

# 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	<b>Phone Numbers</b>
Address: 1001 17TH STREET #1600		
City: DENVER State: CO Zip: 80202		
Contact Person: Jake Janicek	Email: jjanicek@caerusoilandgas.com	
		Phone: (970) 285-9606
		Mobile: (970) 778-2314

### PROJECT, PURPOSE & SITE INFORMATION

#### PROJECT INFORMATION

Remediation Project #: 12401

Initial Form 27 Document #: 401908998

#### 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: 460722	API #: _____	County Name: GARFIELD
Facility Name: Basin Pipeline WC-4 Vault Release	Latitude: 39.403993	Longitude: -108.099484	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: SESW	Sec: 27	Twp: 7S	Range: 96W Meridian: 6 Sensitive Area? Yes

#### SITE CONDITIONS

General soil type - USCS Classifications ML

Most Sensitive Adjacent Land Use Gravel  
Pit/Riparian Area

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? Yes

Other Potential Receptors within 1/4 mile

## 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	SOILS	Undetermined	Laboratory Analysis
Yes	SURFACE WATER	Isolated to Quarry Pond	Laboratory 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 attached narrative.

### 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 ):

Pending soil conditions associated with winter conditions, soil samples will be collected from within Section 1 (Please see attached Figure 1) to further delineate the spill path and to assess background levels of EC, SAR, and pH. The sampling plan which details the sampling locations is attached.

#### Proposed Groundwater Sampling

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

The COGCC has issued a COA stating that Caerus must install two temporary monitoring wells South and Southwest of the Quarry Pond. This will be to verify that groundwater has not been impacted from the low-level hydrocarbons in the bottom three feet of the pond and to determine groundwater flow direction. Pending landowner and quarry operator approval, it is estimated the wells would be installed the week of March 18th, 2019 and sampled for analytes listed in COGCC Table 910-1. If all data is in compliance with COGCC Table 910-1 Concentration Levels, the wells would be pulled and backfilled or plugged per state regulations. Please see Figure 4 for the proposed placement of these monitoring wells.

#### Proposed Surface Water Sampling

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

Once remediation activities (Please reference the "Remediation Summary" portion of this form) associated with addressing impacts to the Quarry Pond have initiated, weekly samples will be collected from the Quarry Pond and submitted for analytes listed in COGCC Table 910-1. Please see Figure 4 for this sampling point (identified by "Pond Sample"). This sample may be collected from a port set up on the pump being utilized to circulate the pond water if the pond conditions are considered unsafe for sampling from the center of the pond.

### Additional Investigative Actions

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

Two piezometer wells will be installed northwest and northeast of the Quarry Pond to assist in the determination of groundwater flow. Please see Figure 4 for the placement of these piezometer wells.

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

### Soil

Number of soil samples collected 48  
Number of soil samples exceeding 910-1 39  
Was the areal and vertical extent of soil contamination delineated? No  
Approximate areal extent (square feet) 1300

### NA / ND

-- Highest concentration of TPH (mg/kg) 653.7  
-- Highest concentration of SAR 40  
BTEX > 910-1 Yes  
Vertical Extent > 910-1 (in feet) 0

### Groundwater

Number of groundwater samples collected 1  
Was extent of groundwater contaminated delineated? No  
Depth to groundwater (below ground surface, in feet) 25  
Number of groundwater monitoring wells installed 0  
Number of groundwater samples exceeding 910-1 0

ND Highest concentration of Benzene (µg/l)             
ND Highest concentration of Toluene (µg/l)             
ND Highest concentration of Ethylbenzene (µg/l)             
ND Highest concentration of Xylene (µg/l)             
-- Highest concentration of Methane (mg/l) 0.014  
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### Surface Water

11 Number of surface water samples collected  
2 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?

Please refer to COGCC Document 401924462 for offsite impacts to soil.

Laboratory analytical results from surface water samples collected throughout the project area have indicated that surface water down gradient of the Basin Pipeline WC-4 Vault Release has been impacted. Please refer to the attached laboratory analytical results, summary table, and Figure 3 for details on offsite impacts.

☒ Were background samples collected as part of this site investigation?

Two background water samples have been collected. They are sample locations Quarry Spring and Basin Vault River Up. Please reference Figure 3 for their locations.

☒ Was investigation derived waste (IDW) generated as part of this investigation?

Volume of solid waste (cubic yards) 484 Volume of liquid waste (barrels) 8700

☒ Is further site investigation required?

Extent of impact will continue to be delineated.

# 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.

Please refer to COGCC Document 401924462 for this information.

## **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.

SURFACE WATER: Caerus would like to begin remediation of the low-level dissolved phase hydrocarbons identified within the lower 3 feet of water in the quarry pond identified on Figure 4. Due to current below freezing weather condition Caerus believes the best approach of hydrocarbon remediation at the concentrations observed to be through the use of a circulator, in this case a 3-inch gas powered pump. The pump inlet would be positioned one foot from the bottom of the pond, discharging through a pressurized nozzle to the surface of the pond. This effort will allow the ice to melt off the surface of the pond and for the pump inlet to be moved around the pond maximizing circulation. This effort will increase oxygen levels within the pond and allow for aeration and bioremediation to occur stripping dissolved hydrocarbon from the water. Caerus proposes installation of the pump and associated equipment on the North side of the quarry pond. Operation of the pump would occur during normal business hours to prevent the possibility of equipment freezes during colder nightly conditions. It is estimated the pump would run for less than one months' time given water volume within the pond and pumping capacity of the pump.

