



## U.S. Department of Energy

Grand Junction Office  
2597 B<sup>3</sup>/<sub>4</sub> Road  
Grand Junction, CO 81503

**APR - 3 2002**

Mr. Henry Maddux, Field Supervisor  
U.S. Fish & Wildlife Service  
Salt Lake Field Office  
2369 West Orton Circle  
West Valley City, UT 84119

Subject: U.S. Department of Energy Request for Concurrence on Initial and Interim Actions  
Beginning in FY 2002 at the Moab Project Site

Dear Mr. Maddux:

The U.S. Department of Energy Grand Junction Office is requesting a USFWS concurrence concerning a proposal to conduct initial and interim actions at the Moab Project Site beginning in fiscal year 2002. Both actions are intended to minimize potential risk to endangered fish species as a result of elevated concentrations of ammonia in the Colorado River. The goal of the initial action is to dilute concentrations of ammonia in areas of the river where potentially suitable endangered fish habitat exists. The goal of the interim action is to reduce the mass of ammonia that discharges into the river. On November 19, 2001, DOE contacted your office to discuss the general scope of these actions, and we believe the points raised by USFWS are addressed in this request. In addition to these actions, DOE is proposing to increase its consumptive use of surface water for purposes of site management.

Plate 1 and Attachments 1 and 2 are relevant to the initial action. Attachment 3 and Plate 2 pertain to the interim action. Attachment 1 is the trip report that documents results of a field meeting with Michael Hudson, Utah Division of Wildlife Resources (UDWR). Attachment 2 outlines factors relevant to determining the initial action and incorporates key elements of the trip report. Attachment 3 is the Wildlife Management Plan that addresses possible wildlife issues related to the proposed evaporation pond.

This request for concurrence supplements concurrence received from your office on September 12, 2001, and January 30, 2002. This request is being submitted to allow DOE to mitigate potential immediate risks to endangered fish species before remediation of the surface and groundwater contamination regulated under the Uranium Mill Tailings Radiation Control Act (UMTRCA). Comments received from USFWS on the draft determination letter have been incorporated.

### **Introduction**

The Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001 transferred responsibility for remediation of the Atlas millsite in Moab, Utah, from the Moab Mill

Reclamation Trust to DOE. Remediation of the millsite is to be managed under the authority of UMTRCA. Under the legislation, DOE is chartered with making "every reasonable effort...to provide for the stabilization, disposal, and control in a safe and environmentally sound manner of such tailings in order to prevent or minimize radon diffusion into the environment and to prevent or minimize other environmental hazards from such tailings."

In Title 40 *Code of Federal Regulations* Part 192, the U.S Environmental Protection Agency established cleanup levels for sites within the purview of UMTRCA. Characterization and studies of surface water (USGS 1998, Shepherd Miller 2001) have shown that concentrations of ammonia in groundwater are elevated and are influencing the Colorado River adjacent to the millsite. Concentrations of ammonia in the river exceed Utah Surface Water Quality Criteria and may be adversely affecting endangered species of fish and designated critical habitat. Species of concern are the Colorado pikeminnow (*Ptychocheilus lucius*) and the razorback sucker (*Xyrauchen texanus*). The Colorado pikeminnow is the primary species of concern because it is most likely to inhabit the area of the river near the millsite. DOE was notified in December 2001 that UDWR is planning to re-introduce the bonytail (*Gila elegans*) into its historical range, which includes the general vicinity of the millsite. Due to the presence of potentially suitable habitat for the southwestern willow flycatcher (*Empidonax trailii extimus*) in the general vicinity of the initial and interim actions, this species will also be addressed.

### **Initial Action**

DOE is planning an experimental/observational approach to dilute elevated concentrations of ammonia in areas identified as suitable habitat for endangered species of fish. The intent is to mix the contaminated water with clean water and thereby reduce risk to endangered fish. Larval and young-of-the-year life stages are of primary concern. This initial action is planned to begin in the spring of 2002 and continue for 3 to 5 years. It is not intended to address final remedial action at the Moab Project Site. Beginning in January 2003, results and progress will be reported annually to USFWS by January 31 for the preceding year. The report will include operational time frames, descriptions of activities, monitoring results, species information, maps, and photographs.

The December 19, 2001, field trip with UDWR determined that the initial action would focus on a segment of the river beginning at Moab Wash and extending 600–800 feet south (Plate 1), where three areas were identified as potentially suitable habitat, assuming river morphology does not change significantly. These areas will be marked, and the river stage will be monitored. Other potentially suitable areas were identified but will require monitoring during declining river stages to determine if habitat is present.

DOE would begin monitoring for potentially suitable habitat after peak runoff and when river flow is below 15,000 cubic feet per second (cfs) at the Cisco gauging station. This is the level at which the sandbar immediately downstream of Moab Wash is reported to become exposed (Shepherd Miller 2001). Once the sandbar is exposed, backwater areas begin to form that may provide habitat for endangered fish species. As the water level declines significantly, the backwater areas can be cut off or dry up and no longer serve as potential habitat. The river stage most likely to provide suitable habitat is estimated to be between 5,000 and 12,000 cfs.

Historically, these flows are present from mid-June through mid to late August. This estimate may be revised on the basis of observations during implementation of the initial action. When it appears that suitable habitat may be present, Colorado River water will be withdrawn from an upstream location and discharged into the areas of potential habitat. The determination concerning the start of water introduction will be made in consultation with UDWR. It is anticipated that DOE will begin pumping water to identified areas in late May to early June, depending on visual observations of water levels.

