

State of Colorado  
Energy & Carbon Management Commission

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Document Number:  
404217082

Receive Date:

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

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 28820 Initial Form 27 Document #: 403371436

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: LOCATION	Facility ID: 447608	API #: _____	County Name: WELD
Facility Name: BOCKIUS 15-1,8, PFANNEBECKER C14-32 D,C15-22	Latitude: 40.312703	Longitude: -104.527565	
** correct Lat/Long if needed: Latitude: 40.312693		Longitude: -104.527923	
QtrQtr: SENE	Sec: 15	Twp: 4N	Range: 64W Meridian: 6 Sensitive Area? Yes
Facility Type: SPILL OR RELEASE	Facility ID: 489352	API #: _____	County Name: WELD
Facility Name: Bockius 15-1,8, Pfannebecker C14-32	Latitude: 40.312669	Longitude: -104.527671	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: SENE	Sec: 15	Twp: 4N	Range: 64W Meridian: 6 Sensitive Area? Yes

## **SITE CONDITIONS**

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

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? No \_\_\_\_\_

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

Aquatic Native Species Conservation Waters  
Intermittent Riverine Wetlands 90ft W (Box Elder Creek)  
No other potential receptors are located within 1/4 mile of the Site.  
Above distances are approximations.

# 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	Refer to Tables and Figures	Lab analysis
Yes	SOILS	Refer to Tables and Figures	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 will be conducted pursuant to ECMC Rule 911 at the BOCKIUS PFANNEBECKER T4N-R64W-S15 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 will be 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 will be analyzed by a certified laboratory for TPH (total volatile [C6-C10] and extractable [C10-C36] hydrocarbons), organic compounds in soil per ECMC Table 915-1, and EC, SAR, pH, and boron. All samples collected will be analyzed by a certified laboratory using approved ECMC 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 ECMC 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 will occur during abandonment activities. Field personnel will field screen all disturbed areas using visual and olfactory senses to determine if laboratory confirmation sampling is required. The ECMC Tank Battery and Produced Water Vessel Closure Checklists will be utilized and filled out during the abandonment process. A photolog will be submitted on the Subsequent Form 27.

# SITE INVESTIGATION REPORT

## **SAMPLE SUMMARY**

Soil	NA / ND
Number of soil samples collected    33	-- Highest concentration of TPH (mg/kg)    5210

Number of soil samples exceeding 915-1 33 -- Highest concentration of SAR 12.5

Was the areal and vertical extent of soil contamination delineated? No BTEX > 915-1 No

Approximate areal extent (square feet) 5148 Vertical Extent > 915-1 (in feet) 15

**Groundwater**

Number of groundwater samples collected 1 -- Highest concentration of Benzene (µg/l) 640

Was extent of groundwater contaminated delineated? No ND Highest concentration of Toluene (µg/l)         

Depth to groundwater (below ground surface, in feet) 15 -- Highest concentration of Ethylbenzene (µg/l) 96

Number of groundwater monitoring wells installed 0 -- Highest concentration of Xylene (µg/l) 61

Number of groundwater samples exceeding 915-1 1 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?

Empty rectangular box for notes.

Were background samples collected as part of this site investigation?

Fifteen background samples were collected during the tank battery decommissioning event from an area not impacted by oil and gas development at similar depths and lithologies as confirmation samples collected at the location and analyzed for ECMC Table 915-1 metals and soil suitability for reclamation standards (pH, EC, SAR, and Boron). All samples failed the ECMC standards for As, Ba, Cd, and Pb. One sample ailed the ECMC standard for pH.  
Background Soil Sample Analysis (mg/kg)  
Arsenic 0.5 Ft: Max\*1.25 = 4.63  
Arsenic 4 Ft: Max\*1.25 = 4.73  
Arsenic 5 Ft: Max\*1.25 = 4.56  
Barium 0.5 Ft: Max\*1.25 = 203  
Barium 4 Ft: Max\*1.25 = 203  
Barium 5 Ft: Max\*1.25 = 366  
Cadmium 3 Ft: Max\*1.25 = 1.41  
Cadmium 3 Ft: Max\*1.25 = 1.20  
Cadmium 5 Ft: Max\*1.25 = 1.26  
Lead 0.5 Ft: Max\*1.25 = 52.3  
Lead 4 Ft: Max\*1.25 = 72.9  
Lead 5 Ft: Max\*1.25 = 69.8  
Selenium 0.5 Ft: Max\*1.25 = 0.325  
Selenium 4 Ft: Max\*1.25 = 0.325  
Selenium 5 Ft: Max\*1.25 = 0.325  
pH 4 Ft: Max = 8.59

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?

Background samples will be collected in five locations from an area not impacted by oil and gas development at similar depths (9', 14', and 15') and lithologies as the excavation confirmation samples and analyzed for ECMC Table 915-1 metals and soil suitability for reclamation standards (SSR) (pH, EC, SAR, and Boron). The samples will be used to characterize native soil and potentially attribute elevated metals and inorganics concentrations to native soil conditions.  
PWV01-NW@4' sample location will be resampled for full Table 915-1 soil constituents, and the sample location will be resampled for Table 915-1 metals.

**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.

Impacted soil was removed from the Bockius15-1,8, Pfannebecker C14-32D Tank Battery release area by excavation. The impacted soil was disposed of at an approved landfill as non-hazardous waste in accordance with Rules 905 and 906. Copies of the waste manifests are available upon request.

