

State of Colorado  
Energy & Carbon Management Commission

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Document Number:  
403935325

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: <u>KP KAUFFMAN COMPANY INC</u>	Operator No: <u>46290</u>	Phone Numbers Phone: <u>(720) 868-9848</u> Mobile: <u>(303) 550-8872</u>
Address: <u>1700 LINCOLN ST STE 4550</u>		
City: <u>DENVER</u>	State: <u>CO</u>	Zip: <u>80203</u>
Contact Person: <u>John Peterson</u>	Email: <u>jpeterson@kpk.com</u>	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 25978 Initial Form 27 Document #: 403166227

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: TANK BATTERY Facility ID: 482821 API #: \_\_\_\_\_ County Name: WELD

Facility Name: Koch Tank Battery Latitude: 40.079624 Longitude: -105.037601

\*\* correct Lat/Long if needed: Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

QtrQtr: NENE Sec: 6 Twp: 1n Range: 68w Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE Facility ID: 483548 API #: \_\_\_\_\_ County Name: WELD

Facility Name: Koch Tank Battery Latitude: 40.079578 Longitude: -105.037613

\*\* correct Lat/Long if needed: Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

QtrQtr: NENE Sec: 6 Twp: 1N Range: 68W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE Facility ID: 483852 API #: \_\_\_\_\_ County Name: WELD  
 Facility Name: Koch Tank Battery Separator Latitude: 40.080040 Longitude: -105.037670  
 \*\* correct Lat/Long if needed: Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_  
 QtrQtr: NENE Sec: 6 Twp: 1N Range: 68W Meridian: 6 Sensitive Area? Yes

**SITE CONDITIONS**

General soil type - USCS Classifications CL Most Sensitive Adjacent Land Use Open space  
 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**

Approximately 8 habitable structures are within 1/4 mile of the Koch Tank Battery. County Road 3 is 80 feet to the east; Lower Boulder Ditch is roughly 125' northeast of the spill. High Priority habitats and 100-year floodplain are not present within 1/4 mile; there is no Bald Eagle Roost site within a 1/4 mile; there is no Bald Eagle Active Nest site within 1/2 mile. There are 4 wells within 1/4 mile of the spill site. A Freshwater Emergent Wetland Habitat borders the northwest, west, southwest, and southeast boundaries of the Tank Battery, approximately 90' from the spill site.

**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
UNDETERMINED	GROUNDWATER	TBD	laboratory analytical results
Yes	SOILS	2350 ft2	laboratory analytical results

**INITIAL ACTION SUMMARY**

Description of initial action or emergency response measures take to abate, investigate, and/or remediate impacts associated with E&P Waste.

During P&A of the KOCH Tank Battery, associated onsite flowline, separator, & produced water vessel, historical crude oil & produced water impacts were noted. Soil was screened with a PID & confirmation soil samples were analyzed. Per the approved Form 271 prepared for this site (document #403166227), if impacts were not noted during field screening soil samples were submitted for laboratory analysis of BTEX, TMBs, naphthalene, TPH, pH, specific conductance (EC), SAR, & boron. If impacts were detected, soil samples were analyzed for the full COGCC Table 915-1 analytical suite.

Field screening reported impacts by the crude & produced water tanks. Soil excavation occurred at the tanks in Fall 2022 & Winter 2024. Approximately 835 yds3 of soil were excavated from 11/19/22 through 12/15/22 & 104 yds3 were excavated on 2/15/24 & properly disposed of at Front Range Landfill in Erie, CO. Sidewall & floor samples were submitted for Table 915-1 analysis in 12/22 & 2/24. 1-methylnaphthalene, SAR, & pH exceeded Table 915-1 levels & site-specific levels in the remaining soil. 1-methylnaphthalene & naphthalene reporting limits were above the Protection of Groundwater Soil Screening Levels, so the Minimum Detection Limits were reported for 12/22 samples. Groundwater was noted in the excavation & a grab groundwater sample was submitted for BTEX, TDS, chloride & sulfate analysis. Chloride & sulfate exceeded Table 915-1 levels in the groundwater.

Six samples were submitted along flowline for limited Table 915-1 since field screening did not report impacts. Analytical results from sample SS-1@2' reported impacts so additional excavation and sampling occurred. Sample SS-1@3' was submitted for the full Table 915-1 analysis on 1/27/23 and resampled on 2/15/24. Benzo(a)anthracene, SAR, & pH exceeded Table 915-1 levels & site-specific levels in the remaining soil.

Excavations were backfilled in February 2024. Figures, tables, field notes & 2024 manifests are attached.

**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 ):

SS-1@3' and BH-5@6' will be resampled, and four soil samples will be collected surrounding SS-1 at 3' bgs to ensure impacts were removed. All 6 samples will be analyzed for full Table 915-1 analysis.

