[6450-01-P]

DEPARTMENT OF ENERGY

Record of Decision for the Remediation of the Moab Uranium Mill Tailings, Grand and San Juan Counties, Utah

AGENCY: Office of Environmental Management, U.S. Department of Energy

ACTION: Record of Decision

SUMMARY: The U.S. Department of Energy (DOE) announces its decision to implement the preferred alternatives identified in the *Remediation of the Moab Uranium Mill Tailings, Grand and San Juan Counties, Utah, Final Environmental Impact Statement* (DOE/EIS-0355) (Final EIS). By implementing the preferred alternatives, DOE will remove the uranium mill tailings and other contaminated material from the Moab milling site and nearby off-site properties (vicinity properties) and relocate them at the Crescent Junction site, using predominantly rail transportation. DOE will also implement active ground water remediation at the Moab milling site. In reaching this decision, DOE considered the potential environmental impacts, costs, and other implications of both on-site and off-site disposal. For off-site disposal, DOE considered three alternative sites in Utah (Crescent Junction, Klondike Flats, and the White Mesa Mill) and three transportation modes (truck, rail, and slurry pipeline).

DOE identified off-site disposal as its preferred alternative for the disposal of mill tailings, primarily because of the uncertainties related to long-term performance of a

capped pile at the Moab site. Issues, such as the potential for river migration and severe flooding contribute to this uncertainty. The Crescent Junction site was identified as the preferred off-site disposal location, rather than Klondike Flats or White Mesa Mill, because Crescent Junction has the longest isolation period (time it would take for contaminants to reach the ground water); the lowest land-use conflict potential; access to existing rail lines without crossing U.S. Highway 191; the shortest haul distance from the rail rotary dump into the disposal cell, reducing the size of the radiological control area; and flat terrain, making operations easier and safer. DOE identified rail as the preferred mode of transportation, because compared to truck transportation, rail has a lower accident rate, lower potential impacts to wildlife, and lower fuel consumption. In addition, compared to a slurry pipeline, rail transportation would have a much lower water demand and would avoid landscape scars caused by pipeline construction, which could create moderate contrasts in form, line, color, and texture with the surrounding landscape.

This Record of Decision (ROD) has been prepared in accordance with the regulations of the Council on Environmental Quality (Title 40 *Code of Federal Regulations* [CFR] Parts 1500–1508) for implementing the National Environmental Policy Act (NEPA) and DOE's NEPA Implementing Procedures (10 CFR Part 1021). The Final EIS also includes a Floodplain and Wetlands Assessment and a Floodplain Statement of Findings in compliance with DOE's Floodplain and Wetland Environmental Review requirements (10 CFR Part 1022).

ADDRESSES: Copies of the Final EIS and this ROD may be requested by calling 1-800-637-4575, a toll-free number, or by contacting Mr. Donald Metzler, Moab Federal Project Director, U.S. Department of Energy, by mail: 2597 B ¾ Road, Grand Junction, Colorado, 81503; by fax: 1-970-248-7636; by phone: 1-800-637-4575 or 1-970-248-7612; or e-mail: moabcomments@gjo.doe.gov. The Final EIS is also available, and this ROD will be available, on the DOE NEPA website, at http://www.eh.doe.gov/nepa/documents.html and on the project website at http://gj.em.doe.gov/moab/.

FOR FURTHER INFORMATION CONTACT: For further information on the *Remediation of the Moab Uranium Mill Tailings, Grand and San Juan Counties, Utah, Final Environmental Impact Statement*, contact Donald Metzler, as indicated in the ADDRESSES section above. For general information on the DOE NEPA process, contact Carol Borgstrom, Director, Office of NEPA Policy and Compliance, EH-42, U.S. Department of Energy, 1000 Independence Avenue, SW, Washington, DC 20585; telephone 1-202-586-4600, or leave a message at 1-800-472-2756.

SUPPLEMENTARY INFORMATION: In the Final EIS, DOE considers the environmental impacts associated with the disposal of uranium mill tailings currently on the Moab milling site and on vicinity properties at the Moab milling site or at one of three alternative sites in Utah: Crescent Junction, Klondike Flats, or the White Mesa Mill. The Final EIS also considers three transportation modes— truck, rail, and slurry pipeline—for

moving the tailings from the Moab site to the off-site alternatives. In addition, the EIS considers active ground water remediation at the Moab milling site to address ground water contamination that resulted from past mill operations.

