SPECIAL STATUS SPECIES

Affected Environment

In compliance with the Endangered Species Act, Reclamation consulted with the U.S. Fish and Wildlife Service (Service) to obtain a list of Federal special status species that may occur within the study area (attachment C). These species, along with Arizona State special status species, their status, and their potential for occurrence in Yuma County are listed in table V-1. Species unlikely to occur because of habitat or distribution limitations were omitted from further analysis. General life history information is provided for each species that is known to occur or for which suitable habitat is available.

Plants

Peirson's milkvetch, blue sand lily, sand food, Gander's cryptantha, and dune sunflower are all specialists of active sand dunes. Most are known from nearby active dunefields, including the Algodones Dunes and the Yuma Dunes. Except for sand food, which has been observed colonizing piles of sand excavated from irrigation canals (Barton-Aschman Associates, 2000), it is uncertain if others within this group are currently present within the study area because no known surveys have been conducted. It is also uncertain if these species could potentially colonize windblown sandy areas within the 5-mile zone that are not active dune fields.

Peirson's Milkvetch

This species grows on slopes and hollows of windblown dunes just outside the 5-mile zone on the Barry M. Goldwater Range (AFGD scoping comments, July 10, 2001). Potential habitat also exists within the 5-mile zone. This species is vulnerable to OHV disturbance, livestock grazing and trampling, and urban development. It is also vulnerable to random naturally occurring events because of its small population size (*Federal Register*, 1996).

Blue Sand Lily

This lily has the potential to grow in the sandy habitat in the area. It is vulnerable to OHV disturbance and habitat alterations.

Gander's Cryptantha

The California Native Plant Society lists this species as extremely rare. Its habitat is in creosote bush scrub and sandy soils in desert dunes.

Table V-1.—Special Status Species for Yuma County, Arizona

Common Name	Status[1]	Potential for Occurrence
Plants		
Peirson's milkvetch *Astragalus magdalenae var Peirsonii*	BLM Sensitive Species[2]	Possible. Suitable habitat consisting of slopes and hollows of wind-blown dunes exists within the 5-mile zone. It is currently found in suitable areas adjacent to the 5-mile zone.
Blue sand lily *Triteleiopsis palmeri*	SR	Possible. Very narrow distribution in sand dunes. More common in Mexico. Can potentially grow in sandy habitat.
Sand food *Pholisma sonorae*	SC, HS	Highly likely. It is found along the Mexican boundary below elevation 500 feet in drifting sand.
Gander's cryptantha *Cryptantha ganderi*	SC	Possible. Found in creosote bush scrub and sandy soils in desert dunes. California Native Plant Society lists it as extremely rare.
Dune spurge *Eriphorbia platysperma*	SC	Possible habitat for the dune spurge is found on the Yuma Dunes just east of the 5-mile zone.
Dune sunflower *Helianthus niveus ssp tephrodes*	SC	Possible. Grows in shifting sand dunes and sandy desert areas adjacent to creosote bush. It is currently found in nearby active dune fields.
Senita *Lophocereus schottii*	SR	Unlikely. Only known site in U.S. is from Organ Pipe National Monument.
Straw-top cholla *Opuntia echinocarpa*	SR	Unlikely. Occurs in the Sonoran Desert between elevation 1000 to 5000 feet.
California fan palm *Washingtonia filifera*	SR	Unlikely. The only known wild populations are found in canyons of the Kofa Mountains. It has been domesticated and planted extensively throughout southern Arizona.
Kearny sumac *Rhus kearneyi*	SR	Unlikely. Preferred habitat of dry cliffs from elevation 1000 to 1500 feet not available.
Parish onion *Allium parishii*	SR	Unlikely. Found on rocky slopes from 3000 to 4000 feet in the Kofa Mountains in Yuma County.
Mammals		
Sonoran pronghorn *Antilocapra americana sonoriensis*	FE, WC	Unlikely. Remnant populations exist in areas adjacent to 5-mile zone and along international boundry. Current range maps indicate the closest population is in the adjacent Barry M. Goldwater Air Force Range.
Yuma hispid cotton rat *Sigmodon hispidus eremicus*	SC	Unlikely. Found near Colorado River or along sloughs adjacent to river and in fields with Bermuda grass.
California leaf-nosed bat *Macrotus californicus*	SC, WC	Likely. Found in south half of Arizona in desert scrub.
Pale Townsend's big-eared bat *Corynorhinus townsendii*	SC	Likely. Found throughout Arizona over desertscrub, though not common anywhere.

[1] FE = Federal endangered; FT = Federal threatened; SC = Federal species of concern; FP = Federal proposed; SR = Arizona Native Plant Law salvage restricted; HS = Arizona Native Plant Law highly safeguarded; WC = wildlife of special concern in Arizona.

[2] The proposed listing of the flat-tailed horned lizard as threatened was withdrawn on January 3, 2003. This species is being managed under provisions of the 2003 Rangewide Management Strategy. If recovery does not proceed as outlined in the Rangewide Management Strategy, this species could be listed as threatened or endangered.

Table V-1.—Special Status Species for Yuma County, Arizona (continued)

Common Name	Status[1]	Potential for Occurrence
Mammals (continued)		
Yuma myotis *Myotis yumanensis*	SC	Possible. Forages in riparian areas on the Lower Colorado River and along irrigation canals. Roost sites may exist in buildings or bridges. Bats may commute over the 5-mile zone between roosting and foraging habitat.
Greater western mastiff bat *Eumops perotis*	SC	Possible. Prefers desert scrub near cliffs and rugged canyons with abundant crevices (AGFD, 1992). It has also been observed foraging in desert.
Spotted bat *Euderma-maculatum*	SC, WC	Possible. Species is extremely rare in Arizona. A specimen was found 4 miles south of Yuma in 1904. Preferred habitat is unclear, but appears to be uneven rocky cliffs within 1 mile of rivers.
Fish		
Razorback sucker *Xyrauchen texanus*	FE	Unlikely. Razorbacks occur in the Lower Colorado River. No suitable habitat exists within the 5-mile zone.
Birds		
Bald eagle *Haliaeetus leucocephalus*	FT	Unlikely. Winters on the nearby Lower Colorado River but no suitable foraging or nesting habitat exists within the 5-mile zone. Eagles may pass over the area during migration.
Brown pelican *Pelecanus occidentalis californicus*	FE	Unlikely. Breeds on the Pacific coast of Baja California. Post breeding wanderers seen along Colorado River in summer. No suitable habitat exists within the 5-mile zone.
Cactus ferruginous pygmy-owl *Claucidium brasilianum cactorum*	FE, WC	Unlikely. No suitable habitat (large mesquite, paloverde, ironwood and saguaro) exists within the 5-mile zone.
Southwestern willow flycatcher *Empidonax trailii extimus*	FE, WC	Unlikely. No suitable habitat (riparian areas) exist within the 5-mile zone. May pass through area during migration.
Great egret *Ardea alba*	WC	Unlikely. No suitable habitat (wetlands) exists within the 5-mile zone. May pass through area during summer.
Snowy egret *Egretta thula*	WC	Unlikely. No suitable habitat (wetlands) exists within the 5-mile zone. May pass through area during summer.
California black rail *Laterallus jamaicensis coturniculus*	SC, WC	Unlikely. No suitable habitat (wetlands) exists within the 5-mile zone.
Yuma clapper rail *Rallus longirostris yumanensis*	FE, WC	Unlikely. No suitable habitat (wetlands) exists within the 5-mile zone.
Yellow-billed cuckoo *Coccyzus americanus*	FC	Unlikely. No suitable habitat (riparian forests) exists within the 5-mile zone. Only rarely observed as a transient in xeric desert habitat.
Reptiles		
Flat-tailed horned lizard *Phrynosoma m'callii*	FT	High. Highly suitable habitat exists within the 5-mile zone. Specimens found during October 2001, as well as many other documented sightings (Rorabaugh et al., 1985).

