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**Tamarisk Control
Grand Canyon – Parashant National Monument
Bureau of Land Management
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Tamarisk Control

Grand Canyon – Parashant National Monument

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1.0 INTRODUCTION/PURPOSE AND NEED

1.1 Introduction: *Tamarix ramosissima* (tamarisk), *Elaeagnus angustifolia* (Russian olive) and *Ulmas pulila* (Siberian elm) are natives of Eurasia. *Nicotiana glauca* (Tree tobacco) is a native of South America. All of these exotic tree species were intentionally introduced into the U.S. in the early 1800's, as domestic landscape species. They have since escaped from cultivation and become prolific in the wild. Tamarisk is found in numerous washes and near small wet areas on the Grand Canyon – Parashant National Monument. In most areas, it is an insignificant or minor component with respect to the overall species composition. Through time, tamarisk can displace native species by out-competing the natives for water, and by making the soil increasingly more saline. Although the other three exotic tree species have not yet been found on the Monument, they are also very invasive and may closely follow tamarisk invasions. Control of each of these non-native, invasive tree species is much more efficient, practical, and less costly before the infestations become numerous, large, and/or dense.

1.2 Purpose: The purpose of the proposed project is to improve ecological functions, processes, and diversity along washes and near springs, where it occurs, within the Grand Canyon – Parashant National Monument (excluding the area from below the high water mark of the shoreline of Lake Mead), by extirpating non-native, invasive tamarisk and any other non-native invasive tree species, where discovered, on the Monument.

1.3 Need: The need for this project is to achieve conformity with the

- 1.3.1 The Wilderness Protection Act (1964),
“A wilderness area generally appears to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable.”
- 1.3.2 Arizona Strip Resource Management Plan (1990),
“Maintain, restore, or improve riparian areas to achieve a healthy and productive ecological condition for maximum long-term benefits. This can be accomplished using fire, mechanical, chemical or biological means.”
- 1.3.3 The Standards for Rangeland Health (1997),
“Productive and diverse upland and riparian-wetland plant communities of native species exist and are maintained.”
- 1.3.4 The Grand Canyon – Parashant National Monument Proclamation (2000), and Interim Management Policy (2001), “Existing noxious weed and exotic species control activities should continue.”
- 1.3.5 National Park Service Management Policies (2001) Section 4.4.4: “Exotic species will not be allowed to displace native species if displacement can be prevented.”
- 1.3.6 Executive Order 13112 (1999) “Each Federal agency whose actions may affect the status of invasive species shall, to the extent practicable and permitted by law... prevent the introduction of invasive species, detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner....not authorize, fund or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species...”

1.4 Issues: The following Issues were identified during scoping:

- 1.4.1 Reduced soil productivity
- 1.4.2 Reduced diversity and abundance of native vegetation

- 1.4.3 Impacts on bird roosting and nesting habitat
- 1.4.4 Impacts on Monument Objects
 - 1.4.4.1 Ecological Diversity
- 1.4.5 Impacts on Visual Resources
- 1.4.6 Impacts on Areas with Wilderness Characteristics

1.5 Conformance with Existing Plans

The Proposed Action, described below, is subject to conformance with the BLM Arizona Strip District RMP (1990). The Proposed Action is in direct conformance with the following decisions:

1.5.1 Conformance with Arizona Strip District RMP (1990). The proposed action is specifically authorized by the following decisions in the RMP:

- RP02 Maintain, restore, or improve riparian areas to achieve a healthy and productive ecological condition for maximum long-term benefits. This can be accomplished using fire, mechanical, chemical or biological means.
- RR06 Implement actions to restore and/or maintain natural conditions or appearance in all areas.
- WS01 Manage vegetation cover towards ecological stability and sound long-term protective soil cover using mechanical, chemical, biological or fire as tools for accomplishment.

The proposed action and alternative(s) would not conflict with other decisions in the Arizona Strip District RMP (1990).

1.5.2 Conformance with Arizona Standards for Rangeland Health (1997). The proposed action is specifically authorized by the following decisions in the AZ Standards for Rangeland Health:

Standard 3: Productive and diverse upland and riparian-wetland plant communities of native species exist and are maintained.

1.5.3 Conformance with the Grand Canyon – Parashant Monument Proclamation (2000) and Interim Management Policy (2001). The proposed action is specifically authorized by the following decisions in the Monument Proclamation and Interim Management Policy:

For the purpose of protecting the objects identified below, all motorized and mechanized vehicle use off road will be prohibited, except for emergency or authorized administrative purposes.

Ecological Diversity: Resulting from the junction of two physiographic ecoregions (the Basin & Range and the Colorado Plateau) and three floristic provinces (the Mojave Desert, Great Basin, and Colorado Plateau).

Existing noxious weed and exotic species control activities should continue.

Chaining and other methods of vegetation manipulation that cause substantial surface disturbance shall not be permitted.

1.5.4 Conformance with LUP Amendment for Fire, Fuels, and Air Quality Management (2003). The proposed action is specifically authorized by the following decisions in the 2003 LUP Amendment for Fire, Fuels and Air Quality:

Manual treatment of undesired plants would be used where fire is undesirable or where significant constraints prevent widespread use of fire as a management tool.

Chemical treatment would be utilized to control unwanted vegetation.

1.5.5 Conformance with National Park Service Policy and Lake Mead National Recreation Area Policies and related management plans:

1.5.5.1 Conformance with National Park Service (Organic Act of 1916) To “conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.”

1.5.5.2 Conformance with The National Park Service Strategic Plan for Managing Invasive Nonnative Plants on National Park Service Lands (1996). To: 1) Prevent invasion, 2) Increase public awareness, 3) Inventory and monitor non-native plants, 4) Conduct research and transfer technology, 5) Integrate planning and evaluation, and 6) Manage invasive non-native plants.

1.5.5.3 Conformance with Public Law 88-639: Lake Mead National Recreation Area was established for: ...general purpose of public recreation, benefit and use, and in a manner that will preserve, develop, and enhance . . .the recreation potential, and in a manner that will preserve the scenic, historic, scientific, and other important features of the area ...

1.5.5.4 Conformance with the 1999 LMNRA Resource Management Plan and State of Park Report: Develop a program for the management of exotic species, particularly plant species. Tamarisk is specifically stated in this document as a significant invader of riparian and spring systems.

1.5.5.5 Conformance with the National Management Plan: Meeting the Invasive Species Challenge in 2001. The plan emphasizes prevention, early detection and rapid response, control and management, restoration, international cooperation, research and monitoring, information management, and education and public awareness. The plan gives specific tasks to various departments in the US government. The National Park Service was noted as establishing Exotic Plant Management Teams (EPMT) to “identify, eradicate, or control small, localized infestations on lands managed by the National Park Service.”

The Proposed Action and No Action Alternatives would not conflict with other National Park decision documents.

1.6 Relationship to Laws, Regulations, Other Plans

Pertinent laws include Federal Land Policy Management Act, Endangered Species Act, Wilderness Protection Act, American Indian Religious Freedom Act, Archaeological Resources Protection Act, Native American Graves Protection and Repatriation Act; Executive Order 13007, Native American Consultation Handbook (8160) and its supplement (8160-1). Plans include the Desert Tortoise Recovery Plan, Biological Opinions, the Programmatic Agreement

with the State Historical Preservation Office, and the 1991 FEIS on Vegetation Treatment on BLM Lands.

2.0 ALTERNATIVES

2.1 Proposed Action - Alternative A

BLM and NPS would use chainsaws to manually cut tamarisk (and other non-native, invasive tree species, if discovered) and/or treat with chemical herbicides to extirpate tamarisk (and other non-native, invasive tree species), where it occurs, within the Grand Canyon – Parashant National Monument, excluding the area below the high water mark of the shoreline of Lake Mead. Project objectives are to reduce tamarisk cover by more than 90% immediately after the initial treatment, to reduce tamarisk cover by more than 95% within five years, and to prevent the establishment of any other non-native invasive tree species. Depending on the age and size of individual stems, the density of stems, and the degree of intermingling with native vegetation, one of the following methods would be used to treat these woody non-native species:

2.1.1 Tree Cutting, Herbicide Application, and Hand pulling

Arizona certified herbicide applicators, under direct supervision of BLM certified personnel, would apply triclopyr.

Cut-stump Application: Trees with stems greater than six inches in diameter (at ground level), would be cut near ground level with chainsaws, except in wilderness, where they would be cut with hand saws or loppers. Triclopyr and vegetable oil mixture would be applied to the cut stumps. A mixture of triclopyr and water would be applied to the cut stumps near wet areas. Cut stems would be pulled away from native vegetation and left to decompose on site.

Low Volume Bark Application at Stem Base: On trees with stems less than six inches in diameter (at ground level), a mixture triclopyr and a vegetable oil with backpack sprayers would be applied to the trunk of trees, from the ground level interface, up the stem approximately 18". Triclopyr would be applied according to label requirements.

Foliar Application: A mixture of triclopyr with water and a surfactant would be sprayed on individual trees, where at least 50% of the foliage of the tree could be covered with the herbicide mixture.

Hand pulling of seedlings: Individual stems, usually less than 0.5 inches in diameter and up to 12" in height would be hand pulled, by the roots, from the ground.

2.1.2 Access: Access to the individual project sites would be by way of existing routes and dry washes, using standard ½ ton and ¾ ton trucks, and ATVs. On occasion, cross country transportation may be required. Where cross country transportation is necessary and tracks would remain visible indefinitely, these tracks would be rehabilitated. During implementation, personnel will avoid walking in saturated areas which contain obvious spring flows and gravel substrate.

2.1.3 Monitoring:

Implementation monitoring would consist of:

- a. Completion of BLM Pesticide Application Report within 24 hours of application,
- b. Documentation of proposed treatments in the BLM MIS System at the beginning of each fiscal year, and
- c. Documentation of treatment completion in the BLM MIS System at the end of each fiscal year.

Effectiveness monitoring would consist of visual observation and documentation and would be initiated the fall following the first treatments, and continue throughout the life of the project.

2.1.4 Conservation Measures, Terms and Conditions - Desert Tortoise

The following conservation measures are contained in US Fish and Wildlife Service Biological Opinion 2-21-96-F-123. They are specific to activities on BLM managed land, and will be adhered to on NPS managed land.

Personnel education programs, well-defined operational procedures, and movement of tortoises out of in harm's way shall be implemented for any activity that results in disturbance of desert tortoise habitat or may result in death or injury of a desert tortoise.

- a. For each authorized project ("project" means any surface-disturbing activities proposed by the Bureau and described in the Mojave Amendment to the RMP), that may cause disturbance of desert tortoise habitat and/or death or injury of a desert tortoise, the Bureau shall designate a field contact representative (FCR) who shall be responsible for overseeing compliance with these terms and conditions and for coordination on compliance with the Service. The FCR, qualified biologist(s) approved by the Bureau, and authorized biologist shall have the authority and the responsibility to halt all project activities that are in violation of these terms and conditions. These individuals shall have a copy of the terms and conditions of this biological opinion while on the work site.
- b. A desert tortoise education program shall be presented to all project personnel that may encounter tortoises; such as employees, inspectors, supervisors, contractors, and subcontractors; prior to initiation of activities that may result in disturbance of desert tortoise habitat or death or injury of desert tortoises. The education program will include discussions of the following:
 - 1. Legal protection of the desert tortoise and sensitivity of the species to human activities;
 - 2. A brief discussion of desert tortoise distribution and ecology;
 - 3. The terms and conditions of Biological Opinion 2-21-96-F-123;
 - 4. Project features designed to reduce adverse effects to desert tortoises and their habitat, and to promote the species' long-term survival;
 - 5. Protocols during encounters with desert tortoises and associated reporting requirements; and
 - 6. The definition of take and penalties for violations of Federal and State laws.
- c. Use of motorized vehicles during rehabilitation or restoration activities in suitable or occupied habitat will be restricted, to the extent feasible, to existing roads, trails, or washes, and to temporary access roads or fuel-breaks, created to enable the treatment activities to occur. If off-road is deemed necessary, any cross-country travel paths will be surveyed prior to use and will be closed and rehabilitated after rehabilitation or restoration activities are completed.

d. Prior to moving a vehicle, personnel will inspect under the vehicle for tortoises. If a tortoise is found under the vehicle, the tortoise will be allowed to move away from the vehicle on its own accord, if possible.

e. Temporary access routes created during project construction shall be modified as necessary to prevent further use. Closure of access routes could be achieved by ripping, barricading, posting the route as closed, and/or seeding and planting with native plants.

f. In DWMAs/ACECs, vehicles associated with Bureau-authorized projects traveling on unpaved roads in desert tortoise habitat shall not exceed speed limits established by the Bureau as necessary to protect desert tortoises. These speed limits will generally not exceed 40 mph even on the best unpaved roads but may be much less on some roads.

g. During the tortoise active season (March 15 through October 15), project features that might trap or entangle desert tortoises such as open trenches, pits, open pipes, etc shall be covered or modified to prevent entrapment.

h. To the extent possible, project activities shall be scheduled when tortoises are inactive (October 15 through March 15).

i. If a tortoise or clutch of tortoise eggs is found in a project area, to the extent practicable activities shall be modified to avoid injuring or harming it. If activities cannot be modified, the tortoise/clutch shall be moved from harm's way by an the authorized biologist the minimum distance possible within appropriate habitat to ensure its safety from death, injury, or collection associated with the project or other activities. The authorized biologist shall be allowed some discretion to ensure that survival of each relocated desert tortoise/clutch is likely. Desert tortoises/clutches shall not be translocated to lands outside the administration of the Federal government without the written permission of the landowner. Handling procedures for desert tortoises and their eggs shall adhere to protocols outlined in Desert Tortoise Council (1994 with 1996 revisions).

