

State of Colorado
Energy & Carbon Management Commission

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Document Number:

403967280

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 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: FOUNDATION ENERGY MANAGEMENT LLC	Operator No: 10112	Phone Numbers
Address: 5057 KELLER SPRINGS RD STE 650		Phone: (972) 707-2523
City: ADDISON	State: TX	Zip: 75001
Contact Person: Afton Iiams	Email: aiiams@foundationenergy.com	Mobile: (720) 879-4954

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 17342 Initial Form 27 Document #: 402565168

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: 2024 Workplan Progress Report (FBTA)

SITE INFORMATION

No Multiple Facilities

Facility Type: WELL	Facility ID:	API #: 057-06124	County Name: JACKSON
Facility Name: ALLARD 30-8-5		Latitude: 40.812241	Longitude: -106.301789
** correct Lat/Long if needed: Latitude:		Longitude:	
QtrQtr: SENE	Sec: 30	Twp: 10N	Range: 79W
Meridian: 6		Sensitive Area? Yes	

SITE CONDITIONS

General soil type - USCS Classifications GW

Most Sensitive Adjacent Land Use Non-Crop Land - Silver Spur Land and Cattle

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

The Allard location was constructed in alluvial material associated with the Michigan River.

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	Unknown	Laboratory analysis
Yes	SOILS	10000 sq ft	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.

Initial actions and completed remedial measures have previously been submitted to the ECMC in Form 19I (#402528181), in the Form 19S (#402545454), and in the Form 27I (#402565168). A remediation work plan was submitted in a Form 27S (#402669575). The ECMC assigned spill tracking facility ID #324639 and remediation number #17342 for the Site. The impacts were initially discovered in late September 2020 and believed to be from a historical spill of unknown origins. The Allard well was plugged and decommissioned in November 2020, and impacted material was discovered in two separate areas of the Site at the former well jack area (WJA) on the northern portion of the site and near the former battery and treater area (FBTA) on the southern portion of the site. Following the well plugging activities, initial delineation activities were completed on December 1, 2020, and included test pitting and sampling activities. Impacted material was hauled offsite, and clean backfill material was used to fill the test pits. Lab results confirmed groundwater was above ECMC standards for benzene. During May 2021, additional soil impacts were removed by excavation and nine groundwater monitoring wells were installed. Results of that remediation and investigation were presented in a Form 27S (#402726781). During the ECMC approved 2023 investigation activities (September-November), impacted material encountered was removed, stockpiled, and subsequently treated on site with FEM directive and ECMC discussion/verbal approval, utilizing the soil shredding techniques to treat the material ex-situ and use as backfill. The southern area (FBTA) was delineated and details from these activities were provided in F27S #403605077 and subsequent workplans in F27S #403460544 and #403853986. In accordance with Form 27S #403940050 for Remediation #34492, that project is being closed and ongoing work activities for that area will be performed under this remediation project number.

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):

In accordance with previous approved Form 27-S reports and associated COA's including the recently approved Form 27S #403940050 for remediation project #34492 which is being closed and merged into this remediation project, investigation and remediation for the former investigation pipeline area is ongoing. Additional soil samples will be collected from the treated soil from every 100 cubic yards of treated material and submitted for Table 915-1 analysis. Soil samples will be collected from the excavation extents and submitted for Table 915-1 analysis to confirm that petroleum hydrocarbon impacted soil extents have been delineated. Per the COAs of Form 27S #403940050, ECMC staff observed what appears to be a band of hydrocarbon in the soil of the excavation wall. Per delineation activities that were performed in September 2024, this is a layer of organic material not impacted by E&P waste. Removal of the west wall of the excavation into and through the existing canal has been approved.

