Record of Decision for the El Paso–Las Cruces Regional Sustainable Water Project

Appendices

1.0 Summary

This Record of Decision (ROD) documents the selection of the Preferred Alternative–River with Local Plants as presented in the El Paso–Las Cruces Regional Sustainable Water Project Final Environmental Impact Statement (FEIS). This ROD also approves project sponsors proceeding with construction of the project, in accordance with statutory and contractual obligations. The New Mexico–Texas Water Commission, a regional planning body, proposed the project. Commission members include the City of Las Cruces, Doña Ana County, Elephant Butte Irrigation District, New Mexico State University, El Paso Water Utilities / Public Service Board (EPWU / PSB), the University of Texas at El Paso, and Texas A&M University's Agricultural Research and Extension Center. The U.S. Section, International Boundary and Water Commission, United States and Mexico (USIBWC), served as the federal lead agency in the preparation of National Environmental Policy Act (NEPA) documents. The EPWU / PSB served as joint lead agency.

The need for this project is based on the region's future drinking water supply requirements. Population growth rates and the demand for drinking water in the region have increased sharply. The project is necessary to avoid potentially permanent impacts on the Mesilla and Hueco Bolsons (ground water basins or aquifers) and critical drinking water shortages in the El Paso–Las Cruces region. Selection of the Preferred Alternative provides NEPA compliance for the construction and operation of a variety of features, including water treatment plants, diversion structures, aqueducts, aquifer storage and recovery, water acquisition, and fish and wildlife enhancements and mitigation. Project features would be constructed and become operational over three, 10-year phases, extending from the present to the year 2030.

The FEIS for the proposed project considered the Preferred Alternative, four other action alternatives, and the No Action Alternative. The FEIS addresses potential impacts related to the construction, operation, and maintenance of features associated with each of the alternatives and is intended to satisfy the disclosure requirements of NEPA. The FEIS also will be used by the lead agencies and project sponsors, in conjunction with other relevant materials, to plan actions and make decisions. The Environmental Protection Agency Notice of Availability for the FEIS appeared in the Federal Register (Volume 65, Number 242, Page 78484) on December 15, 2000.

The USIBWC and EPWU / PSB, through this ROD, selects the Preferred Alternative as presented in the FEIS and approves project sponsors proceeding with project implementation. This ROD, which incorporates the FEIS by reference, explains the basis for this decision and establishes environmental commitments and mitigation measures that will be implemented. The selected alternative best achieves a combination of five broad performance objectives covering a series of environmental, financial, reliable / sustainable, implementable, and quality of life performance measures. Based solely on four environmental performance measures—water quantity, water quality, habitats, and cultural resources—the River with Year-Round Lower Plants Alternative is the environmentally preferable alternative, followed closely by the selected (Preferred) alternative.

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2.0 Introduction

The purpose of this Record of Decision (ROD) is to select one of the alternatives described in the FEIS for implementing the proposed El Paso–Las Cruces Regional Sustainable Water Project (hereafter referred to as the project). The proposed project consists of features that would develop a high quality, sustainable drinking water supply for the El Paso–Las Cruces region of far west Texas and southern New Mexico. The project would eventually provide 174.5 million gallons per day (mgd) of treated surface water on a year-round basis. This water would be converted from agricultural use to meet municipal needs in the region. Construction would occur in phases to help meet the region's drinking water demands through the year 2030.

The New Mexico–Texas Water Commission (Commission), a regional planning body, is proposing the project. The U.S. Section, International Boundary and Water Commission, United States and Mexico (USIBWC), is the federal lead agency. The El Paso Water Utilities / Public Service Board (EPWU / PSB) serves as joint lead agency. The U.S. Fish and Wildlife Service (FWS), U.S. Bureau of Reclamation (USBR), and U.S. Bureau of Land Management (BLM) are cooperating agencies.

The need for this project is based on the region's future drinking water supply requirements. The project is necessary to avoid potentially permanent impacts on the Mesilla and Hueco Bolsons (ground water basins or aquifers) and critical drinking water shortages in the El Paso–Las Cruces region. Population growth rates and the demand for drinking water have increased sharply. It is projected that the Texas portion of the Hueco Bolson will be exhausted of all fresh water by the year 2025. If additional surface waters are not made available to supplement the drinking water supply, water shortages in the region will likely lead to severe health and sanitation problems. Water supplies would be even more limited during periods of drought; therefore, there exists a need for contingency water supplies during drought conditions if the pumping trends of the early 1990s continue.

The proposed project deals with securing future drinking water supplies from surface sources for the El Paso–Las Cruces region for the following purposes:

- Provide a year-round drinking water supply from the Rio Grande Project that is of sufficient quantity and quality to meet the anticipated municipal needs of Hatch, New Mexico; Las Cruces, New Mexico; northern and southern Doña Ana County, New Mexico; the Anthony / Canutillo area of Texas; northwest and northeast El Paso, Texas; and areas served by EPWU / PSB's Canal Water Treatment Plant (WTP) and expanded Jonathan Rogers WTP
- Protect and maintain the sustainability of the Mesilla Bolson
- Extend the longevity of the Hueco Bolson

In addition, the project will strive to meet the following criteria:

- The project should attempt to limit excessive total dissolved solids (TDS) concentrations (maintain less than 1,000 milligrams per liter [mg/L] TDS and less than 300 mg/L sulfates) because high quality water is needed to achieve successful treatment and to meet federal drinking water standards.
- The project should seek to deliver water efficiently, and to promote water conservation.
- The project should provide overall benefits to the riverine ecosystem—particularly aquatic and riparian habitats.

3.0 Description of Alternatives

3.1 General

A Preferred Alternative, four other action alternatives, and a No Action Alternative were developed and analyzed for the El Paso–Las Cruces Regional Sustainable Water Project (the project). The action alternatives consist of the following:

- Preferred Alternative–River with Local Plants
- River with Year-Round Lower Plants Alternative
- River with Combined Plant Alternative
- Aqueduct with Local Plants Alternative
- Aqueduct with Combined Plant Alternative

Each action alternative is a combination of features that would function together to meet project purposes. These features include water treatment plants (WTP), diversion structures, aqueducts, aquifer storage and recovery (ASR), water acquisition, and fish and wildlife enhancements and mitigation. Features would be constructed and become operational over three, 10-year phases, extending from the present to the year 2030. Based on detailed analyses during the Draft EIS preparation, and considering group participation from selected public meetings, the USIBWC and EPWU / PSB identified the River with Local Plants Alternative as the Preferred Alternative for the proposed project.

Project features and functions for the Preferred Alternative and each of the other action alternatives are summarized in the text that follows. The No Action Alternative also is briefly described.

3.2 Preferred Alternative–River with Local Plants

Four new WTPs would be constructed and one existing WTP would be expanded under this alternative. New plants, and their Phase 3 treatment capacities in million gallons per day (mgd), would include the Hatch Area WTP (4.5 mgd), Las Cruces Area I-10 site WTP (34 mgd), Anthony Area WTP (16 mgd), and Upper Valley WTP (80 mgd). The existing Jonathan Rogers WTP would be expanded from 40 mgd to 80 mgd. Treatment of raw surface water at these new and expanded WTPs would provide an additional 127.5 mgd of drinking water during Phase 1, 159.5 mgd during Phase 2, and 174.5 mgd during Phase 3 to meet municipal needs in the El Paso–Las Cruces region. These WTPs would help prevent critical drinking water shortages in the future, as well as permanent impacts on aquifers caused by excessive pumping of ground water. The existing Canal WTP would be operated the same as at present under this alternative.

Four permanent diversion structures would be constructed on the Rio Grande to divert water to the new WTPs. The new structures would be designed to provide fish passage and minimize the potential for fish capture, entrainment, and impingement. These diversions would be constructed, owned, operated, and maintained by the same entities responsible for

the associated WTPs. These entities are: the City of Hatch for the Hatch WTP and Diversion; the City of Las Cruces for the Las Cruces Area I-10 site WTP and Diversion; Anthony Water Sanitation District and/or Doña Ana County for the Anthony Area WTP and Diversion; and El Paso Water Utilities/Public Service Board (EPWU/PSB) for the Upper Valley WTP and Diversion and the Jonathan Rogers WTP. The diversion structure for the Jonathan Rogers WTP has already been constructed.

Underground pipelines would be used to convey raw water diverted from the Rio Grande to the new WTPs, and to convey treated water via transmission systems to service areas for immediate use or underground storage. A 32-mile-long underground pipeline (the El Paso Aqueduct) would be constructed to convey 80 mgd of treated surface waters year-round from the proposed Upper Valley WTP to demand centers in northwest and northeast El Paso, and to the ASR system in northeast El Paso. During periods of excess supply, treated surface waters would be stored in a ground water aquifer (the Hueco Bolson) through wells within the ASR system. This stored water would be recovered by pumping, and would be used to meet drinking water demands during surface water shortages and to prevent the continued excess pumping of ground water from the Hueco Bolson. The El Paso Aqueduct and ASR system would be constructed, owned, operated, and maintained by EPWU/PSB.

The project's water supply would be increased by acquiring rights to water, and through forbearance agreements, water conservation, and water banking. Acquiring rights to water associated with the retirement of selected farmlands from irrigated agriculture would occur through property purchases and other methods. Water also would be acquired by leasing, through forbearance agreements, all or a portion of water rights from interested parties. Projects that reduce water loss in the agricultural distribution system would achieve water savings. Lastly, water also may be obtained from a water bank set up using long-term agreements.

Transferring water from agricultural to municipal use through conversion of Rio Grande Project water uses is necessary to successfully implement the Project. Conversion of some water use is allowed under the Rio Grande Project as long as the converter (water utility or similar entity) has the agreement of the landowner plus either the Elephant Butte Irrigation District (EBID) in New Mexico or the El Paso County Water Improvement District No. 1 (EPCWID No. 1) in Texas, and the agreement of the USBR, who is responsible for the administration of Rio Grande Project water.

Enhancement features and mitigation measures will be implemented that replace, improve, or enhance fish and wildlife habitat affected by the project. In addition, standard construction and operating procedures (SOPs) and best management practices (BMPs) designed to avoid or reduce adverse impacts will be implemented during the construction and operation of all project features. Examples of enhancement features include improving river channel and shoreline habitat, and establishing desired plant species and wildlife habitat on retired farmlands. Examples of mitigation measures include transplanting sensitive plants from the El Paso Aqueduct right-of-way (ROW) to a nearby location to avoid impacts, and monitoring agricultural drains to confirm the hydrologic model projection that drains will not dry up. Enhancement features and mitigation measures are described further in this ROD in Section 8.0, *Environmental Commitments and Mitigation*, and SOPs and BMPs are presented in Appendices A and B, respectively.

3.3 River with Year-Round Lower Plants Alternative

The design, construction, and operation of project features for this alternative would be identical to project features of the Preferred Alternative, with the following exceptions: the rates at which the Upper Valley, Jonathan Rogers, and Canal WTPs would produce treated water; the rate at which the El Paso Aqueduct would convey treated water; and the required volume of project water supply. Compared to the Preferred Alternative, less water would be diverted from the Rio Grande for treatment at the Upper Valley WTP, and more water would be diverted from the river for treatment farther downstream at the Jonathan Rogers and Canal WTPs during the secondary irrigation season (November through February). As a result, more water would remain in the Rio Grande between the diversion points for these WTPs during the secondary irrigation season under the River with Year-Round Lower Plants Alternative. This significant increase in water released from Elephant Butte Reservoir would be required to meet water quality standards for drinking water sources at American Dam.

Anticipated operational levels at these three WTPs during the secondary irrigation season are 40 mgd at the Upper Valley WTP, 60 mgd at the Jonathan Rogers WTP, and 20 mgd at the Canal WTP. During the primary irrigation season (March through October), anticipated operational levels are 60 mgd at the Upper Valley WTP, 60 mgd (Phase 1) and 80 mgd (Phases 2 and 3) at the Jonathan Rogers WTP, and 40 mgd at the Canal WTP. The El Paso Aqueduct would convey 40 mgd of treated water during the secondary irrigation season and 60 mgd of treated water during the primary irrigation season.

Components of the water acquisition program would be the same as described for the Preferred Alternative. However, potentially more irrigated farmlands would be converted to another use than under any other action alternative in order to acquire the larger supply of project water that would be needed for the River with Year-Round Lower Plants Alternative.

3.4 River with Combined Plant Alternative

Many project features of the River with Combined Plant Alternative are the same as described for the Preferred Alternative, differing primarily in the approach to treating and conveying drinking water to Doña Ana County's South Planning Area. WTPs associated with this alternative would be the same as for the Preferred Alternative, with two exceptions: the Anthony Area WTP would not be constructed, but the Upper Valley WTP would have a larger treatment capacity (up to 96 mgd during Phase 3) than under the Preferred Alternative in order to meet the Anthony (South Planning) Area's drinking water needs. The proposed Upper Valley WTP would serve as a combined plant for both the Upper Valley and Anthony, New Mexico, service areas.

The Hatch, Las Cruces, and Upper Valley Diversions would be constructed under the River with Combined Plant Alternative. Their design, construction, and operation would be the same as for the Preferred Alternative, with one exception: the Upper Valley Diversion would be designed to supply 96 mgd of raw water for treatment at the Upper Valley WTP. The Anthony Diversion would not be constructed because the Anthony Area WTP is not proposed for construction.

The 32-mile-long El Paso Aqueduct would be designed, constructed, and operated the same as for the Preferred Alternative. In addition, 16 mgd of treated water would be conveyed from the Upper Valley WTP and the El Paso Aqueduct north to the Anthony, New Mexico area for distribution.

3.5 Aqueduct with Local Plants Alternative

Project features of this alternative are the same as for the Preferred Alternative, differing primarily in the location of the proposed Las Cruces Area WTP and the manner in which raw river water would be delivered to the Anthony Area WTP and the Upper Valley WTP. WTPs under the Aqueduct with Local Plants Alternative would be designed, constructed, and operated the same as for the Preferred Alternative, with the following exceptions: The Las Cruces Area WTP would be located at the Leasburg Site, not the I-10 Site, and water for the Anthony Area and Upper Valley WTPs would be diverted at an existing structure and conveyed via new pipelines for treatment. The only new diversion under this alternative would be the Hatch Diversion. It would be designed, constructed, and operated the same as described for the Preferred Alternative.

The El Paso Aqueduct and the New Mexico–Texas Aqueduct would be constructed under this alternative. The design, construction, and operation of the El Paso Aqueduct would be the same as for the Preferred Alternative. Water to be conveyed in the New Mexico–Texas Aqueduct would be diverted from the Rio Grande at the existing Mesilla Diversion. It initially would be stored in the proposed Westside Reservoir, a regulating reservoir planned near the Mesilla Diversion at the head of the existing Westside Canal. The New Mexico–Texas Aqueduct would convey raw water from the Westside Reservoir to the Anthony Area and Upper Valley WTPs via two pipelines, where it would be treated and distributed the same as described for the Preferred Alternative. The New Mexico–Texas Aqueduct would be constructed, owned, operated, and maintained by EPWU together with the Anthony Water Sanitation District and/or Doña Ana County.