Only biologists or tortoise monitors authorized by the US Fish and Wildlife Service and Arizona Game and Fish Department shall handle desert tortoises. The authorized biologist or monitor shall maintain a record of all desert tortoises encountered during project activities. This information shall include for each desert tortoise:

- The locations and dates of observation
- General condition and health, including injuries and state of healing and whether animals voided their bladders
- Location moved from and location moved to
- Diagnostic markings (i.e. identification numbers of marked lateral scutes)

No notching of scutes or replacement of fluids with a syringe is authorized.

Desert tortoises that are handled shall be marked for future identification. An identification number (using the acrylic paint/epoxy technique) shall be placed on the 4th costal scute (Fish and Wildlife Service 1992).

j. At no time shall vehicle or equipment fluids be dumped on federal lands. All accidental spills must be reported to the Bureau and cleaned up immediately, using the best available practices according to the requirements of the law. All spills of federally or State-listed hazardous materials that exceed reportable quantities shall be promptly reported to the appropriate State agency and the Bureau.

k. To reduce attraction of potential desert tortoise predators, project sites in desert tortoise habitat shall be maintained in a sanitary condition at all times; waste materials at those sites shall be placed in covered receptacles and disposed of promptly at an appropriate waste disposal site. "Waste" refers to all discarded matter, including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment. All reasonable effort shall also be taken to reduce or eliminate water sources associated with project activities that might attract ravens and other predators.

l. Unleashed dogs shall be prohibited in project areas.

Treatment Schedule: Treatment activities would be scheduled to begin in October, 2007, and continue for 20 years, or until tamarisk (and/or other non-native invasive woody species) is/are no longer present in the monument. As additional infestations are identified, treatments would be implemented, with the appropriate conservation measures, and monitored. Project implementation would typically occur between October 15th and March 15th, outside the bird nesting season and tortoise active season.

2.1.5 Location: The proposed project area is the Grand Canyon – Parashant National Monument (excluding the area below the high water mark of the shoreline of Lake Mead). See the Project Map in Appendix A.

2.1.6 Scope: The spatial scope of this Environmental Assessment is the washes and springs of the Grand Canyon – Parashant National Monument (above the high water mark of Lake Mead), where tamarisk (or any non-native invasive tree species) occurs (approximately 100 acres); and the temporal scope for treatment implementation and monitoring is a period of 20 years, or until all non-native invasive tree species are no longer present on the Monument.

2.1.7 Herbicide Information

- **Acute toxicity:** The oral LD50 of Triclopyr in rats ranges from 630 to 729 mg/kg and is over 2000 mg/kg for various amine and ester formulated products. Other oral LD50 values for triclopyr are 550 mg/kg in the rabbit and 310 mg/kg in the guinea pig. The dermal LD50 for the technical material in rabbits is greater than 2000 mg/kg, and greater than 4000 mg/kg for the formulations. Inhalation of triclopyr did not affect rats, but inhalation of some of the formulations did cause nasal irritation. A similar result was seen when rabbit eyes were exposed. The technical material had only a slight effect on rabbit eyes, while some formulations caused significant eye irritation. These data indicate triclopyr is slightly toxic.
- **Chronic toxicity:** Rats fed diets containing between 3 and 30 mg/kg/day of triclopyr experienced no ill effects. Male rats fed much higher doses (100 mg/kg/day) had decreased liver and body weight and increased kidney weight. Male mice also showed reduced liver weight but at 60 mg/kg/day. Monkeys fed smaller doses of triclopyr (20 mg/kg/day) showed no adverse effects.
- **Reproductive effects:** Triclopyr fed to rabbits on days 6 to 18 of gestation at doses of 25, 50, and 100 mg/kg/day produced no effects on maternal body weight, litter size, or

fetal body weight. A three-generation study of rats at doses of 3, 10, and 30 mg/kg/day for an 8- to 10-week period prior to breeding of each generation showed no impact of triclopyr on fertility rates. Triclopyr does not appear to cause reproductive toxicity.

- **Teratogenic effects:** Pregnant rats given moderate to high doses of 50, 100, and 200 mg/kg/day on days 6 to 15 of gestation had offspring with mild fetotoxicity, but no birth defects. There were no teratogenic effects in rabbits treated on days 6 to 18 of gestation at dose rates of 10 and 25 mg/kg/day. These data suggest that triclopyr is not teratogenic.
- **Mutagenic effects:** Triclopyr is nonmutagenic in bacterial and cytogenetic assay systems. A mutagenicity study using rats was weakly positive, but a negative result was found in mice, the more sensitive species. Based on these data, triclopyr is unlikely to be mutagenic.
- **Carcinogenic effects:** Rats and mice fed oral doses of triclopyr at 3 to 30 mg/kg/day for 2 years showed no carcinogenic response. Even though the mice did have a high incidence of lymph cancer, these incidences were apparently characteristic of the particular strain of mice and did not represent a dose-related effect. Based on these data, Triclopyr is unlikely to be carcinogenic.
- **Organ toxicity:** Organs affected by exposure to triclopyr include the kidneys and liver.
- **Fate in humans and animals:** Data from animal studies indicate that triclopyr is rapidly eliminated via the urine as the unchanged parent compound. At higher oral doses, some triclopyr may be eliminated through the feces as the absorption capacity of the intestine is exceeded. Reported half-lives for elimination of triclopyr from mammals are 14 hours (dog) and <24 hours (monkeys). A human elimination half-life of approximately 5 hours has been suggested. Minor metabolites of triclopyr may include trichloropyridinal.

2.2 No Action

Under the no action alternative, the Proposed Action would not be implemented. Existing management and use of the project area would continue subject to applicable statutes, regulations, and policies.

2.3 Alternatives Considered but not Analyzed in Detail

2.3.1 Prescribed Fire

The use of fire to control tamarisk has repeatedly been found ineffective when used as the sole control method. Tamarisk shows a remarkable ability to recover from fire as it is a fire-adapted species. Fire used with a follow up herbicide application has proved effective in areas with a dense population of tamarisk. However, tamarisk in the project area does not necessarily occur in dense thickets. Also, tamarisk usually occurs intermixed with desirable, fire-intolerant, native woody species. It would be impossible to burn and kill tamarisk without adversely impacting the desired native species.

2.3.2 Cutting Only

Cutting tamarisk trees without herbicide application has also proven to be ineffective. Tamarisk has the ability to crown sprout and recovers quickly from cutting. This tool is not viable, when used alone.

2.3.3 Use of Alternative Herbicide

An alternative was considered to use the herbicide “Habitat” (Isopropylamine salt of Imazapyr) for control of tamarisk around water. Although “Habitat” is approved for use on open water, it is generally most effective for treating large thickets of tamarisk near open water, using the foliar application method. Because tamarisk has not yet developed into large, dense thickets on the Monument, this use of Habitat as a control agent is not particularly applicable; therefore, this alternative was not further evaluated.

3.0 AFFECTED ENVIRONMENT

3.0.1 General Setting: The Grand Canyon – Parashant National Monument is a vast, biologically diverse landscape, as it is the junction of two physiographic ecoregions: The Mojave Desert and the Colorado Plateau. Individually, these regions contain ecosystems extreme to each other, ranging from stark, arid desert to high elevation plateaus, tributaries and rims of the Grand Canyon. The western margin of the Shivwits Plateau marks the boundary between the Sonoran/Mojave/Great Basin floristic provinces to the west and south, and the Colorado Plateau province to the northeast.

3.1 Critical Elements of the Human Environment not Affected by the Proposed Action

The following critical elements of the human environment are not present or are not affected by the proposed action or alternatives evaluated in this EA, and therefore, will not be addressed:

- Air Quality
- Cultural Resources
- Environmental Justice
- Prime or Unique Farmlands
- Floodplains
- Native American Religious Concerns
- Hazardous or Solid Wastes
- Water Quality
- Wild Horse and Burros
- Wild & Scenic Rivers

3.2 Critical Elements of the Human Environment that May be Affected

For a more detailed description of the affected environment, refer to the Arizona Strip District RMP (1990) and the Grand Canyon-Parashant National Monument Proclamation (2000).

3.2.1 ACECs

The Pakoon – Gold Butte Area of Critical Environmental Concern was designated in 1998 to protect Desert Tortoise and appropriate tortoise habitat. Approximately 25 miles of ephemeral washes within this ACEC contain tamarisk. The important constituent element of tortoise habitat which may be affected by implementation of the proposed action is vegetation structure for shelter and shade, where treatments occur.

3.2.2 Threatened or Endangered Species

3.2.2.1 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 an herbivore that spends most of its life in underground burrows. It can live 80 years and has a low reproductive rate. Recent data on tortoise populations in the project area is unavailable. Desert tortoise may occasionally access the washes and springs in the area, but spend most of their time in the creosote-bursage and are not dependant upon riparian habitat.

Garlon 3A is an amine salt formulation of the active ingredient triclopyr. In *Recommended Protection Measures for Pesticide Applications in Region 2 of the U.S. Fish and Wildlife Service*, Garlon 3A has a toxicity group rating of 1e for reptiles and terrestrial amphibians. Class 1e pesticides are slightly to moderately toxic as an eye irritant.

Garlon 4 is an ester formulation of the active ingredient triclopyr. In *Recommended Protection Measures for Pesticide Applications in Region 2 of the U.S. Fish and Wildlife Service*, Garlon has a toxicity group rating of 0 for reptiles and 2 for terrestrial amphibians. Class 0 is practically non-toxic, while class 2 is highly toxic.

3.2.2.2 Grand Wash Springsnails

The Grand Wash Springsnail is known to occur in only three springs within Grand Wash trough on the Monument. The species lives within aquatic communities associated with spring flows and gravel substrate. It is threatened by groundwater depletion, subsequent loss of spring flows, and habitat degradation due to livestock use.

Garlon 3A is an amine salt formulation of the active ingredient triclopyr. In *Recommended Protection Measures for Pesticide Applications in Region 2 of the U.S. Fish and Wildlife Service*, Garlon 3A has a toxicity group rating of 0 for fresh water mollusks. Class 0 pesticides are practically non-toxic to fresh water mollusks.

Garlon 4 is an ester formulation of the active ingredient triclopyr. In *Recommended Protection Measures for Pesticide Applications in Region 2 of the U.S. Fish and Wildlife Service*, Garlon has a toxicity group rating and 1 for freshwater mollusks. Class 1 is slightly to moderately toxic to fresh water mollusks.

3.2.2.3 Neo-tropical Migrant Birds

The tamarisk trees, in the Monument, contribute to the nesting and roosting habitat for neo-tropical migrant birds.

3.2.3 Wetlands and Riparian Areas

Riparian scrub usually occurs along ephemeral or intermittent watercourses. Riparian scrub communities are characterized by a broad continuum of vegetative associations that range from mesic vegetation types to more xeric types along the usually dry washes.

Native riparian vegetation in the small wetland areas around springs is either no longer present, or is degraded from current and historic livestock grazing and the dewatering of most springs for livestock use.

The spring riparian areas and ephemeral washes infested by tamarisk occur at various locations within the monument, from approximately 2,000 to 5,000 feet in elevation. The infestations are typically small (less than two acres).

Tamarisk can transpire groundwater to the extent that local surface flows are diminished or no longer exist. In a hot, dry climate, a dense stand of tamarisk was found to use nine acre feet of water per acre per year. Tamarisk can transpire groundwater to the extent that local surface flows are diminished or no longer exist.

3.2.4 Water Quality

The most significant sources of non-point source pollution affecting Monument water are grazing, hydrologic modification, and recreation. Pollutants of concern are increased sediment and salt loads due to runoff events.

3.2.5 Wilderness

Four wilderness areas occur within the monument: The Grand Wash Cliffs (35,272 acres), the Paiute (southern portion – 32,272 acres), Mt. Logan (14,560 acres), and Mt. Trumbull (7,999 acres).

