

## **Chapter 1. Purpose and Need**

### **Federal Action**

The federal action addressed in this draft programmatic Environmental Assessment/Biological Assessment is implementation of the Carlsbad Project Vegetation Management Program. The Vegetation Management Program consists of a research component and a treatment component, both targeting the pest saltcedar (*Tamarix* sp.) and potentially other invasive plants such as kochia. The research component includes studies of biological agents, herbicides, and mechanical methods; revegetation; and herbicide residue. The treatment component includes potential aerial application of an herbicide that would be implemented in cooperation with the Carlsbad Irrigation District and the Carlsbad Soil and Water Conservation District. The Vegetation Management Program, if implemented, is envisioned to further our knowledge of the most appropriate and most effective treatment and revegetation methodologies while simultaneously reducing the amount of acreage currently impacted by non-native invasive species (including trees that consume lots of water) infestations. The Program is anticipated to be dynamic and ongoing over the next approximately 10 years, adapting to new information, and likely initiating new studies. The long-range view of the Program is a reduction of non-native invasive species, such as saltcedar and kochia, and reestablishment of native vegetation like grasses and shrubs. Though many details and specific activities of the Program are unknown at this time, all future work proposals will be consistent with this long-range view. The Program is proposed to be conducted on lands of the Carlsbad Project administered by the Bureau of Reclamation and potentially on lands within the Carlsbad Project which are owned by the Carlsbad Irrigation District (CID). Reclamation will fully coordinate the Vegetation Management Program with CID. No lands owned by CID would be included without concurrence by CID.

### **Purpose of and Need for Action**

The purpose of the Vegetation Management Program is to learn about the range of treatment methods, their effectiveness on Carlsbad Project lands, how to optimize invasive plants control through integration of the methods, and how to reestablish native vegetation on treated lands as well as to actually reduce the amount of acreage currently infested with saltcedar and other invasive plants. The need for the Program is based on Reclamation's desire to control saltcedar and other invasive plants on its Carlsbad Project lands and reestablish native vegetation appropriate to the impacted areas. The Department of Interior Strategic Plan 2003-2008 includes one goal, "Sustain biological communities on DOI managed and influenced lands and waters in a manner consistent with obligations regarding the allocation and use of water" and a performance measure associated with that goal of "Percent change from baseline in the number of acres infested with invasive plant species". Reclamation's performance goal essentially mimics and supports the Department's goal and will be measured by the percent change in infested priority acres. The consumption of water by invasive species, particularly the nonnative species such as saltcedar, is a continuing problem in the arid and semiarid regions of the western United States. Recent prolonged and severe drought in the Pecos River Basin increases the need for water conservation and water salvage. A multi-agency cooperative study was completed in New Mexico on the Rio Grande to measure evapotranspiration associated with saltcedar and native vegetation. Preliminary results indicate the average annual water use by saltcedar in the floodplain is equivalent to the requirements for alfalfa, roughly four acre feet (AF) of water per

year (Draft Technical Report Project # 1-4-23955).

### **Location, Setting, and Background**

The Carlsbad Project stores water in Santa Rosa (a Corps of Engineers Dam), Sumner, Brantley, and Avalon Dams to provide water for about 25,000 acres within the Carlsbad Irrigation District. Project features include Sumner Dam and Lake Sumner (formerly Alamogordo Dam and Reservoir), McMillan Dam (breached in 1991 and replaced with [Brantley Dam](#)), Avalon Dam, and a drainage and distribution system to irrigate 25,055 acres of land in the Carlsbad area.

The Vegetation Management Program is proposed to be implemented on lands of the Carlsbad Project administered by the Bureau of Reclamation or owned by CID. Approximately 33,400 acres of saltcedar were cleared during the 1960s – 1970s on the Pecos River in New Mexico. These areas have had limited success in passive revegetation because of limited available moisture and most areas are still occupied by rudimentary annual species such as Kochia, sunflower and cocklebur. Some areas have had active revegetation attempts as late as the 1990's with limited success. Approximately 2,700 acres were seeded with several grass species including the Aggressive Lehman's Lovegrass via broadcast seeding under contract with Granite Seed.

Though the Carlsbad Project includes a broad geographic area in southeastern New Mexico, the location currently considered for the Vegetation Management Program is limited to Carlsbad Project lands around Brantley and Avalon Reservoirs north of the city of Carlsbad. These Carlsbad Project lands total 7,829 acres, of which 5,026 acres are administered by Reclamation and 2,803 acres are owned by CID (Appendix D). The project area also supports extensive mineral leasing activities (oil and gas wells) administered largely by the Bureau of Land Management (BLM). Livestock grazing occurs within the project area as well, primarily on lands surrounding the Pecos River downstream from Brantley Reservoir and on lands surrounding Avalon Reservoir.

