

State of Colorado  
Oil and Gas Conservation Commission

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Report taken by:  
PETER GINTAUTAS

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: <u>CRESTONE PEAK RESOURCES OPERATING LLC</u>	Operator No: <u>10633</u>	<b>Phone Numbers</b>
Address: <u>1801 CALIFORNIA STREET #2500</u>		Phone: <u>(303) 7743985</u>
City: <u>DENVER</u> State: <u>CO</u> Zip: <u>80202</u>		Mobile: <u>(720) 2365525</u>
Contact Person: <u>David Tewkesbury</u>	Email: <u>David.Tewkesbury@CrestonePR.com</u>	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 17330 Initial Form 27 Document #: 402635948

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 INFORMATION

Yes  Multiple Facilities

Facility Type: <u>LOCATION</u>	Facility ID: <u>336477</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>DIER-62N67W 8NWSW</u>	Latitude: <u>40.149717</u>	Longitude: <u>-104.921124</u>	
	** correct Lat/Long if needed: Latitude: <u>40.149532</u>	Longitude: <u>-104.920377</u>	
QtrQtr: <u>SWSW</u> Sec: <u>8</u> Twp: <u>2N</u> Range: <u>67W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>			

Facility Type: <u>SPILL OR RELEASE</u>	Facility ID: <u>479631</u>	API #: _____	County Name: _____
Facility Name: _____	Latitude: _____	Longitude: _____	
	** correct Lat/Long if needed: Latitude: <u>40.149532</u>	Longitude: <u>-104.920377</u>	
QtrQtr: <u>SWSW</u> Sec: <u>8</u> Twp: <u>2N</u> Range: <u>67W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>			

## SITE CONDITIONS

General soil type - USCS Classifications SC

Most Sensitive Adjacent Land Use Idle field

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? Yes

### **Other Potential Receptors within 1/4 mile**

Residential areas and occupied structures

# 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	To be determined	Investigation pending

## INITIAL ACTION SUMMARY

Description of initial action or emergency response measures take to abate, investigate, and/or remediate impacts associated with E&P Waste.

On March 21, 2021, 13 barrels of produced water were released from the produced water dumphine inside unlined secondary containment. To characterize the release and to determine the extent of potential impacts, the portion of the line responsible for the subsurface release was exposed and soil samples were collected from the base and sidewalls of the exposed area. The soil sample which displayed the highest degree of impacts as determined by field-screening, visual observations of staining, and hydrocarbon odor was submitted for the full Table 915-1 analyte list. Subsequent soil samples were analyzed for constituents of concern which exceeded Table 915-1 allowable limits in the most impacted sample and that could not be cleared by background levels.

## 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 ):

Crestone proposes to delineate identified pH impacts using a hydro vacuum truck to advance approximately two additional potholes at the site. The previously installed pothole SB01 will be advanced deeper to vertically delineate soil pH impacts. Approximately three additional potholes (SB04-SB06) will be advanced South and East of SB02@4.5 and samples will be collected to horizontally delineate pH impacts. Based on the depths of previous exceedances, samples will be collected from approximately 6 feet below ground surface (6' bgs). Additional soil borings may be completed if field observations indicate additional delineation is needed. See the attached map for proposed sample locations. If groundwater is encountered before vertical soil clearance can be achieved, a groundwater sample will be collected and analyzed for Table 915-1 inorganic constituents of concern in lieu of additional soil samples.

### Proposed Groundwater Sampling

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

If groundwater is encountered during potholing activities, or if soil pH impacts are suspected to threaten groundwater quality, a groundwater sample will be collected and analyzed for Table 915-1 inorganic constituents of concern. One or more background groundwater samples may be collected as part of site investigation.

### 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

NA / ND

Number of soil samples collected 15 ND Highest concentration of TPH (mg/kg) \_\_\_\_\_  
 Number of soil samples exceeding 915-1 6 -- Highest concentration of SAR 0.334  
 Was the areal and vertical extent of soil contamination delineated? No BTEX > 915-1 No  
 Approximate areal extent (square feet) 500 Vertical Extent > 915-1 (in feet) 12

**Groundwater**

Number of groundwater samples collected 0 Highest concentration of Benzene (µg/l) \_\_\_\_\_  
 Was extent of groundwater contaminated delineated? No Highest concentration of Toluene (µg/l) \_\_\_\_\_  
 Depth to groundwater (below ground surface, in feet) \_\_\_\_\_ Highest concentration of Ethylbenzene (µg/l) \_\_\_\_\_  
 Number of groundwater monitoring wells installed \_\_\_\_\_ Highest concentration of Xylene (µg/l) \_\_\_\_\_  
 Number of groundwater samples exceeding 915-1 \_\_\_\_\_ 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?  
 Five background soil samples were collected from native undisturbed soil near the site to characterize background levels of arsenic, selenium, and pH. Laboratory results of background samples indicate arsenic concentrations ranging from 1.02 milligrams per kilogram (mg/kg) to 2.57 mg/kg, selenium concentrations ranging from below the laboratory detection limit to 0.435 mg/kg, and pH values ranging from 6.53 to 7.38. A map depicting background sample locations, laboratory reports, and a laboratory results summary table were provided in document #402665268.

