WCEC
ENVIRONMENTAL CONSULTANTS

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February 14, 2025

Mr. Reed Miner
MT Department of Environmental Quality
655 Timberwolf Parkway, Suite 3
Kalispell, MT 59901-1215

Re: **Cleanup Work Plan 34980** for Moore Oil Kardguard, 206 East 1st Street, Libby, MT, Facility ID# 27-10130 (TID 24291), Release# 1664, Work Plan ID# 34980.

Dear Mr. Miner:

Enclosed for your review is the **Cleanup Work Plan 34980** for the Moore Oil Kardguard facility located at 206 East 1st Street in Libby, Montana.

Thank you for your consideration of this work plan. If you have any questions or concerns, please call or email me at jrolle@wcec.com.

Sincerely,

Jim Rolle
Director, WCEC

ec: Bary Moore, Moore Oil, Inc.; bary2mooreoil@blackfoot.net

Cleanup Work Plan

Moore Oil Kardguard

206 East 1st Street

Libby, MT 59923

Facility ID# 27-10130 (TID 24291), Release# 1664, Work Plan ID# 34980

Prepared for:

Bary Moore

2718 Tradewinds Way

Thompson Falls, MT 59873

Prepared by:

West Central Environmental Consultants, Inc.

1030 South Ave. W.

Missoula, MT 59801

February 14, 2025

WCEC Project No. 95-1095-70

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Appendix A: Work Plan 34980 Estimated Costs Documentation

1.0 Introduction & Purpose

This work plan and cost estimate is based on typical project costs to comply with Montana Department of Environmental Quality (MTDEQ) requirements for corrective action and continued monitoring at the Moore Oil Bulk Kardguard facility located at 1st Street and Montana Avenue in Libby, Montana (Facility ID# 27-10130, Release# 1664). This work plan was prepared as requested by the Montana Department of Environmental Quality (MTDEQ) in correspondence dated December 12, 2024.

The purpose of the scope of work included in this Remedial Investigation (RI) work plan is to remove impacted soil that exceed direct contact and leaching to groundwater Risk-Based Screening Levels (RBSLs) that were identified during removal of the former fuel rack and underground piping. Excavation of impacted soils and follow-up groundwater monitoring will be completed to bring the site into compliance with MTDEQ regulatory standards.

1.1 Site Location & Geology

The Moore Oil Petroleum Bulk Plant is located on the corner of 1st Street and Montana Avenue in the city of Libby, Montana (NE/4 of NW/4 of Sec. 3, T30N, R31W, Lincoln County, MT) [Figure 1]. The former bulk petroleum storage terminal consisted of five aboveground storage tanks (ASTs), product dispensing and fill racks, a customer card lock dispenser, above and below ground product piping, and an office/storage warehouse building [Figure 2]. The ASTs were located within an unlined concrete dike. The fuel storage and dispensing equipment at the site was reportedly decommissioned since the last groundwater monitoring event performed in 2016.

The site is located on the Kootenai River floodplain, approximately 1/4 mile from the river. The site stratigraphy consists of interbedded silts, sands, and gravels of fluvial origin. The inferred groundwater flow direction in the area is to the north or northwest.

2.0 Site History

On May 17, 1993, an overfill of one AST resulted in a release of approximately 15 to 40 gallons of diesel fuel into the soils around one of the 20,000 gallon diesel ASTs. On August 7, 1995, Catherine McDonald, from the MTDEQ conducted a field inspection of the reported leak. One hand augered boring was advanced to 3 feet below grade, directly adjacent to the overfilled diesel AST. A soil sample was collected and analyzed for Diesel Range Organics (DRO). The sample indicated the presence of 2,400 (mg/kg) parts per million (ppm) DRO. Based on this information, the MTDEQ required a remedial investigation to determine the extent and magnitude of soil and groundwater contamination at the site.