Water will be pumped from the Colorado River through a screened intake (one-fourth-inch to three-eighths-inch mesh) at an upstream location close to the three identified areas. An estimated maximum of 1,360 gallons per minute (gpm) (3.03 cfs) will be withdrawn (nonconsumptive use), which is within the volume of water rights transferred to DOE from PricewaterhouseCoopers. No water will be lost, so no Colorado River water will be depleted. The water will be pumped through an engineered system (primarily PVC piping or equivalent). Flow meters and valves will control the volume and velocity of water discharged to the areas where ammonia concentrations in the river may pose a risk to endangered fish. Velocities will be controlled so that habitat will not be created, modified, or destroyed. Baffles, socks, or multiple discharge points may also be used to control velocity. The system will be designed to be flexible, allowing for periodic adjustment of water placement depending on river stage and the location of the habitat. Engineering design considerations, goals, and parameters (e.g., turbidity, velocity, depth) are addressed in Attachments 1 and 2. During installation, operating parameters will be optimized to meet USFWS and engineering goals.

The fixed-location components of the system (Plate 1) will be located aboveground along an existing trail above the average high-water stage. Flexible hoses will extend from the fixed-location components through tamarisk to the discharge areas at up to five locations. Some trimming or removal of tamarisk will be necessary at each location to allow installation of the system. Less than 0.25 acre of disturbance is expected to occur. Although the area is not designated as critical habitat for the southwestern willow flycatcher, USFWS has determined that it is potentially suitable habitat. The proposed actions are not anticipated to affect breeding activities (see General Mitigation Efforts section).

DOE will monitor ammonia concentrations as part of the routine quarterly sampling and analysis of surface water and groundwater. Additional monitoring of ammonia concentrations may be planned for the affected habitat areas. The objective of the initial action is to provide dilution. The assumption is that any dilution will be beneficial as long as habitat is not created, modified, or destroyed.

### **Interim Action**

The interim action is planned for implementation in the fall of 2002 and is intended to reduce risk to endangered fish and habitat by minimizing the potential for contaminated groundwater to reach the Colorado River. The interim action will operate in conjunction with the initial action. Plate 2 shows the general location of infrastructure required for the interim action.

Up to 15 groundwater extraction wells will be placed close to the existing road that parallels the Colorado River. Wells will be placed to optimize interception of contaminated groundwater, which discharges to areas of potentially suitable fish habitat in the river. Groundwater will be withdrawn continuously at a rate of about 30 gpm and will be piped to an evaporation pond of up to 6 acres (Plate 2). The pond will be bermed so that it will be located outside the 100-year floodplain.

As shown on Plate 2, the evaporation pond will be located within the fenced millsite in an area previously disturbed and relatively void of vegetation. The pond will also be relatively close to U.S. Highway 191 and activities associated with management of the millsite. Because the proposed location of the evaporation pond is near human activities and the Colorado River (a significant water source for wildlife), the pond is not anticipated to attract a significant number of wildlife visitors, including birds. However, DOE has prepared a Wildlife Management Plan (Attachment 3) with an emphasis on sensitive species in case monitoring indicates that wildlife use of the pond is substantial. Less than 2 acres of vegetation, including tamarisk, will be disturbed or removed for installation of the wells and pipeline system.

The system will operate continuously until a final determination is made for remedial action at the Moab Project Site. The interim action is not intended to address final remedial action at the site. To determine if concentrations of ammonia and other constituents are decreasing in the river, DOE will sample both river water and groundwater as part of the routine surface water and groundwater sampling. Preliminary groundwater modeling predicts that ammonia concentrations in the river should decrease measurably in 2 to 3 years after the interim action begins.

DOE will conduct visual observations to evaluate the occurrence of fish mortality. Any observed mortality would be reported immediately to USFWS.

### **Use of Surface Water for Site Management**

DOE's letter dated August 30, 2001, stated that less than 60 acre-feet of water from the Colorado River would be required annually for site transition activities. Your letter dated September 12, 2001, concurred with use of this volume of water. DOE has had an opportunity to evaluate water needs for management of the site, including dust control and decontamination activities. We have determined that 60 acre-feet may not be sufficient for these activities, and we are requesting use of up to 100 acre-feet as authorized by the programmatic *Biological Opinion for Elimination of Fees for Water Depletion of 100 Acre-Feet or Less from the Upper Colorado River Basin* (May 2, 2000).

### **General Mitigation Efforts**

Because the objectives of both actions are to decrease concentrations of ammonia in the Colorado River, the proposed initial and interim actions are anticipated to have a positive effect on aquatic species, including endangered fish and their habitat. As mentioned, the initial action system is designed to adjust to changing habitat conditions based on river stage. Both actions are consistent with stakeholder requests to mitigate potential effects of elevated ammonia concentrations.

DOE will not create, modify, or destroy habitat for endangered fish species during either action. During the initial action, the potential habitat areas will be observed visually at least once a week from June 1 through August 30 to determine if new habitat is appearing or if existing habitats are still viable. As new habitat areas form, water will be introduced into those areas at a controlled rate. In areas where the river stage would not naturally provide habitat, water will not be introduced so that new habitat will not be artificially created. DOE will make these determinations of habitat suitability through consultation with UDWR or as directed by USFWS. Information to be documented during the visual observations will include

- Date and time.
- Name of observer.
- River stage.
- Fish presence and mortality.
- Start and stop dates of water introduction.
- Photos taken.
- Agencies consulted.
- Habitat locations.
- Mapping completed.

During construction for both actions, vegetation that may provide suitable flycatcher habitat would be disturbed or destroyed. Care will be taken to minimize disturbances. DOE will make every effort to complete intrusive activities associated with installation or other disruptive activities outside the breeding season (May 15 through August 15) (USDA 2000). If this is not possible, DOE will work with USFWS and UDWR to conduct studies necessary to determine presence of the species. DOE will remove only that vegetation required to complete the project. As discussed in previous consultation, some or all of the area of the proposed actions may eventually require excavation and removal of contaminated soils. If this is the case, this disturbance of the tamarisk will be part of the planned future consultation with the USFWS. With regard to the current actions, DOE will be happy to meet with USFWS representatives before construction to fully evaluate potential habitat suitability in the project areas.

