

Corrective Action Plan

35017 & 35018

Farmers Union Oil Company Bulk Plant
101 McDonald Street
Terry, MT 59349
Facility ID# 40-02755, Release# 2619 & 4948
Work Plan ID# 35017 & 35018

Prepared for:

Farmers Union Oil Co.
101 McDonald Avenue
Terry, MT 59349

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WCEC Project No. 95-971-70

WCEC

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Environmental



Emergency Response



Industrial Services

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1.0 Introduction

West Central Environmental Consultants (WCEC) has prepared this corrective action plan (CAP) for air sparge operation and groundwater monitoring at the Farmers Union Oil Company facility (Facility ID# 40-02755, Release# 2619 and 4948, Work Plan ID# 35017 & 35018). The CAP was generated in response to the request by the Montana Department of Environmental Quality (MTDEQ) on February 19, 2025.

1.1 Site Location

The Farmers Union Oil Company Bulk Plant facility is located at 101 McDonald Avenue in Terry, Montana. A site location map is included as Figure 1 and a current site details map is included as Figure 2. The Public Land Survey System (PLSS) description for the site is the SW/4, NW/4, SE/4 of Section 16, T12N, R51E. The approximate geographic coordinates are N 46.7942°, W -105.3111°. Township, range, and section information was obtained using the United States Geological Survey (USGS) Terry, Montana 1:24,000 Quadrangle. The site is located within the Lower Yellowstone River Hydrologic Unit.

1.2 Geologic/ Hydrogeologic Setting

The surficial geology in Terry, Montana consists of alluvial terrace deposits from the Pleistocene and Pliocene. These deposits consist of moderately to poorly sorted sand and gravel with a thickness generally less than 30 feet [MT MBMG, 2003]. At the location of the facility, approximately 8 feet of clay intermixed with sandy silt overlay a layer of poorly sorted sand and gravel. These surficial deposits are underlain by the Tongue River member of the Fort Union Formation. The Fort Union Formation consists of sandstone interbedded with siltstone, mudstone and clay. The thickness of this formation is generally less than 400 feet in most areas. Most of the groundwater wells in the area have been completed at depths of less than 200 feet below ground surface, and are used for irrigation, livestock, and domestic use. The reported average yield of wells completed a depths of less than 200 feet is approximately 35 gallons per minute.

2.0 Site History

2.1 Site History Prior to Reported Release

The original gas station and bulk facility were in the approximate location of the current aboveground storage tank (AST) facility. The station was moved across the street in the late 1950's or early 1960's. The former station building was dismantled between 1998 and 2000. WCEC conducted an environmental property assessment for Farmers Union Oil in September 1993 [WCEC, 1995]. The site inspection noted staining beneath and near the ASTs, product lines, and former temporary drum storage area. No recorded release was found in the records of the facility prior to 1993. During the environmental assessment, one groundwater monitoring well was installed near the northeast corner of the AST containment at the facility. The well was installed at this location because the nearest recorded release to the facility in 1993 was at Coop's Service Station across Laundre Avenue to the southwest. This well was found to have petroleum impacts to groundwater.

2.2 Soil Boring Investigation

WCEC advanced one Geoprobe boring on May 1995 to confirm hydrocarbon impacts on the north side of the containment area [WCEC, 1996]. This boring was determined by photoionization detector (PID) to indicate the presence of hydrocarbon impacts. WCEC reported these impacts to the MTDEQ upon discovery.

WCEC returned to the facility in July 1995 to conduct a Geoprobe investigation at the facility to determine the extent of petroleum impacts. Two hand augured borings were advanced inside of the containment, and seven Geoprobe borings were advanced in the area surrounding the containment. Field observations and laboratory conformation samples delineated petroleum impacts under and surrounding the AST containment.

2.3 Monitoring Well Installations

Based on the information obtained from the Geoprobe investigation, WCEC completed three monitoring wells in November 1995 (MW2, MW3 and MW4). These wells were screened from 8 feet to 18 feet below ground surface. The MTDEQ requested the installation of additional wells due to the inability of the installed wells to delineate the extent and magnitude of petroleum impacts to the shallow aquifer below the facility. WCEC directed Hansen Environmental Drilling of Glasgow, Montana in the installation of three new wells during July 1998 (MW5, MW6 and MW7). These wells were screened from 6 feet to 16 feet below ground surface.

2.4 Remedial Excavation

WCEC conducted a remedial excavation at the facility on October 10, 2013. This excavation was conducted in response to a release of gasoline that occurred on April 26, 2013. Following the removal of the AST, WCEC directed the excavation of 140 tons of soil from inside the containment wall. The excavation was limited in scope by the containment wall and adjacent ASTs that were in continued operation at the facility. The excavation was extended vertically until groundwater was encountered. The excavated soils were hauled to the City of Glendive Class II Landfill for disposal [WCEC, 2013].