Because the activities assessed in the Final EIS could affect Federal, state, and private lands and pass through several local and county jurisdictions, 12 agencies and municipalities worked with DOE as cooperating agencies in the preparation of the EIS. These cooperating agencies are the Bureau of Land Management (BLM); National Park Service; U.S. Army Corps of Engineers; U.S. Environmental Protection Agency (EPA); U.S. Fish and Wildlife Service (USF&WS); U.S. Nuclear Regulatory Commission (NRC); the State of Utah; the Ute Mountain Ute Tribe; Grand County; San Juan County; the City of Blanding; and the Community of Bluff. Because the Crescent Junction site is currently on land managed by BLM, the Department of the Interior will complete a Public Land Order, based upon DOE's application for land withdrawal, this ROD, and the Final EIS, that will transfer jurisdiction of the Crescent Junction site to DOE. BLM will, as necessary, also grant permits for removal of borrow materials (such as soil, sand, gravel, and rock) from BLM lands.

Background: In 1978, Congress passed the Uranium Mill Tailings Radiation Control Act (UMTRCA), 42 *United States Code*, (U.S.C.) 7901 et seq., in response to public concern regarding potential health hazards of long-term exposure to radiation from uranium mill tailings. Title I of UMTRCA required DOE to establish a remedial action program and authorized DOE to stabilize, dispose of, and control uranium mill tailings and other

contaminated material (called residual radioactive material [RRM]), at 22 uranium-ore processing sites and associated vicinity properties. Vicinity properties are those off-site areas near the Moab milling site that can be confirmed to be contaminated with RRM. UMTRCA also directed EPA to promulgate cleanup standards, which are now codified at 40 CFR Part 192, "Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings," and directed NRC to oversee the cleanup and license the completed disposal cells. In October 2000, Congress enacted the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001 (Public Law 106-398), amending UMTRCA Title I, to give DOE responsibility for remediation of the Moab milling site, in accordance with UMTRCA Title I (DOE's authority to perform surface remedial action at eligible uranium milling sites and vicinity properties expired in 1998 for all other sites.).

The Moab milling site lies approximately 30 miles south of Interstate 70 (I-70) on U.S. Highway 191 (US-191) in Grand County, Utah. The 439-acre milling site is located about 3 miles northwest of the city of Moab on the west bank of the Colorado River at the confluence with the Moab Wash. The milling site is bordered on the north and southwest by steep sandstone cliffs. The Colorado River forms the eastern boundary of the milling site. US-191 parallels the northern site boundary, and the State Road 279 (SR-279) transects the west and southwest portion of the property. Arches National Park has a common property boundary with the Moab milling site on the north side of US-191, and the park entrance is located less than 1 mile northwest of the milling site. Canyonlands National Park is located about 12 miles to the southwest.

At the Moab milling site, a former uranium-ore processing facility was owned and operated by the Uranium Reduction Company and later by the Atlas Minerals Corporation (Atlas) under a license issued by NRC. The mill ceased operations in 1984 and has been dismantled except for one building that is currently used by DOE. During its years of operation, the facility accumulated uranium mill tailings, which are naturally radioactive residue from the processing of uranium ore. The uranium mill tailings are located in a 130-acre unlined pile that occupies much of the western portion of the milling site. The top of the tailings pile averages 94 feet above the Colorado River floodplain and is about 750 feet from the Colorado River. The pile was constructed with five terraces and consists of an outer compact embankment of coarse tailings, an inner impoundment of both coarse and fine tailings, and an interim cover of soils taken from the milling site outside the pile area. Debris, from dismantling the mill buildings and associated structures, was placed in an area at the south end of the pile and covered with contaminated soils and fill. Radiation surveys indicate that some soils outside the pile also contain radioactive contaminants at concentrations in excess of those allowed in the EPA standards in 40 CFR Part 192.

In addition to the contaminated materials currently at the Moab milling site, tailings may have been removed from the Moab milling site and used as construction or fill material at homes, businesses, public buildings, and vacant lots in and near Moab. As a result, these vicinity properties may have elevated concentrations of radium-226 that exceed the maximum concentration limits in 40 CFR Part 192. In accordance with the

requirements of UMTRCA, DOE is obligated to remediate those properties where contaminant concentrations exceed the maximum concentration limits in 40 CFR Part 192, along with the Moab milling site. DOE estimates the total residual radioactive material at the Moab milling site and vicinity properties has a total mass of approximately 11.9 million tons and a volume of approximately 8.9 million cubic yards.

Ground water in the shallow alluvium at the site was contaminated by ore-processing operations. The Colorado River, adjacent to the site, has been affected by site-related contamination, mostly due to ground water discharge. The primary contaminant of concern in the ground water and surface water is ammonia. Other contaminants of potential concern are manganese, copper, sulfate, and uranium. DOE is currently conducting interim ground water remedial actions.

Previous NEPA Review

In September 1998, the former Moab milling site owner, Atlas, filed for bankruptcy. The bankruptcy court appointed NRC and the Utah Department of Environmental Quality as beneficiaries of a bankruptcy trust created in March 1999, to fund future reclamation and site closure. Later, the beneficiaries selected PricewaterhouseCoopers to serve as trustee. To support its remediation decision-making, NRC issued the Final Environmental Impact Statement Related to Reclamation of the Uranium Mill Tailings at the Atlas Site, Moab, Utah (NUREG-1531, March 1999), which proposed stabilizing the tailings impoundment (pile) in place.