The proposed actions may meet the criteria for categorical exclusion under the National Environmental Policy Act (NEPA). The DOE Grand Junction Office NEPA Compliance Officer will make a formal determination. If it is determined that an environmental assessment is necessary, your office would be included in the process. This USFWS consultation will be a key consideration in determining the appropriate level of NEPA documentation.

DOE has completed a draft floodplain/wetland assessment for the interim action. Notification will be published in the *Federal Register*, and copies of the document will be forwarded to regulatory agencies and key stakeholders, including your office, for comment.

Neither the final Biological Opinion (USFWS 1998) nor the final Environmental Impact Statement (NRC 1999) identified jurisdictional wetlands at the site. Field observations conducted in February 2002 and reported in the draft floodplain/wetland assessment have determined that isolated areas close to the river meet criteria for jurisdictional wetlands. Additional studies are planned for spring 2002. The "scrub-shrub wetland" referred to in the Final Environmental

Impact Statement is a term used for classifying vegetation in the Cowardin system (USFWS 1979) and does not reflect the Corps of Engineers wetlands delineation criteria (USACE 1987).

### Determination

DOE's proposed actions are intended to reduce levels of ammonia and other constituents in the Colorado River, which could be adversely affecting endangered fish species and critical habitat, before final remedial action at the Moab Project Site. DOE believes that the small areas and short-term disturbances associated with proposed actions will not adversely affect the southwestern willow flycatcher. Both actions are designed to result in a positive effect on endangered fish species and their habitat.

These actions are not considered "major construction activities" within the context of NEPA and USFWS consultation guidance. In addition, the effects on listed species and habitat are expected to be discountable, beneficial, or insignificant. Therefore, DOE has determined that the proposed actions are not likely to adversely affect listed species or habitat.

This letter is a request for concurrence with DOE's determination regarding the initial and interim actions and increased use of surface water. If activities change significantly, we will bring them to your attention. If you have any questions, please contact me at (970) 248-6197.

Sincerely,



Tracy Plessinger  
Project Manager

### References

Shepherd Miller, 2001. *Interim Report: Ammonia Concentrations in the Colorado River Adjacent to the Atlas Mill Tailings, Moab, Utah*, prepared for Moab Reclamation Trust, PricewaterhouseCoopers, Houston, Texas, by Shepherd Miller, Inc., Fort Collins, Colorado, January.

U.S. Army Corps of Engineers (USACE), 1987. *Corps of Engineers Wetlands Delineation Manual*, Technical Report No. Y-87-1, Environmental Laboratory, Waterways Experiment Station, Vicksburg, Mississippi, January.

U.S. Department of Agriculture (USDA), 2000. *Status, Ecology, and Conservation of the Southwestern Willow Flycatcher*, General Technical Report RMRS-GTR-60, Forest Service, Rocky Mountain Research Station, September.

U.S. Fish and Wildlife Service (USFWS), 1979. *Classification of Wetlands and Deepwater Habitats of the United States*, FWS/OBS-79/31, prepared by Lewis Cowardin et al. for the U.S. Department of the Interior, U.S. Fish and Wildlife Service, Office of Biological Services, Washington, D.C., December.

———, 1998. *Final Biological Opinion for the Proposed Reclamation of the Atlas Mill Tailings Site in Moab, Utah*, U.S. Fish and Wildlife Service Regional Office, Denver, July 29.

U.S. Geological Survey, 1998. *Determination of a Safe Level of Ammonia That Is Protective of Juvenile Colorado Pikeminnow in the Upper Colorado River, Utah*, 1998 Quick Response Program, U.S. Geological Survey, Columbia Environmental Research Center, Columbia, Missouri, James F. Fairchild and Ann L. Allert, principle investigators.

U.S. Nuclear Regulatory Commission (NRC), 1999. *Final Environmental Impact Statement Related to Reclamation of the Uranium Mill Tailings at the Atlas Site, Moab, Utah*, NUREG-1531, Division of Waste Management, Office of Nuclear Material Safety and Safeguards, Washington, DC, March.

Enclosures

cc w/enclosures:

M. Fliegel, NRC

M. Hudson, UDWR

L. Morton, State of Utah

D. Bergman-Tabbert, DOE-GJO

J. Berwick, DOE-GJO

D. Metzler, DOE-GJO

J. Elmer, MACTEC-ERS

Project Record File MOA 18.12.1 (T. Smith)

**Attachment 1**

**Trip Report of the Moab Project Site Field Meeting  
on December 19, 2001**

# Moab UMTRA Project

# Meeting/Teleconference Record (MACTEC-ERS)

**Date:** January 7, 2002

**To:** Record File

**From:** R. Bleil

**Subject:** Trip Report—Field Meeting December 19, 2001, with M. Hudson, Utah Division of Wildlife Resources, to Discuss Habitat Requirements for Endangered Fish in the Vicinity of the Moab Site

## Persons Present/Contacted:

Name	Company/Agency	Telephone Number/Extension
M. Hudson	Utah Division of Wildlife Resources	On file
T. Plessinger	DOE-GJO	On file
R. Bleil, L. Cummins, K. Karp, S. Marutzky	MACTEC-ERS	On file

**Issue/Concern:** A field meeting was held in Moab, Utah, on December 19, 2001, to determine areas of potentially suitable fish habitat adjacent to the Moab site. Determining these areas is critical to the design, implementation, and operation of "initial" and interim actions to mitigate the potential effects of ammonia on endangered fish in the Colorado River. USFWS deferred to M. Hudson, UDOWR, to assist DOE in this aspect of the project. Mr. Hudson's expertise is in endangered fish and their habitat requirements.