“The first and dominant goal is to provide for the long-term protection and preservation of the area’s wilderness character under a principle of non-degradation. The area’s natural condition, opportunities for solitude, opportunities for primitive and unconfined types of recreation, and any ecological, geological, or other features of scientific, educational, scenic, or historical value present will be managed so that they remain unimpaired.” There is also a requirement to manage the area using the minimum tool, equipment, or structure necessary to successfully, safely, and economically accomplish the objective.

Small areas of tamarisk occurrence exist within these wilderness areas.

3.3 Issues determined during Scoping

3.3.1 Soil Salinity

Soils in the washes typically contain rock fragments (from boulders to gravel), low clay amounts, segregated calcium carbonate, and organic matter. The amount of gravelly streambed alluvium, and sandy or silty soil and cobbles depends on the location relative to the channel. Typical pH is 7.8 to 8.4. In areas with perennial water, there is generally more organic matter and lower pH. Where tamarisk is present, soil salinity has increased and is continuing to increase.

3.3.2 Vegetation Diversity

The Monument encompasses the following ecological zones and vegetation associations:

- Interior Chaparral: Shrub oak, manzanita
- Mojave Desert: Creosote, white bursage, Joshua tree
- Mojave – Great Basin Transition: Blackbrush, yucca
- Great Basin: Sagebrush, pinion pine, juniper
- Ponderosa pine: Ponderosa pine
- Riparian: Cottonwood, willow, tamarisk

Red brome, schismus, and mustard have invaded much of the Mojave Desert zone and most previously burned areas of the Transition and Great Basin zones. Tamarisk has invaded many of the ephemeral washes and spring sources in the Riparian zone.

3.3.3 Bird Roosting and Nesting Habitat

Riparian habitats are disproportionately more important to wildlife, compared to the surrounding uplands, due to the potential availability of water and a more diverse vegetative cover. Mammals, birds and amphibians depend upon the potential water sources associated with the riparian habitat. Birds may use tamarisk for nesting and roosting habitat.

3.3.4 Visual Resources

The project area contains the following classifications of and objectives for visual resources:

Class I: The objective for this class is to preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract attention.

Class II: The objective for this class is to retain the existing character of the landscape. Management activities may be seen, but should not attract the attention of the casual observer.

Class III: The objective of this class is to partially retain the existing character of the landscape. Management activities may attract attention but should not dominate the view of the casual observer.

Class IV: The objective for VRM Class IV areas is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high.”

3.3.5 Monument Objects

From the Proclamation, Monument Objects in the proposed project area that could be affected include:

Mojave Desert Tortoise (Refer to T&E species 3.2.2.1, above)

Ecological Diversity: Resulting from the junction of two physiographic ecoregions (the Basin & Range and the Colorado Plateau) and three floristic provinces (the Mojave Desert, Great Basin, and Colorado Plateau).

3.3.6 Areas with Wilderness Characteristics

Several areas with wilderness characteristics occur within the Monument, and these areas contain individual tamarisk and/or small pockets of tamarisk infestation.

4.0 ENVIRONMENTAL CONSEQUENCES – Alternative A, Proposed Action

4.0.1 Impact Type and Duration -

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.

Short Term Impacts: Less than one year

Long Term Impacts: > one year

4.1 Impacts to Critical Elements of the Human Environment: Alternative A

4.1.1 ACEC

Short-term, direct: Vegetative cover for tortoise would temporarily be reduced, slightly, along washes where tamarisk is treated.

Long-term, direct and indirect: Vegetative cover for tortoise, in the treatment areas, would recover to pre-treatment status. Vegetation species composition, along washes and near springs, would be improved and consist of native species. Native plant density would increase as available soil water would increase and soil salinity would decrease.

4.1.2 Threatened or Endangered Species

4.1.2.1 Mojave Desert Tortoise

Short-term, direct: The amount of vegetative shelter for tortoise would be slightly reduced in dry washes during the active season, in areas treated the previous winter.

Ingestion or absorption of Garlon 4 by desert tortoise would not occur, as tortoise do not use tamarisk as a food source. Exposure of tortoise to Garlon 3A could result in eye irritation. However, survey for and removal of tortoise from the treatment area, prior to treatment, would prevent any such exposure.

Long-term, direct and indirect: No impacts on desert tortoise are anticipated.

On July 30, 2007 BLM informally consulted with USFWS. The proposed action was discussed, including access. USFWS concurred with a finding of "No Impact to tortoise" as long as the Terms and Conditions from the 1998 Desert Tortoise Amendment would be implemented and special emphasis placed on the education of BLM, NPS, and/or contract project personnel.

4.1.2.2 Grand Wash Springsnails

Short-term, direct: No impact, as personnel will avoid areas with obvious spring flows and gravel substrate during project implementation.

Ingestion or absorption of tryclopypyr by spring snails would not result in adverse impacts, as spring snails do not use tamarisk as a food source.

Long-term, direct and indirect: No impact.

4.1.2.3 Neo-tropical Migrant Birds

Short and long-term, direct and indirect: No impact to migratory neo-tropical birds. Project implementation would generally occur after the nesting season and there are no dense stands of tamarisk providing habitat, that would be removed.

4.1.3 Wetlands and Riparian Areas

Short-term, direct: Implementation of the proposed action would result in a change in the species composition as tamarisk would no longer be a component of the vegetation structure.

- **Breakdown of triclopyr in vegetation:** Triclopyr is readily translocated throughout a plant after being taken up by either roots or the foliage. Cowberries contained residues of 2.4 ppm at 6 days, 0.7 to 1.1 ppm at 30 to 36 days, and 0.2 to 0.3 ppm at 92 to 98 days after application. The estimated half-life in aboveground drying foliage as in a forest overstory is 2 to 3 months [6].
- **Breakdown of Triclopyr in water:** Triclopyr is not readily hydrolyzed at pH 5 to 9. Hydrolysis of the ester and the amine salt occurs rapidly and results in formation of Triclopyr [6]. Reported half-lives in water are 2.8 to 14.1 hours, depending on season and depth of water [137]. The ester formulation half-life is from 12.5 to 83.4 hours [137]. In water, the most important breakdown process is photolysis [137].
- **Effects on aquatic organisms:** The parent compound and amine salt are practically nontoxic to fish. Triclopyr has a LC50 (96-hour) of 117 mg/L in rainbow trout and 148 mg/L in bluegill sunfish. The compound is practically nontoxic to the aquatic invertebrate *Daphnia magna*, a water flea, with a reported LC50 for the amine salt of 1170 mg/L. The ester formulation has reported 96-hour LC50 values of 0.74 mg/L and 0.87 mg/L in the rainbow trout and bluegill sunfish, respectively. The compound has little if any potential to accumulate in aquatic organisms. The bioconcentration factor for triclopyr in whole bluegill sunfish is only 1.08.

Long-term, direct and indirect: Native vegetation would be more vigorous and recruitment would be improved, as additional nutrients and water would be available; and soil salinity would be reduced. Native vegetation species composition would be improved.

4.1.4 Water Quality

- **Breakdown of Triclopyr in water:** Triclopyr is not readily hydrolyzed at pH 5 to 9. Hydrolysis of the ester and the amine salt occurs rapidly and results in formation of Triclopyr. Reported half-lives in water are 2.8 to 14.1 hours, depending on season and depth of water. The ester formulation half-life is from 12.5 to 83.4 hours. In water, the most important breakdown process is photolysis.

4.1.5 Wilderness

Short-term, direct: Implementation of the proposed action would result in a change in the species composition as tamarisk would no longer be a component of the vegetation structure. Evidence of human activity would be present for up to five years. During periods of treatment activity, there would be an increased management presence in the area, reducing opportunities for solitude for brief periods. The appearance of naturalness would quickly return as cut trees disintegrate. The use of hand tools is consistent with minimum tool guidelines for wilderness.

Long-term, direct: Native vegetation would be more vigorous and recruitment would be improved, as additional nutrients and water would be available; and soil salinity would be reduced. Native vegetation species composition would be improved. Evidence of human activity would not exist.

4.2 Impacts to Resources: Alternative A

4.2.1 Soil Salinity

Short-term, direct and indirect: No affects.

- **Breakdown of triclopyr in soil and groundwater:** In natural soil and in aquatic environments, the ester and amine salt formulations rapidly convert to the acid, which in turn is neutralized to a relatively nontoxic salt. It is effectively degraded by soil microorganisms and has a moderate persistence in soil environments. The half-life in soil ranges from 30 to 90 days, depending on soil type and environmental conditions, with an average of about 46 days. The half-life of one of the breakdown products (trichloropyridinol) in 15 soils ranged from 8 to 279 days, with 12 of the tested soils having half-lives of less than 90 days. Longer half-lives may occur in cold or arid conditions. Triclopyr is not strongly adsorbed to soil particles and has the potential to be mobile.

Long-term, direct and indirect: Improved soil biological productivity as tamarisk salts are leached from the soil profile.

4.2.2 Vegetation Diversity

Short-term, direct: Extensive research has shown that the following triclopyr mixtures provide successful tamarisk control: Triclopyr mixed with 25% natural vegetable oil, or triclopyr combined in a 50% water mixture. Empirical evidence has shown that implementing the Proposed Action would result in 80 to 99% immediate reduction in cover of tamarisk.

Breakdown of triclopyr in vegetation: Triclopyr is readily translocated throughout a plant after being taken up by either roots or the foliage. Cowberries contained residues of 2.4 ppm at 6 days, 0.7 to 1.1 ppm at 30 to 36 days, and 0.2 to 0.3 ppm at 92 to 98 days after application. The estimated half-life in above ground drying foliage as in a forest over-story is 2 to 3 months.

Long-term, direct and indirect: Native vegetation would be more vigorous and recruitment would be improved, as additional nutrients and water would be available; and soil salinity would be reduced. Native vegetation species composition would be improved and making progress toward achieving Standard 3 of the Arizona Standards for Rangeland Health.

4.2.3 Bird Roosting and Nesting Habitat

Short-term, direct: Small amount of disturbance to some individuals during project work. The cut vegetation would result in a cool, shady micro-site for birds by providing cover and shade near the ground.

- **Effects on birds:** Triclopyr is slightly, to practically nontoxic to birds. The LD50 of the parent compound in the mallard duck is 1698 mg/kg, while the formulated compounds are of lower toxicity. The LC50 in bobwhite quail and Japanese quail fed triclopyr for 8 days are 2935 ppm and 3278 ppm, respectively.
- **Effects on other organisms:** The compound is nontoxic to bees.

Long-term, direct and indirect: As native vegetation responds to the treatment, foraging, nesting, roosting, and hiding habitat for wildlife would be improved. The existing tamarisk would be replaced by native vegetation, including mesquite, catclaw acacia, and desert willow. These native species provide more diverse and higher quality habitat for most

wildlife species, particularly song birds. In addition, removal of the tamarisk could result in an increase in surface water, which would provide additional water for wildlife and insects.

4.2.4 Visual Resources

Short-term, direct: Implementation of the proposed action would create slight to minor visual contrast resulting from the cut and drying vegetation. Cut stumps, dried vegetation, and tree skeletons would be visible and would remain for two to four years. However, the density of these items would be so low as to practically blend with the landscape. The proposed action would only affect foreground views of the casual observer (less than ¼ mile); at greater distances the treatment would not be seen.

Long-term, direct and indirect: Improved quality of visual resources as vegetative composition and structure become more visually diverse, and the native vegetation becomes more vigorous.

Class I: Objectives = Met.

Class II: Objectives = Met.

Class III: Objectives = Met.

Class IV: Objectives = Met.

4.2.5 Monument Objects

4.2.5.1 Ecological diversity resulting from the junction of two physiographic ecoregions (the Basin & Range and the Colorado Plateau) and three floristic provinces (the Mojave Desert, Great Basin, and Colorado Plateau).

Short-term, direct: Ecological diversity would be improved by the removal of non-native invasive species.

Long-term, direct: Native vegetation would be more vigorous and recruitment would be improved, as additional nutrients and water would be available; and soil salinity would be reduced. Native vegetation species composition would be improved. These native species provide more diverse and higher quality habitat for most wildlife species, particularly song birds. In addition, removal of the tamarisk could result in an increase in surface water, which would provide additional water for wildlife and insects.

4.2.6 Areas with Wilderness Characteristics

Short-term, direct: Implementation of the proposed action would result in a change in the species composition as tamarisk would no longer be a component of the vegetation structure. During periods of treatment activity, there would be an increased management presence in the area, reducing opportunities for solitude for brief periods. The appearance of naturalness would quickly return as cut trees disintegrate.

Long-term, direct: Native vegetation would be more vigorous and recruitment would be improved, as additional nutrients and water would be available; and soil salinity would be reduced. Native vegetation species composition would be improved, providing a more natural contribution to wilderness characteristics.