2.1 Soil and Groundwater Investigations

On December 22, 1995, WCEC advanced three test borings to determine the spatial extent of the contamination associated with the 1993 diesel spill. Two soil borings were placed immediately downgradient from the overfilled diesel AST. A third boring was located upgradient from the AST bermed area in the vicinity of the bulk loading rack. Soil contamination was encountered in all borings, and continued below the groundwater surface. The lack of surficial soil contamination and the concentration of contamination in the groundwater surface in these areas indicated the contamination was likely a result of groundwater/capillary fringe transport and soil smear. Contamination around the loading rack and associated piping appeared to be related to numerous small spills over time in this area.

The MTDEQ issued a request for further soil and groundwater investigation at the site on September 3, 2002. WCEC prepared and submitted the *Geoprobe Soil and Groundwater Investigation Workplan* on behalf of Moore Oil on September 24, 2002 [WCEC, 2002]. The MTDEQ approved the work plan in a letter dated November 19, 2002. WCEC conducted an additional soil and groundwater site investigation on August 19 and 20, 2003. During the investigation, a total of 16 soil borings were completed at the site. The worst case impacts to the soils were encountered in the areas north and northwest of the bulk loading rack and associated piping, and on the south and east sides of the containment dike. Soil contamination in the area north and northwest of the bulk loading rack and on the south side of the containment dike extended from the surface to below the groundwater interface. During the investigation, significant groundwater contamination was encountered in all areas in which boreholes were completed below the groundwater surface. Complete results from the investigation are included in the *Additional Soil and Groundwater Investigation Report*, dated October 22, 2003 [WCEC, 2003].

Based on the results of the soil and groundwater investigation, WCEC recommended excavation of accessible contaminated soils, oxygen enhancement treatment of the aquifer, and installation of groundwater monitoring wells. Upon request from the MTDEQ, WCEC prepared the *Remedial Excavation, Oxygen*

Enhancement Treatment, Groundwater Monitoring Well Installation, and Groundwater Sampling Workplan dated February 20, 2004 [WCEC, 2004b]. Completion of the scope of work was initiated by WCEC following approval of the work plan.

2.2 Remedial Excavation and Oxygen Enhancement Treatment

On June 14 through June 18, 2004, WCEC supervised the excavation of contaminated soils from the Moore Oil Kardguard site in Libby, Montana. Oedewaldt Construction, Inc. of Libby, Montana was contracted by WCEC to perform the excavation and hauling of contaminated soils, backfilling, and resurfacing of the excavated areas. A total of 1,224 cubic yards of soil was removed from the site during the remedial excavation. All soils removed from the site were taken to the One Time Landfarm for Contaminated Soils location as approved by the MTDEQ. Details of the landfarm location are included in the *One Time Landfarm Application and Information* submitted to the MTDEQ by WCEC on January 26, 2004 [WCEC, 2004a].

During the remedial excavation, WCEC personnel performed an oxygen enhancement treatment of the groundwater and shallow aquifer beneath the site. A total of 2,500 pounds of PermeOx Plus™ was distributed onto the groundwater surface and surrounding soils during the remedial effort. Groundwater analytical results and water quality field parameters are used to evaluate the effectiveness of the oxygen enhancement treatment in mitigating hydrocarbon impacts to groundwater. Complete details of the remedial excavation and oxygen enhancement treatment are included in the *Remedial Excavation and Oxygen Enhancement Treatment Report* submitted to the MTDEQ by WCEC on August 6, 2004 [WCEC, 2004c].

2.3 Monitoring Well Installation

On July 12 and 13, 2004, WCEC supervised the installation of six groundwater monitoring wells at the Moore Oil Kardguard facility. Environmental West Exploration Inc. of Spokane, Washington was contracted by WCEC to complete the installation of the monitoring wells at the site. The six monitoring wells were recorded as MP1 through MP6. The groundwater monitoring wells were installed in the locations determined by WCEC and MTDEQ personnel to define the extent and magnitude of impacts to groundwater at the source areas (MP2, MP3, and MP4) and to delineate plume migration and contaminant origin. In addition to the six new site monitoring wells, three additional site monitoring wells were located at or near the site. One well, MW3, is associated with the Venture Oil facility cleanup, and the other two wells were located in the City of Libby Park immediately to the west of the site [Figure 2]. The park wells were recorded as PW1 and PW2. Static groundwater elevation data from all monitoring wells is used in conjunction with groundwater elevation data to map the potentiometric surface across the site.

