

State of Colorado
Oil and Gas Conservation Commission

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Document Number:
402761431
Receive Date:
08/27/2021

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
Address: 1001 17TH STREET #1600		Phone: (970) 285-2925
City: DENVER State: CO Zip: 80202		Mobile: (970) 640-6919
Contact Person: Blair Rollins	Email: brollins@caerusoilandgas.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 15973 Initial Form 27 Document #: 402490446

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

No Multiple Facilities

Facility Type: SPILL OR RELEASE	Facility ID: 477097	API #:	County Name: GARFIELD
Facility Name: Unocal 1 dumpline release	Latitude: 39.519440	Longitude: -108.122330	
** correct Lat/Long if needed: Latitude:		Longitude:	
QtrQtr: NWSW	Sec: 16	Twp: 6S	Range: 96W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SC Most Sensitive Adjacent Land Use Non-crop land
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

The nearest dry drainage is located adjacent to the well pad to the north. The nearest surface water is approximately 2,320 feet west of the site. Nearest downgradient groundwater well is located approximately 5,830 feet south of the site.

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	GROUNDWATER	TBD	Laboratory analytical results
Yes	SOILS	TBD	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.

Upon discovery of the spill, Caerus shut in the wells to stop the release. Caerus utilized manual excavation to determine if the extents of contamination could be identified for the release. Soil samples were collected to verify compliance with COGCC Table 910-1 standards for the project.

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):

Soil samples were collected during soil boring installation adjacent to the point of release and are outlined in the attached report of work completed.

Proposed Groundwater Sampling

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

Groundwater was encountered during soil boring installation near the point of release. Groundwater samples were collected as part of the assessment activities and are included within the attached report of work completed.

Proposed Surface Water Sampling

Will surface water samples be collected as part of this investigation? (Number, analyses, and locations of samples):

[Empty box for surface water sampling details]

Additional Investigative Actions

Additional alternative investigative actions described in attached Site Investigation Plan (summary):

Caerus is preparing a proposal for additional groundwater monitoring wells to determine the lateral extent of groundwater contamination associated with the project.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 5
Number of soil samples exceeding 915-1 5
Was the areal and vertical extent of soil contamination delineated? Yes
Approximate areal extent (square feet) 2500

NA / ND

-- Highest concentration of TPH (mg/kg) 19.02
-- Highest concentration of SAR 25.6
BTEX > 915-1 Yes
Vertical Extent > 915-1 (in feet) 60

Groundwater

Number of groundwater samples collected 5
Was extent of groundwater contaminated delineated? No
Depth to groundwater (below ground surface, in feet) 15'
Number of groundwater monitoring wells installed 5
Number of groundwater samples exceeding 915-1 3

-- Highest concentration of Benzene (µg/l) 1880
-- Highest concentration of Toluene (µg/l) 98
-- Highest concentration of Ethylbenzene (µg/l) 46
-- Highest concentration of Xylene (µg/l) 737
NA Highest concentration of Methane (mg/l) _____

Surface Water

0 Number of surface water samples collected
0 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?

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?
Caerus will conduct additional site investigation to determine effectiveness of a selected and implemented remediation strategy.

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.

Caerus installed a soil boring immediately adjacent to the point of release using a direct-push drilling rig on July 6, 2021. During drilling activities, groundwater was observed in the POR soil boring and within the additional SVE wells onsite. Soil samples were collected as part of the monitoring well installation, and groundwater samples were collected from all available groundwater wells onsite. Caerus is in the process of determining remediation strategies for the site due to the recent finding of groundwater within the monitoring wells at the location.

REMEDIATION 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.

Caerus is in the process of determining effective remediation strategies at the site. When groundwater is present within the quarter, Caerus will conduct a dewatering event prior to collecting groundwater samples. When groundwater is not present within the quarter, Caerus will conduct a powered-trailer SVE event to remediate soil impacts within the area and provide makeup air to the subsurface soils.

Soil Remediation Summary

In Situ Ex Situ
_____ Bioremediation (or enhanced bioremediation) _____ Excavate and offsite disposal

Chemical oxidation
 Yes Air sparge / Soil vapor extraction
 Yes Natural Attenuation
 Other _____

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

No Bioremediation (or enhanced bioremediation)
 No Chemical oxidation
 No Air sparge / Soil vapor extraction
 No Natural Attenuation
 Yes Other Dewatering and monitoring _____

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.

