



**UNITED STATES DEPARTMENT OF THE INTERIOR  
GRAND CANYON-PARASHANT NATIONAL MONUMENT  
345 East Riverside Drive  
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**January 14, 2011**

**NOTICE OF AVAILABILITY  
DOI-BLM-AZ-A030-2010-0004-EA**

**Pakoon Springs  
Control of Non-natives and Management of Public Use  
Grand Canyon – Parashant National Monument**

Dear Interested Public:

Please be advised that an Environmental Assessment (DOI-BLM-AZ-A030-2010-0004-EA) has been prepared for the proposed Grand Canyon – Parashant National Monument Pakoon Springs, Control of Non-natives and Management of Public Use. This EA is a public document, and it is available for your review and comment.

In December 2007, the Bureau of Land Management (BLM) and Grand Canyon Wildlands Council (GCWC) began implementation of the Pakoon Springs Rehabilitation Project, at Pakoon Springs Ranch, Grand Canyon – Parashant National Monument, in Mohave County, Arizona. The spatial scope of the project is approximately 50 - 60 acres. Soil trenches were dug and soil cores were collected to gather soils and geomorphologic information to better inform the rehabilitation decisions and actions. Areas of buried organic matter were found, locating areas of dense vegetation that had existed prior to the development of the springs. This information was used to design and implement the rehabilitation treatments.

During March and April of 2008, 2009, and 2010, the BLM and GCWC recontoured all but one spring pond at Pakoon Springs, decommissioned roads, and started re-vegetation work. A non-native invasive weed, Malta star thistle, was discovered in April 2008. A large population of Russian thistle appeared around the springs in May 2008.

Since the rehabilitation activities began, visitation has increased at Pakoon Springs. Potential increased public use of this very remote site could result in the need for focused management of the public use - to ensure rehabilitation investments and public health and safety are protected.

This proposed action is in conformance with the Grand Canyon – Parashant National Monument Resource Management Plan (2008); and includes conservation measures to protect National Monument objects and Special Status Species.

Copies of the EA are available upon request from, and written comments may be submitted to:

Kathleen Harcksen, Project Manager  
Arizona Strip District Office  
345 E Riverside Drive  
St George UT 84790.  
Phone: 435-688-3380 (desk) or 435-688-3358 (fax),

This EA has also been posted on the Arizona Strip Field Office's web home page [http://www.blm.gov/az/st/en/fo/arizona\\_strip\\_field.html](http://www.blm.gov/az/st/en/fo/arizona_strip_field.html). The deadline for receipt of comments is February 14, 2011. Public comments are welcome and encouraged.

By law, the names and addresses of those commenting are available for public review during regular business hours. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All comments from organizations or businesses will be available for public inspection in their entirety.

Sincerely,

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Pam McAlpin  
Grand Canyon – Parashant National Monument BLM Manager

# **United States Department of the Interior Bureau of Land Management**

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**DOI-BLM-AZ-A030-2010-0004-EA**

**Pakoon Springs**  
**Control of Non-natives and Management of Public Use**  
**Grand Canyon – Parashant National Monument**  
**Bureau of Land Management**  
345 East Riverside Drive  
St. George, Utah 84790  
435-688-3200

January 14, 2011

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## Chapter 1

# PURPOSE AND NEED

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## 1.1 Introduction

In December 2007, the Bureau of Land Management (BLM) and Grand Canyon Wildlands Council (GCWC) began implementation of the Pakoon Springs Rehabilitation Project, at Pakoon Springs Ranch, Grand Canyon – Parashant National Monument (GCPNM), Mohave County, Arizona (Pakoon Springs Rehabilitation, EA AZ-130-2007-0048). Soil trenches were dug and soil cores were collected to gather soils and geomorphologic information to better inform the rehabilitation decisions and actions. Areas of buried organic matter were discovered, designating areas where dense vegetation had existed prior to the development of the springs. This information was used to design and implement the rehabilitation treatments. The spatial scope of the project is approximately 50 - 60 acres. During March and April of 2008, 2009, and 2010 the BLM and GCWC recontoured all but one spring pond at Pakoon Springs, decommissioned roads, and started re-vegetation work. Implementation of the Authorized Action in EA AZ-130-2007-0048 is ongoing, and the project objectives are being met.

The actions proposed in this new Environmental Assessment (EA) have been developed from information gained during the past three years. A non-native invasive weed, Malta star thistle, was discovered in April 2008. A large population of Russian thistle (another non-native invasive weed) appeared around the springs in May 2008. Since the rehabilitation activities began, recreational visitation has increased at Pakoon Springs. Additional increased public use of this very remote site would result in the need for focused management of the public use - to ensure rehabilitation investments, and public health and safety are protected. Also, the National Park Service proposes to set up measuring devices, at the spring outlet, for long-term monitoring of water quantity and quality at Pakoon Springs.

To be responsive to the new information, a determination has been made to consider additional actions and to analyze those actions in this EA. In this EA the BLM will:

1. evaluate the actions necessary to eliminate non-native invasive weeds (especially Malta star thistle, Russian thistle),
2. evaluate the actions necessary to prevent the introduction of additional non-native, invasive plant and animal species, especially aquatic non-native, invasive species, and
3. evaluate the impacts of installing visitor use infrastructure: interpretive panels, walkways, a loop trail, signs, a bridge, picnic table, fences, a garbage can, a toilet, and long-term hydrological monitoring equipment.

## 1.2 Purpose and Need

The Purpose and Need for the Proposed Action are as follows.

**Purpose:** The purposes of this proposed action are:

- 1) rehabilitate and enhance native biodiversity, ecological function, and the pre-development riparian habitat characteristics of Pakoon Springs; and
- 2) provide an outdoor venue for natural and cultural resource education, spring restoration interpretation, and recreation on the Grand Canyon – Parashant National Monument.

**Need:** This proposed action is needed to move the area towards the desired future condition, as described in the Record of Decision and Management Plan for the Grand Canyon – Parashant National Monument, 2008, specifically Riparian Habitats in the 2008 RMP, which include:

Riparian areas, including Monument objects, would consist of a diversity of vertical and horizontal structures, vegetative age classes, and endemic species.

Riparian areas would be protected, enhanced, and/or restored by allowing tools that are necessary and appropriate to mitigate adverse impacts of allowable uses and undesirable disturbances, and contribute to meeting the Arizona Standards for Rangeland Health, NPS Vital Signs, and enhance Monument objects and values.

Ecological functions and processes would be intact with vegetative species composition and cover appropriate to the site.

Where sites have the potential for over-story vegetation, the canopy cover of over-story and under-story vegetation would be at or approaching maximum density.

All riparian areas, including Monument objects, would be in, or moving towards, proper functioning condition.

All surface water would meet, or be improving towards, Arizona State water quality standards.

Flowing water systems would provide contiguous water and associated riparian vegetative cover, where possible.

Availability of surface water at seeps and springs would be appropriate for the soil type, climate, and landform and would support a diverse population of endemic plant and wildlife species.

A sufficient quantity of water with safe access for wildlife would be available, where appropriate.

Riparian communities would provide habitat for common species such as rush, cottonwood, willow, and yellow-breasted chat, as well as rare species such as Southwestern Willow (SW) Flycatcher, Common Black Hawk, Lucy's Warbler, and speckled dace where consistent with site potential.

Invasive plants and animals such as tamarisk, Russian olive, and Brown-headed Cowbird would be reduced or eliminated.

Existing opportunities for visitors to enjoy sightseeing and viewing wildlife in the Backways Travel Management Areas will be maintained/enhanced.

### **1.3 Conformance with Land Use Plan**

The proposed action, described in Chapter 2 of this document, is in conformance with the Grand Canyon – Parashant National Monument Records of Decision and Resource Management Plan/General Management Plan (RMP), approved February 2008. The proposed action is consistent with the following decisions contained within this plan:

The following decisions are from Table 2.3 of the RMP regarding Vegetation and Fuels Management:

DFC-VM-05 Ecological processes and functions will be protected, enhanced, and/or restored by

allowing tools that are necessary and appropriate to mitigate adverse impacts of allowable uses and undesirable disturbances, and contribute to meeting the Standards for Rangeland Health an NPS Vital Signs and enhance Monument values.

DFC-VM-06 Invasive plant species will be contained, controlled, or eliminated and native species restored to meet Desired Plant Community objectives.

MA-VM-04 Treatment methods can include, but are not limited to mechanical, chemical, biological, and/or any combination thereof.

MA-VM-13 Implementation of ongoing noxious weed and invasive species control actions will be continued as per national guidance and the Weed Management Area Plan. Integrated weed management will continue using available tools to control noxious weeds consistent with vegetation management decisions for each Ecological Zone, and as appropriate to the land use allocation and in order to protect resources and Monument values.

MA-RP-02 The Riparian Ecological Zone will be managed for a mixture of herbaceous and woody vegetation, in accordance with agencies' policies on native and non-native species.

IMPL-RP-01 The functions and processes of Pakoon Springs can be restored to a combination of naturally appearing pond and flowing water habitats that meet Rangeland Health Standards. Relict leopard frogs, Grand Wash springsnails, or other special status species can be re-introduced to the area provided suitable habitat exists after restoration.