**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.

The source was excavated and 33 confirmation soil samples were collected from the sidewalls and floor of the 5,148 sq. ft. excavation and analyzed for the full Table 915-1 suite of analytes. Sample locations DL01@4', AST03@0.5', and PWW01-S@4' previously proposed to be resampled for Table 915-1 SSR constituents and metals were removed by excavation. Impacted soil remains in situ in six locations in the N, E, and S excavation sidewalls and in one location in the east excavation floor. Conventional excavation is limited to the N and E by underground utilities, and to the S by overhead and underground utilities. The Operator proposes to treat residual impacts in place with a soil vapor extraction system. System wells are proposed on the attached figures.

Impacted groundwater was encountered during the excavation of impacted soil. A groundwater sample was collected for Table 915-1 organic and inorganic constituents in groundwater (Benzene, Toluene, Ethylbenzene, Total Xylenes (BTEX), naphthalene, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Chloride ion, Sulfate ion and Total Dissolved Solids (TDS). The Operator proposes to install monitoring wells to monitor natural attenuation of impacted groundwater at the location.

NFA will be requested once soil concentrations comply with their respective Table 915-1 clean-up standards and four consecutive quarters of groundwater sampling have been completed and reported at the location with concentrations of Table 915-1 constituents below regulatory limits. As needed, soil and/or groundwater remediation plans will be developed and submitted to ECMC in a supplemental Form 27.

**Soil Remediation Summary**

<input type="checkbox"/> In Situ	<input checked="" type="checkbox"/> Ex Situ
_____ Bioremediation ( or enhanced bioremediation )	Yes Excavate and offsite disposal
_____ Chemical oxidation	If Yes: Estimated Volume (Cubic Yards) _____ 2860
_____ Air sparge / Soil vapor extraction	Name of Licensed Disposal Facility or ECMC Facility ID # _____
_____ Natural Attenuation	No Excavate and onsite remediation
_____ Other _____	_____ Land Treatment
	_____ Bioremediation (or enhanced bioremediation)
	_____ Chemical oxidation
	_____ Other _____

**Groundwater Remediation Summary**

No \_\_\_\_\_ Bioremediation ( or enhanced bioremediation )

No \_\_\_\_\_ Chemical oxidation

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

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

No \_\_\_\_\_ 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.

Operator proposes to install five soil borings that will be improved with PVC monitoring wells. One monitoring well will be installed within the source area (if possible) and additional wells will be installed to monitor up-gradient, down-gradient, and cross-gradient groundwater conditions. Each soil boring location will have the soil type logged, will be field screened with a PID, and the interval with the highest PID measurement and/or the interval directly above groundwater will be collected and submitted for analysis of Table 915-1 constituents in soil. Quarterly groundwater monitoring will be conducted until four consecutive quarters of groundwater sampling have been completed and reported at the location with concentrations of Table 915-1 constituents below regulatory limits. Groundwater monitoring wells will be sampled and submitted to a laboratory for analysis of Table 915-1 groundwater constituents: Benzene, Toluene, Ethylbenzene, Total Xylenes (BTEX), naphthalene, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Chloride ion, Sulfate ion and Total Dissolved Solids (TDS). Monitoring well locations are displayed on the attached.

# 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 Excavation Data Update: Proposed Monitoring Wells and System Wells \_\_\_\_\_

## 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 (policies MWZZ316714 and MWZX316724) 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? No

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

Does Groundwater meet Table 915-1 standards? No

Is additional groundwater monitoring to be conducted? Yes

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 ECMC 1000 Series Rules.

Is the described reclamation complete? Yes

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. 10/31/2026

Proposed date of completion of Reclamation. 10/31/2028

## 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. 03/29/2023

Actual Spill or Release date, or date of discovery. 01/16/2025

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 11/16/2023

Proposed site investigation commencement. 05/15/2023

Proposed completion of site investigation. 03/31/2025

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 01/16/2025

Proposed date of completion of Remediation. 08/31/2026

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:

Additional resampling is needed to deny or delineate the presence of elevated inorganics and metals. Active remediation is needed to remove soil impacts encountered during reclamation/excavation activities at the BOCKIUS 15-1,8, PFANNEBECKER C14-32 Tank Battery. Quarterly groundwater sampling is required for a minimum of four quarters to monitor impacts observed within the BOCKIUS 15-1,8, PFANNEBECKER C14-32 excavation.

**OPERATOR COMMENT**

This form serves to comply with the Rule 913.e. reporting schedule. Pending ECMC approval, the Operator will schedule and complete the monitoring well installation and remediation system wells as outlined in this proposed Remedial Action workplan within the date range provided in the Remedial Action Dates section of the Implementation Schedule. Supplemental Form 27s will be prepared and submitted on a quarterly schedule to provide updates and progress of the remediation until closure criteria has been achieved.

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

Signed: Ethan Black

Title: Consultant

Submit Date: \_\_\_\_\_

Email: ethanb@fremontenv.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: \_\_\_\_\_

Date: \_\_\_\_\_

Remediation Project Number: 28820

**COA Type**

**Description**

0 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**

404217085	REMEDATION PROGRESS REPORT
404217086	LABORATORY ANALYTICAL REPORT
404217087	LABORATORY ANALYTICAL REPORT
404217088	LABORATORY ANALYTICAL REPORT
404217089	LABORATORY ANALYTICAL REPORT
404217090	LABORATORY ANALYTICAL REPORT
404217091	LABORATORY ANALYTICAL REPORT
404217092	LABORATORY ANALYTICAL REPORT

Total Attach: 8 Files

**General Comments**

**User Group**

**Comment**

**Comment Date**

		Stamp Upon Approval
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Total: 0 comment(s)