SOIL: Following the delineation of impacts, Caerus will evaluate the collected data and select an appropriate remediation strategy.

## **Soil Remediation Summary**

☐ In Situ

\_\_\_\_\_ Bioremediation ( or enhanced bioremediation )

\_\_\_\_\_ Chemical oxidation

\_\_\_\_\_ Air sparge / Soil vapor extraction

\_\_\_\_\_ Natural Attenuation

\_\_\_\_\_ Other \_\_\_\_\_

☒ Ex Situ

Yes \_\_\_\_\_ Excavate and offsite disposal

If Yes: Estimated Volume (Cubic Yards) \_\_\_\_\_ 484

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**

☐ \_\_\_\_\_ 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.

## REMEDATION PROGRESS UPDATE

### PERIODIC REPORTING

Frequency: ☐ Quarterly ☐ Semi-Annually ☐ Annually ☐ Other \_\_\_\_\_

Report Type: ☐ Groundwater Monitoring ☐ Land Treatment Progress Report ☐ O&M Report

☒ Other Remediation and Sampling Plan \_\_\_\_\_

### 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:

Potentially contaminated stormwater runoff continued to be recovered from down gradient sediment traps and disposed of at the High Mesa Water Treatment Facility (COGCC ID 149013) to ensure contaminants didn't migrate down gradient of these control points. The volume of liquid E&P Waste listed below is as of February 7, 2019. No fluid was available to be recovered from February 8, 2019 through February 13, 2019. On February 13, 2019, we ceased recovery operations of stormwater runoff and allowed it migrate through the project area and downgradient.

All soil represented by sample Basin PL Stock E identified as being impacted on COGCC Document 401924462 was transported to Greenleaf Environmental Services. Waste Manifests are attached.

Volume of E&P Waste (solid) in cubic yards \_\_\_\_\_ 484

E&P waste (solid) description \_\_\_\_\_ Soil impacted by produced water

COGCC Disposal Facility ID #, if applicable: \_\_\_\_\_

Non-COGCC Disposal Facility: \_\_\_\_\_ Greenleaf Environmental Services

Volume of E&P Waste (liquid) in barrels \_\_\_\_\_ 8700

E&P waste (liquid) description \_\_\_\_\_ Produced Water/Stormwater runoff

COGCC Disposal Facility ID #, if applicable: \_\_\_\_\_ 149013

Non-COGCC Disposal Facility: \_\_\_\_\_

## REMEDATION COMPLETION REPORT

### REMEDATION 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.

Following remedial activities, any areas excavated will be backfilled to match preexisting grade and re-seeded if vegetation was disturbed.

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? \_\_\_\_\_

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. 01/16/2019

Actual Spill or Release date, if known. \_\_\_\_\_

### **SITE INVESTIGATION DATES**

Date of Initial Actions described in Site Investigation Plan (start date). 01/14/2019

Date of commencement of Site Investigation. 01/14/2019

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**

The project area has been divided into sections in order to better detail remediation and assessment efforts throughout the spill path. Please see Figure 1 to review these sections.

All soil removed for disposal was disposed of at Greenleaf Environmental Services. Attempts were made to populate this information in the "Soil Remediation Summary" subsection of the "Remedial Action Plan" section, but the form would not populate this information.

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 Lead \_\_\_\_\_

Submit Date: ` 03/04/2019 \_\_\_\_\_

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: 03/04/2019 \_\_\_\_\_

Remediation Project Number: 12401 \_\_\_\_\_

**COA Type****Description**

	<p>Submit a Supplemental eForm 27 to provide the following information:</p> <ol style="list-style-type: none"> <li>1) Soil boring/construction logs for proposed monitoring wells and peizometers.</li> <li>2) Additional information regarding soil sampling inside of Basin Pipeline WC-4 Vault.</li> <li>3) Additional information regarding plans to address inorganics exceedances south of compressor station.</li> </ol>
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**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**

401929715	FORM 27-SUPPLEMENTAL-SUBMITTED
401931677	ANALYTICAL RESULTS
401931678	ANALYTICAL RESULTS
401931679	ANALYTICAL RESULTS
401931680	ANALYTICAL RESULTS
401931716	ANALYTICAL RESULTS
401931717	ANALYTICAL RESULTS
401951942	ANALYTICAL RESULTS
401951952	DISPOSAL MANIFESTS
401951957	SITE INVESTIGATION PLAN
401951963	ANALYTICAL RESULTS
401951966	ANALYTICAL RESULTS
401959769	AERIAL IMAGE
401959776	MONITORING REPORT
401959782	ANALYTICAL RESULTS

Total Attach: 15 Files

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

Environmental	Attached soil sampling workplan addresses Table 910-1 exceedances for SAR and pH inside of Summit Midstream's Orchard Compressor Station. Soil sampling workplan also does not address SAR and pH exceedances south of the Orchard Compressor Station (south end of Section 1, Section 2, Section 3).	03/01/2019
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Total: 1 comment(s)