Environmental Assessment No. NM-220-05-054
Case File No. 607101
for

Treatment of Saltcedar (*Tamarix spp.*) and Other Invasive Nonnative Vegetation for Orilla Verde Recreation Area

Located in
T. 24 N., R. 11 E., Portions of Secs. 1, 2, 10, 11, 15, 16, 21, 22, 28, 29

Bureau of Land Management
New Mexico
Farmington District - Taos Field Office
Taos, New Mexico

July 7, 2006

Preliminary Finding of No Significant Impact and Decision Record
for
Treatment of Saltcedar (*Tamarix* spp.) and Other Invasive Non-native Vegetation in Orilla Verde Recreation Area
EA No. NM-220-05-054
Case No. 607101

Preliminary Finding of No Significant Impact

After reviewing the attached Environmental Assessment (EA) for *Treatment of Saltcedar (Tamarix spp.) and Other invasive Non-native Vegetation in Orilla Verde Recreation Area*, I have determined that the proposed action, when implemented with the conservation measures included in the EA, cultural and threatened and endangered species clearances prior to implementation, and ongoing monitoring throughout the life of the project, would not have a significant impact on the human environment or to minority or low-income populations or communities. Based on informal consultation with the U.S. Fish and Wildlife Service, a Biological Assessment has determined a "May Affect – Not Likely to Adversely Affect" for two listed species and designated critical habitat. Concurrence from the U.S. Fish and Wildlife Service would be obtained prior to implementation. Therefore, an Environmental Impact Statement is not required.

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Sam DesGeorges Date
Taos Field Manager

Preliminary Decision Record

Summary of Proposal

The BLM and its partners would conduct annual inventories for nonnative, invasive vegetation (hereinafter "weeds") in the project area, map their locations, and determine initial treatment(s) covering from one to ten acres, appropriate retreatment method(s) on previous treatment sites, using one or more of the methods as outlined in the Proposed Action. These methods include manual (hand pulling), mechanical (chainsaw), biological (grazing), use of herbicides (Habitat®), prescribed fire, and/or native plant restoration treatments. Work would be done over a 10 to 15 year period. Concurrently with these control actions, BLM would work aggressively to restore native vegetation to the cleared areas to enhance and protect watershed health, biodiversity, and habitat of sensitive species.

Location

The project area covers 83 acres of public land in Orilla Verde Recreation Area. The treatment sites are mainly along the Rio Grande Wild and Scenic River, between Taos Junction Bridge and the village of Pilar. The legal description is T. 24 N., R. 11 E., on portions of Secs. 1, 2, 10, 11, 15, 16, 21, 22, 28, and 29.

Purpose and Need

About 25 acres in the project area are infested with noxious weeds (primarily saltcedar), mainly in the riparian corridor along the Rio Grande. Other noxious weed species of concern currently known to occur in the project area include perennial pepperweed, Siberian elm, Russian olive, Canada thistle, Russian knapweed and Tree of Heaven. Action by BLM and interested partners is needed to suppress the population of noxious weeds, establish a program to accelerate the reestablishment of native species, and monitor treated sites to continue suppression efforts. BLM estimates that nearly 36 million acres of public land were infected with noxious weeds in 2000, and that invasive plants and noxious weeds are spreading at a rate of about 2,300 acres per day. Such encroachment is destroying sensitive species' habitat, reducing forage for more common species, and affecting human activities such as recreation and grazing.

Description of Proposed Action

The Bureau of Land Management's Taos Field Office proposes treatment of vegetation to control the spread of and remove saltcedar (*Tamarix* spp.) and other invasive, nonnative plants on public lands in the Orilla Verde Recreation Area over the next 10-15 years. We would use Integrated Pest Management (IPM) techniques, including manual, mechanical, biological, herbicide, prescribed fire and restoration treatment methods. Details regarding implementation are in the Environmental Assessment (EA).

It is proposed to initiate control of weeds over 1-10 acres annually. Focusing treatment on small sites, and the preservation of screening for recreation and important perch sites and cover habitat for wildlife, would mitigate impacts to wildlife habitat and visual resources. An annual meeting would provide an opportunity for the public to participate in the planning of initial and retreatment sites, and/or the implementation, monitoring, or educational components of the project.

Control efforts would occur primarily during the fall and winter for exotic tree species, while monitoring, education and implementation on herbaceous species of weeds would occur during spring and summer months. Replanting of the riparian area with native vegetation would occur during spring or fall. The management of noxious weeds would enhance and protect biodiversity, watershed health and special status species while addressing risk of wildfire to adjacent communities. Education and outreach would provide tools and resources for others in the region working on controlling weeds, as well as an opportunity to work collaboratively with the public.

BLM would arrange access to treatment sites. No road construction would be required. No structures would be removed and none are anticipated to require removal. Vegetation (slash) would be removed from the treatment sites by prescribed fire of burn piles, chipping, hauling, or left on site to reduce soil erosion and provide wildlife habitat.

BLM and/or its agents/partners could use any of the treatment methods (manual, mechanical, biological, herbicide, prescribed fire, and restoration) as fully described in the Environmental Assessment, either singly or in concert. For herbicide treatments, Habitat® (Imazapyr) would be used, and in very small quantities at any one time, applied with paintbrushes or wicking devices, and all standard operating procedures and bureau-wide requirements would be followed.

Before planning a treatment, site-specific analysis would consider these criteria:
1) Land use of the treatment area and proximity of sensitive areas, including developed recreation sites and threatened and endangered species habitat.
2) Hydrology of the treatment area and if there is sufficient overbank flooding or ground water present to support native riparian species.
3) Characteristics of the target plant species (size, distribution, density, and life cycle) and associated nontarget plant species in the treatment area.
4) Accessibility, slope, and soil characteristics (rockiness and erodibility) of the treatment area.

The overriding goal is to treat vegetation only where necessary, and to prioritize treatment methods based on their effectiveness and likelihood to have minimal impacts on the environment.

Treatment areas of highest priority are where there is overbank flooding and/or high groundwater levels allowing for rapid restoration of native riparian vegetation. For the most part, these stands contain individual saltcedar trees inside large patches of native vegetation and treatment would quickly reestablish large areas of native vegetation.

The second priority treatment areas are larger patches with over 50% canopy cover of weedy species. If present, perennial pepperweed is a species that would colonize a riparian site treated for some other weed. Therefore, where this plant does not currently exist, those patches would be easier to treat and have been set as the second stage to maximize native riparian restoration prior to moving to larger more complex areas.

The third priority treatment areas are ones with high weed density, potential habitat for the endangered Southwestern willow flycatcher (*Empidonax traillii extimus*), and perennial pepperweed is present in the immediate area. These patches would require strategic treatment as they represent potential habitat for an endangered species and treatment would need to address multiple weed species so as not to replace one weed with another (i.e., perennial pepperweed for saltcedar).

The last areas for treatment have been determined to be the current most valuable habitat patches for the Southwestern willow flycatcher. At this stage, maximum alternative native riparian habitat in the project area avoids an adverse affect to the endangered species or designated critical habitat.

Treatment priorities identified in the *Final Environmental Impact Statement Vegetation Treatment on BLM Lands in Thirteen Western States* (1991) would apply, including: (1) take actions to prevent or minimize the need for vegetation controls where feasible; (2) use effective nonchemical methods of vegetation control where feasible; and (3) use herbicides only after considering the effectiveness of all potential methods.

The BLM, in coordination with other agencies and project partners, would develop an annual project plan that would identify initial and re-treatment sites, methods used, monitoring activities required, and educational outreach opportunities.

Baseline information exists for soils, vegetation, groundwater levels, fisheries, breeding birds, Southwestern willow flycatcher, amphibians, reptiles, bats, and raptors. Inventory and monitoring are methods to adapt components of this decision to future treatment areas. With the assistance of the project partners, a detailed multi-party monitoring plan would be developed and monitoring results would be available for public review. The BLM and its partners would conduct annual weed inventories and mapping, and treatment of newly found populations identified and prioritized based on the above criteria. Treated sites would be monitored by the BLM and its partners and results evaluated and documented to determine effectiveness of the methods used in meeting the objectives; whether impacts to resources or people were within the scope of the predictions herein; implementation and effectiveness of conservation measures; and whether mitigation should be added to enhance effectiveness. Changes in treatment prescriptions made because of monitoring and evaluation, and treatments prescribed for newly found weed populations, must adhere to all conservation measures and monitoring requirements in the EA, and the action and effects must be within the scope of those considered in this analysis.

Reasonable Alternatives

The "No Action" alternative would allow the noxious weeds to continue to spread and eventually invade our rangelands. This would increase erosion, destroy wildlife habitat, and decrease diversity of both flora and fauna. The “No Herbicide” alternative would address noxious weeds at a slower rate and allow the noxious weeds to continue to spread in some areas due to limited funding and work force to affect control.

Conservation Measures Incorporated Into the Proposed Action

Specific conservation measures in the EA ensure the proper and safe implementation of all treatment methods. Some of the best management practices include: reasonable and prudent precautionary measures to ensure public health and safety and prevention of the spread of weedy species; tools and techniques to restore native vegetation indigenous to the area; surveys and monitoring for wildlife and special status species; following all local, state and federal regulations for the application of herbicide products; notification of treatments sites and methods; and appropriate clearances by biologists and archeologists for threatened and endangered species and cultural resource protection. Affected publics in the project area would be notified prior to any weed treatments.

Monitoring

Trend plot and photo points would be established to document changes in vegetation and ground cover. A detailed monitoring plan would incorporate vegetation, wildlife and water quality information to evaluate and determine effectiveness of the methods used in meeting the objectives, whether impacts are within the scope of the EA and if mitigation should be added to enhance effectiveness. Any change in treatment prescriptions made because of monitoring and evaluation would adhere to all conservation measures and monitoring requirements in the EA, and the action and effects would be within the scope of those considered in the EA.

Results of Scoping
Issues and management concerns were identified through phone calls, emails, field trips, letters, and several meetings conducted between December 2003 and May 2006. BLM would continue to seek out opportunities to involve stakeholders and the public in the implementation of the project. It is the BLM's intent to continue to build the partnerships developed during the planning of this project. BLM would continue to work in cooperation, consultation, and collaboration with stakeholders, tribal, local and state governments, interest groups and the public to support common objectives.

Public comments strongly supported the purpose and need for the proposed action and its objectives. Some comments clearly favored manual treatments and non-herbicide treatments over herbicide use, especially near areas frequented by the public. Several comments favored herbicide use due to its economic and proven efficacy. Only two separate written comments were provided. One contained a pesticide use policy and the other a request that nonnative vegetative screening for camping purposes be left in place until alternative screening is established. The BLM has responded to these comments by providing answers to questions posed under the pesticide use policy, and would provide vegetative screening for recreation by planting native vegetation as a replacement.

