

State of Colorado
Energy & Carbon Management Commission

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Document Number:
403923861
Receive Date:
09/17/2024

Report taken by:
Kilian Collins

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

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 24052 Initial Form 27 Document #: 403104005

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: 332337	API #: _____	County Name: WELD
Facility Name: HIGHLAND-64N64W 20NWSW	Latitude: 40.295853	Longitude: -104.582261	
** correct Lat/Long if needed: Latitude: 40.296514		Longitude: -104.577168	
QtrQtr: NWSW	Sec: 20	Twp: 4N	Range: 64W Meridian: 6 Sensitive Area? Yes
Facility Type: SPILL OR RELEASE	Facility ID: 483859	API #: _____	County Name: WELD
Facility Name: Highland 12-20 Tank Battery	Latitude: 40.296323	Longitude: -104.577165	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: NWSW	Sec: 20	Twp: 4N	Range: 64W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SW _____

Most Sensitive Adjacent Land Use Crop Land _____

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

Riverine 0.02mi S, 0.11/0.19mi W, 0.02mi E, 0.08mi NE
Freshwater Pond 0.03mi E
Structures 0.18/0.2mi NE



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	GROUNDWATER	Refer to Tables and Figures	Lab analysis
Yes	SOILS	20' X 30' X 5.5' 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 ECMC Rule 911 at the HIGHLAND T4N-R64W-S20 L01 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):

Eight grab confirmation soil samples were collected from the produced water vessel excavation, beneath the above-ground oil tank, and at the separator. Soil samples were 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. Additionally, one soil sample was analyzed for ECMC Table 915-1 metals. All samples collected were 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):

Groundwater samples were collected as part of the site investigation and analyzed for organic and inorganic compounds in groundwater per ECMC Table 915-1. Groundwater monitoring will be continued on a quarterly basis. Point of compliance has been achieved at the location.

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. A detailed summary of decommissioning activities, including field notes, site photos, figures, and laboratory analytical results was submitted on a previous Form 27.

Site Assessment activities have been conducted to delineate impacted media at the facility, as described herein. Seven soil borings (BH01 - BH07) have been advanced in the area of impacts. Soil borings BH01 - BH07 were converted to temporary groundwater monitoring wells, and groundwater samples were collected. Groundwater monitoring at the 7 temporary monitoring wells will be continued on a quarterly basis.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

NA / ND

Number of soil samples collected 46 -- Highest concentration of TPH (mg/kg) 35
 Number of soil samples exceeding 915-1 36 -- Highest concentration of SAR 7.48
 Was the areal and vertical extent of soil contamination delineated? Yes BTEX > 915-1 No
 Approximate areal extent (square feet) 600 Vertical Extent > 915-1 (in feet) 9

Groundwater

Number of groundwater samples collected 7 ND Highest concentration of Benzene (µg/l) _____
 Was extent of groundwater contaminated delineated? Yes ND Highest concentration of Toluene (µg/l) _____
 Depth to groundwater (below ground surface, in feet) 7 ND Highest concentration of Ethylbenzene (µg/l) _____
 Number of groundwater monitoring wells installed 7 ND Highest concentration of Xylene (µg/l) _____
 Number of groundwater samples exceeding 915-1 0 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?
 A total of two background samples were collected on 2/2/2023 from one discrete location and analyzed for pH, SAR, EC, and Boron. A total of ten background samples were collected on 5/1/2023 from five discrete locations and analyzed for arsenic, barium, pH, and SAR. A detailed discussion of background sampling results is provided in the second quarter 2024 Supplemental Form 27 (Document No. 403681608).

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?
 A supplemental site investigation (SSI) will be completed to vertically and horizontally delineate the elevated pH results observed at sample locations SEP01-FL@3.5' and SEP01-DL@3.5' during facility decommissioning, and at sample locations BH02@8-9', BH02@17-18', and BH03@8-9' during the 5/1/2023 site assessment activities. Based on the pH exceedances identified during previous site assessment activities, Noble proposes to limit future SSI soil sampling to pH only. Concurrently with the SSI, additional background soil samples will be collected to determine if elevated pH results are attributed to native soil conditions at the site. The SSI will be completed in accordance with the proposed implementation schedule, and the results of the SSI will be submitted on a subsequent Form 27. The proposed soil boring locations are illustrated on Figure 5.

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.
 A Site Assessment was conducted on 5/1/2023 and 11/13/2023 to delineate impacted media. Seven soil borings were advanced in the area of impacts. BH01 was advanced between waste characterization samples AST01@0.5' and FS01@5.5' to vertically delineate impacts at those locations. BH02 - BH07 were advanced surrounding BH01 to vertically and laterally delineate impacts identified at AST01@0.5' and FS01@5.5'. Soil samples were collected and analyzed for TPH (total volatile [C6-C10] and extractable [C10-C36] hydrocarbons), organic compounds in soil, arsenic, barium, EC, SAR, pH, and boron. Each of the seven soil borings were converted to temporary groundwater monitoring wells. Seven groundwater samples were collected and analyzed for BTEX, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benz(a)anthracene, 1-methylnaphthalene, 2-methylnaphthalene and inorganic parameters in groundwater per Table 915-1. The results of the 5/1/2023 and 11/13/2023 site assessment were included in the second quarter 2024 Supplemental Form 27 (Document No. 403681608).

