

State of Colorado
Energy & Carbon Management Commission

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Document Number:
403833874
Receive Date:
07/10/2024

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 ECOM 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 #: 28564 Initial Form 27 Document #: 403337136

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: No Further Action Request to Remediation Project Number (RPN) 28564 - HILL 9-12A (L9E) - Well Decom.

SITE INFORMATION

No Multiple Facilities

Facility Type: WELL	Facility ID: _____	API #: 045-09354	County Name: GARFIELD
Facility Name: HILL 9-12A (L9E)	Latitude: 39.458477	Longitude: -107.677823	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: NWSW	Sec: 9	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? 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

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SITE INVESTIGATION PLAN

TYPE OF WASTE:

- | | | |
|------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------|
| <input type="checkbox"/> E&P Waste | <input checked="" type="checkbox"/> Other E&P Waste | <input type="checkbox"/> Non-E&P Waste |
| <input 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 checked="" type="checkbox"/> Other (as described by EPA) | Historic impacts associated with operation
_____ |

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
No	SOILS	12x12x7	Soil Sampling/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 reference the State of Colorado Energy and Carbon Management Commission (ECMC) Form 27 Document Number (DN) 403104892 for information regarding previous investigative decommissioning activities completed to date associated with decommissioned production well (HILL-9-12A) and associated decommissioned production flowline dogleg (dumpline/sales line).

In response to investigative analytical data compiled during the second quarter (Q2) of 2023 decommissioning activities, additional excavation oversite was completed on June 3, 2024 to mechanically remove previously documented soil impacts observed along the north and west sidewalls associated with confirmation soil sample locations 20230720-L9-(NW-HILL 9-12A)@5 and 20230720-L9-(WW-HILL 9-12A)@5 (DN 403401892). The north and west sidewalls were mechanically expanded laterally and vertically using an excavator to target and remove the previously observed exceedances. An estimated 37 cubic yards of soil were removed to address the previously observed impacts along the north and west sidewalls of decommissioned production well Hill 9-12A. Confirmation soil samples were methodically collected from the base and all sidewalls of the excavation as advanced to confirm the removal of impacts. All confirmation soil samples were collected and submitted from areas where the greatest degree of impact would have been observed. Five confirmation soil samples were collected from the excavation footprint. One base sample and four along each sidewall. Additionally, one 5-point confirmation soil sample was collected from the stockpiled soils excavated to remove previously identified impacts. The stockpile sample consisted of material removed from both decommissioned wells at the location (Hill 9-12A and Hill 9-14). The total volume of soils excavated representative of the 20240603-L9-(STOCK) was approximately 61 cubic yards.

Please see the attached ROWC for in-depth discussion of Q2 remediation activities.

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 6

Number of soil samples exceeding 915-1 6

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

Approximate areal extent (square feet) 144

NA / ND

-- Highest concentration of TPH (mg/kg) 155.4

NA Highest concentration of SAR

BTEX > 915-1 No

Vertical Extent > 915-1 (in feet) 6

Groundwater

Number of groundwater samples collected 0

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet)

Number of groundwater monitoring wells installed

Number of groundwater samples exceeding 915-1

 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 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?

Please see DN 403401892 for details on previously collected and reported site-specific background soil samples.

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.

Since the impacts are considered historical, no source can be identified.

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 associated with RPN 28564.

Per ECMC Rule 915.e.(2).C (site-specific waste characterization) Caerus requests relief of arsenic as a contaminant of concern (COC). Although, arsenic concentrations were documented as an exceedance in all decommissioning soil samples with values ranging from 3.80 milligrams per kilogram (mg/kg) [20240603-L9-(SW-HILL9-12A)@7] to 10.3 mg/kg [20230720-L9-(EW-HILL 9-12A)@5], these values are greater than the arsenic concentration in produced water sample 20240522-MCSOURCE-(L9-T) collected from the L9 location on May 22, 2024 (Figure 6). This produced water sample was collected from the same fluids and geologic formation as decommissioned well Hill 9-12A produced. Therefore these fluids should be considered representative of decommissioned well Hill 9-12A.

Per condition of approval (COA) in DN 403401892 no chromium (VI) exceedances were observed under Protection of Groundwater Soil Screening Concentrations Levels (PGSSLCS) or RSSCLS in submitted confirmation soil samples. The produced water sample (as described above) was analyzed for chromium (VI) and reported a concentration below the laboratory detection limit (Figure 6).

Please see the attached ROWC for further justification and supporting analytical data.

Soil Remediation Summary

In Situ

Ex Situ

_____ Bioremediation (or enhanced bioremediation)

_____ Excavate and offsite disposal

_____ Chemical oxidation

_____ If Yes: Estimated Volume (Cubic Yards) _____

_____ Air sparge / Soil vapor extraction

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

_____ Natural Attenuation

_____ Excavate and onsite remediation

_____ Other _____

_____ No Land Treatment

_____ No Bioremediation (or enhanced bioremediation)

_____ No Chemical oxidation

_____ Yes Other Confirm stockpile compliant through soil sampling/laboratory analytical results.

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.

[Empty rectangular box for monitoring plan details]

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Approved Reporting Schedule:

Quarterly Semi-Annually Annually Other

Closure of RPN 28564 - HILL 9-12A (L9E) well and associated flowline infrastructure.