Preliminary Decision Record
I have reviewed the issues identified in scoping for this project, the proposed action and its conservation measures, its response to the issues, the conformance with the Resource Management Plan, monitoring requirements, and the analysis of potential environmental effects. The proposed action offers the best mix of federal and partnership strategies to meet the objectives of controlling or removing infestations of noxious weeds and preventing their spread to adjacent lands. I therefore approve the proposed action for implementation.

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Sam DesGeorges Date
Taos Field Manager

TABLE OF CONTENTS

List of Tables

Appendices

Chapter 1 - Purpose & Need for Action

A. Introduction

Legislation transferred the land along the Rio Grande within Orilla Verde Recreation Area from the State of New Mexico to the Bureau of Land Management in 1990. An interim management plan was in place until 1994 when an Amendment to the Taos Resource Management Plan (RMP) outlined certain management objectives for the area and designated 5,688 acres of public land as a special recreation management area (USDI, BLM 1994). Guidance derived from a 1991 New Mexico Statewide Comprehensive Outdoor Recreation Plan directed federal agencies to rehabilitate and provide opportunities for picnic areas, hiking trials, and camping areas, among others. The RMP Amendment emphasized maintaining/improving biodiversity, protecting visual resources, improving soil and water conditions through augmentation to native species and control and/or removal of non-natives, among other things. The Rio Grande Corridor Final Plan incorporates the above guidance and represents the current management direction authorizing the protection and enhancement of wildlife and visitor use of the area (USDI, BLM 2000).

Many factors affect vegetation along riparian zones throughout the southwest, including altered hydrologic and fire regimes, variability in climate in the form of drought and floods, and an increase in human activity (DeLoach, et al., 1999; USDA, FS 2005; Friedman, et al., 2004). In many riparian areas, large mature cottonwoods are no longer present, possibly as a consequence of historic human activities, as well as loss of the over bank flooding necessary to provide opportunity for cottonwood seedlings to establish (Friedman & Lee 2002). In the project area, historical grazing practices may have caused degradation of riparian vegetation allowing invasion of several undesirable plant species. BLM assumed control of the area in 1990 and ceased grazing in the riparian zone. The National Wild and Scenic River System designated the project area as "scenic" in 1994 (Rio Grande Designation Act of 1994, PL-103-242).

The Southwestern willow flycatcher (*Empidonax traillii extimus*) (WIFL), listed as a federally endangered species in 1995, is known to use the area as migratory stopover habitat. The U.S. Fish and Wildlife Service (USFWS) designated critical habitat for the WIFL in 2005, which includes the project area (USDI, FWS 2005).

B. Description of Proposed Action

The Bureau of Land Management (BLM) Taos Field Office proposes a strategic plan for treatment of exotic vegetation to control the spread of and remove saltcedar (*Tamarix* spp.) and other invasive, nonnative plants (hereinafter referred to as "weeds") on public lands in the Orilla Verde Recreation Area (OVRA) over the next 10-15 years using integrated pest management techniques, including manual, mechanical, biological, herbicide (Habitat® [Imazypr] as described in Appendix D), prescribed fire and restoration treatment methods (USDA, FS 2005; USDI, BLM 2005). Some methods would not be considered under this plan, according to the alternatives section referenced below (see Chapter 2.A.).

C. Purpose and Need for Action

The purpose of the proposed action includes the need to:

- *develop and protect native riparian plant species* by controlling and removing invasive, nonnative vegetation and restoring native plant cover;
- *ensure sustainability of a healthy watershed and proper floodplain health and function* by improving water quality and sustained yield of water through reduction of the spread of invasive, nonnative vegetation and increasing desired native plant species to meet objectives of the BLM land use plans;

- *reduce the threat of wildfire to local residents* by reducing fuels and replacing dense stands of saltcedar and invasive, nonnative vegetation with native riparian vegetation less prone to intense fire activity; and
- *improve wildlife habitat for a variety of terrestrial and aquatic species* by increasing quality and production of desirable native plants species.

Weeds are aggressive, undesirable plants that are a serious threat to public and private lands (Asher & Harmon 1995; NRCS 1999; USDA, BLM 2005). Weeds typically out-compete native plants for space, water, and nutrients, as they have characteristics that give them a competitive advantage over native plant species (McDaniel & Duncan 1997; Dudley & DeLoach 2004). They demonstrate high reproductive capacity through prolific seed production and root sprouting (USDA, FS 2005; NRCS 1999). If left uncontrolled, they tend to dominate areas and reduce the diversity and sustainability of native plant populations (USDA, FS 2005; NRCS 1999; Taylor & McDaniel 1998). Saltcedar is the dominant non-native riparian tree in the western United States, and Russian olive is a close second (Friedman, et al., 2004). Controlling the spread of weed species is now a regional and national priority for the BLM and other land management agencies (USDI, BLM 2005; USDA, FS 2005).

In general, weed invasion and spread results in a loss of natural diversity and reductions in the quality of wildlife habitat, water quality and scenic value (Williams 1997; Asher & Harmon 1995; USDA, FS 2005). Weeds can alter ecosystems by changing the frequency and intensity of wildfires (DeLoach, et al., 2000). All these modifications have serious implications to local economies by reducing revenues from hunting and fishing, impacting the value of lands for agriculture and grazing industries, and impacting those who use native plants for cultural or artistic purposes (DeLoach, et al., 2000; USDI, BLM 2005).

Listed below are the dominant weeds on lands within the boundaries of OVRA.

- Saltcedar (*Tamarix* L.)
- Perennial pepperweed (*Lepidium latifolium* L.)
- Siberian elm (*Ulmus pumila* L.)
- Russian olive (*Elaeagnus angustifolia* L.)
- Canada thistle (*Cirsium arvense* (L.) Scop.)
- Russian knapweed (*Acroptilon repens* (L.) DC.)
- Tree-of-Heaven (*Ailanthus altissima*)

(This list may change over time due to new sightings or listings, or removal of current populations.)

OVRA should contain native plants at both the community and population level that are productive, resilient, diverse, vigorous, and able to reproduce and sustain natural fluctuations within ecological processes. The depletion of groundwater storage caused by saltcedar invasion works against survival of more desirable species and a truly productive riparian ecosystem (DeLoach, et al., 2000; Renz 2000). The BLM is in a good position to deal with these weeds now because the problem in OVRA has not reached an epidemic level where it would take large-scale, costly efforts to solve. A significant portion of the understory vegetation consists of native riparian species and, once released from the competition of saltcedar and other weeds, would reestablish successfully (NRCS 1999). Treatment of the problem in this early stage using an integrated approach would minimize the time required to obtain control, as well as ground and habitat disturbance (Taylor & McDaniel 1998).

D. Project Area Description

OVRA begins one mile north of the town of Pilar, which is approximately 15 miles south of Taos, in Taos County, New Mexico, and includes the Rio Grande north for approximately 5 miles to the point where NM Highway 570 climbs to the west rim of the gorge. (See map in Appendix A). The project area is located in T. 24 N., R. 11 E., and portions of Sections 1, 2, 10, 11, 15, 16, 21, 22, 28 and 29.

The east portion of the project area is easily accessible by NM 570, a paved road that follows the canyon on the east side of the river all along its length. The project area is much wider and more open than the upper section of the Rio Grande (Taos Junction Bridge to the CO/NM state line) and provides a richer riparian environment. The canyon is about 700 to 800 feet deep in this section and the gradient of the river decreases significantly in contrast to the upper gorge. Wildlife, particularly songbirds, waterfowl and shorebirds, are more abundant in this wider riparian zone, and fishing and other activities increase due to the ease of access. Just downstream from OVRA is the village of Pilar, where private land borders both sides of the Rio Grande for approximately one mile where BLM ownership resumes.

BLM management of OVRA provides for a variety of activities including camping, fishing, boating, wildlife viewing, hiking and sightseeing. Camping is allowed only at designated sites. The west side of the river throughout the recreation area is currently undeveloped except for the campground at Taos Junction Bridge. Within OVRA, there is no livestock use, closure of locatable minerals, and a No Surface Occupancy stipulation for oil and gas leasing and development. Other restrictions include no motorized travel on the river, and no hunting, trapping and the discharge of firearms, in coordination with the New Mexico Department of Game and Fish.

Saltcedar is the most abundant weed in the project area, totaling approximately 25 acres of the project area. Saltcedar exists in 16.6 acres of monotypic stands (6.6 acres in one large stand), 10.2 acres mixed with willow, and 10.2 acres mixed with other native species. Native willow stands comprise approximately 29 acres of the project area; however, most of these contain single saltcedar trees or seedlings. Table 1 demonstrates the height of the saltcedar component and the relationship of these stands to the road (NM 570) and the river. See Appendix B for a map of the saltcedar and native vegetation in the project area.

Table 1. Acres of Saltcedar summarized by height

Adjacent to Road	Height (ft)	Saltcedar Acres
No	< 5	0.5
No	5-10	1.4
No	10-15	3.2
No	15-20	8.1
	Sum	**13.2**
Yes	10-15	4.6
Yes	15-20	6.8
Yes	20-40	0.5
	Sum	**11.9**
		====
	Grand Total	**25.1**

Source: Bureau of Reclamation (2004)

E. Conformance with Applicable Land Use Plan

The Rio Grande Corridor Final Plan (USDI, BLM 2000) amended the 1988 Taos Resource Management Plan and provides for the management and control of non-native exotic vegetation along the section of the Rio Grande within the project area. This plan states the desired future condition of the landscape is one that "*supports a diverse, healthy, natural system represented by native communities of vegetation with no increase in exotic plant species*," and that "*vegetative modifications…improve the health of the land, including habitat, watershed function and soil stability*" (p. 1-2). In the management of Wild and Scenic River corridors, the BLM will "*conserve or enhance riparian vegetation through controls on vehicle use,*

plantings, and removal of noxious weeds or invasive, non-native plants" (p. 2-6). In addition, the proposed action meets the plan objective to develop, "*A strategy [will be developed] to control tamarisk and noxious weeds and reestablish native vegetation to improve biodiversity within the Recreation Area*" (p. 2-11). In addition, "*Riparian habitat will be maintained or improved by…removing exotic plant species.…*" (p. 3-27). The plan also states to, "*Develop projects as needed to control exotic and noxious weeds*" (p. 3-31).

F. Relationship to Statutes, Regulations, and/or other Plans

This Environmental Assessment (EA) is tiered to the Final Environmental Impact Statement, Vegetation Treatment on BLM Lands in Thirteen Western States (USDI, BLM 1991) (EIS) which outlines vegetation treatment using the Integrated Pest Management methods described in the proposed action. The EIS is available at the BLM Taos Field Office for review upon request.