Proposed Groundwater Sampling

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

On September 20, 2024, a grab groundwater sample (S. Flowline S.W.) was collected from the excavation area for the flowline remediation and submitted for Table 915-1 analysis. Laboratory analytical results were below the Table 915-1 standards. However, per email communication between ECMC and FEM as well as the COAs in Form 27-S 403940050, ECMC staff observed a sheen on the surface of the groundwater inside the excavation. Additional groundwater samples will be collected to verify that E&P waste is not impacting groundwater in the excavation. Groundwater sampling will also be performed at the existing monitoring wells on a quarterly basis. The sheen observed may be attributed to organic soil within the groundwater smear zone and is being mitigated by excavation activities. Comparison photo logs between October 15 and 21, 2024 are provided for reference and demonstrate that the discoloration of the groundwater is being mitigated by ongoing remediation activities.

Proposed Surface Water Sampling

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

On April 16, 2024, and May 8, 2024, ECMC personnel conducted Site visits at the project location and noted potential runoff from the stockpiled soil into the irrigation canal adjacent to the site. On April 30, 2024, and May 1, 2024, FEM collected three surface water samples (SW-01, SW-02, and SW-03) from the irrigation ditch, upgradient, adjacent to, and downgradient of the stockpiled soil and the analytical results were below laboratory detection limits and/or Table 915-1 regulatory standards as previously reported. Surface water is currently not present in the irrigation canal and the canal is not anticipated to be turned on until the spring of 2025.

Additional Investigative Actions

☐ Additional alternative investigative actions described in attached Site Investigation Plan (summary):

Additional investigation activities are planned to be performed including removal of the west wall of the excavation and the irrigation canal along the west wall to delineate, remove, and treat E&P waste impacted soil through previously approved soil shredding/treatment processes. Soil samples from the soil shredding process will be collected from every 100 cubic yards of treated material and submitted for Table 915-1 analysis.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 4

Number of soil samples exceeding 915-1 0

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

Approximate areal extent (square feet) 10000

Groundwater

Number of groundwater samples collected 0

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 6

Number of groundwater monitoring wells installed 0

Number of groundwater samples exceeding 915-1 0

Surface Water

3 Number of surface water samples collected

0 Number of surface water samples exceeding 915-1

If surface water is impacted, other agency notification may be required.

NA / ND

ND Highest concentration of TPH (mg/kg)

-- Highest concentration of SAR 1.6

BTEX > 915-1 No

Vertical Extent > 915-1 (in feet) 8

 Highest concentration of Benzene (µg/l)

 Highest concentration of Toluene (µg/l)

 Highest concentration of Ethylbenzene (µg/l)

 Highest concentration of Xylene (µg/l)

 Highest concentration of Methane (mg/l)

OTHER INVESTIGATION INFORMATION

☐ Were impacts to adjacent property or offsite impacts identified?

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

Background soil and groundwater samples upgradient of the source area have been identified as MW02 in the FBTA.

☒ Was investigation derived waste (IDW) generated as part of this investigation?

Volume of solid waste (cubic yards) 5940

Volume of liquid waste (barrels) 0

☒ Is further site investigation required?

Additional investigation activities are planned to be performed including removal of the west wall of the excavation and the irrigation canal along the west wall to delineate, remove, and treat E&P waste impacted soil through previously approved soil shredding/treatment processes. Soil samples from the soil shredding process will be collected from every 100 cubic yards of treated material and submitted for Table 915-1 analysis. This Form 27S is being submitted to update the ECMC that remediation project #34492 is being closed under this remediation project, to address ECMC COAs from Form 27S #403940050 and email communication on October 22, 2024, and to summarize the soil shredding remediation and confirmation sampling process. Results of ongoing investigation, delineation, and remediation activities will be provided in future Form 27-S reports.

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.