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 _____

Adequacy of Operator's General Liability Insurance and Financial Assurance

Describe the adequacy of the Operator's general liability insurance and Financial Assurance to fully address the anticipated costs of Remediation, including the estimated remaining cost for this project (below).

If this information has been provided on a Form 27 within the last 12 months, provide the Document Number of that form.

Operator anticipates the remaining cost for this project to be: \$ _____

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 _____

ECMC Disposal Facility ID #, if applicable: _____

Non-ECMC Disposal Facility: _____

Volume of E&P Waste (liquid) in barrels _____ 25

E&P waste (liquid) description Hydro-vac rinseate mixed with impacted soils

ECMC Disposal Facility ID #, if applicable: _____

Non-ECMC Disposal Facility: Greenleaf Environmental

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? Yes

Does the previous reply indicate consideration of background concentrations? Yes

Does Groundwater meet Table 915-1 standards? Yes

Is additional groundwater monitoring to be conducted? _____

Operator shall comply with the ECMC 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.

Any excavations will be backfilled to the existing grade of the pad surface.

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? No

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

Did the local soil conservation district provide the seed mix? No

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). 05/01/2023

Proposed site investigation commencement. 05/01/2023

Proposed completion of site investigation. 05/18/2023

REMEDIAL ACTION DATES

Proposed start date of Remediation. 10/10/2023

Proposed date of completion of Remediation. 06/03/2024

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

Caerus believes that a pathway to groundwater from soil identified at the pad location during production well decommissioning activities does not exist and requests concerning this subject per ECMC Table 915-1, Footnote 7 and due to the following reasons.

1) The vertical distance between the base of the wellhead excavation and the anticipated static water table depth. The static water table depth is estimated to be greater than 320 feet below pad surface based on documents associated with test hole and attempted pump test of water well located approximately 0.48 miles south and identified by DWR Permit# 79843-. The vertical distance between the assumed static water level and the base of the wellhead location is greater than 327 feet associated with this remediation project.

2) At no time during site investigation or remediation activities was/has groundwater been observed infiltrating, pooling, or standing within the existing excavation .

3) The nearest sensitive receptor (441 feet north) is an unnamed tributary to East Mamm which the United States Geological Survey (USGS) map symbol detailed on the topo map provided on COGCC GISOnline indicates it is an intermittent stream. However, based on local knowledge and field observations, this tributary is better characterized as ephemeral, as it rarely flows except in extreme weather events, exceptional groundwater elevation increases manifested through irrigation, natural springs, and/or rain/snow melt events. There is no observable standing water within the immediate remediation area and any resulting appreciable groundwater elevation increase would have been observed in the excavation associated with this remediation project. Any impacts to groundwater would have been observed through the multiple excavations completed at the location.

Given these observations and facts concerning groundwater in the immediate vicinity of the project site, Caerus requests that the Director make a determination to evaluate the remediation success of this project using the RSSLCs listed in Table 915-1.

All soil represented by the previously collected decommissioning compliance soil samples with elevated concentrations with respect to ECMC Table 915 -1 RSSLCs have been removed or the concentrations are within respective background concentrations per ECMC Rule 915.e.(2)C.

It has been proven through site specific E&P Waste profiling that the arsenic concentrations observed in decommissioning compliance soil samples are not a result of a spill of E&P waste and the soil represented by these samples should remain in situ. Based on ECMC Rule 915.e.(2)C, Caerus requests that arsenic be removed from the COCs used to evaluate the successful closure of this remediation project.

Caerus requests that the Director assign a "No Further Action" designation to RPN 28564 which is associated with the decommissioned wellhead Hill 9-12A (API # 045-09354) and associated production infrastructure (flowlines).

Caerus requests to use the soils excavated from the decommissioned production wells representative of stockpile soil sample 20240603-L9-(STOCK) be used to backfill the open excavations as all analytes are within ECMC Table 915-1 concentrations or with respective background concentrations per ECMC Rule 915.e.(2)C. (E&P Waste profiling).

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: 07/10/2024

Email: brollins@caerusoilandgas.com

Based on the information provided herein, this Application for Site Investigation and Remediation Workplan complies with ECMC Rules and applicable orders and is hereby approved.

ECMC Approved: Steven Arauza

Date: 08/07/2024

Remediation Project Number: 28564

COA Type

Description

	Based on review of information presented it appears that no further action is necessary at this time, and ECMC approves the closure request. However, should future conditions at the site indicate contaminant concentrations in soils exceeding ECMC standards or if surface and/or ground water is found to be impacted, then further investigation and/or remediation activities will be required at the site. In addition, the non-working surface area disturbed by the remediation activity shall be reclaimed in accordance with the 1000 Series Reclamation Rules including the establishment of vegetative cover on non-cropland and successful growth on cropland. Landowner must approve reclamation of cropland.
1 COA	

ATTACHMENT 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

403833874	INVESTIGATION/REMEDATION WORKPLAN (SUPPLEMENTAL)
403850146	REMEDATION PROGRESS REPORT

Total Attach: 3 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
		Stamp Upon Approval

Total: 0 comment(s)