T. Plessinger, DOE, briefed Mr. Hudson on the status and proposed actions at the site, including the need to mitigate potential ammonia effects in the Colorado River. The DOE/MACTEC-ERS team discussed with Mr. Hudson the need to identify potentially suitable habitat and factors affecting the potential presence of endangered species, with an emphasis on the Colorado pikeminnow. The following information, grouped into major categories, was discussed during the field visit:

### General Information

- The river was roughly estimated to be flowing at 3,200 cfs on the day of the field visit.
- Nursery habitat is very limited for larvae and young-of-the-year (YOY) life stages in the Colorado River.
- Most, if not all, spawning of the Colorado pikeminnow is believed to be within and upstream of the Grand Valley, Colorado.
- Spawning usually occurs in early to mid June after peak spring runoff.
- Eggs/larvae can travel 100 miles or more downstream from the spawning site and could be in the Moab site area.
- Bonytail will be stocked upstream of the Moab site under the recovery program.

### Species Presence

- Studies have been completed in the vicinity of the site that prove the presence of endangered species.
- The State of Utah has historically performed YOY surveys, with varying results at different locations and during different sampling events in the same location.
- No studies have been conducted adjacent to the Moab site where ammonia levels are elevated.
- Mr. Hudson encouraged a survey plan and biota survey (e.g., seining) of the area to determine presence. He has a sample plan. Funding and the extent of Mr. Hudson's participation will have to be determined.
- Adults of the species may be present in the same areas as YOY.

### Habitat Suitability Parameters

- The fish prefer shallow backwaters, with sandy substrate, a few inches to 2 ft in depth.
- Warmer sections of standing or very low velocity backwaters with a good food supply are preferred.
- Fish presence, particularly YOY, in preferred areas is variable and unpredictable.
- Some turbidity may enhance the habitat by providing cover for protection from predation.
- Larvae and YOY use eddies to access backwater areas. YOY are more mobile than larvae.
- Habitat suitability/availability can change fairly quickly depending upon river stage. The areal extent and configuration of the sand bar changes depending upon river stage.
- The sandbar becomes exposed at flows less than approximately 15,000 cfs (Sheppard Miller 2001).

- Some habitat criteria, including water depth and velocity, can be less than optimal if other factors, such as food supply, are attractive. Suitability parameters can vary significantly and are not prescriptive.

Location and Extent of Suitable Habitat

- Approximately 1,200 ft from Moab Wash downstream provides potentially suitable habitat. Within this area there are three "ideal" locations for suitable habitat within 600–800 ft of Moab Wash, including Moab Wash itself. These areas should be the focus for the first year.
- Other areas within the 1,200-ft stretch will need to be observed and evaluated for future years, pending evaluation of the first year's results.
- Little, if any, suitable habitat was present at the time of the field visit, due to the seasonally low river stage.
- On 12/19/01, the river was 1–2 ft below the river stage required to provide suitable habitat in the three ideal locations.

Mitigation and Design Issues

- Dilution of acute concentrations of un-ionized ammonia is the goal of the proposed action.
- Temperature and pH affect toxicity, pH significantly more so than temperature.
- A qualitative approach, due to uncertainties, to measure success makes sense to Mr. Hudson.
- Mr. Hudson agrees that the initial action will be an experimental approach.
- Mr. Hudson liked the idea of a flexible system of introducing water that can be monitored and adjusted.
- Maintaining a low-velocity volume of water to areas of potentially suitable habitat is critical.
- Adding water to suitable habitat after the river recedes and egress from the backwater to the river is eliminated would create artificial habitat. We don't want to do this.
- Water rights/withdrawal—If water rights are in place, the point of withdrawal may not be an issue. Start-up and duration of the initial action annually will depend on the time frame that suitable habitat is present. It appears that in the three key areas the time frame could be as little as 2–4 weeks.
- It may be beneficial for the water to be naturally warmed (in the holding tank) prior to discharge to the backwater areas. Backwater areas are typically warmer. It also may be beneficial to introduce water at the mouth of the backwater and direct upstream to the back of the backwater area to maintain natural conditions.

Bank Stabilization

- Mr. Hudson recommended that any widening of the existing trail/road along the river (to allow for the pipeline) be done on the west (upgradient) side away from the river, so as not to affect bank stability.

Tamarisk/Southwestern Willow Flycatcher

- Tamarisk removal was discussed briefly, although it was not planned to be within the scope of the field visit. Mr. Hudson is willing to discuss potential habitat concerns with the state biologist, if requested.

**Recommendations/Follow-up Action:**

- Have Mr. Hudson review the trip report prior to distribution.
- Revise the white paper "Factors Relevant to Implementing Initial Actions at the Moab, Utah, UMTRA Project Site" based on information received during the field visit and incorporated into the trip report.
- Submit a letter to USFWS with the white paper attached to complete informal consultation. Copy Mr. Hudson.
- Re-evaluate the need for a subcontracted fish consultant. Due to the qualitative success measures agreed to by Mr. Hudson and his willingness to implement an experimental approach, it appears a consultant is not necessary at this time.
- Develop a biota survey plan in coordination with UDOWR and USFWS to determine presence of endangered fish. Determine the extent of involvement of UDOWR and the need for funding.
- Determine the need for additional media sampling and develop a surface water sampling plan if necessary.
- Develop a project work plan for monitoring implementation, operation, and measures of success of the initial action, including required data, photos, and decision points.
- The results of the biota survey, project work plan, and surface water sampling plan will serve as the basis for the annual report requested by USFWS.

**Affect Scope, Schedule, or Budget:** YES X NO \_\_\_

Scope, schedule, and budget are not anticipated to be dramatically affected. However, the above recommendations will need to be reviewed by MACTEC-ERS and DOE to determine if they are warranted and within the scope of existing task orders.

