected from 8/4/2020 through 8/27/2020.

In order to address the arsenic exceedances exhibited in the soil samples collected between 8/4/2020 and 8/27/2020, Caerus is requesting consideration for the COGCC Table 910-1 Concentration Level for arsenic under guidelines set forth under FAQ 31. Caerus believes the request for FAQ 31 consideration is acceptable as arsenic results for all samples collected were below background concentrations or within the range of 1.25 x background accepted by the COGCC. Please see Table 1 and associated background soil sample results included as an attachment on the attached document for details on background soil sampling. This sampling occurred in 2011 at the location. All samples were collected from undisturbed areas.

In order to address EC, SAR, and pH exceedances exhibited in 11 of the 18 confirmation samples collected from the walls and base of the excavation between 8/4/2020 and 8/13/2020, Caerus is requesting consideration for COGCC Table 910-1 Concentration Levels for EC, SAR, and pH under guidelines set forth under FAQ 32 as these samples were collected from a depth of three feet or greater below the pad surface and these areas will be covered (pending COGCC approval) with clean soil represented by soil samples 20200814-L19-595 (STOCK 01) and 20200814-L19-595 (STOCK 04). Caerus believes the request for FAQ 32 consideration is acceptable as there are minimal potential receptors in the area and environmental impacts to these receptors are unlikely. The nearest surface water is 350 feet to the east and groundwater at the site is estimated to be approximately 100 feet below the pad surface based on well information for a water well identified by Permit # 164780. The value for depth to groundwater listed on this form was taken from the construction details listed for this well.

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: ` 09/14/2020 _____

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: Steven Arauza _____

Date: 10/05/2020 _____

Remediation Project Number: 14181 _____

COA Type

Description

	Laboratory reports missing for sample IDs: 20200807-L19-595 (W BOTTOM) @ 23' and 20200807-L19-595 (SW BOTTOM) @ 23'
	Operator shall submit the missing laboratory reports via a Supplemental eForm 27.

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

402485864	FORM 27-SUPPLEMENTAL-SUBMITTED
402485866	ANALYTICAL RESULTS

Total Attach: 2 Files

General Comments

User Group

Comment

Comment Date

Environmental	Operator's request to utilize soil represented by 20200814-L19-595 (STOCK 01) and 20200814-L19-595 (STOCK 04) samples to backfill the open excavation is approved based on analytical data provided.	10/05/2020
Environmental	Based on the analytical data provided for background samples, the COGCC approves of the operator's request for consideration of arsenic background concentrations(13-31 mg/kg) in exceedance of Table 910-1.	09/25/2020
Environmental	Based on the sample depths and analytical results provided for confirmation soil samples, the Operator's request for consideration of documented Table 910-1 exceedances for inorganic constituents (EC, pH, and SAR) at depths ranging from 11' to 24' per FAQ 32 is conditionally approved.	09/25/2020

Total: 3 comment(s)