The processes of restoring previously developed Mojave Desert springs, and the function of Mojave Desert springs for wildlife, indigenous people, and the historic ranching activity can be developed for interpretation. Adequate protection (barriers, etc.) to ensure restoration efforts are not adversely impacted by visitors can be installed.

DFC-VM-30 Endemic plant species and associated communities such as creosote bush, Joshua tree, Mojave yucca and cacti will be present along with other shrubs, grasses, and wildflowers. These communities can include stands of young and old shrubs, sparse vegetation, scattered to larger expanses of creosote bush or Joshua trees, seeps, healthy streamside (riparian) vegetation, and other interspersed grassland and shrub habitats.

DFC-VM-33 Treatment emphasis will be to reduce the proliferation of non-indigenous annual plant species, reduce fire intensity and frequency, and improve tortoise structural and forage habitat components.

MA-VM-25 Vegetation treatments can be used in the Mojave Desert Ecological Zone to enhance vegetative diversity, restore native plant communities, maintain or increase wildlife habitat, and reduce or eliminate hazardous fuels. Treatment priority areas will be where desert tortoise habitat has been burned and/or converted to invasive annual grass communities.

MA-VM-26 Treatment preference will be to use chemical methods. Prescribed fire and mechanical treatment methods will only be authorized where doing so will benefit desert tortoise or their habitat, reduce invasive plant species, reduce fire frequency or intensity by removing hazardous or flashy fuels, or be necessary for research.

IMPL-RP-01 The functions and processes of Pakoon Springs can be restored to a combination of naturally appearing pond and flowing water habitats that meet Rangeland Health Standards. Relict leopard frogs, Grand Wash spring snails, or other special status species can be re-introduced to the area provided suitable habitat exists after restoration. The processes of restoring previously developed Mojave Desert springs, and the function of Mojave Desert springs for wildlife, indigenous people, and

the historic ranching activity, can be developed for interpretation. Facilities to house the interpretive materials and enhance the visitor experience, including picnicking, can be provided. Adequate protection (barriers, etc.) to ensure restoration efforts are not adversely impacted by visitors can be installed.

The following decisions are from Table 2.4 of the RMP regarding Wildlife and Fish Management:

MA-WF-05 Access to public lands with wildlife and fish hunting and viewing opportunities will be maintained as determined in the route evaluation/designation process. Access to public lands with sensitive wildlife and/or fisheries resources can be closed or limited, where determined necessary through monitoring of resource conditions.

The following decisions are from Table 2.5 in the RMP regarding Threatened and Endangered Species:

DFC-TE-05 The public will be well informed about special status species in the Monument and the need for conservation.

MA-TE-12 No new developed campgrounds will be authorized or constructed in listed or proposed special status species habitat.

MA-TE-36 Vehicle camping will be restricted to disturbed areas along designated routes in desert tortoise habitat.

DFC-TE-48 Introductions and/or augmentations of relict leopard frogs can be authorized at suitable habitat locations, such as Pakoon Springs and Tassi Springs. Introductions and augmentations will be coordinated closely with the Relict Leopard Frog Conservation Team, AGFD, USFWS, counties, tribes, and adjacent landowners. Introductions can be made in areas where doing so is not detrimental to viability of populations of other native species.

The final Conservation Agreement and Rangewide Conservation Assessment and Strategy for relict leopard frogs will be implemented.

MA-TE-66 The use of harmful pesticides adjacent to riparian areas will be limited or eliminated. If used, application will occur in a manner that avoids drift, according to directions (i. e. not broad applications).

MA-TE-70 Roads and trails used by OHVs within riparian areas, or areas with the potential to support riparian vegetation will be closed and rehabilitated.

The following decision is from Table 2.7 in the RMP regarding Cultural Resources:

IMPL-CL-01 Interpretation of and education about previous human occupation and use of the area will be accomplished using appropriate sites and methods.

The following decision is from Table 2.8 in the RMP regarding Visual Resources:

MA-VR-03 All new surface disturbing projects or activities, regardless of size or potential impact, will incorporate visual design considerations during project design as a reasonable attempt to meet the VRM objectives for the area and minimize the visual impacts of the proposal. Measures to mitigate potential visual impacts can include the use of natural materials, screening, painting, project design, location, or restoration.

The following decisions are from Table 2.13 in the RMP regarding Recreation & Visitor Services/Interpretation & Environmental Awareness:



DFC-RR-04 Existing opportunities for visitors to enjoy sightseeing and viewing wildlife in the Backways TMAs will be maintained/enhanced.

DFC-RR-06 In Backways and Specialized TMAs, recreation opportunities associated with somewhat remote settings, such as exploring backcountry roads, vehicle camping, hunting, sightseeing, recreation aviation, and picnicking will be maintained/enhanced on existing roads, provided they will be compatible with the protection and enhancement of sensitive resource values and Monument objects, where appropriate.

MA-RR-09 Sensitive areas where increased visitation can create unacceptable changes or impacts to natural or cultural resources will not be publicly promoted.

MA-RR-08 A Limits of Acceptable Change (LAC) framework will be used to establish acceptable resource and social and managerial settings and conditions using appropriate indicators and standards.

MA-RR-09 Recreational activities can be limited or restricted in special status species and other sensitive habitats.

MA-RR-11 Management responses to unacceptable resource and/or social conditions will range from least restrictive methods (e.g., information and education) to most restrictive (e.g., visitor limits, supplemental rules, or restrictions). Where feasible, the least restrictive methods will be the first priority.

MA-RR-13 Camping can be limited in listed species and other sensitive habitats. Camping can be restricted or limited to protect cultural and/or natural resources through campsite monitoring and LAC.

MA-RR-14 Vehicle camping along designated routes will be allowed only at existing sites where previous camping use is evident. However, existing sites that overlie or are causing significant impacts to sensitive resources will be closed and new sites can be made available in locations where resource impacts are lessened.

DFC-RR-16 The Monument's interpretation and environmental education program will be grounded in:  
The Monument's natural and cultural resources,  
Themes related to the Monument's purpose, significance, and mission statements, and  
The BLM and NPS' missions and goals.

DFC-RR-28 The public will understand the importance of natural and cultural resources in the Monument through interpretive, watchable wildlife, and other environmental education programs.

The following decisions are from Table 2.15 in the RMP regarding Travel Management:

DFC-TM-05 The Backways TMA will provide for a variety of motorized, non-motorized, and mechanical travel modes to serve a variety of needs, but not to the detriment or exclusion the protection of resources. It will also serve the motorized and non-motorized needs of visitors engaged in viewing scenery, visiting cultural resources and interpretive sites, exploring by vehicle, camping, picnicking, hunting; studying nature, and participating in organized events.

MA-TM-12 Installations/structures (e.g., unobtrusive barriers, gates, signs) on or along routes will be allowed when they will be the minimum necessary to control unauthorized use and when consistent with the TMA objectives.

## 1.4 Relationship to Statutes, Regulations, or Other Plans

This EA has been prepared in accordance with the requirements of NEPA and is consistent with any additional Federal, State, and local statutes that may be relevant to the proposed action, such as those cited below.

Fundamentals of Rangeland Health (43 Code of Federal Regulations [CFR] 4180.1) and Arizona's Standards and Guidelines, which were developed through a collaborative process involving the Arizona Resource Advisory Council and the BLM State Standards and Guidelines Team. The Secretary of the Interior approved the Standards and Guidelines in April 1997. These standards and guidelines address watersheds, ecological condition, water quality, and habitat for sensitive species. These resources are addressed later in this document.

President's National Energy Policy and would not have adverse energy impacts. The proposed action would not deny energy projects, withdraw lands, close roads, or in any other way deny or limit access to mineral materials to support energy actions.

Executive Order 13186 requires the BLM and other Federal agencies to work with the U.S. Fish and Wildlife Service to provide protection for migratory birds. Implementation of the proposed action is not likely to adversely affect any species of migratory bird known or suspected to occur in the project area. No take of any such species is anticipated.

Executive Order 13112 Invasive Species, requires the BLM to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.

Arizona laws or AGFD regulations that prohibit the intentional unpermitted release of species into water bodies, as well as camping within ¼ mile of open water.

2007 Record of Decision: Vegetation treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement and Environmental Report (includes FWS Biological Opinion and conservation measures)

The project area is located in Mohave County, Arizona. The proposed action is consistent with the *Mohave County General Plan* (adopted September 1994). While Pakoon Springs is not specifically addressed in the *Mohave County General Plan*, this proposed action does not conflict with decisions contained within the plan.

*Arizona Game and Fish Department's Wildlife Program Management Strategic Plan for the Years 2007–2012* (AGFD 2007) and the *Arizona Game and Fish Department Water Development Standards* (AGFD 2005a). AGFD's strategic plan and development standards support the management and enhancement of wildlife habitats, including maintenance and/or redevelopment of existing water catchments, through partnerships with public agencies, property owners and lessees, and wildlife conservation organizations.

In addition, the proposed action complies with applicable Federal, State, and local laws.

- Federal Land Policy and Management Act of 1976 (43 USC 1707 *et seq.*)
- Endangered Species Act of 1973, as amended
- Section 106 of the National Historic Preservation Act of 1966, as amended
- Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001–3013; 104 Stat. 3048-3058)

- National Environmental Policy Act of 1969

## 1.5 Issues Identified

Identification of issues for this assessment was accomplished by considering the resources that could be affected by implementation of one of the alternatives. A summary of the issues and the rationale for analysis are given below.