Source removal activities were originally conducted at both the WJA and FBTa in May 2021, and the details are presented in a previous F27S (Document #402726781). The northern area has been delineated and backfilled with ECMC approval of previously submitted Form 27 (#403550559). During the ECMC approved 2023 investigation activities (September-November) and conversations with ECMC manager, impacted material encountered was removed, stockpiled, and subsequently treated on site with FEM directive and ECMC discussion/verbal approval utilizing the soil shredding techniques to treat the material ex-situ and use as backfill. The southern area (FBTA) was delineated as much as possible and backfilled before onsite winter conditions were present. The results from stockpile soil sampling on April 20, 2024, indicate that the treated material is below Table 915-1 standards. Best management practices for the stockpile have been performed including covering the stockpile with 6 mil poly sheeting, surrounding the stockpile with wattle, and securing the stockpile from livestock with an electric fence. FEM proposes to utilize this material during final reclamation activities. Results from remediation activities were previously provided in F27S #403605077 and a response to conditions of approval was provided in F27S #403760544. Additional source removal from the former Flowline area (project #34492) which is being incorporated into this remediation project is being performed in accordance with Form 27S #403940050.

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.

Previous remediation activities have been provided in approved Form 27-S reports. This Form 27S is being submitted to update the ECMC that remediation project #34492 is being closed under this remediation project, to address ECMC COAs from Form 27S #403940050 and email communication on October 22, 2024, and to summarize the soil shredding remediation and confirmation sampling process. The site is being excavated to lateral extents (walls) identified via previous investigation bore holes installed at the site. Excavation to delineate depth (bases) is also being conducted. Walls and bases are being field screened with a PID meter targeting a PID of <20 parts per million (ppm). Samples are then sent to the lab on a quick turnaround for confirmation analysis. The excavated material is being treated by Elite Environmental and utilizes a combined soil shredding and screening process with an internal chemical application process to remediate petroleum hydrocarbon E&P waste impacts. Post treatment confirmation samples, taken every 100 cubic yards, are analyzed to insure the effectiveness of the remediation. Once lab results are received confirming that the treated soil meets Table 915-1 standards, the excavation will be backfilled with the treated material. Once the current excavation is backfilled, that will allow for a workspace to access and remove the canal wall to the west of the current excavation for delineation and remediation in that area. Vertical and horizontal extents will be delineated along and in the canal until bases and walls with a PID of <20 ppm are identified. Confirmation soil samples will also be collected at approximate 20-foot spacing and submitted for Table 915-1 analysis. The excavated material will be treated as detailed above. During the soil shredding and treatment process, clean water brought in from the town of Walden and used in the treatment process. Standing groundwater in the excavation is being treated via excavation and source removal.

Soil Remediation Summary

☐ In Situ

_____ Bioremediation (or enhanced bioremediation)
_____ Chemical oxidation
_____ Air sparge / Soil vapor extraction
_____ Natural Attenuation
_____ Other _____

☒ Ex Situ

No Excavate and offsite disposal
_____ If Yes: Estimated Volume (Cubic Yards) _____
Name of Licensed Disposal Facility or ECMC Facility ID # _____
Yes Excavate and onsite remediation
No Land Treatment
Yes Bioremediation (or enhanced bioremediation)
Yes Chemical oxidation
Yes Other Soil Shredding

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.

On September 20, 2024, a grab groundwater sample (S. Flowline S.W.) was collected from the excavation area for the flowline remediation and submitted for Table 915-1 analysis. Laboratory analytical results were below the Table 915-1 standards. However, per email communication between ECMC and FEM as well as the COAs in Form 27-S 403940050, ECMC staff observed a sheen on the surface of the groundwater inside the excavation. Additional groundwater samples will be collected to verify that E&P waste is not impacting groundwater in the excavation. Groundwater sampling will also be performed at the existing monitoring wells on a quarterly basis. The sheen observed may be attributed to organic soil within the groundwater smear zone and is being mitigated by excavation activities. Comparison photo logs between October 15 and 21, 2024 are provided for reference and demonstrate that the discoloration of the groundwater is being mitigated by ongoing remediation activities.

REMEDATION 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 COA's response document and project update

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.

Foundation carries both pollution liability insurance and an umbrella policy over that for a total of \$11,000,000. Cost provided below is an estimate and may be adjusted based on site observations.