4.3 Cumulative Impacts of the Proposed Action, Alternative A.

The cumulative impacts of the Proposed Action, with past and reasonably foreseeable future actions, are indiscernible, with the exception of continued livestock grazing at unfenced spring

sources and the fact that most springs have been dewatered. These two past, present and future actions will preclude the native vegetative species from achieving full potential response to the treatments.

4.4 ENVIRONMENTAL CONSEQUENCES - Alternative B, No Action

The proposed action would not be implemented. Existing management and use of the project sites would continue, subject to applicable statutes, regulations, policies and land use plan direction.

Short-term, direct: Management objectives for desired plant communities would not be met by allowing the non-native tamarisk to survive, flourish, and continue to invade the washes and springs. This alternative would not meet the objectives in the 1990 Resource Management Plan, Standard 3 of the Standards for Rangeland Health, 1997, nor the Wilderness Preservation Act of 1964.

Long-term, direct: Eventually all remaining native plant species would be eliminated from these sites, as thick stands of tamarisk would prevent the reproduction of desirable native species. Tamarisk would continue to invade areas not currently invaded.

Impacts to Critical Elements of the Human Environment: Alternative B

4.4.1 ACECs

Long-term, direct: Plant species composition in the proposed treatment area would continue to degrade to exclusively non-native, invasive, fire-adapted tamarisk in washes and near springs.

4.4.2 Threatened or Endangered Species

4.4.2.1 Mojave Desert Tortoise

Short and long-term, direct: Minor impact, as forage for desert tortoise would be non-existent in the proposed treatment sites, as they would become exclusively or dominantly tamarisk.

4.4.2.2 Grand Wash Springsnails

Long-term, indirect: Moderate impact as surface water would continue to become more saline and to diminish, which would reduce the available and suitable habitat for springsnails.

4.4.3.3 Neo-tropical Migrant Birds

Short and Long-term, direct and indirect: No impact.

4.4.3 Wetlands and Riparian Areas

Short-term, direct: Non-native, invasive tamarisk would continue to reproduce and expand.

Long-term, direct and indirect: Vegetation species composition would become predominantly tamarisk. Soils would become increasingly more saline, to the exclusion of native species.

4.4.4 Water Quality

Short and Long-term, direct and indirect: Surface water would become more saline and continue to diminish.

4.4.5 Wilderness

Short and Long-term, direct and indirect: Where tamarisk occurs or becomes established, vegetation species composition would become predominantly tamarisk. Soils would become increasingly more saline, to the exclusion of native species. Surface water would continue to diminish. Wildlife species composition would become less diverse. There would be no reduction in the sense of solitude since there would be no treatment activity. Visitors would see the area as it currently exists.

4.5 Impacts to Resources – Alternative B

4.5.1 Soil Salinity

Long-term, direct and indirect: Tamarisk would continue to make the soil more saline, eventually making it inhospitable for native species. Overall biological productivity would continue to decline.

4.5.2 Vegetation Diversity

Short-term, direct: Tamarisk would continue to out-compete native vegetation for water. Progress would not be made toward attaining Standard 3 for Rangeland Health.

Long-term, direct: Tamarisk would continue to make the soil more saline, eventually making it inhospitable for native species. Species composition would become predominantly tamarisk, as soils become more saline and water availability decreases.

4.5.3 Nesting and Roosting Habitat

Short-term, direct: No impact.

Long-term, indirect: As tamarisk continues to become more dominant, and native vegetation is slowly overcome by tamarisk, the wildlife nesting and roosting habitat for some species will continue to degrade. Species diversity of wildlife would continue to decline as species diversity of vegetation continues to decline.

4.5.4 Visual Resources

Short-term, direct: No impact.

Long-term, direct and indirect: As the patch size of tamarisk increases, and the density of tamarisk in any given patch increases, a visual monoculture would result. Although visual quality objectives would be met, actual visual quality would decrease.

Class I: Objectives = Met.
Class II: Objectives = Met.
Class III: Objectives = Met.
Class IV: Objectives = Met.

4.5.5 Monument Objects = Ecological Diversity:

Long-term, direct: Ecological diversity would continue to degrade by the continued expansion of non-native tamarisk.

4.5.6. Areas with Wilderness Characteristics

Short and Long-term direct and indirect: Where tamarisk occurs or becomes established, vegetation species composition would become predominantly tamarisk. Soils would become increasingly more saline, to the exclusion of native species. Surface water would continue to diminish. Wildlife species composition would become less diverse. There would be no reduction in the sense of solitude since there would be no treatment activity. Visitors would see the area as it currently exists.

4.6 Cumulative Impacts of No Action, Alternative B

Short and Long-term, direct: The cumulative impacts of not removing the non-native, invasive tamarisk will result in continued and unacceptable increases in soil salinity, as well as losses of soil productivity and native vegetation for the foreseeable future.

Long-term, indirect: Tamarisk locations would become more numerous throughout the Monument, as pollen and seeds are dispersed; and tamarisk densities, in any one location would increase. Native vegetation would become virtually non-existent where tamarisk occurs.

Dense tamarisk thickets would increase the potential for catastrophic wildfire (Dave Busch and Stan Smith, 1993), and subsequent loss of native riparian vegetation. Catastrophic wildfire would increase soil erosion and sedimentation, adversely impact air and water quality, aquatic plants and animals, visual quality, neo-tropical migrant bird nesting. Catastrophic wildfire could also spread outside the tamarisk thickets and into surrounding tortoise habitat.

5.0 CONSULTATION AND COORDINATION

5.1 Persons, Groups, & Agencies Consulted

The following agencies have been consulted with, or provided recommendations to this EA:

Arizona Department of Game and Fish
US Fish and Wildlife Service
US Bureau of Land Management
National Park Service

5.2 Summary of Public Participation

A Notice of Availability of the Environmental Assessment was sent to those on the Arizona Strip District Office NEPA mailing list, as well as to the grazing permittees on the Monument.

5.2.1 List of Commenters

Sandy Bahr, Conservation Outreach Director
Sierra Club – Grand Canyon Chapter

Tiffany Sprague, Conservation Program Assistant
Sierra Club – Grand Canyon Chapter

5.2.2 Comment Analysis

Generally the comments raised concerns about;

1. The perceived excessive use of herbicides, especially in wilderness and around T&E species,
2. Cross country vehicle access and speed limits

5.2.3 Response to Public Comment

Thank you for your comments and input into the Grand Canyon – Parashant National Monument Tamarisk Control Project and EA. Your comments are presented in *italic type*, while the BLM and NPS response is presented in **bold type**.

Thank you for the opportunity to comment on the Environmental Assessment (EA) regarding the “Grand Canyon – Parashant National Monument – Tamarisk Control.” Please accept these comments on behalf of the Sierra Club’s Grand Canyon Chapter and our 14,000 members in Arizona.

We strongly support removal of non-native plants such as tamarisk (Tamarisk sp.) and efforts to limit the replacement of native species with these non-native invasive plants. We applaud the Bureau of Land Management (BLM) for proposing action within Grand Canyon – Parashant National Monument to address the Tamarisk issue.

Tamarisk has spread rapidly through many of the nation’s riparian areas, choking out native vegetation and altering habitat characteristics. It is most prevalent in areas where the natural hydrological conditions have been changed due to dams and other water diversions. Land management agencies need to work quickly to reduce, and wherever possible eradicate, this species before further damage is done. However, this removal must be accomplished an environmentally sound manner that does not create more problems than it addresses, especially in critical areas such as our national monuments and wilderness areas.

Thank you for your support. The project is designed to accomplish the objectives in the context of the environmentally sensitive Grand Canyon – Parashant National Monument.

Our primary concern with the EA is the significant use of herbicides in the Proposed Action – Alternative A. Herbicides can have lasting negative effects in the environment, and their use should be limited and avoided wherever feasible. For example, studies have shown that several commonly used pesticides and herbicides can reduce species richness and productivity. There is evidence that certain species are particularly affected, including frogs. So, a key concern is the possible negative impacts of the chemicals on the non-target species.

Significant amounts of tamarisk can be removed using only non-mechanical and non-chemical means (i.e. hand pulling or digging out), although it does require additional effort from personnel. Volunteers with the Sierra Club and Friends of the Agua Fria National Monument have successfully removed several hundred tamarisk trees from Badger Spring Wash in Agua Fria National Monument near Phoenix using only these means. Although time and personnel constraints may limit the feasibility of digging out the larger trees, we encourage the BLM to remove not only the seedlings but all smaller and younger plants using non-chemical methods. We encourage the BLM to consider using volunteers to assist with this project and would be happy to assist with that aspect.

Removal of trees using non-chemical means is especially important in wilderness areas in which, as the EA states, “there is also a requirement to manage the area using the minimum tool,

equipment, or structure necessary to successfully, safely, and economically accomplish the objective.” Because many of the trees can be removed using non-chemical means, chemicals cannot be considered the “minimum tool.” We strongly encourage the BLM to use only non-chemical methods in wilderness areas.

It is impossible to hand pull all the tamarisk trees in wilderness. If chemicals are not used, the larger trees would have to be removed with bulldozers. Even this activity would not prevent the remaining roots from sprouting and forming a more dense area of tamarisk. We have determined that the use of chemicals is the minimum tool necessary to achieve the objective in wilderness.

The EA states:

Hand pulling of seedlings: Individual stems, usually less than 0.5 inches in diameter and up to 12” in height would be hand pulled, by the roots, from the ground.

If after removing what can be removed by digging them out, it is determined that chemicals must be used, we encourage the BLM to use only Garlon 3A, unless there is specific need for Garlon 4. According to the specimen label, Garlon 4 is “very toxic to aquatic organisms [and] may cause long-term adverse effects in the aquatic environment.” The label also indicates that spray should not be allowed to fall within one meter of the top bank of any static or flowing waterbody. Obviously, this means that Garlon 4 should not be used near water, but we are also concerned about potential drift. Environmental conditions such as wind could potentially cause this chemical to drift toward nearby water sources. Use of only Garlon 3A in all areas where chemicals are deemed necessary would decrease the chance of negatively affecting water quality and aquatic organisms. Additionally, Garlon 4 has a Class 2 rating for terrestrial amphibians, meaning that it is highly toxic. If Garlon 4 must be used, BLM should thoroughly inventory the area prior to implementing the proposed action to ensure that no native terrestrial amphibians do or could occur in the treatment area.

Garlon 3A would be the primary chemical used, Garlon 4 would be used only away from water (>30 ft) in accordance with the label and policy. Hand applicators that allow for close proximity application would be used by individuals who are trained to minimize drift while spraying. BLM and NPS shares the concerns about the impacts of Garlon 4 on aquatic systems and would take the necessary precautions to ensure nearby water was not contaminated.

Although Garlon 3A is considered safer to use near water than many other herbicides, it still poses a risk. According to its specimen label, “this chemical has properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination.” We recommend using only hand pulling and digging to remove trees near to the water or where soils are permeable to reduce the risk of contaminating the water and affecting any aquatic life. Drift can also be a problem with this chemical. The specimen label recommends making applications “only when there is little or no hazard from spray drift” and strongly advises not permitting “spray mists containing Garlon 3A to drift onto [susceptible] plants,” such as flowers or desirable broadleaf plants. Several native riparian species are highly susceptible to this chemical, including cottonwood and sycamore. Many of these native species are important food sources for various wildlife species and are also important for soil stability.

BLM and NPS will ensure that chemical is applied, following label directions, only to target species, as necessary, and that non-target species would not be impacted.

In areas where tamarisk trees outnumber native vegetation, thorough surveys should be implemented prior to treatment to ensure that existing wildlife will not be displaced and that adequate habitat remains for future use (e.g. by migratory birds or special status species). The EA states that tamarisk within the monument contributes to the nesting and roosting habitat for neo-tropical birds. These species could be severely affected if adequate native vegetation does not remain.

Tamarisk does not occur in large (> 2 ac.) single species patches in the monument. Removal of tamarisk will not adversely impact neo-tropical birds. BLM and NPS will ensure that the chemical is applied only to target species, as necessary, and that non-target species would not be impacted.

The EA does not mention the endangered Southwestern willow flycatcher. This species is known to occur in nearby areas, including Grand Canyon National Park and Lake Mead National Recreation Area. Prior to implementing treatment in areas where flycatcher habitat could be negatively affected, surveys should be conducted using established protocol. Even if this species is found not to occur within the treatment areas, consideration would be given to the fact that they are found in neighboring areas and may occasionally use areas within the Grand Canyon – Parashant National Monument, so great care should be taken with regard to this species.

Although habitat for Southwestern willow flycatcher exists outside the proposed treatment area, prior surveys have revealed that no Southwestern willow flycatcher habitat exists within the proposed treatment area. Hand applicators that allow for close proximity application would be used by individuals who are trained to minimize drift while spraying. Therefore there would be no effect to the species or their habitat.

