

Office of Environmental Management – Grand Junction



Moab UMTRA Project
Moab Site Fugitive Dust Control Plan

Revision 2

August 2018



U.S. Department
of Energy

Office of Environmental Management

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Review and Approval



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8-28-18

Date



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8-27-18

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8/27/18

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Revision History

Revision	Date	Reason for Revision
0	February 2013	Initial issue.
1	May 2017	Changed to a Project-wide document and updates made throughout.
2	August 2018	Updates reflecting Project progress.

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1.0 INTRODUCTION

This Plan complies with Utah Administrative Code Rule R307-205-8, “Emission Standards: Fugitive Emissions and Fugitive Dust, Tailings Piles and Ponds,” which requires owners or operators of an existing tailings operation to take steps to minimize fugitive dust resulting from grading, excavating, depositing, natural erosion or other causes in association with such operation. This Plan describes the engineering and administrative controls used to minimize and control fugitive dust emissions from activities and operations conducted by the U.S. Department of Energy (DOE) Moab Uranium Mill Tailings Remedial Action (UMTRA) Project (Moab site). This site-specific Plan is updated as necessary to reflect dust controls for current and ongoing site activities and operations.

1.1 Site Description

The Moab site is a former uranium ore-processing facility located about 3 miles northwest of Moab in Grand County, Utah (see Figure 1). The Moab site currently encompasses 480 acres and consists of an approximately 130-acre uranium mill tailings pile, haul roads, the hillside and rail load-out areas, the Queue Support Area, a lidding structure, the north and east laydown areas, the Off-pile Area, Administrative Area, and the freshwater pond. This former millsite is located on the western bank of the Colorado River at the confluence with the Moab Wash. The Moab site is bordered on the north, west, and southwest by steep sandstone cliffs. U.S. Highway 191 (US-191) parallels the northern site boundary, and State Route 279 (SR-279) transects the western portion of the property. The Colorado River forms the eastern boundary of the site. The Moab Wash runs northwest to southeast through the site and joins the Colorado River. Figure 2 shows the major features of the Moab site.

1.2 Site History

The Moab millsite was operated under private ownership between 1956 and 1984. Uranium mill tailings from the milling process were disposed of on site in an unlined impoundment. As part of decommissioning activities conducted between 1989 and 1995, an interim cover was placed on the tailings pile. Through Congressional legislation, ownership of the Moab site was transferred to DOE in October 2001. Relocation of the tailings pile and other contaminated materials to an off-site disposal cell began in 2009. Transportation of the materials is primarily by rail.

1.3 Project/Site Information

Name of operation, physical site address, and owner/operator contact information is provided below.

Name of Operation

Moab UMTRA Project: Moab site

Physical Address of Operation

2021 N. US-191, Moab, Grand County, Utah 84532

Owner

U.S. Department of Energy, Grand Junction office
200 Grand Avenue, Suite 500
Grand Junction, Colorado 81501
DOE Federal Cleanup Director: (970) 257-2115

Operator

Remedial Action Contractor (RAC)
North Wind Portage
2021 N. US-191
Moab, Utah 84532
Project Manager: Greg Church (970) 257-2117
Moab Operations/Site Manager: Ken Kisiel (435) 719-2805
On-call Manager (after hours): (970) 361-8335