In 1998 the BLM prepared the Southwestern Willow Flycatcher Management Plan-Taos Resource Area which proposed augmentation of native vegetation with plantings of willows and cottonwood poles as well as "removal of saltcedar and Russian olive using EPA approved chemicals by hand application on small patches a few acres at a time." The BLM RMP Amendment for Fire and Fuels Management on Public Land in New Mexico and Texas (2004) addresses wildfire threats posed by dense stands of saltcedar. These plans would be available at the BLM Taos Field Office for review upon request.

The Carson-Foley Act of 1968 directs agency heads to enter upon lands under their jurisdiction with noxious plants and destroy noxious plants growing on such land. The Tamarisk Control and Riparian Restoration Act of 2003 provides direction to the Secretary of the Interior to establish a program to control or eradicate tamarisk in the Western States. The Federal Insecticide Fungicide and Rodenticide Act as amended (Public Law 92-516), the Federal Environmental Pesticide Control Act of 1972, Executive Order 13112 – Invasive Species (1999), and other pertinent statutes, authorize the prevention of introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species and their control cause. Existing state plans for management of weeds include the "Strategy for Long-Term Management of Exotic Trees in Riparian Areas for New Mexico's Five River Systems, 2005-2014" (USDA, FS 2005). The guidance listed above is available at the BLM Taos Field Office for review upon request.

BLM Manual 9011 and Handbook H-9011-1 provide policy for conducting chemical pest control programs under an integrated pest management approach. BLM Manual 9014 provides guidance and procedures for planning and implementing biological control in IPM programs. BLM Manual 9015 provides policy relating to the management and coordination of weed activities among BLM, organizations, and individuals. The proposed action and all alternatives would follow all BLM Manual direction, are incorporated herein by reference, and would be available at the BLM Taos Field Office for review upon request.

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G. Scoping & Development of Issues and Alternatives

Issues and management concerns were identified through phone calls, emails, field trips, letters, and meetings conducted between December 2003 and May 2006. Contacts were made with tribal leaders; local, state and other federal agencies; and individuals and user groups. See Appendix C for a list of scoping and results.

The BLM has been collecting baseline data and working collaboratively with multiple partners, including watershed groups, local residents, special interest groups, and other organizations and individuals in the region. BLM would continue to seek out opportunities to involve stakeholders and the public in the implementation of the project. It is the BLM's intent to continue to build the partnerships developed

during the planning of this project. BLM is currently working in partnership with the New Mexico Natural Heritage Program, Bureau of Reclamation, New Mexico Cooperative Extension Service, Taos County Noxious Weed Committee, the Taos Chapter of the Native Plant Society, and New Mexico State Forestry to use the best available science to map the project area, assess the condition, and plan for implementation of the project. BLM would continue to work in cooperation, consultation, and collaboration with stakeholders, tribal, local and state governments, interest groups and the public to support common objectives.

Public comments strongly supported the purpose and need for the proposed action and its objectives. Some comments clearly favored manual treatments and non-herbicide treatments over herbicide use, especially near areas frequented by the public. Several comments favored herbicide use due to its economic and proven efficacy.

Only two separate written comments were provided during the formal scoping period. One contained a pesticide use policy and the other a request that nonnative vegetative screening for camping purposes be left in place until alternative screening is established. The BLM has responded to these comments by providing answers to questions posed under the pesticide use policy, and would plant native vegetation as alternative screening for recreation. From 2001 through 2006, cottonwood poles, boxelders and New Mexico olive have been planted in specific areas of concern.

Development of issues and alternatives include management concerns to: improve soil and watershed health; restore and protect native riparian vegetation for wildlife and special status species; enhance recreational opportunities for visitors; and address wildfire threats to adjacent communities. Mixed stands of native and non-native vegetation in a recreation area and Scenic River corridor require sound and strategic application of treatments. In addition, multiple species of weeds would necessitate concurrent treatment methods where these plants co-exist. Environmental factors change over time creating the need for consistent monitoring and attention to these issues to reach the management goals and objectives.

Therefore, Alternative A (the proposed action) incorporates multiple treatment methods, including manual, mechanical, biological, fire and herbicide use; Alternative C includes the methods of the proposed action without the herbicide component; and Alternative B represents the no action alternative, or continuation of current management.

From the preliminary issues and those brought forward in the scoping process, the following issues are analyzed in this EA:

- restoration of riparian ecosystem function and native vegetation;
- enhancement and protection of biodiversity, including wildlife and special status species;
- long-term watershed health;
- human health and safety; and
- risk of wildfire to adjacent communities.

Chapter 2 - Proposed Action & Alternatives

A. Alternatives Considered but Not Analyzed in Detail

A number of alternative treatment methods were considered but eliminated from further analysis.

Single treatment methods of any kind are shown to be ineffective. Treatment sites need a multiple of treatment methods over a series of years (2-5 years typically) in order to obtain the weed control objective (McDaniel & Duncan 1997; DeLoach, et al., 2000; USDA, FS 2005).

The use of bulldozers, root plows and rakes cause a tremendous amount of surface disturbance (down to approximately 5 feet) over the entire treatment area. The course soils of the project area are prone to erosion with this large-scale activity, and the amount of surface disturbance is incompatible with the scenic river guidelines and land use management plans for the area. Therefore, this method would not be considered further.

Release of biological control agents researched and developed for saltcedar in the Southwest may be a consideration in the future but will not be analyzed in this EA. Currently these insects appear to be better adapted to areas north of the 38th parallel where day length exceeds 14 hours 45 minutes during the summer (Thompson 2003). If insects proven effective in southern locales were approved by federal and state agencies in the control of saltcedar, development of a release plan and environmental analysis would be completed prior to proceeding with this method.

Flooding facilitates removal of saltcedar species in the middle Rio Grande where levees and low flow channels allow for the control of streamflow (Taylor & McDaniel 1998). This method is not available due to the wild and scenic nature of the Rio Grande and restrictions to alteration of streamflow under such a designation.

B. Description of Alternatives

1. Alternative A – Proposed Action

The proposal is that the BLM and its partners implement a scientifically sound strategic plan for weed control and removal (mainly saltcedar and perennial pepperweed) under the principals of IPM, including a plan for fire mitigation and rehabilitation of a riparian ecosystem with an educational and public outreach component. This project includes the riparian segment of OVRA with implementation over the next 10 to 15 years. Control efforts would occur primarily during the fall and winter for exotic tree species, while monitoring, education and implementation on herbaceous species of weeds would occur during spring and summer months. Restoration of the riparian area with native vegetation would enhance and protect biodiversity, watershed health and special status species while addressing risk of wildfire to adjacent communities (DeLoach, et al., 2000; USDA, FS 2005; USDI, BLM 2005). Education and outreach would provide tools and resources for others in the region working on controlling weeds, as well as an opportunity to work collaboratively with the public.

It is proposed to initiate control of weeds over 1-10 acres of land within OVRA annually. Small treatment sites and conservation of screening for recreation and important wildlife habitat would mitigate impacts to visual and wildlife resources. Annual meetings with the public and all interested parties would provide an opportunity for participation in the planning for initial and retreatment sites, implementation, monitoring and educational components.

During the implementation phase, BLM would arrange access to all treatment sites. No road construction would be required. No structures would be removed and none are anticipated to require removal.

Vegetation (slash) would be removed from the treatment sites by either prescribed fire of burn piles, chipping, hauling, or left on site to mitigate soil erosion and provide wildlife habitat (USDI, BLM 2005; USDA, FS 2005).

Timing of weed treatments is imperative for success (McDaniel & Duncan 1997). There are many factors that would affect the annual number of acres treated, including available funds, workforce, other workloads, revised land use planning, threatened or endangered species conflicts, cultural and visual resources and recreation management concerns.

Treatment Methods

BLM and/or its agents/partners could use manual, mechanical, biological, herbicide (Habitat® [Imazypr]) or prescribed fire methods, as more fully described in Appendix D, with restoration of native vegetation as necessary. The methods used would be those deemed most appropriate for each site, pursuant to an annual public planning meeting.

Treatment Criteria

Before planning a treatment, site-specific analysis would consider these factors:

1) Land use of the treatment area and proximity of sensitive areas, including developed recreation sites and threatened and endangered species habitat.
2) Hydrology of the treatment area and if there is sufficient overbank flooding or ground water present to support native riparian species.
3) Characteristics of the target plant species (size, distribution, density, and life cycle) and associated nontarget plant species in the treatment area.
4) Accessibility, slope, and soil characteristics (rockiness and erodibility) of the treatment area.

Treatment Priorities

The overriding goal is to treat vegetation only where necessary, and to prioritize treatment methods based on their effectiveness and likelihood to have minimal impacts on the environment. Preliminary treatment priority areas, based on the above criteria and in collaboration with state and federal agencies and local citizens groups, are shown on the map in Appendix E and described below.

1A/1C: Treatment areas of highest priority are where there is overbank flooding and/or high groundwater levels allowing for rapid restoration of native riparian vegetation. For the most part, these stands contain individual saltcedar trees inside large patches of native vegetation and treatment would quickly reestablish large areas of native vegetation. 1A represents sites that contain individual saltcedar trees or isolated plants for treatment, where 1C areas are of a medium density with less than 25% canopy cover of weedy species.

2: The second priority treatment areas are larger patches with over 50% canopy cover of weedy species. If present, perennial pepperweed is a species that would colonize a riparian site treated for some other weed (Renz 2000a). Therefore, where this plant does not currently exist, those patches would be easier to treat and would be set as the second stage to maximize native riparian restoration prior to moving to larger more complex areas.

3: The third priority treatment areas are ones with high weed density, potential WIFL habitat, and perennial pepperweed is present in the immediate area. These patches would require strategic treatment as they represent potential habitat for an endangered species and treatment would need to address multiple weed species so as not to replace one weed with another (i.e., perennial pepperweed for saltcedar). At this point in the project, alternative native riparian habitat has been established in “1A/1C” and “2” priority treatment areas.

W: These are the last areas for treatment as they have been determined to be the current most valuable habitat patches for the WIFL. At this stage, maximum alternative native riparian habitat in the project area avoids an adverse affect to the endangered species or designated critical habitat.

Treatment priorities identified in the Final Environmental Impact Statement Vegetation Treatment on BLM Lands in Thirteen Western States (1991) would apply, including: (1) take actions to

prevent or minimize the need for vegetation controls where feasible; (2) use effective nonchemical methods of vegetation control where feasible; and (3) use herbicides only after considering the effectiveness of all potential methods.

Planning, Education & Monitoring

The BLM, in coordination with other agencies and project partners, would develop an annual project plan that would identify initial and re-treatment sites, methods utilized, monitoring activities required, and educational outreach opportunities.