3.6 Aqueduct with Combined Plant Alternative

Many project features of the Aqueduct with Combined Plant Alternative are the same as described for the Aqueduct with Local Plants Alternative, differing primarily in the approach to treating and conveying drinking water to Doña Ana County's South Planning Area. WTPs under this alternative would be the same as under the Aqueduct with Local Plants Alternative, with the following two exceptions. The Anthony Area WTP would not be constructed, but the Upper Valley WTP's treatment capacity would be 96 mgd rather than 80 mgd to meet the Anthony (South Planning) Area's drinking water needs. The proposed Upper Valley WTP would serve as a combined plant for the Upper Valley and Anthony service areas in the same manner as described for the River with Combined Plant Alternative. The only difference would be that raw water would be supplied through the New Mexico–Texas Aqueduct for the Aqueduct with Combined Plant Alternative, rather than through a new diversion adjacent to the Upper Valley WTP as described for the River with Combined Plant Alternative. The only new diversion under the Aqueduct with Combined Plant Alternative would be the Hatch Diversion, the same as for the Aqueduct with Local Plants Alternative.

The El Paso and New Mexico–Texas Aqueducts would be constructed under this alternative the same as described for the Aqueduct with Local Plants Alternative, with one exception: a single pipeline would convey 96 mgd of raw water from the proposed Westside Reservoir to the Upper Valley WTP. Raw water would be treated at the Upper Valley WTP and would be distributed via the El Paso Aqueduct and associated transmission mains to northeast and northwest El Paso and to Doña Ana County's South Planning Area, the same as described for the River with Combined Plant Alternative.

3.7 No Action Alternative

With the No Action Alternative, none of the project features or phasing proposed for the Preferred Alternative or other action alternatives would be implemented. Anticipated environmental impacts of the project would not occur, and the following project features would not be implemented: proposed WTP, diversion, and aqueduct construction; fish and wildlife enhancements and mitigation; new, project-specific water acquisition measures; aquifer storage and recovery; and other project features.

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4.0 Summary of Environmental Impacts

The following text summarizes and compares potential impacts of the Preferred Alternative, other action alternatives, and the No Action Alternative. Section 4.1 describes the consequences of the No Action Alternative. Section 4.2 compares the impacts of the Preferred Alternative and other action alternatives by resource topic. Section 4.3 provides a brief summary comparison of the action alternatives.

4.1 No Action Alternative

Existing water supply conditions in the El Paso–Las Cruces region would continue into the future under the No Action Alternative. These conditions would eventually result in critical drinking water shortages, and the needs and purposes of the proposed project would remain unmet. Some of the major consequences that would result from not implementing the proposed project features under the No Action Alternative include the following:

- Demands on the Hueco Bolson would continue to increase until fresh water is exhausted.
- Increasing demands on the Mesilla Bolson would exhaust the Texas fresh water portion and stress the New Mexico portion.
- Pumping in the Mesilla Bolson would increase movement of poor-quality ground water into the deeper part of the aquifer, and horizontal movement of poor-quality ground water would increase within the same layer.
- Acreages and production from croplands in New Mexico would continue without significant changes.
- Urbanization in Texas would continue to remove croplands from typical agricultural practices at a rate of about 700 acres or less per year.
- Ecosystem / watershed management needs would continue to grow, and water would be managed in an increasingly litigious and reactive setting.
- Fish and wildlife habitat in the active river channel would remain the same, and lack of river habitat would continue to limit aquatic species.
- There would be fewer agricultural drains and poorer habitat quality within drains because of urbanization.
- Water supplies would not grow along with the population of the El Paso–Las Cruces region.
- Limited water supplies would disrupt future economic growth; result in some health problems and increased health-care costs; and increase conflicts between New Mexico and Texas, and between the United States and Mexico.

- Future water shortages and water conservation would cause social and economic disruptions, reduce the quality of life for local residents, and limit options for social mobility. Minority and low-income populations may be most affected.

4.2 Comparison of Impacts

4.2.1 Water Resources

There would be occasional significant adverse impacts on river water quality under each action alternative. Based on significance criteria presented in the EIS, impacts are defined as occurring when there is a greater than 10 percent increase in the concentration of total dissolved solids (TDS) and exceedance of the TDS drinking water standard of 1,000 milligrams per liter (mg/L). The frequency of impact occurrence among alternatives would be least under both the Preferred Alternative and the River with Combined Plant Alternative, and greatest under the River with Year-Round Lower Plants Alternative. Impacts would occur in the Rio Grande between the Upper Valley WTP site and Montoya Drain during the primary irrigation season in Phases 2 and 3 of the Preferred Alternative and the River with Combined Plant Alternative; and in Phases 1, 2, and 3 of the other action alternatives. In addition, under the River with Year-Round Lower Plants Alternative, there would be a significant increase in TDS concentration between International Dam and Riverside Dam during the primary irrigation season in Phase 3 of the project. This would result from reduced river flows and less dilution of drain flows entering the river.

4.2.2 Land Use

The most substantive changes in land use would be the conversion of farmlands in New Mexico and Texas out of irrigated agricultural production as part of the land retirement-water acquisition component of the proposed project. Conversion of agricultural land in Doña Ana County, New Mexico, and El Paso County, Texas, to another land use would be a significant impact because all agricultural lands in these two counties are considered to be Farmland of Statewide Importance subject to the Farmland Protection Policy Act. Under the River with Year-Round Lower Plants Alternative, an estimated total of 44,732 acres of irrigated farmland would be converted to other land uses that do not require a water supply. Of this total, 19,344 acres would be converted in Texas (8,600 acres in Phase 1 and 10,744 acres in Phase 2) and 25,388 acres would be converted in New Mexico (12,780 acres in Phase 1 and 12,608 acres in Phases 2 and 3). For each of the other action alternatives, including the Preferred Alternative, an estimated total of 33,066 acres of irrigated farmland would be converted. Of this total, 14,344 acres would be converted in Texas (6,100 acres in Phase 1 and 8,244 acres in Phase 2) and 18,722 acres would be converted in New Mexico (9,447 in Phase 1 and 9,275 acres in Phases 2 and 3). To minimize conflicts with both county and city land use plans and the adverse effects of farmland conversion, a combination of water acquisition methods will be pursued to reduce the amount of acreage that would need to be converted from agricultural land use. Otherwise, construction of project features would not conflict with the goals, objectives, or policies stated in the Doña Ana County, City of El Paso, City of Las Cruces, and City of Socorro plans. Project objectives also would be consistent with the policies of these entities, which indicates that viable and safe sources of new water should continue to be found.

4.2.3 Aquatic Resources

There would be no significant adverse impacts on aquatic resources in the Rio Grande and its irrigation drains, or in Elephant Butte and Caballo Reservoirs from the proposed project. There would be very minor benefits from the proposed flow regimes under each action alternative, and additional benefits from implementing fish and wildlife enhancements. Generally, each action alternative would result in increased river flows during the secondary irrigation season, when flows are typically low, and reduced river flows during the primary irrigation season, when flows are typically high. Potential flow-related benefits would be slightly greater under the River with Year-Round Lower Plants Alternative than the other action alternatives, which would generally be similar, because of comparatively greater flow reductions during the primary irrigation season and comparatively greater flow increases extending farther downstream during the secondary irrigation season. However, benefits from increased river flows and slightly more diverse habitat during winter would be masked by the continued negative influence of the altered river channel and floodway on the existing poor quality habitat and fishery in the Rio Grande.

Conversely, decreased river flows during the primary irrigation season would not be great enough to alter the typically high flow and water velocity conditions during this time of year, which provides very little fish habitat and essentially no spawning habitat. As a result, benefits to the fish community because of modified river flows would be minimal regardless of the action alternative. None of the flow regimes would reestablish quiet, slow waters of moderate depth, such as backwaters and oxbows, which most river species require for successful spawning and juvenile rearing. The greatest potential benefit under each action alternative may be the establishment of a more year-round flow regime that would allow development of effective riverine habitat enhancements, such as widening the active channel with embayments, backwater areas, and sloughs, and planting native riparian species. Other aquatic resource benefits under each action alternative would include increased spawning habitat for some species of fish in Elephant Butte Reservoir during average and dry water years because of increased water levels during some months. Benefits would be greater for the River with Year-Round Lower Plants Alternative than for the other action alternatives because of higher reservoir water levels.

4.2.4 Vegetation Resources

There would be permanent and temporary adverse impacts on vegetation resources because of project construction, operation, and maintenance. However, none of these impacts would be significant either because of the temporary nature of disturbance, small acreage disturbed, distribution of effect over a broad geographic range, or the abundance and proximity of the same but undisturbed vegetation resource. There would be no significant impacts on rare and/or sensitive vegetation communities or plant species from any of the action alternatives. Estimated acres of disturbed lands by action alternative include the following:

- Preferred Alternative and River with Year-Round Lower Plants—292 acres temporarily disturbed and 1,142 acres permanently disturbed
- River with Combined Plant Alternative—284 acres temporarily disturbed and 1,099 acres permanently disturbed

- Aqueduct with Local Plants Alternative—369 acres temporarily disturbed and 1,251 acres permanently disturbed
- Aqueduct with Combined Plant Alternative—361 acres temporarily disturbed and 1,208 acres permanently disturbed.

Under each alternative, permanently disturbed lands would consist primarily of commonly-occurring Chihuahuan Desert scrub (from 738 to 826 acres, depending on alternative), agricultural land (from 342 to 398 acres), and a total of 12 to 34 acres, depending on alternative, of other grasslands, shrublands, residential/industrial lands, and, potentially, wetlands. Estimated wetlands losses under each action alternative would generally be less than 1 acre, except at the Westside Regulating Reservoir site (Aqueduct with Local Plants Alternative and Aqueduct with Combined Plant Alternatives) where a 14-acre, low-quality, tamarisk shrub wetland would be replaced by this reservoir. Also, approximately 45,000 acres of land under the River with Year-Round Lower Plants Alternative and approximately 33,000 acres of land under each of the other action alternatives would be converted out of farm production as part of the land retirement—water acquisition component of the proposed project. Other effects under each alternative would include the gradual flooding of wetland and riparian vegetation around Elephant Butte Reservoir during Phase 3 of the project. The same amount of vegetation would gradually develop at the new, higher water levels. Changes in river flows under each alternative may provide some minimal benefits to adjacent wetland communities. Under each action alternative, implementation of fish and wildlife enhancements, such as planting native riparian vegetation, conducting tamarisk control, and establishing non-mow areas, would improve or establish native wetland and riparian vegetation within the river corridor, and would potentially provide more food and cover for wildlife.

4.2.5 Wildlife Resources

There would be permanent and temporary adverse impacts on wildlife resources, including birds, mammals, and herptiles (amphibians and reptiles), as well as project benefits from the Preferred Alternative and the other action alternatives. Several of these impacts would have significant adverse effects, and they would occur under three alternatives. Increased river flows during the secondary irrigation season would result in the loss (inundation) of more than 500 acres of exposed river bottom, such as sandbars, shoreline, and islands, as well as shallow feeding habitat from November through February with the River with Year-Round Lower Plants Alternative, and during January with the two Aqueduct Alternatives. These losses would have significant adverse impacts on aquatic herptile communities in the Rio Grande that use exposed surfaces for basking and hibernation, and on wintering shorebirds and some waterfowl because of reduced feeding and roosting habitat. No mitigation is proposed for these significant impacts because there would be concurrent minor benefits to some other waterfowl and fish from increased flows and water depths during the secondary irrigation season. Inundation of exposed bottom areas and shallow feeding habitat in the Rio Grande would be less extensive under the other action alternatives, and would not result in significant adverse impacts on wildlife resources.

No other potential impacts on wildlife resources would be significant. Construction activities would potentially directly or indirectly impact wildlife by disturbing, altering, and/or converting existing habitat to other land uses, displacing wildlife permanently or

temporarily, or eliminating wildlife. Project operations may impact wildlife by altering the quality and quantity of terrestrial and aquatic habitat. Most terrestrial habitats (vegetation communities) that would be disturbed are Chihuahuan Desert scrub and agricultural land. These two habitat types would comprise 97 to 99 percent, depending on the alternative, of the total acres of habitat permanently disturbed under each action alternative. Remaining terrestrial habitat types, consisting of other grasslands, disturbed scrubland, residential/industrial land, and potentially, wetlands, would comprise only 1 to 3 percent—depending on the alternative—of the acres permanently disturbed. Herptile abundance in these habitat types and in the project area is low, and impacts on this wildlife group would not be significant. Losses of agricultural land rated as providing good or average quality habitat for wildlife would be less than 1 percent of the total available in the project area. Resultant impacts on birds and mammals would, therefore, not be significant. Potential impacts on birds and mammals because of large losses of Chihuahuan Desert scrub would not be significant because of the discontinuous nature of this habitat loss, eventual regeneration and replacement over time (20 to 30 years) as habitat matures, and the abundance of this habitat type in the project area. There would be temporary impacts on some wildlife at Elephant Butte Reservoir during Phase 3 of all action alternatives as habitat shifts to upslope communities because of projected increases in water levels from project operation. Wildlife communities would benefit directly or indirectly from the implementation of fish and wildlife enhancements under each of the action alternatives, and from the retirement of agricultural lands.

4.2.6 Threatened and Endangered Species

There would be no significant adverse effects on any federally listed endangered and threatened species and BLM sensitive species from the Preferred Alternative or the other action alternatives. There would be potential, minimal, beneficial effects on southwestern willow flycatcher—a federally endangered species potentially present in the river corridor—under all action alternatives because of a possible slight increase in vegetation, health, and insect populations (prey) from slightly modified river flow regimes. Southwestern barrel cactus, a BLM-sensitive species present in the proposed El Paso Aqueduct ROW, which is a feature of all alternatives, will be avoided during construction activities. Also, attempts will be made to avoid southwestern barrel cactus at the Las Cruces Area WTP (Leasburg site) if this WTP is selected for construction under the Aqueduct with Local Plants Alternative or the Aqueduct with Combined Plant Alternative. Sand prickly pear, a BLM-sensitive species and state-listed species that also is present in the El Paso Aqueduct ROW, will be transplanted and monitored to avoid significant adverse construction effects. River flow differences among alternatives that could potentially affect riparian plant health, insect populations, shallow nursery areas, and roosting habitat would not be great enough to cause significantly different adverse or beneficial effects on listed species. Conservation measures that will be implemented under the Preferred Alternative and all other action alternatives to avoid adverse effects include preparation of a monitoring plan for southwestern barrel cactus, preparation of a conservation plan and report for sand prickly pear, and implementation of SOPs and BMPs for all features of the proposed project.

4.2.7 Recreation Resources

There would be no significant adverse impacts on existing or proposed major recreation resources and recreation opportunities at Elephant Butte and Caballo Reservoirs or along the Rio Grande from implementing the Preferred Alternative or the other action alternatives. No mitigation is proposed for any of these alternatives because river flows and reservoir water surface elevations would not change enough to cause adverse recreation impacts. Some recreation benefits may eventually result from implementation of watershed management measures and potential improvements to public access to the Rio Grande. These management measures would be a part of fish and wildlife enhancements under the Preferred Alternative and the other action alternatives.

4.2.8 Cultural Resources

Three known cultural resources sites (prehistoric artifact scatters) eligible for the National Register of Historic Places (NRHP) would potentially be adversely affected by the proposed project. One site is near the proposed Las Cruces Area WTP (Leasburg site), which is part of the two Aqueduct alternatives. The two other sites are within the proposed El Paso Aqueduct ROW, which is a component of the Preferred Alternative and the other action alternatives. These potential significant impacts, and impacts on any other significant cultural resources if discovered during site-specific archaeological inventories (for example, at proposed ASR locations), will be mitigated through avoidance (if possible) or data recovery and documentation of the affected resources. The Ysleta del Sur Pueblo identified project-related issues that they asserted would affect the Pueblo's ability to perform religious ceremonies associated with the Rio Grande. These issues were recognized and discussed in consultation with the Pueblo during and following preparation and publication of the DEIS and FEIS. Based on consultation and results of analyses presented in the DEIS and FEIS, it is concluded that the project would not significantly change the historic conditions of the Rio Grande downstream of the Riverside Dam in El Paso and south of the Zaragosa crossing. Therefore, the ability of the Ysleta Del Sur Pueblo to perform religious ceremonies associated with the river will not be affected by the El Paso–Las Cruces Regional Sustainable Project.

