3.0 Soil Remediation Activities

3.1 Mobilization

Shaw will mobilize all necessary personnel and equipment to support the field activities. Heavy equipment requirements include two Caterpillar (CAT) 320 excavators, a CAT 950E loader, a CAT D6 dozer, two dump trucks, a large-capacity storage box, and the soil stabilization equipment and personnel. Equipment will be rented from local vendors to minimize mobilization costs. Support equipment requirements include sampling supplies, sampling equipment, and on-site transportation. Most equipment and material will be procured at the Shaw-FTMC office through equipment vendors and scientific supply vendors and shipped directly to the site. Demobilization will primarily consist of disassembly, packing, and return of rented equipment to the supplier and travel for personnel back to the Shaw office in Knoxville, Tennessee.

Subcontracts will be issued for a licensed Alabama land surveyor, a waste transporter, and a waste disposal facility. Mobilization and demobilization to the site will be included.

3.2 Site Surveying and XRF Support

A registered land surveyor in the state of Alabama will survey the site including locating and marking the boundary line of the EBC and establishing the 25 foot by 25 foot sampling grids. A total of three grids will be staked, one at each of the three ranges in the EBC. At each grid node, the XRF will be used to analyze collected surface soil samples for metals (including lead). Additional details, including the XRF sampling and analysis procedures and figures showing the sampling grids, are found in Chapter 4.

Lead concentrations greater than 880 mg/kg located at the grid nodes will be marked and the area defined as an excavation limit. If any grid node within the EBC boundaries of the surveyed grid exceeds 880 mg/kg, then the grid will be expanded as needed to further define the extent of contamination. No sampling or analysis will be performed in the area outside the EBC.

3.3 Preconstruction and Clearing

Once the XRF survey is complete and the excavation limits are defined, the site can be further prepared by assessing the need for additional clearing and grubbing, instituting site controls, determining how to minimize the impact of the soil removal on the existing surface water features (i.e., intermittent tributary streams to Remount Creek in the Skeet Range Area), and control erosion and site runoff. During this stage a haul road may be constructed or existing roads may be improved in the Skeet Range area to facilitate truck access and loading.

3.3.1 Clearing and Grubbing

Shaw assumes that the bulk of tree clearing and grubbing within the EBC has already been performed by ALDOT. Very little should be required to remove any additional trees or ground cover. Trees will be cut with chainsaws and removed to areas outside the EBC.

3.3.2 Site Control

Shaw will use construction fencing materials and barricade tape to delineate the site exclusion zone (EZ), contamination reduction zone, and site support zones in compliance with the site-specific SHP (Appendix B). The soil removal sites are located in remote areas that are gated and locked. Little opportunity for site trespassers exists, but several warning signs will be posted at conspicuous locations around the perimeter of the soil removal areas to discourage unauthorized entry.