[1] FE = Federal endangered; FT = Federal threatened; SC = Federal species of concern; FP = Federal proposed; SR = Arizona Native Plant Law salvage restricted; HS = Arizona Native Plant Law highly safeguarded; WC = wildlife of special concern in Arizona.

Table V-1.—Special Status Species for Yuma County, Arizona (continued)

Common Name	Status[1]	Potential for Occurrence
Reptiles (continued)		
Sonoran desert tortoise *Gopherus agassizii*	SC	Unlikely. AGFD indicates the closest populations exist in the Barry M. Goldwater Range, Yuma Proving Ground and Cabeza Prieta National Wildlife Refuge. Preferred habitats of rocky slopes and bajadas of Sonoran desertscrub not available in the 5-mile zone.
Desert rosy boa *Charina trivirgata gracia*	SC	Possible. Suitable habitat (rocky shrublands and desert) may exist within the 5-mile zone.
Cowles's fringe-toed lizard *Uma notata rufo punctata*	SC, WC	High. Suitable habitat (windblown sand) exists within the 5-mile zone.
Narrow-headed garter snake *Thamnos rufi punctatus*	SC, WC	Unlikely. No suitable habitat (pinon-juniper, oak-pine) in the 5-mile zone.
Mexican garter snake *Thamnophis equis megalops*	SC, WC	Unlikely. No suitable habitat (highland canyons primarily) present.

[1] FE = Federal endangered; FT = Federal threatened; SC = Federal species of concern; FP = Federal proposed; SR = Arizona Native Plant Law salvage restricted; HS = Arizona Native Plant Law highly safeguarded; WC = wildlife of special concern in Arizona.

Sand Food

Only the saucer-shaped receptacle of this root parasite is normally seen above ground. This species absorbs water through leaf stomata. During periods of drought stress, water absorbed can move directly into the host plant. Thus, this species is not strictly a parasite. It is commonly 3.5 to 12.5 centimeters in diameter with numerous tiny, violet-colored flowers opening in successive circles. The long (up to 39 inches), succulent underground stems are attached to the roots of various shrubs. The Papogo Indians used them extensively for food. It is found in southern Yuma County along the Mexican border below elevation 500 feet in drifting white sand. Threats include urban development and OHV disturbance.

Mammals

The California leaf-nosed bat, Yuma myotis, and spotted bat were discussed under "Desert Bats" in the Wildlife section. Additional sensitive bat species potentially found in the study area include the pale Townsend's big-eared bat and the greater western mastiff bat.

California Leaf-Nosed Bat

This bat is a year-round resident of the Sonoran desert scrub. Roost sites include mines, caves, and rock shelters. The primary threat to this species is human disturbance of the roost sites, which can cause abandonment, as well as closure of mines. It is unlikely that roost sites exist within the study area; however, it is likely that this species forages in the area.

Yuma Myotis

This bat is most often found in buildings or bridges and occasionally mines or caves. It forages primarily along riparian areas, particularly along edge habitat. The major threat to this bat is the loss of riparian habitat.

Western Mastiff Bat

This is the largest bat in the U.S., with a 2-foot wingspan. Little is known of its status or behavior because of its selection of roost sites in cliff-face crevices and its habit of foraging high above the ground. Its long narrow wings limit its ability to obtain water to those pond areas that are at least 100 feet long, severely limiting its range. Losses of large natural springs have reduced its distribution.

Pale Townsend's Big-Eared Bat

Townsend's bats are found in arid Western desert scrub as well as pine forests. Severe population declines have occurred through its range because of its extreme sensitivity to roost site disturbance.

Spotted Bat

This bat's echolocation frequency is low enough to be audible to humans. It was initially thought to be extremely rare; but, subsequently, it has been learned the bat occupies a rather large range throughout central-western North America. This bat is difficult to observe and selects roosting sites high in cliff crevices.

Reptiles

Flat-Tailed Horned Lizard

The flat-tailed horned lizard was a Federal category 2 candidate for listing as threatened in 1982. It was elevated to a category 1 species in 1989. In 1993, the Service issued a proposed rule to list the flat-tailed horned lizard as threatened. On July 15, 1997, the Service issued a final decision to withdraw the proposed rule when several State and Federal agencies, including Reclamation, signed a Conservation Agreement (CA) to implement the recently completed Rangewide Management Strategy. (Also see chapter II, "Flat-Tailed Horned Lizard Interagency Coordinating Committee.) On July 31, 2001, the Ninth Circuit Court of Appeals vacated an earlier ruling from the District Court for the Southern District of California that upheld withdrawal of the proposed listing of the flat-tailed horned lizard as threatened.

On December 26, 2001, the Service issued a notice of reinstatement of the 1993 proposed listing of the flat-tailed horned lizard as a threatened species. On January 3, 2003, the Service issued its final determination to withdraw the proposed rule (68 *Federal Register*; January 3, 2003). The Service made this determination because it found that threats to the species as identified in the proposed rule were not as significant as earlier believed. It appears that the cornerstone of this decision was based upon the existence of the CA

to implement the Rangewide Management Strategy. The purpose of the Rangewide Management Strategy was to provide a framework for conserving sufficient habitat to maintain several viable populations of the horned lizard throughout its range. As part of the CA, agencies designated five management areas (MAs) meant to be the core areas for maintaining self-sustaining populations of flat-tailed horned lizards in the United States. One of the five MAs includes the Yuma Desert Management Area, which encompasses approximately 16,000 acres of Reclamation land within the study area (shown on **map V-6**). While all of the conservation measures outlined in the CA have not yet been implemented, the Service felt actions that have been, and are being, implemented do provide protection for the flat-tailed horned lizard and its habitat and have contributed to reductions in specific threats to the species. The Service states that the Rangewide Management Strategy / CA has been the main regulatory mechanism established for the conservation of the flat-tailed horned lizard throughout its range.

The Flat-Tailed Horned-Lizard Interagency Coordinating Committee issued the Flat-tailed Horned Lizard Rangewide Management Strategy, 2003 Revision, in May 2003. Reclamation will continue to manage the approximately 16,000 acres of the Yuma Desert Management Area within the 5-mile zone pursuant to this management strategy guidance. The Yuma Desert Management Area is one of five management areas whose purpose is to secure and maintain several self-sustaining populations of the flat-tailed horned-lizard throughout the species' range. These five MAs encompass large blocks of habitat where surface disturbing and mortality causing activities are minimized. As a signatory agency, Reclamation has incorporated these measures, as summarized in the following, into this resource management plan. Chapter VI describes the RMP in detail.

