

State of Colorado  
Energy & Carbon Management Commission

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Document Number:  
404045182  
Receive Date:  
12/31/2024  
Report taken by:  
Chris Sanchez

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 ECMC 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: WESTERN OPERATING COMPANY | Operator No: 95620                | Phone Numbers<br>Phone: (303) 726-8650<br>Mobile: ( ) |
| Address: 1165 DELAWARE STREET #200          |                                   |   |
| City: DENVER                                | State: CO                         | Zip: 80204  |
| Contact Person: Steve James                 | Email: steve@westernoperating.com |   |

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 33553 Initial Form 27 Document #: 403622204

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: WELL                            | Facility ID: _____  | API #: 061-06010       | County Name: KIOWA                        |
| Facility Name: FOSTER 1                        | Latitude: 38.409810 | Longitude: -102.447940 |   |
| ** correct Lat/Long if needed: Latitude: _____ |                     | Longitude: _____       |   |
| QtrQtr: NENW                                   | Sec: 15             | Twp: 19S               | Range: 45W Meridian: 6 Sensitive Area? No |

|  |                     |                        |   |
|--|---------------------|------------------------|---|
| Facility Type: LOCATION                        | Facility ID: 324795 | API #: _____           | County Name: KIOWA                        |
| Facility Name: FOSTER-619S45W 15NENW           | Latitude: 38.409732 | Longitude: -102.447934 |   |
| ** correct Lat/Long if needed: Latitude: _____ |                     | Longitude: _____       |   |
| QtrQtr: NENW                                   | Sec: 15             | Twp: 19S               | Range: 45W Meridian: 6 Sensitive Area? No |

## SITE CONDITIONS

General soil type - USCS Classifications SM

Most Sensitive Adjacent Land Use Rangeland

Is domestic water well within 1/4 mile? No

Is surface water within 1/4 mile? No

Is groundwater less than 20 feet below ground surface? No

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

The Foster #1 wellhead and tank battery is surrounded by rangeland in all directions. There are no residences within a quarter mile of the wellhead. There are no groundwater well permits mapped within a quarter mile of the wellhead. Groundwater depth is unknown, but groundwater permit 75864, approximately 1.25 miles south-southwest of the wellhead, reported a static water level of 56 feet below ground surface (ft-bgs) at the time of completion. Chivington Reservoir is mapped approximately 0.5 mile east of the site. The site is located within Lesser Prairie Chicken Focal Area density habitat and estimated occupied range. There are no additional sensitive areas or wildlife habitats identified within a quarter mile of the wellhead.

# 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 checked="" type="checkbox"/> Oil            | <input type="checkbox"/> Tank Bottoms                |  |
| <input checked="" 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          | Investigation ongoing | 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.

Western Operating proposes to plug and abandon (P&A) the Foster #1 wellhead and decommission the related on-location tank battery. Plugging and abandonment of the well will occur in Winter 2023/2024. Cut and cap activities are planned to commence and be completed approximately 10 days after P&A activities are complete. Western Operating will conduct site investigation activities, field screening, and confirmation soil sampling activities during closure in accordance with COGCC 900 Series Rules. Discreet soil samples and, if necessary, one groundwater sample will be collected and analyzed pursuant to Rule 915, following the general sample collection guidance in Rule 915.e.(2) and Rule 915.e.(3). All waste generated during the closure activities will be managed and disposed of in accordance with Rules 905 and 906. See the attached Figure 1 for a topographic location map.

## 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 ):

A minimum of 12 discreet soil samples will be collected for field screening from qualifying production equipment. At least six samples will be submitted to accredited laboratory for analysis of TPH (C6-C36), Table 915-1 Organic Compounds in Soil, Table 915-1 metals, and Table 915-1 Soil Suitability for Reclamation (Electrical conductivity, Sodium adsorption ratio, and pH by saturated paste method, boron (hot water soluble)). See the attached Figure 2 for an illustration of the facility layout and proposed soil sample locations.

### Proposed Groundwater Sampling

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

If encountered, at least one groundwater sample will be collected for analysis of Table 915-1 Groundwater Inorganic Parameters (total dissolved solids, sulfate, chloride) and organic compounds in groundwater.

### 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 ):

Assessments will be conducted during the removal or abandonment-in-place (TBD) of the off-location flowline (~3,760 feet in length) approximately every 250 feet. Soils will be field screened below the flowline and if suspected impacts are observed, a soil sample will be submitted for laboratory analysis of TPH (C6-C36), Table 915-1 Organic Compounds in Soil, Table 915-1 metals, and Table 915-1 Soil Suitability for Reclamation. Laboratory soil samples will be collected for laboratory analysis listed above at significant direction changes, and in close proximity to sensitive habitats, such as wetlands, surface water crossings, and HPH boundaries. A Form 44 pre-abandonment notification will be submitted at least 30 days prior to flowline abandonment activities.

