

## Section 5. Site Controls, Best Management Practices, and Construction Quality Control

---

This section summarizes controls implemented during the NTCRA to protect workers, as well as the best management practices (BMPs) and construction QC activities.

### 5.1. DUST CONTROL

ERRG performed all site work in a manner that minimized dust generation. When possible, ERRG used engineering and operation controls, rather than respirators, to control dust. The primary engineering control used was the application of water (not excessive) on the surfaces of haul roads to minimize the generation of dust. However, it was not possible to apply water during excavation of most of the waste rock because access to the excavation was limited because of the steep terrain. In such cases, ERRG provided respirator training and protection for workers as required.

During the NTCRA, the following dust control measures were implemented, as described in Section 7 of the Removal Action Work Plan ([ERRG, 2010a](#)):

- Maintaining vehicle speeds below 15 miles per hour on unpaved surfaces
- Controlled spraying of water on haul roads
- Controlled spraying of water while excavating soil or waste, loading dump trucks, or moving soil or waste rock
- Controlling the rate of grading activities to minimize dust generation
- Keeping drop heights to a minimum while loading trucks

### 5.2. AIR MONITORING

During excavation of waste rock, real-time air monitoring was performed, as appropriate, for both fugitive dust and arsenic, cadmium, copper, lead, and zinc measured as total dust concentrations. Portable dust monitors (MIE Mini-ram®, model numbers 1007, 1008, 1161, and 10584) were used throughout excavation activities to monitor for dust emissions both upwind and downwind of the jobsite.

In addition, the Site Safety and Health Officer selected an ERRG crewmember performing hand excavation of the waste rock to wear a personal air pump with a particulate filter to evaluate airborne exposure levels for metals (including arsenic, cadmium, copper, lead, and zinc). Air sampling was

performed in accordance with National Institute of Occupational Health (NIOSH) Method 7300 (NIOSH, 2003). The air samples were submitted for 24-hour rush analyses, and ERRG's Health and Safety Manager reviewed the analytical results. The results demonstrated that airborne exposure levels for the heavy metals tested were within permissible exposure limits, and that respirators were not required. However, ERRG's Health and Safety Manager reviewed results of subsequent dust monitoring activities, and it was concluded that personnel removing waste rock on the mountain should wear half-face respirators with P-100 cartridges to protect them from fugitive and nuisance dust when dust was present.

### 5.3. SURFACE DRAINAGE AND EROSION CONTROL

BMPs were implemented prior to performing any site construction activities to reduce the sediment load of stormwater runoff from the site. The BMPs included (1) grading active work areas to prevent storm water from running from active work areas to undisturbed areas, (2) installing stormwater control devices such as straw wattles or silt fences around the perimeter of disturbed work areas of the site, (3) covering soil stockpiles with plastic sheeting, (4) covering waste rock in the repository with plastic sheeting, and (5) protecting stream crossings with silt fences and straw wattles. Erosion control (i.e., silt fence) was installed around the disturbed areas of the North Storage Area, the repository, South Storage Area, and the Project Trailer Area.

### 5.4. CONSTRUCTION QUALITY CONTROL AND QUALITY ASSURANCE

In addition to preparing daily activity summaries and tracking the progress of the project, ERRG's site QC Specialist monitored QC of all construction activities. The IQAT, JBR Environmental Consultants, Inc., monitored field QA to ensure work met the requirements of the Forest Service's Removal Design and the intent of the NTCRA. In addition, the IQAT reviewed the QC data and reports for the NTCRA to verify it was being performed in accordance with the plans and was meeting the performance requirements.

A three-phase control system (i.e., preparatory, initial, follow-up) was implemented for all work activities and was monitored by ERRG's QC Specialist, Site Manager, and Site Superintendent. The three phases included preparatory meetings prior to beginning any new work activity, initial meetings at the start of any new work activity, and follow-up meetings periodically during the performance of each of the work activities. [Appendix C](#) provides documentation associated with the QC and QA process for the NTCRA activities. [Appendix D](#) provides the repository geosynthetics QC and QA documentation. [Appendix H](#) contains the red-line record drawings. [Appendix I](#) contains the compaction testing results. [Appendix K](#) provides the submittal log.

The IQAT visited the site at key milestones, including excavation of the repository, installation of subgrade and cover geomembrane, collection of initial representative samples of waste rock, and

collection of confirmation samples from waste rock excavation grids. During subsequent visits, the IQAT observed the following activities:

- Placement of waste rock in the repository
- Covering of the waste rock and capping the repository
- Construction of reclamation features, including log wattles, straw wattles, planting, and seeding of disturbed areas
- Construction of sediment/pH treatment basins, erosion control features, and winterization activities related to the site and haul roads

The NTCRA as documented by this Removal Action Completion Report has been reviewed by the IQAT for compliance with the construction tolerances and removal goals to achieve the level of performance required to meet the RAOs.