Regional schools and universities would carry educational programs on riparian and weed ecology. Students would be assisting in some implementation, monitoring, and conducting further outreach to the community on riparian ecosystems and weed control issues.

Baseline information exists for soils, vegetation, groundwater levels, fisheries, breeding birds, Southwestern willow flycatcher, amphibians, reptiles, bats, and raptors. Inventory and monitoring are methods to adapt components of this decision to future treatment areas (USDA, FS 2005; USDI, BLM 2005). With the assistance of the project partners, a detailed multi-party monitoring plan would be developed and monitoring results would be available for public review upon request and at public meetings. The BLM and its partners would conduct annual weed inventories and mapping, and treatment of newly found populations identified and prioritized based on criteria in this EA. Treated sites would be monitored by the BLM and its partners and results evaluated and documented to determine effectiveness of the methods used in meeting the objective; whether impacts to resources or people were within the scope of the predictions herein; implementation and effectiveness of conservation measures; and whether mitigation should be added to enhance effectiveness. Changes in treatment prescriptions made because of monitoring and evaluation, and treatments prescribed for newly found weed populations, must adhere to all conservation measures and monitoring requirements in this EA, and the action and effects must be within the scope of those considered in this analysis. There would be a detailed monitoring plan to address effectiveness. Some of the measurements are listed in Table 2 below.

Table 2. Monitoring Requirements

Objective	**Prospective Indicator(s)**
Retention of native hydrophilic species	Stem density (#/m^2 or ac) of native species, % existing canopy of native species
Restore composition of vegetation	Stem density (#/m^2 or ac) of weedy species; % change from baseline in the number of acres infested with weed species; % existing canopy of weedy species; # acres treated
Restore watershed and soil condition	soil salinity, pH, fertility and organic matter levels
Water quality	Levels of dissolved oxygen, pH, nitrogen, phosphorus, conductivity, turbidity, temperature, and bacteria w/in acceptable ranges
Enhance wildlife habitat	Southwestern willow flycatcher, breeding bird and raptor surveys

Conservation Measures
Specific conservation measures in Appendix F ensure the proper and safe implementation of all treatment methods. Some of the best management practices include: reasonable and prudent precautionary measures to ensure public health and safety and prevention of the spread of weedy species; tools and techniques to restore native vegetation indigenous to the area; surveys and monitoring for wildlife and special status species; appropriate clearances by biologists and archeologists for threatened and endangered species and cultural resource protection; notification of treatments sites and methods; and following all local, state and federal regulations for the application of herbicide products.

Timeline
Based on the criteria and priorities outlined above, implementation would begin at the Taos Junction Bridge (See Appendix G). Factors such as terrain, access, soils and structures (campground and boating facilities) and the placement of extricated plant material may affect the amount of time needed to complete a treatment site. A proposed timeline for implementation is shown in Table 3 below. Generally, biological surveys would occur in the spring to mid-summer; planning, monitoring, education and implementation on herbaceous weeds would occur from spring through the fall; and implementation on weedy tree species would occur in the fall and winter (between September 15 and April 15 to avoid adverse impacts to migratory birds or the Southwestern willow flycatcher). The same outline would occur year-to-year until the project area reaches its potential (est. 10-15 years), with monitoring and maintenance indefinitely to prevent reinfestation of weedy species.

Table 3. Proposed Timeline for Implementation of Proposed Action

Date	***Activity***
April-July	Biological surveys, including Southwestern willow flycatcher, breeding birds, bats and raptors. Implement herbaceous weed treatments and retreat sites as necessary.
May-September	Planning for initial treatment sites for weedy tree and shrub species. Gather pre-treatment data (vegetation, soils, etc.). Conduct monitoring on previous treatment site(s) and educate community on lessons learned and project deliverables. Implement herbaceous weed treatments and retreat sites as necessary.
October – March	Implement initial vegetation treatment on 1-10 acres for weedy tree and shrub species.
Ongoing	Monitor groundwater levels and water quality throughout project area, obtain soil samples in treatment and control sites. Education and public outreach events to further collaborate and provide tools to the region on riparian restoration.

2. Alternative B – No Action
The no action alternative consists of forgoing implementation of the proposed action and the BLM would continue to manage weeds sporadically, using primarily mechanical mowing methods on herbaceous weed species in and near developed campgrounds. For some specific weeds that reproduce by roots or underground rhizomes (perennial pepperweed), this activity only increases density of weedy species when performed in a non-consistent fashion (Renz 2000a).

Without consultation with the USFWS where listed species may be affected and/or designated critical habitat modified, removal of the components of that habitat is prohibited by the BLM under the Endangered Species Act. According to the Southwestern Willow Flycatcher Recovery Plan (2002), removal of exotic (vegetation) species in potentially suitable habitat may be acceptable as part of an overall restoration plan. Under the no action alternative, BLM could not manage any saltcedar or Russian olive species, while these and other weeds would continue to expand and limit the riparian, wildlife and recreational values in the area, as well as continue to pose a wildfire threat to adjacent communities.

3. Alternative C – No Herbicide

To address the issue of potential effects on human health, especially for those with multiple chemical sensitivities, a no herbicide alternative will be analyzed. Treatment of weed species includes manual, mechanical, biological or prescribed fire methods, including restoration, as described in Appendix D. Criteria and priorities developed in the proposed action would be the same for this alternative. This alternative involves conducting weed treatments over the same acres as the proposed action.

C. Comparison of Alternatives

Below is a comparative summary of the alternatives and effects of implementing the proposed action or alternatives based on where different levels of effects exist between alternatives.

Table 4. Comparison of Alternatives

Issue	Alternative A Proposed Action	Alternative B No Action	Alternative C No Herbicide
Restoration of riparian ecosystem function and native vegetation	Overall effect would be to achieve desired plant communities on treated sites, reclaim areas to native vegetation, reduce populations and spread of weeds, and remove vegetation that is a potential hazard to recreationists. Greatest number of options for treatment method allows greatest management flexibility.	Overall increased vigor and stand densities of weeds. Long-term decline in native plant community and overall reduction in the quality of the riparian ecosystem than that of Alternative A or C.	Objectives could be reached in a much longer timeframe and would require an extensive workforce. Less management flexibility than under Alternative A. There is uncertainty and a lack of data as to the effectiveness of non-herbicidal treatment of noxious weeds.
Enhancement and protection of biodiversity, including wildlife and special status species	Plant and animal diversity would increase in the short-term as areas of a single weed species are replaced by new and larger areas of native vegetation. In the long-term, habitat would improve for special status species. Site-specific analysis and consultation would ensure that no special status species or habitat is adversely affected.	Weeds would continue to expand throughout the project area, reducing habitat quality for wildlife and special status species in both the short- and long-term. There would be no enhancement or protection of biodiversity under this alternative.	In the short-term there would be little to no affect on biodiversity due to the slower rate of treatment and control of weeds. Most adverse impacts would be from uncontrolled weeds in the area. Plant and animal diversity would increase in the long-term as areas of weeds are replaced by new and larger areas of native vegetation; and habitat would improve for special status species. Site-specific analysis and consultation would ensure that no special status species or habitat is adversely affected.

Long-term watershed health	In the long-term, overall watershed health would increase due to a decrease in monocultures of weed species in the project area and a reduction in the weed seed source for downstream areas. Short-term erosion may occur in treatment sites. Unlikely any significant amount of herbicides introduced into streams or ground water.	Monocultures of weedy species would continue to expand and increase in density in the long-term, resulting in an overall decline in watershed health.	This alternative eliminates potential risk of surface and ground water contamination from herbicides. In the long-term, overall watershed health increase in areas treated due to an increase in native riparian vegetation, which would decrease the weed seed source for downstream areas in the watershed.
Human health and safety	Prescribed burning would be conducted according to a Burn Plan, minimizing threats to human health and safety. There would be an overall low risk of health impacts from using herbicides, to workers or general public, based on EPA ratings, risk assessments in the Final EIS for Vegetation Treatment on BLM Lands in Thirteen Western States (USDI, BLM 1991), BMP's, and other conservation measures. Higher risk to people with multiple chemical sensitivities, although public notification requirement allows for avoidance of treated areas.	May be an increased risk of allergens and skin irritations as weed species increase in density and distribution.	No risk of health affects from herbicide exposure. Prescribed burning would be conducted according to a Burn Plan, minimizing threats to human health and safety.
Wildfire risk to adjacent communities	High level of effectiveness and resource protection from the threat of intense wildfire due to removal of dense stands of fire-prone species of vegetation.	No protection. Weed-related contribution to the threat of intense wildfire activity would continue and increase over long-term.	Medium level of effectiveness and resource protection from the threat of intense wildfire activity due to slower rate of removal of dense stands and fire-prone species of vegetation.

With the exception of the human health and safety issue, the comparison of effects shows a difference between Alternative A and C in the rate of initiation of treatment areas and completion of the goals and

objectives. In addition, due to the increased amount of time and work force required, Alternative C might have a larger economical impact than Alternative A. As to the issue of human health and safety, there would be no risk associated with Alternative B or C, and minimal affects in Alternative A based on state, federal and agency standard operating procedures. Alternative B does not address the issues of native vegetation, riparian and watershed health or risk of wildfire to adjacent communities.

Chapter 3 – Affected Environment

Bureau of Land Management and the National Environmental Policy Act (NEPA) requires the analysis of certain critical elements. There is no affect to the following critical elements by the proposed action or any of the alternatives: Air Quality, Areas of Critical Environmental Concern, Cultural Resources, Unique or Prime Farmlands, Native American Religious Concerns, Hazardous or Solid Wastes, Wilderness, and Environmental Justice. There may be an affect to the following aspects of the human environment by the proposed action or alternatives and, therefore, will be the subject of this environmental analysis.

A. Soils
Soils are an Orthents-Rock outcrop association, which consists of steep soil and rock outcrops typical of canyons along the Rio Grande. Orthents are deep well-drained soils on canyon slopes, found in material derived from old alluvium of the Santa Fe formation. The surface layer is very gravelly or cobbled loam; the underlying material is gravelly loam or gravelly clay loam. Erosion, slumping hazards, steepness of slope, and stoniness restrict the human use of this association. (USDA, SCS 1982).

B. Water Quality, Surface/Ground
The majority of the water for the Rio Grande is from snow pack runoff from the high mountains of the Sangre de Cristo Mountains. Other contributions are in the form of ground water recharge to the system. Water availability and quality are influenced by a complex system of interstate compacts, international agreements, climate, irrigation, wastewater treatment, and a multitude of natural and human influenced processes that occur within the watershed. The project area is located in the Rio Grande hydrologic region (USGS), and has been rated as good (highest) in watershed surface water quality and good (highest) in general groundwater quality (USDI, BLM 2005).