**Presence of non-native – invasive plant species:** During the spring of 2008, several non-native, invasive weed species were identified at Pakoon Springs. Executive Order 13112 Invasive Species, requires the BLM to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.

**Threatened and Endangered Species:** Mojave Desert Tortoise. The proposed action project site is located within Critical Habitat for Mojave Desert Tortoise.

**Wetlands & Riparian Areas:** Non-native, invasive weeds are present in the wetlands. Executive Order 13112 Invasive Species, requires the BLM to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.

**Water Quality:** Water quality could be impacted by the use of aquatic herbicides.

**Wildlife:** Wildlife could be impacted by the use of herbicides and construction of infrastructure.

**Recreation:** From 2007 through 2010, there has been a noticeable increase in visitors at Pakoon Springs. Most of these visitors arrive via All Terrain Vehicles (ATVs) and want to drive into the riparian rehabilitation area, see what's going on, take a break, have lunch, etc. If not managed, this use could result in deposition of trash and human waste. The lack of educational material could result in unwanted introductions of aquatic non-native invasive species.

**Visual Resources:** Pakoon Springs is located in a visually sensitive, VRM Class II landscape.

## Chapter 2

### 2.0 PROPOSED ACTION AND NO ACTION ALTERNATIVE

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#### 2.1 Alternative A (Proposed Action)

**Managing Public Use and Potential Invasive Species Introductions:** The project area has been fenced and gates installed at the north and south ends of the project area. The gates would remain locked, and except for administrative purposes, no vehicles or camping would be permitted within the fenced area, or within ¼ mile of any surface water. To protect public safety and the integrity of the site, the installation of educational materials, a parking lot, walkways, a bridge, a picnic table, camping locations, a garbage receptacle, fencing, and/or a toilet would be considered.

Determination of what facilities to install, and if or when to install them would be made by evaluating information gained through monitoring visitor use, in accordance with the following RMP decisions:

MA-RR-09 Sensitive areas where increased visitation can create unacceptable changes or impacts to natural or cultural resources will not be publicly promoted.

MA-RR-08 A Limits of Acceptable Change (LAC) framework will be used to establish acceptable resource and social and managerial settings and conditions using appropriate indicators and standards.

MA-RR-09 Recreational activities can be limited or restricted in special status species and other sensitive habitats.

MA-RR-11 Management responses to unacceptable resource and/or social conditions will range from least restrictive methods (e.g., information and education) to most restrictive (e.g., visitor limits, supplemental rules, or restrictions). Where feasible, the least restrictive methods will be the first priority.

The impacts of potential, actual, and/or problematic increased visitor use at Pakoon Springs would be determined by

- 1) Installing traffic counters at both north and south access spur roads,
- 2) Installing a pedestrian counter at the pedestrian gate, to be installed on the north end,
- 3) Collecting use data (trash, etc.) and
- 4) Developing and applying Levels of Acceptable Change (LAC) criteria.

Based on monitoring information, facilities and/or infrastructure would be installed to protect resources and resolve use problems. An educational loop trail system and infrastructure (to hold educational materials) would be installed when LAC criteria have been exceeded.

Trails and structures would be designed to blend into the landscape's form, line, color, and texture. Any constructed structures would be designed so that they would not attract attention of the casual observer, and would be colored and textured to blend into the surrounding landscape.

Boating would be prohibited, and fishing would be discouraged within the Pakoon Springs enclosure.

Walking the creek channel would be discouraged. However, walking down a portion of the creek channel would be permitted.

- 1) A sign would be placed, in the channel, designating the first relatively easy location to exit the creek channel.
- 2) An additional sign would be placed at the next location relatively easy to exit the creek channel, and the public would be asked to exit the channel at this location.

If information, from monitoring, shows impacts in the creek have become unacceptable (i.e., damage to native vegetation and/or appearance of trash and/or human waste), walking down the creek would no longer be allowed.

### **Eliminate Non-native Invasive Species**

#### 1. Non-native, Invasive Plant Species:

a. To prevent introduction or re-introduction of non-native, invasive species, vehicular access would be limited to Administrative use. The entrance gates, both north and south entrances would remain locked so that only administrative vehicles could enter the enclosure.

b. An attempt would be made to eliminate the invasive non-native species Malta star thistle and Russian thistle vegetation populations at Pakoon Springs. Glyphosate and Imazapyr (both terrestrial and aquatic formulations); and Metsulfuron and Clopyralid (terrestrial formulations only) would be used to control non-native invasive Malta star thistle, Russian thistle, and other exotic weeds that may emerge on site.

The herbicides proposed for use would allow for maximum potential to eradicate the unwanted species, and to readily apply adaptive management of weed species difficult to control, due to short life span and long term seed-banks. Herbicides would be used to stress the physiology of target plants.

Although several herbicides are included in this analysis, it is not anticipated that all of these herbicides would be used on an annual or consistent basis. Non-chemical methods such as mechanical (scraping with a tractor or cutting with a chainsaw) and hand-pulling would also be used, where feasible and appropriate. Native vegetation would be avoided during herbicide application.

Glyphosate, Imazapyr, Metsulfuron and Clopyralid herbicides would be used to spot treat, and be directionally applied only to the target plant species at Pakoon Springs:

1. By ground based equipment such as backpack or tank sprayers,
2. At the minimum recommended label rates to be effective (which depends on the target species)
3. According to label directions, and
4. Under supervision of a BLM certified applicator, according to BLM policies (H-9011-1).

***Glyphosate :***

**Aquatic Glyphosate (Rodeo and other trade names):**

Annual Weeds:

Apply up to 40 ounces per acre for annual weeds, however smaller amounts may be applied according to specific species recommendations, per the label.  
Apply 1.5% solution in water for handheld spot foliar treatments.

Perennial Weeds:

Apply up to 112 ounces per acre, however smaller amounts may be applied according to specific species recommendations, per the label.  
Apply up to 5% solution for handheld spot foliar treatments.

**Terrestrial Glyphosate (Ranger Pro and other trade names):**

Annual Weeds:

Apply up to 128 ounces/acre, however smaller amounts may be applied according to specific species recommendations, per the label.  
Apply up to 2% solution for handheld spot foliar treatments.

Perennial Weeds:

Up to 128 oz/acre may be applied, however smaller amounts may be applied according to specific label and species recommendations.  
Up to 5% solution for handheld spot foliar treatments

***Imazapyr:***

**Aquatic** formulations (Habitat, Polaris, Ecomazapyr and other trade names)

Annual weeds:

Apply up to 48 ounces per acre, however smaller amounts may be applied according to specific species recommendations, per the label.  
Spot foliar applications of various weeds include 1 to 2% solution with water.

Various other weeds:

Apply up to 96 ounces per acre, however smaller amounts may be applied according to specific species recommendations, per the label.

**Terrestrial** formulations (Arsenal and other trade names)

Various weeds

Up to 48 ounces/acre, however smaller amounts may be applied according to specific label and species recommendations.  
Spot foliar applications of various weeds include 1 to 2% solution with water.

**Metsulfuron** (Escort or other trade names)

Annual weeds:

Apply up to 1 ounce/acre.

Various other weeds:

Apply up to 2 ounces/acre.  
Spot foliar applications of various weeds includes up to 1 gram/gallon.

**Clopyralid** (Transline or other trade names)

Various weeds including malta starthistle:

Apply up to 21 ounces/acre, however smaller amounts may be applied according to specific species recommendations, per the label.  
Spot foliar application of various weeds includes a 1/4 to 1/2 ounce per 1 gallon of water.

Buffers: Only aquatic approved herbicides (formulations of glyphosate and imazapyr) would be applied within 10 feet of surface water. Non-aquatic herbicides (Metsulfuron and Clopyralid) would not be applied within a 10 foot “no application” buffer zone around open water, saturated soils and/or damp to wet soils, during hand application. A 25 foot “no application” buffer would be delineated around open water, saturated soils and/or damp to wet soils if applying non-aquatic approved herbicides from a vehicle.

Safety Precautions: Workers applying the herbicides would take all necessary safety precautions, including following label directions, the use of proper handling procedures, and use of personal protective equipment, protective clothing (coveralls, gloves), and eye protection (splash goggles or face shields). During and following the application of herbicides, the project site would be closed to the public for 24 hours. All gates would be locked, and warning signs would be placed on the gates.

The labels and risk assessments for all the chemicals proposed include precautionary measures, which would be implemented to reduce both human and ecological risks.

Treatment Monitoring: The herbicide treatments would be monitored during and after treatment application, and periodically thereafter. Any reoccurrence of undesirable species would be retreated.

## 2. Non-native, Invasive Aquatic Animal Species:

a. During the suppression of fires, the use of the pond water, by helicopters or fire engines, would be permitted. If the water dipping apparatus being used have previously dipped in waters contaminated with non-native invasive aquatic quagga muscles, zebra mussels, New Zealand mud snails, or other non-native species, fire suppression equipment would not be permitted to dip in the Pakoon Springs Pond until the equipment has been adequately sanitized. If Relict Leopard Frogs and/or other sensitive status species are introduced into the pond, this decision would be re-evaluated.

b. The proposed educational or interpretive panels, displays, kiosks, etc. (as well as any related published brochures or web site information) would dovetail with all similar information being provided to the public by sister agencies (National Park Service/Lake Mead National Recreation Area, US Forest Service, Nevada Department of Wildlife Resources, Utah Division of Wildlife Resources, Arizona Game and Fish Department (AZG&FD), etc.) and would emphasize the serious ecological threats posed by the colonization or spread of non-native, invasive plant species, and aquatic invasive species, and the substantial investment in time and funding already devoted to controlling those species at Pakoon Springs, including the alligator named "Clem", bullfrogs, mosquito fish, and tamarisk.

