

State of Colorado  
Energy & Carbon Management Commission

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403735793  
Receive Date:  
03/29/2024  
Report taken by:  
CHRIS CANFIELD

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: <u>NOBLE ENERGY INC</u>	Operator No: <u>100322</u>	Phone Numbers Phone: <u>(970) 730-7281</u> Mobile: <u>( )</u>
Address: <u>1099 18TH STREET SUITE 1500</u>		
City: <u>DENVER</u>	State: <u>CO</u>	Zip: <u>80202</u>
Contact Person: <u>Dan Peterson</u>	Email: <u>rbueuf27@chevron.com</u>	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 29712 Initial Form 27 Document #: 403389644

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>302371</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>BRNAK-62N64W 28SWSE</u>	Latitude: <u>40.103940</u>	Longitude: <u>-104.553780</u>	
** correct Lat/Long if needed: Latitude: <u>40.102639</u>		Longitude: <u>-104.551726</u>	
QtrQtr: <u>SWSE</u>	Sec: <u>28</u>	Twp: <u>2N</u>	Range: <u>64W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>
Facility Type: <u>SPILL OR RELEASE</u>	Facility ID: <u>485280</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>Brnak 34-28</u>	Latitude: <u>40.102639</u>	Longitude: <u>-104.551651</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>SWSE</u>	Sec: <u>28</u>	Twp: <u>2N</u>	Range: <u>64W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

## SITE CONDITIONS

General soil type - USCS Classifications SW \_\_\_\_\_

Most Sensitive Adjacent Land Use Cropland \_\_\_\_\_

Is domestic water well within 1/4 mile? No \_\_\_\_\_

Is surface water within 1/4 mile? Yes \_\_\_\_\_

Is groundwater less than 20 feet below ground surface? No \_\_\_\_\_

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

Intermittent Riverine Wetlands 0.09mi W, 0.25mi SE (Denver-Hudson Canal)  
Farm Structures 0.25 WSW  
NA

# 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
UNDETERMINED	GROUNDWATER	NA	Lab analysis if encountered
Yes	SOILS	10' x 10' x 1' bgs	Lab 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.

A site investigation was conducted pursuant to COGCC Rule 911 at the BRNAK T2N-R64W-S28 L01 Facility and Tank Battery location.

## 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 ):

Grab confirmation soil samples were collected from the produced water vessel(s) excavation, beneath the ground oil tank(s), and at the risers for the flowline(s) and dumpline(s) of any separator(s). Soil samples were analyzed by a certified laboratory for TPH (total volatile [C6-C10] and extractable [C10-C36] hydrocarbons), organic compounds in soil per COGCC Table 915-1, metals, EC, SAR, pH, and boron. All samples collected were analyzed by a certified laboratory using approved COGCC laboratory analysis methods.

### Proposed Groundwater Sampling

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

If groundwater is encountered during the site investigation a grab groundwater will be collected and analyzed for all organic compounds per COGCC Table 915-1.

### 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 ):

Visual inspection at the tank battery area occurred during abandonment activities. Field personnel field screened all disturbed areas using visual and olfactory senses to determine if laboratory confirmation sampling was required. The COGCC Tank Battery and Produced Water Vessel Closure Checklists were utilized and filled out during the abandonment process. A photolog was submitted on the Subsequent Form 27.

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

<b>Soil</b>	<b>NA / ND</b>
Number of soil samples collected      33	-- Highest concentration of TPH (mg/kg)      222
Number of soil samples exceeding 915-1      33	-- Highest concentration of SAR      21.5

Was the areal and vertical extent of soil contamination delineated? Yes

BTEX > 915-1 Yes

Approximate areal extent (square feet) 100

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?

A total of fifteen background samples were collected from five discrete locations and analyzed for pH, SAR, EC, boron, arsenic, barium, and selenium. A detailed comparison of background samples is provided in the Operator Comments section.

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?

An additional supplemental site investigation (SSI) will be completed to delineate the inorganic compounds present at BH02@10' (pH), BH04@5' (SAR), BH04@10' (EC), BH07@10' (EC) and BH08@5' (pH) above established background thresholds (refer to the Operator Comments section). A proposed SSI map is attached to this Form 27. Based on the elimination of organic compounds and metals as contaminants of concern (refer to the Operator Comments section), Noble is requesting to limit future soil sampling to the analysis of pH, SAR, and EC. The results of the SSI will be submitted on a subsequent Form 27.

**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.

Refer to the remediation summary section below.

**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.

A Site Assessment was conducted on October 18, 2023 to delineate impacted media. Nine soil borings were advanced in the area of impacts. BH01 was advanced at the same location as the waste characterization sample MH01@1' to vertically delineate organic impacts at that location. BH02-BH05 were advanced surrounding BH01 to vertically and laterally delineate organic impacts identified at MH01@1'. BH06 was advanced at the same location as the waste characterization sample FS01@5' to vertically delineate inorganic impacts at that location. BH04, and BH07-BH09 were advanced surrounding BH06 to vertically and laterally delineate inorganic impacts identified at FS01@5'.