2.5 AST & Bulk Rack Removal

The aboveground storage tanks, concrete containment, and bulk rack at the facility were removed in 2015. Currently only propane is dispensed from this BNSF lease property. A shed for the SVE/AS system is still present on the lease parcel.

2.6 SVE/AS System

An SVE/AS pilot study was conducted in 2014 with a full SVE/AS system installed in 2016. This system included three SVE wells and three air sparge wells. The SVE wells were connected to a 2-horsepower EG&G Rotron, explosion proof, regenerative blower capable of delivering an open air flow rate of 160 standard cubic feet per minute (scfm), and a maximum vacuum of 65 inches of water. The SVE system effluent was plumbed through four 55-gallon vapor mitigation drums filled with activated carbon. The air sparge wells were connected to a 2-horsepower GAST, explosion proof, rotary vane compressor capable of a maximum flow rate of 21 scfm, and a maximum pressure of 15 pounds per square inch (psi). This system was operated for approximately one year. It removed an estimated 982 kg (350 gallons) of hydrocarbons from the subsurface during this period.

This system was expanded following the remedial excavation completed in July 2023. Two additional sparge wells were installed and plumbed back to the system shed via a single trunk line following the excavation.

2.7 Remedial Excavation 2023

A remedial excavation was conducted in two distinct areas of the facility. One area was located under the former UST containment and the other was located in the area of the former bulk rack. Historical data from soil boring investigations and limited excavation in the former tank basin were used in delineating the planned area of the remedial excavation.

The northern excavation was completed to a maximum depth of 11 to 12 feet below grade, and the excavation was suspended when groundwater was encountered. The total surface area of the northern excavation was 1,450 square feet.

The southern area of remedial excavation was initiated near the former bulk rack location and extended to a maximum depth of approximately 11 to 12 feet below ground surface. The total surface area of the southern excavation was 1,050 square feet. All of the excavated materials were disposed of at the Class II landfill located in Glendive, Montana.

2.8 Monitoring Well Installation 2023

Three monitoring wells were installed following the remedial excavation to replace monitoring wells that had to be abandoned prior to the excavation. The new monitoring wells were installed at the approximate location of the three wells that were abandoned. Monitoring well MW1 was replaced with MW16 due to indication that this well was improperly screened when installed in 1995. Monitoring well MW15 was replaced with MW17, and monitoring well 14, was replaced with MW18. All three monitoring wells were drilled to a depth of 20 feet below ground surface and completed with 15 feet of screen and 5 feet of solid PVC riser.

2.9 Groundwater Monitoring

Groundwater sampling has been conducted since 1995 in site wells. Gasoline and diesel range constituents have been detected in monitoring wells and soil samples collected throughout the site history. Lead scavengers (1,2-dichloroethane and 1,2 dibromoethane) were detected in groundwater samples in 2019, but no wells exceeded Montana DEQ RBSLs for these constituents during high and low groundwater monitoring events completed in 2019.

3.0 Scope of Work

3.1 Scope of Work

The scope of work required by the MTDEQ consists of:

- Prepare the Cleanup WP in accordance with the Montana Cleanup Guidance for Petroleum Releases (Cleanup Guidance).
- Analyze samples for petroleum constituents as required by the Montana Risk-Based Corrective Action Guidance for Petroleum Releases.
- Validate all laboratory analytical data using DEQ's Data Validation Summary Form (DVSF).
- Discuss ongoing WP tasks and results with DEQ's project manager; submit written agreed-upon WP modifications as required to complete the WP objectives.
- Prepare an updated Release Closure Plan (RCP), discuss the results with DEQ's project manager. Use the RCP format found online.
- Prepare and submit an Interim Data Submittal (IDS) for each interim groundwater monitoring event. The IDS is expected to include discussion, data, tables, and figures described in the Groundwater Monitoring Work Plan and Report Guidance for Petroleum Releases.
- Prepare and submit a Cleanup Report detailing the results of the cleanup and all groundwater monitoring events conducted under this work plan. The Report is expected to include all the content, tables, figures, and appendices outlined in the Cleanup Report format.
- Use standardized DEQ WP and Report formats found online under the Forms dropdown at the PTCS webpage.
- Submit WP and Reports electronically following the PTCS submittal requirements.