The Rio Grande is a perennial river. Water quality assessments by the State of New Mexico (2001) have identified this section as fully supporting irrigation, livestock waters, marginal coldwater fisheries, primary contact, warm water fisheries, and wildlife habitat. Seeps and springs are present throughout the general vicinity. There are several seeps above the project area along the basalt slopes on the west side of the river, which support small pockets of cottonwoods and other riparian plant species. A spring development exists on the east side of NM570, outside the riparian corridor of the project area, where many local residents fill cisterns for domestic uses.

The large stands of saltcedar in the project area may be affecting the water quality in the local area. Saltcedar can cause deepening and narrowing of channels, change in riffle water, overgrowth in sand and gravel bars, and changes in turbidity and temperature of the water (USDA, FS 2005; DeLoach, et al., 2000; Renz 2000; NRCS 1999; Friedman & Lee 2002). In addition, the river provides water to crops in downstream towns and villages. Saltcedar water use is among the highest of all stream bank species. Saltcedar can lower water tables, which in turn dries up springs, reduces stream flow, and may deplete available water for agriculture, native plants, and wildlife (DeLoach, et al., 2000; Taylor & McDaniel 1998; Dudley & DeLoach 2004). Therefore, the large stands of saltcedar in the project area may be affecting the water quantity in the local area.

C. Riparian Zones

Riparian-wetland areas (hereinafter "riparian area") are the "green zones" that transition between areas of open water and upland vegetation. It is the unique and critical ecological link between the aquatic and upland environments. In a healthy riparian ecosystem, four primary elements (soils, hydrology, vegetation and landform/geology) are in balance and mutually support one another. The health of a riparian area is judged by its function, capabilities and relative potential, with the objective of maintaining or achieving a long-term, properly functioning condition. Riparian vegetation should capture sediment and provide forage, habitat, and biodiversity (USDI, BLM 1998).

Approximately 83 acres of riparian area exists in the project area. The dominant vegetation in the riparian area includes willows, saltcedar, Siberian elm, New Mexico olive, cottonwood, Apache plume, grasses, rushes, sedges and forbs. Success of natural reseeding in the project area would come largely from the existing plant communities found on the site that are in good condition, namely coyote willow, cottonwood and New Mexico olive. This native vegetation would be an important source for revegetation. Saltcedar is the dominant weed species in the riparian area, while coyote willow is the dominant native vegetation. Appendix B shows a map of riparian vegetation in the project area.

D. Invasive, Nonnative Species

A noxious weed is a plant that causes disease or has other adverse effects on the human environment and is, therefore, detrimental to the public health and to the agriculture and commerce of the United States (NRCS 1999). Generally, noxious weeds are aggressive, difficult to manage, parasitic, are carriers or hosts of harmful insects or disease, and are either native, new to, or not common in, the United States. In most cases, however, noxious weeds are non-native species.

Of the 32 noxious weeds listed by the New Mexico Department of Agriculture (1999), the ones with known populations in the project area are saltcedar, perennial pepperweed, Siberian elm, Russian olive, Canada thistle, Russian knapweed, and Tree of Heaven. Saltcedar is the dominant weed species. Appendix B is a map that demonstrates the native and nonnative vegetation coverage in the project area. Specific acres of herbaceous weeds are not yet inventoried, although general locations are known. Mapping and treatment of these weeds would occur throughout the life of the project. Infestations of weeds in the project area are beginning to impact biodiversity and natural ecosystems, but are not yet at such levels to require large and widespread treatment practices to achieve control.

E. Wildlife

Habitat types in the area are dispersed vertically and horizontally over the landscape in a patchwork pattern that provides large amount of "edge" where one habitat type blends into another. The riparian habitat along the Rio Grande provides cover to water availability for wildlife and, for larger species, accessed primarily on the west side. Numerous unique, special-feature habitats exist within the area. Several species are "obligate" to these specific features, such as caves or cracks in cliffs; that is, they cannot survive except where the feature exists. These species include bats, fish, eagles, falcons, and cliff swallows.

The area provides habitat for many other mammals, including elk, mule deer, black bear, bobcat, coyote, grey fox, cottontail rabbit, chipmunks, rock squirrel, mice, wood rat, porcupine, long-tailed weasel, striped skunk, beaver, muskrat and raccoon. Numerous avian species use the Rio Grande corridor during spring and fall migration, including non-game migratory birds. The project site serves as an important migratory corridor and stopover site for many migratory birds. Common bird species seen in OVRA are great blue heron, mallard, spotted sandpiper, mourning dove, white-throated swift, western wood-pewee, pinyon jay, raven, crow, northern rough-winged swallow, violet-green swallow, bushtit, rock wren, American robin, yellow warbler, blue grosbeak, spotted towhee, red-winged blackbird, Bullock's oriole,

and house finch (Hawks Aloft 2005). The watershed provides suitable habitat for many reptiles and amphibians, including bullfrog, bull snake, garter snake and collard lizard (Hanlon-Abeita, 2005). A BLM survey conducted in 2005 for fish species in this section of the Rio Grande found white sucker, brown trout, smallmouth bass, common carp, northern pike, yellow perch, rainbow trout and longnose dace.

It is possible, due to the dense stands of saltcedar and other weeds in the project area, decreased plant diversity may be negatively affecting local wildlife populations (Williams 1997; Hunter, et al., 1988; Ellis 1995; Meents, et al., 1981).

F. Threatened and Endangered Species

See Appendix H for a list of all special status species analyzed in this EA. There are several plants listed as a Species of Concern by the State of New Mexico, USFWS, and the Southwest Region of the U.S. Forest Service. In addition, the New Mexico Rare Plants Council lists rare plants for Taos County, of which two have the potential to occur in the project area, cyanic milkvetch (*Astragalus cyaneus*) and Taos milkvetch (*Astragalus puniceus var. gertrudis*). At this time, none of these species are known to occur within the project area.

Pursuant to USFWS Federal Species List for Taos County, New Mexico (June 2006), the only listed species which might be found in OVRA are the Southwestern willow flycatcher (*Empidonax traillii extimus*) (WIFL), listed as endangered, and the bald eagle (*Haliaeetus leucocephalus)*, listed as threatened.

In 1993, the BLM began surveying for the WIFL along the Rio Grande in the most likely areas for the species to occur. From 1993 to 1997, nesting birds were located in the project area, however, since that time there have been only migratory observations. Currently, the willow and mixed saltcedar stands provide small patches of suitable and near suitable habitat. Protocol surveys for the WIFL are ongoing and would continue as long as the species continues to be federally listed. Wintering bald eagles are in the project area from October through March.

In October 2005, the USFWS designated critical habitat for the WIFL along the Rio Grande, including the project area. The designation for the "Rio Grande – North Segment" begins at the Taos Junction Bridge and continues downstream to the northern extent of Ohkay Owingeh Pueblo lands, approximately 30 river miles (USDI, FWS 2005).

G. Recreation

OVRA provides access for a variety of activities including camping, picnicking, fishing, swimming, boating, wildlife viewing, rock climbing, hiking, and general sightseeing along NM 570. The west side of the river throughout the recreation area is undeveloped except for the campground at Taos Junction Bridge. Shoreline and side channel habitat is restricted at selected sites to protect bird habitat (USDI, BLM 2000). Most recreation occurs between mid-April and Labor Day. Thousands of vacationers and locals visit this area year round. Camping is available in 5 developed campgrounds: Taos Junction, Petaca, Arroyo Hondo, Rio Bravo and Pilar. Each site has picnic and overnight camping facilities and restrooms. Taos Junction and Rio Bravo have group shelters that accommodate up to 50 people. There is boating access at 4 locations: Taos Junction, Rio Bravo, Arroyo Hondo and Lone Juniper (a site for primitive camping). The recreation area is a designated fee area under the Land and Water Conservation Fund. Most recreation activities rely heavily on the river and its banks. During the winter, limited overnight use occurs on the weekends. Day uses such as fishing and sightseeing are more common during the winter. Boating is extremely popular during the months of May, June, and early July. Boaters consist of private and commercial outfitters.

H. Visual Resource Quality
The BLM has established a system for evaluating visual resources and uses for Visual Resource Management (VRM) classes to provide management direction for these resources on public land. VRM Class I pertains to those lands in OVRA above the rim of the gorge, VRM Class III is assigned to the developed recreation sites, and VRM Class II is assigned to the remainder of the project area.

The objective of VRM Class I 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. The VRM Class II objective is to retain the existing character of the landscape; the level of change to the characteristic landscape should be low and management activities may be seen, but should not attract attention of the casual observer. The objective for VRM Class III is to partially retain the existing character of the landscape; the level of change can be high and management activities may attract attention but should not dominate the view of the casual observer (USDI, BLM 1986).

I. Wild and Scenic Rivers
The project area is designated as "scenic" under the National Wild and Scenic River System (Rio Grande Designation Act of 1994, PL-103-242). The attributes for which this area is rated include water quality, recreation, fish habitat, riparian, cultural, scenic, wildlife and geologic values.

J. Human Health and Safety
This section tiers to the Final Environmental Impact Statement Vegetation Treatment on BLM Lands in Thirteen Western States (USDI, BLM 1991) in its description of human health risks, including accidents, injuries, cancer, diseases and exposure to contaminants, and is incorporated herein by reference. Rules and regulations in OVRA provide for visitor safety, including waste disposal, designated areas for campfires and testing of water quality for existing wells.

Wildfires cause the loss of life and property. The area is classified as Fire Condition Class III and risk of wildfire exists in the form of dense stands of saltcedar and careless disposal of cigarettes or use of campfires by visitors in the riparian area.

There may be some risk of allergens and skin irritations associated with specific weeds (Bisognano, et al., 2005).

Chapter 4 - Environmental Effects

A. Alternative A – Proposed Action
The analysis for the proposed action is tiered to the Final Environmental Impact Statement Vegetation Treatment on BLM Lands in Thirteen Western States (USDI, BLM 1991) (EIS) which outlines direct, indirect and cumulative effects when using the Integrated Pest Management methods described in the proposed action. In addition to this programmatic EIS, detailed project level analysis is summarized as follows:

1. Soils
Direct and Indirect Effects - Vegetation treatments may directly affect the physical characteristics of the soils. Vegetation treatments may alter the presence and abundance of soil microorganisms or larger organisms that contribute to overall soil quality. The impacts to soils and microorganisms would be short-term and greatly reduced when vegetation cover is reestablished.

After considering all potential methods, where herbicide is applied, it would not alter a soil's physical properties, although there may be indirect effects on soil microorganisms. Depending on the application rate and the soil environment, soil organisms could be stimulated or inhibited. When vegetation decomposes, the resulting addition of organic matter to the soil can support increased populations of microorganisms. Soil microorganisms can metabolize Habitat® (Imazapyr) and are responsible for its decomposition. Half-life in soil of Habitat® varies from 21 to 130 days (USDI, BLM 2005).