4.2.9 Transportation and Circulation

There would be no significant adverse impacts on traffic levels, roadway level of service (LOS), or roadway condition during construction or operation and maintenance of the Preferred Alternative or the other action alternatives. Changes in traffic levels during project construction would be similar among alternatives, except as affected by activities at the proposed Anthony Area WTP and New Mexico–Texas Aqueduct sites. Commuters would be inconvenienced during the morning and evening commute hours while project features are being constructed. There also is the potential for roadway deterioration during construction periods. Mitigation commitments directed at these short-term effects include a traffic management plan to minimize impacts on transportation and circulation patterns and to reduce inconveniences to commuters during project construction, a road maintenance program to prevent roadway deterioration, and a pedestrian safety program that addresses route and timing restrictions of project vehicles during construction.

4.2.10 Mineral and Energy Resources

The Preferred Alternative and the River with Combined Plant Alternative would not adversely impact or benefit the amount of power that could be generated at the Elephant Butte Dam hydroelectric facility. The other three action alternatives, especially the River with Year-Round Lower Plants Alternative, may cause significant adverse effects on the amount of power that could be generated at this facility during the primary irrigation season of most years, but may provide significant and offsetting benefits toward power generation during the secondary irrigation season of most years. None of the alternatives would significantly impact any energy resources.

4.2.11 Environmental Justice

A significant adverse environmental justice impact would be the loss of farmworker jobs—which are likely held by a disproportionately large number of minority or low-income populations—because of agricultural land retirement. This impact would occur under the Preferred Alternative and all other action alternatives in the acquisition of water for M&I use. Its magnitude would be greater under the River with Year-Round Lower Plants Alternative where an estimated 45,000 acres of land would be converted out of farm production, as compared to 33,000 acres under the other action alternatives. Mitigation will include implementing a job retraining program for affected individuals. A significant environmental justice benefit under the Preferred Alternative and all other action alternatives would be the reliable delivery of potable water to the colonias, which consist of minority or low-income populations.

4.2.12 Socioeconomics

There would be significant and / or substantive adverse impacts on agricultural employment, earnings and income, production value, and irrigated harvested cropland under each of the action alternatives. The magnitude of potential impacts would be greater under the River with Year-Round Lower Plants Alternative because of the potential conversion of approximately 45,000 acres of irrigated farmland under this alternative, as compared to the conversion of approximately 33,000 acres of farmland under the other action alternatives. Significant impacts and differences among alternatives are summarized in the following text:

- River with Year-Round Lower Plants Alternative
  - Employment—552 farm jobs lost in Phase 1 (12.2 percent of farm employment in the region) and an additional 536 farm jobs lost in Phase 2 (11.8 percent of farm employment in the region)
  - Market value of crop production—$3.7 million decrease in El Paso County in Phase 1 (10.5 percent of total production value in the county) and $6.9 million decrease in El Paso County in Phase 2 (19.8 percent of total); $14.2 million decrease in the Doña Ana and Sierra Counties region in Phase 1 (12.2 percent of total production value in county region)

  - Irrigated harvested cropland—In El Paso County, an 11.9 percent reduction in Phase 1 and a 23.0 percent reduction in Phase 2; in the Doña Ana and Sierra Counties region, a 16.9 percent reduction in Phase 1 and a 9.8 percent reduction in Phase 2

- For each of the other action alternatives, including the Preferred Alternative
  - Employment—264 farm jobs lost in Phase 1 (5.8 percent of farm employment in the region) and an additional 248 farm jobs lost in Phase 2 (5.5 percent of farm employment in the region)
  - Market value of crop production—$5.1 million decrease in El Paso County in Phase 2 (14.8 percent of total production value in the County); in the Doña Ana and Sierra Counties region, non-significant reductions of $6.6 million (5.7 percent of total production value in the region) in Phase 1, $2.9 million (2.5 percent) in Phase 2, and $3.6 million (3.1 percent) in Phase 3
  - Irrigated harvested cropland—In El Paso County, a 17.7 percent reduction in Phase 2; in the Doña Ana and Sierra Counties region, an 11.0 percent reduction in Phase 1

4.2.13 Air Quality

There would be no significant adverse impacts on air quality from the Preferred Alternative or the other action alternatives. Any increases in fugitive dust and particulate matter because of project construction would be temporary. The potential for adverse effects on air quality during construction and project operation will be minimized or avoided by following mitigation commitments for air pollution prevention.

4.2.14 Noise

There would be no significant adverse noise impacts caused by the Preferred Alternative or the other action alternatives during project construction or operation. Potentially adverse effects of localized but substantial increases in noise levels during some aspects of project construction will be minimized by following mitigation commitments for noise pollution prevention.

4.2.15 Health and Safety

There would be no significant adverse impacts on health and safety from the construction and operation of the Preferred Alternative or the other action alternatives. There would not be a greater-than-average risk of accidents occurring because of mitigation commitments that address traffic management, road maintenance, and route and timing restrictions during project construction and the availability of emergency/contingency plans for project operations. Health and safety benefits of the project would include a reduction in the potential for waterborne illnesses to occur.

4.2.16. Indian Trust Assets

There are no Indian trust assets at or near proposed project feature sites, and there would be no adverse impacts on Indian trust assets from the Preferred Alternative or the other action alternatives.

4.3 Comparison of Alternatives

Table 4-1 compares potential impacts among the Preferred Alternative and the four other action alternatives for each resource area. Potential impacts are noted in the table as being significant, notable but not significant, or not significant or notable. In many instances, there are either no or only minimal differences among the alternatives; and for most resources, impacts would not be expected to reach a level of significance. There would, however, be significant adverse impacts from each of the action alternatives on the following resources:

- Water resources (TDS exceedances)
- Land use (conversion of Farmland of Statewide Importance in Doña Ana County and El Paso County)
- Environmental justice (loss of farmworker jobs held by minority or low-income populations)
- Socioeconomics (reduced agricultural production, revenue, and employment)

TABLE 4-1
Environmental Impact Summary for the Preferred Alternative and Other Action Alternatives

	Preferred Alternative-River with Local Plants	River with Year-Round Lower Plants Alternative	River with Combined Plant Alternative	Aqueduct with Local Plants Alternative	Aqueduct with Combined Plant Alternative
Water Resources	S	S	S	S	S
Land Use	S	S	S	S	S
Aquatic Resources	N	N	N	N	N
Vegetation Resources	N	N	N	N	N
Wildlife Resources	N	S	N	S	S
Threatened and Endangered Species	NS	NS	NS	NS	NS
Recreation Resources	NS	NS	NS	NS	NS
Cultural Resources	NS	NS	NS	NS	NS
Transportation and Circulation	N	N	N	N	N
Mineral and Energy Resources	NS	N	NS	N	N
Environmental Justice	S	S	S	S	S
Socioeconomics	S	S	S	S	S
Air Quality	NS	NS	NS	NS	NS
Noise	N	N	N	N	N

TABLE 4-1
Environmental Impact Summary for the Preferred Alternative and Other Action Alternatives

	Preferred Alternative-River with Local Plants	River with Year-Round Lower Plants Alternative	River with Combined Plant Alternative	Aqueduct with Local Plants Alternative	Aqueduct with Combined Plant Alternative
Health and Safety	NS	NS	NS	NS	NS
Indian Trust Assets	NS	NS	NS	NS	NS

S=Significant Impacts
N=Notable but Not Significant Impacts
NS=No Significant or Notable Impacts

The magnitude and extent of these impacts would be slightly greater under the River with Year-Round Lower Plants Alternative, primarily because of the direct and indirect effects of potentially retiring more irrigated farmland under this than the other alternatives. River flows under this particular alternative would be slightly more beneficial to aquatic resources than the other alternatives because of greater flow increases extending farther downstream during the secondary irrigation season, and because of greater flow reductions during the typically high-flow primary irrigation season. However, this minor benefit to fish would potentially be offset by adverse effects on herptiles, some shorebirds, and waterfowl from inundating a significant portion of exposed river bottom and shallow feeding areas for four months during winter. For this reason, the River with Year-Round Lower Plants Alternative, as well as the two Aqueduct Alternatives, would have a significant adverse impact on wildlife resources.

Based on the foregoing analyses, the Preferred Alternative and the River with Combined Plant Alternative generally would result in fewer overall significant or notable adverse impacts than the other action alternatives. Impacts from the Aqueduct with Local Plants Alternative and Aqueduct with Combined Plant Alternative would be slightly greater, while impacts from the River with Year-Round Lower Plants Alternative would exceed impacts from each of the other four action alternatives. Overall benefits associated with each action alternative would include the reliable delivery of a potable water supply and the avoidance of adverse consequences associated with the No Action Alternative, and the implementation of a series of fish and wildlife enhancements that focus on the Rio Grande and adjacent habitats.

5.0 Basis for Decision

The No Action Alternative and five action alternatives were evaluated based on their ability to meet the purpose and need of the project and five associated performance objectives. The No Action Alternative failed to meet the purpose and need and was not included in the comparison. All of the action alternatives meet the basic purposes and needs of the project. In order to discern how well they meet those measures, a set of performance objectives was used to provide a more detailed assessment. These objectives were consistent with those developed earlier in the NEPA process. Results of that evaluation were compared to determine which alternative would best meet all of the performance objectives and the purpose and need of the project. This comparison is presented in the following text and provides the basis for deciding which alternative to select for implementing the proposed project.

The five performance objectives, their relative importance (weighted by percent), and individual performance measures that were evaluated for each performance objective include the following:

- Environmental Performance (20 percent)
  - Aquatic and terrestrial habitats
  - Cultural resources
  - Water quality
  - Water quantity
- Financial Performance (20 percent)
  - Project costs
  - Environmental mitigation costs
  - Funding potential
- Reliable / Sustainable Performance (25 percent)
  - Operational reliability
  - Firm yield / drought susceptibility
  - Water quality
  - Impacts to agriculture
- Implementable Performance (25 percent)
  - Interregional jurisdictional issues
  - User-entity criteria
  - Regulatory agency and permitting criteria
  - Public support
- Quality of Life Performance (10 percent)
  - Balance agricultural concerns with urban needs
  - Promote water conservation
  - Promote recreational opportunities

The five performance objectives and their associated performance measures represent a much broader array of assessment criteria than required by NEPA in the evaluation of potential environmental effects. The performance objectives were developed based on project objectives, stakeholder values, technical reality, and relative importance. They were first developed by a wide spectrum of stakeholders at a NEPA Alternatives Planning Workshop held June 16, 1998, who provided input for developing these criteria, selecting the most important performance measures from a larger set of performance issues, and assigning values of relative importance. The implementable performance and reliable/sustainable performance criteria were judged to be the most important, followed closely by the environmental performance and financial performance criteria. Quality of life performance criteria were judged to be less important than the other performance criteria. Results of an initial alternatives' evaluation using these performance criteria were discussed with participants at a NEPA Alternatives Preliminary Screening Workshop on August 5, 1998. These same criteria were used to select the Preferred Alternative in October 1999.

Figures 5-1 through 5-5 compare the five performance objectives and associated performance measures among the Preferred Alternative and other action alternatives. Figures 5-1, 5-2, and 5-3 depict environmental, financial, and reliable/sustainable performance, while Figures 5-4 and 5-5 show implementable and quality of life performance. Figure 5-6 compares overall performance among all of the action alternatives.

Table 5-1 summarizes the comparative rank and score of the Preferred Alternative and other action alternatives for each performance objective and for overall performance. When all five of the performance objectives are considered together, overall performance would be greatest under the Preferred Alternative–River with Local Plants (score of 60), followed by the River with Combined Plant Alternative (score of 56), then the two Aqueduct Alternatives (scores of 48 and 42). Overall performance would be least under the River with Year-Round Lower Plants Alternative (score of 39), although environmental performance would be slightly greater under this alternative than any of the other action alternatives. For the financial, reliable/sustainable, implementable, and quality of life performance objectives, values would be greatest under either the Preferred Alternative or the River with Combined Plant Alternative.