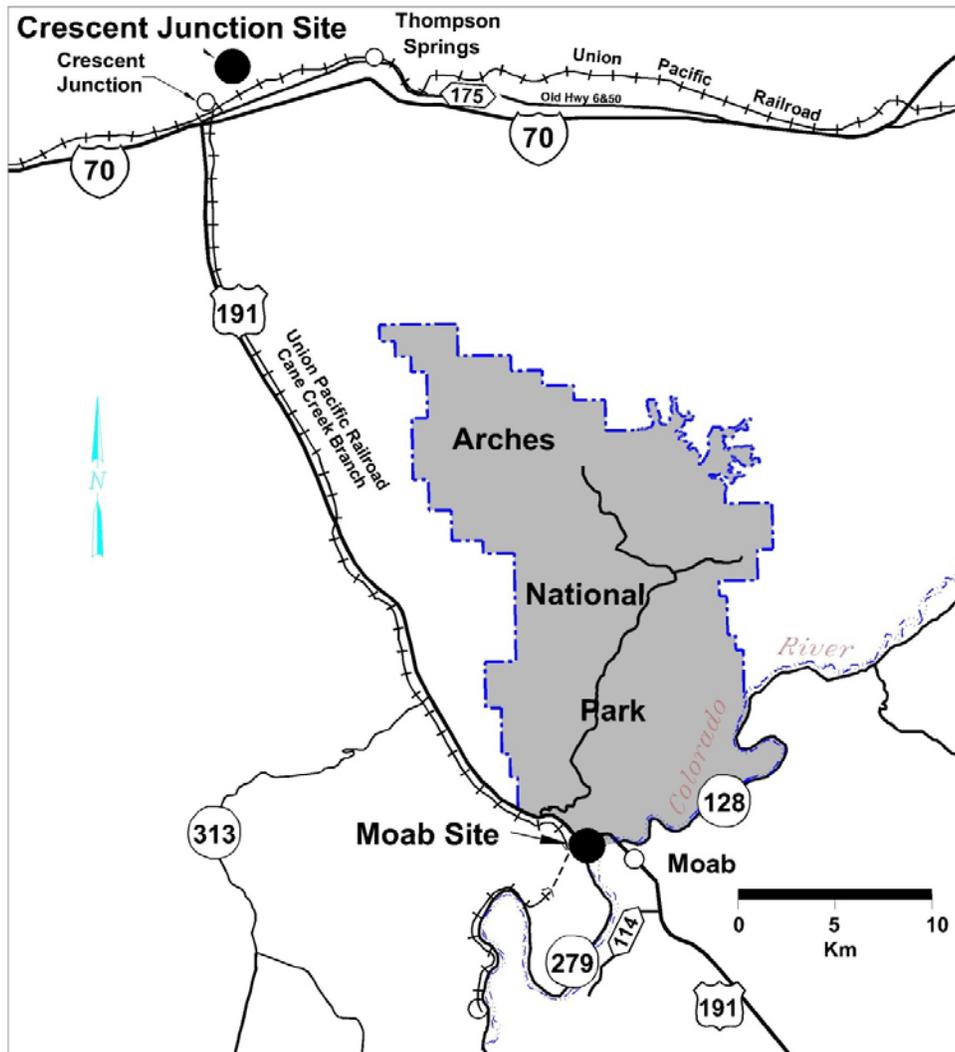


Figure 1. Location of Moab Site

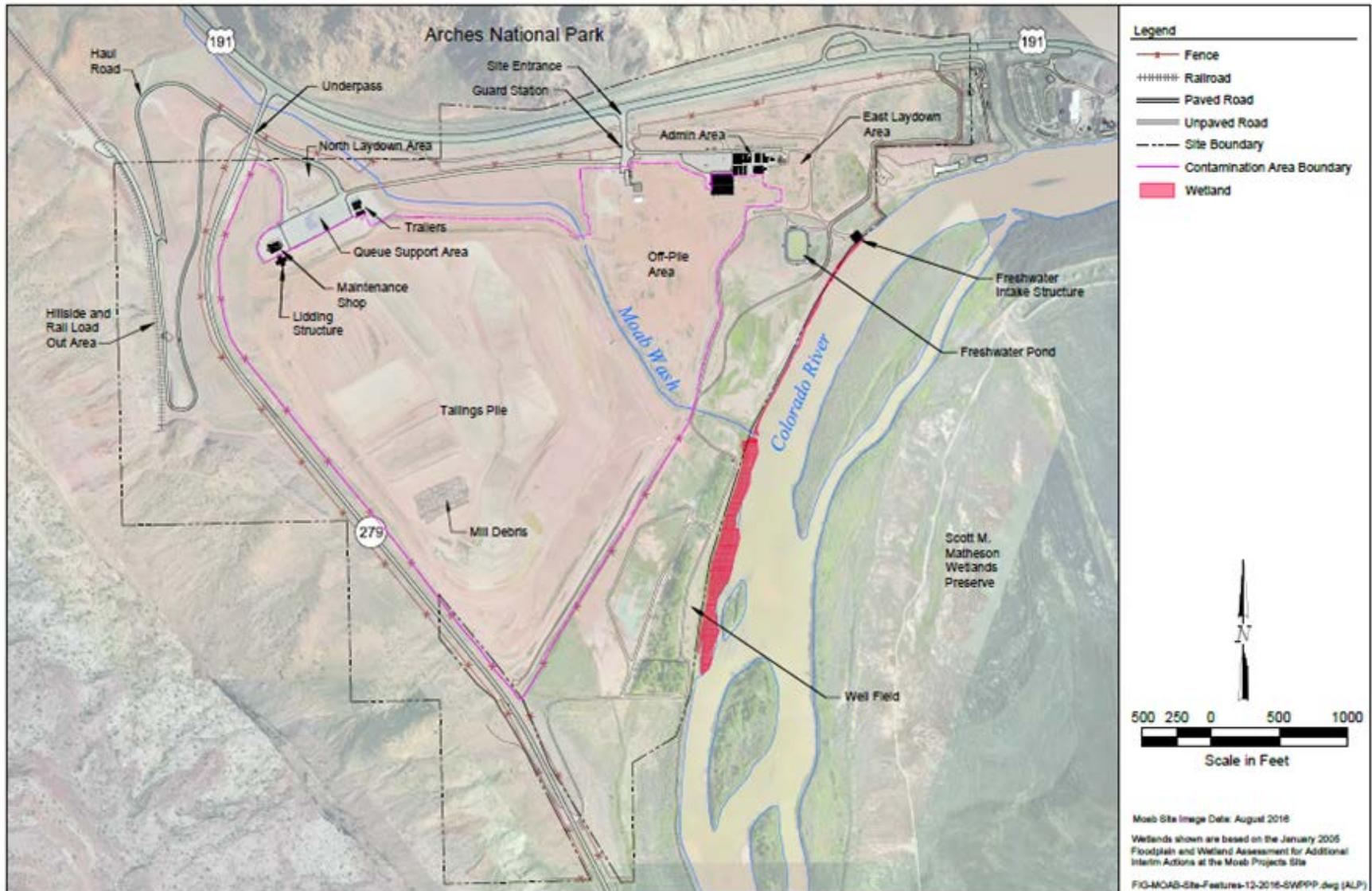


Figure 2. Moab Site Features

1.4 Climate

The semi-arid desert climate of the Moab site is characterized by hot summers and mild to cold winters. The average annual temperature is approximately 57°F. January is the coldest month of the year, with low temperatures averaging 20°F. July is generally the warmest month of the year, with high temperatures averaging 99°F. Temperature extremes have ranged from -24°F in January 1930 to 114°F in July 1989. The relative humidity is low, often less than 20 percent during daytime hours.

The 12-year precipitation average for the Moab site is 8 inches per year. Evaporation greatly exceeds annual precipitation, thus contributing to the likelihood of fugitive dust. Thunderstorms occur about 40 days per year. Prevailing winds in the Moab region are from the southwest.

Two meteorological monitoring stations are located on the Moab site. Wind speed and direction data are used to determine when site-specific action levels have been exceeded, and certain dust controls (e.g., the application of dust suppressants) should be initiated. In addition, personnel certified to read opacity measurements in the state of Utah determine when active dust control measures should be initiated and when specific dust-generating activities (e.g., excavating, hauling, grading) should be discontinued.

2.0 SOURCES OF FUGITIVE DUST

The materials of concern with respect to fugitive dust emissions at the Moab site are uranium mill tailings and disturbed soils that are not stabilized. The majority of the mill tailings are contained within the on-site tailings pile, the footprint of which originally covered approximately 130 acres. The interim cover on the eastern and southern side slopes of the tailings pile primarily consists of sand and silt with low levels of radioactivity.

A description of the on-site activities and site conditions that may contribute to or generate fugitive dust emissions at the Moab site is provided below.

2.1 High-potential Source Areas and Activities