- Mitigate and compensate as needed project impacts on flat-tailed horned-lizards and their habitat both within and outside of MAs through humane and cost-effective measures.
- Limit land use authorizations that would cause surface disturbance with the MAs. Every attempt shall be made to locate projects outside of MAs. New rights-of-way may be permitted only along boundaries of MAs and only if impacts can be mitigated to avoid long-term impacts. The cumulative new disturbance per MA since 1997 may not exceed 1 percent of the total acreage on Federal land.
- Limit vehicle access and limit route proliferation within MAs.
- Limit the impacts of recreational activities within MAs.
- Authorize limited use of plants in MAs.
- Suppress fires in MAs using a mix of methods. Post suppression mitigation shall include rehabilitation of firebreaks and other ground disturbances.
- No pesticides treatments shall be applied within MAs.
- Damaged and degraded habitat, including closed routes and other small areas of disturbance, shall be rehabilitated.

- ❖ Coordinate monitoring, management and research activities among the participating agencies and Mexico.

An estimated 13,000 acres of suitable flat-tailed horned lizard habitat exists within the 5-mile zone on Federal land outside the Yuma Desert Management Area. Under the 2003 Rangewide Management Strategy, flat-tailed horned lizard habitat outside MAs receives a degree of protection through mitigation and compensation. Specifically, signatory agencies will ensure that adverse effects of projects they authorize are mitigated and that residual effects are compensated in accordance with a standard formula specified in the Rangewide Management Strategy (pages 62–64).

Reclamation recognizes its obligations under the conservation agreement, however, reserves the right to maintain the existing PRPU authorized by Public Law 93-320. Reclamation also reserves the right to expand the PRPU but would coordinate any such activity closely with the Service to minimize impact to the flat-tailed horned lizard.

In Arizona, the flat-tailed horned lizard is found in the creosote-white bursage series of Sonoran desert scrub. This is an open community associated with sandy flats and valleys, as well as areas with a veneer of fine, windblown sand. The approximately 16,000-acre Yuma Desert Management Area encompasses the best remaining relatively undisturbed creosote-white bursage community in the 5-mile zone. Habitat destruction from urbanization and agricultural development and direct mortality from OHVs are the primary threats to this species.

Cowle's Fringe-Toed Lizard

Cowles's fringe-toed lizard has similar habitat requirements as flat-tailed horned lizards, preferring fine, wind-blown sandy substrates. They are usually more associated with active sand dunes than flat-tailed horned lizards; however, they were observed in several locations in the 5-mile zone during a 1985 survey for flat-tailed horned lizards (Rorabaugh et al., 1985).

Desert Rosy Boa

Desert rosy boa is a powerful constrictor that preys on small mammals and birds. It prefers moist areas around springs or permanent streams in rocky desert areas.

Environmental Consequences

Elements Common to All Alternatives

Four land use changes and five roads are currently in the planning stages and will ultimately be constructed regardless of the alternative selected. The land use changes include the expansion of Rolle Airfield, expansion of the Yuma Desalting Plant sludge disposal site, the ongoing maintenance, monitoring and installation of new observation wells; and the Border Patrol's expansion of the protective zone along the International Boundary from 90 to 150 feet wide. Rolle Airfield exists in an area of flat creosote brush-bursage outside of the Yuma Desert Management Area. Currently, much of Section 35

(**map V-3**), which is allocated for Rolle Airfield, is relatively undisturbed. As this airfield is expanded, this habitat will be lost to runways, roads, buildings, parking lots and other disturbance, resulting in an overall loss of habitat. The amount of habitat to be converted is unknown at this time, and will depend on the needs of the Yuma area as growth continues. The sludge disposal site known as the A22 site is located on Section 5 (**map V-3**). It may potentially occupy up to 1,240 acres. It is assumed that area covered by sludge disposal will be lost habitat. It is not known at this time whether sludge can be revegetated. It may be possible to cover the sludge with a layer of topsoil and revegetate it with native species. Reclamation's maintenance, monitoring, and installation of new observation wells will result in the disturbance of additional habitat, although the exact amount of habitat disturbed is unknown at this time. The Border Patrol's expansion of the protective zone along the international boundary from 90 to 150 feet will encompass approximately 12 miles of border, for a total about 87 additional acres of creosote bush-bursage lost to road development.

The five road and utility corridor projects include proposed SR195 and a major interchange at 23rd Street and Avenue E; a major road from the proposed SR195 interchange at 23rd Street and Avenue E north along Avenue E to Rolle Airfield; a water and sewer utility corridor along 23rd Street to the minimum security prison on Avenue B; an improved highway from San Luis east along 23rd Street to the proposed SR195 interchange; and a new truck route from San Luis to the new commercial port-of-entry paralleling the international boundary from San Luis to 24th Street, then along 24th Street east to Avenue B, then south to the International Boundary. Two major sources of impacts to wildlife and vegetation will include the paving and widening of road surfaces and the increased volume of traffic such roads will create. Creosote-bursage habitat will be lost and the risk of vehicle collisions with wildlife will be substantially increased.

Alternative A – Special Status Species

Under Alternative A, rapidly increasing human populations would continue to exert tremendous pressure on the Federal lands within the 5-mile zone, both in terms of efforts to expand human development into the area, as well as in increasing levels of OHV and other recreational uses of the area. Land use authorizations considered on a case-by-case basis in the absence of a comprehensive land use plan could potentially remove suitable habitat for special status species from public land ownership and management.

Within the Yuma Desert Management Area, the ability to meet the planning recommendations set forth under the 2003 Rangewide Management Strategy will be made more difficult by the absence of a comprehensive land use strategy. No specific provisions would be provided to allow land exchanges or purchase from willing sellers to consolidate Federal land ownership within the Yuma Desert Management Area. OHV use would continue at the present level, resulting in the death and injury of species such as the flat-tailed horned lizard, as well as habitat degradation. No formal agreements would be established with the BLM, MCAS, or AGFD to enhance management common border areas, or land within the 5-mile zone.

In the 13,000 acres of suitable flat-tailed horned lizard habitat within the 5-mile zone outside of the Yuma Desert Management Area boundary, the present level of unrestricted and often illegal use of the public land (such as dumping trash) would continue unabated. OHV use would continue to expand in this already heavily impacted area as human population in the surrounding area increases. Additional habitat degradation would occur as unregulated recreational use of the area continues to occur. Land use decisions would continue to be made on a case-by-case basis.

Conditions for special status species under Alternative A would continue to be the same as presently occurs. Reclamation would attempt to control OHV use but would be hampered by the lack of a formal agreement with AGFD to enforce OHV closures. No formal agreements would be established with the BLM or MCAS to provide improved management of common borders

Alternative B

The land use strategy under this alternative would maximize natural resource protection within the study area. Land use authorizations would be concentrated in the western portion of the study area while protecting the Yuma Desert Management Area. Any new land use authorizations not compatible with the Rangewide Management Strategy would not be allowed. Land transfers or exchanges to protect natural resources could be authorized. This alternative provides the most protection for special status species of the three action alternatives.

The existing primary roads would be maintained, but no new secondary roads would be constructed. Maintaining primary roads avoids the proliferation of parallel roads, resulting in a minimum of habitat disturbed.

All OHV use would be eliminated from the study area, thus removing one of the major sources of habitat degradation and wildlife death and injury.

Partnerships with the Border Patrol, AGFD, and MCAS would be actively developed, providing an overall benefit for special status species. Partnerships with the Border Patrol would jointly develop standards and guidelines for OHV use that could result in a decrease in the mortalities caused by vehicle collisions with flat-tailed horned lizards. Partnership with the AGFD to enforce OHV closures, initiate inventory and monitoring of special status species, and the development of protection plans would benefit all special status species in the study area. Partnership with MCAS to reduce OHV use of the Yuma Desert Management Area and the border with the Barry M. Goldwater Range as well as collaboration on other flat-tailed horned lizard management issues would also be beneficial.