### **Target Species**

Saltcedar is an exotic deciduous tree growing on an estimated 6,172 acres within the Carlsbad Project area (Resource Management Plan (RMP), December, 2003). Saltcedar is considered a noxious species whose impacts to water resources in New Mexico are detrimental. It transpires large amounts of water in comparison to native vegetation. It consumes water 35 percent more rapidly than native vegetation (Johns, E. L. 1990). It has been classified as a salt secreting halophyte. A halophyte is defined as a plant that tolerates large amounts of salt or alkali in the soil or water. Saltcedar can successfully out-compete native vegetation to form monotypic stands. Along channels it increases sedimentation and reduces channel capacity (Blackburn et al 1982). Saltcedar is also classified as a phreatophyte which is defined as "a plant that habitually obtains its water supply from the zone of saturation, either directly or through the capillary fringe" (def. Meinzer, O. E. 1927). With the increasing scarcity and demand for water, limiting non-beneficial consumptive uses of water becomes paramount. Saltcedar can be treated with various methodologies. Within the Carlsbad Project, Reclamation has relied on mechanical treatments. Root Plowing is currently used where the machine shears vegetation below the soil surface. To ensure cutting below the root crown of saltcedar, the root plow must be between 12 to 18 inches below the ground. The above ground vegetation is removed before or during root plowing, and is piled and burned to prevent resprouting of shoots and stems. This action occurs around the shoreline at Brantley where the saltcedar is too large to use the tractor.

Saltcedar can have regrowth rates which exceed six feet per growing season. Regrowth typically occurs as multiple stems from the cut trees base and the number of stems increases after each cutting. Stem diameters often increase to greater than two inches within a short period of time. Stem diameters exceeding two and one half inches cannot be cut with mowing equipment currently on hand. In the absence of any control methods, saltcedar will effectively eliminate or “crowd out” desirable vegetation.

Other target species occurring in the project area include not only kochia (*Kochia scoparia*) but *Centaurea melitensis* (Malta starthistle) and *Peganum harmala* (African rue) which are identified as noxious weeds.

### **Brantley Reservoir**

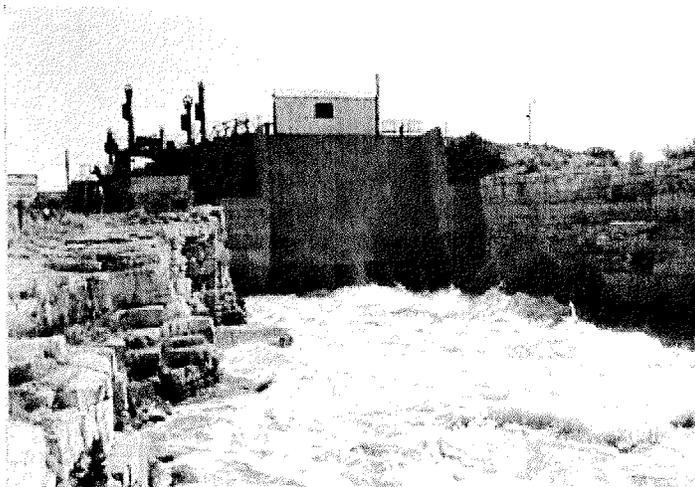
Brantley Dam and Reservoir of the Brantley Project were authorized on October 20, 1972, by Public Law 92-514, for irrigation, flood control, fish and wildlife, recreation benefits, and to replace McMillan Dam, which was determined to be unsafe. Construction of Brantley Dam was completed in August 1988. The dam is on the Pecos River at mile 478.5, situated in Eddy County about 13 miles upstream from the city of Carlsbad, New Mexico. It is about 10 miles upstream from the [Avalon Dam](#) in the [Carlsbad Project](#) and 25 miles downstream from Artesia. The Brantley Project area extends about 16.5 miles above the damsite. The dam was designed high enough to allow for future siltation and the gradual raising of the reservoir pool elevation as it occurs over the next 100 years. The conservation pool encompasses approximately 3,800 surface acres. Carlsbad Irrigation District operates and maintains Brantley Dam for irrigation releases.



Brantley Dam and Reservoir

### **Avalon Reservoir**

Avalon Dam was originally built in the early 1890s and then reconstructed by Reclamation in 1907 after being destroyed twice by floodwaters. The dam's height was increased in 1912 and again in 1936. Avalon Reservoir is located in Eddy County and has a structural height of 58 feet and a volume of 202,000 cubic yards with a water surface area of 930 acres when full. In addition to being both a storage and regulating reservoir, Avalon Dam serves as the diversion dam for the project by diverting water in to the Main Canal to irrigate project lands on both sides of the Pecos River near Carlsbad. Total reservoir capacity today is 4,980 AF at maximum water surface elevation at 3177 feet (Reclamation datum). The dam is located on the Pecos River five miles north of Carlsbad, NM. Carlsbad Irrigation District operates and maintains Avalon Dam for irrigation releases.



Avalon Canal Outlet Works

## Chapter 2. Proposed Action and Alternative

Alternatives considered in this draft EA/BA are the Proposed Action and the No Action alternative (Table 1). The Proposed Action consists of implementing the Vegetation Management Program in addition to ongoing operation and maintenance activities (O&M). The No Action consists of continuing ongoing O&M.

**Table 1. Summary Comparison of the Alternatives**

NO ACTION	PROPOSED ACTION
<p><b>Vegetation Treatments:</b> Ongoing periodic mowing of kochia in the floodway/ root plowing, grubbing and a rubber tire tractor use are used on saltcedar on the shoreline areas of Brantley and Avalon Reservoirs</p>	<p><b>Vegetation Treatments:</b> Possible aerial herbicide treatments of monotypic saltcedar stands; Ongoing periodic mowing of noxious and invasive weeds in the floodway/root plowing, grubbing and use of a tractor on saltcedar on the shoreline areas of Brantley and Avalon Reservoirs; treatments of noxious weeds and kochia possible.</p>
<p><b>Investigations:</b> None</p>	<p><b>Investigations:</b> Biological, mechanical, and herbicide treatment studies; herbicide residue study; revegetation studies.</p>