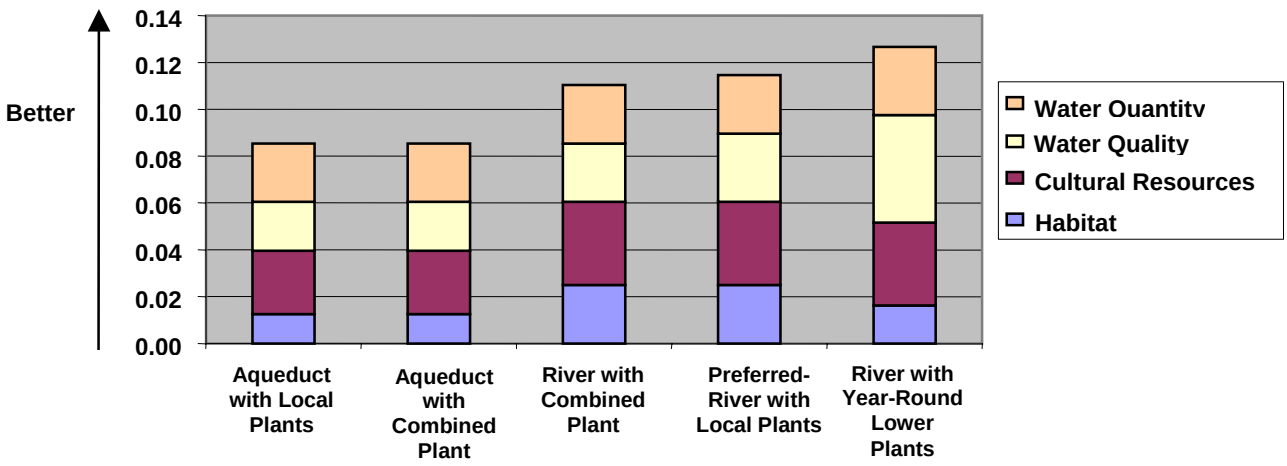

Figure 5-1. Comparison of Environmental Performance

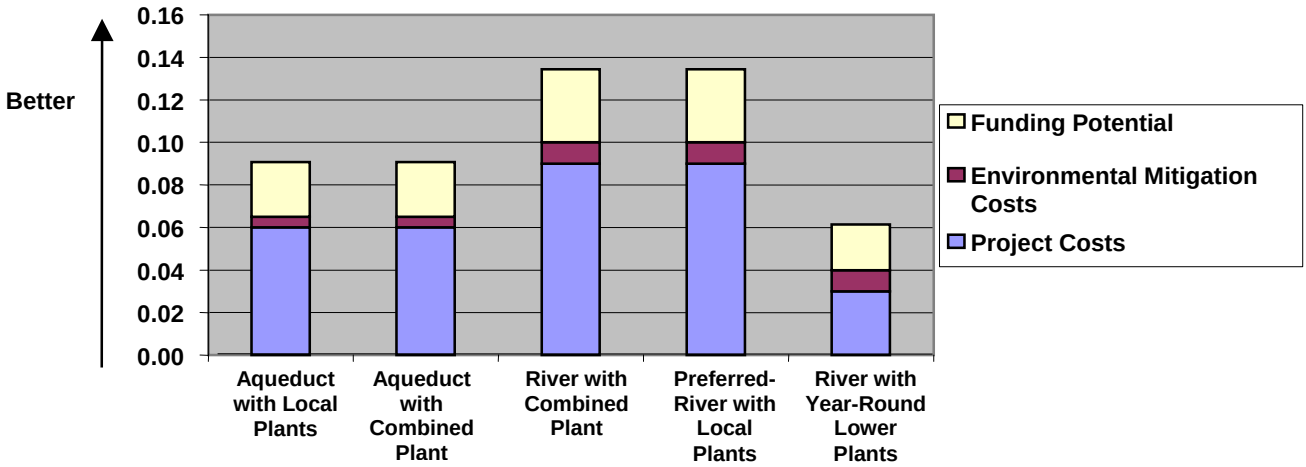

Figure 5-2. Comparison of Financial Performance

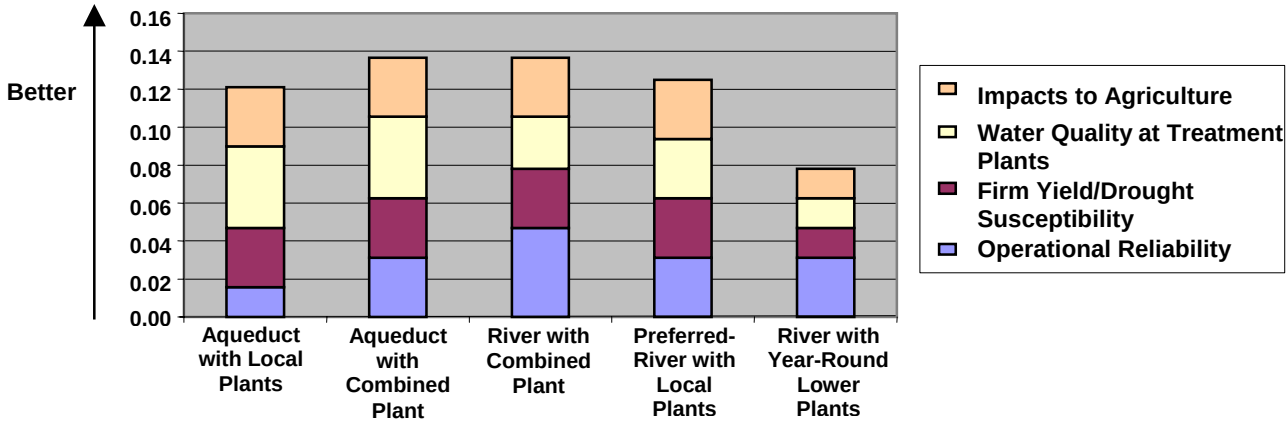

Figure 5-3. Comparison of Reliable / Sustainable Performance

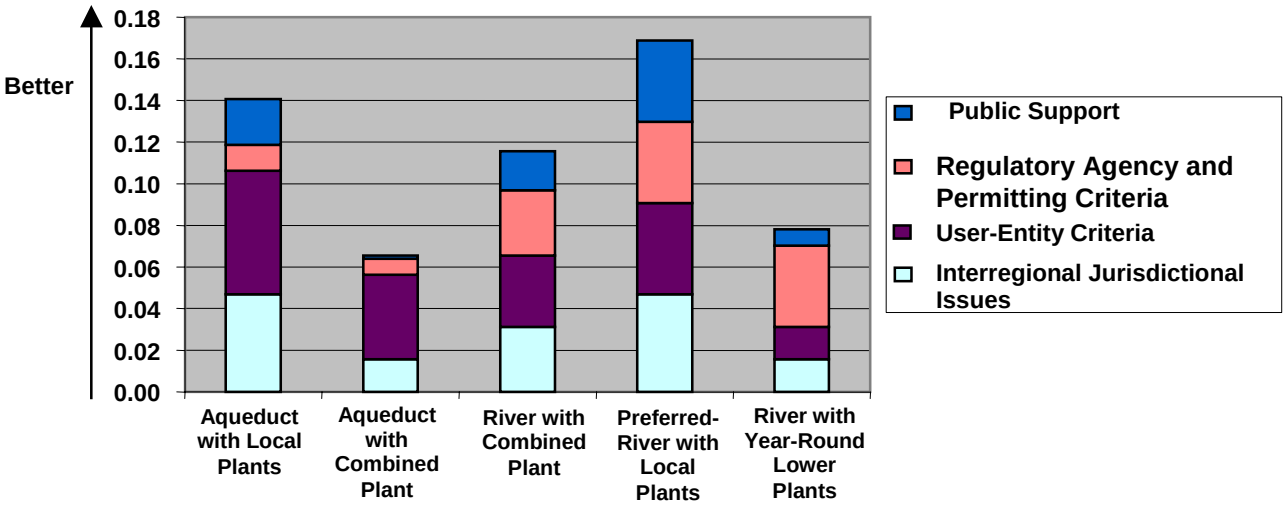

Figure 5-4. Comparison of Implementable Performance

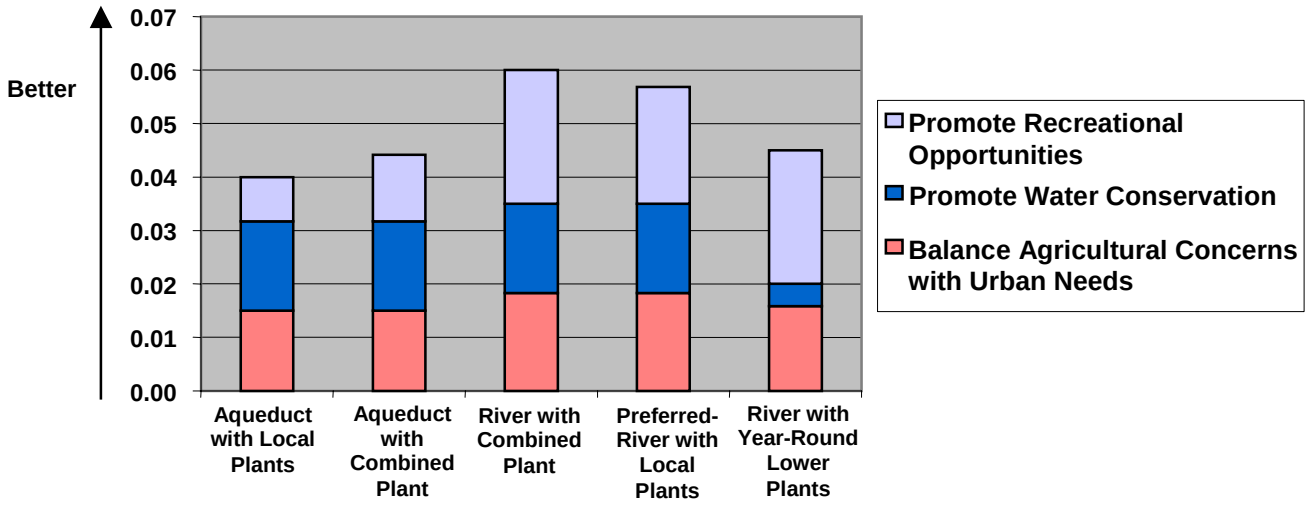

Figure 5-5. Comparison of Quality of Life Performance

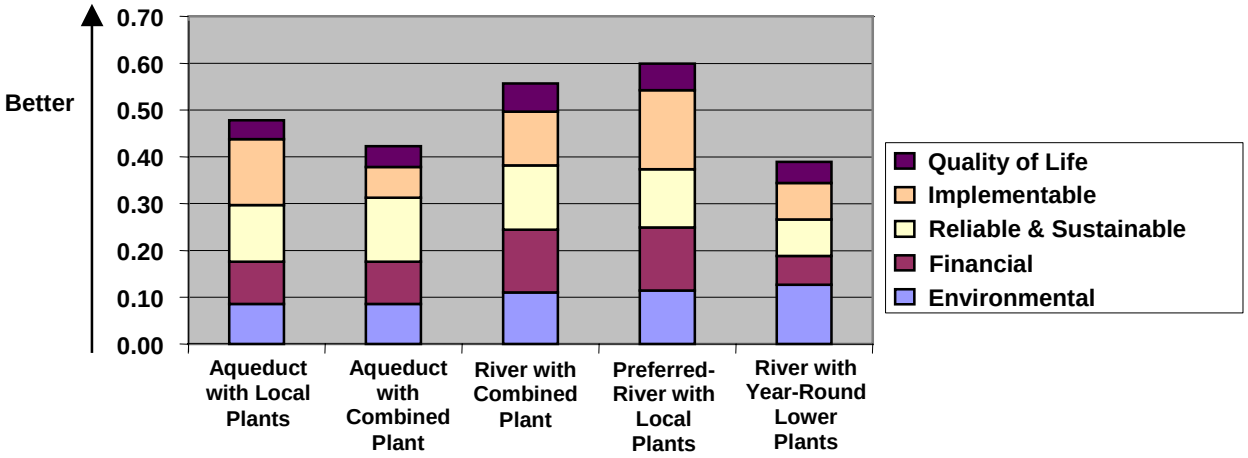

Figure 5-6. Comparison of Overall Performance

TABLE 5-1
Comparative Rank and Score of the Preferred Alternative and Other Action Alternatives by Performance Objective and Overall Performance

	Environmental Performance		Financial Performance		Reliable/ Sustainable Performance		Implementable Performance		Quality of Life Performance		Overall Performance	
	Rank	**Score**	**Rank**	**Score**	**Rank**	**Score**	**Rank**	**Score**	**Rank**	**Score**	**Rank**	**Score**
Preferred Alternative—River with Local Plants	2	12	1/2*	14	3	12	1	17	2	5	1	60
River with Year-Round Lower Plants Alternative	1	13	5	6	5	8	4	8	3	4	5	39
River with Combined Plant Alternative	3	11	1/2*	14	1/2*	14	3	11	1	6	2	56
Aqueduct with Local Plants Alternative	4/5*	9	3/4*	9	4	12	2	14	5	4	3	48
Aqueduct with Combined Plant Alternative	4/5*	9	3/4*	9	1/2*	14	5	6	4	4	4	42

*Indicates a tie in rank between two alternatives.

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6.0 Decision

It is the decision of the joint lead agencies to select the Preferred Alternative–River with Local Plants as presented in the FEIS, dated November 2000, and to approve proceeding with construction of the proposed El Paso–Las Cruces Regional Sustainable Water Project, in accordance with statutory and contractual obligations. In making this decision, the agencies have reviewed the Preferred Alternative, the four other action alternatives, and the No Action Alternative discussed in the FEIS; their predicted environmental, economic, and social impacts; their anticipated environmental, financial, reliable/sustainable, implementable, and quality of life performances; and the risks and safeguards inherent in them. The agencies have considered the comments received on the DEIS and FEIS and the responses to those comments; the technical documents and other available materials; and recommendations from the project steering committee. In addition, in the course of adopting the Preferred Alternative, the agencies have made specific environmental and mitigation commitments that, by agreement and statutory provision, are binding and must be carried out by the project sponsors, as defined in the DEIS and FEIS. These commitments are described in Section 8.0 and Appendices A and B of this document. The negative impacts of the selected Preferred Alternative are acceptable, given the benefits expected and the mitigation and enhancement that will be provided. This ROD and the approval by the appropriate agencies of the authorizing actions, permits, and licenses enumerated in Table 1.4-1 of the FEIS, as revised and presented in Appendix C of this ROD, fulfills the regulatory prerequisites necessary to initiate and/or carry out construction of the proposed project under the Preferred Alternative.

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7.0 Environmentally Preferable Alternative

The River with Year-Round Lower Plants Alternative is the environmentally preferable alternative. This conclusion is based on a comparison of predicted environmental performance among action alternatives, specifically using water quantity, water quality, aquatic and terrestrial habitats, and cultural resources as performance criteria. Figure 5-1 and Table 5-1, presented previously, indicate that overall environmental performance would be slightly greater for the River with Year-Round Lower Plants Alternative (score of 13) than for the Preferred Alternative (score of 12). This difference is primarily because of slightly greater water quality and water quantity benefits associated with increased stream flows extending farther downstream for the River with Year-Round Lower Plants Alternative. Effects on cultural resources between these two alternatives would be the same, while effects on habitats—specifically on wildlife habitat during the secondary irrigation season—would be slightly more adverse for the River with Year-Round Lower Plants Alternative. Findings depicted in Figure 5-1 for the four environmental performance measures reflect adverse as well as beneficial effects, and are consistent with results of impact analyses for these same four performance measures presented in this document in Section 4.0, *Summary of Environmental Impacts*.

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8.0 Environmental Commitments and Mitigation

8.1 Environmental Commitments

Environmental commitments that will be implemented consist of the fish and wildlife enhancements described in the EIS and in the following text. The utilities and other project sponsors that will build project features have agreed that these fish and wildlife enhancements will be part of the project. A Watershed Council (WC) has been established to oversee the implementation of enhancements that, when combined, will provide the greatest blend of benefits to project-area fish and wildlife and their habitat, while not exceeding the budget for environmental commitments (described in the following paragraphs). The WC will have flexibility in recommending the site-specific designs, locations, and frequencies for implementing enhancement actions.

Specific individual enhancements within each of eight enhancement categories will be implemented. In addition, some individual enhancements that are outside the eight enhancement categories also could be selected by the WC for implementation, if approved by project sponsors. The project sponsors must approve enhancement details and locations recommended by the WC to ensure such enhancements are consistent with long-range project goals and sustainability. Some members of the WC will be members of the New Mexico–Texas Water Commission and the Commission's Management Advisory Committee, thus assuring a balanced process to equally consider and implement enhancements.

The project sponsors have committed to a binding 2 percent of project construction costs for funding the construction, operation, and maintenance of selected and approved enhancement actions. If, for example, project construction costs are $350 million, then 2 percent of this total, or $7 million, would be committed to funding enhancement actions. As the various actions associated with the Preferred Alternative are implemented, the applicable funding and permitting agencies must enforce the 2 percent provision. In addition, the project sponsors have agreed to support efforts to obtain additional funds for enhancements beyond the 2 percent construction cost commitment. These funds would potentially come from government or private grants. Further, the committed enhancement monies could be used to leverage such grants. Environmental commitment funds would be administered by the WC. The schedule for constructing enhancement features, and the provision of funds by project sponsors for constructing those features, would be linked to the start of construction of other project features.

Further definition and commitment on implementing enhancement actions was developed during consultation between the USIBWC and the U.S. Fish and Wildlife Service (FWS) on the FWS *Draft Fish and Wildlife Coordination Act Report* (FWS Report) (dated September 2000). The USIBWC stated in a letter dated November 7, 2000, that the enhancements presented in the EIS accommodate nearly all of the 16 mitigation recommendations for the proposed project contained in the FWS Report. The USIBWC noted that FWS "Recommendation Nos. 5 through 16 will be implemented as part of the 2 percent of construction costs already

committed to as enhancement features." Regarding FWS Recommendation No. 14, the USIBWC stated that project sponsors had already agreed to cowbird trapping as an enhancement feature, but that they would not participate in the management of riparian habitat specifically for southwestern willow flycatchers, as requested by the FWS.