The ability to implement provisions of the Rangewide Management Strategy would be maximized under this alternative.

Alternative C

The land use strategy developed under this alternative would maximize community, recreation and commercial development of the study area. Development would be allowed in the Yuma Desert Management Area if mitigation can be achieved. Land exchanges would be allowed to benefit development. The cities of San Luis and Yuma could obtain utility corridors, roads, recreation areas, and other infrastructure developments much more readily under this alternative. The net result of this is a greater conversion of habitat to urban uses and a much greater human use of the area that presently exists both within the Yuma Desert Management Area and outside the management area.

Road density would increase as primary and secondary roads are constructed to access recreation, community, and commercial developments, further reducing habitat and increasing the risk of vehicle collisions with wildlife.

Campgrounds and extended-stay RV facilities would be developed. While bringing the current level of dispersed, unregulated recreational use of the study area under control and management, habitat would be adversely impacted, particularly in the extended stay areas. Development of designated OHV trails would control much of the proliferation of OHV roads and trails that has resulted in habitat degradation and vehicle collisions with wildlife.

Partnerships would be the same as discussed for Alternative B.

The ability to implement provisions of the Rangewide Management Strategy would be more difficult under Alternative C because of the emphasis on development.

Alternative D

The land use strategy developed under this alternative represents a blend of limited development and natural resource protection. Limited community, commercial, and recreational development would be allowed in the western portion of the study area. Within the Yuma Desert Management Area, only developments needed to meet public health and safety needs would be allowed. Land use exchanges to benefit special status species and limited recreation, community, and commercial development would be allowed. The net result of this is a moderate conversion of wildlife habitat to urban uses in the western portion of the study area with improved land use planning.

Road density would increase slightly as primary roads are maintained and secondary roads are constructed to access recreation facilities.

A limited number of day use and campground facilities would be constructed in the western portion of the study area. No extended stay recreational vehicle facilities would be permitted. Nonmotorized trails would be developed in the western portion, and all OHV use would be eliminated. These measures would result in improved control of dispersed recreation, elimination of the habitat degradation, and vehicle collisions with wildlife.

Partnerships are the same as described for Alternative B.

The ability to implement provisions of the Rangewide Management Strategy would be greatly improved compared to conditions in the No Action Alternative and in Alternative C but would be slightly more difficult than for the maximum natural resource protection measures of Alternative B.

Cumulative Impacts

Actively limiting development on Reclamation lands in the western portion of the study area will benefit vegetation, wildlife, and special status species. Eliminating OHV use, developing recreational facilities that better manage human use, and establishing law enforcement with AGFD will also benefit desert wildlife and vegetation. Establishing comprehensive planning that actively manages growth will prevent the continued loss of habitat.

Mitigation

Special Status Species

No surveys have been conducted for any of the special status species listed in table V-1. All of the proposed projects common to all of the alternatives will require site specific National Environmental Policy Act compliance. Surveys should be completed at that time in the areas that disturbance would potentially occur to determine the presence of these species, as well as the existence of suitable habitat. Detailed protective measures would be developed and implemented.

Flat-Tailed Horned Lizard Rangewide Management Strategy, 2003 Revision

The following mitigation measures are excerpted from the 2003 Flat-tailed Horned Lizard Rangewide Management Strategy. They are summarized here both to emphasize the importance of implementing these measures and to highlight the need to establish a mechanism to ensure that they are implemented in the study area.

These mitigation measures are applicable to all lands within the study area including the approximately 16,000 acres of the Yuma Desert Management Area as well as the approximately 13,000 acres outside the management area which has known flat-tailed horned lizard occurrence (based on the project evaluation protocol in Appendix 6 of the Rangewide Management Strategy).

- To the extent possible, surface-disturbing projects shall relocated outside of flat-tailed horned lizard MAs and shall be timed to minimize mortality.
- Designate a field contact representative that will have the authority to ensure compliance with protective measures, including the ability to halt activities that violate these terms and conditions.

- ❖ All project work areas shall be clearly flagged and all construction activities shall be restricted to flagged areas to eliminate adverse impacts to the flat-tailed horned lizard or its habitat.
- ❖ Within flat-tailed horned lizard habitat, area of disturbance of vegetation and soils shall be the minimum required for the project.
- ❖ Existing roads shall be used for travel and equipment storage whenever possible. Access to any newly created access roads shall be restricted by constructing barricades, erecting fences with locked gates at road intersections, and / or posting signs.
- ❖ A biological monitor shall be present in construction areas to develop and implement worker education programs, ensure than protection measures designed to reduce impacts to flat-tailed horned lizard are implemented, flag designated work areas, enforce procedures if flat-tailed horned lizards are encountered, and emphasize importance of reducing vehicle mortality on flat-tailed horned lizards when driving to and from work site.
- ❖ Sites of permanent or long-term projects in the Yuma Desert Management Area, where continuing activities are planned and where flat-tailed horned lizard mortality could occur shall be enclosed with flat-tailed horned lizard barrier fencing to prevent lizards from entering project.
- ❖ Project proponent shall develop a habitat restoration plan to include: collecting and replacing topsoil; preparing seedbeds, fertilizing and seeding of native species, noxious weed control, erosion control, eliminating hazards to flat-tailed horned lizards such as holes or trenches; minimizing disturbance of perennial shrubs during restoration, and periodically inspecting restored areas.
- ❖ Construction of new paved roads shall include a lizard barrier fence on each side of the road that is exposed to occupied flat-tailed horned lizard habitat.
- ❖ If adverse effects remain after the project proponent has taken all reasonable on-site mitigation measure, compensation must be made for the remaining (residual) on-site effects.

Residual Impacts

Despite improved growth management measures and measures designed to protect Sonoran Desert habitats, urbanization in the rapidly growing area near Yuma, San Luis, and the soon-to-be constructed commercial port-of-entry is likely to continue to exert tremendous pressures on adjacent public lands. Pressure to consider commercial and community development proposals on adjacent Federal land will continue regardless of the presence or absence of a resource management plan. Resisting this pressure will require a great deal of management resolve. Open lands adjacent to large urban areas are subject to increased human demand for unstructured recreational activities, such as driving for pleasure, OHV use, hiking, hunting, bird watching, picnicking, and camping. While these are healthy activities for individuals, when large numbers of people use

open lands, habitat degradation can and has occurred. Increasing urbanization in the Sonoran Desert ecosystem cannot be offset by protective measures in the study area alone.

RECREATION

Affected Environment

While agriculture is the predominant industry in the cities of Yuma and San Luis, tourism is the second largest contributor to the local economy, and many visitors come to the area annually. Figure V-2 shows recreation facilities and attractions in the area. Additionally, military and civilian personnel associated with the Barry M. Goldwater Range often seek outdoor recreation within the area and represent a segment of the area=s population likely to participate in active outdoor recreation, especially hunting, off-road driving, and hiking.

Recreation use in the study area is generally informal, unstructured, and local. No formal studies of recreation use have been conducted; however, local Reclamation and Border Patrol personnel familiar with the study area have observed that OHV driving is the most popular recreational activity, followed by nature study and birding. In fact, the area is criss-crossed with two-track routes, although some of the visible OHV impacts may be attributable to Border Patrol activities. **Photograph V-12** shows OHV use in the study area.

Photograph V-12.—Unauthorized OHV use.