NRC received numerous comments both in favor of and opposed to the proposed action. However, NRC's EIS did not address ground water compliance or remediation of vicinity properties. NRC documented USF&WS concerns regarding the effects of contaminants reaching the Colorado River; specifically, the effects on four endangered fish species and critical habitat. (In 1998, USF&WS had concluded in a Biological Opinion that continued leaching of existing concentrations of ammonia and other constituents into the Colorado River would jeopardize the razorback sucker and Colorado pikeminnow.)

In accordance with Public Law 106-398, DOE acquired the Moab milling site in 2001 to facilitate remedial action. DOE's EIS built upon the analyses and the alternatives evaluated in NRC's EIS, and expanded the scope of the EIS to include remediation of ground water and vicinity properties. During this decision-making process, to minimize potential adverse effects to human health and the environment in the short term, former site operators, custodians, and DOE have instituted environmental controls and interim actions at the Moab milling site. Controls have included: storm water management; dust suppression; pile dewatering activities; and placement of an interim cover on the tailings, to prevent movement of contaminated windblown materials from the pile. Interim actions have included: restricting site access; monitoring ground water and surface water; and managing and disposing of chemicals, to minimize the potential for releases to the Colorado River.

DOE's EIS Process

DOE began the preparation of an EIS to support its decision-making process for the Moab milling site with a Notice of Intent (NOI) published on December 20, 2002, in the *Federal Register* (67 FR 77970). Public scoping meetings were held in four Utah cities in January 2003, during the scoping comment period, which ended February 14, 2003. After considering public comments and input from the 12 cooperating agencies, DOE issued the Draft EIS in November 2004. During a 90-day public comment period that ended on February 18, 2005, DOE conducted four public hearings on the Draft EIS in Moab, Green River, Blanding, and White Mesa, Utah. In preparing the Final EIS, DOE considered over 1,600 comments that it received, including late comments. In April 2005, DOE announced its preferred alternatives of off-site disposal, using predominantly rail transport to the Crescent Junction, Utah site and active ground water remediation. The Final EIS was issued in July 2005.

The Proposed Action

DOE is proposing to clean up surface contamination and implement a ground water compliance strategy to address contamination that resulted from historical uranium-ore processing at the Moab milling site pursuant to NEPA, 42 U.S.C. 4321 et seq. and UMTRCA, 42 U.S.C. 7901 et seq.

Alternatives

DOE analyzed the following alternatives in the EIS:

No Action: Under the No Action alternative, DOE would not remediate contaminated material, either on the site or at vicinity properties. The existing tailings pile would not be covered and managed in accordance with standards in 40 CFR Part 192. No short-term or long-term site controls or activities to protect human health and the environment would be continued or implemented. Public access to the site is assumed to be unrestricted. All site activities, including operation and maintenance, and ongoing interim ground water remediation activities, would cease. A compliance strategy for contaminated ground water beneath the site would not be developed, in accordance with standards in 40 CFR Part 192. No institutional controls would be implemented to restrict use of ground water, and no long-term stewardship and maintenance would take place. Because no activities would be budgeted or scheduled at the site, no further initial, interim, or final remedial action costs would be incurred. DOE recognizes that this scenario would be highly unlikely; however, it was included as a part of the EIS analyses, to provide a basis for comparison to the action alternatives assessed in the EIS, as required by NEPA.

Disposal alternatives

***On-site Disposal*:** The on-site disposal alternative would involve placing contaminated site materials and materials from vicinity properties on the existing tailings

pile and stabilizing and capping the tailings pile in place. The cap would be designed to meet EPA standards for radon releases. Final design and construction of the cap would meet the requirements for disposal cells under applicable EPA standards (40 CFR Part 192). Flood protection would be constructed along the base of the pile, and cover materials for radon attenuation and erosion protection would be brought to the site from suitable borrow areas.

***Off-site Alternatives*:** DOE evaluated three sites in Utah for off-site disposal: Crescent Junction; Klondike Flats; and the White Mesa Mill.

Crescent Junction. The Crescent Junction site is approximately 30 miles northwest of the Moab milling site and 20 miles east of the city of Green River, just northeast of the Crescent Junction interchange on Interstate 70 and US Highway 191. The site consists of undeveloped land administered by BLM.

Klondike Flats. Klondike Flats is a low-lying plateau about 18 miles northwest of the Moab milling site, just northwest of the Canyonlands Field Airport and south-southeast of the Grand County landfill. The Klondike Flats site consists of undeveloped lands administered by BLM and the State of Utah School and Institutional Trust Lands Administration.

