UNITED STATES DEPARTMENT OF THE INTERIOR
GRAND CANYON-PARASHANT NATIONAL MONUMENT
345 East Riverside Drive
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Phone: (435) 688-3345 Fax: (435) 688-3388

August 23, 2007

NOTICE OF AVAILABILITY
Environmental Assessment AZ-130-2007-0042
Grand Canyon – Parashant National Monument - Tamarisk Control

Dear Interested Party:

Please be advised that an Environmental Assessment (EA-AZ-130-2007-0042) has been prepared for the proposed Grand Canyon – Parashant National Monument tamarisk control project. This EA is a public document, and it is available for your review and comment.

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 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.

Cut-stump with herbicide application, low volume bark herbicide application at stem base, foliar herbicide application, and hand pulling of seedlings would be used to remove non-native, invasive tree species, depending on the size of individual stems, the density of stems, and the degree of intermingling with native vegetation. Cut material would be pulled away from native vegetation, and allowed to deteriorate on site.

This proposed action is in conformance with the Arizona Strip Resource Management Plan (1990), as amended (1998), the Grand Canyon – Parashant National Monument Proclamation (2000) and Interim Management Guidelines (2001), and includes conservation measures to protect National Monument objects, wilderness, and wildlife.

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

Dori Ann Taylor
Grand Canyon – Parashant National Monument
345 E Riverside Drive
St George UT 84790.
Phone: 435-688-3345 (desk) or 435-688-3388 (fax),

This EA has also been posted on the Arizona Strip Field Office's web home page http://www.blm.gov/az/st/en/fo/arizona_strip_field.html. The deadline for receipt of comments is September 23, 2007. Public comments are welcome and encouraged.

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

Sincerely,

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Dennis Curtis,
Grand Canyon – Parashant Monument BLM Manager

_____

Jeff Bradybaugh,
Grand Canyon – Parashant NPS Superintendent

United States Department of the Interior
Bureau of Land Management

Environmental Assessment EA-AZ-130-2007-0042
August 2007

Tamarisk Control

Grand Canyon – Parashant National Monument
Bureau of Land Management

345 East Riverside Drive
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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 it's' 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 causal 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:

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 tryclopyr 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 tryclopyr 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
5.2.2 Comment Analysis
5.2.3 Response to Public Comment

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:

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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
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Ray Klein, NPS	Law Enforcement
Dennis Curtis, BLM	Monument Manager
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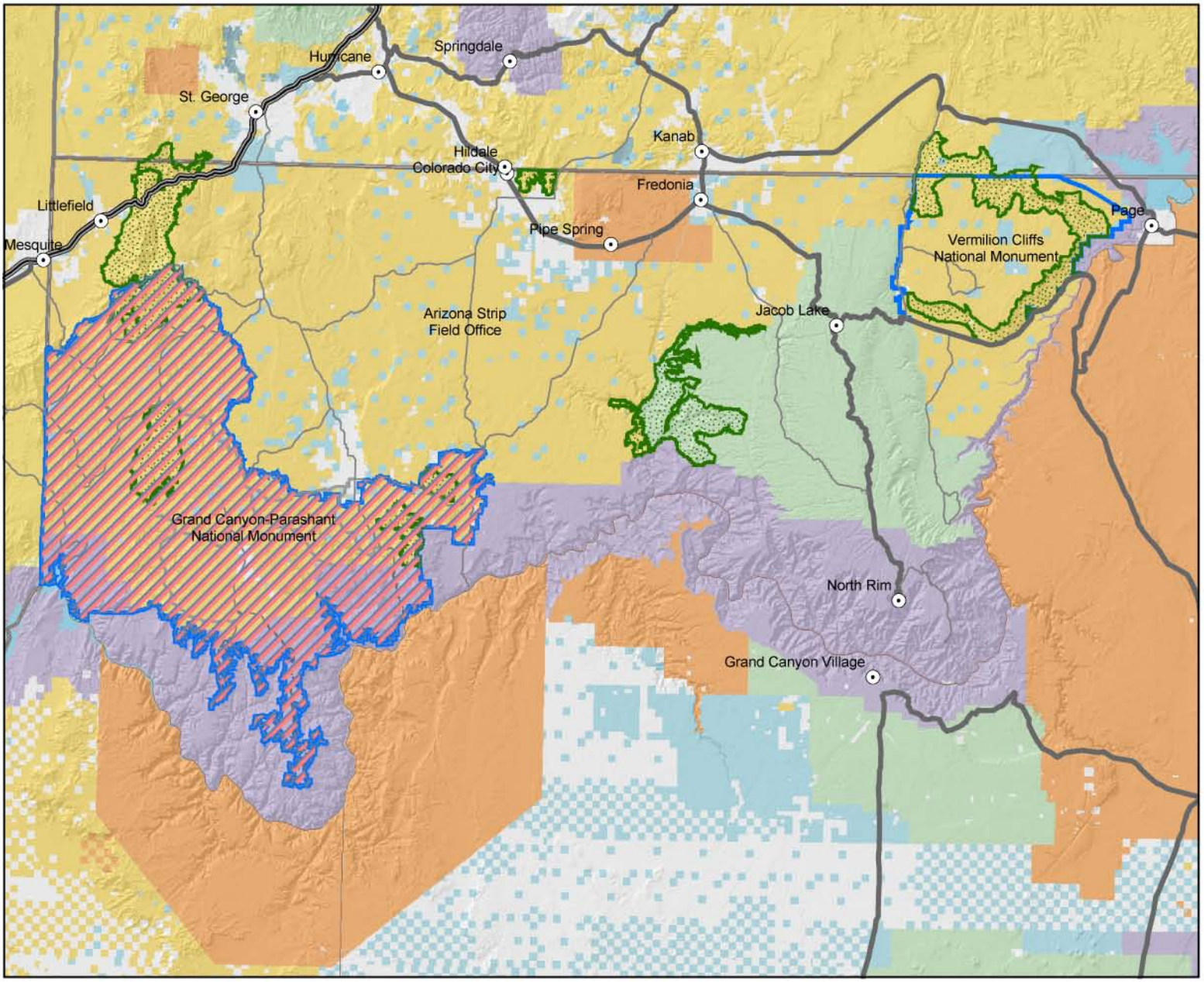
State of Arizona



Legend

- Area of NEPA Project
- Designated Wilderness
- Monuments
- Bureau of Land Management
- State Lands
- Private Lands
- National Park Service
- Indian Lands
- National Forest
- Interstate
- Primary Routes
- Secondary Routes
- Light Duty Routes
- 4WD Routes

Location Map

1:1,220,000

0 10 20 30 40 Miles

0 20 40 60 80 KM

United States Department of the Interior
Bureau of Land Management
Arizona Strip District Office

Map created on July 30, 2007

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CAUTION:
Land ownership data is derived from less accurate data than the 1:24000 scale base map. Therefore, land ownership may not be shown for parcels smaller than 40 acres, and land ownership lines may have plotting errors due to source data.

No warranty is made by the Bureau of Land Management for the use of the data for purposes not intended by the BLM.