3.3.3 Surface Water and Erosion Controls

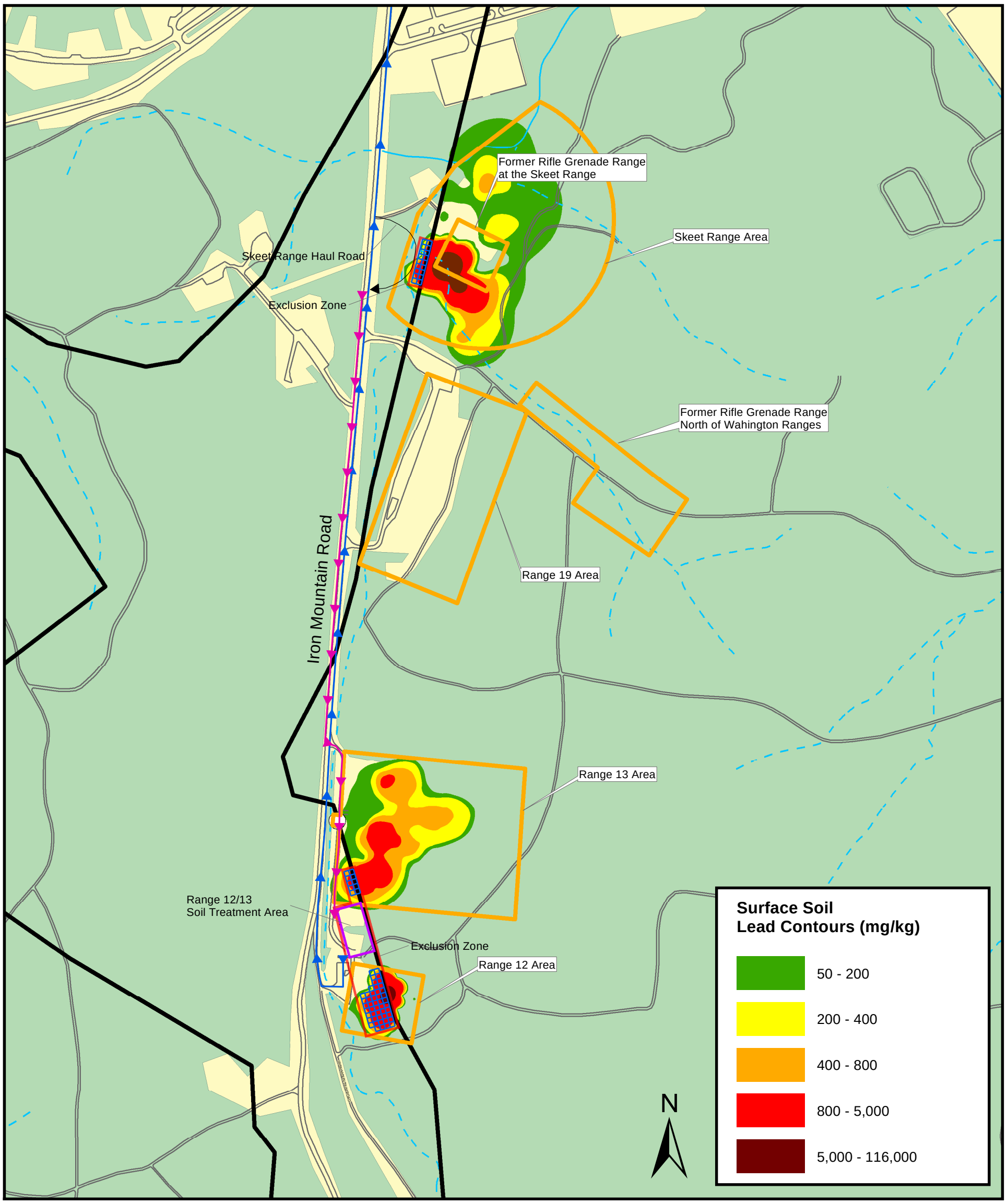
The only suspected area where surface water may be encountered is in the Skeet Range. Part of the area within the EBC may include intermittent tributary streams that flow into Remount Creek north of soil excavation area. Once the XRF survey is complete, the area will be assessed to determine how to conduct the soil removal while minimizing impacts to Remount Creek. This may include redirecting the tributary streams around the excavation area or building a temporary collecting pond and pumping the surface water around the excavation. Shaw will also insure that site erosion controls such as silt fencing and/or staked hay bales are in place to prevent soil from the removal area migrating into streams or other peripheral areas.

3.3.4 Haul Road and Loading Area Construction

Shaw expects to construct and/or improve the existing roads around the Skeet Range area to facilitate equipment access and loading in the area. Shaw plans to use the existing IMR as part of the haul road to the Range 12/13 treatment area (Figure 3-1). The excavator, loader, dump truck, bulldozer, and water truck for dust suppression may be used to construct the haul road. Up to 110 cy of ¾-inch crushed stone may be required to complete this task.