White Mesa Mill. The White Mesa Mill site is approximately 85 miles south of the Moab site, 4 miles from the Ute Mountain Indian Reservation and the community of White Mesa, and 6 miles from Blanding in San Juan County, Utah. This commercial, state-licensed, uranium mill is owned by the International Uranium (USA) Corporation and disposes of processed tailings materials on-site in lined ponds. It has

been in operation since 1980. The facility would need a license amendment from the State of Utah, before it could accept material from the Moab milling site.

***Off-site Disposal Transportation Alternatives*:** For each of the off-site disposal alternatives, DOE evaluated three modes of transporting RRM from the Moab milling site: truck, rail, and slurry pipeline.

Truck Transport. Trucks would use US-191, as the primary transportation route, for hauling contaminated materials and oversized debris to the selected disposal site. Trucks would be used exclusively for hauling borrow materials to the selected disposal site. Construction of highway entrance and exit facilities would be necessary to safely accommodate the high volume of traffic currently using this highway.

Rail Transport. An existing rail line runs from the Moab milling site north along US-191, and connects with the main east-west line near I-70. The Crescent Junction and Klondike Flats sites could be served from this rail line with upgrades and additional rail sidings. There is no rail access from the Moab milling site to the White Mesa Mill site. Construction of a rail line from the Moab milling site to the White Mesa Mill site was not analyzed in detail, because of the technical difficulty, potential impacts, and high cost.

Slurry Pipeline. This transportation mode would require construction of a new buried pipeline from the Moab site to the selected disposal site and a buried water line to recycle the slurry water back to the Moab milling site for reuse in the pipeline.

Ground Water Remediation Alternative

Active ground water remediation would be implemented under both the on-site and off-site disposal alternatives. DOE's proposed action for ground water at the Moab milling site is to apply ground water supplemental standards, in accordance with 40 CFR Part 192, Subpart C, and implement an active remediation system to intercept and control discharge of contaminated ground water to the Colorado River. Because of its naturally high salt content, the uppermost aquifer at the Moab site is not a potential source of drinking water. The active remediation system would extract and treat ground water, while natural processes act on ground water to decrease contaminant concentrations to meet long-term protective ground water cleanup goals. Active remediation would cease after long-term goals were achieved. Conceptually, the same system would be installed and operated at the Moab milling site regardless of whether the on-site or off-site disposal alternative was implemented.

Analysis of Environmental Impacts

The Final EIS assessed environmental impacts in detail, including impacts to physical, biological, socioeconomic, cultural, and infrastructure resources that could occur under: the on-site disposal alternative; the off-site disposal alternative; three transportation modes; and the No Action alternative. The impact analyses in the Final EIS determined that there were many resource areas such as air quality, terrestrial ecology, land use, noise and vibration, visual, human health, infrastructure, waste management, and socioeconomics, in which the impacts would neither be significant nor violate any

standards, or for which there would be little difference among alternatives and, therefore, these impact areas were not discriminators among the alternatives. This ROD focuses on the potential impacts (both adverse and beneficial) that discriminate among the alternatives and made the most significant contribution to DOE's decision-making. These impact areas include: ground water, surface water, aquatic ecology, floodplains, threatened or endangered species, cultural resources, traffic, and environmental justice. For the detailed impact analyses, the reader is referred to the Final EIS on the web pages listed above under **Addresses**.

Ground Water. Ground water remediation would be implemented under both the on-site and off-site disposal alternatives. Under the on-site and off-site disposal alternatives, supplemental standards would be applied to protect human health. Supplemental standards would include institutional controls to prohibit the use of ground water for drinking water. Under the on-site disposal alternative, the tailings pile would be a continuing source of contamination that could maintain contaminant concentrations at levels above background concentrations in the ground water and, therefore, potentially require the application of supplemental standards and institutional controls in perpetuity to protect human health. Under the off-site disposal alternatives, contaminant concentrations in the ground water, under the Moab milling site, would return to background levels after an estimated 150 years, by which time active ground water remediation would have been completed, and institutional controls would no longer be needed. The tailings pile would not be a continuing source of contamination to ground water at the Moab milling site under the off-site disposal alternative.

However, under the on-site disposal and No Action alternatives, natural basin subsidence could result in permanent tailings contact with the ground water in an estimated 7,000 to 10,000 years, at which time surface water concentrations could temporarily revert to levels that are not protective of aquatic species in the Colorado River.

In addition, under the No Action alternative, ground water beneath the Moab milling site would remain contaminated, would pose an increased risk to human health, and would continue in perpetuity to discharge contaminants to the surface water at concentrations that would not be protective of aquatic species.