The USIBWC also commented on FWS Report Recommendation Nos. 1 and 3. (FWS recommendation Nos. 2 and 4 do not apply to the Preferred Alternative and, therefore, are not discussed here.) Recommendation No. 1 would widen the Rio Grande channel and levee, where needed, to create a variety of instream and shoreline habitats. Recommendation No. 3 would remove rip-rap, lower the tops of banks, and place boulders to widen the river top width and develop instream habitats. The USIBWC and sponsoring utilities agree to implement Recommendation Nos. 1 and 3 under the following conditions:

- The potential measures will focus on simple, low-tech solutions.
- The feasibility of Recommendation Nos. 1 and 3 will be studied as part of the ongoing Canalization Project EIS being conducted by the USIBWC.
- The FWS and WC will provide input during that feasibility process.
- The feasibility studies will address biological values, cost effectiveness, constructibility, effects on the Canalization Project purposes, regulatory permitting, and public and political acceptance.

If recommended measures are deemed feasible after that analysis, they will be implemented as project features are built. If they prove infeasible, alternative approaches that provide similar fish and wildlife values will be developed and studied and their feasibility assessed using the same criteria. Once feasible alternative approaches are identified, they will be implemented as project features are built.

The sponsoring utilities commit $2 million to study and implement acceptable enhancement measures for FWS recommendation Nos. 1 and 3. These funds will be available to leverage the acquisition for other grants and funds to maximize the total budgets dedicated to this effort. The utilities will share the $2 million cost proportionate to the production for their respective water treatment plants, which are planned as part of the Project. These funds would be committed and expended as treatment plants are constructed. This $2 million fund will be separate and in addition to the 2 percent of construction costs available for the other enhancement measures discussed previously.

Specific actions within each of the eight enhancement categories that will be implemented in the project area are described in the text that follows. As noted in previous text, details on design, placement, and frequency at which different enhancement features will be implemented will be developed by the WC and reviewed by project sponsors.

8.1.1 Floodway Within the Levees

8.1.1.1 Modify Drain and Spillway River Confluence

This action will be implemented at the Rio Grande's confluence with selected drains and spillways in the project area. It also will be implemented at canals above Mesilla where additional water could be diverted from the river and then returned to the river through

drains or spillways a short distance downstream, thereby creating additional fish and wildlife habitat. This sort of water diversion and return to the river for subsequent diversion downstream is not believed to affect water rights. From a habitat perspective, this enhancement will create areas similar to natural oxbow lakes that existed before channelization. This action would best be combined with the planting of riparian vegetation within the floodway (see Section 8.1.1.3, *Native Riparian Vegetation Planting*). Section 8.1.1.2, which follows, describes some of the approaches to this type of habitat development and enhancement.

8.1.1.2 Widen Active Channel with Embayments, Backwater Areas, and Sloughs

This action will involve widening the active river channel to provide some quiet-water areas for fish. Where appropriate, this action will be combined with others, such as planting native riparian vegetation (see Section 8.1.1.3) to achieve the greatest broad biological benefits. Tamarisk control will probably be needed. All of these actions will need to be consistent with flood control requirements. Figures 8-1, 8-2, and 8-3 are conceptual drawings of the three approaches for widening the river channel, which is described in the following text.

- **Embayments** will provide some quiet, shallow-water habitat for fish that is now lacking (see Figure 8-1). Embayments should contain some anchored stumps and logs to mimic historic conditions and their habitat values. They could be constructed almost anywhere with sufficient space within existing or expanded levees. Embayments would be most effective at discharge points of drains or irrigation spillways because of the flow-through water that would reduce sand accumulation. Embayments also may require some rock armoring, which could support additional habitat features.

- **Backwater ponds** will be developed at the confluence of drains and canals to provide critical quiet- and slow-water habitat of moderate depth that is now lacking (see Figure 8-2). The use of drain or irrigation water would prevent sand accumulation and thus maintain the desired pond depth. Flow-through also would provide access for fish and would not need to occur at all times. The bottom of ponds could be excavated to below the main river bed elevation to ensure adequate water volume, even during times of no flow through the ponds. Backwater ponds also would provide wildlife habitat.

- **Backwater sloughs** involve the same concept as backwater ponds, except that the source of sediment-free water will be the infiltration berm along the river (see Figure 8-3).

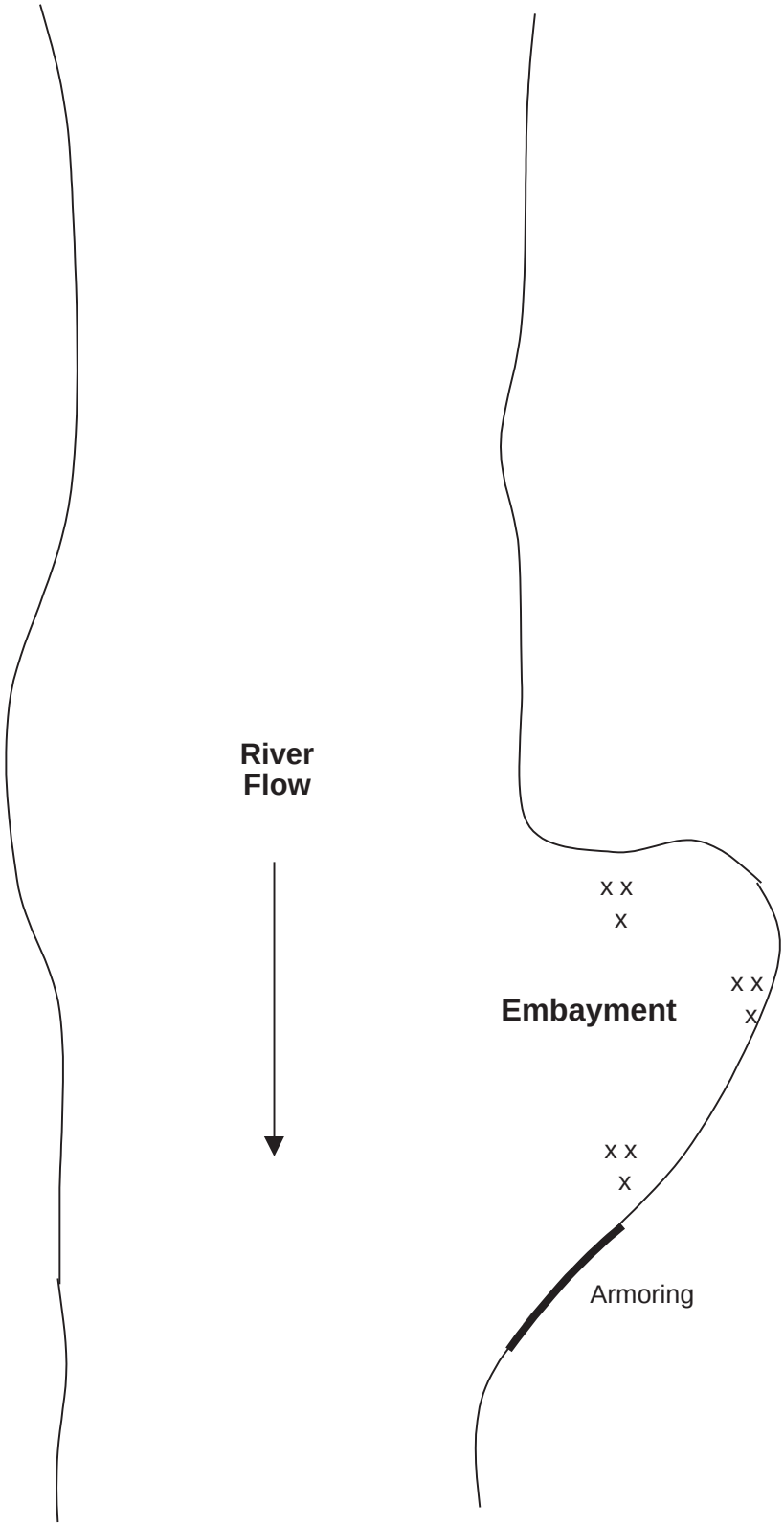

FIGURE 8-1
Embayment Along River

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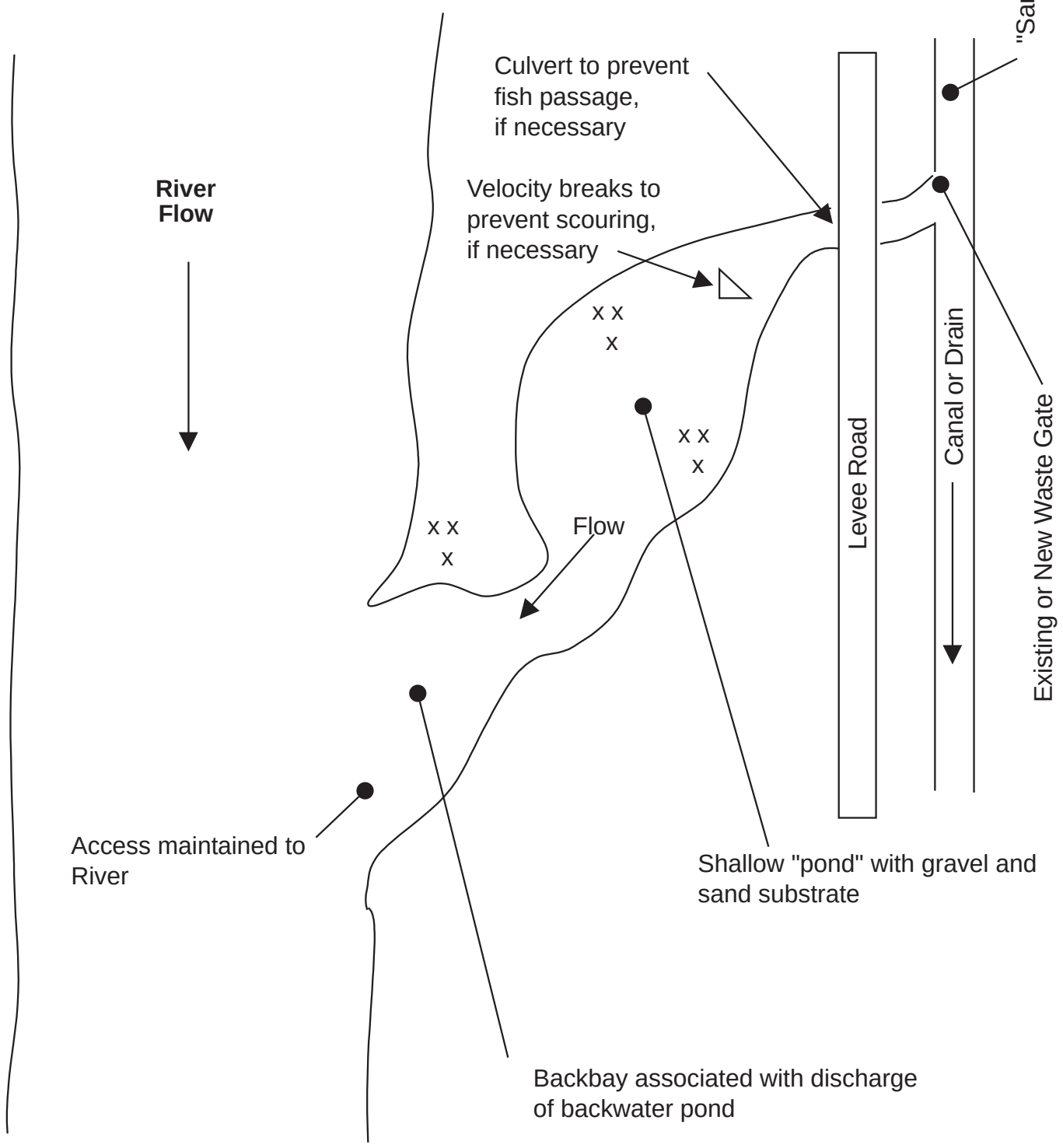

FIGURE 8-2
Backwater Pond with Backbay at River

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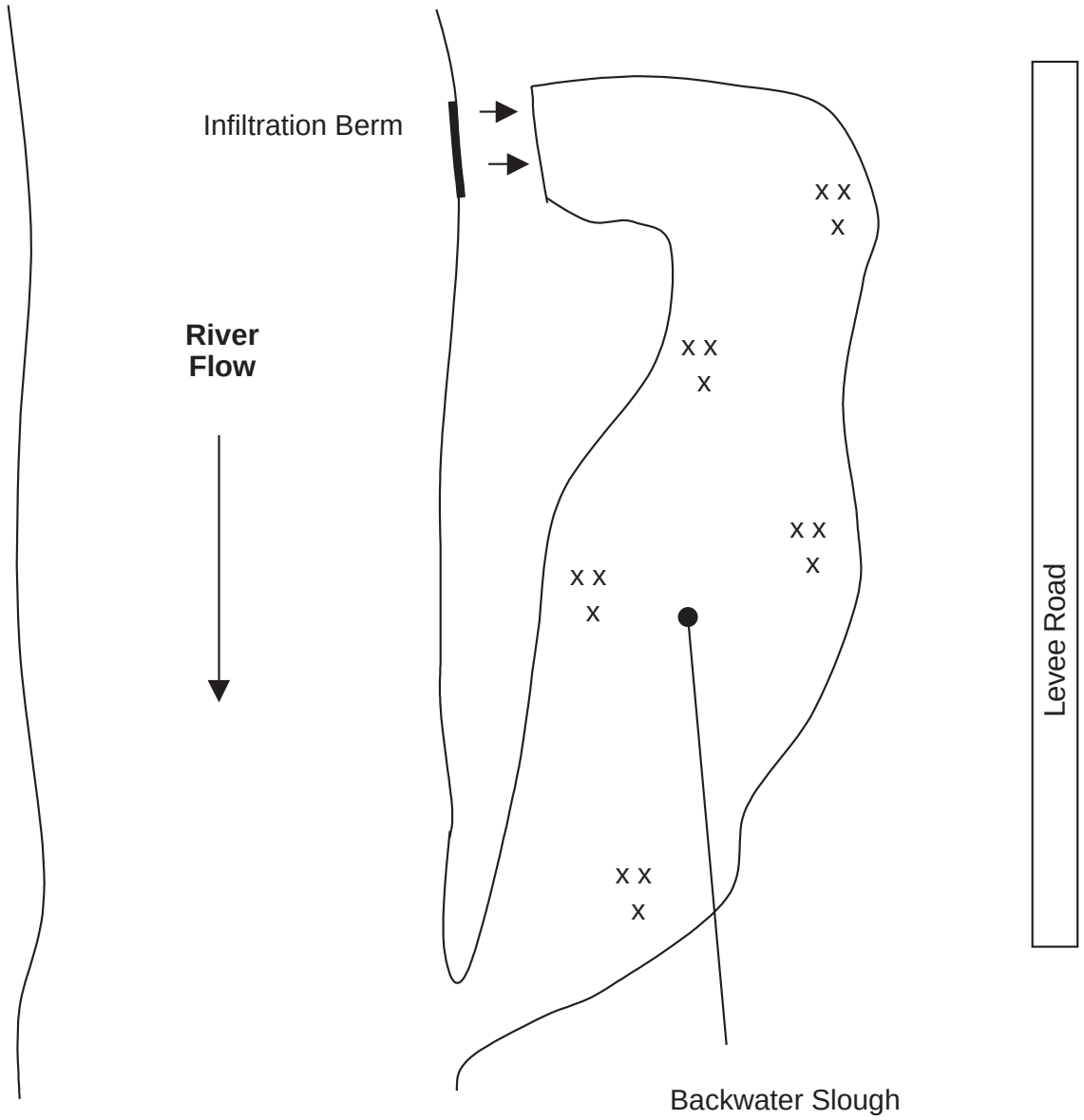

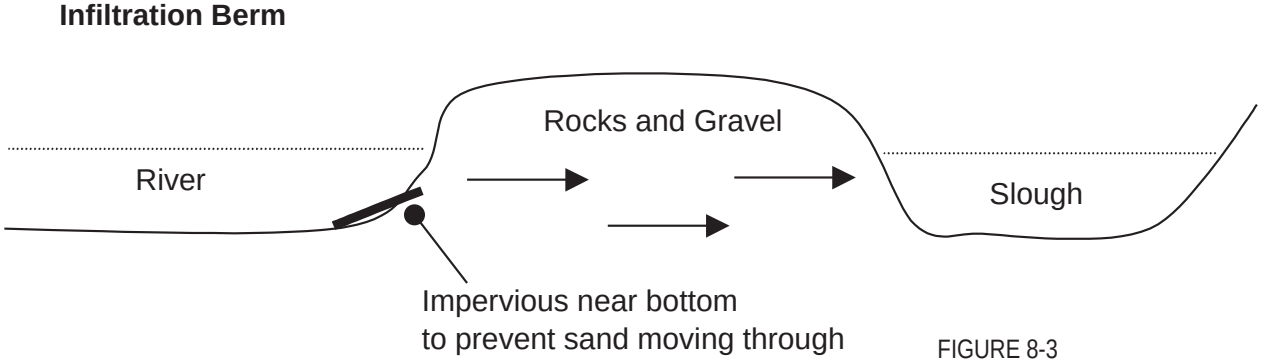

FIGURE 8-3
Backwater Slough Created with River Water

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8.1.1.3 Native Riparian Vegetation Planting

This action will increase the extent of willow and cottonwood riparian communities along the river within the floodways. This will benefit a wide range of wildlife species, including neotropical migrant birds. Planting riparian vegetation could be implemented as an independent action or in conjunction with several other enhancement actions, especially those discussed in Sections 8.1.1.1 and 8.1.1.2. The main drawback of this action will be a possible reduction in flood conveyance. This potential problem could be alleviated with other enhancement actions that will increase conveyance capacity, such as modifying the drain / spillway river confluence, widening the active channel with embayments / backwater areas / sloughs, and setting back the existing levees (see Section 8.1.1.6, *Establish No-Mow Zones [Green Zones]*).