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

WASTE DISPOSAL INFORMATION

Was E&P waste generated as part of this remediation? Yes

Describe beneficial use, if any, of E&P Waste derived from this remediation project:

None

Volume of E&P Waste (solid) in cubic yards 5940

E&P waste (solid) description petroleum impacted soils

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility: Pawnee Waste, Grover CO

Volume of E&P Waste (liquid) in barrels 0

E&P waste (liquid) description

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility:

REMEDATION COMPLETION REPORT

REMEDATION 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.

The WJA was backfilled and regraded with ECMC approval (document # 403550559) to match onsite surrounding conditions. Following the 2023 excavation and soil investigation activities in the FBTA, the area was backfilled with a mixture of clean backfill provided from a nearby source as well as remediated soils from the soil shredded material. Both the WJA and FBTA will be reclaimed upon final remediation approval to match existing conditions and with landowner approval. Foundation proposes to reseed the locations with a seed mix approved by the landowner during the next favorable season after approval. Final reclamation will be performed in accordance with 1000 series rules. Future activities onsite will also need to be reclaimed accordingly.

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. _____

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

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 12/01/2020

Proposed site investigation commencement. 05/11/2021

Proposed completion of site investigation. 12/31/2023

REMEDIAL ACTION DATES

Proposed start date of Remediation. 05/11/2021

Proposed date of completion of Remediation. 12/31/2024

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 report is being provided as a progress update and work plan, with response to the COAs that were included in the Form 27-S report #403940050. Previous remediation activities have been provided in approved Form 27-S reports. This Form 27S is being submitted to update the ECMC that remediation project #34492 is being closed under this remediation project, to address ECMC COAs from Form 27S #403940050 and email communication on October 22, 2024, and to summarize the soil shredding remediation and confirmation sampling process. The site is being excavated to lateral extents (walls) identified via previous investigation bore holes installed at the site. Excavation to delineate depth (bases) is also being conducted. Walls and bases are being field screened with a PID meter targeting a PID of <20 parts per million (ppm). Samples are then sent to the lab on a quick turnaround for confirmation analysis. The excavated material is being treated by Elite Environmental and utilizes a combined soil shredding and screening process with an internal chemical application process to remediate petroleum hydrocarbon E&P waste impacts. Post treatment confirmation samples, taken every 100 cubic yards, are analyzed to insure the effectiveness of the remediation. Once lab results are received confirming that the treated soil meets Table 915-1 standards, the excavation will be backfilled with the treated material. Once the current excavation is backfilled, that will allow for a workspace to access and remove the canal wall to the west of the current excavation for delineation and remediation in that area. Vertical and horizontal extents will be delineated along and in the canal until bases and walls with a PID of <20 ppm are identified. Confirmation soil samples will also be collected at approximate 20-foot spacing and submitted for Table 915-1 analysis. The excavated material will be treated as detailed above. During the soil shredding and treatment process, clean water brought in from the town of Walden and used in the treatment process. Standing groundwater in the excavation is being treated via excavation and source removal.

On September 20, 2024, a grab groundwater sample (S. Flowline S.W.) was collected from the excavation area for the flowline remediation and submitted for Table 915-1 analysis. Laboratory analytical results were below the Table 915-1 standards. However, per email communication between ECMC and FEM as well as the COAs in Form 27-S 403940050, ECMC staff observed a sheen on the surface of the groundwater inside the excavation. Additional groundwater samples will be collected to verify that E&P waste is not impacting groundwater in the excavation. Groundwater sampling will also be performed at the existing monitoring wells on a quarterly basis. The sheen observed may be attributed to organic soil within the groundwater smear zone and is being mitigated by excavation activities. Comparison photo logs between October 15 and 21, 2024 are provided for reference and demonstrate that the discoloration of the groundwater is being mitigated by ongoing remediation activities.

Results of ongoing investigation, delineation, and remediation activities will be provided in future Form 27-S reports.

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

Signed: Afton Iiams

Title: HSE/Regulatory Specialist

Submit Date: _____

Email: regulatory@foundationenergy.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: 17342

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

403968530	PHOTO DOCUMENTATION
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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)