

**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:

☒ 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	SOILS	Undetermined	Laboratory Analysis
No	SURFACE WATER	None	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 refer to COGCC Documents 401905874, 401914437, and 401908998 for initial investigative actions prior to January 15th, 2019.

Between January 15th and January 23rd, 2019, a total of 39 soil samples were collected from the Basin Pipeline WC-4 Vault Release project. 36 of the samples were collected along or near the spill path from a depth of 0-6" to determine the extent of impact and 3 collected from temporarily stockpiled soil on the OD34 (COGCC Location ID 334094) well pad. All samples were submitted for laboratory analysis of COGCC Table 910-1 analytes. Laboratory analytical results indicated TPH (OCS (POR) 0-6") and benzene (OCS (POR) 0-6", OCS (SS01) 0-6", OCS (SS02) 0-6") exceedances near the point of release (POR) as well as variable EC, pH, and SAR exceedances along the spill path. The temporarily stockpiled soil on the OD34 well pad was compliant with all COGCC Table 910-1 Concentration Levels except SAR in sample Basin PL Stock E. Laboratory analytical results, summary tables, and soil sample location diagrams have been included as attachments to this Supplemental Form 27. Please refer to COGCC Document 401914951 for details regarding the temporary storage of stockpiled soil on the OD34 well pad.

### 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 ):

Additional soil samples along and near the spill path will be collected on January 31st, 2019 to further delineate the extent of impact. Once samples have been collected and analyzed, laboratory analytical results, a summary table, and a sample location diagram will be provided as attachments to a Supplemental Form 27.

#### 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 39

Number of soil samples exceeding 910-1 33

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 0

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet) \

Number of groundwater monitoring wells installed

Number of groundwater samples exceeding 910-1

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

7 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?

Laboratory analytical results from the 39 soil samples collected along and near the spill path have indicated impacts to adjacent property have occurred. Please refer to the attached laboratory analytical results, summary tables, and samples location diagrams for details on offsite impacts.

☐ 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) 0

Volume of liquid waste (barrels) 1123

☒ Is further site investigation required?

Extent of impact will continue to be delineated and an appropriate remediation strategy selected based upon laboratory analytical data.

# 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.

Per COA #3 on COGCC Document 401914437 and COA #2 on COGCC Document 401908998, Caerus is to clarify whether the 3/8-inch stainless tubing and transducer was repaired or removed. The 3/8-inch stainless tubing connecting the transducer was initially repaired so the Basin Pipeline could be returned to service. The tubing and transducer were later preemptively removed to prevent a similar re-occurrence.

## 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.

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

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

☐ \_\_\_\_\_ 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 \_\_\_\_\_

### 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 is 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 don't migrate down gradient of these control points. The volume of liquid E&P Waste listed below is as of January 23rd, 2019. This number will be updated in Supplemental Form 27's if weather events continue.

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

E&P waste (solid) description \_\_\_\_\_

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

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

Volume of E&P Waste (liquid) in barrels \_\_\_\_\_ 6895

E&P waste (liquid) description Potentially Contaminated 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. \_\_\_\_\_

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**

Laboratory analytical results, summary table, and a sample location diagram for water samples collected between January 18th and January 31st, 2019 will be included as attachments in the next Supplemental Form 27 once all results have been received.

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: ` 02/01/2019

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: 02/08/2019

Remediation Project Number: 12401

**COA Type****Description**

	Provide documentation of soil excavation from POR and final disposition of E&P waste removed from POR area via Supplemental eForm 27.
	Operator shall install temporary monitoring well(s) downgradient (to the south/southwest) of the impacted gravel pond to assess for groundwater impacts and determine the direction of groundwater flow.
	Operator shall immediately begin addressing remediation or removal of benzene-impacted fluids from gravel pond.

**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**

401924462	FORM 27-SUPPLEMENTAL-SUBMITTED
401925425	ANALYTICAL RESULTS
401925427	ANALYTICAL RESULTS
401925432	ANALYTICAL RESULTS
401925433	ANALYTICAL RESULTS
401925434	ANALYTICAL RESULTS
401925437	ANALYTICAL RESULTS
401925439	ANALYTICAL RESULTS
401925477	SOIL SAMPLE LOCATION MAP
401925478	SOIL SAMPLE LOCATION MAP

Total Attach: 10 Files

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

Environmental	Have surface or stratified water samples been collected from additional gravel ponds within the pit?	02/08/2019
Environmental	Have soil samples been collected from the base of the valve can at the POR?	02/08/2019
Environmental	Spoke with operator regarding benzene impacts from preliminary data for a sample collected from bottom of gravel pit on 2/4/2019 via phone. Advised operator to notify pit operator of benzene impacts. Operator indicated that pit operator had been notified of impacts via phone on 2/6/2019.  Operator indicates under Operator Comment that analytical results for water samples will be submitted via a Supplemental eForm 27.	02/07/2019

Total: 3 comment(s)