CC:	Trip Participants	C. Bahrke	J. Berwick	D. Metzler
	J. Elmer	G. Van Reyper	M. Gardner	C. Carpenter
	M. Madril	G. Smith	S. Morrison	File: Moab—Initial Action

## **Attachment 2**

### **Factors Relevant to Determining Initial Action at the Moab Project Site**

# **Factors Relevant to Determining Initial Action at the Moab Project Site March 2002**

## **Background**

In October 2000, the former Moab, Utah, millsite operated by Atlas Corporation was added to the list of Title I sites under the Uranium Mill Tailings Radiation Control Act (UMTRCA). On October 25, 2001, custody of the site was transferred from the Moab Mill Reclamation Trust to DOE for remedial action. Prior to the transfer, an Environmental Impact Statement was completed that authorized on-site stabilization. However, DOE, in accordance with the Floyd D. Spence Act, will also evaluate off-site remedial action alternatives.

Stakeholders have expressed concern that elevated levels of some groundwater constituents, primarily ammonia, are reaching the Colorado River. The U.S. Fish and Wildlife Service (USFWS) and Utah Division of Wildlife Resources (UDWR), among others, are concerned because the segment of the Colorado River where the millsite is located is designated critical habitat for endangered fish species. The Columbia Environmental Research Center of the U.S. Geological Survey conducted a study in 1998 which determined that ammonia concentrations contributed by the Moab Project Site present a risk to endangered fish species (USGS 1998). The Colorado pikeminnow (*Ptychocheilus lucius*) is the only endangered fish species known to actually occur in the area. The study also concluded that current Utah surface water quality standards for ammonia would be protective of fish species.

DOE, in consultation with stakeholders, is planning to implement short-term actions prior to remedial action to mitigate the potential for site-contributed contaminants, particularly ammonia, to adversely affect endangered fish. The focus is on protection of the Colorado pikeminnow specifically. Short-term actions consist of the initial and interim actions. The purpose of the initial action is to dilute high concentrations of un-ionized ammonia in the Colorado River where suitable habitat may exist. This dilution will result from introducing clean, upstream water to the critical habitats without altering the physical suitability of the habitat. Interim action will focus on source reduction of contaminants in groundwater, thereby reducing the potential for contaminated groundwater to reach the Colorado River. This paper addresses the factors relevant to determining the initial action that is planned for the spring and summer of 2002 and incorporates key information obtained during the December 19, 2001, field trip conducted by DOE, UDWR, and MACTEC-ERS. The USFWS requested that DOE consult with UDWR in conducting the field trip.

## **Initial Action Location**

Biological, physical, and chemical factors will influence the location, timing, duration, design, and success of the initial action. DOE intends to implement an environmentally acceptable and cost-effective action that will meet stakeholder expectations.

Biological factors include species presence, life-stage of concern, and food supply availability. The species of primary concern is the Colorado pikeminnow, though it is assumed that the razorback sucker (*Xyrauchen texanus*) could inhabit the area. Limited data are available on the critical habitat of the razorback sucker. For purposes of the initial and interim actions, it is assumed that habitat suitable for the Colorado pikeminnow will also be suitable for the sucker. In addition, UDWR has disclosed that it is planning to reintroduce the bonytail (*Gila elegans*) into its historical range upstream of the site in the near future.

Because spawning areas for the pikeminnow have been identified upstream of the Moab Project Site in the Grand Valley area of Colorado, the spawning life stage is not of concern in the vicinity of the Moab Project Site. Larval life stage and young-of-the-year are of primary concern in areas where suitable habitat may be present. USFWS has defined physical characteristics of suitable habitat to include (1) warmer backwater and slow-moving eddies, (2) a sandy/silty substrate, and (3) water depths of less than 2 feet (see Attachment 1: Trip Report). On the basis of the field visit with UDWR on December 19, 2001, DOE has determined that the segment of river along the eastern boundary of the millsite starting at the mouth of Moab Wash and extending approximately 1,200 feet south may meet the criteria for suitable habitat. Within this segment, three locations were tentatively identified starting at Moab Wash and extending about 600–800 feet south of the wash. Elevated concentrations of contaminants associated with the Moab Project Site are present in this area of potentially suitable habitat, which consists of quiet backwaters, depending on river levels.

The areal extent and quality of available habitat depend upon the time of year, changes in river morphology, and water level. Therefore, for purposes of determining potentially suitable habitat in the vicinity of the Moab Project Site, it is assumed that the critical time for the larval stage and young-of-the-year survivability is from mid-June through mid-August following spawning and after spring runoff. Because natural processes can physically alter the river channel characteristics, the exact location of potentially suitable habitat can change seasonally or annually. It has been documented that suitable habitat may exist in the three segments identified once the river stage is below 15,000 cubic feet per second (cfs) (Shepherd Miller 2001). It is estimated that the greatest potential for habitat exists when the flow is between 5,000 and 12,000 cfs. Field observations will be necessary to confirm this.

The concentrations of ammonia entering the river will also influence the location of the initial action. The locations (e.g., near-shore, in the river channel) and concentrations of ammonia where groundwater is surfacing in the Colorado River must be understood. The relationships between groundwater–surface water mixing zones and potentially suitable habitat must also be defined in designing and implementing the initial and interim actions. The State of Utah defines mixing zones as areas where contaminants are entering a surface water body and dilution with ambient water is in progress but has not yet reached concentrations that meet standards for all pollutants. At no time are contaminant concentrations in mixing zones to exceed acutely lethal concentrations. Certain criteria are established for dimensions of chronic mixing zones, but with the presence of endangered species, more stringent site-specific mixing zones may be warranted. Data from all sampling events will be evaluated and plotted to establish a baseline for the

distribution of ammonia concentrations in the critical habitat areas. The distribution of ammonia contamination will aid in determining the locations and frequency of sampling.