8.1.1.4 Tamarisk Control

Tamarisk control will be followed by the planting of native riparian species, which will benefit many wildlife species. Tamarisk also has been shown to transpire substantially more water than native species, so water loss would be reduced where tamarisk is replaced by native species. Several studies have shown that the effect of tamarisk removal on stream flow could not be measured.

8.1.1.5 Control Cowbirds

Cowbirds are brood parasites, laying their eggs in the nests of other species. The cowbird chicks out-compete or kill the nestlings of the host species. This is a major problem for southwestern willow flycatchers and other neotropical migrants. Cowbird control can result in higher reproductive success for the host species.

8.1.1.6 Establish No-Mow Zones (Green Zones)

This action will involve establishing areas within the floodway that will not be mowed so that riparian vegetation can grow. This action will be combined with tamarisk control and probably planting of riparian species. The potential for flood conveyance restriction will be evaluated based on analyses contained in the pending flood control EIS being prepared by the USIBWC.

8.1.2 Retired Agricultural Lands

8.1.2.1 Plant with Desired Species and Control Noxious Weeds

Lands retired from farming will support a wide variety of noxious weeds, which pose a nuisance to surrounding farmers. These lands will be planted with desired species that can become self-sustaining after a few years of irrigation. This action will reduce the potential for noxious weed problems and provide some wildlife habitat. Irrigation water will be required for a few years, but the amount required will be less than the amount needed to grow crops.

8.1.3 Rio Bosque Wetlands Park

8.1.3.1 Assure Year-Round Water Supply

The most critical need for the Rio Bosque Wetlands Park is a year-round water supply to maintain site vegetation. Currently, the park receives only winter discharges from the Bustamante Wastewater Treatment Plant (WWTP). Any wetland benefits are lost during the dry summer months. This enhancement action will provide year-round delivery of water to the park in sufficient quantities to adequately support the planned wetlands and associated riparian habitat. Possible approaches include either installing a pump station for delivering water that has passed through the park into the Riverside Canal, or integrating the park's wetlands into the wastewater treatment process at the Bustamante WWTP. In addition, recirculating water within the park using a pump and a pipe distribution system would be done.

8.1.4 Diversion Sites

8.1.4.1 Treatment Wetlands

Treatment wetlands will be developed at diversion sites to pre-treat water before it is delivered to the WTP sites. This could potentially result in substantial cost savings for treatment, and also provide valuable habitat for species that use emergent wetlands. Interpretive areas with educational/interpretive displays will be developed at these wetlands.

8.1.4.2 Instream Habitat Enhancement at New Diversions

Some new diversions with fish passage facilities will be constructed to replace some of the old diversions that block fish movements. This would provide connectivity and prevent genetic isolation of fish populations. Standard fish ladders will not work for most of the target species. Therefore, the new diversions will include alternative structures, such as rock or boulder clusters (see Figure 8-4), that allow fish passage. In addition, these new diversions will have fish-friendly screens (see Figure 8-4) that are designed to minimize the potential for fish capture, entrainment, and impingement.

8.1.5 Existing On-Stream Diversions

8.1.5.1 New Mexico Department of Game and Fish (NMDGF): Mesilla Property Enhancement

NMDGF owns a parcel near Mesilla that they would like to improve for wildlife. Details of their plans have not yet been developed. Funding will be provided for some portion of the improvements.

8.1.6 Modify Levee/Expand Floodway

8.1.6.1 Levee Setback

This will involve moving some levees farther from the river channel to establish a wider floodplain. This action will probably be implemented in conjunction with several other actions that would improve and expand habitat. The resultant effect will be to offset potential reductions in flood conveyance caused by actions such as planting riparian vegetation. Wider levees will permit a more naturally functioning river and floodplain, with

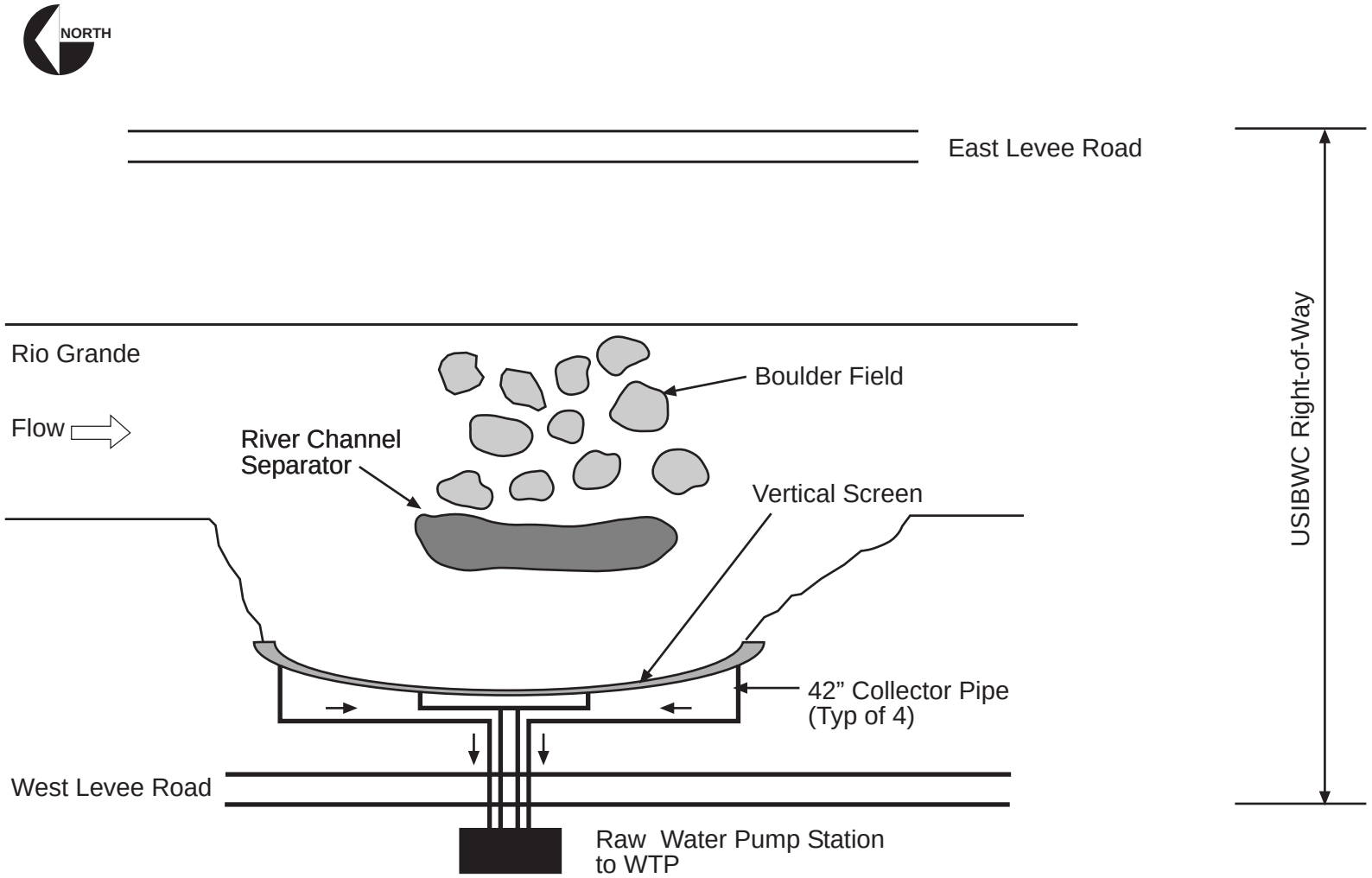

FIGURE 8-4
Example of a Conceptual Diversion Structure Design

all of the associated habitat benefits. Lands that currently support other uses will be required in order to widen the floodplain.

8.1.7 Drains/Canals

8.1.7.1 Modify Drain and Spillway River Confluence

The concept for this enhancement action was discussed in Section 8.1.1.1.

8.1.7.2 Modify Drain Maintenance to Improve Habitat on One Side of Canals or Drains

Vegetation is currently cleared from the banks of drains on a regular basis. This enhancement will involve continued vegetation clearing, but along only one side of the drains. Vegetation will be allowed to grow along the side that is not maintained. Tamarisk control will be required.

8.1.8 Watershed Management Measures

8.1.8.1 Develop a Watershed Database and Planning Tool

The objective of this enhancement is to develop a database of information related to the river and its environs. All pertinent information will be assembled in one location, and will form the basis for a watershed level review of past practices that have affected the river ecosystem. This perspective on the past will serve as the basis for developing a watershed planning tool to guide future river management and local development. The basic premise for this action is that a reasonable base of understanding must be in place to establish the parameters for acceptable projects within the eco-region. This planning tool also will be used to guide the specific placement of enhancement actions discussed previously in order to optimize benefits for fish and wildlife.

8.1.8.2 Create a Watershed Council

Creation of a Watershed Council (WC) to oversee the implementation of enhancement actions described previously was discussed in Section 8.1, *Environmental Commitments*. The following bulleted list contains additional potential enhancement actions that will be considered for implementation by the WC:

- Land-owner inducements for conservation easements
- Creation of a water bank
- Providing a funding mechanism for long-term enhancements
- Developing corridor connectivity
- Improving public access to the river. A successful program of riparian enhancement will require public involvement and volunteerism. Only a very small group of individuals will commit to such a program if it has no discernable interface with the public. Therefore, public access to the river, as a recreational and environmental asset, is needed. These types of projects should include integration of park systems with natural habitat enhancement and interpretive centers.

8.1.8.3 Develop and Maintain a Coordinated System for Measuring and Monitoring Enhancement and Mitigation

Through a coordinated effort, a long-term measurement and monitoring program will be established to determine the effectiveness and/or impact of the enhancement actions (described above) and mitigation measures (described below). Data from the baseline analysis will be linked to the information gathered from measuring the effects of enhancement and mitigation activities. This information will be extrapolated to actively implement adaptive management as a strategy in regional resource management.

8.2 Mitigation

Mitigation measures will be implemented for significant adverse impacts that are expected to occur. Based on impact analyses and assumptions presented in the EIS, three specific mitigation measures will be implemented under the Preferred Alternative. They consist of the following:

8.2.1 Monitor Agricultural Drains

Field studies will be conducted to confirm the hydrologic model projection that drains will not dry up. If drains dry up because of project-related actions and result in impacts on fish and wildlife, additional mitigation will probably be necessary.

8.2.2 Transplant Sensitive Plants

Approximately 60 clumps of sand prickly pear (a federal species of concern) will be transplanted from the El Paso Aqueduct ROW to a nearby location to avoid impacts from pipeline construction. Biologists will determine the actual numbers of sand prickly pear that will be affected after the pipeline centerline has been flagged. A biologist will then develop a transplant plan and will be present to ensure the plan is being followed or, if necessary, modified based on biological principles. A biologist will monitor the transplant site weekly during the first month following the transplant, quarterly during the remainder of the first year, and twice during the second year.

In addition to the above two mitigation measures, standard construction and operating procedures (SOPs) and best management practices (BMPs) designed to avoid or reduce adverse impacts will be implemented during the construction and operation of all project features. SOPs and BMPs are presented in Appendices A and B, respectively, of this ROD.

8.2.3 Retraining Program

A retraining program will be implemented that focuses on training displaced farm workers for employment outside the agricultural sector. This retraining program is essential to mitigate for the project-related loss of farm jobs. This program will be developed in more detail as the project is implemented and the needs of the program are more clearly defined. Criteria for determining farmworkers' eligibility to participate in the program, and the type and level of training that will be provided, will be developed at a later date.

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9.0 Implementation

Construction of the El Paso–Las Cruces Regional Sustainable Water Project under the selected alternative (Preferred Alternative–River with Local Plants) by the project sponsors will be pursuant to, and in accordance with, this ROD; the FEIS; the authorizing actions, permits, and licenses enumerated in the revised Table 1.4-1 of the FEIS (see Appendix C of this ROD); those recommendations contained in the FWS Report that are included in this ROD in Section 8.0, *Environmental Commitments and Mitigation*; and the Biological Opinion issued pursuant to the Endangered Species Act.

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10.0 Administrative Review

This ROD is the final step in the administrative process. There are no further opportunities for administrative review.

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11.0 Administrative Record

Arrangements for review of the administrative record for the FEIS can be made by contacting the following person:

Mr. Douglas Echlin
Environmental Protection Specialist
Environmental Management Division
USIBWC
4171 North Mesa Street, C-310
El Paso, Texas 79902

Incorporated by reference in the administrative record are the FEIS, associated comments and responses, the DEIS, and the Technical Reports.

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12.0 Signature

By signing this ROD, we select the Preferred Alternative–River with Local Plants as presented and described in the FEIS, and approve the project sponsors proceeding with construction of the El Paso–Las Cruces Regional Sustainable Water Project, in accordance with statutory and contractual obligations.

John M. Bernal
Commissioner
United States Section
International Boundary and Water Commission
United States and Mexico

January 16, 2001
Date

Ed Archuleta
General Manager
El Paso Water Utilities/Public Service Board

January 16, 2001
Date

Appendix A

Standard Construction and Operating Procedures

APPENDIX A

Standard Construction and Operating Procedures

Landscape Preservation and Impact Avoidance

1. To the maximum extent practicable, all trees, native shrubs, and other vegetation will be preserved and protected from construction operations and equipment except where clearing operations are required for permanent structures, approved construction roads, or excavation operations.

2. To the maximum extent practicable, all maintenance yards, field offices, and staging areas will be arranged to preserve trees, shrubs, and other native vegetation.