## **Long-Term Hydrological Monitoring, and Pre-historic Hydrological Regime**

1. The Mojave Desert Inventory and Monitoring Network (MOJN) was created by the National Park Service (NPS) to monitor the natural resources of seven NPS units in the Mojave Desert region, including Grand Canyon-Parashant National Monument. As part of MOJN's spring monitoring activities, network personnel propose to monitor discharge, water quality, and benthic macroinvertebrate communities at Pakoon Springs. This monitoring would require the installation of a weir box, a data-logging pressure transducer, and a V-notch or rectangular weir below the dam, where the spring's discharge flows into the wash. MOJN or other NPS staff would visit the dam quarterly to measure basic water quality parameters, download the data logger at the weir, remove any plant matter or other debris from the weir box, and measure flow at other discharge points. Annually or less frequently, water samples and macro-invertebrate samples would be collected for laboratory analysis. These activities are part of a long term monitoring program, so they would continue indefinitely.

2. To determine the paleo hydrologic regime and associated vegetation communities, a pragmatic test of the early origin and fixation of gamma-ray spectrometric (U, Th) and magneto-susceptibility (Fe) patterns related to sedimentary cycle boundaries in pure platform limestones would be conducted. The information gained would be useful in understanding climate change and would be accomplished by acquiring cores at depth.

### **2.1.1 Conservation Measures, Terms and Conditions - Desert Tortoise and Cultural Resources**

1. The following conservation measures are an integral part of the proposed action (FWS, November 7, 2007):

- i. All individuals handling tortoises must meet the FWS desert tortoise monitor or biologist qualifications requirements. Permitting of these individuals may be done through application for a section 10(a)(1)(a) research and recovery permit, or through project-specific section 7 consultation.

- ii. Designate a field contact representative (FCR) who will have the authority to halt all non-emergency project activity should any danger to a listed species arise. Work will only resume after hazards to the listed species are removed.
  - iii. Authorized biologists will act as biological monitors and be present during all construction activities for the protection of desert tortoises and other listed species. These biological monitors will be responsible for determining compliance with measures as defined in the biological opinion or other agreements between the project proponent and agencies.
  - iv. A biological monitor will be assigned each activity within the project site requiring large equipment. A biological monitor would also be assigned to all backfilling, recontouring, and reclamation activities.
  - v. Authorized activities will require monitoring of the desert tortoise population throughout the duration of the project. The appropriate level of monitoring will be developed in coordination with BLM and FWS. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, section 7 consultation reinitiated.
  - vi. Within DWMAs/ACECs during the tortoise active season (March 15-October 15), set a 20 mph speed limit on BLM roads.
  - vii. Uncontrolled domestic dogs will be prohibited from the project site and site access routes. Use of firearms, except by law enforcement officers or licensed hunters during lawful hunting activities will also be prohibited.
2. BLM shall submit annual reports. Specifically for desert tortoises, the reports shall briefly document for the previous calendar year actions taken to implement these terms and conditions, surface-disturbing activities authorized, the effectiveness of these terms and conditions at reducing take of desert tortoise, actual acreage of desert tortoise habitat disturbed, numbers of tortoises taken, including animals injured or killed, the number of desert tortoises excavated from burrows, the number of desert tortoises moved from construction sites, and information on individual desert tortoise encounters. The report shall make recommendations for modifying or refining these terms and conditions to enhance desert tortoise protection and reduce needless hardship on the BLM and users of public lands.
  3. Any surface, or sub-surface archaeological, historical, or paleontological remains discovered and not covered in the Cultural Resource Protection Record (CRPR) during project work shall be left intact; all work in the area shall stop immediately and the BLM Monument Manager (435-688-3202) shall be notified immediately. Commencement of work shall be allowed upon the okay of the BLM Monument Manager in consultation with the archaeologist.
  4. If, in connection with operations, any human remains, funerary objects, sacred objects or objects of cultural patrimony – as defined in the Native American Graves Protection and Repatriation Act (P.L. 101-601; 104 Stat. 3048; 25 U.S.C. 3001) are discovered, the proponent shall stop operation in the immediate area of the discovery, protect the remains and objects, and immediately notify the BLM Monument Manager. The immediate area of the discovery will be protected until notification by the BLM Monument Manager that operations may resume.

## **2.2 Alternative B = No Action**

Under the No Action Alternative, no treatment of non-native, invasive vegetation species would occur.



Existing management and use of the project area would continue and be subject to applicable statutes, regulations, and policies. No infrastructure or facilities would be developed for interpretation, education, or sanitation.

Vehicular access would continue to be limited to Administrative Use only, as the project area is fenced and gated and most access roads within the fenced area have been decommissioned. Pedestrian access would remain open to all areas of the project site.

## Chapter 3

### 3.0 AFFECTED ENVIRONMENT

#### 3.1 ELEMENTS/RESOURCES of the Human Environment

The BLM is required to consider many authorities when evaluating a Federal action. Those elements of the human environment that are subject to the requirements specified in statute, regulation, or executive order, and must be considered in all EAs have been considered by BLM resource specialists to determine whether they would be potentially affected by the proposed action. These elements are identified in Table 3.1, along with the rationale for determination on potential effects. If any element was determined to be potentially impacted, it was carried forward for detailed analysis in this EA; if an element is not present or would not be affected, it was not carried forward for analysis. Table 3.1 also contains other resources/concerns that have been considered in this EA. As with the elements of the human environment, if these resources were determined to be potentially affected, they were carried forward for detailed analysis in this document.

**Table 3.1. Summary Evaluation of Elements/Resources of the Human Environment**

Resource	Determination*	Rationale for Determination
Air Quality	NI	Air quality within the general area is good, although wind-blown dust can be a minor source of pollution. The project area is within an attainment area for all National Ambient Air Quality Standards. The proposed action would result in temporary, localized deterioration of air quality if construction of infrastructure is implemented, but these emissions would be temporary and would cease once construction is complete.
Areas of Critical Environmental Concern	NP	The project area is not within an Area of Critical Environmental Concern.
Cultural Resources	NI	A cultural resource inventory has been completed for the project area and no cultural resources would be impacted.
Environmental Justice	NI	The proposed action would have no disproportionately high or adverse human health or other environmental effects on minority or low-income segments of the population. The proposed action would also have no effect on low-income or minority populations.
Farmlands (Prime or Unique)	NP	There are no prime or unique farmlands within the project areas.
Floodplains	NI	No actions are proposed that would result in permanent fills or diversions, or placement of permanent facilities, in floodplains or special flood or hazard areas. In addition, according to the Federal Emergency Management Agency Flood Insurance Rate Maps, the proposed facilities are not located within a 100-year floodplain. The facilities would be located in a zone of minimal flooding hazard.
Invasive, Non-native Species	PI	The presence of Invasive, Non-native species is one of the primary reasons for the development of the Proposed Action.

<b>Resource</b>	<b>Determination*</b>	<b>Rationale for Determination</b>
Native American Religious Concerns	NP	During consultations with American Indian Tribes who claim cultural affiliation to northern Arizona, no Native American religious concerns have been identified in relation to the weed control and visitor use of Pakoon Springs.
Threatened, Endangered, or Candidate Animal Species	PI	The project area is within Critical Habitat for the Mojave Desert Tortoise.
Threatened, Endangered, or Candidate Plant Species	NP	No Threatened, Endangered, or Candidate plant species occur in the project areas.
Wastes (hazardous or solid)	NP	No known hazardous or solid waste issues occur in the project area.
Water Quality (drinking/ground)	PI	There are at least five spring sources in the project area. The water quality would be impacted by the application of aquatic formulations of herbicides.
Wetlands/Riparian Zones	PI	The area of wetlands has increased since implementation of the rehabilitation treatments began. The wetlands would be impacted by the application of aquatic formulations of herbicides.
Wild and Scenic Rivers	NP	There are no designated, eligible, or suitable Wild and Scenic River segments within the project areas.
Wilderness	NP	The project area is not located within designated wilderness.
Livestock Grazing	NP	The project area is not located within an active grazing allotment.
Woodland/Forestry	NP	The project area is located within the Mojave Desert Ecological Zone. There would be no impact to Woodland or Forestry resources.
Vegetation	NI	Native vegetation would be avoided during herbicide application, therefore any impacts would not be measurable. The installation of infrastructure would be located so that native vegetation would not be disturbed.
BLM or State Sensitive Plants	NP	No native BLM or State Sensitive plants are found within the project area.
Wildlife (including mule deer, big horn sheep, sensitive species and migratory birds)	PI	Disturbance to wildlife could occur during construction of infrastructure and herbicide application. Consequently, the presence of people, machinery and the increased noise would impact wildlife.
Soils	NI	The terrain at the project areas is mostly flat or has minimal relief. Infrastructure would not be constructed on moist soils, therefore impacts to soils would be negligible.
Recreation	PI	Disturbance to the recreating public could occur during construction activities, including increased noise as well as reduced short-term opportunities for solitude. Not implementing the proposed action could result in a reduction in the quality of the recreation experience from increased trash and human waste.
Visual Resources	PI	Visitors are drawn to the visual contrast of the lush riparian vegetation against the sparse Mojave Desert. Recreation and interpretation development would introduce structures within visual sensitive VRM Class II landscape.
Geology/Mineral Resources/Energy Production	NI	The Monument has been closed to mineral development through the Proclamation, and the construction of the proposed infrastructure would not alter any known geologic features.
Paleontology	NP	No paleontological resources are known to occur in the project area.
Lands/Access	NI	Access to public lands may be slightly altered by implementation of the proposed action, however, not to a degree that would require further analysis. No other land issues have been identified in connection with the proposed action.
Fuels/Fire Management	NI	No hazardous fuels reduction or fuels management projects are proposed for the project area. The proposed action would not adversely impact fire management, as many water sources exist in the area.
Socioeconomic Values	NP	The economic base of the Arizona Strip is mainly livestock grazing, with a few gypsum/selenite mines and uranium operations. Nearby communities are supported by tourism (including outdoor recreation), construction, gambling, and light industry. The social aspect involves a remote, unpopulated setting with moderate to high opportunities for solitude. The proposed action would have no effect on the economy or social aspect of the region since there would be no displacements or disruption to established businesses or uses of the area.

