

State of Colorado  
Oil and Gas Conservation Commission

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04/13/2022

Report taken by:  
Candice (Nikki) Graber

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.

Closure request is not available for an Initial Site Investigation and Remediation Workplan.

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>	City: <u>DENVER</u> State: <u>CO</u> Zip: <u>80202</u>	Phone: <u>(303) 7744017</u>
Contact Person: <u>Schuyler Hamilton</u>	Email: <u>SHamilton@CiviResources.com</u>	Mobile: <u>(720) 9251820</u>

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 13348 Initial Form 27 Document #: 402015162

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>329863</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>MATHEWS 'B' UNIT-61N66W 14SWSE</u>	Latitude: <u>40.047219</u>	Longitude: <u>-104.740268</u>	
** correct Lat/Long if needed: Latitude: <u>40.046578</u>		Longitude: <u>-104.740144</u>	
QtrQtr: <u>SWSE</u>	Sec: <u>14</u>	Twp: <u>1N</u>	Range: <u>66W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

Facility Type: <u>SPILL OR RELEASE</u>	Facility ID: <u>467044</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>Mathews B Unit 1</u>	Latitude: <u>40.046578</u>	Longitude: <u>-104.740144</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>SWSE</u>	Sec: <u>14</u>	Twp: <u>1N</u>	Range: <u>66W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

## **SITE CONDITIONS**

General soil type - USCS Classifications SM

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**

Occupied structures 1/4 mile to South

# 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	GROUNDWATER	Approximately 120' x 60'	Monitoring wells
Yes	SOILS	76' x 123' x 32' bgs	Excavation

## INITIAL ACTION SUMMARY

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

The partially buried produced water vessel at the Mathews B Unit 1 location was removed and the area was backfilled prior to soil sampling. On July 19, 2019, a soil boring (SB-01) was advanced to 10 feet below ground surface (bgs) in the former location of the partially buried produced water vessel in accordance with the approved Form 27 (doc #402015162) to characterize the soils beneath the previously removed vessel. The soil sample collected from SB-01 at 7.5 to 10 feet bgs identified soil impacts exceeding Table 910-1 allowable limits for benzene, TPH, and SAR. A Form 19is (doc number 402125356) was submitted to report soil impacts to the state. The vertical and horizontal extents of soil impacts were delineated according to Table 910-1 standards by excavation with final extents measuring 76 feet x 123 feet x 32 feet bgs. Impacted soil was excavated, stockpiled on site, and treated with oxidizers. Composite samples were collected from all treated soil and from within the footprint of contaminated and treatment stockpiles to verify compliance with Table 910-1 standards for TPH and BTEX. During excavation efforts, impacted groundwater was encountered at approximately 31 feet bgs. Prior to backfilling treated soil into the excavation as approved by doc # 402651465, impacted groundwater was treated with COGAC and persulfate oxidizers. After backfilling, groundwater monitoring wells were installed to delineate the extent of groundwater contamination. Organic groundwater impacts have been delineated, and the site is being monitored on a quarterly basis.

## 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 does not propose any additional soil sampling.

### Proposed Groundwater Sampling

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

Groundwater samples will be collected and analyzed for Table 915-1 groundwater constituents of concern on a quarterly basis until results are within Table 915-1 allowable limits for four consecutive quarters.

### 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 124  
Number of soil samples exceeding 915-1 7  
Was the areal and vertical extent of soil contamination delineated? Yes  
Approximate areal extent (square feet) 9300

### NA / ND

-- Highest concentration of TPH (mg/kg) 15170  
-- Highest concentration of SAR 26.85  
BTEX > 915-1 Yes  
Vertical Extent > 915-1 (in feet) 32

### Groundwater

Number of groundwater samples collected 59  
Was extent of groundwater contaminated delineated? Yes  
Depth to groundwater (below ground surface, in feet) 30'  
Number of groundwater monitoring wells installed 23  
Number of groundwater samples exceeding 915-1 46

-- Highest concentration of Benzene (µg/l) 3390  
-- Highest concentration of Toluene (µg/l) 6610  
-- Highest concentration of Ethylbenzene (µg/l) 3500  
-- Highest concentration of Xylene (µg/l) 35000  
NA 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?