Surface Water and Aquatic Ecology. Under the No Action alternative, surface water contamination and nonprotective river water quality would continue in perpetuity. DOE estimates that under all action alternatives, contamination of the Colorado River from ground water discharge would be reduced to levels that would be protective of aquatic species within 5 to 10 years, after implementation of ground water remediation because of the interception and containment of the contaminated ground water plume. DOE also anticipates that contaminant concentrations in surface water that are protective of aquatic species in the Colorado River could be maintained, under all action alternatives, for the 200- to 1,000-year time frame specified in EPA's ground water standards (40 CFR Part 192). Under the off-site disposal alternative, removal of the pile coupled with the estimated 75 years of active ground water remediation would result in

permanent protective surface water quality. Under the on-site disposal alternative, active ground water remediation would continue for up to an estimated 80 years.

Floodplains. A Colorado River 100- or 500-year flood could release additional contamination to ground water and surface water under the on-site disposal or No Action alternatives. However, under the on-site disposal alternative, the increase in ground water and river water ammonia concentrations, due to floodwaters inundating the pile, would be minor, and the impact on river water quality would rapidly decline over an estimated 20-year period. Under the No Action alternative, lesser flood events could also result in the release of contaminated soils to the Colorado River, as sediment runoff. In contrast to the on-site disposal and No Action alternatives, the off-site disposal alternative presents no risk of these recurrences of surface water contamination at the Moab site because the tailings pile would be removed to an area not located in a floodplain.

In accordance with its regulations in 10 CFR Part 1022, DOE has prepared the *Floodplain and Wetlands Assessment for Remedial Action at the Moab Site*. This assessment and a Floodplain Statement of Findings are appended to the Final EIS.

Threatened or Endangered Species. In compliance with the Endangered Species Act, DOE prepared a Biological Assessment that addressed all alternatives, and USF&WS prepared a Biological Opinion for the Crescent Junction off-site disposal and active ground water remediation alternatives. The Biological Assessment and Biological Opinion are appended to the Final EIS. In its Biological Opinion, USF&WS determined

that disposal at the Crescent Junction site and active ground water remediation at the Moab site "may affect," but is "not likely to adversely affect," the threatened bald eagle, the endangered southwestern willow flycatcher, the threatened Mexican spotted owl, the endangered Black-footed ferret, the candidate yellow-billed cuckoo, and the candidate Gunnison sage grouse. In addition, USF&WS determined that there would be no effect for the threatened Jones' cycladenia, the threatened Navajo sedge, and the endangered clay phacelia, as these species are not known to occur in the project areas.

After reviewing the current status of the Colorado River fish, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, the USF&WS's Biological Opinion concludes that the Crescent Junction and active ground water alternatives are not likely to jeopardize the continued existence of the Colorado pikeminnow, humpback chub, bonytail, and razorback sucker and are not likely to result in destruction or adverse modification of critical habitat. The USF&WS concludes that the proposed action to dispose of tailings (i.e., surface contamination) off site would reduce negative effects associated with the ongoing contamination of the Colorado River near the Moab site and would eliminate the potential for future catastrophic events associated with river flooding and river migration. The proposed action for ground water remediation at the Moab site would address the effects of ground water contaminants impacting endangered fish in the Colorado River. There would be adverse effects associated with the current levels of ground water contamination until ground water remediation is fully implemented, assuming the effects are not minimized by existing interim actions. The USF&WS has determined that the amount of "take" that

is occurring in the nearshore habitats will not jeopardize the Colorado River fish. "Take" is defined by the Endangered Species Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct."
In its Incidental Take Statement, the USF&WS is allowing incidental take of Colorado River fish associated with exposure to nonprotective concentrations of contaminants in nearshore habitats along the north bank of the Colorado River at and downstream of the Moab site for 10 years from finalization of the Biological Opinion. "Incidental take" means that as a result of DOE's actions there will be an allowable "take" of protected fish.

Cultural Resources. Only the Moab site and White Mesa Mill site have been field-surveyed; however, cultural resources would probably be adversely affected under all the action alternatives. The numbers of potentially affected cultural resources would vary significantly among the action alternatives. The on-site disposal alternative would have the least effect on cultural resources, potentially affecting 4 to 11 sites eligible for inclusion in the National Register of Historic Places. The White Mesa Mill slurry pipeline alternative would have the greatest adverse effect on cultural resources, potentially affecting up to 121 eligible cultural sites. The Klondike Flats alternative could adversely affect a maximum of 35 (rail) to 53 (pipeline) eligible sites, and the Crescent Junction alternative could adversely affect a maximum of 11 (rail) to 36 (pipeline) eligible sites.

A minimum of 10 to 11 traditional cultural properties would be potentially affected under the White Mesa Mill truck or slurry pipeline alternatives, whereas no such

properties would be affected by the other alternatives. (The term “traditional cultural properties” can include properties associated with traditional cultural practices, ceremonies, and customs.) Mitigation of the potential impacts to cultural sites and traditional cultural properties under the White Mesa Mill alternative would be extremely difficult given the density and variety of these resources, the importance attached to them by tribal members, and the number of tribal entities that would be involved in consultations.