Cumulative Effects – Weed control and riparian restoration activities on public and private lands add to the beneficial cumulative effects of the project by reducing monocultures of weeds replacing native plants. Wildfire burn area rehabilitation, fuel reduction activities, restoration of dispersed recreation sites that have been denuded, and closure of unneeded roads and trails on public and private lands all contribute to retention of soil in the watershed.

2. Water Quality, Surface and Ground

Direct and Indirect Effects – The project area has an opportunity to improve and reach its site dependent potential within 10-15 years. While vegetation treatments can alter the abundance and types of vegetation that may shield soils from erosion, the proposed action can increase plant cover by encouraging the growth of native riparian species already present and improve water quality in the long-term. The impacts to soils and surface water would be short-term and greatly reduced when vegetation cover is reestablished. The collection zone for the spring on the east side of NM570 is above the project area and is not affected by the proposed action.

After considering all potential methods, where herbicide is applied it may enter surface or ground water through surface or subsurface runoff. To have significant effects, the product must be present in the water at concentrations high enough to impair water quality at a point of use. Drift of herbicides into surface water would be unlikely due to the hand application of the product with paintbrushes or wicking with ropes or other non-spray devices. As such small quantities of herbicide would be used within the project area, and all standard operating procedures and bureau-wide requirements followed in implementing the proposed action, there would be no adverse effect to water quality. After treatment, herbicides may move through the soil and into underlying ground-water aquifers by leaching. To pollute ground water, they must then move laterally at concentrations high enough to impair water quality at a point of use. Studies have shown no significant impacts to benthic macroinvertebrate communities, an indicator of water quality, due to herbicide use (Fowlkes, et al., 2003). Habitat® (Imazapyr) is an aquatic label and has low persistence in water with a half-life of 3 to 14 days. As such small quantities of herbicide would be used within the project area and all standard operating procedures and bureau-wide requirements followed in implementing the proposed action, there would be no adverse effect to groundwater quality.

Cumulative Effects - Foreseeable weed control activities could use any of the methods of the proposed action. Actions that include herbicides or other chemicals could add to chemical loading in the water or aquatic environments. Weed control activities on public and private lands add to the beneficial cumulative effects of the project by reducing monocultures of weeds replacing native plants. In addition, thinning, burning, grazing, construction or maintenance of roads, or driving off roads or trails in the watershed could increase soil erosion and potentially cause sediment to move into streams and drainages. Wildfire burn area rehabilitation, fuel reduction activities, riparian restoration projects, restoration of dispersed recreation sites that have been denuded, and closure of unneeded roads and trails on public and private lands all contribute to soil stabilization and enhanced water quality.

3. Riparian Zones

Direct and Indirect Effects - Implementation of the proposed action would be a significant start in restoring the native riparian vegetation in the watershed to increase biodiversity and ensure natural

riparian ecosystem processes. Under any of the treatment methods, some nontarget understory species may be affected; however, vegetation would recover within months or a few years following treatment (Taylor & McDaniel 1998), depending on climate conditions. Most of the dense saltcedar stands have no understory and, therefore, impacts to nontarget vegetation would be minimal. All riparian habitat within the area has the opportunity to improve and, over the long term, reach its site dependent growth potential.

Cumulative Effects – Some riparian projects that have occurred along the Rio Grande watershed in New Mexico include those controlling saltcedar and nonnative vegetation in the Ohkay Owingeh, Santa Ana and Santo Domingo Pueblos, as well as the Bosque around Albuquerque. In addition, human-caused fires and drought have affected many acres of riparian habitat in the watershed. BLM projects would primarily be aimed at restoring native vegetation and ecosystem functionality, based on agency priorities and budgets. Long-term ecosystem restoration projects would compensate for activities that remove or damage native vegetation, including short-term removal of nontarget plants from this proposed project. Overall, the most noticeable cumulative effect on vegetation would be beneficial, especially over the long term. BLM management activities would result in increased abundance and diversity of riparian and other native vegetation, which would be enhanced by the effects of this weed control project.

4. Invasive, Nonnative Species

Direct and Indirect Effects – Density of weeds would be diminished under a program of control and/or removal. Opportunities for weeds to expand would be arrested. Education on weed identification and prevention would minimize future weed infestations in other localities. Rapid response to new populations of weeds would prevent large scale and costly efforts for control and/or removal.

Cumulative Effects - Some nonnative vegetation control projects that have occurred along the Rio Grande watershed in New Mexico include those in the Ohkay Owingeh, Santa Ana and Santo Domingo Pueblos, as well as the Bosque around Albuquerque. BLM projects would primarily be aimed at restoring native vegetation and ecosystem functionality, based on agency priorities and budgets. Overall, the most noticeable cumulative effect on vegetation would be beneficial, especially over the long term, including a reduction of range-wide weedy species. BLM management activities would result in increased abundance and diversity of native vegetation, which would be enhanced by the effects of this weed control project.

5. Wildlife

Direct and Indirect Affects - Treatments designed to increase and/or decrease vegetation components usually have a temporary effect on all wildlife species. Removal of saltcedar from the riparian community would remove some of the vertical structure of vegetation currently found along the river. This would likely affect bird species seeking cover and perches while traversing through the area either yearlong or seasonally. Treatment areas would remain small, some perch trees could be left standing, alternative habitat developed and implementation would avoid the nesting season to minimize negative effects to migratory bird species. In most cases, wildlife displaced in the short term by implementation of the proposed action would return when vegetation begins to grow back. Some shift of wildlife may occur within the areas treated. Species favoring dense, heavy brush may vacate the area, while species favoring open or willow type habitat may inhabit the area. Enhancing the structural diversity of vegetation by controlling shrubs and increasing understory species in a mosaic pattern should increase bird diversity. In addition, increased willows along the bank would enhance quality habitat for fish and may increase the prey base (insects) that fall from the branches into the river.

An increase of native forb and grass species would most likely lead to an increase in use of the treated areas by wildlife species that prefer a grassland type, such as mule deer. The recreational value would correspond to the availability of animals for viewing. The anticipated improvements from the proposed action in the native riparian vegetation would result in a significant improvement in wildlife use of this

habitat. The long-term effect of treating vegetation would be to create reliable native forage, nesting and browse sources for wildlife while providing wildlife viewing opportunities and recreational opportunities for the public in the riparian area.

After considering all potential methods, where herbicide is applied, short-term direct effects to wildlife would be avoided by the use of standard operating procedures and best management practices, including those conservation measures listed in Appendix F. Imazapyr is the active ingredient in Habitat® that inhibits the enzymatic functions of saltcedar to cause it to exhaust its food and energy reserves. It is a weak acid, and it is not a mutagen, terratogen, carcinogen or an endocrine disrupter (BASF 2006). According to research conducted by the manufacturer, Imazapyr concentrations were found to be practically not-toxic to birds, fish and aquatic invertebrates, and only slightly toxic to algae and diatoms. A worst-case risk assessment, which incorporates estimated environmental concentrations based on the EPA's worst-case criteria, indicated that applications for aquatic vegetation management would not result in an unreasonable risk to the environment.

Cumulative Effects – Some riparian projects that have occurred along the Rio Grande watershed in New Mexico include those controlling saltcedar and nonnative vegetation in the Ohkay Owingeh, Santa Ana and Santo Domingo Pueblos, as well as the Bosque around Albuquerque. In addition, human-caused fires and drought have affected many acres of riparian habitat in the watershed. BLM projects would primarily be aimed at restoring native vegetation and ecosystem functionality, based on agency priorities and budgets. Long-term ecosystem restoration projects would compensate for activities that remove or damage some wildlife habitat, including short-term removal of some plants from this proposed project. Overall, the most noticeable cumulative effect on wildlife would be beneficial, especially over the long term. BLM management activities would result in increased abundance and diversity of wildlife habitat, which would be enhanced by the effects of this weed control project.

6. Threatened and Endangered Species

Direct and Indirect Effects - A Biological Assessment (BA) for all currently listed species has determined a "No affect" or "May affect – Not Likely to Adversely Affect" situation for all federally listed, proposed, or candidate plant and animal species in Taos County, New Mexico, for the proposed action. The BA is available at the BLM Taos Field Office for review upon request. No negative impacts to any threatened, endangered or special status species would result from the proposed action. Neither the State of New Mexico nor the USFWS lists any plants as threatened or endangered in Taos County, New Mexico. Therefore, the proposed action would have no affect on federal or state listed threatened or endangered plants.

The New Mexico Rare Plants Council lists rare plants for Taos County, of which two have the potential to occur in the project area, cyanic milkvetch (*Astragalus cyaneus*) and Taos milkvetch (*Astragalus puniceus var. gertrudis*). At this time, neither of these species is known to occur within the project area, and it is unlikely they would be affected by the proposed action. Ongoing vegetation surveys would ensure none of these plants are either present or adversely affected by the proposed action.

Pursuant to USFWS Federal Species List for Taos County, New Mexico (June 2006), the only listed species which might be found in OVRA are the Southwestern willow flycatcher (*Empidonax traillii extimus*) (WIFL), listed as endangered, and the bald eagle (*Haliaeetus leucocephalus)*, listed as threatened. The proposed action may enhance habitat quality for the bald eagle and Southwestern willow flycatcher. As the project will occur over a long time period (10-15 years), protocol surveys for Southwestern willow flycatcher will occur throughout the life of the project, or as long as the species remains listed. If Southwestern willow flycatcher territories were identified within the project area, a 1/4 mile buffer would be established around them to avoid disturbance to the species or alteration of habitat

in areas being used territorially. All project related activity would be excluded from this buffer zone. Project related vegetation management on saltcedar and other exotic tree species, and the noise associated therewith, would be conducted outside the Southwestern willow flycatcher breeding season, which extends from May 1 through August of each year. This specific project activity would be restricted between April 15 and September 15.

Coordination and consultation between the BLM and the Service would be maintained throughout the life of the project to discuss Southwestern willow flycatcher territory locations, make adjustments to the treatment schedule/site locations and buffer size, and/or mitigate any potential adverse affects to threatened or endangered species or designated critical habitat.

In October 2005, the USFWS designated critical habitat for the WIFL, including certain areas of the Rio Grande, including the project area (USDI, FWS 2005). There would be short-term direct effects from the proposed action that would modify the existing habitat. However, with improvements in the vegetative and hydrologic conditions in the riparian area of the project area, there is the long-term potential to develop habitat suitable for the WIFL and other riparian obligate Neotropical migratory birds. Currently, only small-dispersed patches are suitable for WIFL nesting and the area is primarily migratory stopover habitat. Saltcedar stands may be inferior habitat for the WIFL versus native riparian vegetation (Meents, et al., 1981; Ellis 1995; Hunter, et al., 1988). Therefore, a positive impact to the WIFL and critical habitat would result from the adoption of this alternative.