Resource	Determination*	Rationale for Determination
Wild Horses and Burros	NI	The project area is located within the Tassi Herd Management Area. The Appropriate Management Level in the HMA is zero, although many burros occupy the HMA. The entire project area has been fenced and gated. There would be no impacts to burros.
Wilderness Characteristics	NP	The project area is not located within areas managed to maintain wilderness characteristics.

## 3.2 Resources and Issues Brought Forward for Analysis

### 3.2.1 Non – native, Invasive Species

#### 3.2.1.1 Non-native Invasive Plant Species.

Over the past 100 years, many non-native plant species, some very invasive, were purposefully and/or accidentally introduced at Pakoon Springs. The known herbaceous, non-native, invasive plant species present at Pakoon Springs include Malta star thistle, Russian thistle, sow thistle, red brome, Bermuda grass, mustard species, field bindweed, date palm, pomegranate, hollyhock, tamarisk, and Filaree. Many more non-native species may be present, but as of yet are undetected.

**Glyphosate** is a broad spectrum, non-selective herbicide, active on most kinds of green plants. Glyphosate works by disrupting a plant enzyme involved in the production of amino acids that are essential to plant growth. It is a post-emergent, systemic herbicide with no soil residual activity. When Glyphosate comes in contact with the soil, it is bound to soil particles. The affinity between Glyphosate and soil particles remains until it is degraded, which is primarily a biological degradation process, carried out under both aerobic and anaerobic conditions by soil micro flora (Product Label, November 2002).

**Clopyralid** is a synthetic plant growth hormone and has some structural similarities to naturally occurring hormones called auxins. It disrupts plant growth by binding to molecules that are normally used as receptors for the natural growth hormones. Because Clopyralid is more persistent in plant tissue than auxins, the binding causes abnormal growth leading to plant death in a few days or weeks, depending on the species. Label directions caution against applying Clopyralid to soils which have rapid to very rapid permeability. Most of the soils in the project area contain heavy clays and permeability is very slow (Product Label, revised July 2008).

**Imazapyr** is a non-selective broad-spectrum systemic herbicide, absorbed by the foliage and roots, with rapid transfer to the xylem and phloem and the meristematic regions, where it accumulates and causes disruption of protein synthesis. This leads to interference in DNA synthesis and cell growth of the plants (Product Label, April 2006). The result of exposure is death of new leaves. It was first registered in the United States in 1984.

**Metsulfuron-methyl** is a residual sulfonylurea compound used as a selective pre- and post-emergence herbicide for broadleaf weeds and some annual grasses. It is a systemic compound with foliar and soil activity, and it works rapidly after it is taken up by the plant. Its mode of action is by inhibiting cell division in the shoots and roots of the plant, and it is biologically active at low use rates. Metsulfuron-methyl is rapidly taken up by plants at the roots and on foliage. The chemical is translocated throughout the plant, but is not persistent. It is broken down to non-herbicidal products in tolerant plants (Product Label, March 2007).

#### 3.2.1.2 Potential Introduction of Non-native, invasive aquatic species

Threats from non-native, invasive aquatic species could include the inadvertent spread of quagga or zebra mussels, or New Zealand mud snails, or the intentional release of crayfish, red-eared sliders, bullfrogs, or other non-native species. People visiting Lake Mead may unknowingly pick up invasive aquatic species and then visit Pakoon Springs later the same day, perhaps leaving these invaders to create or help perpetuate a potentially huge problem. A boat used on Lake Mead or another infested water body is how quagga or zebra mussels might become established in the Pakoon Springs pond. Fishing poses risks because of the contaminated bait or gear that may be used, and the dumping of buckets with water obtained elsewhere.

### **3.2.2 Threatened or Endangered Species – Mojave Desert Tortoise**

The proposed project area is included within the Northeastern Mojave Recovery Unit, which is one of six Mojave Desert Tortoise recovery units established through the 1994 Recovery Plan.

The Mojave Desert Tortoise is federally listed as threatened and is found in creosote-bursage habitats below about 4,500 feet in elevation. The desert tortoise is a herbivore that spends most of its life in underground burrows. It can live 80 years and has a low reproductive rate. There is no data on tortoise populations in the project area. Desert tortoise may occasionally access the washes and springs in the area, however they spend most of their time in the creosote-bursage and are not dependent upon riparian habitat.

No discovery of tortoise or their sign has been found during prior surveys of the project area.

Historically, the area has been highly developed. During the past four years there has been much ground disturbance, during the rehabilitation implementation activities.

### **3.2.3 Water Quality**

Pakoon Springs has light isotope signatures, indicating that high elevation zones are recharging this spring, even though it emits at low elevation. High elevation recharge of low elevation springs is probably coming from the Virgin Mountains, though there is also a chance that Pleistocene age water is recharging this spring. High discharge springs at lower elevations are likely sourced by higher elevations or older ground water.

BLM and NPS have sought funding for more than five years to determine the source of the water at Pakoon Springs. A current funding request has a high probability of being funded.

Water samples taken in 2003, at the large pond discharge pipe were tested at the Southern Utah University water lab. The following information was provided:

pH	7.14
Total Dissolved Solids	275 mg/l (mostly sulfates w/some sodium)
Fluoride	0.205 mg/l (just over the MCL of 0.2)
Arsenic	11.4 mg/l (exceeding the MCL of 10.0)

### **3.2.4 Wetlands and Riparian Areas**

The area of wetlands and riparian vegetation has increased at least five times of that prior to the treatments identified in the 2007 EA. Prior to the treatments, only the margin of the ponds, and a short stretch of the wash held riparian vegetation. Much soil has wetted up from the filling of the ponds, and has revegetated (either naturally or artificially) with native riparian vegetation.

Where there was approximately 100 feet of perennial stream in the wash (to the east of the ponds), there is now over a mile of perennial stream flow.

### 3.2.5 Wildlife

Pakoon Springs is in the AGFD's Game Management Unit (GMU) 13B.

Nongame wildlife found on the allotment is typical of the area, including a variety of small mammals, including desert cottontail rabbits, birds including raptors, and reptiles. Predators include coyotes, bobcats, and mountain lions.

#### BLM Sensitive, Wildlife Species of Concern

Species listed as sensitive by the BLM typically consist of small and widely dispersed populations, inhabit ecological refugia or specialized or unique habitats, could become endangered or extirpated from the State or within a significant portion of its range; is under status review by the U.S. Fish and Wildlife Service; or is State-listed, but may be better conserved through application of BLM sensitive species status. Arizona wildlife species of special concern are ones whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats or population declines, as described by the Arizona Game and Fish Department's listing of Wildlife of Special Concern in Arizona. Table 1 lists the sensitive animal species that may occur at or near Pakoon Springs.

Executive Order 13186 requires the BLM and other Federal agencies to work with the USFWS to provide protection for migratory birds. These species are protected by legislation and it is important to maintain habitat for these species so migratory patterns are not disrupted. All migratory birds are protected under the 1918 Migratory Bird Treaty Act (16 USC 703), which prohibits unpermitted taking of any migratory birds, their parts, nests, or eggs. Additional protection is provided by the Neotropical Migratory Bird Conservation Act of 2000 (16 USC Chapter 80).

Bald and golden eagles are protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c). This law, enacted in 1940, and amended several times since then, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs.

**Table #1. Sensitive Species that are Known to Occur or have the Potential to Occur\***

Species	Pakoon Springs	BLM Sensitive	Arizona Wildlife Species of Concern
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	potential	no	yes
Golden eagle ( <i>Aquila chrysaetos</i> )	potential	no	no
American peregrine falcon ( <i>Falco peregrinus</i> )	verified	yes	yes
Spotted bat ( <i>Euderma maculatum</i> )	verified	yes	yes
Western small-footed myotis ( <i>Myotis ciliolabrum</i> )	verified	yes	no
Fringed myotis ( <i>Myotis thysanodes</i> )	verified	yes	no
Big free-tailed bat ( <i>Nyctinomops macrotis</i> )	verified	yes	yes
California leaf-nosed bat ( <i>Macrotus californicus</i> )	verified	Yes	yes
Banded gila monster	verified	Yes	no

Species	Pakoon Springs	BLM Sensitive	Arizona Wildlife Species of Concern
<i>(Heloderma suspectum cinctum)</i>			
Grand Wash spring snail <i>(Pyrglopsis arizonae)</i>	potential	Yes	no

\* "Potential to occur" means that suitable habitat exists, but species presence has not been verified.

