

State of Colorado Oil and Gas Conservation Commission

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Receive Date:

Report taken by:

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>	Phone Numbers
Address: <u>1801 CALIFORNIA STREET #2500</u>		Phone: <u>(303) 7744017</u>
City: <u>DENVER</u> State: <u>CO</u> Zip: <u>80202</u>		Mobile: <u>(720) 9251820</u>
Contact Person: <u>Schuyler Hamilton</u>	Email: <u>SHamilton@CiviResources.com</u>	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 13340 Initial Form 27 Document #: 402015133

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

No Multiple Facilities

Facility Type: <u>LOCATION</u>	Facility ID: <u>336418</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>BILLINGS 2N68W/34NENE</u>	Latitude: <u>40.099480</u>	Longitude: <u>-104.983670</u>	
	** correct Lat/Long if needed: Latitude: <u>40.099394</u>	Longitude: <u>-104.983999</u>	
QtrQtr: <u>NENE</u>	Sec: <u>34</u>	Twp: <u>2N</u>	Range: <u>68W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

SITE CONDITIONS

General soil type - USCS Classifications SC Most Sensitive Adjacent Land Use Cropland

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

Residential area to west

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	GROUNDWATER	No groundwater remaining	Monitoring wells drilled to refusal and dry
Yes	SOILS	To be determined	Soil borings

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 May 31, 2019, a soil boring (SB01) was advanced in the location of the former produced water vessel and a soil sample was collected to characterize potential impacts. Results of soil analysis indicated benzene and pH values in exceedance of Table 910-1 allowable limits. To delineate the extent of soil impacts, a total of fifty-two soil borings have been advanced since August 2019. Impacted groundwater was encountered during 2019 site investigation efforts at approximately 10 feet below ground surface (bgs); therefore, four soil borings were completed as monitoring wells to characterize groundwater impacts. In October 2019, COGAC was injected into the subsurface to address hydrocarbon impacts and to reduce the potential for impact mobilization. In 2020 and 2021, failed attempts to collect groundwater samples from installed monitoring wells and additional soil borings demonstrated that groundwater was no longer present in the remediation area above the confining layer. Organic soil impacts have been delineated horizontally in accordance with Table 915-1 Residential standards. Soil suitability for reclamation constituents and metals have not been delineated. Vertical soil delineation was not achieved because the auger encountered refusal at a confining clay layer in all soil borings at approximately 17 feet bgs. Borings were not advanced past the confining layer to avoid creating a conduit to deeper formation soil and groundwater. It is Crestone's intent to characterize vertical delineation in future remediation excavation activities once impacted soil has been removed to minimize potential for cross-contamination. Each soil boring advanced in May and June 2021 was completed as a temporary monitoring well to verify the absence of groundwater above the confining layer. No groundwater has been observed in any of the newly completed wells. Soil and groundwater samples collected prior to May 2021 were submitted for analysis of Table 910-1 constituents of concern.

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 collect one or more additional background soil samples to characterize native levels of inorganic constituents of concern. Analytical results for all soil samples will be screened against Table 915-1 residential limits due to the confining clay layer present at depths varying from 16 to 20 feet below ground surface across the site and the lack of groundwater above the confining layer.

Proposed Groundwater Sampling

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

The groundwater originally observed appears to have dissipated as indicated by consistently dry monitoring wells. Based on guidance from COGCC regulatory personnel, groundwater presence or absence above the confining layer will be verified on a quarterly basis. If groundwater is present, samples will be collected and analyzed for Table 915-1 constituents of concern.

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 92

Number of soil samples exceeding 915-1 39

Was the areal and vertical extent of soil contamination delineated? No

Approximate areal extent (square feet) 2000

NA / ND

-- Highest concentration of TPH (mg/kg) 2416

NA Highest concentration of SAR

BTEX > 915-1 No

Vertical Extent > 915-1 (in feet) 19

Groundwater

Number of groundwater samples collected 7

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet) 20'

Number of groundwater monitoring wells installed 8

Number of groundwater samples exceeding 915-1 2

-- Highest concentration of Benzene (µg/l) 227

ND Highest concentration of Toluene (µg/l)

-- Highest concentration of Ethylbenzene (µg/l) 390

ND Highest concentration of Xylene (µg/l)

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?

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

BK-1 and BK-2 were collected to determine native levels of Table 915-1 constituents of concern. BK-2 was determined to contain organic constituents of concern above lab detection limits and is not considered a background sample. Additional background soil samples are proposed to be collected. Laboratory results of background analysis are presented in Table 1, and sample locations are presented in Figure 3.

☐ 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?

Crestone proposes to collect at least one additional soil background sample to characterize native levels of inorganic constituents of concern.

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.

Remediation methodologies will be evaluated once additional background data is obtained to allow for constituent-specific remediation considerations.

REMEDIAL ACTION 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.

Please see Initial Action Summary for a review of remediation project initiation and progress. In September 2021, twelve additional soil borings (B-34 through B-45) were advanced to delineate soil impacts. BK-2 was also advanced with the intent to characterize native levels of inorganic constituents of concern. At least one soil sample from each boring was submitted for analysis of Table 915-1 soil constituents of concern. Horizontal delineation of soil organic impacts was achieved by these recent soil samples, but vertical extents were not able to be delineated due to a clay confining layer at approximately 17 feet bgs. Each of the thirteen borings was drilled to refusal. Soil suitability for reclamation and metal constituents impacts remain undelineated both horizontally and vertically. Crestone proposes to collect additional background samples to establish alternative allowable limits for inorganic constituents. Remediation methodologies will be evaluated once additional background data is obtained to allow for constituent-specific remediation considerations. Soil boring logs and lab results are attached. Groundwater was not present in installed monitoring wells during 3rd quarter 2021.

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

_____ No _____ Bioremediation (or enhanced bioremediation)
 _____ Yes _____ Chemical oxidation
 _____ No _____ Air sparge / Soil vapor extraction
 _____ Yes _____ Natural Attenuation
 _____ Yes _____ Other _____ 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.

Groundwater is no longer present within the remediation area above the clay confining layer as indicated by consistently dry monitoring wells. Groundwater presence or absence will continue to be verified on a quarterly basis. If groundwater is present, samples will be collected and analyzed for Table 915-1 groundwater constituents of concern. If groundwater is encountered, one or more background groundwater samples may be collected to establish native levels of total dissolved solids, chloride, and sulfate.

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 Site Investigation Report

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 activities will be completed in accordance with 1000 Series Rules, in collaboration with the landowner, and reported in a Form 4 (Sundry Notice) with proper documentation to demonstrate compliance with requirements for final reclamation.

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. 06/06/2019

Actual Spill or Release date, or date of discovery. _____

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 05/31/2019

Proposed site investigation commencement. 05/31/2019

Proposed completion of site investigation. 09/30/2022

REMEDIAL ACTION DATES

Proposed start date of Remediation. 10/15/2019

Proposed date of completion of Remediation. 06/01/2022

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 the COGCC to provide 3rd Quarter 2021 site investigation data and to propose additional soil background sample collection. Background soil sampling is tentatively scheduled for February 2022. Results of site investigation activities including site maps, lab result summary tables, boring logs, and laboratory reports are attached.

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

Signed: Chris Rice

Title: Environmental Technician

Submit Date:

Email: CRice@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:

Date:

Remediation Project Number: 13340

COA Type**Description**

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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**

402913931	SITE INVESTIGATION REPORT
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Total Attach: 1 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)