A limited amount of dove hunting also occurs within the study area. The AGFD would like to see the area remain open and managed for dove hunting. Hunting opportunities for other game species are abundant within lands on the Barry M. Goldwater Range and on the several national wildlife refuges within the region, thus diminishing the importance of the study area as an area for hunting birds and animals other than doves.

The relatively undisturbed nature of the Sonoran Desert within the study area offers the opportunity to explore and experience this “oasis” of desert land. The sandy, creosote-bush-type Sonoran Desert ecosystem, found in abundance within the 5-mile zone, has largely disappeared from the region and has been classified a AUnique Natural Area and Feature@ by the Bureau of Land Management.

Name	Managing Agency	Facilities/Attraction
Imperial Dam	Reclamation	Not applicable.
Quail Hill	BLM	Gray water disposal station.
Beehive Mesa	BLM	Hiking, nature study, fishing access.
Coyote Ridge	BLM	Recreational vehicle (RV) dump station.
Cripple Creek	BLM	RV dump station.
Skunk Hollow	BLM	Hiking, nature study, fishing access.
South Mesa	BLM	Restrooms, RV dump station, water, outside showers, swimming, fishing, shade ramadas, amphitheater.
Hurricane Ridge	BLM	
Senator Wash	BLM	Camping, vault toilets, swimming, fishing, boat launching.
Squaw Lake Recreation Area	BLM	Restrooms, water, showers, gray water disposal, camping, swimming, fishing, boat launching, picnicking.
Hidden Shores	BLM	Overnight camping (tents and RV fees). Trailer hookups, groceries, cafe, laundry, showers, boat rentals, fuel, phone, RV dump station, boat launch.
Laguna Dam	Reclamation	Historically interesting as a first example in this country of the Indian or rock fill type of diversion dam. Fishing access.
Yuma Proving Grounds	U.S. Army	Hunting is allowed with a State of Arizona hunting license within the State hunting seasons. A special permit issued by the Yuma Proving Grounds is also required. Hunting is restricted to designated areas.
Imperial National Wildlife Refuge	Service	Hunting, fishing, and nature study. Vehicle use is restricted to designated roads.
Kofa National Wildlife Refuge	Service	Hunting, fishing, hiking, and nature study. Vehicle use is restricted to designated routes. Rock collecting is permitted in certain locations.
Pichaco State Recreation Area	California State Parks	Boating, fishing, hiking, camping.
Mittry Lake Wildlife Area	BLM	Camping, fishing, nature study, hunting.
Sand Dunes Recreation Area	BLM	Off-road vehicle routes, challenge area.
Cabeza Prieta National Wildlife Refuge	Service	Hiking, photography, wildlife observation, primitive camping.
Betty Kitchen Watchable Wildlife Area	BLM	Picnic tables, ramadas, fishing pier, interpretive trail.
Barry M. Goldwater Range	U.S. Air Force and Marine Corps	Backpacking, hiking, photography, sightseeing, primitive camping, dispersed hunting. Access by permit only. Hunting by permit only.

Figure V-2.—Recreation Facilities and Attractions in the United States near Yuma, Arizona.

Off-road vehicle use within the area has potentially adverse effects on the flat-tailed horned lizard, whose habitat is found extensively throughout the 5-mile zone. (Also see "Special Status Species.") Loss of habitat and the resulting decline in population levels brought about the development of the 2003 Rangewide Management Strategy, which discourages activities that could potentially disturb the lizard. Off-road vehicle use can harm the lizard by compacting the top several inches of the friable soils where the lizard seeks shelter and hibernates throughout the colder, winter months. Specifically, the Rangewide Management Strategy states, "Vehicle use shall be restricted to designated open and limited routes. . .reduce open and limit route density in management areas (MAs), particularly in portions of MAs where route density is high."

The Rangewide Management Strategy has implications for other recreational uses within the eastern portion of the study area. Competitive recreational events are discouraged. Development of new recreational facilities, such as visitor centers, campgrounds, mountain bike trails, and equestrian trails, are also discouraged. However, non-motorized recreational activities, such as rock hounding, hiking, backpacking, non-vehicle based camping, picnicking, horseback riding, hunting, bird watching, and nature study can be compatible with Rangewide Management Strategy objectives.

The region around Yuma and San Luis offers a variety of recreational opportunities to visitors and residents alike. However, the few visitors to the study area itself are generally from the local area. More well-known and visited areas within a several hours drive of Yuma and San Luis include locations managed by BLM, Service, Arizona State Parks, and California State Parks.

Both Yuma and San Luis have annexed portions of the 5-mile zone because of their need to expand. San Luis and Yuma County have all recently completed or updated their master plans. These plans address the proposed development of the annexed lands, including requirements for community recreation, parks, and open space. Planning considerations also address the effect of the anticipated rapid growth in the San Luis area. On the basis of historical data, San Luis is expected to double its population within the next 6 years, and the conversion of existing agricultural land to residential use is inevitable. As agricultural land is converted to residential use, the need for community recreation and open space follow. Because of the legal requirements of maintaining the 5-mile zone to meet water delivery obligations to Mexico, a large portion of the Reclamation lands are apportioned to open space, trail corridors, and passive recreation. The one exception is a tract of land that the city of San Luis general plan identifies for future development as a golf course. The city is interested in seeing a golf course constructed but is not interested in operating and maintaining it.

Border Patrol activity has the potential to adversely affect the visitor experience within the study area. Virtually all vehicles and persons are under some type of observation while within the study area, and visitors can anticipate that Border Patrol vehicles or aircraft will be dispatched to closely observe any unusual movement or activity. Many recreationists perceive this as an unwelcome intrusion on their solitude and recreational experience.

Environmental Consequences

Alternative A

Under Alternative A, Reclamation would continue to manage recreation and public activities within the study area according to its ability and authority. If Reclamation receives additional law enforcement authorities, or authority to impose and enforce additional rules and regulations or policies, it would do so as necessary and appropriate. No new recreation facilities are expected to be constructed within the study area, and future recreation demand would not be met.

Existing management practices would allow dispersed and uncontrolled recreation use to continue. Only minimum basic visitor health and safety services would be provided, thereby compromising visitor health and safety. As a result, increased damage to the desert environment from undefined and uncontrolled OHV use and increased trash and dumping would occur, especially as populations increase within the region and more people seek recreational activities within the study area. Additionally, the quality of the recreational experience for those visitors seeking solitude and nature study most likely would decline, and opportunities to interpret the desert environment to further the appreciation and protection would go unrealized.

Alternative B

Under Alternative B, in general, public demand for developed, dispersed, and urban recreation facilities and opportunities would not be met.

Specifically, the demand for campgrounds, day use facilities, trails, and OHV areas would not be met. In addition, the demand for community recreation areas (e.g., soccer fields, ball fields) and open space for relaxation and exercise would go unmet. As the populations of the cities of San Luis and Yuma continue to increase, the demand for areas to accommodate these important social needs also will increase at the same time that opportunities within the study area are not being provided.

Additionally, city, county, and State land use managers could expect OHV users to be displaced to other, currently unused areas. Vehicular access within the study area would be limited, so nature study enthusiasts, bird watchers, and, to some extent, hunters also could be displaced, especially in the Yuma Desert Management Area.

One advantage of this alternative over Alternative A is that environmental interpretation would be used to communicate positive environmental stewardship messages to promote appreciation and proper use of the desert's natural and cultural resources.