2.4 Additional Remedial Excavation and Oxygen Enhancement Treatment

WCEC supervised an additional excavation of contaminated soils made accessible by remodeling activities at the site from July 11 to July 14, 2005. Oedewaldt Construction, Inc. of Libby, Montana was contracted by WCEC to perform the excavation and hauling of contaminated soils, backfilling, and resurfacing of the excavated areas. Approximately 600 cubic yards of contaminated soil was removed from the site during the remedial excavation. An additional 50 yards of uncontaminated soil and debris was hauled to the City of Libby municipal landfill. All contaminated soils removed from the site were taken to the One Time Landfarm for Contaminated Soils location as approved by the MTDEQ.

During the July 2005 remedial excavation, WCEC personnel performed additional oxygen enhancement treatment of the soils and groundwater at the site. A total of 3,000 pounds of PermeOx Plus™ was distributed onto the groundwater surface and surrounding soils during the remedial effort. The PermeOx Plus™ was distributed as evenly as possible over the bottom of the excavation. Groundwater analytical results and water quality field parameters are used to evaluate the effectiveness of the oxygen enhancement treatment in mitigating hydrocarbon impacts to groundwater. Complete details of the 2005 remedial excavation and oxygen enhancement treatment are included in the *Remedial Excavation Report* submitted to the MTDEQ by WCEC on September 13, 2005 [WCEC, 2005].

Monitoring well MW4 was destroyed during the remedial excavation conducted in July 2005. On November 28, 2005, a monitoring well was reinstalled in the approximate location of the original MW4 well. The replacement well will be referred to as MP4 in all future reports and documents for the site.

2.5 Oxygen Slurry Trench Treatment

At the request of the MTDEQ, WCEC supervised an oxygen slurry trench treatment on September 4, 2013. The location of the slurry trench is shown on Figure 2. The trench was sited near monitoring well MP4 in an attempt to address ongoing risk based screening level (RBSL) exceedances in groundwater samples from that location. WCEC contracted Oedewaldt Construction, Inc. of Libby, Montana to excavate the slurry trench. The trench was advanced to a terminal depth of approximately 10 feet below ground surface. The approximate width of the trench was 4 feet.

Excavated soil from the trench was field screened for petroleum impacts using a combination of visual and olfactory observations and photoionization detector (PID) measurements. The upper 6 to 7 feet of excavated soil did not exhibit any petroleum hydrocarbon impacts based on the field screening process. The lower 8 to 10 feet of trench material was heavily impacted by petroleum constituents based on the field screening

results. This soil interval represents the top of the groundwater table where hydrocarbon smearing and capillary transport are most likely occurring.

A total of 900 pounds (lbs) of PermeOx Plus™ was applied to the groundwater at the bottom of the trenches during the oxygen slurry treatment. Approximately 700 lbs of this total was placed in the longer trench segment between monitoring wells MW3 and MP4. The remaining 200 lbs of PermeOx Plus™ was applied in the shorter trench segment west of MP4. The PermeOx Plus™ was mixed with water in the excavator bucket at a slurry concentration of 15 percent by weight. Groundwater monitoring was conducted through 2016 to evaluate the effectiveness of the oxygen slurry trench treatment in reducing contaminant concentrations in MP4. Groundwater sampled from MP4 during the October 2016 event was below RBSLs for all constituents analyzed for the first time in site history.

The 2016 Semiannual Groundwater Monitoring Report [WCEC, 2017] included a Remedial Alternatives Analysis that evaluated potential remedial strategies to progress Release 1664 to closure. Based on a review of the cumulative data from all the remedial actions completed to date and analysis of the remedial alternatives presented in this report, WCEC recommended selection of the MNA remedial alternative with continued groundwater monitoring at the Moore Oil facility.

The bulk fuel storage and dispensing equipment was taken out of service in 2023 with removal of the bulk rack, dispenser island, and underground piping complete in September 2024. No impacts exceeding RBSLs were noted in the piping removal samples, however, significant impacts were present in shallow soils beneath the former bulk rack and fueling pad. MTDEQ requested a Cleanup Work Plan to include a scope of work for removal of impacted soils with post-excavation groundwater monitoring during low groundwater conditions.