### **Measures of Success**

The success of the initial action will be measured against defined objectives. Any dilution is considered beneficial. Although this discussion identifies some of the data needed to optimize success, other factors, such as predation, surface water quality, recreational river activities, and variations of river flow, are outside DOE's control. Therefore, DOE, in consultation with UDWR, determined that an experimental/observational approach would be applied for purposes of the initial action. DOE is not planning to conduct additional quantitative sampling of biota or chemical constituents as part of the initial action. However, DOE will collect routine surface water and groundwater samples for analysis of ammonia and other constituents on an ongoing basis as part of site characterization and remedial action. Results of sampling and monitoring will be compiled in annual reports to USFWS and UDWR beginning in January 2003 and will serve as the basis for additional consultation and further actions. The following assumptions were established to qualitatively evaluate success of the action.

### **Assumptions**

- All discharge flows up to 1,360 cfs can be controlled so as not to destroy, modify, or create habitat.
- Endangered fish species may be present at least part of the year.
- June 15 through August 15 presents the greatest opportunity for potentially suitable habitat to be present adjacent to the millsite.
- Critical habitat may be present at other times of the year. However, DOE is targeting sensitive life stages.
- Existing toxicology data are sufficient to determine concentrations of un-ionized ammonia that may adversely affect fish species.
- The proportion of un-ionized ammonia present is dependent upon temperature and pH and will fluctuate daily and seasonally.
- Suitable habitat for larvae, young-of-the-year, and juveniles exists within the zone of ammonia contamination.
- Areas where potentially suitable habitat exists can be determined on the basis of visual observations and average water levels following spring runoff and can be monitored between June 15 and August 15.
- Factors outside DOE's control may affect the success of the initial action.
- Storm events and other actions that increase the volume and levels of river water will dilute ammonia concentrations in a manner similar to the initial action.
- Key stakeholders agree with this approach and agree that it should prove beneficial.

Because of the inherent variation of conditions within the critical habitats where endangered fish may be exposed to ammonia, qualitative measures of success are proposed for the initial action.

**Attachment 3**  
**Wildlife Management Plan for the Moab Project Site**  
**Evaporation Pond**

**Moab Project Site**

**Wildlife Management Plan for the Moab Project Site  
Evaporation Pond**

March 2002

Prepared by  
U.S. Department of Energy  
Grand Junction Office  
Grand Junction, Colorado

Work Performed Under DOE Contract Number DE-AC13-96GJ87335  
Task Order Number MAC02-16

## Introduction

In October 2000, the former Moab, Utah, uranium-ore processing site (Figure 1) operated by Atlas Corporation was added to the list of Title I sites under the Uranium Mill Tailings Radiation Control Act (UMTRCA). On October 25, 2001, custody of the Moab Project Site was transferred from the Moab Mill Reclamation Trust to the U.S. Department of Energy (DOE) for remedial action.

DOE plans to implement short-term initial and interim actions to reduce the potential for site-contributed constituents, especially ammonia, to adversely affect endangered species of fish. The interim action will include construction of a lined evaporation pond up to 6 acres in size (Figure 2) in the summer of 2002. The pond will contain water that has been extracted from the tailings pile, collected from storm water runoff, and pumped from extraction wells to reduce the mass of ammonia in groundwater.

The evaporation pond has the potential to attract sensitive, threatened, or endangered species of wildlife. Constituents in the pond water will eventually become concentrated and could be harmful to wildlife protected under the Endangered Species Act (ESA) and the Migratory Bird Treaty Act (MBTA). Federally protected species are listed in Title 50 of the *Code of Federal Regulations*, Part 10.13 (50 CFR 10.13) and 50 CFR 17.11.

Because the pond will be located in an area where activities associated with the initial and interim actions and with site maintenance operations will create continual disturbances, it is not likely to attract a significant number of wildlife visitors. However, if it is determined that wildlife species may be adversely affected, the DOE Grand Junction Office will work with the U.S. Fish and Wildlife Service (USFWS) and Utah Division of Wildlife Resources (UDWR) to minimize effects. This plan describes the proposed measures to minimize the possibility for adverse effects to wildlife.

## Site Description

The Moab Project Site comprises approximately 400 acres of land, about 130 of which is occupied by the tailings pile on the western portion of the site. The site is bordered on the north and southwest by steep sandstone cliffs. The Colorado River forms the southeastern boundary of the site. U.S. Highway 191 parallels the northern site boundary, and State Highway 279 crosses the southwestern portion of the property. Arches National Park is located north of the site across Highway 191, and Canyonlands National Park is located to the southwest. Moab Wash runs in a southeasterly direction through the center of the site and joins the Colorado River. The wash is an ephemeral stream that flows only when there is a precipitation event or during snowmelt. Vegetation is sparse in the vicinity of the tailings pile and the proposed location for the evaporation pond and therefore provides limited wildlife habitat.

Previous National Environmental Policy Act (NEPA) documents have been prepared for the Moab Project Site. In 1996, DOE published the final *Programmatic Environmental Impact*

*Statement for the Uranium Mill Tailings Remedial Action Ground Water Project (PEIS)* (DOE 1996). The purpose of the PEIS was to analyze the potential effects of implementing four programmatic alternatives for achieving groundwater compliance at designated uranium-ore processing sites. The preferred alternative for the Uranium Mill Tailings Remedial Action (UMTRA) Ground Water Project was published in a Record of Decision in 1997. All subsequent actions on the UMTRA Ground Water Project must comply with the Record of Decision. In 1999, prior to transfer of the site to DOE, the U.S. Nuclear Regulatory Commission (NRC) completed the *Final Environmental Impact Statement Related to Reclamation of the Uranium Mill Tailings at the Atlas Site, Moab, Utah* (NRC 1999), which focused on surface remediation in place. Subsequent NEPA document determinations will consider the actions authorized under both the programmatic and site-specific Environmental Impact Statements.

