

State of Colorado
Oil and Gas Conservation Commission

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402853537
Receive Date:
12/30/2021
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 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 #: 17035 Initial Form 27 Document #: 402582867

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 Assessment Report which includes 3rd and 4th Q 2021 Investigation Activities.

SITE INFORMATION

No Multiple Facilities

Facility Type: LOCATION	Facility ID: 334872	API #:	County Name: GARFIELD
Facility Name: SAMPLE-67S92W 17SENW	Latitude: 39.444880	Longitude: -107.686440	
** correct Lat/Long if needed: Latitude: 39.444597		Longitude: -107.686826	
QtrQtr: NWSE	Sec: 17	Twp: 7S	Range: 92W 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? Yes Is surface water within 1/4 mile? Yes
Is groundwater less than 20 feet below ground surface? No

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- | | | |
|--|--|--|
| <input checked="" type="checkbox"/> E&P Waste | <input type="checkbox"/> Other E&P Waste | <input type="checkbox"/> Non-E&P Waste |
| <input checked="" type="checkbox"/> Produced Water | <input type="checkbox"/> Workover Fluids | _____ |
| <input type="checkbox"/> Oil | <input type="checkbox"/> Tank Bottoms | |
| <input type="checkbox"/> Condensate | <input type="checkbox"/> Pigging Waste | |
| <input type="checkbox"/> Drilling Fluids | <input type="checkbox"/> Rig Wash | |
| <input type="checkbox"/> Drill Cuttings | <input type="checkbox"/> Spent Filters | |
| | <input type="checkbox"/> Pit Bottoms | |
| | <input type="checkbox"/> Other (as described by EPA) | _____ |

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	GROUNDWATER	Defined	Lab Analysis
Yes	SOILS	Defined	Lab Analysis

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 Numbers 402582867 and 402675870 for a description of activities completed prior to 6/17/2021.
Please see the attached Report of Work Completed (ROWC) that documents a summary of activities completed from 8/23/2021 through 10/14/2021.

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):

At this time no additional soil sampling is needed to delineate impacts related to the source area. Additional soil samples will be collected to determine next steps of the impacted soil stockpiled onsite. All future soil samples will be submitted for laboratory analysis of arsenic, barium, cadmium, chromium VI, nickel, selenium, pH, SAR, TPH, BTEX, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, fluorene, and naphthalene per the COGCC's approval via COGCC Document 402619378.

Proposed Groundwater Sampling

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

Based on the recent installation of additional groundwater monitoring wells, delineation of the groundwater plume is confirmed in all cardinal directions. Moving forward Caerus will continue to gauge and monitor all groundwater monitoring wells on a quarterly basis. Due to benzene being the only groundwater analyte in exceedance onsite, Caerus requests a reduced groundwater analyte suite to only include BTEX for all future groundwater samples starting first quarter 2022. Please see Figure 2 of the attached document titled "J17E Dumpline Release Report of Work Completed " for the location of these monitoring wells (MW03 though MW10).

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 64

Number of soil samples exceeding 915-1 64

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) 3900

-- Highest concentration of SAR 39.4

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 71

Groundwater

Number of groundwater samples collected 19

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet) 63'

Number of groundwater monitoring wells installed 11

Number of groundwater samples exceeding 915-1 1

-- Highest concentration of Benzene (µg/l) 186

-- Highest concentration of Toluene (µg/l) 94.4

-- Highest concentration of Ethylbenzene (µg/l) 1.18

-- Highest concentration of Xylene (µg/l) 14.4

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?

Background samples were collected from SB01 on the southeast side of the pad location from undisturbed soil. This data and sampling details can be referenced in COGCC Document Numbers 402582867.

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.

The source was a failed dumpline which was replaced.

During the limited delineation and remediation efforts completed project-to-date, it has been determined that the impacts being observed are the result of an unknown source and couldn't have resulted from the dumpline release (COGCC Spill/Release Point ID 478578) associated with this project. The volume released during that dumpline failure was calculated to have released 1 barrel of produced water.

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.

Full delineation of the plume has been determined, the data will be reviewed and a remediation plan will be presented to the COGCC by April 2022.

Please refer to the attached ROWC for all recent assessment and remediation activities completed since Document Number 402675870 was submitted (8/23/2021 through 10/14/2021).

A pilot test is being conducted on a potential ex-situ remediation approach to test remediation of the impacted areas of the stockpiles depicted on Page 4 of 58 of COGCC Document Number 402675870 titled "J17E Report of Work Completed-Stockpile Characterization". Results of the pilot test and the selected remediation approach will be presented in the next Form 27.

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
- _____ 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.

Based on the recent installation of additional groundwater monitoring wells, delineation of the groundwater plume is confirmed in all cardinal directions. Moving forward Caerus will continue to gauge and monitor all groundwater monitoring wells on a quarterly basis. Due to benzene being the only constituent exceeding groundwater standards, Caerus requests a reduced groundwater analyte suite to only include the analysis of BTEX for all future groundwater samples. Please see Figure 2 of the attached document titled "J17E Dumpline Release Report of Work Completed " for the location of these monitoring wells (MW03 though MW10).

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 Soil and Groundwater Site Assessment Update

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:

Volume of E&P Waste (solid) in cubic yards 744

E&P waste (solid) description Impacted soil

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: Greenleaf Environmental Services

Volume of E&P Waste (liquid) in barrels 40

E&P waste (liquid) description impacted soil mixed with hydrovac
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

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? No

Does the previous reply indicate consideration of background concentrations? _____

Does Groundwater meet Table 915-1 standards? No

Is additional groundwater monitoring to be conducted? Yes

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.

Full delineation of the plume has been determined. Once Caerus determines a path forward with the treatment/use of the impacted soil onsite, the former excavation footprint will be backfilled to existing grade.

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. 11/17/2020

Actual Spill or Release date, or date of discovery. _____

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 11/17/2020

Proposed site investigation commencement. 11/17/2020

Proposed completion of site investigation. 10/14/2021

REMEDIAL ACTION DATES

Proposed start date of Remediation. 01/07/2021

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

Due to benzene being the only constituent exceeding groundwater standards, Caerus requests a reduced groundwater analyte suite to only include the analysis of BTEX for all future groundwater samples.

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: 12/30/2021

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: 01/28/2022

Remediation Project Number: 17035

Condition of Approval**COA Type****Description**

	As indicated under Remediation Summary, Operator shall submit a comprehensive remediation plan via a Supplemental Form 27 no later than April 2022.
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**

402853537	FORM 27-SUPPLEMENTAL-SUBMITTED
402913239	SITE INVESTIGATION REPORT

Total Attach: 2 Files

General Comments**User Group****Comment****Comment Date**

Environmental	Under Proposed Soil Sampling, Operator indicates that no additional soil sampling is needed to delineate impacts related to the source area. The attached report (doc #402913239) documents Table 915-1 Protection of Groundwater SSL exceedances remaining at depth in the vicinity of the tank battery. At a minimum, additional soil sampling will be required to assess effectiveness of AS/SVE approach and to ultimately demonstrate compliance with Table 915-1 Protection of Groundwater SSLs for project closure.	01/28/2022
Environmental	Based on the information provided for groundwater samples (doc #402913239), the Operator's request for a reduced analyte suite of BTEX-only for groundwater samples is conditionally approved.	01/28/2022
Environmental	Comply with outstanding COAs.	12/30/2021

Total: 3 comment(s)