3.0 Scope of Work

3.1 Required Scope of Work

The scope of work requested by MTDEQ consists of:

- Excavate petroleum-contaminated soil as determined by previous investigations. Include in the work plan the estimated dimensions (lateral and vertical) and volume of the excavation, as well as screening criteria that will be used to determine the extent.
- Collect soil samples from the base and sidewalls to characterize the post-excavation soil conditions. Record the depth and map location for each sample.
- Dispose of petroleum contaminated soil at a licensed disposal or treatment facility.
- Backfill excavation with suitable clean fill material.
- Monitor groundwater at select facility monitoring wells post-excavation.
- Analyze soil and groundwater 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) found online under the Guidance dropdown at the Petroleum Tank Cleanup Section (PTCS) webpage.
- 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 and submit one Cleanup Report detailing the results of the remediation and groundwater monitoring. The Report is expected to include all the content outlined in the Cleanup Report format and the following:
    - Cumulative soil and groundwater data tables.
    - Maps of historical and current infrastructure, investigative borings, and remedial actions.
    - Append laboratory analytical data, field data, and completed DVSFs.
- Use standardized DEQ WP and report formats found online under the Forms dropdown at the PTCS webpage.
- Submit WP and reports electronically following the Petroleum Tank Cleanup Section submittal requirements found under the Guidance dropdown at the PTCS webpage.

3.2 Remedial Excavation

WCEC will direct and supervise excavation of impacted soils from the former bulk rack area. The approximate boundary of the excavation is depicted in Figure 3. Based on previous investigations and observations from historical excavations at the site, WCEC anticipates that impacts will extend to a depth of 10 feet which corresponds to the seasonally low groundwater elevation. This results in an anticipated excavation volume of 420 banked cubic yards (590 tons).

Upon approval and initiation of this work plan, WCEC will request an underground utility locate at and surrounding the facility. All pertinent information regarding underground utility corridor locations and depths will be recorded and mapped by WCEC during the initial site inspection. Oedewaldt Construction of Libby, MT will complete excavation, loading, hauling, and backfilling activities under the direction of WCEC. During the excavation, soils will be screening using a photoionization detector to guide the extent of the excavation. The anticipated excavation area is bounded to the north and east by previous excavations and extensive soil sampling data exists for areas adjacent to the west and south. Therefore, WCEC does not anticipate that the footprint of the excavation will expand horizontally beyond the planned area and will be limited vertically to a depth of 10 feet below grade due to the presence of shallow groundwater.

Excavated soils will be loaded directly into trucks or temporarily stockpiled on plastic sheeting pending hauling to the selected disposal facility. WCEC will survey the final extent of the excavation and collect post-excavation soil samples from the pit bottom and sidewalls according to MTDEQ guidance for comparison to all applicable direct contact and leaching to groundwater RBSLs. Soil samples will be placed in appropriate containers, packed on ice, and shipping to Energy Laboratories in Helena, MT for analysis using the VPH and EPH methods. EPH fractions analysis will be performed for any samples that exceed the EPH screening limit. The excavated area will be backfilled with clean, pit run material following collection of confirmation soil samples.

WCEC evaluated various disposal options for the impacted soils that will be generated during the excavation. The Flathead County Landfill is the closest Class II landfill, however, they will not accept material from outside Flathead County. The Republic Services Missoula Landfill would accept the material at a rate of $58/ton. WCEC also contacted Treasure State Concrete in Polson, MT regarding acceptance of the soil for processing as a component of asphalt base material. Treasure State providing pricing of $43/ton, which results in an overall savings of approximately $16,500 in tipping fees and trucking compared to the Missoula Landfill option. Based on this evaluation, WCEC selected disposal at Treasure State Concrete via processing as a component of asphalt hot batching for inclusion in this Work Plan.