Specific care should be given to areas in which the threatened Mojave desert tortoise does or could occur. The EA addresses some issues regarding this species, but seems to disregard other important concerns. As one example, the EA states that activities will be modified “to the extent practicable” to avoid harming an existing tortoise or clutch of eggs. If a tortoise or eggs are found within a treatment area, activities should immediately stop. Also, Garlon 3A is slightly to moderately toxic to reptiles and can cause eye irritation, which can be very dangerous for this species. Chemicals should be avoided in any areas where tortoises are known to occur. The EA states that ingestion or absorption of Garlon by tortoises would not occur as the species does not eat tamarisk. However, this does not take into account drift onto other plants that are used as a food source. We recommend that the BLM establish a tortoise monitoring program during and after tamarisk treatment to ensure that this project does not negatively affect the population. A contingency plan should be developed in the event that negative effects are seen.

The Proposed Action was informally consulted on with the US Fish and Wildlife Service, July 30, 2007. The Service agreed to a finding of No Impact, as long as the Terms and Conditions of the 1998 Biological Opinion and RMP Amendment would be implemented. The Terms and Conditions would be implemented. The EA states:

The following conservation measures are contained in US Fish and Wildlife Service Biological Opinion 2-21-96-F-132. They are specific to activities on BLM managed land, and will be adhered to on NPS managed land.

Personnel education programs, well-defined operational procedures, and movement of tortoises out of in harm's way shall be implemented for any activity that results in disturbance of desert tortoise habitat or may result in death or injury of a desert tortoise.

- a. For each authorized project ("project" means any surface-disturbing activities proposed by the Bureau and described in the Mojave Amendment to the RMP), that**

may cause disturbance of desert tortoise habitat and/or death or injury of a desert tortoise, the Bureau shall designate a field contact representative (FCR) who shall be responsible for overseeing compliance with these terms and conditions and for coordination on compliance with the Service. The FCR, qualified biologist(s) approved by the Bureau, and authorized biologist shall have the authority and the responsibility to halt all project activities that are in violation of these terms and conditions. These individuals shall have a copy of the terms and conditions of this biological opinion while on the work site.

b. A desert tortoise education program shall be presented to all project personnel that may encounter tortoises; such as employees, inspectors, supervisors, contractors, and subcontractors; prior to initiation of activities that may result in disturbance of desert tortoise habitat or death or injury of desert tortoises. The education program will include discussions of the following:

1. Legal protection of the desert tortoise and sensitivity of the species to human activities;
2. A brief discussion of desert tortoise distribution and ecology;
3. The terms and conditions of Biological Opinion 2-21-96-F-123;
4. Project features designed to reduce adverse effects to desert tortoises and their habitat, and to promote the species' long-term survival;
5. Protocols during encounters with desert tortoises and associated reporting requirements; and
6. The definition of take and penalties for violations of Federal and State laws.

c. Use of motorized vehicles during rehabilitation or restoration activities in suitable or occupied habitat will be restricted, to the extent feasible, to existing roads, trails, or washes, and to temporary access roads or fuel-breaks, created to enable the treatment activities to occur. If off-road is deemed necessary, any cross-country travel paths will be surveyed prior to use and will be closed and rehabilitated after rehabilitation or restoration activities are completed.

d. Prior to moving a vehicle, personnel will inspect under the vehicle for tortoises. If a tortoise is found under the vehicle, the tortoise will be allowed to move away from the vehicle on its own accord, if possible.

e. Temporary access routes created during project construction shall be modified as necessary to prevent further use. Closure of access routes could be achieved by ripping, barricading, posting the route as closed, and/or seeding and planting with native plants.

f. In DWMA/ACECs, vehicles associated with Bureau-authorized projects traveling on unpaved roads in desert tortoise habitat shall not exceed speed limits established by the Bureau as necessary to protect desert tortoises. These speed limits will generally not exceed 40 mph even on the best unpaved roads but may be much less on some roads.

g. During the tortoise active season (March 15 through October 15), project features that might trap or entangle desert tortoises such as open trenches, pits, open pipes, etc shall be covered or modified to prevent entrapment.

h. To the extent possible, project activities shall be scheduled when tortoises are inactive (October 15 through March 15).

i. If a tortoise or clutch of tortoise eggs is found in a project area, to the extent practicable activities shall be modified to avoid injuring or harming it. If activities cannot be modified, the tortoise/clutch shall be moved from harm's way by an the authorized biologist the minimum distance possible within appropriate habitat to ensure its safety from death, injury, or collection associated with the project or other activities. The authorized biologist shall be allowed some discretion to ensure that survival of each relocated desert tortoise/clutch is likely. Desert tortoises/clutches shall not be translocated to lands outside the administration of the Federal government without the written permission of the landowner. Handling procedures for desert tortoises and their eggs shall adhere to protocols outlined in Desert Tortoise Council (1994 with 1996 revisions).

Only biologists or tortoise monitors authorized by the US Fish and Wildlife Service and Arizona Game and Fish Department shall handle desert tortoises. The authorized biologist or monitor shall maintain a record of all desert tortoises encountered during project activities. This information shall include for each desert tortoise:

- The locations and dates of observation
- General condition and health, including injuries and state of healing and whether animals voided their bladders
- Location moved from and location moved to
- Diagnostic markings (i.e. identification numbers of marked lateral scutes)

No notching of scutes or replacement of fluids with a syringe is authorized.

Desert tortoises that are handled shall be marked for future identification. An identification number (using the acrylic paint/epoxy technique) shall be placed on the 4th costal scute (Fish and Wildlife Service 1992).

j. At no time shall vehicle or equipment fluids be dumped on federal lands. All accidental spills must be reported to the Bureau and cleaned up immediately, using the best available practices according to the requirements of the law. All spills of federally or State-listed hazardous materials that exceed reportable quantities shall be promptly reported to the appropriate State agency and the Bureau.

k. To reduce attraction of potential desert tortoise predators, project sites in desert tortoise habitat shall be maintained in a sanitary condition at all times; waste materials at those sites shall be placed in covered receptacles and disposed of promptly at an appropriate waste disposal site. "Waste" refers to all discarded matter, including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment. All reasonable effort shall also be taken to reduce or eliminate water sources associated with project activities that might attract ravens and other predators.

l. Unleashed dogs shall be prohibited in project areas.

Wildlife and habitat could be further affected by the proposed access routes to the project sites. We strongly encourage the BLM to use only existing routes in order to access these sites. The EA states that dry washes and cross-country travel may be used. Both of these modes of transportation can be very destructive to the monument and its resources. Roads and off-road vehicles harm wildlife and vegetation both directly by killing them and indirectly by destroying habitat. Areas that cannot be accessed by existing routes should be entered via foot, including all

wilderness areas. The EA does not state that vehicles will not be used in the four wilderness areas that occur within the monument. It should clearly state that.

Because the Monument is vast and has a relatively low road density, and for the safety of the personnel implementing the project, the Minimum Guidance Worksheet resulted in determining the minimum tools to achieve the objectives as follows:

“Although there would be short term disruptions to the solitude and unimpaired wilderness character from implementing Alternative A., the proposed action would restore the wilderness to within the range of historic natural variability, restore ecosystem function and condition, and protect other wilderness values, as well as reduce the long term need for intensive human intervention to restore ecological functions. Mechanical transport is required to haul chemicals, tools, and large quantities of water, over long distances, in some times very hot temperatures.”

Proposed vehicle speeds are also a cause for concern. The EA states that speeds will generally not exceed 40 miles per hour (40) within Desert Wildlife Management Areas (DWMA) and Areas of Critical Environmental Concern (ACEC). Speeds on any unpaved road within the monument, regardless of whether they occur within DWMA/ACECs, should not exceed 30 mph for the safety of personnel and wildlife, as well as for habitat protection. The BLM should encourage its employees and volunteers to travel at speeds even lower than 30 mph in most situations. Even the most conditioned wildlife biologist of off-highway traveler would have a difficult time spotting an adult Mojave desert tortoise while traveling at 40 mph, and the response time available to avoid crushing it would be minimal. Vehicles and roads are especially detrimental to these animals. Smaller animals, including young tortoises, would be nearly impossible to see.

The Proposed Action is in conformance with the Terms and Conditions of the 1998 Biological Opinion and RMP Amendment, as stated:

f. In DWMA/ACECs, vehicles associated with Bureau-authorized projects traveling on unpaved roads in desert tortoise habitat shall not exceed speed limits established by the Bureau as necessary to protect desert tortoises. These speed limits will generally not exceed 40 mph even on the best unpaved roads but may be much less on some roads.

The Sierra Club has provided no scientific evidence to substantiate a mandatory maximum speed limit of 30 mph.

Future monitoring activities are vital for the success of this project. We are pleased to see that the BLM will employ long-term monitoring. We also recommend the use of photo-logs to monitor recovery of native vegetation and any changes to the landscape. Perhaps the BLM could consider a photo points project similar to what has been used on our national forests to monitor the impacts of livestock grazing.

The NPS Exotic Plant Management Team, that would implement this project, has a pre- and post-treatment monitoring system in place, which will be used prior to and post-implementation. In order to track treatment effectiveness and site recovery, photo-logs and other monitoring are routinely carried out by the Exotic Plant Management Teams. The BLM and NPS would be interested in cooperating with the Sierra Club and volunteers to implement this work, including the development of photo-logs.

Recovery of native vegetation is essential in order to maintain soil stability and wildlife habitat. However, in areas where tamarisk has had a large influence, the soil may have become too salty for native plants to recover. Areas disturbed by the removal of tamarisk may also invite other

non-native invasive species to spread into that area. Finally, without a natural hydrological condition in the area, tamarisk is likely to continue to thrive – efforts to ensure the greatest degree possible of natural water flows accompanied by flooding should be encouraged.

Should the BLM decide to work to remove at least a portion of these tamarisk trees by digging them out, we would be happy to assist with the work and would also help recruit volunteers for service projects.

The NPS Exotic Plan Management Team, that would implement this project, has a pre- and post-treatment monitoring system in place, which will be used prior to and post-implementation. In order to track treatment effectiveness and site recovery, photo-logs and other monitoring are routinely carried out by the Exotic Plant Management Teams. The BLM and NPS would be interested in cooperating with the Sierra Club and volunteers to implement this work, including the development of photo-logs.

Thank you again for the opportunity to comment on this EA. We appreciate the efforts of the BLM to protect this amazing landscape, the Grand Canyon – Parashant National Monument. Please keep us informed about plans for this project, this area, and other projects. If you have any questions, please contact us at 602-253-8633 or grand.canyon.chapter@sierraclub.org.

We appreciate these comments from the Sierra Club, regarding the Tamarisk Control EA on for the Grand Canyon – Parashant National Monument (EA AZ-130-2007-0042). The comments will help us fine-tune field operational procedures. Regarding the EA, we believe your concerns are addressed therein, and we propose no changes (other than incorporating the responses to the Sierra Club comments here, in chapter 5). We greatly appreciate the Sierra Club interest in management of the Grand Canyon – Parashant National Monument.

5.3 List of Preparers

This EA was prepared by staff Grand Canyon - Parashant National Monument of the Bureau of Land Management, 345 E. Riverside Drive, St. George, Utah 84790, phone (435-688-3345) - and Lake Mead National Recreation Area, 601 Nevada Way, Boulder City, Nevada 89005, phone (702-293-8906).

The following persons contributed to the development of this analysis:

Kathleen Harcksen, BLM	Team Lead, Writer/Editor: Vegetation, Water Quality, Wetlands/Riparian, ACEC, Wilderness, Wilderness Characteristics, Visual Resources, Monument Objects, Wildlife Habitat, Tortoise
Curt Deuser, NPS	Restoration Ecologist: Noxious, exotic, invasive Weeds
Tom Denniston, BLM	T&E Species
LD Walker, BLM	Noxious, exotic, invasive Weeds
Robert Sandberg, BLM	Water Rights

This EA was also reviewed by:

John Herron, BLM	Cultural Resources
Laurie Ford, BLM	Lands and Realty
Linda Price, BLM	Standards for Rangeland Health
Lee Hughes, BLM	Riparian
Ron Wadsworth, BLM	Law Enforcement
Ray Klein, NPS	Law Enforcement
Dennis Curtis, BLM	Monument Manager
Jeff Bradybaugh, NPS	Monument Superintendent

**FINDING OF NO SIGNIFICANT IMPACT
AND
DECISION RECORD**

**Environmental Assessment AZ-130-2007-0042
Tamarisk Control
Grand Canyon – Parashant National Monument/Arizona Strip District
Bureau of Land Management
345 East Riverside Drive
St. George, Utah 84790
435-688-3200
October 2007**

FONSI: Based on the analysis of potential environmental impacts contained in the attached environmental assessment (EA-AZ-130-2007-0042), and with due consideration of public response, the National Park Service (NPS) and Bureau of Land Management (BLM) have determined that the proposed action does not constitute an action that normally requires the preparation of an environmental impact statement. Both agencies have determined that the proposed action will not have a significant effect on the human environment and an environmental impact statement is therefore not required.