Soil samples were collected and analyzed for Organic compounds in soil per ECMC Table 915-1, TPH, metals in soil per ECMC Table 915-1, and EC, SAR, pH, and boron. Groundwater was not encountered during this assessment. Soil boring samples BH01@1' and BH06@5' were collected from the same locations as waste characterization samples MH01@1' and FS01@5', respectively. The organic exceedances identified during decommissioning at MH01@1' were not repeated by resample location BH01@1', and the SAR and EC exceedances identified during decommissioning at FS01@5' were not repeated by resample location BH06@5'.

The remaining inorganic compounds above established background thresholds will be delineated through a supplemental site investigation in accordance with the attached proposed site investigation map, and proposed sampling plan outlined in the Site Investigation Report section of this Form 27.

**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 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 Supplemental Site Investigation Report and Site Investigation Plan \_\_\_\_\_

## 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.

Noble intends to directly address the costs of remediation at the locations as part of our asset retirement obligation process and operations. Noble has general liability insurance (policy MWZZ 316714) and financial assurance in compliance with ECMC rules. Records are available on the ECMC's website. The cost for remediation is an estimate only, costs may change upwards or downward based on site-specific information. Noble makes no representation or guarantees as to the accuracy of the estimate.

Operator anticipates the remaining cost for this project to be: \$ 50000 \_\_\_\_\_

## WASTE DISPOSAL INFORMATION

Was E&P waste generated as part of this remediation? No

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 in accordance with COGCC 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. 12/03/2024

Proposed date of completion of Reclamation. 12/03/2025

## 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. 03/23/2023

Actual Spill or Release date, or date of discovery. 10/03/2023

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 09/22/2023

Proposed site investigation commencement. 06/01/2023

Proposed completion of site investigation. 12/03/2024

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 12/03/2024

Proposed date of completion of Remediation. 12/03/2025

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 is being submitted with the results of the Supplemental Site Investigation completed at the Brnak 34-28 Tank Battery.

Concurrently with the Supplemental Site Investigation, a total of 15 background samples were collected from five discrete locations and analyzed for pH, SAR, EC, boron, arsenic, barium, and selenium. Background samples were collected from the same depths as the soil boring samples.

The average background concentrations of arsenic, barium, and selenium with a 1.25 multiplier applied were calculated to be 6.50 mg/kg, 238 mg/kg, and 0.455 mg/kg, respectively, whereas the average decommissioning and soil boring concentrations of arsenic, barium, and selenium were calculated to be 2.05 mg/kg, 134 mg/kg, and 0.356 mg/kg, respectively. Additionally, the maximum values of arsenic, barium, and selenium with a 1.25 multiplier applied were calculated to be 9.48 mg/kg, 460 mg/kg, and 0.914 mg/kg, all of which exceed the soil boring and decommissioning sample concentrations, with the exception of selenium at two locations (BH04@5' and BH09@10'). However, the selenium exceedances at these two locations were all below ECMC Table 915-1 Residential Soil Screening Levels (RSSLs). Since the average background concentrations for arsenic, barium, and selenium were calculated to be greater than the average decommissioning and soil boring concentrations, arsenic, barium, and selenium should not be considered a contaminant of concern.

The average background concentrations of pH, SAR, and EC were calculated to be 8.59, 8.32, and 2.65 mmhos/cm, respectively, whereas the average decommissioning and soil boring concentrations of pH, SAR, and EC were calculated to be 8.26, 3.83, and 1.84 mmhos/cm, respectively. While the average background concentrations for pH, SAR, and EC all exceed their corresponding average soil boring concentrations, several soil boring locations exceed the maximum observed background levels (refer to Table 2 of the attached Site Investigation Report). As such, the exceedances observed at BH02@10' (pH), BH04@5' (SAR), BH04@10' (EC), BH07@10' (EC) and BH08@5' (pH) will be further delineated in accordance with the Site Investigation Report section of this Form 27.

Since groundwater was not encountered within 10-ft of the ground surface during the site assessment, since hydrocarbon compounds are limited to 1-ft bgs in sample location MH01@1' and not repeatable, and since the lithology observed in the soil borings consists generally of lean clay, there is no pathway for contaminant migration to the water table. As such, Noble is requesting to apply ECMC Table 915-1 RSSLs to the site. The application of ECMC Table 915-1 RSSLs eliminates the detected concentrations of organic compounds in soil sample MH01@1' as contaminants of concern, and eliminates the two selenium concentrations above background thresholds (BH04@5' and BH09@10') as contaminants of concern.

If the ECMC approves the application of Table 915-1 RSSLs, Noble is proposing to leave the impacts identified at MH01 in place. An additional supplemental site investigation (SSI) will be completed to delineate the inorganic compounds present at BH02@10' (pH), BH04@5' (SAR), BH04@10' (EC), BH07@10' (EC) and BH08@5' (pH) above established background thresholds in accordance with the Site Investigation Report section of this Form 27. Following the completion of the SSI, a detailed reclamation plan will be generated.

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

Signed: Allan Engelhardt

Title: Environmental Consultant

Submit Date: 03/29/2024

Email: chevroneform@tasman-geo.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 CANFIELD

Date: 06/28/2024

Remediation Project Number: 29712

**COA Type**

**Description**

0 COA	
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**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**

403735793	FORM 27-SUPPLEMENTAL-SUBMITTED
403811414	SITE INVESTIGATION REPORT
403811420	SITE INVESTIGATION PLAN

Total Attach: 3 Files

**General Comments**

**User Group**

**Comment**

**Comment Date**

		Stamp Upon Approval
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Total: 0 comment(s)