3.3 Groundwater Monitoring & Sampling

Groundwater sampling of the site wells will be performed during seasonally high groundwater conditions following the excavation. Samples will be collected from MP3, MP4, MP7, and MP8. Well monitoring and sampling will be conducted according to WCEC Standard Operating Procedures (SOPs) and DEQ's Groundwater Sampling Guidance for low-flow sampling. Depth to water measurements will be recorded from all viable site wells during the groundwater monitoring event to provide an accurate potentiometric surface plot, flow direction, and gradient. Groundwater quality parameter data (conductivity, pH, salinity, dissolved oxygen, temperature, ORP, and turbidity) will be acquired from sampled wells during well purging using a flow through cell attached to a peristaltic pump.

Groundwater quality parameter, purging, and stabilization data for each well are recorded in the field using WCEC's Well Sampling Form. If present, any accumulations of free product (FP) in the monitoring wells will be noted and FP thicknesses will be recorded. Groundwater samples will not be collected from any wells that contain a measurable thickness of FP. WCEC will dispose of purge water generating during monitoring and sampling activities according to the DEQ Disposal of Untreated Purge Water from Monitoring Wells flowchart.

Groundwater sample collection from each well will be completed following stabilization of groundwater quality parameters. Groundwater samples will be preserved with hydrochloric acid, packed on ice, and delivered to Energy Laboratories in Billings, Montana under chain of custody. Requested analyses will include EPH screen , VPH, and lead scavengers (EDB, 1,2-DCA). Additionally, Total Extractable Hydrocarbon (TEH) fractions analysis will be conducted if the EPH screen of 1,000 µg/L is exceeded.

3.4 Reporting

WCEC will prepare and submit a Cleanup Report detailing the excavation, disposal, soil sampling, and groundwater monitoring activities. The report will include the content, figures, cumulative data tables, and appendices outlined in the Cleanup Report format guidance, which includes preparation of a Release Closure Plan (RCP). A thorough discussion regarding the remedial actions, recommendations for further corrective actions, and required monitoring of the site with respect to eventual closure of the release will also be presented in the RCP and Cleanup Report.

3.5 Timeline & Costs

The scope of work outlined in this work plan is tentatively scheduled to begin in summer 2025, pending approval from the MTDEQ . The attached *Work Plan 34980 Estimated Costs Spreadsheet* and *PTRCB Groundwater Monitoring & Sampling Unit Cost Worksheet* [Appendix A] detail anticipated project costs to complete the MTDEQ required scope of work. Excavation subcontractor cost estimates are also included in Appendix A.

4.0 References

West Central Environmental Consultants. (WCEC, 2002). *Geoprobe Soil and Groundwater Investigation Workplan*. September 24, 2002.

West Central Environmental Consultants. (WCEC, 2003). *Additional Soil and Groundwater Investigation Report.* October 22, 2003.

West Central Environmental Consultants. (WCEC, 2004a). *One Time Landfarm Application and Information*. January 26, 2004.

West Central Environmental Consultants. (WCEC, 2004b). *Remedial Excavation, Oxygen Enhancement Treatment, Groundwater Monitoring Well Installation, and Groundwater Sampling Workplan*. February 20, 2004.