3. Clearing will be restricted to that area needed for construction. In critical habitat areas—including, but not limited to, wetlands and riparian areas—clearing may be restricted to only a few feet beyond areas required for construction.

4. All areas around structures will be back-filled, compacted, and returned as close as possible to the original condition and grade.

5. Stream corridors, wetlands, riparian areas, steep slopes, or other critical environmental areas will not be used for equipment or materials storage or stockpiling; construction staging or maintenance; field offices; hazardous material or fuel storage, handling, or transfer; or temporary access roads, in order to reduce environmental damage.

6. Excavated or graded materials will not be stockpiled or deposited on or within 100 feet of any steep slopes (defined by industry standards), wetlands, riparian areas, or stream banks (including seasonally active ephemeral streams without woody or herbaceous vegetation growing in the channel bottom).

7. To the maximum extent possible, staging areas, access roads, and other site disturbances will be located in agricultural or disturbed areas, not in native vegetation.

8. Section 404 and stream alteration permits require coordination with the U.S. Army Corps of Engineers (COE); the New Mexico Environment Department (NMED), Surface Water Quality Bureau; and the Texas Natural Resources Conservation Commission (TNRCC).

9. The contractor will notify the community floodplain administrator to ensure that all construction is in compliance with the community's Flood Hazard Prevention Ordinance / Court Order.

10. Unless specified otherwise, vegetation clearing operations at all construction sites will be done between September 1 and April 1 to avoid most bird nesting losses, and will not occur until the year of construction (see *Project Scheduling* in Appendix 1-B, *Best Management Practices*.)

11. All trees greater than 10 inches in diameter will be preserved to the extent practicable during all construction activities. All wetland and riparian vegetation within a 100-yard radius of the large trees will not be disturbed, if possible.

12. The width of all new permanent access roads will be kept to the absolute minimum needed, avoiding wetland and riparian areas where possible. Turnouts and staging areas will not be placed in wetlands. Access roads will be situated to avoid all trees where possible, but especially trees greater than 10 inches in diameter, and to limit disturbance to vegetation.

13. When and where applicable landscaping standards including clearing of native vegetation will be followed as prescribed by local land use agencies and other applicable agencies such as the U.S. Section, International Boundary and Water Commission (USIBWC), when work is within their jurisdictions.

Erosion and Sediment Control

1. The planting of native grasses, forbs, trees, or shrubs beneficial to wildlife, or the placement of riprap, sand bags, sod, erosion mats, bale dikes, mulch, or excelsior blankets will be used to prevent and minimize erosion and siltation during construction and during the period needed to reestablish permanent vegetative cover on disturbed sites.

2. Final erosion control and site restoration measures will be initiated as soon as a particular area is no longer needed for construction, stockpiling, or access. Clearing schedules will be arranged to minimize exposure of soils.

3. Cuts and fills for relocated and new roads will be sloped to prevent landslides and to facilitate revegetation.

4. Slope instability in reservoir areas will be identified through surveys conducted during final design. The identified areas will be stabilized or protected to prevent mass soil movement into reservoir pools to the extent practicable.

5. Borrow areas will be contoured to prevent water from collecting, unless the borrow excavation is below ground water level. Prior to abandonment, borrow area sides will be shaped to carry the natural contour of adjacent undisturbed terrain into the borrow area.

6. Soil or rock stockpiles, excavated materials, or excess soil materials will not be placed near sensitive habitats, including water channels, wetlands, and riparian areas, where they may erode into these habitats or be washed away by high water or storm runoff.

Waste piles will be revegetated using suitable native species after they are shaped to provide a natural appearance.

7. New access roads will avoid wetlands or riparian communities to the extent practicable. In sensitive habitat, construction will be done from the side of the canal opposite the sensitive area to the extent practicable. If this is not possible based on the judgment of the Environmental Compliance Officer (ECO), a road no more than 10 feet wide will be constructed. An ECO will be identified and authorized to ensure compliance with all environmentally related SOPs and BMPs. The decision as to who (i.e., sponsoring utility, program manager, or construction contractor) will employ the ECO will be made during project design.

Pipeline Construction Through Wetlands and Riparian Communities

1. Construction rights-of-way (ROWs) through wetlands and riparian communities will be limited to the minimum practicable width.

2. Cut-off collars, or other appropriate methods determined during final design, will be used to prevent water from being drained away from wetlands and riparian areas in pipeline bedding and/or backfill material.

3. The upper 12 to 18 inches of soil will be removed from the trench area and stockpiled for later use.

4. Surface elevations will be returned to pre-project conditions, taking into account expected settling. Excess soil material will not be disposed of in wetlands, riparian areas, or other native plant communities.

5. Any pipeline construction across USIBWC ROW needs to be coordinated with the USIBWC.

Biological Resource Site Clearances

1. Site clearances described below will be conducted after project authorization, but prior to the start of construction. Qualified biologists will conduct the clearances and report directly to the ECO.

2. Clearance surveys of canals to be rehabilitated and new pipelines will be used to identify sensitive areas to avoid by adjusting pipeline routes or service roads, staging areas, or construction timing or areas for which site-specific mitigation measures will be developed.

3. If native plant communities must be used for access roads or staging areas, site clearances at the appropriate time of year for the species involved will be conducted by

qualified biologists working with the ECO to ensure sensitive species (listed in this report in Chapter 9, *Threatened and Endangered Species*) are not impacted.

4. Sensitive areas along canal banks that are not suitable for temporary storage or permanent disposal of excess soil materials will be clearly marked by the biologist prior to any construction activity.

5. When the plan for the aquifer storage and recovery (ASR) project feature is finalized, wildlife and listed species surveys will be conducted. A report will be prepared that will analyze the impact of the proposed action and if necessary develop mitigation measures to reduce the impact of the action. The report will be submitted to the U.S. Fish and Wildlife Service (FWS) for review and if necessary, consultation.

Site Restoration and Revegetation

1. Construction areas, including storage yards, will be free of waste material and trash accumulations at all times.

2. All unused materials and trash will be removed from construction and storage sites during the final phase of work. All removed material will be placed in approved sanitary landfills or storage sites and work areas will be left to conform to the natural landscape.

3. Upon completion of construction, grade any land disturbed outside the limits of dams, reservoir pools, permanent roads, and other permanent facilities to provide proper drainage and blend with the natural contour of the land. Following grading, revegetate using plants native to the area, suitable for the site conditions, and beneficial to wildlife.

4. Following abandonment, remove all yards, offices, and construction buildings, including concrete footings and slabs, from the site.

5. Obliterate all construction roads above the high-water mark, restore to the original contour, and make them impassable to vehicular traffic when no longer needed by contractors. Remove culverts as appropriate, contour and vegetate road escarpments, and scarify all road surfaces to establish conditions appropriate for reseeding, drainage, and erosion prevention. Temporarily or permanently block all access roads to permit establishment of planted vegetation.

6. Where applicable, consult with the following agencies to determine the recommended plant species composition, seeding rates, and planting dates:

    - U.S. Fish and Wildlife Service (FWS)
    - U.S. Natural Resources Conservation Service (NRCS)
    - U.S. Bureau of Land Management (BLM)

7. Grasses, forbs, shrubs, and trees appropriate for site conditions and surrounding vegetation will be included on the plant list. Species chosen for a site will be matched for

site drainage, climate, shading, resistance to erosion, soil type, slope, aspect, and vegetation management goals. Wetland and riparian species will be used in revegetating disturbed wetlands. Upland revegetation shall match the plant list to the site's soil type, topographic position, elevation, and surrounding natural communities.

Water Pollution Prevention

1. All federal and state laws related to control and abatement of water pollution will be complied with. All waste material and sewage from construction activities or project-related features will be disposed of according to federal and state pollution control regulations.

2. A water quality monitoring program will be developed by the ECO in coordination with the NMED, and the TNRCC. The ECO will ensure that adequate water quality sampling is conducted and disseminate results to the appropriate agencies.

3. The contractor may be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit as established under Public Law 92–500 and amended by the Clean Water Act (Public Law 95–217).

4. Cofferdams used for instream construction shall be constructed of clean, washed, crushed stone or other suitable materials free of contaminants that will not contribute to stream or other water body turbidity or siltation. Easily erodible soils are specifically prohibited from use in cofferdams.

5. Instream diversion and stream crossing installation shall be conducted during the low-flow season. Cofferdam placement, stream diversion, or other activity with a high potential for causing sediment movement into streams will not be conducted during high runoff periods, typically July through September.

6. Machinery for instream construction work will operate from the stream bank, not the stream channel, whenever practicable with minimal streambed disturbance. All disturbed stream beds will be returned to their original condition or better as soon as possible. The highest standards for aesthetic value, water quality, and fish habitat will be adhered to during restoration of the streambed. Where appropriate, native herbaceous and woody species capable of rapid bank stabilization will be used to revegetate all disturbed stream banks.

7. Construction specifications shall require construction methods that will prevent entrance or accidental spillage of pollutants into flowing or dry watercourses and underground water sources. Potential pollutants and wastes include refuse, garbage, cement, concrete, sewage effluent, industrial waste, oil and other petroleum products, aggregate processing tailings, mineral salts, drilling mud, and thermal pollution.

8. Eroded materials shall be prevented from entering streams or watercourses during dewatering activities associated with structure foundations or earthwork operations adjacent to, or encroaching on, streams or watercourses. Methods shall be approved by

the ECO and may include intercepting ditches, bypass channels, barriers, settling ponds, or other methods as approved.

9. Any construction wastewater discharged into surface waters will be essentially free of settling material. Water pumped from behind cofferdams and wastewater from aggregate processing, concrete batching, or other construction operation shall not enter streams or watercourses without water quality treatment. Turbidity control methods may include settling ponds; gravel-filter entrapment dikes; approved flocculating processes not harmful to fish or other aquatic life; recirculation systems for washing aggregates; or other approved methods.

10. All riprap shall be free of contaminants and not contribute significantly to the turbidity of the reservoir.

11. All discharges to navigable waterways or other special aquatic sites shall require Water Quality Certification (Section 401) and NPDES (Section 402) Clean Water Act Permits from NMED and/or TNRCC.

Noise and Air Pollution Prevention

1. Contractors will be required to comply with all applicable federal, state, and local laws and regulations concerning prevention and control of noise and air pollution. Contractors are expected to use reasonably available methods and devices to control, prevent, and reduce atmospheric emissions or discharges of atmospheric contaminants and noise.

2. Contractors will obtain a Texas Air Quality Permit from TNRCC before starting construction or operating equipment that will result in regulated atmospheric emissions. The approvals require best available control technology for regulated emissions vented through stacks and vents and sources of fugitive dust emissions.

3. Contractors will be required to reduce dust from construction operations and prevent it from damaging dwellings or causing a nuisance to people. Methods such as wetting exposed soil or roads where dust is generated by passing vehicles will be employed.

4. Excessive emissions of dust into the atmosphere will not be permitted during the manufacture, handling, and storage of concrete aggregates or during the storage and handling of cement and pozzolans.

5. Open burning is prohibited without permit throughout the project area in New Mexico and Texas. The contractor will be required to obtain the necessary state burning permits from NMED and TNRCC, and to comply fully with their terms and conditions.

Appendix B

Best Management Practices

APPENDIX B

Best Management Practices

Project Scheduling

Description

Project scheduling involves setting a specific time period to conduct construction that would reduce impacts on breeding success for one or more types of wildlife.

Suitable Applications

One of the provisions of The Migratory Bird Treaty Act states that migratory birds can not be "taken" (killed, captured, etc). In the southwest the breeding season for neotropical birds generally ranges from April 1 to August 31. Therefore, construction (initial clearing of ground) at project features where neotropical birds breed or are suspected to breed would be limited to the period between September 1 and March 31.

Approach

1. Identify project features where neotropical birds are known or expected to nest based on the surveys conducted for the EIS.
2. Set construction time limits for each project feature and incorporate into contract.

Site Requirements/Schedule for this Project

Sites where neotropical breeding birds were found or where suitable nesting habitat exists are listed below. Construction clearing would be conducted between September 1 and March 31 at the following project features:

- Las Cruces Leasburg (Aqueduct with Local Plants Alternative; Aqueduct with Combined Plant Alternative)
- Las Cruces I-10 (Preferred Alternative–River with Local Plants; River with Combined Plant Alternative; and River with Year-Round Lower Plants Alternative)
- Upper Valley WTP (all alternatives)
- Westside Regulating Reservoir (Aqueduct with Local Plants Alternative; Aqueduct with Combined Plant Alternative)
- Bosque Park (all alternatives)
- El Paso Aqueduct (all alternatives)
- New Mexico–Texas Aqueduct (Aqueduct with Local Plants Alternative; Aqueduct with Combined Plant Alternative)

- Transmission Lines (all alternatives)

Limitations

There are no significant limitations to the use of this BMP.

Sequencing Construction

Description

Sequencing the construction project to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking.

Suitable Applications

Proper sequencing of construction activities to reduce erosion potential should be incorporated into the schedule of every construction project. Use of other, more costly yet less effective, erosion and sedimentation controls, may often be reduced through proper construction sequencing.

Approach

1. Incorporate existing, natural areas: Inventory and evaluate the existing site terrain and vegetation. Disturbance of highly erosive natural areas such as steep, unstable slope areas and watercourses, should be minimized; while protecting other areas may enhance site aesthetics.

2. Avoid rainy periods: Schedule major grading operations during dry months. Allow enough time before rainfall begins to stabilize the soil with vegetation or physical means or to install temporary sediment trapping devices.

3. Practice erosion and sediment control year round: Erosion may be caused during dry seasons by unexpected rainfall, wind, and vehicle tracking. Therefore, keep the site stabilized year-round, and maintain wet season sediment trapping devices.

4. Minimize soil exposed at one time: Schedule projects to disturb only small portions of the site at any one time. Complete grading as soon as possible. Immediately stabilize the disturbed portion before grading the next portion. Practice staged seeding by revegetating cut and fill slopes as work progresses.

5. Close and stabilize open trenches as soon as possible. Sequence trenching projects so that most open portions of the trench are closed before new trenching begins.

Site Requirements/Schedule for this Project

A site plan should be completed and reviewed prior to implementation. This BMP would have the same schedule as the project scheduling BMP because the majority of the region's rainfall occurs between April 1 and August 31. These approaches apply to some or all of the project features.

Limitations

There are no significant limitations to the use of this BMP.

Brush or Rock Filter

Description

A rock filter berm is made of rock 3/4 to 3 inches in diameter and placed along a level contour where sheet flow may be detained and ponded, promoting sedimentation. A brush barrier is comprised of brush (obtained at or near the site) wrapped in filter cloth and anchored to the toe of the slope. If properly anchored, these filters may be used for sediment trapping and velocity reduction.

Suitable Applications

Check dams across mildly sloped construction roads, below the toe of slopes, along streams and channels, around temporary spoil areas, below other small cleared areas, and at sediment traps at culvert/pipe outlets

Site Requirements/Schedule for this Project

This BMP will be used at all project features where there is sufficient rock or brush at the site (only with the El Paso Aqueduct project feature). Maintenance requirements include:

1. Inspect monthly and after each rainfall.
2. Reshape and replace lost/dislodged rock if berm is damaged.
3. Remove sediments when depth reaches 1/3 of berm height, or 1 foot.

Limitations

The primary limitation is the lack of rock or brush at the majority of the project features. Other limitations include:

- Rock berms that may be difficult to remove.
- Removal problems that limit their usefulness in landscaped areas.
- Inappropriateness for drainage areas greater than 5 acres.
- Runoff that ponds upstream of the filter, possibly causing flooding if sufficient space does not exist.