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

Soil

NA / ND

Number of soil samples collected 8 -- Highest concentration of TPH (mg/kg) 270  
 Number of soil samples exceeding 915-1 4 -- Highest concentration of SAR 5.1  
 Was the areal and vertical extent of soil contamination delineated? No BTEX > 915-1 No  
 Approximate areal extent (square feet) 400 Vertical Extent > 915-1 (in feet) 1

**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?  
 Three background samples have been collected from various depths at one soil boring location undisturbed by oil and gas activities and submitted for analysis of Table 915-1 Soil Suitability for Reclamation Parameters and Metals in Soils. Analytical results demonstrate that pH, arsenic, and barium concentrations above Table 915 standards exist naturally at this location. Additional background sampling will be conducted to determine if pH and EC levels seen in confirmation soil samples are representative of background levels.

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?  
 Additional investigation will be conducted at the off-location produced water gathering line to collect and submit for laboratory analysis a soil sample collected from the areas most likely to have been impacted during the operational life of the flowline, as well as to conduct environmental investigation to confirm the presence or absence of impacts adjacent to the flowline at a minimum of every 250'. This activity has been delayed while determining the abandonment in place or removal of the flowline with landowners.

**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.  
 If a suspected release is identified through soil screening and/or laboratory analysis, soils may be removed and transported to a licensed disposal facility. If all source material cannot be removed during excavation activities, alternative plans will be proposed in subsequent Form 27 supplemental.

**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.  
 If necessary, a remediation or closure plan will be developed based on the results of additional background sampling to determine if pH and EC levels seen in confirmation soil samples are representative of background levels.

**Soil Remediation Summary**

In Situ  Ex Situ  
 \_\_\_\_\_ Bioremediation ( or enhanced bioremediation ) \_\_\_\_\_ Excavate and offsite disposal  
 \_\_\_\_\_ Chemical oxidation \_\_\_\_\_ If Yes: Estimated Volume (Cubic Yards) \_\_\_\_\_

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

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

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

\_\_\_\_\_ Name of Licensed Disposal Facility or ECMC 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 \_\_\_\_\_

## Adequacy of Operator's General Liability Insurance and Financial Assurance

Describe the adequacy of the Operator's general liability insurance and Financial Assurance to fully address the anticipated costs of Remediation, including the estimated remaining cost for this project (below).

If this information has been provided on a Form 27 within the last 12 months, provide the Document Number of that form.

Western Operating has \$5,000,000 in liability insurance and is currently adequately bonded.

Operator anticipates the remaining cost for this project to be: \$ 10000

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

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

Non-ECMC Disposal Facility: \_\_\_\_\_

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

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

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

Non-ECMC 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 ECMC 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 conducted in accordance with COGCC 1004 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. 04/01/2024

Proposed date of completion of Reclamation. 04/01/2025

## 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. 04/26/2023

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

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 12/11/2023

Proposed site investigation commencement. 01/15/2024

Proposed completion of site investigation. 03/10/2025

### REMEDIAL ACTION DATES

Proposed start date of Remediation. \_\_\_\_\_

Proposed date of completion of Remediation. \_\_\_\_\_

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 Supplemental has been prepared as a quarterly update of decommissioning activities at the Foster 1 wellhead. Additional background samples were collected to demonstrate pH, arsenic and barium concentrations above Table 915-1 soil screening limits. A de minimis volume of soil was removed from AST01@0.5 and AST02@0.5 to remove EC exceedances, and grab confirmation soil samples AST01@1 and AST02@1 were collected and submitted for laboratory analysis. Additional excavation will be conducted to remove pH exceedances identified in AST01@1 and AST02@1.

In response to Condition of Approval under Form 27 document 403901176 identifying soil samples submitted to laboratory out of temperature, these samples will all be recollected via hand auger and submitted on ice to a NELAP accredited laboratory for analysis of Table 915-1 constituents in soils.

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

Signed: Ryan Finley

Title: Senior Project Geologist

Submit Date: 12/31/2024

Email: rfinley@entradainc.com

Based on the information provided herein, this Application for Site Investigation and Remediation Workplan complies with ECMC Rules and applicable orders and is hereby approved.

ECMC Approved: Chris Sanchez

Date: 05/09/2025

Remediation Project Number: 33553

**COA Type****Description**

|       |   |
|-------|---|
|       | Operator shall continue quarterly reporting until the site investigation is complete and Full Table 915-1 standards are met within the remediation area |
| 1 COA |   |

**ATTACHMENT 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**

|           |  |
|-----------|--|
| 404045182 | INVESTIGATION/REMEDATION WORKPLAN (SUPPLEMENTAL) |
| 404045183 | MAP  |
| 404045184 | SOIL SAMPLE LOCATION MAP                         |
| 404045185 | ANALYTICAL RESULTS                               |
| 404045186 | ANALYTICAL RESULTS                               |
| 404045187 | ANALYTICAL RESULTS                               |
| 404045188 | PHOTO DOCUMENTATION                              |
| 404198107 | FORM 27-SUPPLEMENTAL-SUBMITTED                   |

Total Attach: 8 Files

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

|               |   |            |
|---------------|---|------------|
| Environmental | Operator notes, In response to Condition of Approval under Form 27 document 403901176 identifying soil samples submitted to laboratory out of temperature, these samples will all be recollected via hand auger and submitted on ice to a NELAP accredited laboratory for analysis of Table 915-1 constituents in soils." | 05/09/2025 |
|---------------|---|------------|

Total: 1 comment(s)