3.4 Construction Support (Excavation)

Initial excavation limits will be set based on the results of the XRF survey. However, it is expected that 0.2 acres will be excavated at the Skeet Range, 0.1 acres will be excavated at Range 13, and 0.7 acres will be excavated at Range 12. Figure 3-1 shows preliminary areas requiring excavation. Soil excavation will be performed in a series of 6-inch to 1-foot lifts using a CAT 320 excavator and loaded in dump trucks to be delivered to a centralized treatment area at Range 12/13 (Figure 3-1). The excavation will extend horizontally in a given area until the



Legend

- Lead Concentrations Above 880 mg/kg
- Study Area
- 25-Ft Grid
- Wooded
- Not Wooded
- Roads
- Surface Drainage Feature (Dashed where Intermittent)
- Topographic Contour (25-foot interval)
- Eastern Bypass Corridor
- Site Exclusion Zones
- Haul Route for Site Dump Trucks (Untreated Soil)
- Haul Route of Treated Soil for Offsite Disposal

0 700 Feet

NAD83 State Plane Coordinates

Figure 3-1

IMR RI Report

Soil Remediation Site Plan

Shaw™ Shaw Environmental, Inc.

U.S. Army Corps of Engineers
Mobile District

x:/ftmc/gisworkarea/klm/mxd/fig3_1_soil_remd_plan.mxd

entire planned area has been removed. Additional lifts will be removed from selected grids based on the post-excavation confirmation sampling results. Shaw expects to excavate the Skeet Range and the Range 12/13 areas concurrently.

Two monitoring wells (HR-70Q-MW01 and HR-70Q-MW02) are located at Range 12 on the ALDOT EBC property in the area suspected to be greater than 880 mg/kg lead. They will be preserved during this construction effort. If the results of the XRF survey show the grids around the wells must be excavated, then a "buffer" area 5 feet by 5 feet by 1 foot deep around the well pads will be excavated by hand. The well buffer zone area will be marked with traffic cones and marked with barricade tape. The excavator will not be allowed to enter this buffer area to protect the integrity of the wells. The soil excavated around the well pads will be combined with the surrounding soil for treatment and disposal.

The Shaw field crew includes a superintendent, equipment operators, and laborers. The equipment required includes two CAT 320 excavators, CAT 950 loader, dump trucks, and a water truck for dust suppression. One excavator will be used initially at the Skeet Range. The other will be used at the Range 12/13 area to support excavation and soil stabilization activities. The loader will also be used at both locations.

Approximately 0.2 acres at the Skeet Range, 0.1 acres at Range 13, and 0.7 acres at Range 12 are within the ALDOT EBC area and concentrations may exceed 880 mg/kg lead in the surface layer. Assuming these areas are correct following the XRF survey, Shaw will excavate the top one foot of soil. This excavation will yield approximately 1,572 cy of material for treatment. A minimum rate of production to support soil treatment is 300 tons per day. Assuming a production rate of 300 tons per day, a total of two weeks is anticipated to complete the excavation. This task will be performed concurrently with soil treatment and transportation and disposal tasks.

3.5 Soil Treatment and Stabilization

This activity includes the stabilization of lead-contaminated soils.

The Shaw field crew will include a stabilization technician, equipment operators, and laborers. Heavy equipment will include an excavator and loader. This task will be conducted concurrently with the construction support and transportation and disposal tasks.

3.5.1 Stabilization Work Area

A soil stabilization work area (Figure 3-1) will be established in the Range 12/13 area and will be of sufficient size to hold eight (8) 300 ton stockpiles. The soil will be brought to the stabilization work area using the dump trucks and placed in stockpiles. Each stockpile will contain 250 cy of excavated soil, assuming a 25 percent volume increase due to soil handling. The area will be surrounded by a 1-foot high earthen berm and/or hay bales to prevent runoff water and soil migration.

3.5.2 Soil Stabilization Treatment

Each stockpile of soil containing lead will have Portland cement added. Portland cement will be purchased, delivered in pneumatic tankers, and stockpiled onsite as needed. An ash filter system will be used during its unloading and handling to control fugitive dust emissions. Based on a density of 60 pounds per cubic foot for the stockpiled Portland cement and a density of 1.2 tons per cubic yard for the stockpiled soil, 12 cubic yards (equivalent to 15 tons of Portland cement) will be added to every 250 cubic yards (300 tons) of stockpiled soil. The addition of the Portland cement will be monitored by the treatment technician on site. The soil and Portland cement will be mixed with an excavator as needed until homogenous. After treatment, the stabilized soil stockpile will be composite sampled and analyzed by U.S. Environmental Protection Agency (EPA) Methods 1311/6010B for Toxicity Characteristic Leaching Procedure (TCLP) metals on a 72-hour rush turnaround basis. Treated stockpiles will be covered with heavy-duty plastic sheeting to prevent erosion of the pile and migration of the material out of the area.