Alternative C

Under Alternative C, which would provide the maximum recreation development among all the alternatives, demand for all types of recreational facilities and opportunities would be most fully met.

Overnight campgrounds and support facilities, as well as full-service recreational vehicle campgrounds designed to accommodate extended stays, would be constructed. Day use areas would be maximized, and non-motorized, multi-use trails would be developed throughout the western portion of the study area. Designated recreational OHV use areas also would be established in the western portion of the study area. Public motorized access would be limited to OHV use areas or designated roads and trails. Some OHV users could be displaced to other areas, particularly those desiring a less controlled environment.

Urban recreation opportunities, such as golfing, tennis, baseball, and biking, could be accommodated in the western portion of the study area.

This alternative would best meet the needs of the cities of San Luis and Yuma in providing open spaces and recreation facilities for their increasing populations. Additionally, if partners could be found, opportunities exist to cooperatively establish a nature center to interpret the unique Sonoran Desert and to educate the public on the responsibilities of different government entities within the study area. Interpretive signs could also be placed throughout the study area in a further effort to educate and inform the public about the unique Sonoran Desert natural and cultural resources.

By maximizing recreation facility development and providing increased recreational opportunities, carrying capacity limits may be exceeded to the point that user conflicts may increase. The quality of the recreation experience may, therefore, decrease for some users. In addition, as visitor use increases, overcrowding, competition for available space, and overuse and abuse of existing facilities and resources may compromise visitor health and safety.

Additionally, some users who desire a more unconfined and uncontrolled recreation experience may be displaced to other areas outside the study area; and closing certain areas, such as campgrounds, day use areas, and sports fields, to shooting sports to protect the safety of other users could displace dove hunters to areas outside the study area. However, the loss of these users should be offset by increases in visitors attracted to increased opportunities and facilities.

Finally, interpretive and educational information would be more readily available, leading to a more enjoyable recreation experience.

Alternative D

This alternative, which allows limited recreation, community, and commercial development, would allow public demand for most types of recreation facilities and opportunities, including urban recreation and open space, to be partially met.

A limited number of day use areas and campgrounds could be developed outside the Yuma Desert Management Area. Day use areas would support nature-based recreation, thereby enhancing opportunities for outdoor photography, hiking, rock hounding, wildlife observation, hunting, and nature study.

Non-motorized, multi-use trails would be constructed in the western portion of the study area. Certain portions of the trails would be paved or hardened to provide access to persons with disabilities. Motorized access would be restricted to designated roads.

Eliminating recreational OHV use would displace those users to other areas, potentially affecting land managers and recreation service providers in these areas. However, eliminating this use would afford the opportunity to rehabilitate existing two-track trails and help protect native plant species and the unique desert habitat. Vehicular access within the study area would be limited; so nature study enthusiasts, bird watchers, and, to some extent, hunters also could be displaced, especially in the Yuma Desert Management Area.

The recreation experience for people seeking solitude and immersion in natural settings would not be as good as under Alternative B but better than under Alternative C. Under Alternative D, the emerging need and demand for urban recreation and open space might not be totally met on Reclamation-managed lands.

Carrying capacity limitations would be easier to manage and maintain under this alternative. Fewer conflicts would occur between different user groups competing for available space. However, limited development of recreation facilities, such as campgrounds, might lead to unmet public demand for such facilities and conflicts between users competing for the same, limited space.

Opportunities to interpret natural and cultural resources within the study area to promote greater appreciation, proper use, and understanding of the unique desert habitat would be the same as under Alternative B.

Alternative D would provide dove hunters with more hunting areas than Alternative C and fewer areas than Alternative B.

Cumulative Impacts

The cumulative impacts of developing recreation facilities and opportunities within the study area under Alternatives C and D would be the displacement of users desiring solitude and an uncontrolled recreation experience. Therefore, visitation on less managed lands within the region might increase as users are displaced from the study area to other areas. Restrictions on shooting sports to protect other recreation users could displace dove hunters to other areas.

Similarly, the cumulative impacts of eliminating recreational OHV use under Alternatives B and D would be the displacement of OHV users to other areas within the region.

Mitigation

Under Alternatives C and D, recreation facility development would complement the surrounding landscape as much as practical and would follow strict design and

construction criteria, guidelines, and standards. Carrying capacity limits and user demand would be properly determined before major facilities are developed. Bilingual regulatory and informational signage would be posted throughout the area, informing the public of the rules and regulations governing the use of the federally owned lands within the study area. Visitor use would be monitored to identify potential user conflicts and corrective actions to be taken if conflicts are identified.

Residual Impacts

No residual impacts have been identified.

VISUAL RESOURCES

Affected Environment

Generally, visual resources in the northern portion of the study area have retained a somewhat natural appearance. Only some one-story structures and an occasional tree interrupt the flat expanse of greenish creosote shrubbery and thickets of mesquite. The shrubbery and thickets are interspersed with areas of brownish, sand-like soil.

The central portion of the study area has expansive views of natural landforms and native vegetation, interspersed with widely scattered facilities, including those of Rolle Airfield and the minimum security prison. The contrast of the urban/agricultural areas and the natural areas provide a change of form, color, and texture within the immediate viewshed.

Some areas of the study area, particularly those near the newly created border crossing, contain citrus groves. Here, linear plantings of taller bushy trees provide a stark contrast to the native creosote shrubbery and thickets of mesquite. In fact, agricultural development is the prominent feature in the viewshed.

Throughout most of the study area, construction of any buildings or facilities will require careful planning to reduce visual intrusion. Any structure taller than the relatively low-lying native vegetation will be visible from long distances.

Environmental Consequences

Alternative A

Visual quality could be expected to gradually degrade under Alternative A. The lack of a comprehensive land use strategy would give Reclamation fewer tools to ensure that developed facilities conform with accepted landscape and construction practices designed to minimize visual intrusion on the landscape. Additionally, uncontrolled OHV and motorized vehicle use would lead to eventual destruction of the natural desert vegetation and would leave a maze of visible vehicle tracks in the fragile desert soils.

Alternative B

This alternative would best protect the visual quality of the area because of fewer non-natural intrusions on the visual character of the study area. Also, this alternative would allow the rehabilitation of already visually scarred areas, such as OHV trails.

Alternative C

This alternative would have the greatest adverse effect on the visual quality among all alternatives. Because Alternative C would maximize community, recreation, and commercial development, it would result in the greatest number of non-natural developments, such as buildings, roads, and parking areas, which would intrude on the landscape. Careful and thoughtful design of constructed facilities could minimize degradation of visual resources. However, the potential exists to heavily degrade the visual character of the area because of the study area's relative lack of topographic screening and its sparse desert vegetation.

Alternative D

Alternative D would have less of an adverse effect on visual resources than Alternative C because fewer recreation and land use facilities would be developed, resulting in fewer intrusions on the natural landscape but a greater adverse effect than Alternatives A or B. Rehabilitation of closed OHV use areas would enhance visual quality.

Cumulative Impacts

No cumulative impacts have been identified.

Mitigation

No mitigation has been identified.

Residual Impacts

No residual impacts have been identified.

ECONOMICS

Affected Environment

For purposes of economic analysis, the overall study area is Yuma County, which has experienced significant economic growth in the past decade. Reclamation derived

economic data from several sources: Bureau of Economic Analysis, Census Bureau, and Arizona Department of Employment Security. Income and employment are shown for all of Yuma County. Employment is also shown for the city of San Luis (San Luis).