## Issues and Concerns

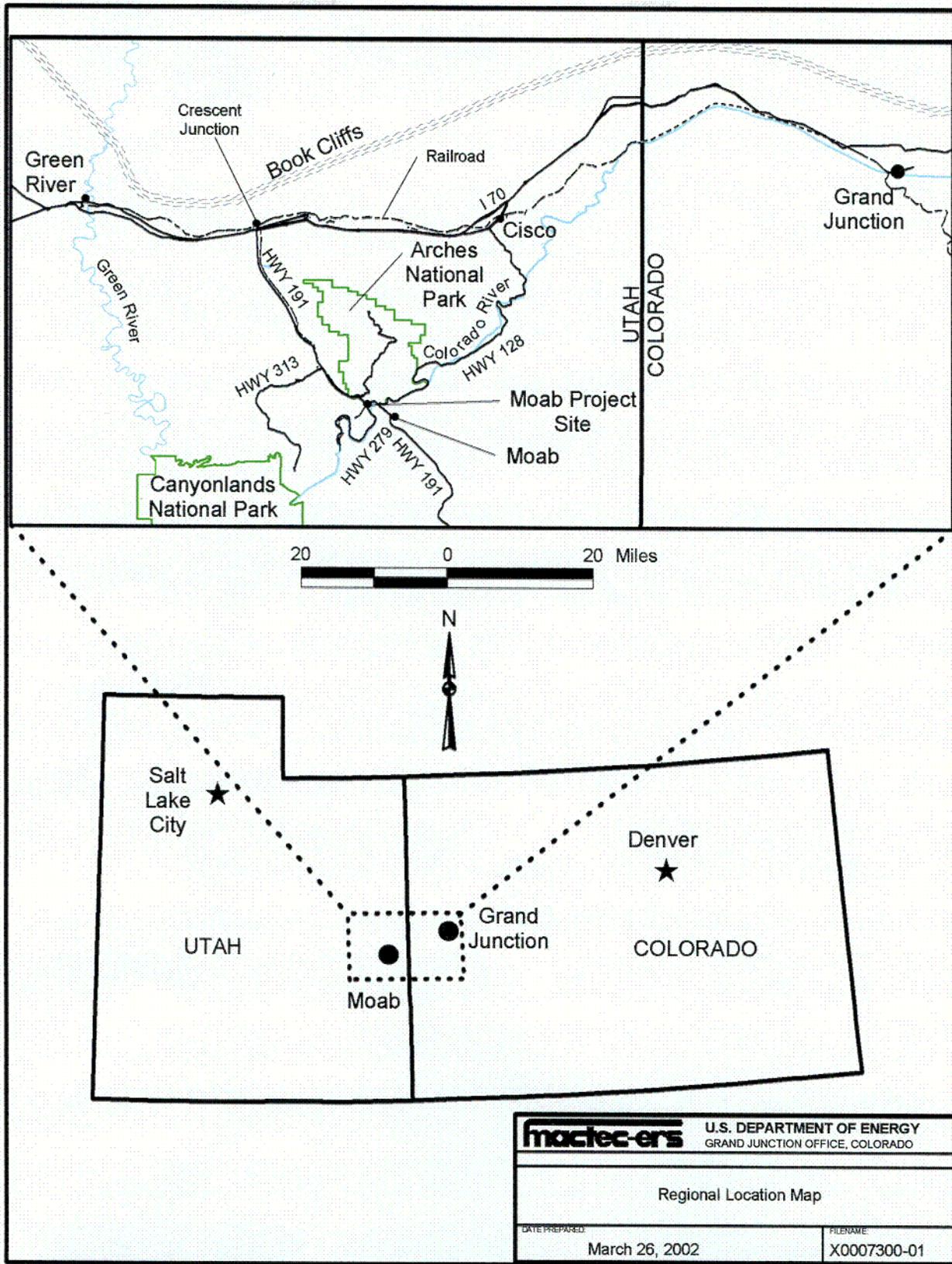
The primary objective of this plan is to minimize the potential for adverse effects to federally listed (ESA or MBTA) endangered or sensitive species that may be exposed to constituents in the evaporation pond. Protection of a species may be necessary depending upon the effect the pond may have on a species' population abundance, distribution, density, or mortality rate relative to naturally occurring factors such as weather, predation, or habitat loss. It is not anticipated that the proposed pond would have a significant adverse effect on wildlife species. However, some mortality could occur if concentrations of constituents in the pond reach toxic levels and wildlife species actually use the pond. Before constituents in the pond water reach toxic concentrations, DOE will develop a complete list of constituents that may be toxic to wildlife and will monitor for these. The list will be provided to USFWS directly or added as an appendix to this plan in a future revision.

Large mammals and small burrowing mammals (e.g., skunks, rabbits), reptiles, and amphibians (depending upon the species' home range) may be attracted to the pond as an additional source of water or habitat. Bird species of concern were identified in NRC's Environmental Impact Statement (NRC 1999). Although the American peregrine falcon is no longer listed, it is included as a species of concern for purposes of this plan.

### *Bird Species of Concern*

Key bird species include:

- Southwestern willow flycatcher (*Empidonax traillii*)
- Raptors, including the ferruginous hawk (*Buteo regalis*), American peregrine falcon (*Falco peregrinus*) red-tailed hawk (*Buteo jamaicensis*), and golden eagle (*Aquila chrysaetos*)
- Migratory species, including passerines and waterfowl



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Figure 1. Location of the Moab Project Site

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Back of Figure 1 (regional location)



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Figure 2. Location of the Proposed Evaporation Pond at the Moab Project Site

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Back of Figure 2 (evaporation pond location)

Migratory birds, particularly waterfowl, generally migrate along established routes that provide essential transient habitat requirements such as cover, roosting sites, and water. The climate, vegetation types, and topography in the vicinity of the Moab Project Site generally provide these essential elements. Habitat is present in surrounding areas that could support the intermittent presence of raptors and migratory birds, including the southwestern willow flycatcher and peregrine falcon.