Traffic. All the proposed action alternatives would result in increased traffic on local roads and US-191. Among the three off-site disposal locations, truck transportation to the White Mesa Mill site would represent the most severe impact to traffic in central Moab, an area that the Utah Department of Transportation currently considers to be highly congested. Transportation of contaminated materials from the Moab milling site to the White Mesa Mill site would result in a 127 percent increase in average annual daily truck traffic through Moab. In contrast, if the tailings were trucked to the Klondike Flats or Crescent Junction sites, or if either the rail or slurry pipeline transportation modes were implemented for any of the off-site disposal locations, there would be only a 7 percent increase in truck traffic through central Moab from shipments of vicinity property materials under all action alternatives, and only a 2 to 3 percent increase from shipments of borrow materials for the on-site disposal alternative or for off-site disposal at the Klondike Flats or Crescent Junction locations. All alternatives would also result in an overall increase in the average annual daily truck traffic on US-191, both north and south of Moab, from shipments of contaminated material and borrow material. These impacts

would be most severe with the off-site truck transportation mode, which would increase average annual daily truck traffic on US-191 by 95 percent for the Klondike Flats or the Crescent Junction alternative and by 65 to 186 percent for the White Mesa Mill alternative, depending on the segment of US-191.

In comparison, the on-site disposal alternative and the rail or pipeline off-site alternatives would increase average annual daily truck traffic on US-191 only by 7 percent. DOE estimates that less than one traffic fatality would occur for all alternatives and transportation modes, with the exception of truck transportation to White Mesa Mill, for which modeling predicts that 1.3 traffic fatalities would occur.

Environmental Justice. Disproportionately high and adverse impacts to minority and low-income populations would occur under the White Mesa Mill off-site disposal alternative (truck or slurry pipeline transportation) as a result of unavoidable adverse impacts to at least 10 to 11 potential traditional cultural properties located on and near the White Mesa Mill site, the proposed White Mesa Mill pipeline route, the White Mesa Mill borrow area, and the Blanding borrow area. Moreover, if the White Mesa Mill alternative were implemented, it is likely that additional traditional cultural properties would be located and identified during cultural studies.

The sacred, religious, and ceremonial sites already identified as traditional cultural properties are associated with the Ute, Navajo, and Hopi cultures and people. Currently, there are no known traditional cultural properties at any other site, although

the potential for their being identified during cultural studies and consultations ranges from low to high, depending on the site and mode of transportation. The impacts to all other resource areas analyzed in the EIS (for example, transportation or human health) would not represent a disproportionate adverse impact to minority and low-income populations under any alternative.

Cumulative Impacts. The on-site and off-site disposal locations under consideration are located in rural areas with no other major industrial or commercial centers nearby. No past, present, or reasonably foreseeable future actions are anticipated to result in cumulative impacts when considered with the alternatives assessed in this EIS. However, seasonal tourism in and around Moab, and to a lesser extent at the off-site disposal locations, could have a cumulative impact on traffic congestion in central Moab, especially under the truck transportation mode, in which truck traffic would increase by over 100 percent.

Environmentally Preferred Alternative

DOE has identified off-site disposal at the Crescent Junction site using rail transportation and active ground water remediation as the environmentally preferred alternatives. The Crescent Junction site has the longest (over 170,000 years) isolation period (time it would take for contaminants to reach the first aquifer); the lowest land-use conflict potential; and the greatest distance from the public. Rail transportation is environmentally preferred over truck because of fewer conflicts with existing highway uses, lower emissions and fuel demands, and reduced likelihood of wildlife impacts; and

more favorable than slurry pipeline because of the significantly reduced water demand and reduced impact area; a rail line is already available, and a slurry pipeline would need to be constructed.

In comparison, although the Klondike Flats site provides significant isolation (over 25,000 years) from ground water, use of the site would require construction of a new public access road parallel to Blue Hills Road and a 1- to 4-mile truck haul road that would traverse the steep bluffs (20 to 30 percent grade) north of Blue Hills Road. The truck haul road would require radiological controls from a rail spur to the disposal cell site. These actions would be adjacent and visible to public access, could temporarily adversely affect recreational use of the local area, and could cause visual impacts to users of the northern areas of Arches National Park.

Of the three alternative off-site locations, the White Mesa Mill alternative would require the greatest distance for transportation; would have the greatest potential for adversely affecting cultural resources and traditional cultural properties at the site and along a slurry pipeline corridor; and would have the shortest isolation period (3,600 to 7,700 years to reach springs and seeps). Implementation of that alternative using truck transportation would cause extensive adverse traffic impacts in the cities of Moab, Monticello, and Blanding.