Table V-2 shows Yuma County=s total personal income and earnings by industry in 1990 and 2000. From 1990 to 2000, total personal income increased by approximately 77 percent, or a 6-percent average annual increase. Total earnings increased by about 74 percent, or a 5.7-percent average annual increase. In 1990, the largest shares of total earnings for Yuma County were the government (Federal / military: 22.7 percent and state / local services: 10.8 percent), services (16.7 percent), and farming (13 percent).

Table V-2.CPersonal Income and Earnings, Yuma County
1990 and 2000
($millions)

	1990	2000
Total personal income	$1,453.0	$2,578.1
Earnings by industry		
Farming	$140.7	$249.2
Agricultural services, forestry, fisheries, and other	$72.3	$170.2
Mining	$1.6	$0.5
Construction	$51.0	$128.6
Manufacturing	$58.3	$76.4
Transportation, utilities, and communication	$49.1	$71.2
Wholesale trade	$38.3	$70.6
Retail trade	$101.1	$180.2
Finance, insurance, and real estate	$26.5	$62.0
Services	$180.3	$355.1
Government - Federal and Military	$245.6	$302.2
Government - State and Local	$116.6	$216.3
Total earnings	$1,081.4	$1,882.5

These industries also had the largest shares of earnings in 2000: government (28 percent), services (19 percent), and farming (13 percent).

For the city of San Luis, the 2000 Census showed that more than 54 percent of the households earned less than $25,000 per year, compared to the State of Arizona, in which only about 28.8 percent of the households earned less than $25,000. Median household income in 2000 in the city of San Luis was $22,996, compared to $40,558 for the State of Arizona.

Table V-3 shows total employment and employment by industry for Yuma County in 1990 and 2000. From 1990 to 2000, total employment in the county increased by 31 percent. The largest employers in 2000 were related to the agricultural sector:

Table V-3.CTotal Employment and Employment by Industry, Yuma County
1990 and 2000

	1990	2000
Total employment	51,145	67,040
Employment by industry		
Farming	4,296	3,703
Agricultural services, forestry, fisheries, and other	6,760	11,765
Mining	110	[1]0
Construction	1,962	3,395
Manufacturing	2,261	2,428
Transportation, utilities, and communication	1,573	1,853
Wholesale trade	1,662	2,156
Retail trade	8,245	10,787
Finance, insurance, and real estate	2,352	[1]0
Services	9,407	14,233
Government: Federal/military	7,583	6,433
Government: State/Local	4,934	7,099

[1] For these sectors, estimates are not shown to avoid disclosure of confidential information. Estimates are included in the total employment figure.

farming (5.5 percent) and agricultural services (17.6 percent). The service sector (21.2 percent) was the second largest employer, followed by the government (Federal, State, and local) sector (20.2 percent).

Table V-4 shows total employment and employment by industry for the city of San Luis in the 1990 and 2000 Censuses. Total employment in 1990 was 956 full- and part-time jobs. By 2000, employment increased approximately 220 percent to 3,057 jobs. The biggest employers in 2000 were agriculture (24.4 percent), followed by services (22.3 percent) and trade (21.9 percent).

Table V-5 shows three indicators of economic growth in the San Luis area from 1990 to 1999. During that period, new building permits increased more than 20 times; taxable sales increased more than 50 percent; and net assessed valuations tripled.

Irrigated agriculture is important in Yuma County and within the study area. The Yuma Project, constructed in the early 1900s, is one of Reclamation=s earliest projects. It is divided into two divisions: Reservation Division (14,676 irrigable acres) and Valley Division (53,450 irrigable acres). The Valley Division boundary is just north of the city of San Luis. Another Reclamation project, northwest of San Luis, is the Yuma Auxiliary Project (3,400 irrigable acres), which was first constructed in the 1920s. Rehabilitation and betterment work was completed in the 1965. Table V-6 shows agricultural data from the 1997 Census of Agriculture for Yuma County, and table V-7 shows agricultural data based on the 2000 Arizona Agricultural Statistics publication.

Table V-4.CTotal Employment and Employment by Industry,
City of San Luis

	1990	2000
Total employment (Persons over 16 years of age)	956	3,057
Total employment by industry		
Agriculture, forestry, fisheries, and mining	326	746
Construction	31	237
Manufacturing	72	306
Transportation, utilities, and communication	51	207
Wholesale trade	20	242
Retail trade	146	427
Finance, insurance, and real estate	0	44
Services	301	682
Public administration	9	166

Table V-5.CSan Luis Growth Indicators
1990 and 2000

	1990	1999
New building permits	26	556
Taxable sales	$33,115,200	$65,513,320
Net assessed valuation	$4,759,686	$14,646,455

Source: Arizona State University, Arizona Department of Revenue

Table V-6.C1997 Census of Agriculture, Yuma County

	1997	1992	1987
Number of farms (irrigated lands)	438	503	548
Irrigated land, harvested crop land (acres)	195,045	188,198	186,318
Market value of agricultural products sold (all lands)	$502,063,000	$402,187,000	$356,150,000

According to Reclamation=s Annual Crop Production Report for 1999, the primary crops grown in the Yuma Project, Valley Division, included cotton, wheat, hay ,vegetables, and citrus fruits, with a gross crop value of $226,627,694. For the Yuma Auxiliary Project, the primary crops were alfalfa hay and citrus fruits, with a gross crop value of $3,225,000.

Table V-7.C1999 Crop Production, Yuma County
2000 Arizona Agricultural Statistics

Crops	Acres Harvested	Yield per Acre	Production
Upland cotton	22,400	1,251 lbs.	58,400 bales
Pima cotton	1,800	1,093 lbs.	4,100 bales
Durum wheat	35,300	5,880 lbs.	103,780 tons
Other wheat	1,300	6,420 lbs	4,170 tons
Barley	2,900	5,520 lbs	8,000 tons
Corn (grain)	3,400	10,130 lbs	17,220 tons
Alfalfa hay	30,000	8.3 tons	249,000 tons
Other hay	20,500	4.0 tons	82,000 tons
Vegetables	76,800	309 cwt	23,709,000 cwt
Grapes	1,115	489 ctn	n/a
Citrus fruit	18,300		8,945,000 ctn
Total	213,815		Gross cash receipts = $625,636,000

On the basis of income and employment data, the base or primary industries in Yuma County are agriculture and government. Because of the availability of irrigation water supplies and opportunity to harvest crops several times during the long agricultural season, agriculture and related agricultural services are the primary contributors to the county=s economy. The presence of the MCAS, as well as other Federal and State agencies, contribute to the government sector of the local economy.

For the city of San Luis, agriculture and related services are the primary contributors to the city=s economy. In addition, merchants provide services to people passing through the international boundary area. Industry and commerce have flourished in the area near the port-of-entry because of increased traffic between Mexico and the United States.

Environmental Consequences

Alternative A

New development, including the proposed SR195 and other new roads and highways, would continue to foster economic growth in the study area.

Alternative B

Transferring or exchanging the Hillander “C” tract and removing this tract from agricultural production would adversely affect the agricultural sector of the economy. Eliminating existing land use authorizations, if possible, also could adversely affect the regional economy, depending on the type of authorization.

If groundwater pumped from the study area approaches the 160,000-acre-foot-per-year limit stipulated by IBWC 242 Minute, land use applicants within the study area would be required to obtain water from a surface or groundwater source outside the study area. This water likely would be more expensive, which could adversely affect the land use applicant.