Certain portions of the Moab site are considered high-potential sources of fugitive dust emissions. These areas are characterized by loose, poorly consolidated soils and sediments; poor vegetative cover; or high levels of current or future/anticipated activity or disturbance.

The surface of the tailings pile consists of loosely consolidated soils and, therefore, is considered a high-potential source of fugitive dust emissions. Moab remediation activities involve excavating, conditioning, and loading of tailings material into containers. These activities involve the use of heavy equipment and have the potential to generate high levels of fugitive dust emissions.

Off-pile contaminated areas that have not been remediated but are disturbed through site activities are also high-potential sources for fugitive dust emissions. Off-pile areas disturbed from remediation or construction activities are contoured, seeded, and revegetated as soon as possible. These efforts may involve the use of heavy equipment and may create high potential to generate fugitive dust; however, the duration is relatively short term.

Periodically, site operations involve activities that may temporarily have high potential to produce fugitive dust. For example, the decontamination of equipment in preparation for release off site or for installation of spray-on liners in containers.

Combined, the tailings pile, unremediated disturbed off-pile areas, uncompacted soils and sediments, poor vegetative cover areas, and portions of the Moab site with high levels of activity or disturbance comprise about 34 percent of the total land surface of the Moab site.

2.2 Moderate-potential Source Areas and Activities

Moderate-potential source areas are characterized by more stable soil conditions with typically less levels of activity. These areas of the Moab site (about 8 percent) have varying degrees of vegetative or asphalt cover. Examples of moderate-potential source areas are the off-pile remediation area in the well field, the Moab Wash corridor, the asphalt paved portions of the Queue Support, and Administrative Areas. Site access roads, other than haul roads, located outside of the Contamination Area (CA) are also considered moderate-potential source areas.