Cumulative Effects – BLM projects would primarily be to restore native vegetation and ecosystem functionality, based on agency priorities and budgets. Long-term ecosystem restoration would compensate for activities that remove or damage vegetation that may be used by threatened or endangered species in the project area. BLM management activities would result in increased abundance and diversity of riparian and other native vegetation, benefiting listed species, and would enhance the effects of this weed control project.

7. Recreation

Direct and Indirect Effects - No reduction of available recreational resources is anticipated under the proposed action. Short-term avoidance of treatment areas would limit use in small areas, but in the long-term, improved vegetation conditions resulting from the implementation of the proposed action would improve the visual naturalness of the area and the condition of wildlife habitat, which should increase recreational experiences, including fishing, boating and wildlife viewing.

Cumulative Effects – BLM projects would restore native vegetation and ecosystem functionality, based on agency priorities and budgets. Long-term ecosystem restoration projects would compensate for activities that remove or damage native vegetation, including short-term removal of plants from this proposed project. Overall, the most noticeable cumulative effect on recreation would be beneficial, especially over the long-term, as aesthetics, water quality and wildlife-viewing opportunities are enhanced.

8. Visual Resource Quality

Direct and Indirect Effects - Any pre- or post-treatment treatments would have a temporary “disturbed” appearance. Visual resources would be affected due to removal of the saltcedar by whatever method of treatment is applied, however, in the long-term visual resources would be improved as the treated areas recover producing new growth. The proposed action would change the color and texture of the landscape by partially replacing the saltcedar infested areas with grasses, forbs, and native trees. Fire treatments would result in a strong color contrast in the short-term. A mosaic of vegetation with irregular edges would provide variety in color, form and texture (See Appendix I). In the long term, increased plant growth and diversity would tend to change the visual character of the area in a positive manner.

Cumulative Effects – BLM projects would primarily be aimed at restoring native vegetation and ecosystem functionality, based on agency priorities and budgets. Long-term ecosystem restoration projects would compensate for activities that remove or damage native vegetation affecting visual resources, including short-term removal of plants from this proposed project. Overall, the cumulative effect on visual resources would be beneficial, especially over the long-term due to increased abundance and diversity of riparian and other native vegetation.

9. Wild and Scenic Rivers

Direct and Indirect Effects – There would be short-term direct effects to the scenic quality of small treatment sites, however, over the long-term native vegetation would reestablish in the area thereby improving visual and scenic qualities. There would be beneficial long-term effects to the attributes for which this area was rated, including water quality, recreation, fish habitat, riparian, and wildlife values.

Cumulative Effects – BLM projects would restore native vegetation and ecosystem functionality, based on agency priorities and budgets. Long-term ecosystem restoration projects would compensate for activities that remove or damage native vegetation, including short-term removal of plants from this proposed project. Overall, the cumulative effect would be beneficial, especially over the long term due to increased abundance and diversity of riparian and other native vegetation.

10. Human Health and Safety

Direct and Indirect Effects –There may be an increased risk of allergens and skin irritations as manual crews work with specific weeds, however, over the long-term allergens and skin irritations from weeds eliminated or significantly decreased.

Areas inaccessible to the public would be the most likely candidates for herbicide treatments, avoiding exposure of most publics to any herbicide treatments. After considering all potential methods, where herbicide is applied, short-term direct effects to human health and safety from any treatment would be avoided by the use of standard operating procedures and best management practices, including those conservation measures listed in Appendix F. As there would be no aerially spraying and very small quantities of herbicides applied by certified applicators and supervised crews by hand, it is unlikely that there would be any adverse effects to human health or safety.

Imazapyr is the active ingredient in Habitat® that inhibits the enzymatic functions of saltcedar to cause it to exhaust its food and energy reserves. It is a weak acid, and it is not a mutagen, terratogen, carcinogen or an endocrine disrupter (BASF 2006). A worst-case risk assessment, which incorporates estimated environmental concentrations based on the EPA's worst-case criteria, indicated that applications for aquatic vegetation management would not result in an unreasonable risk to the environment. With the exception of those with multiple chemical sensitivities, for which notices would be posted to avoid the area, there would be no significant adverse affects by the proposed action on human health and safety. Removal of dense saltcedar stands would reduce the threat of wildfire to adjacent communities.

Cumulative Effects - Foreseeable weed control activities using any of the methods described herein could be conducted by private landowners, county, State and other Federal agencies. Other actions that introduce herbicides into the environment include, but are not limited to: herbicides recently applied or expected to be applied in northern New Mexico by Soil and Water Conservation Districts, Bureau of Indian Affairs, U.S. Forest Service, or watershed associations. Other limited introductions would come from driving vehicles on or off roads, constructing facilities and roads, reconstructing and maintaining roads, or extracting oil-gas or mineral resources.

B. Alternative B – No Action

1. Soils

Direct and Indirect Effects - Saltcedar and other noxious weeds would continue to infest the area, soil salinity would increase as saltcedar leaves continue to excrete salt removed from deep in the substrate. In turn, vegetation intolerant of saline conditions would be precluded, encouraging a monoculture of salt tolerant species, such as saltcedar and perennial pepperweed. Therefore, a negative impact to soils would result from the adoption of this alternative.

Cumulative Effects - Foreseeable future projects in the watershed by private individuals or federal, state, or local agencies include fuelwood thinning, prescribed burning, sagebrush removal, sand and gravel operations, domestic grazing, construction and maintenance of roads, and driving off roads or trails, which could increase soil erosion in the short-term. BLM projects are aimed at restoring native vegetation and ecosystem functionality in the watershed, based on agency priorities and budgets.

2. Water Quality, Surface and Ground

Direct and Indirect Effects - Surface and subsurface water levels would continue to be impacted by the increase of saltcedar density and the increased evapotranspiration that occurs as a result.

Cumulative Effects – Foreseeable future projects in the watershed by private individuals or federal, state, or local agencies include fuelwood thinning, prescribed burning, sagebrush removal, sand and gravel operations, domestic grazing, construction and maintenance of roads, and driving off roads or trails which could increase soil erosion and decrease water quality in the short-term. BLM projects would primarily restore native vegetation and ecosystem functionality in the watershed, based on agency priorities and budgets.

3. Riparian Zones

Direct and Indirect Effects - There would be minor shifts in the herbaceous plant composition, depending on the growing conditions from year to year, from native to weed species. Without management, saltcedar and other nonnative vegetation would continue to expand and create larger monotypic stands. The remaining stands of willows and other native vegetation may be lost due to continued infestation of saltcedar and nonnative vegetation within and surrounding these native vegetation patches. This would prevent the vegetative community from moving toward its natural potential. Therefore, a negative impact to riparian ecosystem function would result from the adoption of this alternative.

Cumulative Effects – Some riparian projects that have occurred along the Rio Grande watershed in New Mexico include those controlling saltcedar and nonnative vegetation in the Ohkay Owingeh, Santa Ana and Santo Domingo Pueblos, as well as the Bosque around Albuquerque. In addition, human-caused fires and drought have affected many acres of riparian habitat in the watershed. Foreseeable future projects in the riparian zones of the watershed by private individuals or federal, state, or local agencies include weed treatments, thinning projects, prescribed burning, domestic grazing, construction and maintenance of roads, camping, and driving off roads or trails which could reduce riparian vegetation in the short-term. BLM projects would primarily restore native vegetation and ecosystem functionality in the watershed, based on agency priorities and budgets. Long-term ecosystem restoration projects would not compensate for the long-term loss of native riparian vegetation and ecosystem function in the project area from the no action alternative.

4. Invasive, Nonnative Species

Direct and Indirect Effects – There would be an increase in weeds in the project area over the long-term. As visitors use the area, they would inadvertently spread these weeds throughout the region by picking up

seeds and transporting them on their personal affects or vehicles. Density and species composition of weedy species would increase in the project area under this alternative.

Cumulative Effects – Some nonnative vegetation control projects that have occurred along the Rio Grande watershed in New Mexico include those in the Ohkay Owingeh, Santa Ana and Santo Domingo Pueblos, as well as the Bosque around Albuquerque. Foreseeable future projects in the watershed by private individuals or federal, state, or local agencies include weed treatments, prescribed burning, sagebrush removal, sand and gravel operations, domestic grazing, construction and maintenance of roads, and driving off roads or trails which could increase or decrease weedy species in the project area over the short-term. BLM projects would primarily restore native vegetation and ecosystem functionality in the watershed, based on agency priorities and budgets. Long-term ecosystem restoration projects would not compensate for the long-term increase of weedy species in the project area from the no action alternative.

5. Wildlife

Direct and Indirect Effects - Avian communities may be forced out by lack of nesting or foraging habitat or suffer overcrowding by saltcedar. The insect community upon which birds rely for food is altered with the introduction of saltcedar, and it is further degraded as saltcedar increases in surface area and density. Foraging success affects reproductive capacity in energy expended to catch a sufficient amount of prey to support daily metabolic needs and that of avian offspring. Mammal populations would continue to experience a lack of diversity in vegetation to forage, nest and find cover. This general lack of biodiversity and suppressed reproductive capability could also decrease public wildlife viewing opportunities in the area and hunting success in adjacent game management units. The river corridor would not provide optimal conditions for migration for all wildlife species, and optimum fishery habitat, as vegetation structure and composition continue to decline.

Cumulative Effects - Some riparian projects that have occurred along the Rio Grande watershed in New Mexico include those controlling saltcedar and nonnative vegetation in the Ohkay Owingeh, Santa Ana and Santo Domingo Pueblos, as well as the Bosque around Albuquerque. In addition, human-caused fires and drought have affected many acres of riparian habitat in the watershed. Foreseeable future projects in the watershed by private individuals or federal, state, or local agencies include weed treatments, thinning projects, prescribed burning, domestic grazing, construction and maintenance of roads, camping, and driving off roads or trails, which could reduce wildlife habitat in the short-term. BLM projects would restore native vegetation and ecosystem functionality in the watershed, based on agency priorities and budgets. Long-term ecosystem restoration projects would not compensate for the long-term loss of wildlife habitat in the project area from the no action alternative. The project area represents unique riparian wildlife resources and cannot be replaced in upland terrestrial habitat.

6. Threatened and Endangered Species

Direct and Indirect Effects - Pursuing the no action alternative and not addressing the weed issue in the project area may cause further reductions in the extent and composition of riparian habitat and decrease suitability and carrying capacity for all wildlife species, including that for special status species.