Active ground water remediation is environmentally preferred over the No Action alternative because the No Action alternative would not mitigate or eliminate the ongoing

impacts to surface water quality and, subsequently, to aquatic species, and in the opinion of the USF&WS would violate the Endangered Species Act by jeopardizing the continued existence of protected fish species in the Colorado River. Whereas, as discussed in the section on threatened or endangered species, active ground water remediation would mitigate ongoing impacts from past mill operations and, combined with off-site disposal, would ultimately eliminate future risks to the Colorado River and aquatic species.

Comments on the Final EIS

DOE received comments on the Moab Final EIS from the State of Utah Representative Jim Matheson, EPA, Jean Binyon on behalf of the Utah Chapter Sierra Club, Jerry McNeely on behalf of the citizens of Grand County, Utah, and the Grand County Council, and Susan Breisch of San Diego, California. All commentors expressed support for DOE's preferred alternative identified in the Final EIS.

EPA stated that the Crescent Junction disposal alternative "has the least environmental and cultural impact of any of the alternatives considered. The stable geologic and surface conditions at the Crescent Junction alternative will provide isolation of these tailings without public health risks for the long-term." And, "…we appreciate that DOE has fully considered the benefits of the Crescent Junction site, using rail transport, which should provide a secure geologic setting that offers the best opportunity for long-term public health and environmental protection."

Jean Binyon commented, “You are to be congratulated on the careful consideration and thoughtful responses you gave to the large volume of comments received.” Jerry McNeely commented, “The Department of Energy’s position in the final EIS is evidence that the DOE has listened to our concerns and concurs with us.”

Susan Breisch commented, “With few exceptions, the document…was clear for a general reader.” Ms. Breisch, however, questioned a reference in the EIS to a one time $3,800 payment by DOE as a water depletion fee. As explained in more detail in Section 4.1.6.1 of the Final EIS, in accordance with the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin, activities that withdraw water from the Colorado River make a one time contribution of $10 per acre-foot of water used based on the average annual depletion during a project. This fee helps support the activities necessary to recover endangered fish in the Colorado River. The $3,800 contribution is an estimate based on the projected water use associated with the conceptual design of the preferred alternatives assessed in the Final EIS. DOE will work closely with the USF&WS during the finalization of the project design and the determination of project water needs. Subsequently, DOE’s actual contribution amount will be determined and the appropriate funding transferred to the Recovery Program.

Decision

DOE will remove RRM from the Moab mill tailings site and vicinity properties located within the vicinity property inclusion area identified in the Final EIS and use the existing rail lines and extensions to existing sidings to ship the materials to a newly constructed disposal cell at Crescent Junction. Truck shipments will be necessary for some oversized material. Borrow materials needed to construct the disposal cell will be extracted from one or more of the borrow area sites assessed in the Final EIS. Disposal cell design features will be developed after issuance of this ROD, published in a Remedial Action Plan, and approved by the NRC.

DOE will also continue and expand as necessary its ongoing active remediation of contaminated ground water at the Moab site. As an interim action, DOE began limited ground water remediation that involves extraction of contaminated ground water from on-site remediation wells and evaporation of the extracted contaminated water in a lined pond. An expanded ground water remediation program may use evaporation or one or more of the other treatment technologies assessed in the Final EIS to treat or dispose of contaminated ground water. Final selection of a treatment technology will be documented in the Ground Water Compliance Action Plan that will be developed after the Remedial Action Plan.

Basis for the Decision

DOE considered the analyses provided in the Final EIS, including the Floodplain and Wetlands Assessment, and Biological Assessment and Biological Opinion appended to the EIS; the costs associated with the alternatives; significant input from the 12 cooperating agencies; and comments provided by other agencies, governors, state and Federal senators and representatives, and the public. DOE selected off-site disposal over on-site disposal because off-site disposal offers greater long-term isolation of the mill tailings, greater protection of the environment, and greater reduction in the long-term risk to the health and safety of the public. In addition, there are fewer uncertainties and differing opinions regarding the ability of an off-site disposal cell to meet regulatory performance requirements for the requisite 200- to 1,000-year performance period. The principal areas of uncertainty or controversy concerning on-site disposal that were discussed in detail in the Final EIS include tailings pile characteristics, ground water modeling, compliance standards, river migration, and future flooding. Off-site disposal eliminates or reduces these on-site disposal uncertainties.

As discussed in the above section on the *Environmentally Preferred Alternative*, the Crescent Junction site was selected because it will provide: the greatest isolation for the uranium mill tailings; the lowest land-use conflict potential; and the greatest distance from the public; and therefore, the safest site with the lowest long-term human health risks. Although the costs for the Crescent Junction site are expected to be slightly more than those for the Klondike Flats site, because of the increased transportation distance,

DOE considered the decreased long-term risks provided by the Crescent Junction site to justify the selection of Crescent Junction. The higher cost of the White Mesa Mill alternative and the increased impacts associated with its implementation led DOE not to choose it.