Groundwater impacts extended past the facility boundaries on the east and south perimeters.

Were background samples collected as part of this site investigation?

Groundwater sample BK-1 was collected May 14, 2021 to establish native levels of total dissolved solids, chloride ions, and sulfate ions in groundwater. Based on analytical results of BK-1, Crestone proposes alternative allowable limits for total dissolved solids (TDS) and sulfate of 862 mg/L and 304 mg/L, respectively.

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?

Groundwater samples will be collected on a quarterly basis and submitted for Table 915-1 constituents of concern until results remain within allowable limits for four consecutive quarters.

## 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.

No soil has been removed from the site. Approximately 1600 cubic yards of impacted soil were treated onsite with oxidizers and backfilled into the excavation.

### 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.

See Initial Action Summary for a review of remediation project initiation and progress. 4th quarter 2021 groundwater samples were collected December 2. Organic groundwater impacts were delineated 3rd quarter 2021 and remain delineated. Due to COGAC and oxidizer treatments, sulfate and total dissolved solids (TDS) levels are elevated above Table 915-1 allowable limits and remain undelineated to the southeast of the site. See Table 2 and Figure 3 for groundwater analytical results. Groundwater will continue to be monitored on a quarterly basis until analytical results are within Table 915-1 allowable limits for four consecutive quarters. In-situ treatments, such as COGAC, may be implemented to continue groundwater remediation. Because organic groundwater impacts are delineated, Crestone proposed to remove superfluous upgradient wells from the sampling scope via approved Form 27 document #402868328. Crestone proposed to remove six wells (B-9, B-15, B-16, B-17, B-18, and B-19) from the quarterly sampling scope as these wells fall upgradient and crossgradient of the upgradient delineation wells. If organic impact delineation is lost, the site will return to a quarterly reporting schedule.

## 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 # \_\_\_\_\_  
Yes \_\_\_\_\_ Excavate and onsite remediation  
No \_\_\_\_\_ Land Treatment  
No \_\_\_\_\_ Bioremediation (or enhanced bioremediation)  
Yes \_\_\_\_\_ Chemical oxidation  
No \_\_\_\_\_ Other \_\_\_\_\_

## Groundwater Remediation Summary

No \_\_\_\_\_ Bioremediation ( or enhanced bioremediation )  
Yes \_\_\_\_\_ Chemical oxidation  
No \_\_\_\_\_ Air sparge / Soil vapor extraction  
Yes \_\_\_\_\_ Natural Attenuation  
Yes \_\_\_\_\_ Other Activated carbon (COGAC) \_\_\_\_\_

## 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.

A total of 23 groundwater monitoring wells have been installed to monitor groundwater quality. Groundwater samples will be collected and submitted for Table 915-1 groundwater constituents of concern. Groundwater will continue to be monitored on a quarterly basis until all constituents of concern are within Table 915-1 allowable limits for four consecutive quarters. Based on the approved sampling scope reduction via Form 27 document number 402868328, Crestone will not sample B-9, B-15, B-16, B-17, B-18, and B-19 as these wells fall upgradient and crossgradient of the upgradient delineation wells. See Figure 3 for delineation details and points of compliance.

# 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 \_\_\_\_\_

## 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.

Reclamation will be completed per the 1000 series rules.

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 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. 07/30/2019

Actual Spill or Release date, or date of discovery. \_\_\_\_\_

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 04/29/2019

Proposed site investigation commencement. 04/29/2019

Proposed completion of site investigation. 12/01/2023

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 01/20/2021

Proposed date of completion of Remediation. 08/30/2021

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 has been submitted to provide Q4 2021 data and updated contact information to the COGCC. Please find site investigation information attached including site map, groundwater contour map, lab results summary table, and lab report.

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

Signed: Schuyler Hamilton

Title: Environmental Specialist

Submit Date: 04/13/2022

Email: SHamilton@CiviResources.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: Candice (Nikki) Graber

Date: 05/10/2022

Remediation Project Number: 13348

**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**

402948705	FORM 27-SUPPLEMENTAL-SUBMITTED
403014184	MONITORING REPORT

Total Attach: 2 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)