FORM 27 Rev 3/16

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 INFORMATON

Name of Operator: CAERUS PICEANCE LLC Operator No: 10456
Address: 1001 17TH STREET #1600
City: DENVER State: CO Zip: 80202
Contact Person: Blair Rollins

Phone Numbers
Phone: (970) 285-2925
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Email: brollins@caerusoilandgas.com

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 8900 Initial Form 27 Document #: 2313856

PURPOSE INFORMATION

- [ ] 901.e. Sensitive Area Determination
- [ ] 909.c.(1), Rule 905: Pit or PW vessel closure
- [ ] 909.c.(2), Rule 906: Spill/Release Remediation
- [ ] 909.c.(3), Rule 907.e.: Land treatment of oily waste
- [ ] 909.c.(4), Rule 908.g.: Centralized E&P Waste Management Facility closure
- [ ] 909.c.(5), Rule 910.b.(4): Remediation of impacted ground water
- [ ] Rule 909.e.(2)A.: Notice completion of remediation in accordance with Rule 909.b.
- [ ] Rule 909.e.(2)B.: Closure of remediation project
- [ ] Rule 906.c.: Director request
- [x] Other Updated investigation plan for REM 8900

SITE INFORMATION

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

Facility Type: PIT Facility ID: 112427 API #: County Name: MESA
Facility Name: FEDERAL 36-1 Latitude: 39.234842 Longitude: -108.172560
** correct Lat/Long if needed: Latitude: Longitude:
QtrQtr: NWNW Sec: 36 Twp: 9S Range: 97W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications CH
Most Sensitive Adjacent Land Use RANGELAND
Is domestic water well within 1/4 mile? Yes
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

An ephemeral drainage is located approximately 915 feet north of the remediation project. Three groundwater wells are located approximately 860 to 1215 feet south of the remediation project. These three monitoring wells indicate a total depth ranging from 60 to 70 feet below ground surface but based on conversations with the owner, these wells are dry. Depth to groundwater is estimated to be greater than 60 feet below ground surface. A domestic water well located to the east indicates static water level to be approximately 260 feet below ground surface.. Based on the depth information for each monitoring well, Caerus estimates groundwater to be deeper than 20 feet below ground surface.

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- [x] **E&P Waste**
  - [x] Produced Water
  - [ ] Oil
  - [x] Condensate
  - [ ] Drilling Fluids
  - [ ] Drill Cuttings
- [x] **Other E&P Waste**
  - [ ] Workover Fluids
  - [ ] Tank Bottoms
  - [ ] Pigging Waste
  - [ ] Rig Wash
  - [ ] Spent Filters
  - [x] Pit Bottoms
  - [ ] Other (as described by EPA) _____
- [ ] **Non-E&P Waste** _____

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	SOILS	To be determined	Environmental drill rig and laboratory analytical report

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 refer to COGCC document numbers 2313856, 400971468, and 401012094 for initial actons taken in response to the historic pit investigation and remediation.

In May 2015, 11 soil borings were installed to delineate the extent of contamination at the site, see attached report of work completed by Olsson Associates. Following the completion of 11 soil borings, four were converted to soil vapor extraction (SVE) wells for continued SVE remediation. Results of the 2015 investigation determined that the full extent of contamination was not defined and additional sampling was required.

In December 2016, 13 soil borings were installed to delineate the outer extents of contamination associated with the historic pit closure, see attached report of work completed by Apex Companies.

PROPOSED SAMPLING PLAN

Proposed Soil Sampling

- [x] Will soil samples be collected as part of this investigation? (Number, type (grab/composite), analyses, and locations of samples):

Caerus proposes to install seven soil borings in the area of the former pit to completely delineate impacts associated with this project. The proposed 2020 soil boring locations are included on the provided Figure along with the 2015 and 2016 soil boring locations to demonstrate aerial extent of contamination delineation. Caerus will collect soil samples from within each soil boring to be analyzed for COGCC Table 910-1 analytes to determine the vertical extent of contamination within the area. Based on the findings of complete delineation of the remediation project, Caerus will develop an updated remediation workplan for COGCC and BLM review and approval.

Proposed Groundwater Sampling

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

Caerus does not anticipate encountering groundwater during the proposed 2020 soil boring installation activities. In the event that groundwater is encountered, Caerus will attempt to collect a sample for analysis of COGCC Table 910-1 standards.

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: 38

Number of soil samples exceeeding 910-1: 6

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

Approximate areal extent (square feet): 1200

NA / ND

-- Highest concentration of TPH (mg/kg): 8700

-- Highest concentration of SAR: 9.8

BTEX > 910-1: Yes

Vertical Extent > 910-1 (in feet): 25

Groundwater

Number of groundwater samples collected: 0

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet): 50`

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?

☐ 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 proposes to install 7 soil borings to determine the extent of contamination associated with the historic pit closure. Following confirmation of the extent of contamination, Caerus will prepare a revised remediation plan for COGCC and BLM review and approval.

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.

Caerus proposes to install soil borings to effectively delinate the contamination associated with the project. Caerus will rely on the soil boring logs developed during the drilling process to understand geology in the area to determine an effective remediation strategy for the site.

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.

Currently the remediation strategy for the project is in-situ soil vapor extraction and natural attenuation. Caerus proposes to install seven soil borings to determine if the remediation strategy is effective at degrading the contamination source. Based on the findings of the soil boring installation, Caerus will propose an updated remediation strategy to ensure effective remediation of the project is being utilized.

Soil Remediation Summary

☒ **In Situ**

- Yes — Bioremediation (or enhanced bioremediation)
- No — Chemical oxidation
- Yes — Air sparge / Soil vapor extraction
- Yes — Natural Attenuation
- No — 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

- No — Bioremediation (or enhanced bioremediation)
- No — Chemical oxidation
- No — Air sparge / Soil vapor extraction
- No — Natural Attenuation
- No — 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 has not been encountered at the site. In the event that groundwater is encountered during soil boring installation, Caerus will attempt to collect a representative sample for COGCC Table 910-1 analysis.

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? _____

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: _____

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.

See attached.

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 approve the seed mix? _____

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

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). _____

Date of commencement of Site Investigation. 06/01/2020

Date of completion of Site Investigation. _____

REMEDIAL ACTION DATES

Date of commencement of Remediation. _____

Date of completion of Remediation. _____

SITE RECLAMATION DATES

Date of commencement of Reclamation. _____

Date of completion of Reclamation. _____

OPERATOR COMMENT

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:` 04/27/2020 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 Arauza Date: 05/27/2020

Remediation Project Number: 8900

COA Type	Description
	Assess nature and extent of contamination with confirmation soil samples. The operator shall comply with Rule 910.b.(3) for collection of soil samples. The operator shall notify the COGCC and comply with Rule 910.b.(4) if groundwater is encountered during site investigation operations.
	Analyze all soil samples for the complete list of Table 910-1 analytes.
	Within 45 days of completion of proposed soil sampling event, submit complete documentation: soil boring map, analytical summary table, complete lab reports, soil boring logs via a Supplemental eForm 27. Operators Supplemental eForm 27 shall also include a summary of SVE operations and an assessment of the effectiveness of SVE remediation efforts.
	Submit revised remediation strategy via a Supplemental eForm 27 for COGCC approval prior to implementation.

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
402380955	FORM 27-SUPPLEMENTAL-SUBMITTED
402381078	SITE MAP
402381082	ANALYTICAL RESULTS
402381090	SITE INVESTIGATION REPORT
402381091	SITE INVESTIGATION REPORT

Total Attach: 5 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)