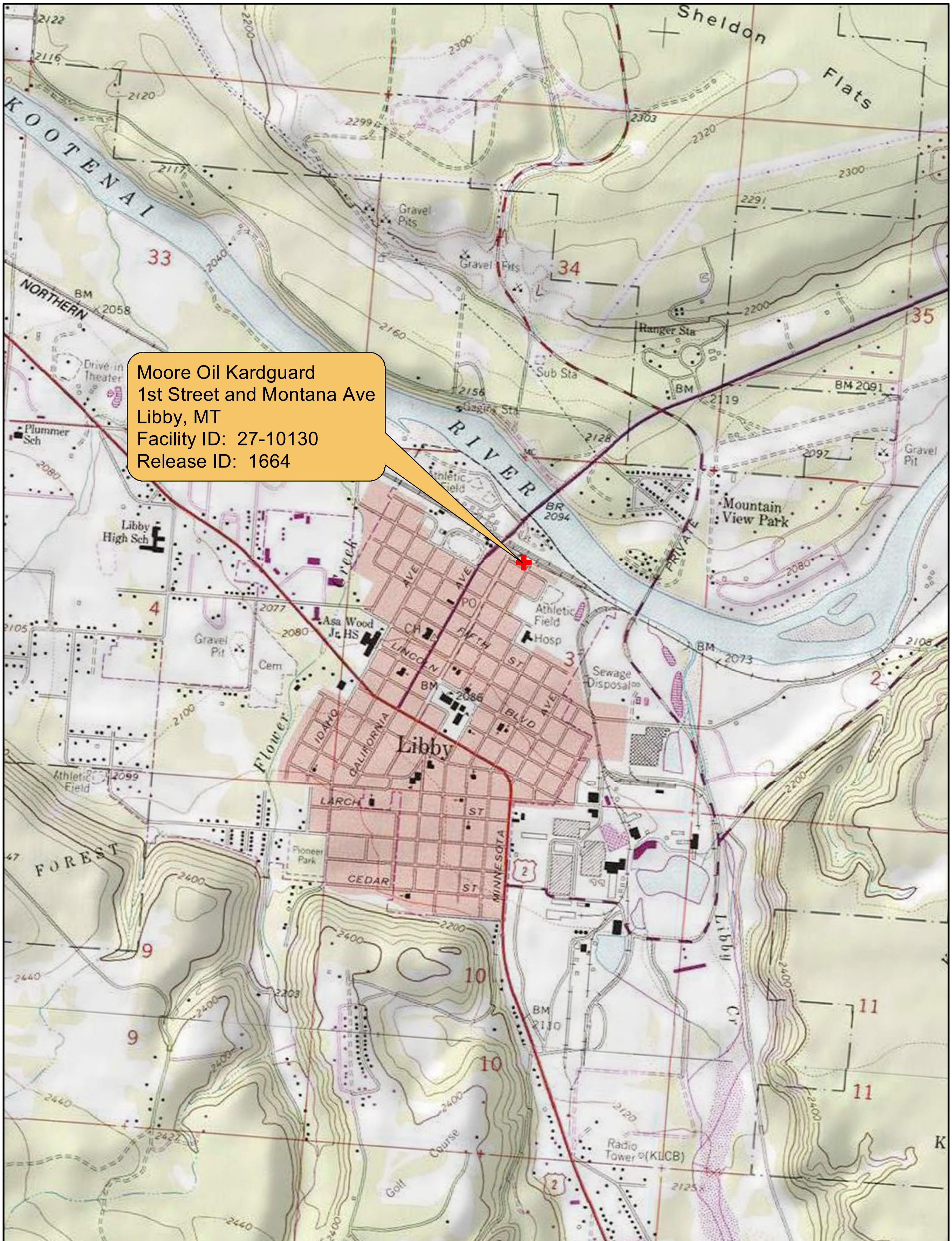
West Central Environmental Consultants. (WCEC, 2004c). *Remedial Excavation and Oxygen Enhancement Treatment Report*. August 6, 2004.

West Central Environmental Consultants. (WCEC, 2005). *Remedial Excavation Report*. September 13, 2005.

West Central Environmental Consultants. (WCEC, 2013). *Revised ORC Injection & Quarterly Groundwater Monitoring Work Plan*. May 9, 2013.

West Central Environmental Consultants. (WCEC, 2017). *Semiannual Groundwater Monitoring Report 2016*. February 9, 2017.

List of Figures



✚ PROJECT LOCATION N Feet: 2,000 1,000 0 2,000 1 inch = 2,000 feet	PROJECT #: 09-1095-70 DATE: 11/18/16 DRAWN BY: MM BASEMAP: ESRI TOPO	**Site Location Map** Moore Oil Kardguard 1st Street and Montana Ave Libby, MT	WCEC ENVIRONMENTAL CONSULTANTS **FIGURE 1**