### 3.2.6 Recreation

Within the vicinity of the proposed project area, recreation setting attributes include geology, scenic view sheds, remoteness and a sense of solitude. General recreation activities include driving for pleasure, exploring, hiking, photography, bird watching, and viewing nature and wildlife.

A short air strip, which is used occasionally, was developed, several years ago, on a mesa adjacent to the proposed project area. On two separate occasions in the past four years, interested visitors have landed at the air strip and walked over to Pakoon Springs to see what was going on.

ATVs are currently limited to designated routes. Winter and springtime Pakoon Springs visitation, via ATVs, has increased between 2008 and the present.

Generally, the January visitors are bird hunters, and their dogs, who camp just outside the fence on the north boundary. They have created a dispersed camp site where none had existed prior to the rehabilitation activities. This campsite is located within ¼ mile of open water. Use of Pakoon Springs by bird hunters has resulted in a major increase in the number of shotgun shells left each year.

March visitors are generally groups of three or more on All Terrain Vehicles (ATVs).

Currently there are no informational, educational, nor sanitation facilities at Pakoon Springs.

### 3.2.7 Visual Resources

BLM inventories and classifies public lands in order to identify and maintain areas that contain important scenic qualities; the Visual Resource classification system is based on a combination of three elements – scenic quality, visual sensitivity, and distance zones – with the most important to visitors probably being scenic quality (BLM 1986). Scenic quality is described as the visual appeal of an area. The rating is based on seven key factors: landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modification. BLM lands fall into one of four Visual Resource Management (VRM) classes.

Pakoon Springs is within VRM Class II: The objective for VRM Class II is to retain existing character of the landscape. The level of change to the characteristic landscape would be low. Management activities may be seen, but should not attract the attention of the casual observer.

Located in the Mojave Desert, Pakoon Springs is one of the few large springs on the Arizona Strip; it is the largest in the Grand Canyon-Parashant National Monument (GCPNM). The springs are located within the gently rolling terrain of sparsely distributed Joshua Trees and other Mojave Desert vegetation. Pakoon Springs consists of lush, green, riparian vegetation and is one of the few sightseeing destinations, and main attractions, of the Pakoon Basin. Its beauty as a uniquely large desert oasis attracts the attention of most everyone who passes by.

## Chapter 4

# ENVIRONMENTAL CONSEQUENCES

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This section includes a discussion of the environmental consequences (including a description of direct and indirect impacts and cumulative effects, if any). Impacts are defined as modifications to the existing condition of the environment and/or probable future condition that would be brought about by implementation of one of the alternatives.

Cumulative impacts are generally assessed with the environmental impacts of past, present, or reasonably foreseeable future actions within the project area.

The impact analyses in the following sections were based on knowledge of the resources and the site, information provided by experts and other agencies, and professional judgment.

### 4.1 Impact Type, Duration, and Magnitude

#### Type

**Direct Impacts:** Direct impacts are caused by an action and occur at the same time and same place as the action.

**Indirect Impacts:** Indirect impacts are caused by an action and occur later or not in the same location as the action, but are reasonably foreseeable.

#### Duration

**Short Term Impacts:** Less than five years

**Long Term Impacts:** More than five years

#### Magnitude

**Negligible:** Not quantifiable.

**Minor:** Changes would be measurable, although small, short-term, and local.

**Moderate:** Changes would be measurable and would have appreciable impacts, although the effects would be local.

**Major:** Major impacts are measurable, appreciable, and generally regional in nature.

### 4.2.1 Impacts on Non-native, Invasive Species

#### 4.2.1.1.a Alternative A. Proposed Action – Non-native, Invasive Plant Species

Short-term, direct: The impact to non-native, invasive plant species would be moderate.

Annual monitoring and determination of the need for and implementation of subsequent treatments of non-native invasive plant species would result in eradicating those species from the project area.

Long-term, direct: Impact to non-native, invasive plant species would be moderate.

Once installed, the clearly marked loop trail would keep most foot-traffic concentrated to a limited linear surface, and reduce more dispersed walking that may increase the potential for spreading invasive/noxious weeds through seed dispersal. Regular monitoring to detect

and treat any new occurrences of non-native, invasive weeds would ensure new populations don't become established.

#### **4.2.1.1.b Alternative B. No Action – Non-native, Invasive Plant Species**

Short-term, direct: The impact to non-native, invasive plant species would be moderate.

Non-native, invasive plant species would continue to spread and occupy the entire project area.

Long-term, direct: Impact to non-native, invasive plant species would be major.

Seeds from the non-native, invasive plant species would be carried to other locations by visitors to Pakoon Springs.

#### **4.2.1.2.a Alternative A. Proposed Action - Non-native, Invasive Aquatic Faunal Species**

Short-term, direct: The impact to non-native, invasive aquatic species would be negligible.

The proposed educational or interpretive panels would make the connection about how aquatic invasives could greatly reduce or eliminate the potential of Pakoon Springs to successfully and significantly contribute to the recovery of several rare or extirpated species, like Relict leopard frog, Grand Wash spring-snails, and speckled dace.

**Imazapyr** would be considered slightly toxic to practically non-toxic to invertebrates based on the results from a range of invertebrate species. The reported acute toxicity LC50 concentration for the water flea *Daphnia magna* is >100 mg/L (Product Label, April 2006).

Long-term, direct: Impact to non-native, invasive aquatic species would be minor.

By preventing private vehicles from accessing the enclosure, the risk of someone introducing aquatic, non-native, invasive species by using a boat in the pond would be minimized, as it would require a much longer transport distance on foot.

There is a very low potential for **Glyphosate** to build up in the tissues of aquatic invertebrates or other aquatic organisms (Product Label, November 2002).

#### **4.2.1.2.b Alternative B. No Action - Non-native Aquatic Faunal Species**

Short & Long-term, direct and indirect: The impacts to non-native aquatic faunal species would be moderate.

Fishing poses risks because of the contaminated bait or gear that may be used, and the dumping of buckets with water obtained elsewhere. There is a high risk that even one or a few incidents could facilitate the introduction of an invasive aquatic species that could jeopardize the entire success of the Pakoon Springs restoration project. One New Zealand mud snail cyst could result in a massive population through cloning that could eventually fundamentally alter all of the aquatic habitats at Pakoon Springs.

#### **4.2.2.a Alternative A. Proposed Action - Threatened Mojave Desert Tortoise**

Short & Long-term, direct and indirect: There would be negligible impacts to the Mojave Desert Tortoise.



**Clopyralid, Glyphosate, and Metsulfuron – methyl** are rated slightly to moderately toxic to reptiles, as an eye irritant (FWS, 2004).

A permitted biological monitor would be present during any implementation activities, to ensure no disturbance to Desert Tortoise or primary constituent elements of Critical Habitat.

#### **4.2.2.b Alternative B. No Action – Threatened Mojave Desert Tortoise**

Short & Long-term, direct and indirect: There would be minor impacts to the Mojave Desert Tortoise.

The total conversion of native vegetation to non-native, invasive weeds would result in a local deterioration of habitat, with the loss of many primary constituent elements.

#### **4.2.3.a Alternative A. Proposed Action - Water Quality**

Short-term, direct: The impacts would be minor.

Water quality would be reduced until the applied chemicals have completely deteriorated (generally, in less than a week).

**Imazapyr** breaks down relatively quickly in water. Imazapyr has low volatility and the potential for loss to the atmosphere is low (Product Label, April 2006).

Long-term, indirect: The impact would be negligible to minor.

In water, **Glyphosate** is strongly adsorbed to suspended organic and mineral matter and is also broken down primarily by microorganisms. Its half-life in pond water ranges from 12 days to 10 weeks (Product Label, November 2002).

#### **4.2.3.b Alternative B. No Action – Water Quality**

Short and Long-term, direct and indirect: The impact would be negligible.

No herbicides would be applied to the water.

#### **4.2.4.a Alternative A. Proposed Action - Wetlands and Riparian Zones**

Short-term, direct: The impact would be minor.

A typical half-life for **Imazapyr** in soils is 10 days. Microbes and sunlight break down Imazapyr in the environment. Imazapyr's potential to leach to groundwater is high; surface runoff potential is high, and potential for loss on eroded soil is intermediate. Imazapyr is highly persistent in soil (Product Label, April 2006).

The breakdown of **Metsulfuron**-methyl in soils is largely dependent on soil temperature, moisture content, and pH. The chemical will degrade faster under acidic conditions, and in soils with higher moisture content and higher temperature. The chemical has a higher mobility potential in alkaline soils than in acidic soils, as it is more soluble under alkaline conditions. Metsulfuron-methyl is stable to photolysis, but will break down in ultraviolet light. Half-life estimates for Metsulfuron-methyl in soil are wide ranging from 14 - 180 days, with an overall

average of reported values of 30 days (Product Label, March 2007). At Pakoon Springs, it is estimated that breakdown in the more alkaline soils found there would be somewhere between 30 days and 180 days (Product Label, March 2007).