Negative environmental impacts that could occur are negligible to minor in effect. 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 our decision to implement the Tamarisk Control project on the BLM portion of the Grand Canyon – Parashant National Monument, as described in the Proposed Action, Alternative A. of EA-AZ-130-2007-0042. BLM and NPS would hand pull, use chainsaws and/or hand saws to manually cut tamarisk (and other non-native, invasive tree species, if discovered), and/or treat with chemical herbicides to extirpate tamarisk (and other non-native, invasive tree species), where it occurs, within the Grand Canyon – Parashant National Monument, excluding the area below the high water mark of the shoreline of Lake Mead.

Depending on the age and size of individual stems, the density of stems, and the degree of intermingling with native vegetation, one of the following methods would be used to treat these woody non-native, invasive species:

Tree Cutting, Herbicide Application, and Hand pulling

Arizona certified herbicide applicators, under direct supervision of BLM and/or NPS certified personnel, would apply triclopyr. Application of herbicide will be conducted in accordance

with the manufacturer's label directions and an approved BLM and NPS Pesticide Use Proposal.

Cut-stump Application: Trees with stems greater than six inches in diameter (at ground level), would be cut near ground level with chainsaws, except in wilderness, where they would be cut with hand saws. Triclopyr and vegetable oil mixture would be applied to the cut stumps. A mixture of triclopyr and water would be applied to the cut stumps near wet areas. Cut stems would be pulled away from native vegetation and left to decompose on site.

Low Volume Bark Application at Stem Base: On trees with stems less than six inches in diameter (at ground level), a mixture triclopyr and a vegetable oil would be applied with backpack sprayers to the trunk of trees, from the ground level interface, up the stem approximately 18". Triclopyr would be applied according to label requirements.

Foliar Application: A mixture of triclopyr with water and a surfactant would be sprayed on small, individual trees, where at least 50% of the foliage of the tree could be sprayed, by hand with the herbicide mixture. This application would not occur where non-target species could be effected directly, or by drift.

Hand pulling of seedlings: Individual stems, usually less than 0.5 inches in diameter and up to 13" in height would be hand pulled, by the roots, from the ground.

Access: Access to the individual project sites would be by way of existing routes and dry washes, using standard ½ ton and ¾ ton trucks, and ATVs. On occasion, cross country transportation may be required. Where cross country transportation is necessary and any tracks would remain visible for more than two years, these tracks would be rehabilitated. During implementation, personnel will avoid walking in saturated areas which contain obvious spring flows and gravel substrate.

Mechanical transport is required to haul chemicals, tools, and large quantities of water into wilderness, over long distances, in some times very hot temperatures. While working in wilderness, project personnel would conduct all activities in accordance with existing wilderness area policies, utilizing a *Leave No Trace* approach.

Project personnel would receive a briefing on the goals and objectives of the treatment, and include information regarding protection of desert tortoise. The briefing would include information on employee and visitor safety.

Monitoring:

Implementation monitoring would consist of:

- a. Completion of BLM and NPS Pesticide Application Report within 24 hours of application,
- b. Documentation of proposed treatments in the BLM MIS System and NPS Pesticide Proposal reporting system at the beginning of each fiscal year, and
- c. Documentation of treatment completion in the BLM MIS System and NPS Pesticide Reporting System at the end of each fiscal year.

Effectiveness monitoring would consist of:

Treatment areas would be monitored on a yearly basis to evaluate the success of removal treatments, and for colonization of native and non-native vegetation. Re-sprouts of treated tamarisk would be treated, and newly colonized non-native species would be treated. Monitoring would occur for a minimum of 20 years, but would likely continue beyond that time frame.

Impairment of National Park Service Resources or Values

In addition to reviewing NEPA significance criteria, National Park Service (NPS) staff have determined that implementation of the proposed action (Alternative A -preferred alternative) will not constitute an impairment of NPS resources or values or alter opportunities for the enjoyment of the Monument. This conclusion is based on a thorough analysis of the impacts described in the environmental assessment, agency and public comments received, and the professional judgment of the decision-maker in accordance with the *NPS Management Policies 2006*. As described in the environmental assessment, implementation of the selected action (preferred alternative) will not result in major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation of Lake Mead National Recreation Area and the Presidential Proclamation of the Grand Canyon – Parashant National Monument; (2) key to the natural or cultural integrity of the Monument; or (3) identified as a goal in the Lake Mead National Recreation Area *General Management Plan* or other relevant National Park Service planning documents.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is the alternative that will promote NEPA, as expressed in Section 101 of NEPA. Alternative A. will satisfy the following requirements:

- Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- Assure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
- Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable or unintended consequences;
- Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
- Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and,
- Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

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 Arizona Strip Resource Management Plan, 1992, as amended, and the Lake Mead General Management Plan, 1986.

It is consistent with:

The Grand Canyon – Parashant National Monument Proclamation and Interim Management Policy, as well as with the Draft BLM RMP,

The National Park Service Organic Act (1916): To “conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.”, and

The National Park Service Strategic Plan for Managing Invasive Nonnative Plants on National Park Service Lands (1996). To: 1) Prevent invasion, 2) Increase public awareness, 3) Inventory and monitor non-native plants, 4) Conduct research and transfer technology, 5) Integrate planning and evaluation, and 6) Manage invasive non-native plants.

Potential adverse impacts on wilderness character (solitude and naturalness) were resolved through use of hand tools, “Leave No Trace” practices, and minimum tool considerations during activity planning. Concerns regarding wildlife habitat were addressed in the project design.

The No Action Alternative was not selected because it is not in conformance with existing direction, and would not protect National Monument objects, wilderness character, and important ecological and social resources.

The following Alternatives were Considered but not Analyzed in Detail

Prescribed Fire

The use of fire to control tamarisk has repeatedly been found ineffective when used as the sole control method. Tamarisk shows a remarkable ability to recover from fire as it is a fire-adapted species. Fire used with a follow up herbicide application has proved effective in areas with a dense population of tamarisk. However, tamarisk in the project area does not necessarily occur in dense thickets. Also, tamarisk usually occurs intermixed with desirable, fire-intolerant, native woody species. It would be impossible to burn and kill tamarisk without adversely impacting the desired native species.

Cutting Only

Cutting tamarisk trees without herbicide application has also proven to be ineffective. Tamarisk has the ability to crown sprout and recovers quickly from cutting. This tool is not viable, when used alone.

Use of Alternative Herbicide

An alternative was considered to use the herbicide “Habitat” (Isopropylamine salt of Imazapyr) for control of tamarisk around water. Although “Habitat” is approved for aerial use on open water, it is generally most effective for treating large thickets of tamarisk near open water, using the foliar application method. Because tamarisk has not yet developed into large, dense thickets on the Monument, this use of Habitat as a control agent is not particularly applicable; therefore, this alternative was not further evaluated.

Public Review and Comments

This EA was posted on the Arizona BLM website and was made available for public and agency comment during a 30-day review period beginning August 23, 2007 and ending September 23, 2007. The Grand Canyon – Parashant National Monument sent a Notice of Availability to 118 federal and state agencies, individuals, businesses, grazing permittees, and organizations, notifying them of the availability of the EA and the methods of accessing the document. The announcement and document were published on the BLM internet NEPA website. Individuals and organizations could request the environmental assessment in writing, by phone, or by e-mail.

One comment letter, from the Grand Canyon Chapter of the Sierra Club was received during the 30-day review period. The Sierra Club supports the project, with concerns, which are addressed as follows:

“Significant use of herbicides”

Use of herbicides would be minimized and confined to larger stems, where root systems are well established and control would not be affected by hand-pulling. Individual stems, usually less than 0.5 inches in diameter and less than 13” in height, would be hand pulled by the roots, from the ground.

“Garlon 4 should not be used near water, but we are also concerned about potential drift”

Garlon 3A would be the primary chemical used, Garlon 4 would be used only away from water (>30 ft) in accordance with the label and policy. Close proximity spray application would be by hand, and be applied by individuals who are trained to minimize drift while spraying. BLM and NPS shares the concerns about the impacts of Garlon 4 on aquatic systems and would take the necessary precautions to ensure nearby water was not contaminated.

“Specific care should be given to areas in which the threatened Mojave desert tortoise does or could occur”

The Proposed Action was informally consulted on with the US Fish and Wildlife Service, July 30, 2007. The Service agreed to a finding of No Impact, as long as the Terms and Conditions of the 1998 Biological Opinion and RMP Amendment would be implemented. The Terms and Conditions would be implemented.

“Areas that cannot be accessed by existing routes should be entered via foot, including all wilderness areas. The EA does not state that vehicles will not be used in the four wilderness areas that occur within the monument”

Because the Monument is vast and has a relatively low road density, and for the safety of the personnel implementing the project, the Minimum Guidance Worksheet resulted in determining the minimum tools to achieve the objectives as follows:

Although there would be short term disruptions to the solitude and unimpaired wilderness character from implementing Alternative A., the proposed action would

restore the wilderness to within the range of historic natural variability, restore ecosystem function and condition, and protect other wilderness values, as well as reduce the long term need for intensive human intervention to restore ecological functions. Mechanical transport is required to haul chemicals, tools, and large quantities of water, over long distances, in some times very hot temperatures.

“Proposed vehicle speeds are also a cause for concern”

The Proposed Action is in conformance with the Terms and Conditions of the 1998 Biological Opinion and RMP Amendment, as stated:

f. In DWMA/ACECs, vehicles associated with Bureau-authorized projects traveling on unpaved roads in desert tortoise habitat shall not exceed speed limits established by the Bureau as necessary to protect desert tortoises. These speed limits will generally not exceed 40 mph even on the best unpaved roads but may be much less on some roads.

“We also recommend the use of photo-logs to monitor recovery of native vegetation and any changes to the landscape”

The NPS Exotic Plan Management Team, that would implement this project, has a pre- and post-treatment monitoring system in place, which will be used prior to and post-implementation. In order to track treatment effectiveness and site recovery, photo-logs and other monitoring are routinely carried out by the Exotic Plant Management Teams. The BLM and NPS would be interested in cooperating with the Sierra Club and volunteers to implement this work, including the development of photo-logs.

BLM IMPLEMENTATION AND APPEAL

Within 30 days of receipt of the decision for BLM lands, an appeal may be filed with: Interior Board of Land Appeals, Office of Hearings and Appeals, U.S. Department of the Interior, 801 North Quincy St., Suite 300, Arlington, VA 22203. A copy of the notice of appeal must also be filed in these offices: Grand Canyon – Parashant National Monument, 345 East Riverside Drive, St. George, Utah 84790; as well as with: Office of the Field Solicitor, U S Courthouse Suite 404, 401 West Washington Street SPC 44, Phoenix, AZ 85003-2151.

Approved:

Dennis Curtis

Manager, Grand Canyon Parashant National Monument

Date

NPS IMPLEMENTATION

As soon as practicable, the selected actions described in Environmental Assessment AZ-130-2007-0042 may be implemented on NPS lands.

Recommended: _____
Jeff Bradybaugh Date
Superintendent, Grand Canyon Parashant National Monument

Approved: _____
Jonathan B. Jarvis, Regional Director Date
Pacific West Region



**UNITED STATES DEPARTMENT OF THE INTERIOR
GRAND CANYON-PARASHANT NATIONAL MONUMENT**
345 East Riverside Drive
St. George, Utah 84790
Phone: (435) 688-3345 Fax: (435) 688-3388

In Reply Refer:
ParashantTamarisk Control

**NOTICE OF DECISION
Grand Canyon – Parashant National Monument
TAMARISK CONTROL
October 30, 2007**

Dear Interested Party:

Please be advised that an Environmental Assessment (EA-AZ-130-2007-0042) was prepared for the Grand Canyon – Parashant National Monument proposed Tamarisk Control project. This EA went through an interdisciplinary development and review process, a Finding of No Significant Impact (FONSI) was made, and a Decision Record (DR) was signed. Although the project involves actions in both the BLM and NPS portions of the Monument, a single EA, FONSI, and DR have been prepared. The Decision Record applies only to the BLM managed lands in the Monument. The EA, FONSI, and DR are public documents, and available upon request.