3.2 Groundwater Monitoring

Groundwater monitoring will be performed on a semiannual basis for a period of two years during seasonally high and low groundwater periods. Semiannual monitoring will be completed during periods of high water (late May - early June) and low water (October-November) periods. Groundwater samples will be collected from MW4, MW8, SVE9, SVE11, MW16, MW17, and MW18. Well sampling will be conducted using low flow sampling methodologies in accordance with MTDEQ requirements and WCEC SOPs. WCEC will use a peristaltic pump to purge and sample each monitoring well. Groundwater quality parameter data (conductivity, pH, salinity, dissolved oxygen, temperature, ORP, and turbidity) will be acquired from all site wells sampled during each event using a flow through cell. Groundwater sample collection from each well will be completed following stabilization of groundwater quality parameters. Groundwater quality parameter, purge, and stabilization data for each well will be recorded in the field using WCEC's Well Sampling Form. Depth to water measurements will be recorded from all the site wells during each groundwater monitoring event to provide an accurate potentiometric surface plot, flow direction, and gradient.

Groundwater samples will be preserved in accordance with analytical method, packed on ice, and delivered to Energy in Billings, Montana under chain of custody. All groundwater samples collected will be submitted for VPH and EPH analyses. Additionally, EPH fraction analysis will be performed for any samples which exceed the EPH screening limit of 1,000 µg/L. A duplicate sample will be collected from monitoring well SVE11 for use in data validation, and a trip blank will be submitted for each sampling event.

3.3 Data Validation

WCEC will complete the MTDEQ – Waste Management and Remediation Division Data Validation Summary Form. WCEC will submit one trip blank and one field duplicate sample for analysis of relative percent difference (RPD) of groundwater laboratory results for each event. WCEC will collect duplicate samples from monitoring well SVE11 for analysis of relative percent difference in the data validation process. The completed data validation form will be included as an appendix to the monitoring report.

3.4 Air Sparge System Operation

Currently the air sparge system is in operation as approved in the last work plan. WCEC recommends that system operation be continued through the May 2025 sampling event. Total system pressure and air temperature will be recorded during O&M events. If system pressures are at or near zero, assessment of well heads and piping will be conducted to ensure effective system operation. The system doesn't have flow gauges installed at the current time. If monitoring results from the May 2025 sampling event indicate

that system operation will be needed throughout the entirety of this work plan, WCEC will discuss with DEQ if the installation of flow gauges to air sparge trunk lines would be valuable. Decisions on continued operation of the system will be based on constituent concentrations compared to the May 2024 high groundwater monitoring event. If constituent concentrations are comparable to May 2024, then it will be recommended that continuous system operation be maintained. If levels are found to have attenuated to levels observed during the Fall 2024 sampling event, WCEC will make a recommendation to suspend operations of the AS system during the Fall 2025 event. Recommendations for system operation will be made in each IDS submitted throughout the work plan.

3.5 Reporting

Interim data submittals will be completed following each groundwater monitoring event. Each IDS will include a brief discussion of current site conditions, updated cumulative data tables, and potentiometric groundwater surface maps.

A comprehensive report will be prepared following the completion of all corrective actions covered under this work plan. The report will contain a site history, cumulative soil and groundwater analytical tables, site maps and groundwater potentiometric surfaces for each sampling event. This report will also include a discussion and recommendations to bring the site to closure. These recommendations will be based on the results of the analysis in the Release Closure Plan that will be included as an appendix to the report. Additional appendices will include all groundwater analytical reports, groundwater monitoring field data sheets, and data validation summary forms

4.0 Timeline and Costs

The attached *PTRCB Groundwater Monitoring and Sampling Unit Cost Work Sheet* [Appendix A] details anticipated project costs to complete the MTDEQ required scope of work. The remedial actions outlined in this work plan will be initiated in May 2025 following the receipt of a work plan approval letter from MTDEQ. WCEC has tentatively scheduled the initial ground water monitoring event for May 2025.

4.1 Planned Workflow & Cost Explanations

The estimated costs in Appendix A include completion of the initial phase of cleanup and sampling tasks included in this work plan. WCEC will complete these tasks during 2025 and 2026 during a total of four individual events as follows:

Event 1: Groundwater monitoring May-June 2025

Event 2: Groundwater monitoring October -November 2025

Event 3: Groundwater monitoring May-June 2026

Event 4: Groundwater monitoring October -November 2026

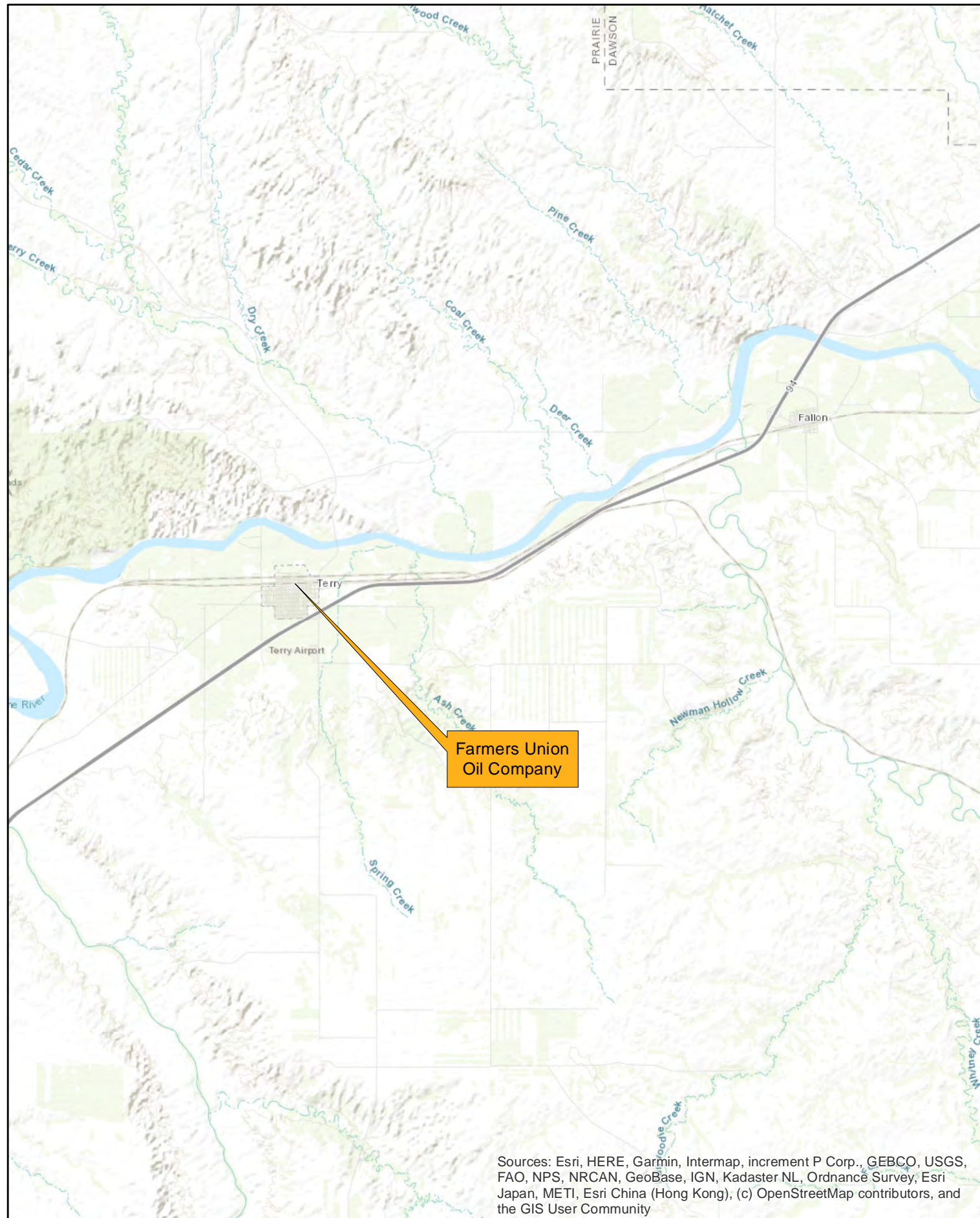
Final report completion by December 31, 2026

Air sparge system operation and maintenance will be conducted during the groundwater monitoring events until system operation is suspended based on analytical results and discussion with DEQ following each IDS submittal. Appendix A contains a *PTRCB Groundwater Monitoring and Sampling Unit Cost Worksheet* for Corrective Action Plan #35017 & 35018.

List of Figures

Figure 1: Site Location Map

Figure 2: Site Details Map



PROJECT #: 95-0971-70
Date: 7/25/2022
DRAWN BY: NGO
ORTHO PHOTO DATE: July 16, 2011

Site Location Map
Farmers Union Oil Company
101 McDonald Avenue
Terry, MT

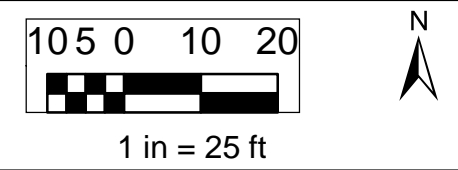
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ENVIRONMENTAL CONSULTANTS

FIGURE 1



Legend

- ◆ Monitoring Wells
- SVE Wells
- ◎ AS Wells
- ◆ Abandoned MW Wells
- Historic Excavation 2013
- Electric UG
- SVE System Line
- AS System Line
- Historic Bulk Fuel Rack
- Excavation Boundary 2023
- Historic Excavation boundary 2013
- Historic AST containment wall



Site Details Map

Farmers Union Oil Company
 101 McDonald Avenue
 Terry, MT

PROJECT #: 95-0971-70 IMAGE SOURCE: GOOGLE EARTH

<p>DRAWN BY: NGO</p> <p>Date: 11/19/2024</p> <p>SCALE: 1:300</p>	<p>WCEC ENVIRONMENTAL CONSULTANTS</p>
FIGURE 2	