Long-term, indirect: The impacts would be moderate.

The wetlands and riparian areas would be more stable and primarily occupied by native flora and fauna. The habitat may become suitable for the introduction of Relict Leopard Frogs or other desirable, native, and/or special status species. Habitat conditions for native species would be improved. If suitable habitat conditions for Relict leopard frog, Grand Wash Spring Snail, Speckled Dace and/or other native fish species are created during the completion of the actions authorized in the existing EA, and remain stable, the introduction of those species could be considered.

The area would meet both Standards 1 and 2 of Standards and Guidelines for Rangeland Health.

#### **4.2.4.b Alternative B. No Action - Wetlands and Riparian Areas**

Short and long-term, direct and indirect: The impacts would be moderate.

Non-native, invasive weeds would persist and expand. Examples of threats include the common reed (phragmites) that could potentially overwhelm much of the pond, wetland, and stream corridor habitats.

The area would not meet Standards 1 and 2 of Standards and Guidelines for Rangeland Health, due to the presence on non-native invasive weeds.

#### **4.2.5.a Alternative A. Proposed Action - Wildlife**

Short-term, direct: The impact would be minor.

The plant enzyme affected by **Glyphosate**, ESP synthase, is not present in humans or animals, contributing to the low toxicity to wildlife. The acute dermal toxicity to rats (LD50) is 5,000 mg/kg body weight and the acute inhalation toxicity to rats (LD50) is 2.9 mg/L. Therefore Glyphosate is practically non-toxic to rats, so the conclusion can be drawn that Glyphosate-containing products are relatively non-toxic to animals, including humans (Product Label, November 2002).

Single dose oral toxicity is extremely low for **Clopyralid**. The oral LD50 for rats is >5000 mg/kg. The dermal LD50 for rabbits is >2000 mg/kg. The inhalation LD50 for rats is >0.38mg/L. Excessive vapor concentrations are attainable and could be hazardous on single exposure. The aerosol LC50 for rats is >3.0 mg/L for 4 hours. Clopyralid is of relatively low toxicity to mammals but can cause moderate eye damage. Clopyralid has low toxicity if individuals accidentally eat, touch, or inhale residues. Clopyralid vapors may irritate the eyes, and direct contact may cause very slight but temporary eye injury. It is not a skin sensitizer or irritant (Product Label, revised July 2008).

**Imazapyr** is practically non-toxic to mammals based on an acute oral LD50 of >5,000 mg/kg in rats. Acute dermal toxicity of >2,000 mg/kg was reported in rabbits. Imazapyr is practically non-toxic to birds. Oral LD50 values of >2,150 were reported for both quail and duck. Imazapyr is irritating to the eyes and can cause rashes, redness and swelling at the site of exposure, if contact occurs. The primary route of potential harm would occur during the application process. The amount of the product needed to produce an acute effect is relatively large (LD 50= >5000 mg/kg & LC 50= <100. Imazapyr has low toxicity if individuals get residues on their skin and very low toxicity if it is eaten or inhaled (Product Label, April 2006).

**Metsulfuron-methyl** has very low avian toxicity. The oral LD50 value for mallard ducks is greater than 2510 mg/kg, and dietary LC50 values for mallard ducks and bobwhite quail are greater than 5620 ppm (40). Metsulfuron-methyl has low acute toxicity to honey bees with a topical LD50 of greater than 25 ug/bee (40). The LC50 for earthworms is greater than 1,000 mg/kg soil. Metsulfuron has very low toxicity in mammals. Based on laboratory tests, the oral dose of Metsulfuron-methyl that causes mortality in half of the test animals (LD50) is > 5,000 mg/kg in rats. It has low dermal toxicity in tests with rabbits, with an LD50 > 2,000 mg/kg, and low inhalation toxicity in rats, with a median lethal concentration in air of greater than 5 mg/liter air. Systemic poisoning by sulfonyleurea based compounds is unlikely, unless large quantities have been ingested. No accounts of poisoning by Metsulfuron-methyl are currently available (Product Label, March 2007).

Long-term, direct: The impact to wildlife would be minor.

**Glyphosate** was re-registered in September 1993 after EPA reviewed new studies and concluded that the use of Glyphosate-based herbicides in accordance with label direction would not pose unreasonable risks or adverse effect to the environment (Product Label, November 2002).

Native flora and fauna, and their habitats, would be restored. As the project site becomes fully occupied with native vegetation, wildlife habitat would be improved.

Definition: LC50/LD50, Acute toxicity is commonly measured by the lethal dose (LD) or lethal concentration (LC) that causes death in 50 percent of treated laboratory animals. LD50 indicates the dose of a chemical per unit body weight of an animal and is expressed as milligrams per kilogram (mg/kg). LC50 is the concentration of a chemical per volume of air or water and is expressed as milligrams per liter (mg/L). Chemicals are highly toxic when the LD50 or LC50 value is small and practically nontoxic when the value is large. However, the LD50 and LC50 do not reflect potential health effects such as cancer, birth defects, or reproductive toxicity that may occur at levels of exposure below those that cause death.

#### **4.2.5.b Alternative B. No Action - Wildlife**

Short-term, direct: The impact would be negligible.

Long-term, indirect: The impacts would be moderate.

The expansion of non-native invasive weeds would increase the risk of habitat loss from catastrophic fire. The non-native invasive weeds provide a fuel source which could be ignited during summer monsoon storms. Native Mojave vegetation is not fire adapted and would be destroyed. The change in the fire regime would result in a habitat devoid of vertical structure. No opportunity would exist to introduce desirable faunal species.

#### **4.2.5.a Alternative A. Proposed Action – Recreation**

One of the goals of the project is to “Provide an outdoor venue for natural and cultural resource education, spring restoration interpretation, and recreation on the Grand Canyon – Parashant National Monument.” This project would provide new trails and displays to educate the public on the importance of preserving desert spring ecosystems. The project would provide methods to allow visitors to view the springs safely, with the least amount of resource damage. The project would help direct users to appropriate parking and camping places, through installation of visually appropriate parking barricades, trails, bridges, viewing platforms, signs, etc.

#### **4.2.5.b Alternative B. No Action – Recreation**

The No Action Alternative would allow visitors to develop their own methods for viewing the springs and camping in the surrounding area. No action would miss the opportunities to build partnerships with our visiting public to preserve these unique springs. The no action alternative would provide recreational users a more unconfined experience. The No Action Alternative would result in unmanaged public use that could result in presence of trash and human and/or animal waste. The lack of educational material could result in unwanted introductions of aquatic non-native invasive species.

#### **4.2.5.a Alternative A. Proposed Action - Visual Resources**

The proposed action would provide infrastructure that would enhance the viewing of the Pakoon Springs without attracting the attention of the casual visitor. All structures would be designed and colored to blend with the background.

#### **4.2.5.b Alternative B. No Action - Visual Resources**

No structures would be placed that could possibly distract from view of the landscape. Visitors could create their own trails and modifications to view the springs. No bridges, viewing platforms would be available to enhance views.

### **4.3.a Cumulative Impacts of the Proposed Action**

The historic cumulative impact of the private uses of the springs was very damaging to riparian habitat. Through the rehabilitation efforts of the past four years, this damage has been mitigated, and the riparian habitat has been put on a trajectory to full recovery of ecological structure and function.

Implementation of the Proposed Action has a high probability of creating sustainable native Mojave Desert riparian wildlife habitat. This habitat would then be considered for introductions of several native species that are at risk of extinction. If the habitat continues to expand to an adequate size, Southwest Willow Flycatchers, a threatened species, may take up residence.

The cumulative impacts would meet many wildlife objectives and goals described in the Desired Future Conditions decisions in the 2008 RMP, as well as the numerous interagency agreements to improve wildlife habitat.

Once developed, this habitat would also provide a very unique recreational and environmental education opportunity on the Grand Canyon - Parashant National Monument.

There are many activities that might happen at Pakoon Springs – or that would impact Pakoon Springs, in the future. These include:

1. The use of the pond water, by helicopters or fire engines, during the suppression of fires; This use should have no cumulative impacts to the ecological system and riparian habitat, as long as the dipping apparatus have been adequately sanitized, if they have been used in other, potentially contaminated waters. Also, the amount of water that might be taken for fire suppression would be quickly replaced by the volume of water produced by the springs.
2. Visitors could introduce aquatic non-native, invasive species at Pakoon Springs. All attempts will be made to inform and educate the public to the adverse impacts caused by these species, and that they should be diligent when visiting different aquatic locations.
3. Use of the riparian area by trespass cattle or burros: During July of 2009, 12 – 14 head of cattle trespassed, through a cut fence, into the rehabilitated spring area. The cows were not removed

until sometime in November. The damage they did (besides littering the landscape with cow dung) included:

- a) setting the growth of the newly established riparian species back for at least 12 months, and
- b) contaminating the water, which resulted in a massive algae bloom in the pond during the fall. If grazing permits are not administered diligently this could happen again, with the same adverse impact. Or if the fences are cut by visitors, the burros would find the openings and make use of the riparian vegetation, resulting in the same adverse impact as from livestock.