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.

Groundwater was not encountered during decommissioning activities. Groundwater was encountered during subsequent site assessment soil boring activities, and temporary monitoring wells were installed for quarterly groundwater monitoring, as described herein. Quarterly groundwater monitoring will be continued until four consecutive quarters of compliant groundwater results have been achieved.

A supplemental site investigation (SSI) will be completed to vertically and horizontally delineate the elevated pH results observed at sample locations SEP01-FL@3.5' and SEP01-DL@3.5' during facility decommissioning, and at sample locations BH02@8-9', BH02@17-18', and BH03@8-9' during the 5/1/2023 site assessment activities, in accordance with the attached proposed site investigation map, and proposed sampling plan outlined in the Site Investigation Report.

Following the additional SSI soil sampling activities outlined in the Site Investigation Report section, the generation of a detailed reclamation plan, and the completion of quarterly groundwater monitoring, Noble will request a No Further Action (NFA) designation for the site.

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

_____ Name of Licensed Disposal Facility or ECMC Facility ID # _____

_____ Natural Attenuation

_____ Excavate and onsite remediation

_____ Other _____

_____ Land Treatment

_____ Bioremediation (or enhanced bioremediation)

_____ Chemical oxidation

_____ Other _____

Groundwater Remediation Summary

_____ Bioremediation (or enhanced bioremediation)

_____ Chemical oxidation

_____ Air sparge / Soil vapor extraction

Yes _____ 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.

Groundwater monitoring will be conducted at the seven site groundwater monitoring wells (BH01, BH02R, and BH03 -BH07) until four consecutive quarters of compliant groundwater results has been achieved. The groundwater samples will be collected for analysis of BTEX, naphthalene, 1,2,4-trimethylbenzene (TMB), 1,3,5-TMB, benz(a)anthracene, 1-methylnaphthalene (M), 2-M and inorganic parameters.

Third quarter 2024 analytical results indicated that organic compound concentrations, including benz(a)anthracene, 1-M, and 2-M, were in compliance with the applicable regulatory standards in all seven monitoring well locations. In addition, inorganic parameters were in compliance with the applicable regulatory standards or within 1.25x the background concentrations of the cross-gradient monitoring well (BH07) in all monitoring well locations. Dissolved barium concentrations were in compliance with the applicable CDPHE Domestic Water Supply Standard in all seven monitoring well locations.

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.

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 ECMC 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. 02/02/2023

Proposed date of completion of Reclamation. 07/11/2025

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. 06/16/2022

Actual Spill or Release date, or date of discovery. 02/10/2023

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 02/02/2023

Proposed site investigation commencement. 12/31/2024

Proposed completion of site investigation. 03/31/2025

REMEDIAL ACTION DATES

Proposed start date of Remediation. 12/05/2023

Proposed date of completion of Remediation. 06/30/2025

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:

Based on soil analytical data, further site assessment activities are required to delineate pH exceedances recorded on site. In addition, additional background soil borings will be advanced to assess pH in native material on site. The proposed soil boring locations are illustrated on Figure 5.

OPERATOR COMMENT

This Supplemental Form 27 was submitted to summarize quarterly groundwater monitoring activities and analytical results collected during the third quarter 2024 at the Highland 12-20 location.

Third quarter 2024 analytical results indicated that organic compound concentrations, including benz(a)anthracene, 1-M, and 2-M, were in compliance with the applicable regulatory standards in all seven monitoring well locations for the third consecutive quarter. In addition, inorganic parameters were in compliance with the applicable regulatory standards or within 1.25x the background concentrations of the cross-gradient monitoring well (BH07) in all monitoring well locations. Dissolved barium concentrations were in compliance with the applicable CDPHE Domestic Water Supply Standard in all seven monitoring well locations for the third consecutive quarter.

Based on soil analytical data, further site assessment activities are required to delineate pH exceedances recorded on site. In addition, additional background soil borings will be advanced to assess pH in native material on site. The proposed soil boring locations are illustrated on Figure 5.

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

Signed: Jake Whritenour

Title: Environmental Consultant

Submit Date: 09/17/2024

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: _____

Date: _____

Remediation Project Number: 24052

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

403923861	FORM 27-SUPPLEMENTAL-SUBMITTED
403923930	MONITORING REPORT

Total Attach: 2 Files

General Comments

User Group

Comment

Comment Date

Environmental	ECMC has denied this Form 27 for data validation. Operator will provide laboratory analytical report(s) as a stand-alone attachment(s) on the replacement Supplemental Form 27. The Laboratory Report PDF(s) must be secured by the issuing laboratory; If there is a difference between the creation date and secured date of the PDF, Operator shall provide an explanation in the case narrative of the associated report. ECMC will not review combined PDFs with lab reports.	02/06/2025
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Total: 1 comment(s)