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?  
 pH impacts will be delineated vertically and horizontally with soil samples collected from potholes. If groundwater is encountered before vertical soil clearance can be achieved, a groundwater sample will be collected and analyzed for Table 915-1 inorganic constituents of concern in lieu of additional soil samples.

**REMEDIAL ACTION PLAN**

Does this Supplemental Form 27A include changes to a previously approved Remedial Action Plan? Yes \_\_\_\_\_

**SOURCE REMOVAL SUMMARY**

Describe how source is to be removed.  
 Prior to sampling, approximately 32 cubic yards of soil were removed via vacuum truck. No organic impacts to soil were identified during remedial investigation. pH impacts will be delineated vertically and horizontally but will be left in place and managed with reclamation. A reclamation plan will be proposed in a Supplemental Form 27.

**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.  
 In response to the produced water release, Crestone conducted initial excavation activities to identify and expose the point of release and to remove potentially impacted soil from the release area. The water line elbow adjacent to the produced water vessel was identified as the source of the release. For this reason, the produced water vessel remained in place. The remedial excavation was advanced to 6' bgs. On 4/5/2021, soil samples were collected from the base and sidewalls of the excavation. No staining or odor were identified in the excavation. Soil samples were field screened and the sample displaying the highest potential for impacts based on PID results (SSS01@4.5) was submitted for analysis of all COGCC Table 915-1 soil constituents of concern. The remaining four samples collected from the excavation were submitted for TPH, BTEX, and pH analysis. Laboratory results of initial excavation samples indicate that analytes are complaint with COGCC Table 915-1 or below background concentrations observed at the location with the exception of pH. Soil samples collected from the base (SSB01@6) and south sidewall (SSS01@4.5) of the excavation exceed the COGCC Table 915-1 allowable level for pH with values of 9.2 and 8.52, respectively. On 5/13/2021, soil borings were advanced to vertically and horizontally define pH impacts to soils. pH impacts were found to extend vertically past 12' bgs in SB01 and to extend horizontally past SB02 to the Southeast.

**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.

# 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 delineation of pH impacts to soil \_\_\_\_\_

## 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 \_\_\_\_\_

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? \_\_\_\_\_

Does the previous reply indicate consideration of background concentrations? \_\_\_\_\_

Does Groundwater meet Table 915-1 standards? \_\_\_\_\_

Is additional groundwater monitoring to be conducted? \_\_\_\_\_

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.

This facility remains in production; reclamation is not scheduled at this time. When the facility is decommissioned at a later date, reclamation activities will be completed in accordance with 1000 Series Rules.

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? \_\_\_\_\_

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. 03/22/2021

Actual Spill or Release date, or date of discovery. 03/21/2021

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 03/24/2021

Proposed site investigation commencement. 04/05/2021

Proposed completion of site investigation. \_\_\_\_\_

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 04/02/2021

Proposed date of completion of Remediation. 04/05/2021

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**

This Form 27 (Site Investigation and Remediation Workplan) has been submitted to document remediation investigation results completed to date and to propose additional site investigation.

The results of the proposed investigation will be presented in a Supplemental eForm 27. Previous site investigations took place on 4/5/2021 and 5/13/2021 as shown in the lab results summary table. The additional actions proposed in this form are planned for the week of 6/21/2021. The exact sampling date will be determined based on weather, site conditions, stormwater and sediment tracking concerns, and contractor availability.

I hereby certify all statements made in this form are to the best of my knowledge true, correct, and complete.

Signed: David Tewkesbury

Title: Environmental Specialist

Submit Date: 06/11/2021

Email: David.Tewkesbury@CrestonePR.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: PETER GINTAUTAS

Date: 06/15/2021

Remediation Project Number: 17330

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

0 COA	
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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**

402711739	FORM 27-SUPPLEMENTAL-SUBMITTED
402716353	SITE INVESTIGATION REPORT

Total Attach: 2 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)