Straw Bale Barriers

Straw bales need to be certified free of noxious weed seeds and propagules.

Description

A straw bale barrier consists of straw bales placed end to end along a level contour in a shallow trench and staked to hold them in place. The barrier detains runoff, creating a pond behind the barrier where sedimentation occurs.

Suitable Applications

Suitable applications include along the perimeter of the site; along streams and channels; across swales with small catchments; around temporary spoil areas; and below other small, cleared areas.

Site Requirements/Schedule for this Project

This BMP will be used at project features where site drainage / runoff may occur. Maintenance requirements include:

1. Inspect weekly and after each rainfall.
2. Replace bales that have decomposed or whose bindings have broken.
3. Remove sediment behind the barrier when it reaches a depth of 6 inches, and dispose in an approved landfill.

Limitations

Suitable only for sheet flow on slopes of 2 percent or flatter.

- Not recommended for concentrated flow, inlet protection, channel flow, and live streams.

- Straw bale barriers have not been as effective as expected because of improper use. These barriers have been placed in streams and drainageways where runoff volumes and velocities have caused the barriers to wash out. In addition, failure to stake and entrench the straw bale has allowed undercutting and end flow.

Additional Information

A straw bale barrier consists of a series of secured, anchored bales placed to intercept sediment-laden runoff from small drainage areas of disturbed soil. The barrier ponds run off and allow sediment to settle. Straw bale dikes should not be used for extended periods of time because they tend to rot and fall apart. Proper installation, per this reference, is required for these to be effective.

The straw bale barrier is used where there are no concentrations of water in a channel or drainageway, and where erosion would occur from sheet flow. These barriers are typically constructed below disturbed areas subject to sheet flow of runoff.

Slope Roughening/Terracing

Description

Slope roughening / terracing creates microclimates for establishing vegetation, reduces runoff velocity, increases infiltration, and provides small depressions for trapping sediment.

Suitable Applications

Suitable applications include any cleared area prior to seeding and planting. The application is required for cleared, erodible slopes steeper than 3:1 and higher than 5 feet prior to seeding and planting.

Site Requirements/Schedule for this Project

This BMP will be used at project features where there are erodible slopes (primarily in the El Paso Aqueduct corridor). Maintenance requirements include:

1. Inspect roughened slopes weekly and after each rainfall for excessive erosion.
2. Revegetate as quickly as possible.

Limitations

Roughening is of limited effectiveness alone, but is used to speed revegetation.

Installation/Application

Graded areas with smooth, hard surfaces give a false impression of "finished grading." It is difficult to establish vegetation on such surfaces because of reduced water infiltration and the potential for erosion. Rough slope surfaces with uneven soil and rocks left in place may appear unattractive or unfinished at first, but they encourage water infiltration, speed the establishment of vegetation, and decrease runoff velocity. Rough, loose soil surfaces give lime, fertilizer, and seed some natural cover. Niches in the surface provide microclimates that generally provide a cooler and more favorable moisture level than hard flat surfaces; this aids seed germination.

Check Dams

Description

Check dams are small temporary dams constructed across a swale or draining ditch. Check dams reduce the velocity of concentrated stormwater flows, thereby reducing erosion of the swale or ditch, and promoting sedimentation behind the dam.

Suitable Applications

Check dams are used to prevent erosion by reducing the velocity of channel flow in small intermittent channels and temporary swales. They may also promote sedimentation behind the dam, but should not be considered to be a primary sediment trapping device because subsequent storms will scour and re-suspend much of the trapped sediment.

Site Requirements/Schedule for this Project

This BMP will be used at project features where there are erodible slopes (primarily the El Paso Aqueduct corridor).

Installation/Application

Major floods of 2-year storm or larger should safely flow over the check dam without an increase in upstream flooding or destruction of the check dam. They are primarily used in small, steep channels where velocities exceed 2 feet per second (fps).

Construction Road Stabilization

Description

Access roads, parking areas, and other onsite vehicle transportation routes should be stabilized immediately after grading and frequently maintained to prevent erosion and control dust.

Site Requirements/Schedule for this Project

1. Periodically apply additional aggregate on gravel roads.
2. Water active dirt road constructions three or more times per day during the dry season.
3. Inspect weekly, and after each rain.

Repair any eroded areas immediately.

Appendix C

Authorizing Actions, Permits, and Licenses

TABLE 1.4-1 (REVISED FROM THE FEIS)
Authorizing Actions, Permits, and Licenses

Agency or Organization	Actions, Permits, and Licenses Required	Description
Federal Agencies		
U.S. Section, International Boundary and Water Commission, United States and Mexico (USIBWC)	National Environmental Policy Act (NEPA) compliance	USIBWC is the lead agency and is jointly responsible for ensuring compliance with NEPA and other environmental statutes, overall coordination of the environmental review, approving the alternative selected for construction, and signing the Record of Decision (ROD).
	Upholding provisions of the 1906 Convention and 1907 Treaty between the United States and Mexico	USIBWC is the designated federal agency responsible for meeting the United States' obligation under the convention to annually deliver 60,000 acre-feet of water to Mexico. USIBWC must ensure that those deliveries would continue, unaffected by the project.
	Licenses for Rio Grande crossings and other USIBWC-related issues	USIBWC reviews applications and issues licenses for pipeline crossings of the river, alteration of the river channel, changes in water delivery to Mexico, and changes to USIBWC facilities resulting from the construction, operation, and maintenance of project features.
	Archaeological Resources Protection Act (ARPA) Permit	USIBWC issues an ARPA Permit for ground disturbances on Federal land it administers.
U.S. Fish and Wildlife Service (FWS)	Endangered Species Act (ESA) (Section 7 consultation)	Consultation under Section 7 of ESA is required to determine if the project will affect threatened or endangered species. FWS will prepare a Biological Opinion based on the lead and joint agencies' Biological Assessment.
	Fish and Wildlife Coordination Act (FWCA) Report	FWS must prepare a FWCA Report that determines impacts on fish and wildlife and recommends ways to avoid or mitigate those impacts.

TABLE 1.4-1 (REVISED FROM THE FEIS)
Authorizing Actions, Permits, and Licenses

Agency or Organization	Actions, Permits, and Licenses Required	Description
U.S. Army Corps of Engineers (COE)	Permit pursuant to Section 404 of the Clean Water Act (CWA)	COE will potentially issue a CWA 404 Permit, which will be required for excavation or discharge of fill material into waters of the U.S., including wetlands.
	Section 401 Water Quality Certificate of the CWA	COE coordinates the water quality certification process with the states of New Mexico and Texas for applicable project features.
	Nationwide Permits for Utility Line Crossing (COE Permit 12)	COE will potentially issue a permit, which will be required for arroyos crossed by project utility lines.
	Wetland mitigation plan, if needed, for impacts on nonagricultural lands	COE must approve the delineation, impact analysis, and preparation of wetland mitigation plan for jurisdictional wetlands impacted by the project on nonagricultural lands for the CWA 404 permit.
Natural Resources Conservation Service (NRCS)	Wetlands delineation on agricultural lands	NRCS will delineate wetlands on agricultural lands, if needed, under the Food Security Act (FSA).
U.S. Environmental Protection Agency (EPA)	Oversight authority for Section 404 Permits	EPA will review 404 permit applications and recommend approval or denial of permits. EPA has authority to veto COE permit approvals.
	Section 402 National Pollutant Discharge Elimination System (NPDES) Permit	EPA jointly issues or coordinates with the States of New Mexico and Texas in issuing NPDES Permits, as required, for applicable project features in New Mexico and Texas.

TABLE 1.4-1 (REVISED FROM THE FEIS)
Authorizing Actions, Permits, and Licenses

Agency or Organization	Actions, Permits, and Licenses Required	Description
U.S. Bureau of Reclamation (USBR)	Approve water use conversion and enter into and administer third-party water contracts	USBR must approve project-related changes in operating procedures for the delivery of water and the conversion of water from agricultural use to municipal and industrial (M&I) use. USBR will enter into contracts with Elephant Butte Irrigation District (EBID) and/or El Paso County Water Improvement District No. 1 (EPCWID No. 1) and the project sponsor for the proposed projects. They also will enter into contracts with El Paso Water Utilities/Public Service Board (EPWU/PSB) and EPCWID No. 1 for other specific, related facilities or actions involving water supply, savings, exchange, and use.
U.S. Bureau of Land Management (BLM)	Right-of-ways (ROWs) for use of lands and an Archaeological Resources Protection Act (ARPA) Permit for disturbing grounds administered by BLM	BLM will potentially issue a ROW and ARPA Permit for the Anthony Gap waterline crossing through the Organ Mountains' Area of Critical Environmental Concern (ACEC).
U.S. Department of the Army	Consultation with Fort Bliss regarding archeological resources and threatened and endangered species	Construction on lands administered by Fort Bliss and Biggs Army Airfield will require compliance with the National Historic Preservation Act of 1966, as amended, and the Endangered Species Act of 1973, as amended.
State Agencies		
New Mexico Department of Game and Fish (NMDGF) and Texas Parks and Wildlife Department (TPWD)	Managing and consulting on fish and wildlife in New Mexico and Texas with concurrent responsibility for the FWS FWCA Report.	The Departments will comment on the FWCA Report. If they can not concur with FWS, they may prepare their own FWCA Report(s).
New Mexico Historic Preservation Division, State Historic Preservation Officer (SHPO) and Texas Historical Commission, SHPO	New Mexico and Texas Antiquities Permits Signatories to a Programmatic Agreement, if needed, with project sponsors and the Advisory Council on Historic Preservation (ACHP) to guide future studies and mitigation.	Approval of survey and recovery of cultural resources in New Mexico and Texas prior to project construction. The SHPOs and ACHP will determine if the proposed project will have an impact on culturally or historically sensitive sites listed in New Mexico and Texas, or if sites are eligible for listing on the National Register of Historic Places.

TABLE 1.4-1 (REVISED FROM THE FEIS)
Authorizing Actions, Permits, and Licenses

Agency or Organization	Actions, Permits, and Licenses Required	Description
New Mexico Environment Department (NMED) for project features in New Mexico and Texas Natural Resource Conservation Commission (TNRCC) for project features in Texas	Section 401 Water Quality Certificate (CWA)	These agencies, working with the COE, issue Water Quality Certificates for applicable project features in New Mexico and Texas.
	Section 402 National Pollutant Discharge Elimination System (NPDES) Permit	These agencies issue or coordinate with EPA in issuing NPDES Permits, as required, for applicable project features in New Mexico and Texas.
	Section 404 Dredge and Fill Permit (CWA)	These agencies coordinate with the COE, the federal agency responsible for issuing Section 404 Permits.
	Stream Alternation Permit	These agencies issue permits for project features affecting the river bed in New Mexico and Texas.
	WTP License	These agencies issue licenses for the construction and operation of WTPs.
	Texas Air Quality Permit	TNRCC issues an Air Quality Permit for emissions associated with water pumping as part of the aquifer storage and recovery (ASR) program.
New Mexico Department of Transportation (NMDOT) and Texas Department of Transportation (TDOT)	Encroachment Permits	NMDOT and TDOT must issue permits to construct or modify project features in state highway ROWs in New Mexico and Texas.
New Mexico Office of State Engineer (NMOSE)	Water Rights	The New Mexico Interstate Stream Commission (NMISC) asserts that changes in water use and diversions in New Mexico associated with the project will require permits from the NMOSE. Current litigation and adjudication make it unclear whether permits will be required. When project sponsors in New Mexico initiate development of their features, appropriate permits will be obtained.

TABLE 1.4-1 (REVISED FROM THE FEIS)
Authorizing Actions, Permits, and Licenses

Agency or Organization	Actions, Permits, and Licenses Required	Description
Other Agencies and Organizations		
El Paso Water Utilities/Public Service Board (EPWU/PSB)	Joint lead agency Makes decision to construct and requests funds for project and construction and acquisition of project lands and water, as required, for its facilities in Texas on behalf of the City of El Paso. Enters into agreements to construct and operate project features in Texas.	EPWU/PSB is the joint lead agency responsible with USIBWC for ensuring compliance with NEPA and other environmental statutes, overall coordination of the environmental review, approving the alternative selected for construction, and signing the Record of Decision (ROD). EPWU/PSB will enter into the necessary agreements and contracts associated with project construction, operation, and maintenance. EPWU/PSB must enter into agreements with various entities, such as water management agencies and communities, where project features would be constructed that describe the terms of operation and maintenance for those features.
	Well Drilling Permit	EPWU/PSB reviews applications and issues permits for drilling wells (for example, the ASR program) in the Utility's service area in the City.
Governments of Las Cruces, Hatch, and Doña Ana County (or Anthony Water and Sanitation District)	Make decision to construct and request funds for project construction and acquisition of project lands and water, as required, for their facilities in New Mexico on behalf of their respective communities. Enter into agreements with various entities to construct and operate project features in New Mexico.	These entities will enter into the necessary agreements and contracts associated with project construction, operation, and maintenance. These entities must enter into agreements with various other entities, such as water management agencies, where project features would be constructed that describe the terms of operation and maintenance for those features.

TABLE 1.4-1 (REVISED FROM THE FEIS)
Authorizing Actions, Permits, and Licenses

Agency or Organization	Actions, Permits, and Licenses Required	Description
Elephant Butte Irrigation District (EBID), New Mexico	Rio Grande Project, New Mexico portion	EBID operates and maintains the New Mexico portion of the project's irrigation division through contract with the USBR. As such, it would be responsible for selling the water to the Governments of Las Cruces, Hatch, and Doña Ana County (or Anthony Water and Sewer District).
	Rights-of-Use Licenses and Permits	EBID reviews applications and issues leases, permits, licenses, and agreements for the occupation, use, or traversing of lands under the ownership, administration, or management of EBID. Examples are dewatering and utility crossing permits.
El Paso County Water Improvement District No. 1 (EPCWID No. 1), Texas	Rio Grande Project, Texas portion	EPCWID No. 1 operates and maintains the Texas portion of the project's irrigation division through contract with the USBR. As such, it would be responsible for selling the water to EPWU/PSB.
	Right-to-Use Licenses	EPCWID No. 1 reviews applications and issues licenses for the purchase, exchange, easement, lease, or other right-to-use EPCWID No. 1 real property. Examples are dewatering and utility crossing permits.
Doña Ana County Government, New Mexico and El Paso County Government, Texas	ROW and Miscellaneous Permits	Doña Ana and El Paso Counties will need to issue permits for project features in New Mexico and Texas and, as needed, including permits to construct in County road ROWs.
Rio Grande Compact Commission	This agency is responsible for the administration of the Rio Grande Compact.	The Commission oversees the Compact, which controls allocation of Rio Grande Project Waters among the states of Colorado, New Mexico, and Texas. Colorado and New Mexico assert approval will be required from the Commission if changes in seasonal pattern and amounts of release occur. It is uncertain if such approval would be required. This issue will be resolved and appropriate approvals obtained when project sponsors begin initial development of project features.

TABLE 1.4-1 (REVISED FROM THE FEIS)
Authorizing Actions, Permits, and Licenses

Agency or Organization	Actions, Permits, and Licenses Required	Description
Governments of Las Cruces, Hatch, Salem, Garfield, Rincón, Doña Ana, Radium Springs, San Miguel, Mesquite, Anthony, Vado, Berino, Chamberino, La Mesa, and La Union, New Mexico and Government of El Paso, Texas	Miscellaneous permits and approvals	Communities may require permits or approvals for activities affecting local roads, drainage structures, and utilities.