4. Aquifer water extraction on neighboring lands; The Southern Nevada Water Authority is attempting to extract water from northern Nevada aquifers, and pipe it to Las Vegas. If this happens, the production of the springs may be reduced, as we do not yet know the source of the water at Pakoon Springs.

5. Global Climate Change could result in hotter and dryer conditions in the Southwest U.S. If this happens, the production of the springs may be reduced.

#### **4.3.b Cumulative Impacts of the No Action Alternative**

The No Action alternative would facilitate the expansion, and total site occupation, of non-native, invasive plant species, as they are more competitive than the native species. Much of this vegetation would dry out during the heat of the summer and provide a fuel load adequate to sustain catastrophic fires. The cumulative impact would be a burned riparian area, with an adjacent upland totally occupied by non-native, invasive, fire prone weeds.

The No Action Alternative would result in unmanaged visitor use. As this unmanaged visitor use increases, the potential to introduce aquatic non-native, invasive species would increase. The cumulative impact of this introduction would be a total loss of the native aquatic biodiversity, the loss of the ecological function of the wetlands, as well as the loss of opportunity to introduce, or reintroduce native special status species.

The unmanaged visitor use could also result in unsanitary conditions, not appropriate for public use. The cumulative impact of this situation would be the need to consider closing the area to the public to minimize unsanitary conditions.

## Chapter 5

# CONSULTATION AND COORDINATION

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## 5.1 List of Preparers and Contributors

This EA was prepared and reviewed by an interdisciplinary team of resource specialists and is being reviewed by the public.

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BLM Monument Manager

## References

Dow AgroSciences Label for Clopyralid, Stinger® herbicide, revised July 2008.

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Syngeta Label for Metsulfuron, March 2007.

Monsanto Label for Glyphosate, Ranger Pro® herbicide, November 2002.

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Cultural Resource Compliance Record 2005, John Herron

Cultural Resource Compliance Record, 2007, David Van Alfen

**DRAFT**

**FINDING OF NO SIGNIFICANT IMPACT  
AND  
DECISION RECORD  
DOI-BLM-AZ-A030-2010-0004-EA**

**Pakoon Springs  
Control of Non-natives and Management of Public Use  
Grand Canyon – Parashant National Monument**

Bureau of Land Management  
345 East Riverside Drive  
St. George, Utah 84790  
435-688-3200

**February xx, 2011**

**FONSI:** Based on the analysis of potential environmental impacts contained in the attached environmental assessment (DOI-BLM-AZ-A030-2010-004-EA), and with due consideration of public response, the Bureau of Land Management (BLM) has determined that the proposed action will not have a significant effect on the human environment and an environmental impact statement is therefore not required.

Environmental impacts that could occur are negligible to minor in effect, and short in duration. There are no unmitigated adverse impacts on public health, public safety, threatened or endangered species, sites or districts listed in or eligible for listing in the National Register of Historic Places, or other unique characteristics of the region.

There are no highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or elements of precedence identified. Implementation of the action would not violate any federal, state, or local environmental protection law. Therefore, in accordance with the National Environmental Policy Act of 1969, and regulations of the Council on Environmental Quality (40 CFR 1508.9), an environmental impact statement will not be prepared for this project.

**DECISION:**

It is my decision to implement the Pakoon Springs Control of Non-natives and Management of Public Use project on the BLM portion of the Grand Canyon – Parashant National Monument, as described in the Proposed Action, Alternative A (DOI-BLM-AZ-A030-2010-0004-EA).

The Approved+ Action will continue to be an adaptive management project. Adaptive management is a formal, systematic, and rigorous approach to **learn from the results of management actions**, accommodate change, and improve management. Adaptive management consists of synthesizing existing knowledge, exploring alternative actions, and making explicit forecasts about their results. Management actions and monitoring programs will be carefully designed to generate reliable feedback and clarify the reasons underlying results. Actions and objectives will then adjusted based on this feedback and improved understanding to



continue to try to achieve the Desired Resource Conditions. In addition, decisions, actions, and results will be carefully documented and communicated to others, so that knowledge gained through experience is passed on, rather than lost when individuals move or leave the organization.

In December 2007, the Bureau of Land Management (BLM) and Grand Canyon Wildlands Council (GCWC) began implementation of the Pakoon Springs Rehabilitation Project, at Pakoon Springs Ranch, Grand Canyon – Parashant National Monument, Mohave County, Arizona. The spatial scope of the project is approximately 50 - 60 acres. Soil trenches were dug and soil cores were collected to gather soils and geomorphologic information to better inform the rehabilitation decisions and actions. Areas of buried organic matter were found, locating areas of dense vegetation that had existed prior to the development of the springs. This information was used to design and implement the rehabilitation treatments.

During March and April of 2008, 2009, and 2010 the BLM and GCWC recontoured all but one spring pond at Pakoon Springs, decommissioned roads, and started re-vegetation work. A non-native invasive weed, Malta star thistle, was discovered in April 2008. A large population of Russian thistle appeared around the springs in May 2008.

### **Control of non-natives**

An attempt to remove the most invasive non-native vegetation species will be made by using Imazapar, Metsulfuron, Clopyralid, and/or Glyphosate. Project personnel will receive a briefing on the goals and objectives of the treatment, personal safety precautions, and will include information regarding protection of desert tortoise.

#### **Monitoring:**

Implementation Monitoring will consist of:

- a. Completion of BLM Pesticide Application Report,
- b. Documentation of proposed pesticide treatments in the BLM MIS System at the beginning of each fiscal year, and
- c. Documentation of pesticide treatment implementation in the BLM MIS System at the end of each fiscal year.

Effectiveness Monitoring will consist of data gathering of the following monitoring attributes:

Discharge, field water-chemistry, and air temperature at the major spring outflow points will be monitored quarterly for the first year and semi-annually for the following two years. One representative spring source water sample shall be collected for cation, anion and trace metal laboratory analysis. Photographs will be taken at the time of each site visit from reference points.

When restoration is complete, plant growth will be monitored, and the fencing maintained every other month during the growing season. Non-natives plants will be removed during these visits.

### **Public Use**

Since the rehabilitation activities began, visitation has increased at Pakoon Springs. Potential increased public use of this very remote site could result in the need for focused management of the public use - to ensure rehabilitation investments and public health and safety are protected. To protect public safety and the integrity of the site, the installation of educational materials, a parking lot, walkways, a bridge, a picnic table, camping locations, a garbage receptacle, fencing, and/or a toilet will be considered.

Determination of what facilities to install, and when to install them, will be made by evaluating information gained through monitoring visitor use.

### **Monitoring:**

The impacts of potential, actual, and/or problematic increased visitor use at Pakoon Springs will be determined by

- 1) Installing traffic counters at the access spur roads, both north and south
- 2) Installing a pedestrian counter at the pedestrian gate, to be installed on the north end,
- 3) Collecting use data (trash, etc.) and
- 4) Developing and applying Levels of Acceptable Change (LAC) criteria.

**RATIONALE for DECISION:** The decision to authorize the proposed action has been made in consideration of the environmental impacts of implementation.

The action is in conformance with the Grand Canyon – Parashant National Monument Record of Decision and Management Plan, 2008, and with the Grand Canyon – Parashant National Monument Proclamation.

The No Action Alternative consists of the original Proposed Action in EA-AZ-130-2007-0048. The No Action Alternative was not selected because it would not achieve the objectives (as originally stated) nor would it protect and/or enhance National Monument objects and important ecological and social resources nearly as effectively as the Proposed Action.

### **Alternatives Considered but not Analyzed in Detail**

No other alternatives were considered.

### **Administrative Review or Appeal Opportunities**

This decision may be appealed to the Interior Board of Land Appeals, Office of the Secretary, in accordance with the regulations contained in 43 CFR, Part 4 and the attached Form 1842-1. If an appeal is taken, your notice of appeal must be filed at the Grand Canyon – Parashant National Monument, 345 East Riverside Drive, St. George, Utah 84790, within 30 days from receipt of this decision. The appellant has the burden of showing that the decision appealed from is in error.

If you wish to file a petition (request) pursuant to regulations 43 CFR 4.21(b) for a stay (suspension) of the effectiveness of this decision during the time that your appeal is being reviewed by the Board, the petition for a stay must accompany your notice of appeal. A petition for a stay is required to show sufficient justification based on the standards listed below. Copies of the notice of appeal and

petition for a stay must also be submitted to each party named in this decision and to the Interior Board of Land Appeals and to the Office of the Solicitor (Department of the Interior, Office of the Field Solicitor, Sandra Day O'Connor U.S. Court House #404, 401 West Washington Street SPC44, Phoenix, AZ 85003-2151) (see 43 CFR 4.413) at the same time the original documents are filed with this office. If you request a stay, you have the burden of proof to demonstrate that a stay should be granted.

Except as otherwise provided by law or other pertinent regulations, a petition for a stay of a decision pending appeal shall show sufficient justification based on the following standards:

Standards for Obtaining a Stay

1. The relative harm to the parties if the stay is granted or denied,
2. The likelihood of the appellant's success on the merits,
3. The likelihood of immediate and irreparable harm if the stay is not granted, and
4. Whether the public interest favors granting the stay.

**Approved:**

\_\_\_\_\_  
Pam Mc Alpin  
BLM Manager, Grand Canyon Parashant National Monument

\_\_\_\_\_  
Date