Rail transportation was selected as the principal transportation mode because it will eliminate the significant traffic conflicts of truck transport, provide lower worker and public exposures to contaminated material than truck transport, and avoid the consumptive water needs of a slurry pipeline, and the increased costs and complexities of additional tailings drying that would be required before final placement in the disposal cell. In addition, the use of a virtually dedicated rail corridor that is less subject to traffic or weather delays will provide DOE better overall schedule control.

Active ground water remediation was selected because it is the preferred method by which ongoing impacts (resulting from the past operations of the uranium mill) to the Colorado River and aquatic organisms, including four species of endangered fish, can be mitigated in the near term and ultimately eliminated. The No Action alternative for ground water would not provide near-term or long-term protection of the environment and, according to the USF&WS, would jeopardize the continued existence of protected species in the Colorado River.

Mitigation

On the basis of the analyses conducted for the Final EIS, DOE will adopt all practicable measures identified in the Final EIS to avoid or minimize adverse environmental impacts that may result from removing contaminated material from the Moab milling site and vicinity properties and transporting these materials to a new disposal cell constructed at Crescent Junction. Best Management Practices will be employed to control access to contaminated areas, minimize worker and public exposures to contaminated materials, minimize the extent of surface disturbance, and reclaim and revegetate disturbed lands in as timely a manner as is feasible. A storm water management program will be developed that complies with all Utah Pollutant Discharge Elimination System general permit requirements, and U.S. Army Corps of Engineers permit requirements, to mitigate runoff, using management measures such as berms, drainage ditches, sediment traps, contour furrowing, retention ponds, and check dams. A spill prevention and contingency plan will be developed to minimize the potential for spills of hazardous material, including provisions for storage of hazardous materials, refueling of construction equipment within the confines of protective berms, and notification and activation protocols. A dust control system will be implemented, following provisions in the *Fugitive Dust Control Plan for the Moab, Utah, UMTRA Project Site*, which complies with State of Utah requirements specified in the *Utah Administrative Code*, "Emission Standards: Fugitive Emissions and Fugitive Dust," and may include application of liquid or solid surfactants (e.g., sodium or magnesium chloride or water) as necessary to control fugitive dust. Because of the proximity of the

Moab site to Arches National Park, activities near the site periphery will be minimized, and lighting will be pointed downward and use light shields to limit the amount of light beyond the site boundary. To minimize potential adverse impacts to buried archaeological or cultural resources that could be discovered during site activities, site workers will receive training on the need to protect cultural resources and the legal consequences of disturbing cultural resources.

DOE will develop a Remedial Action Plan, Ground Water Compliance Action Plan, and other planning and monitoring documents for remediation of contaminated materials. These planning and monitoring documents will provide the engineering reclamation design and incorporate a ground water compliance strategy and corrective actions. These documents will also integrate mitigation measures into the remediation strategy to reduce or mitigate the impacts of the proposed actions and, where appropriate, identify the mechanisms by which the success of mitigative actions will be evaluated and reported.

In addition, the ongoing impacts to the Colorado River and aquatic organisms that are the result of past milling operations will be mitigated by active ground water remediation until natural processes have reduced the levels of contaminants such as ammonia to concentrations that are below the relevant toxicity standards.

In granting an incidental take for a period of 10 years, following the USF&WS Biological Opinion, during which time DOE will implement its ground water remediation

program, the USF&WS requested, and DOE will implement, the following reasonable and prudent measures to minimize the impacts of incidental take of the endangered Colorado River fishes: (1) monitor backwater habitats near the Moab site for any indication of fish being affected by surface water contamination; (2) evaluate the effectiveness of DOE's initial action (diluting non-protective contaminant concentrations in backwater habitats by pumping clean river water); (3) address uncertainties associated with the ground water remediation program; (4) reduce effects of surface water contamination in habitats along the south bank of the Colorado River, if necessary; and (5) reduce the effects of entrainment at all project pumping sites.

Further, in accordance with the requirements of the Biological Opinion, and consistent with Council on Environmental Quality's regulations in 40 CFR 1505.2, to monitor the success of the active ground water remedial action and enforce the provisions of the Biological Opinion, DOE, in coordination with USF&WS, will develop a Water Quality Study Plan within 18 months of the finalization of this ROD that evaluates and determines: (1) the effectiveness of ground water remediation efforts; (2) the validity of the ground water to surface water dilution factor; (3) compliance with achieving the target goal of acute ammonia standards; (4) the validity of the assumption that by reducing concentrations of ammonia, the other constituents of concern (manganese,

sulfate, uranium, copper, and selenium) will also be reduced to protective levels; (5) the requirements and schedule for DOE's reporting to the USF&WS; and (6) if refinement of the ground water conceptual model is necessary.

Issued in Washington, DC, this 14th day of September 2005.

James A. Rispoli
Assistant Secretary for Environmental Management