Cumulative Effects – The no action alternative, in combination with loss of native riparian vegetation in the region due to weeds, land conversion, fire, domestic grazing, construction and maintenance of roads, camping, driving off roads or trails, or other causes, can result in a reduced range occupied by the Southwestern willow flycatcher or the bald eagle, a reduction in the number of flycatcher or bald eagle populations rangewide, and isolation of flycatcher populations, potentially changing historical movement patterns and cutting off genetic exchange among populations. BLM projects would restore native vegetation and ecosystem functionality in the watershed, based on agency priorities and budgets. Long-term ecosystem restoration projects would not compensate for the loss of riparian habitat critical to

threatened and endangered species in the project area. The project area represents unique riparian wildlife resources and cannot be replaced in upland terrestrial habitat.

7. Recreation

Direct and Indirect Effects - The quality of the recreation experience would remain unchanged in the short-term and decline over the long-term as saltcedar and other weeds continue to spread. Access to the river would continue to decrease with denser stands of saltcedar limiting opportunities for picnicking, fishing and wildlife viewing.

Cumulative Effects – Foreseeable future projects in the watershed by private individuals or federal, state, or local agencies include weed treatments, fuelwood thinning, prescribed burning, sagebrush removal, sand and gravel operations, domestic grazing, construction and maintenance of roads, and driving off roads or trails which should have no cumulative impact on recreation in the project area in the short-term. BLM projects would restore native vegetation and ecosystem functionality in the watershed, based on agency priorities and budgets. Long-term ecosystem restoration projects would not compensate for the long-term loss of quality recreational experiences lost to proliferation of weedy species in the project area from the no action alternative.

8. Visual Resource Quality

Direct and Indirect Effects - No change in VRM classes under this alternative.

Cumulative Effects – Foreseeable future projects in the watershed by private individuals or federal, state, or local agencies include weed treatments, fuelwood thinning, prescribed burning, sagebrush removal, sand and gravel operations, domestic grazing, construction and maintenance of roads, and driving off roads or trails which should have no cumulative impact on visual resource quality in the project area in the short-term. BLM projects would restore native vegetation and ecosystem functionality in the watershed, based on agency priorities and budgets. Long-term ecosystem restoration projects would have no effect on visual resource quality in the project area from the no action alternative.

9. Wild and Scenic Rivers

Direct and Indirect Effects – There would be no short-term effect to the scenic quality of the project area, however, over the long-term weedy species would dominate the area thereby decreasing its visual and scenic qualities. There would be detrimental long-term effects to such attributes for which this area is rated, including water quality, recreation, fish habitat, riparian, and wildlife values.

Cumulative Effects – Foreseeable future projects in the watershed by private individuals or federal, state, or local agencies include weed treatments, fuelwood thinning, prescribed burning, sagebrush removal, sand and gravel operations, domestic grazing, construction and maintenance of roads, and driving off roads or trails which should have no cumulative impact on the scenic quality in the project area in the short-term. BLM projects would restore native vegetation and ecosystem functionality in the watershed, based on agency priorities and budgets. Long-term ecosystem restoration projects would have no effect on the scenic resource quality in the project area from the no action alternative.

10. Human Health and Safety

Direct and Indirect Effects – Short-term direct effects to human health and safety from the no action alternative would be those associated with the affected environment in continuing management. The potential for catastrophic wildfire would remain and increase because of an increase in saltcedar density. There may be an increased risk of allergens and skin irritations as weed species increase in density and distribution.

Cumulative Effects – Foreseeable future projects in the watershed by private individuals or federal, state, or local agencies include weed treatments, fuelwood thinning, prescribed burning, sagebrush removal, sand and gravel operations, domestic grazing, construction and maintenance of roads, and driving off roads or trails. These activities may have an impact to those with multiple chemical sensitivities and a long-term benefit by reducing threats of wildfire to adjacent communities. BLM projects would restore native vegetation and ecosystem functionality in the watershed, based on agency priorities and budgets. Long-term ecosystem restoration projects and the no action alternative would have no adverse affect to human health and safety and be beneficial by reducing threats of wildfire to adjacent communities.

C. Alternative C – No Herbicide

1. Soils

Direct and Indirect Effects – Vegetation treatments may directly affect the physical characteristics of the soils. Vegetation treatments may alter the presence and abundance of soil microorganisms or larger organisms that contribute to overall soil quality. The impacts to soils and microorganisms would be short-term and greatly reduced when vegetation cover is reestablished. In the short-term, no change in impacts to soils would result from the adoption of this alternative, with potential long-term stability in soils as native vegetation returns and additional weed infestations are controlled.

Cumulative Effects – Same as proposed action.

2. Water Quality, Surface and Ground

Direct and Indirect Effects – The project area has an opportunity to improve, albeit at a slower rate with less flexibility in management methods available. While vegetation treatments can alter the abundance and types of vegetation that may shield soils from erosion, these treatments would increase plant cover by encouraging the growth of native riparian species already present and improve water quality in the long-term. The impacts to soils and surface water would be short-term and greatly reduced when vegetation cover is reestablished. The collection zone for the spring on the east side of NM570 is above the project area and would not be affected by the proposed action. There would be no herbicide treatments or risk to surface or ground water from this treatment method.

Cumulative Effects - Foreseeable weed control activities by other entities could use any of the methods listed in the proposed action. Weed control activities on public and private lands add to the beneficial cumulative effects of the project by reducing monocultures of weeds replacing native plants. Chemical loading by other weed treatments in the watershed should not affect the purpose of this alternative. In addition, thinning, burning, grazing, construction or maintenance of roads, or driving off roads or trails in the watershed could increase soil erosion and potentially cause sediment to move into streams and drainages. Wildfire burn area rehabilitation, fuel reduction activities, riparian restoration projects, restoration of dispersed recreation sites that have been denuded, and closure of unneeded roads and trails on public and private lands all contribute to soil stabilization and enhanced water quality.

3. Riparian Zones

Direct and Indirect Effects - Due to the slower progress in controlling or eliminating saltcedar and other noxious weeds, the overall effect would be small improvements in the riparian area with a likely expansion of saltcedar throughout the watershed. Therefore, short-term negative impact to riparian resources could result from the adoption of this alternative. Under any of the treatment methods, some nontarget understory species may be affected; however, vegetation would recover within months or a few years following treatment (Taylor & McDaniel 1998), depending on climate conditions. Most of the dense saltcedar stands have no understory and, therefore, impacts to nontarget vegetation would be minimal. All riparian habitat within the area has the opportunity to improve and, over the long term, reach its site dependent growth potential.

Cumulative Effects - Some riparian projects that have occurred along the Rio Grande watershed in New Mexico include those controlling saltcedar and nonnative vegetation in the Ohkay Owingeh, Santa Ana and Santo Domingo Pueblos, as well as the Bosque around Albuquerque. In addition, human-caused fires and drought have affected many acres of riparian habitat in the watershed. BLM projects would restore native vegetation and ecosystem functionality, based on agency priorities and budgets. Long-term ecosystem restoration projects would compensate for activities that remove or damage native vegetation, including short-term removal of nontarget plants from this proposed project. Overall, the most noticeable cumulative effect on vegetation would be beneficial, especially over the long term. BLM management activities would result in increased abundance and diversity of riparian and other native vegetation, which would enhance the effects of this weed control project.

4. Invasive, Nonnative Species

Direct and Indirect Effects – The overall effect would be a decrease in the density and distribution of weeds in the project area, with a likely short-term expansion of saltcedar throughout the watershed. Education on weed identification and prevention would ensure minimization of future weed infestations in other localities.

Cumulative Effects – Same as proposed action.

5. Wildlife

Direct and Indirect Effects – Same as proposed action. There would be no risk to wildlife from herbicides.

Cumulative Effects – Same as proposed action.

6. Threatened and Endangered Species

Direct and Indirect Effects – Same as proposed action.

Cumulative Effects – Same as proposed action.

7. Recreation

Direct and Indirect Effects - No reduction of available recreational resources under this alternative. Short-term avoidance of treatment areas would limit use in small areas, but in the long- term, improved vegetation conditions resulting from the implementation of the proposed action would improve the visual naturalness of the area and the condition of wildlife habitat, which should increase recreational experiences, including fishing, boating and wildlife viewing. There would be no risk to recreationists from herbicide use.

Cumulative Effects – Same as proposed action.

8. Visual Resource Quality
Direct and Indirect Effects – Same as proposed action.

Cumulative Effects – Same as proposed action.

9. Wild and Scenic Rivers
Direct and Indirect Effects – Same as proposed action.

Cumulative Effects – Same as proposed action.

10. Human Health and Safety
Direct and Indirect Effects – There would be no risk to human health or safety from herbicides. There may be an increased risk of allergens and skin irritations as manual crews work with specific weeds, however, over the long-term allergens and skin irritations from weeds significantly decreased, and removal of dense saltcedar stands would reduce the threat of wildfire to adjacent communities.

Cumulative Effects - Foreseeable weed control activities using any of the methods described herein could be conducted by private landowners, county, State and other Federal agencies. Other actions that introduce herbicides into the environment include, but are not limited to, herbicides recently applied or expected to be applied on in northern New Mexico by Soil and Water Conservation Districts, Bureau of Indian Affairs, U.S. Forest Service, or watershed associations. Other limited introductions would come from driving vehicles on or off roads, constructing facilities and roads, reconstructing and maintaining roads, or extracting oil-gas or mineral resources. Therefore, a neutral impact to human health and safety may result from the adoption of this alternative.

Chapter 5 - Consultation and Coordination

A. List of Agencies, Organizations, and Individuals Consulted

Federal Agencies
USDA Forest Service
USDA Natural Resource Conservation Service
USDI Bureau of Land Management, Farmington District Office
USDI Bureau of Land Management, NM State Office
USDI Bureau of Reclamation
USDI Fish and Wildlife Service

Sate Agencies
NM Department of Game and Fish
NM State Forestry Division
NM Environmental Department
UNM Cooperative Extension Office
UNM Natural Heritage Program

County & Tribal Agencies
Picuris Pueblo
Taos Pueblo
Taos County Soil & Water Conservation District

Organizations
Amigos Bravos
Hawks Aloft, Inc.
Meridian Institute
National Fish and Wildlife Foundation
Native Plant Society, Taos Chapter
Regenesis
Rio Grande Restoration
Rocky Mountain Youth Corps
Taos County Noxious Weed Committee
Forest Guardians
Carson Forest Watch

B. List of Reviewers
Sam DesGeorges, Field Office Manager
John Bailey, Recreation Manager
Terry Humphrey, Multi-Resource Manager
Sher Churchill, NEPA Planner
Paul Williams, Archeologist
Tarah Burt, Biologist Technician
Tami Torres, Recreation Planner

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