The Problem

Tamarix ramosissima (tamarisk), *Elaeagnus angustifolia* (Russian olive) and *Ulmas pulila* (Siberian elm) are natives of Eurasia. *Nicotiana glauca* (Tree tobacco) is a native of South America. All of these exotic tree species were intentionally introduced into the U.S. in the early 1800's, as domestic landscape species. They have since escaped from cultivation and become prolific in the wild. Tamarisk is found in numerous washes and near small wet areas on the Grand Canyon – Parashant National Monument. In most areas, it is an insignificant or minor component with respect to the overall species composition. The impacts caused by tamarisk are well documented. These prolific non-natives displace native vegetation and animals, alter soil salinity, and increase fire frequency and hazard. Tamarisk spreads by seed and can propagate from buried or submerged stems. It can replace or displace native woody species, such as cottonwood, willow and mesquite. Stands of tamarisk generally have lower wildlife values compared to stands of native vegetation, although tamarisk can be important to some bird species as nesting habitat.

Although the other three exotic tree species have not yet been found on the Monument, they are also very invasive and may closely follow tamarisk invasions. Control of each of these non-native, invasive tree species is much more efficient, practical, and less costly before the infestations become numerous, large, and/or dense.

The Solution

The project analyzed in the EA and authorized in the DR, will use chainsaws and/or hand saws to manually cut tamarisk (and other non-native, invasive tree species, if discovered), pull smaller plants up by the roots, and/or treat with chemical herbicides to extirpate tamarisk (and other non-native, invasive tree species), where it occurs, within the Grand Canyon – Parashant National Monument (excluding the area below the high water mark of the shoreline of Lake Mead). Project objectives are to reduce tamarisk cover by more than 90% immediately after the initial treatment, to reduce tamarisk cover by more than 95% within five years, and to prevent the establishment of any other non-native invasive tree species. Depending on the age and size of individual stems, the density of stems, and the degree of intermingling with native vegetation, one of the following methods would be used to treat these woody non-native species:

Hand pulling of seedlings: Individual stems, usually less than 0.5 inches in diameter and up to 12” in height will be hand pulled, by the roots, from the ground.

Cut-stump Application: Trees with stems greater than six inches in diameter (at ground level), will be cut near ground level with chainsaws, except in wilderness, where they will be cut with hand saws or loppers. Triclopyr and vegetable oil mixture would be applied to the cut stumps. A mixture of triclopyr and water would be applied to the cut stumps near wet areas. Cut stems will be pulled away from native vegetation and left to decompose on site.

Low Volume Bark Application at Stem Base: On trees with stems less than six inches in diameter (at ground level), a mixture triclopyr and a vegetable oil would be applied to the trunk of trees with backpack sprayers, from the ground level interface, up the stem approximately 18”. Triclopyr will be applied according to label requirements.

Foliar Application: A mixture of triclopyr with water and a surfactant will be sprayed on individual trees, where at least 50% of the foliage of the tree could be covered with the herbicide mixture.

Arizona certified herbicide applicators, under direct supervision of BLM certified personnel, will apply triclopyr using hand-applicators to the stump or base of the tree at manufacturer-recommended rates.

Access: Access to the individual project sites will be by way of existing routes and dry washes, using standard ½ ton and ¾ ton trucks, and ATVs. On occasion, cross country transportation may be required. Where cross country transportation is necessary and tracks would remain visible for two or more years (the expected temporal period of use for), these tracks will be rehabilitated. During implementation, personnel will avoid walking in saturated areas which contain obvious spring flows and gravel substrate.

Monitoring:

Implementation monitoring will consist of:

- a. Completion of BLM Pesticide Application Report within 24 hours of application,
- b. Documentation of proposed treatments in the BLM MIS System at the beginning of each fiscal year, and

c. Documentation of treatment completion in the BLM MIS System at the end of each fiscal year.

Effectiveness monitoring will consist of visual observation and documentation and would be initiated the fall following the first treatments, and continue throughout the life of the project. Any non-native woody species found during effectiveness monitoring will be treated.

Conformance with existing Direction

The Proposed Action is in conformance with the Arizona Strip Resource Management, 1992, as amended, and consistent with:

The Grand Canyon – Parashant National Monument Proclamation and Interim Management Policy,

The National Park Service (Organic Act of 1916) To “conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.”, and

The National Park Service Strategic Plan for Managing Invasive Nonnative Plants on National Park Service Lands (1996). To: 1) Prevent invasion, 2) Increase public awareness, 3) Inventory and monitor non-native plants, 4) Conduct research and transfer technology, 5) Integrate planning and evaluation, and 6) Manage invasive non-native plants.

The No Action Alternative was not selected because it is not in conformance with existing direction, and would not protect National Monument objects, wilderness character, and important ecological and social resources.

Public Concerns

During the public review period for this project, BLM and NPS received one comment. The commenter is supportive of the project objectives. However, concerns about the use of chemical herbicides, the potential impacts on sensitive species, and wilderness access were raised.

Use of Chemical Herbicide

The range of options for treatment listed above reflects the variety of situations in the project area. While there are small, individual stems that would respond well to pulling, there are also areas of larger, well-established trees and shrubs where pulling would not be feasible, as the stems are just too large. The proposed action is to pull smaller shrubs from the ground, but includes the ability to treat areas with herbicide where resprout is likely and pulling alone would be ineffective.

Due to the remote location, BLM and NPS determined that cutting and painting or spraying larger, well-established plants would have less impact on wilderness character and would create a lower level of disturbance than other methods. Many repeated entries would be necessary to successfully eradicate these exotics if

chemical treatments were not used. BLM and NPS determined that the use of chemical herbicides in combination with mechanical treatment was the minimum tool effective treatment, and that limited use of herbicides would be less intrusive and more effective than repeated eradication efforts that did not include herbicide. BLM and NPS will attempt to pull smaller plants where this treatment would be effective.

Sensitive Species

Concerns were raised about the impact of the project on sensitive species. The potential impacts are documented as:

Short-term, direct: The amount of vegetative shelter for tortoise would be slightly reduced in dry washes during the active season, in areas treated the previous winter.

Ingestion or absorption of triclopyr by desert tortoise would not occur, as tortoise do not use tamarisk as a food source. Exposure of tortoise to triclopyr could result in eye irritation. However, survey for and removal of tortoise from the treatment area, prior to treatment, would prevent any such exposure.

Long-term, direct and indirect: No impacts on desert tortoise are anticipated.

On July 30, 2007 BLM informally consulted with USFWS. The proposed action was discussed, including access. USFWS concurred with a finding of "No Impact to tortoise" as long as the Terms and Conditions from the 1998 Desert Tortoise Amendment would be implemented and special emphasis placed on the education of BLM, NPS, and/or contract project personnel. These terms and conditions would be implemented.

Wilderness Access

Because the Monument is vast and has a relatively low road density, and for the safety of the personnel implementing the project, the Minimum Guidance Worksheet resulted in determining the minimum tools to achieve the objectives in wilderness, as follows:

Although there would be short term disruptions to the solitude and unimpaired wilderness character from implementing Alternative A., the proposed action would restore the wilderness to within the range of historic natural variability, restore ecosystem function and condition, and protect other wilderness values, as well as reduce the long term need for intensive human intervention to restore ecological functions. Mechanical transport is required to haul chemicals, tools, and large quantities of water, over long distances, in some times very hot temperatures.

Appeal Process

Within 30 days of receipt of this decision, an appeal may be filed with: Interior Board of Land Appeals, Office of Hearings and Appeals, U.S. Department of the Interior, 801 North

Quincy St., Suite 300, Arlington, VA 22203. A copy of the notice of appeal must also be filed in these offices: Grand Canyon – Parashant National Monument, 345 East Riverside Drive, St. George, Utah 84790; as well as with: Office of the Field Solicitor, U S Courthouse Suite 404, 401 West Washington Street SPC 44, Phoenix, AZ 85003-2151.

For more information or to request a copy of the EA and/or FONSI/DR, please contact Kathleen Harcksen at (435) 688-3380.

Sincerely,

Dennis Curtis, Monument Manager



**UNITED STATES DEPARTMENT OF THE INTERIOR
GRAND CANYON-PARASHANT NATIONAL MONUMENT
345 East Riverside Drive
St. George, Utah 84790
Phone: (435) 688-3345 Fax: (435) 688-3388**

October 30, 2007

**Environmental Assessment AZ-130-2007-0042
Grand Canyon – Parashant National Monument - Tamarisk Control**

To: Sandy Bahr, Conservation Outreach Director
Sierra Club – Grand Canyon Chapter

Tiffany Sprague, Conservation Program Assistant
Sierra Club – Grand Canyon Chapter

Dear Sandy and Tiffany,

Thank you for your comments and input into the Grand Canyon – Parashant National Monument Tamarisk Control Project and EA. Your comments are presented in *italic type*, while the BLM and NPS response is presented in **bold type**.

Thank you for the opportunity to comment on the Environmental Assessment (EA) regarding the “Grand Canyon – Parashant National Monument – Tamarisk Control.” Please accept these comments on behalf of the Sierra Club’s Grand Canyon Chapter and our 14,000 members in Arizona.

*We strongly support removal of non-native plants such as tamarisk (*Tamarisk spp.*) and efforts to limit the replacement of native species with these non-native invasive plants. We applaud the Bureau of Land Management (BLM) for proposing action within Grand Canyon – Parashant National Monument to address the Tamarisk issue.*

Tamarisk has spread rapidly through many of the nation’s riparian areas, choking out native vegetation and altering habitat characteristics. It is most prevalent in areas where the natural hydrological conditions have been changed due to dams and other water diversions. Land management agencies need to work quickly to reduce, and wherever possible eradicate, this species before further damage is done. However, this removal must be accomplished an environmentally sound manner that does not create more problems than it addresses, especially in critical areas such as our national monuments and wilderness areas.

Thank you for your support. The project is designed to accomplish the objectives in the context of the environmentally sensitive Grand Canyon – Parashant National Monument.

Our primary concern with the EA is the significant use of herbicides in the Proposed Action – Alternative A. Herbicides can have lasting negative effects in the environment, and their use should be limited and avoided wherever feasible. For example, studies have shown that several commonly used pesticides and herbicides can reduce species richness and productivity. There is evidence that certain

species are particularly affected, including frogs. So, a key concern is the possible negative impacts of the chemicals on the non-target species.

Significant amounts of tamarisk can be removed using only non-mechanical and non-chemical means (i.e. hand pulling or digging out), although it does require additional effort from personnel. Volunteers with the Sierra Club and Friends of the Agua Fria National Monument have successfully removed several hundred tamarisk trees from Badger Spring Wash in Agua Fria National Monument near Phoenix using only these means. Although time and personnel constraints may limit the feasibility of digging out the larger trees, we encourage the BLM to remove not only the seedlings but all smaller and younger plants using non-chemical methods. We encourage the BLM to consider using volunteers to assist with this project and would be happy to assist with that aspect.

Removal of trees using non-chemical means is especially important in wilderness areas in which, as the EA states, “there is also a requirement to manage the area using the minimum tool, equipment, or structure necessary to successfully, safely, and economically accomplish the objective.” Because many of the trees can be removed using non-chemical means, chemicals cannot be considered the “minimum tool.” We strongly encourage the BLM to use only non-chemical methods in wilderness areas.

It is impossible to hand pull all the tamarisk trees in wilderness. If chemicals are not used, the larger trees would have to be removed with bulldozers. Even this activity would not prevent the remaining roots from sprouting and forming a more dense area of tamarisk. We have determined that the use of chemicals is the minimum tool necessary to achieve the objective in wilderness.

The EA states:

Hand pulling of seedlings: Individual stems, usually less than 0.5 inches in diameter and up to 12” in height would be hand pulled, by the roots, from the ground.

If after removing what can be removed by digging them out, it is determined that chemicals must be used, we encourage the BLM to use only Garlon 3A, unless there is specific need for Garlon 4. According to the specimen label, Garlon 4 is “very toxic to aquatic organisms [and] may cause long-term adverse effects in the aquatic environment.” The label also indicates that spray should not be allowed to fall within one meter of the top bank of any static or flowing waterbody. Obviously, this means that Garlon 4 should not be used near water, but we are also concerned about potential drift. Environmental conditions such as wind could potentially cause this chemical to drift toward nearby water sources. Use of only Garlon 3A in all areas where chemicals are deemed necessary would decrease the chance of negatively affecting water quality and aquatic organisms. Additionally, Garlon 4 has a Class 2 rating for terrestrial amphibians, meaning that it is highly toxic. If Garlon 4 must be used, BLM should thoroughly inventory the area prior to implementing the proposed action to ensure that no native terrestrial amphibians do or could occur in the treatment area.

Garlon 3A would be the primary chemical used, Garlon 4 would be used only away from water (>30 ft) in accordance with the label and policy. Hand applicators that allow for close proximity application would be used by individuals who are trained to minimize drift while spraying. BLM and NPS shares the concerns about the impacts of Garlon 4 on aquatic systems and would take the necessary precautions to ensure nearby water was not contaminated.