If the stabilization is successful and the treated material meets the project-required leachate concentrations standard of less than 5 milligrams per liter (mg/L), it will be marked for transportation and disposal. If the soil stockpile fails to meet the standard, the stockpile will be retreated and resampled.

A minimum daily treatment rate of 300 tons is planned. Assuming a rate of 300 tons per day, approximately two weeks will be required to complete soil stabilization. One composite TCLP metals sample will be collected per 300 ton batch of soil treated. Soil quantity will be monitored using a loader bucket scale.

3.6 Transportation and Disposal of Treated Material

This task includes the loading and transportation of treated soil to a Resource Conservation and Recovery Act (RCRA)-licensed commercial landfill for final disposal. The disposal of the material shall be in compliance with all applicable federal, state, and local regulations. No hazardous waste is anticipated to be generated during the IMR soil removal activity.

Transportation and disposal will be provided by a licensed waste hauler and operator of a RCRA-licensed commercial landfill. During transportation, the Shaw construction quality control (QC) officer will document the quantities of waste loaded onto each truck and facilitate the Bill of Lading documentation. Transportation will comply with all U.S. Department of Transportation regulations. Shaw will coordinate with the transporters so that the waste will be shipped to arrive on schedule at the landfill. Shaw will receive written approval from the landfill prior to shipping waste to their facility. This shall include checking that the facility is in EPA compliance before shipping waste. The landfill will provide Shaw with a certificate of disposal for each load received and processed.

The construction QC manager will be on site to complete the documentation of the transportation and disposal of generated wastes onsite on a daily basis. The information will be transmitted to the USACE as required in their guidance and collected for inclusion into the final construction report.

The Shaw field crew will include a superintendent, the construction QC manager, equipment operators, and laborers. The heavy equipment required includes a CAT 950 loader. Assuming all of the treated soil can be stockpiled in the soil stabilization work area, approximately one week will be required to complete transportation and hauling. This task will be conducted during construction support, soil treatment, and site restoration tasks.

3.7 Site Restoration

Site restoration will begin only after the confirmatory sampling results from the offsite laboratory indicates the lead concentrations in the remaining site soils are less than 880 mg/kg. Upon completion of the soil removal, vertical cuts will be regraded so that they have a maximum slope of 2 to 1. The downgradient side of excavation areas will be regraded so that storm water is not trapped within the area. Borrow material will not be hauled to the soil removal area. Existing site soils will be used as fill whenever possible.

Reseeding of adjacent non-EBC areas that were impacted from the removal action may be required. Up to 1 acre may require hydroseeding.

3.8 Decontamination

Personnel decontamination areas will be established within the contamination reduction zone at the Skeet Range and the Range 12/13 area to provide them with a controlled transition from the

EZ to the support zone. Personnel decontamination requirements are outlined in the SHP (Appendix B).

Equipment decontamination may be required in the Skeet Range and the Range 12/13 excavation areas. Whenever possible, the excavator and/or loader will be stationed in the support zone and only the bucket used to remove soil from the EZ. The site superintendent will sequence the excavation as much as possible to work from outside the EZ across the areas excavated. This will facilitate decontamination on the excavator/loader bucket.

If needed, one temporary equipment decontamination pad will be constructed at the Skeet Range and one at the Range 12/13 area (Figure 3-1). The pads will be constructed using heavy-duty plastic liner with a wooden barricade/framework to contain decontamination fluids. Lumber drilling mats and/or steel plates will be used to support the equipment while on the pad. Water for decontamination will be supplied by the water truck. Decontamination fluids will be filtered and tested for metals before disposing onsite as required in the FTMC investigation-derived waste plan. Decontamination solids will be added to the soil stockpile for treatment and disposal.

Heavy equipment decontamination can begin after the final area of excavation has passed confirmation analysis and site restoration activities are complete.