2.3 Low-potential Source Areas and Activities

The remainder of Moab site (about 58 percent) is not considered a significant source of fugitive dust emissions due to the limited disturbances and a greater percentage of vegetative, rock, asphalt, or concrete cover present. Examples of low-potential areas include the hillside and rail load-out areas, steep slopes to the north, west, and southwest of the site; US-191 and SR-279 corridors; revegetated and stabilized areas north, east, and southeast of the Administrative Area; remediated off-pile areas, and the freshwater pond and intake structure.

DOE performs various types of environmental monitoring and groundwater remediation activities at the Moab site. Most of these activities are non-intrusive and result in little to no fugitive dust emissions.

3.0 FUGITIVE DUST EMISSION CONTROLS

DOE is responsible for monitoring and controlling fugitive dust emissions from the Moab site until all contaminated soils are removed, and disturbed areas have been stabilized. Table 1 outlines the applicable regulatory limit/action level, method of determination, and the appropriate response actions to control fugitive dust emissions at the Moab site.

Table 1. Fugitive Dust Limit/Action Level and Response Actions

Limit/Action Level	Method of Determination	Response Actions
Opacity cannot exceed 20 percent	Visual observation by EPA Method 9	Initiate application of water and suspend dust-generating activities.
Sustained wind speeds exceeding 20 mph	Real-time meteorological monitoring	Monitor visible emissions, alter or suspend dust-generating activities if necessary to maintain 20 percent or less opacity. If needed, initiate application of water.

EPA = U.S. Environmental Protection Agency

The response actions described below help minimize and control dust emissions at the Moab site to the most practical extent possible. Dust controls are implemented on a graded approach depending on the potential for generation of fugitive dust. No dust controls are in place or planned for the low-potential source/activity areas.

Watering/Chemical Stabilization

Application of dust suppressants by water trucks is the main dust control measure used throughout the Moab site. Both contaminated groundwater inside the CA and fresh water outside the CA have been successfully used as the primary dust control agents. The high total dissolved solids in the contaminated groundwater and some of the fresh water has an added benefit of preventing dust from forming by developing a crust on the soil surface.

Use of various chemical dust suppressants (e.g., surfactants, salt-based soil conditioners) is an option, and these products would be applied in accordance with their recommended end uses. Before application, site personnel shall evaluate if use of the dust suppressant could interfere with other site monitoring activities or cause harm to the environment (e.g., runoff into suitable fish habitat).

Vegetative Covers

Off-pile areas disturbed from remediation or construction activities are contoured, seeded, and revegetated as soon as possible. The vegetative cover stabilizes the soil, thus reducing the impacts of wind and storm water.

Synthetic Covers

To help stabilize disturbed soils on the Moab site, erosion control matting has been placed along the Moab Wash corridor, on portions of the hillside area above and below the rail bench, and in areas north and east of the Administrative Area. Asphalt was placed on the Queue Support Area, employee parking lots, uphill and downhill haul roads, and the rail load-out area to reduce dust.

Container Rinse System

A container rinse system located in the Queue Support Area is used to clean the outside of lidded residual radioactive material containers before transfer to radiological survey racks. This practice minimizes the potential for tracking or spreading sediment or contaminants out of the CA.

Decontamination of Equipment

Decontamination of equipment is performed on the decon pad located in the northeastern portion of the CA within a radiologically controlled area prior to off-site release. This practice minimizes the potential for tracking sediment or contaminants out of the CA.

Wind Breaks

A row of cottonwood trees was planted along US-191 to enhance aesthetics of the Administrative Area from passersby. This tree row also provides a wind break, which reduces wind speed and, therefore, reduces dust blowing off site.

Traffic Speed

Traffic speed is restricted to an appropriate level on all designated roads. This helps limit the generation of fugitive dust.

Off-Hours Dust Control

This Plan is in effect during all hours of operation at the Moab site. During non-business hours, there are no dust-generating activities. However, if high winds are measured at the on-site meteorological station, site personnel evaluate vulnerable areas and implement controls as appropriate to reduce off-hours emissions.

4.0 REFERENCES

40 CFR 60 (Code of Federal Regulations) Appendix A-4, "EPA Reference Method 9, "Visual determination of the opacity of emissions from stationary sources."

UAC R307-205-8 (Utah Administrative Code), "Emission Standards; Fugitive Emissions and Fugitive Dust; Tailings Piles and Ponds."