Although Garlon 3A is considered safer to use near water than many other herbicides, it still poses a risk. According to its specimen label, “this chemical has properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable,

particularly where the water table is shallow, may result in groundwater contamination.” We recommend using only hand pulling and digging to remove trees near to the water or where soils are permeable to reduce the risk of contaminating the water and affecting any aquatic life. Drift can also be a problem with this chemical. The specimen label recommends making applications “only when there is little or no hazard from spray drift” and strongly advises not permitting “spray mists containing Garlon 3A to drift onto [susceptible] plants,” such as flowers or desirable broadleaf plants. Several native riparian species are highly susceptible to this chemical, including cottonwood and sycamore. Many of these native species are important food sources for various wildlife species and are also important for soil stability.

BLM and NPS will ensure that chemical is applied, following label directions, only to target species, as necessary, and that non-target species would not be impacted.

In areas where tamarisk trees outnumber native vegetation, thorough surveys should be implemented prior to treatment to ensure that existing wildlife will not be displaced and that adequate habitat remains for future use (e.g. by migratory birds or special status species). The EA states that tamarisk within the monument contributes to the nesting and roosting habitat for neo-tropical birds. These species could be severely affected if adequate native vegetation does not remain.

Tamarisk does not occur in large (> 2 ac.) single species patches in the monument. Removal of tamarisk will not adversely impact neo-tropical birds. BLM and NPS will ensure that the chemical is applied only to target species, as necessary, and that non-target species would not be impacted.

The EA does not mention the endangered Southwestern willow flycatcher. This species is known to occur in nearby areas, including Grand Canyon National Park and Lake Mead National Recreation Area. Prior to implementing treatment in areas where flycatcher habitat could be negatively affected, surveys should be conducted using established protocol. Even if this species is found not to occur within the treatment areas, consideration would be given to the fact that they are found in neighboring areas and may occasionally use areas within the Grand Canyon – Parashant National Monument, so great care should be taken with regard to this species.

Although habitat for Southwestern willow flycatcher exists outside the proposed treatment area, prior surveys have revealed that no Southwestern willow flycatcher habitat exists within the proposed treatment area. Hand applicators that allow for close proximity application would be used by individuals who are trained to minimize drift while spraying. Therefore there would be no effect to the species or their habitat.

Specific care should be given to areas in which the threatened Mojave desert tortoise does or could occur. The EA addresses some issues regarding this species, but seems to disregard other important concerns. As one example, the EA states that activities will be modified “to the extent practicable” to avoid harming an existing tortoise or clutch of eggs. If a tortoise or eggs are found within a treatment area, activities should immediately stop. Also, Garlon 3A is slightly to moderately toxic to reptiles and can cause eye irritation, which can be very dangerous for this species. Chemicals should be avoided in any areas where tortoises are known to occur. The EA states that ingestion or absorption of Garlon by tortoises would not occur as the species does not eat tamarisk. However, this does not take into account drift onto other plants that are used as a food source. We recommend that the BLM establish a tortoise monitoring program during and after tamarisk treatment to ensure that this project does not negatively affect the population. A contingency plan should be developed in the event that negative effects are seen.

The Proposed Action was informally consulted on with the US Fish and Wildlife Service, July 30, 2007. The Service agreed to a finding of No Impact, as long as the Terms and Conditions of the 1998 Biological Opinion and RMP Amendment would be implemented. The Terms and Conditions would be implemented. The EA states:

The following conservation measures are contained in US Fish and Wildlife Service Biological Opinion 2-21-96-F-132. They are specific to activities on BLM managed land, and will be adhered to on NPS managed land.

Personnel education programs, well-defined operational procedures, and movement of tortoises out of in harm's way shall be implemented for any activity that results in disturbance of desert tortoise habitat or may result in death or injury of a desert tortoise.

a. For each authorized project ("project" means any surface-disturbing activities proposed by the Bureau and described in the Mojave Amendment to the RMP), that may cause disturbance of desert tortoise habitat and/or death or injury of a desert tortoise, the Bureau shall designate a field contact representative (FCR) who shall be responsible for overseeing compliance with these terms and conditions and for coordination on compliance with the Service. The FCR, qualified biologist(s) approved by the Bureau, and authorized biologist shall have the authority and the responsibility to halt all project activities that are in violation of these terms and conditions. These individuals shall have a copy of the terms and conditions of this biological opinion while on the work site.

b. A desert tortoise education program shall be presented to all project personnel that may encounter tortoises; such as employees, inspectors, supervisors, contractors, and subcontractors; prior to initiation of activities that may result in disturbance of desert tortoise habitat or death or injury of desert tortoises. The education program will include discussions of the following:

1. Legal protection of the desert tortoise and sensitivity of the species to human activities;
2. A brief discussion of desert tortoise distribution and ecology;
3. The terms and conditions of Biological Opinion 2-21-96-F-123;
4. Project features designed to reduce adverse effects to desert tortoises and their habitat, and to promote the species' long-term survival;
5. Protocols during encounters with desert tortoises and associated reporting requirements; and
6. The definition of take and penalties for violations of Federal and State laws.

c. Use of motorized vehicles during rehabilitation or restoration activities in suitable or occupied habitat will be restricted, to the extent feasible, to existing roads, trails, or washes, and to temporary access roads or fuel-breaks, created to enable the treatment activities to occur. If off-road is deemed necessary, any cross-country travel paths will be surveyed prior to use and will be closed and rehabilitated after rehabilitation or restoration activities are completed.

d. Prior to moving a vehicle, personnel will inspect under the vehicle for tortoises. If a tortoise is found under the vehicle, the tortoise will be allowed to move away from the vehicle on its own accord, if possible.

e. Temporary access routes created during project construction shall be modified as necessary to prevent further use. Closure of access routes could be achieved by ripping, barricading, posting the route as closed, and/or seeding and planting with native plants.

f. In DWMA/ACECs, vehicles associated with Bureau-authorized projects traveling on unpaved roads in desert tortoise habitat shall not exceed speed limits established by the Bureau as necessary to protect desert tortoises. These speed limits will generally not exceed 40 mph even on the best unpaved roads but may be much less on some roads.

g. During the tortoise active season (March 15 through October 15), project features that might trap or entangle desert tortoises such as open trenches, pits, open pipes, etc shall be covered or modified to prevent entrapment.

h. To the extent possible, project activities shall be scheduled when tortoises are inactive (October 15 through March 15).

i. If a tortoise or clutch of tortoise eggs is found in a project area, to the extent practicable activities shall be modified to avoid injuring or harming it. If activities cannot be modified, the tortoise/clutch shall be moved from harm's way by an the authorized biologist the minimum distance possible within appropriate habitat to ensure its safety from death, injury, or collection associated with the project or other activities. The authorized biologist shall be allowed some discretion to ensure that survival of each relocated desert tortoise/clutch is likely. Desert tortoises/clutches shall not be translocated to lands outside the administration of the Federal government without the written permission of the landowner. Handling procedures for desert tortoises and their eggs shall adhere to protocols outlined in Desert Tortoise Council (1994 with 1996 revisions).

Only biologists or tortoise monitors authorized by the US Fish and Wildlife Service and Arizona Game and Fish Department shall handle desert tortoises. The authorized biologist or monitor shall maintain a record of all desert tortoises encountered during project activities. This information shall include for each desert tortoise:

- The locations and dates of observation**
- General condition and health, including injuries and state of healing and whether animals voided their bladders**
- Location moved from and location moved to**
- Diagnostic markings (i.e. identification numbers of marked lateral scutes)**

No notching of scutes or replacement of fluids with a syringe is authorized.

Desert tortoises that are handled shall be marked for future identification. An identification number (using the acrylic paint/epoxy technique) shall be placed on the 4th costal scute (Fish and Wildlife Service 1992).

j. At no time shall vehicle or equipment fluids be dumped on federal lands. All accidental spills must be reported to the Bureau and cleaned up immediately, using the best available practices according to the requirements of the law. All spills of federally or State-listed hazardous materials that exceed reportable quantities shall be promptly reported to the appropriate State agency and the Bureau.

k. To reduce attraction of potential desert tortoise predators, project sites in desert tortoise habitat shall be maintained in a sanitary condition at all times; waste materials at those sites

shall be placed in covered receptacles and disposed of promptly at an appropriate waste disposal site. "Waste" refers to all discarded matter, including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment. All reasonable effort shall also be taken to reduce or eliminate water sources associated with project activities that might attract ravens and other predators.

I. Unleashed dogs shall be prohibited in project areas.

Wildlife and habitat could be further affected by the proposed access routes to the project sites. We strongly encourage the BLM to use only existing routes in order to access these sites. The EA states that dry washes and cross-country travel may be used. Both of these modes of transportation can be very destructive to the monument and its resources. Roads and off-road vehicles harm wildlife and vegetation both directly by killing them and indirectly by destroying habitat. Areas that cannot be accessed by existing routes should be entered via foot, including all wilderness areas. The EA does not state that vehicles will not be used in the four wilderness areas that occur within the monument. It should clearly state that.

Because the Monument is vast and has a relatively low road density, and for the safety of the personnel implementing the project, the Minimum Guidance Worksheet resulted in determining the minimum tools to achieve the objectives as follows:

“Although there would be short term disruptions to the solitude and unimpaired wilderness character from implementing Alternative A., the proposed action would restore the wilderness to within the range of historic natural variability, restore ecosystem function and condition, and protect other wilderness values, as well as reduce the long term need for intensive human intervention to restore ecological functions. Mechanical transport is required to haul chemicals, tools, and large quantities of water, over long distances, in some times very hot temperatures.”

Proposed vehicle speeds are also a cause for concern. The EA states that speeds will generally not exceed 40 miles per hour (40) within Desert Wildlife Management Areas (DWMA) and Areas of Critical Environmental Concern (ACEC). Speeds on any unpaved road within the monument, regardless of whether they occur within DWMA/ACECs, should not exceed 30 mph for the safety of personnel and wildlife, as well as for habitat protection. The BLM should encourage its employees and volunteers to travel at speeds even lower than 30 mph in most situations. Even the most conditioned wildlife biologist of off-highway traveler would have a difficult time spotting an adult Mojave desert tortoise while traveling at 40 mph, and the response time available to avoid crushing it would be minimal. Vehicles and roads are especially detrimental to these animals. Smaller animals, including young tortoises, would be nearly impossible to see.

The Proposed Action is in conformance with the Terms and Conditions of the 1998 Biological Opinion and RMP Amendment, as stated:

f. In DWMA/ACECs, vehicles associated with Bureau-authorized projects traveling on unpaved roads in desert tortoise habitat shall not exceed speed limits established by the Bureau as necessary to protect desert tortoises. These speed limits will generally not exceed 40 mph even on the best unpaved roads but may be much less on some roads.

The Sierra Club has provided no scientific evidence to substantiate a mandatory maximum speed limit of 30 mph.

Future monitoring activities are vital for the success of this project. We are pleased to see that the BLM will employ long-term monitoring. We also recommend the use of photo-logs to monitor recovery of

native vegetation and any changes to the landscape. Perhaps the BLM could consider a photo points project similar to what has been used on our national forests to monitor the impacts of livestock grazing.

The NPS Exotic Plant Management Team, that would implement this project, has a pre- and post-treatment monitoring system in place, which will be used prior to and post-implementation. In order to track treatment effectiveness and site recovery, photo-logs and other monitoring are routinely carried out by the Exotic Plant Management Teams. The BLM and NPS would be interested in cooperating with the Sierra Club and volunteers to implement this work, including the development of photo-logs.

Recovery of native vegetation is essential in order to maintain soil stability and wildlife habitat. However, in areas where tamarisk has had a large influence, the soil may have become too salty for native plants to recover. Areas disturbed by the removal of tamarisk may also invite other non-native invasive species to spread into that area. Finally, without a natural hydrological condition in the area, tamarisk is likely to continue to thrive – efforts to ensure the greatest degree possible of natural water flows accompanied by flooding should be encouraged.

Should the BLM decide to work to remove at least a portion of these tamarisk trees by digging them out, we would be happy to assist with the work and would also help recruit volunteers for service projects.

The proposed action includes removing at least a portion of the tamarisk by pulling, and the BLM and NPS would be interested in cooperating with volunteers to complete this work.

Thank you again for the opportunity to comment on this EA. We appreciate the efforts of the BLM to protect this amazing landscape, the Grand Canyon – Parashant National Monument. Please keep us informed about plans for this project, this area, and other projects. If you have any questions, please contact us at 602-253-8633 or grand.canyon.chapter@sierraclub.org.

We appreciate these comments from the Sierra Club, regarding the Tamarisk Control EA on for the Grand Canyon – Parashant National Monument (EA AZ-130-2007-0042). The comments will help us fine-tune field operational procedures. Regarding the EA, we believe your concerns are addressed therein, and we propose no changes. We greatly appreciate the Sierra Club interest in management of the Grand Canyon – Parashant National Monument.

Sincerely,

Dennis Curtis,
Grand Canyon – Parashant Monument BLM Manager