Caerus proposes to install additional groundwater monitoring wells within the area to delineate the extent of groundwater contamination associated with the project. Caerus will provide the updated groundwater monitoring plan to the COGCC on subsequent documentation.

Caerus plans to conduct quarterly dewatering events from each groundwater well at the site to determine effectiveness of dewatering as a remediation strategy. Caerus will conduct quarterly groundwater sampling for COGCC Table 915-1 analytes and report to the COGCC on a quarterly schedule.

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 _____

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:

Dewatering activities during the third quarter of 2021 recovered approximately 16 gallons of fluid. The liquid was transported to the NPR Solidification Facility for handling and disposal.

Volume of E&P Waste (solid) in cubic yards _____ 0

E&P waste (solid) description _____

COGCC Disposal Facility ID #, if applicable: _____ 428910

Non-COGCC Disposal Facility: _____

Volume of E&P Waste (liquid) in barrels _____ 1

E&P waste (liquid) description Impacted groundwater from monitoring wells onsite.

COGCC Disposal Facility ID #, if applicable: _____ 428910

Non-COGCC 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 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.

Caerus anticipates the extent of contamination will be contained to the active well pad surface. Caerus plans to backfill the excavation to the active working surface of the well pad for continued operation.

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? Yes _____

If YES, does the seed mix comply with local soil conservation district recommendations? Yes _____

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. _____

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). _____

Proposed site investigation commencement. 07/22/2020

Proposed completion of site investigation. 11/17/2020

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

The Proposed Sampling Plan section found on the Site Investigation Plan tab has been modified to include the discovery of groundwater present in five SVE wells at the site. This information was provided to the COGCC by phone call and groundwater sample results are included on the attached report of work completed.

This Form 27 is to serve as the Q2 2021 and Q3 2021 status update for the project.

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

Signed: Blair Rollins _____

Title: EHS Specialist _____

Submit Date: 08/27/2021 _____

Email: brollins@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 Arauz _____

Date: 09/07/2021 _____

Remediation Project Number: 15973 _____

Condition of Approval

COA Type

Description

	<p>Attached report (doc #402761605) indicates that "due to the tight pore space of the area, radius of influence was not able to be established and/or communication between the wells was invalid. It is recommended to install another centralized SVE well to shorten the distance between wells and check subsurface communication again after install."</p> <p>Installation of a centralized SVE well (SVE05) is documented in the other attached report, doc #402794328.</p> <p>Operator shall assess subsurface communication after installation of SVE05 and submit the results of the assessment via a Supplemental Form 27.</p>
	<p>Operator shall make necessary revisions to the Form 27 Site Conditions to accurately document the depth to groundwater.</p>
	<p>The Operator shall revise all references to Table 910-1 to Table 915-1 and remove any references to previously-approved reduced analyte suite for future Form 27 submittals.</p>
	<p>Based on the documented impacts to groundwater, this project is now subject to Table 915-1 cleanup concentrations for soil and groundwater, using the Protection of Groundwater Soil Screening Level Concentrations.</p> <p>The Operator shall conduct delineation and remediation of impacts to soil and groundwater using the complete list of Table 915-1 contaminants of concern.</p>
4 COAs	

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

402761431	FORM 27-SUPPLEMENTAL-SUBMITTED
402761605	OTHER
402761606	MAP
402794328	SITE INVESTIGATION REPORT

Total Attach: 4 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
Environmental	COGCC conditionally approved a reduced analyte suite (TPH-DRO, TPH-GRO, BTEX, SAR, and pH) on Initial Form 27, doc #402490446, based on analytical results for soil samples (doc #402490581). The approved reduced analyte suite is NO LONGER VALID due to documented groundwater impacts. See COAs above.	09/07/2021
Environmental	<p>Under Proposed Groundwater Sampling, the Operator indicates that groundwater was encountered during installation of a soil boring near the POR.</p> <p>Under Site Conditions, Operator indicates that groundwater is not present within 20' of the surface.</p> <p>Under Sample Summary for groundwater, operator indicates that the depth to groundwater is 15'.</p> <p>The attached report (doc #402794328 indicates that "groundwater was encountered at approximately 10-12ft-bgs in SVE05."</p> <p>See COAs above.</p>	09/07/2021

Total: 2 comment(s)