Moore Oil Kardguard
206 E 1st Street
Libby, MT 59923

Site Details Map

JOB NO.: 95-1095-70 | DATE: 12/20/23 | DRAWN BY: TCP | IMAGE SOURCE: ESRI

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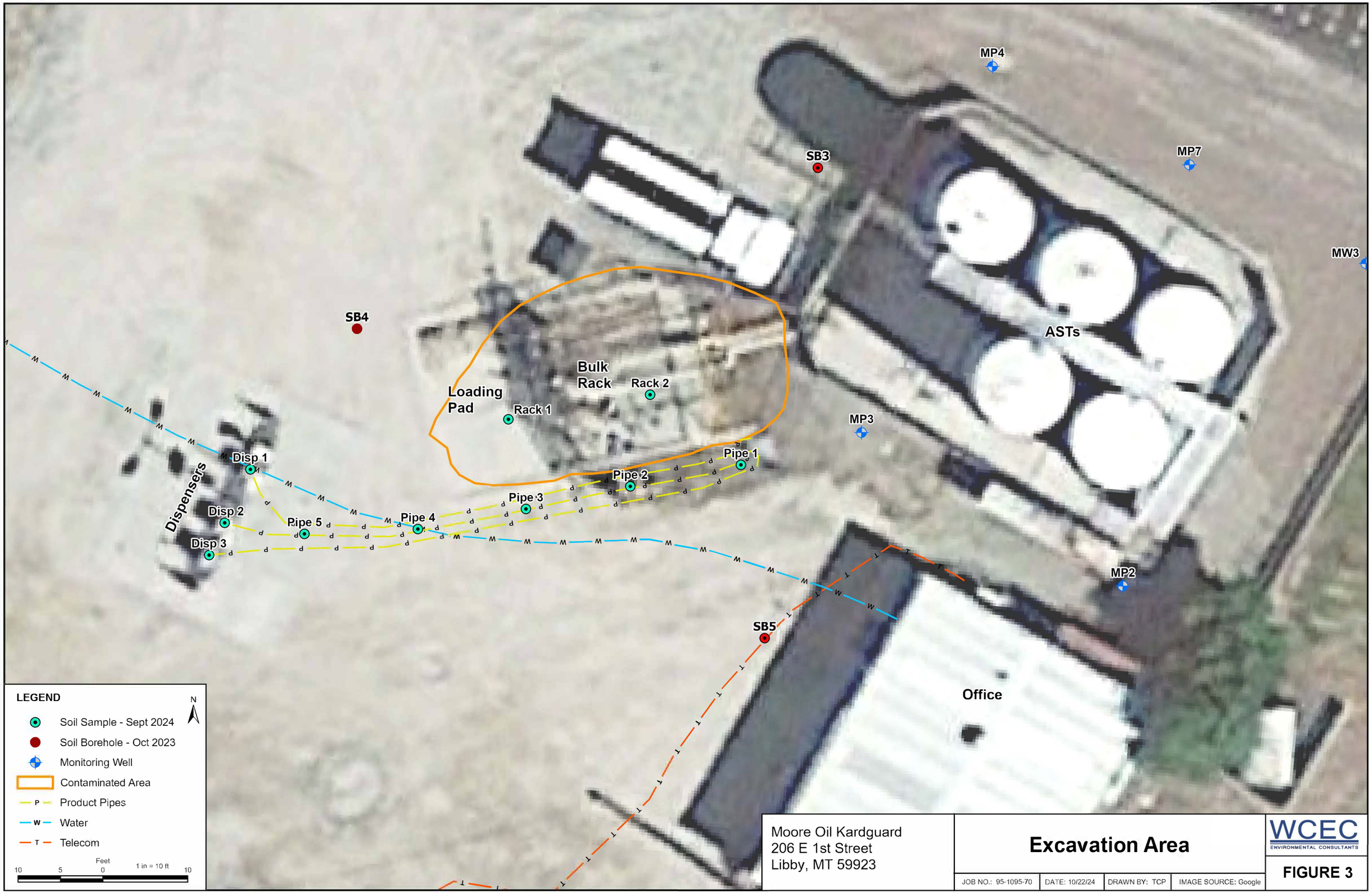
FIGURE 2



Moore Oil Kardguard
206 E 1st Street
Libby, MT 59923

Excavation Area

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FIGURE 3

Appendix A

Work Plan 34475 Estimated Costs Documentation