BH-1@6', BH-2@6', BH-4@6', SW-7@4' and SW-16@4' will be resampled for naphthalene due to detection limit issues in samples collected in 12/22. BH-1@6' will also be resampled for SAR and pH to confirm levels. All other compounds in these 5 samples were below the Table 915-1 soil screening levels.

### Proposed Groundwater Sampling

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

One grab groundwater sample will be collected from BH-5 and submitted for Table 915-1 analysis. A second grab groundwater sample from Background-3 will be submitted for Table 915-1 inorganics to establish site-specific levels.

### 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 ):

## SITE INVESTIGATION REPORT

### SAMPLE SUMMARY

Soil		NA / ND	
Number of soil samples collected	35	--	Highest concentration of TPH (mg/kg) 936
Number of soil samples exceeding 915-1	32	--	Highest concentration of SAR 19.9
Was the areal and vertical extent of soil contamination delineated?	No		BTEX > 915-1 No
Approximate areal extent (square feet)	2350		Vertical Extent > 915-1 (in feet) 6
<b>Groundwater</b>			
Number of groundwater samples collected	1	ND	Highest concentration of Benzene (µg/l)
Was extent of groundwater contaminated delineated?	No	ND	Highest concentration of Toluene (µg/l)
Depth to groundwater (below ground surface, in feet)	6	--	Highest concentration of Ethylbenzene (µg/l) 1.2
Number of groundwater monitoring wells installed	0	--	Highest concentration of Xylene (µg/l) 6.59
Number of groundwater samples exceeding 915-1	1	NA	Highest concentration of Methane (mg/l)
<b>Surface Water</b>			
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?

The soil source sample exceeded Table 915-1 levels for 1,2,4-TMB, 1,3,5-TMB, naphthalene, TPH, 1-methylnaphthalene & 2-methylnaphthalene. SS-1@2' exceeded the TPH Table 915-1 standard. Soil surrounding both samples was excavated & disposed of offsite. SS-1@3', submitted after excavation, exceeded the Table 915-1 standard for benzo(a)anthracene in 1/23 and 2/24. 1-methylnaphthalene slightly exceeded at BH-5@6'.

Arsenic, barium, lead and selenium exceeded Table 915-1 levels in multiple samples, but were below establish site-specific background concentration levels (SSBLs) in all samples.

SAR and pH exceeded Table 915-1 in multiple samples; however, SAR and pH only exceeded established SSBLs at BH-1@6'.

Groundwater sampled from the excavation exceeded Table 915-1 levels for chloride & sulfate.

Were background samples collected as part of this site investigation?

6 background samples were collected at depths of 4' and 6' bgs from 3 locations surrounding the Koch Tank Battery. 5 samples were submitted from 4 locations at Kenneth E Koch (located <1/4-mile N of site). 20 samples from 16 locations at Koch 41-6 (located <1/2-mile N of site) were submitted. Boring logs from Koch 41-6 report soil as consistently fine-grained sand with trace clay from ground surface to 10' bgs. Background & Closure Samples from Kerr McGee Koch Kenneth E A1 O SA Hist Release (Remediation #25626) were also used. All samples analyzed for Table 915-1 inorganics. Results from 37 samples used to establish site-specific background concentration levels (SSBLs). 2 samples from Background-14 location not used due to location's proximity to previous operations. As, Ba, Cd, Pb, Se, EC, pH, SAR & boron exceeded Table 915-1 levels. SSBLs established for metals by multiplying highest background result times 1.25 per Table 915-1 Footnote 1.

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?

SS-1@3' and BH-5@6' will be resampled, and four soil samples will be collected surrounding SS-1 to ensure impacts have been removed. All 6 samples will be analyzed for full Table 915-1 analysis.

BH-1@6', BH-2@6', BH-4@6', SW-7@4' and SW-16@4' will be resampled for naphthalene due to detection limit issues in samples collected in 12/22. BH-1@6' will also be resampled for SAR and pH to confirm levels. All other compounds in these 5 samples were below the Table 915-1 soil screening levels.

One grab groundwater sample will be collected from BH-5 and submitted for Table 915-1 analysis.

A second grab groundwater sample from Background-3 will be submitted for Table 915-1 inorganics to establish site-specific levels.

## 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.

Approximately 835 yds<sup>3</sup> of soil were excavated from the tank battery, associated onsite flowline, separator, and produced water vessel from 11/19/22 through 12/15/22 and an additional 104 yds<sup>3</sup> were excavated in February 2024. All impacted soil was properly disposed of at Front Range Landfill in Erie. Manifests from 2022 were attached to Document #403441191. Manifests from 2024 are attached to this form. Excavations were backfilled in February 2024.