### *Southwestern Willow Flycatcher*

The southwestern willow flycatcher prefers to remain within a few dozen meters of its nesting site (USDA 2000), and the pond is located in an area where no vegetation cover is present. Therefore, the southwestern willow flycatcher would be more likely to occupy sites adjacent to the Colorado River in dense stands of tamarisk. However, as discussed below, DOE will monitor for the species' presence at the pond.

### *Peregrine Falcon*

The peregrine falcon is addressed in this plan because it was a listed species until 1999 and was included in the scope of the Biological Assessment (NRC 1999, Appendix B). The following information was obtained from page 12 of the Biological Assessment:

Peregrine falcons are known to have nested in the vicinity of the Atlas tailings piles (R.D. Williams, U.S. Fish and Wildlife Service, Salt Lake City, Utah, letter to R.L. Doodsma, ORNL, Oak Ridge, Tenn., November 2, 1994), but recent information indicates that the birds have moved further down river beyond the Portals (J. Cresto, Bureau of Land Management, Moab, Utah, personal communication with R.M. Reed, ORNL, Oak Ridge, Tenn., July 12, 1995). Peregrines also are reported to nest within 1.2 km (2 miles) of the [Moab Project] site in Arches National Park and along the Colorado River (W.R. Taylor, U.S. Department of the Interior, Washington, D.C., letter to A. Mullins, NRC, Rockville, Maryland, February 3, 1995). Peregrines have been observed at the Moab Marsh where they undoubtedly prey on the abundant birds life there.

Therefore, DOE will work with USFWS and UDWR to mitigate effects of the proposed evaporation pond if the presence of either species is confirmed. Due to the pond's proximity to human disturbances, including a major highway, and the lack of vegetative cover near the pond, wildlife use of the pond is projected to be less than in undisturbed areas along the Colorado River corridor.

### *Other Species*

If monitoring indicates that large mammals such as deer and coyotes are using the pond, DOE will consult with USFWS and UDWR about the need to erect a fence around the pond. Increased insect activity may attract amphibians to the pond. Management techniques to control insects and prevent access to the pond will require further research if monitoring indicates the need.

## Proposed Monitoring and Management Plan

Experience at other sites has indicated that a phased approach is effective for monitoring and managing endangered species and migratory birds. If determined necessary, DOE will conduct a survey before monitoring to evaluate the presence of sensitive wildlife. The survey would be performed to determine which species may remain in the project area for extended periods and if the pond is within home ranges or migratory distances of species identified in this plan. Survey information would serve as the basis for the scope of the monitoring plan and the list of potentially toxic constituents.

### *Phase 1*

Phase 1 will include two aspects: a monitoring plan and elimination of habitat, including food sources, close to the pond. A 50-foot-wide perimeter around the pond would be maintained void of vegetation, thus eliminating both food and cover. Emphasis will be placed on developing and implementing a monitoring plan consistent with USFWS and UDWR recommendations. All monitoring will be conducted within the fenced area of the mill tailings disposal site in the vicinity of the pond. The monitoring plan will be developed, and the results will be included in the annual report to USFWS beginning in January 2003.

Phase 1 would be casual, qualitative observation monitoring. Should mortality be observed, DOE would report it immediately to USFWS and work with that agency to provide birds to parties permitted to conduct scientific and educational research in accordance with 50 CFR 21.23.

### *Phase 2*

If observational monitoring indicates that key species identified in this plan are using the pond and that management will be required, Phase 2 would identify management techniques to minimize use of the pond by key species. Techniques may include a combination of obstruction and visual deterrents. Several other methods are available for deterring birds from using ponds. Methods include noise (e.g., propane boom cannons), visual deterrents (e.g., reflectors, silhouettes, effigies, water color), human activity, unsuitable habitat (e.g., lack of food and cover), water palatability, and obstruction (e.g., netting). Firing Propane cannons at 15-minute intervals has had notable success. In some cases, luring birds away from an area has proven successful. Luring techniques include providing an alternate food, cover, or water source that would lure birds away from the pond.

### *Phase 3*

If Phase 2 management does not provide sufficient protection of key species, DOE would evaluate the feasibility of alternative approaches that may lure wildlife away from the pond area. This phase would include various aspects of management identified in Phases 1 and 2.

## Research Sources

Information in this plan was obtained from a literature search and discussions with representatives of several regions of USFWS, including P. Ramirez (Wyoming) and R. Kruger (Colorado), the U.S. Bureau of Land Management, Colorado Division of Wildlife, Oak Ridge National Laboratory, and U.S. Department of Energy officials, contractors, and peers. Discussions were also held with manufacturers of bird deterrent devices and materials.

## References

50 CFR (Title 50 *Code of Federal Regulations*), "Wildlife and Fisheries," October 1, 1998:  
 10.13, "List of migratory Birds."  
 13, "General Permit Procedures."  
 17.11, "Endangered and threatened wildlife."  
 17.95, "Critical habitat—fish and wildlife."  
 21.23, "Scientific collecting permits."  
 21.27, "Special purpose permits."  
 402, "Interagency Cooperation—Endangered Species Act of 1973, As Amended."

U.S. Department of Agriculture (USDA), 2000. *Status, Ecology, and Conservation of the Southwestern Willow Flycatcher*, General Technical Report RMRS-GTR-60, Forest Service, Rocky Mountain Research Station, September.

U.S. Department of Energy, 1996. *Final Programmatic Environmental Impact Statement for the Uranium Mill Tailings Remedial Action Ground Water Project*, DOE/EIS-0198, prepared by the U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico, October.

U.S. Nuclear Regulatory Commission, 1999. *Final Environmental Impact Statement Related to Reclamation of the Uranium Mill Tailings at the Atlas Site, Moab, Utah*, NUREG-1531, Division of Waste Management, Office of Nuclear Material Safety and Safeguards, Washington, DC, March.

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