### 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 soil sample exceeded Table 915-1 levels for 1,2,4-TMB, 1,3,5-TMB, naphthalene, TPH, 1-methylnaphthalene & 2-methylnaphthalene. SS-1@2' exceeded the TPH Table 915-1 level. Soil surrounding both samples was excavated. SS-1@3', submitted after excavation, exceeded the standard for benzo(a)anthracene in 1/23 & 2/24. 1-methylnaphthalene slightly exceeded at BH-5@6'. SS-1@3' & BH-5@6' will be resampled, & 4 soil samples will be collected surrounding SS-1 at 3' bgs to ensure impacts were removed.

BH-1@6', BH-2@6', BH-4@6', SW-7@4' & SW-16@4' will be resampled for naphthalene due to detection limit issues in samples collected in 12/22 to ensure impacts are not present.

Results from 37 background samples collected at Kenneth E Koch #1, Koch 41-6 & Koch Tank Battery (within 1/2 linear mile) were used to establish site-specific background concentration levels (SSBLs). Boring logs at Koch 41-6 report soil as consistently fine-grained sand with trace clay from ground surface to 10' bgs. Since lithology did not vary with depth & all samples were collected within top 6' of soil, established SSBLs were not depth-specific. All metals were below established SSBLs. SAR & pH exceed SSBLs at BH-1@6' so location will also be resampled to confirm levels. All other compounds in these 5 samples were below Table 915-1 levels. More excavation may be required.

1 grab GW sample will be collected from BH-5 & submitted for Table 915-1 analysis since naphthalene, 1,2,4-TMB & 1,3,5-TMB were not originally analyzed in the GW. The Form 27 Initial approved for decommissioning work did not require analysis of inorganics; however, chloride & sulfate exceeded Table 915-1 levels. A 2nd grab GW sample from Background-3 will be submitted for Table 915-1 inorganics to establish site-specific levels for comparison to chloride & sulfate levels detected in GW-1 collected in 12/22. If GW impacts are reported, the extent of impacts will be defined, & remediation alternatives will be evaluated.

### Soil Remediation Summary

In Situ

Ex Situ

\_\_\_\_\_ Bioremediation ( or enhanced bioremediation )

Yes \_\_\_\_\_ Excavate and offsite disposal

\_\_\_\_\_ Chemical oxidation

If Yes: Estimated Volume (Cubic Yards)     939    

\_\_\_\_\_ 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
- \_\_\_\_\_ 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.

GW-1 was submitted from the excavation in 12/22 and analyzed for BTEX, TDS, chloride and sulfate. One grab groundwater sample will be collected from BH-5 within the excavation and submitted for full Table 915-1 analysis since naphthalene, 1,2,4-TMB and 1,3,5-TMB were not originally analyzed in the groundwater. The Form 27 Initial approved for the decommissioning work did not require analysis of inorganics; however, chloride and sulfate exceeded Table 915-1 levels. A second grab groundwater sample from Background-3 will be submitted for Table 915-1 inorganics to establish site-specific levels for comparison to chloride and sulfate levels detected in GW-1 collected in 12/22.



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.

Excavations surrounding the tank battery, associated onsite flowline, separator, and produced water vessel was backfilled to grade in February 2024 using 360 yds<sup>3</sup> of clean fill purchased from Front Range Landfill. Clean fill manifests are attached. The soil was compacted by driving over the filled excavation with equipment. Stormwater best management practices are implemented instead of reseeding. The landowner will be developing the site and will be excavating, replacing, and compacting all soil at the site for geotechnical engineering purposes prior to construction.

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? No

If YES, does the seed mix comply with local soil conservation district recommendations? \_\_\_\_\_

Did the local soil conservation district provide the seed mix? No

### SITE RECLAMATION DATES

Proposed date of commencement of Reclamation. 02/19/2024

Proposed date of completion of Reclamation. 12/20/2024

## 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. 02/13/2024

Actual Spill or Release date, or date of discovery. 12/05/2022

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 11/19/2022

Proposed site investigation commencement. 12/05/2022

Proposed completion of site investigation. 11/30/2024

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 11/19/2022

Proposed date of completion of Remediation. 02/15/2024

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**

Please see attached COA response spreadsheet for KPK's actions based on previous COAs for the site.

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

Signed: Katherine Kahn, P.G. \_\_\_\_\_

Title: Senior Hydrogeologist \_\_\_\_\_

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

Email: [kk@ResolutionConsultantsLLC.com](mailto:kk@ResolutionConsultantsLLC.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: 25978

**COA Type****Description**

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**

403939675	DISPOSAL MANIFESTS
403939677	MAP
403939679	ANALYTICAL RESULTS
403939681	ANALYTICAL RESULTS
403939706	OTHER
403939809	OTHER

Total Attach: 6 Files

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

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)