Alternative C

Alternative C's comprehensive land use strategy would encourage commercial development but provide management guidance, which would provide more security for would-be investors than Alternative A and would benefit the commercial and recreation sectors of the economy. Land transfers and exchanges and new land use authorizations could potentially adversely affect the agricultural sector of the economy. However, these adverse effects could be offset by gains to the commercial and recreation services sectors of the economy.

Alternative D

The effect of Alternative D on the economy of the study area would be similar to that of Alternative C, except that net gains in the commercial and recreation service sectors of the economy may be less.

Cumulative Impacts

The potential for decreased land use and water availability in agriculture may further depress the agricultural sector of the regional economy, particularly if this sector is already depressed.

Mitigation

No mitigation has been identified.

Residual Impacts

No residual impacts have been identified.

CULTURAL RESOURCES

Affected Environment

Cultural resources—the remains of past human activity—are finite, nonrenewable, and often fragile. Cultural resources are historic and traditional cultural properties that reflect our heritage. Historic properties include those prehistoric and historic

archaeological sites, buildings, districts, and objects eligible for inclusion in the National Register of Historic Places (Register). Traditional cultural properties are places of special heritage value to contemporary communities (often, but not necessarily, Native American communities) because of their association with the cultural practices or beliefs that are important in maintaining the cultural identity of that community. Federal agencies are required to identify and evaluate the significance of cultural resources located within the area of potential effect (APE) of a Federal undertaking and to evaluate the effect of the undertaking on those resources.

Federal agencies' responsibility to consider and protect cultural resources is based on a number of Federal laws and regulations. In particular, the National Historic Preservation Act of 1966 (NHPA), as amended, and its implementing regulations (36 CFR 800), set forth the requirements and process to identify and evaluate cultural resources, assess effects on these resources, and mitigate adverse effects on them that result from a Federal undertaking. Under Section 106 of NHPA, development of a resource management plan is considered a Federal undertaking.

The APE for this analysis of cultural resources is limited to the area that has been defined as the study area, as shown on **map I-2**.

Historic Setting

Prehistoric Period

It is likely that the lower Colorado River region has been occupied by humans for upwards of 12,000 years. The earliest accepted period of human habitation in the region is associated with the San Diequito Complex. Very little is known about these early desert cultures, but their economy was likely a mixture of hunting and gathering. These early cultures appear to have faded out by about 9,000 before present (B.P.) when Archaic traditions began to move into the region. The Archaic period in western Arizona has been divided into three phases. Phase I (9500-7000 B.P.) is characterized by crude, basally notched, stemmed projectile points. Phase II (7000-400 B.P.) is characterized by the development of manos and metates, and Pinto- and Gypsum-style projectile points. Phase III (about 4000-2000 B.P.) is characterized by an elaboration of stone projectile points, bifacially flaked tools, and the possible production of plain brownware ceramics (Wegener, 1999).

As with the earlier traditions, the ceramic period (about 1300 B.P. to the early historic period) in the lower Colorado River area is not clearly understood. The ceramic period has been divided into three phases: Patayan I, II, and III. Phase I, which is the earliest accepted ceramic stage in southwestern Arizona, spanned from about 1300 to 1000 B.P. The presence of shell and steatite artifacts from California along the Lower Gila River indicates extensive travel and trade during the Phase I period. Major pottery types from this period include Black Mesa Buff, Colorado Beige, and Colorado Red (Sterner and Bischoff, 1997).

The Phase II period, about 1000 to 500 B.P., was marked by the expansion of ceramic production up the Gila River and into the California desert. Major types of pottery

include Tumco Buff along the Colorado River, Palomas Buff along the Gila River, and Salton Buff at Lake Cahuilla. This period also marked the development of new vessel forms with recurved rims and plaster finishes. Phase III began around 500 B.P. and continued to the early historic period. This phase was marked by the abandonment of previous ceramic styles and the development of new styles such as Colorado Buff. During this period, Patayan ceramics reached their widest geographic distribution, indicating extensive trade networks (Sterner and Bischoff, 1997: 10).

Ethnohistoric Period

At the start of the historic period, about 500 to 400 B.P., the inhabitants of southwest Arizona and the lower Colorado River region were Yuman speaking groups. Yuman speakers are a subgroup of the Hokan language family and can be classified as belonging to one of four geographic groups: the Colorado River Delta (Cocopa, Kohuana, and Halyikwamai), the River Yumans along the Colorado and Gila Rivers (Yuma or Quechan, Mohave, Halchidhoma, and Maricopa), upland Yuman in western Arizona (Yavapai, Walapai, and Havasupai), and western Yumans of the California desert (Diegueno, Kamia, Kailiwa, and Paipai). In addition, the Hia-ced O'odham (a non-federally recognized tribal group seeking Federal recognition that is currently part of the Tohono O'odham) occupied the inland desert south of the Gila River and may have occupied areas on the eastern margin of the 5-mile zone. The Hopi claim that a number of its clans have histories that place them on the lower Colorado and Gila Rivers.

Agriculture provided 30 to 50 percent of subsistence for the Delta and River groups. No evidence of irrigation works or similar land modification has been located in the lower Colorado River area. Agricultural strategies appear to have been developed to maximize the use of flood waters to provide water for crops. Crops included maize, beans, squash, and melons. Seeds were planted in newly deposited sediments after flood waters had receded. Dietary protein came from fish and small mammals such as rabbits and squirrels and, to a lesser extent, deer and bighorn sheep (Sterner and Bischoff, 1997).

Historic Period

The first non-aboriginal people to enter the region of the lower Colorado River were Spanish explorers in search of gold and other riches in the 1500s. In the 1540s, Hernando de Alarcon reached the mouth of the Colorado River and headed upriver to Yuma Crossing, where he spent several months before returning to New Spain.

Throughout most of the 1600s, the Spanish largely ignored the Yuma area, but when they returned in the late 1600s, they were determined to gain a stronger foothold by converting the native peoples to Christianity. One of the successful missionaries to explore the Southwest was the Jesuit priest Eusebio Francisco Kino. In 1699, Kino explored the Gila River. The following year, Kino led an expedition to the Gulf of California, crossing the Colorado River at Yuma. Kino noted that the Quechan village at the crossing contained more than 1,000 people.

For most of the 1700s, Yuma was the western edge of Spanish control. In 1780, attempts to establish two missions in the Yuma area were shortlived. The local Quechan Indians resisted efforts by the Spanish Franciscans to "civilize" them, and on July 17, 1781, killed the priests and all Spanish males at the two missions. Few non-Indians entered the area again until the 1820s, when Anglo-American trappers explored the lower Gila River in search of beaver. By the start of the Mexican-American War in 1846, the American presence in the area had been firmly established.

Over the years, Yuma became established as an important trade center. By 1870, Yuma (then known as Arizona City) was the second largest settlement in the Arizona territory, with a population of 1,144. Irrigated agriculture began in the late 1800s and early 1900s, when three private ditch companies were formed to develop and irrigate the bottom lands of the Yuma Valley. Along with the private companies, some individuals and farmers' organizations also attempted irrigation. At about the same time, the newly created United States Reclamation Service (predecessor of the Bureau of Reclamation) also recognized the area's potential for irrigation, and on May 10, 1904, the Secretary of the Interior authorized construction of the Yuma Project. Project work began with the construction of Laguna Dam on July 19, 1905. In addition to Laguna Dam, original project features include the Boundary Pumping Plant, one powerplant, and a system of canals, laterals, and drains. The East Main Canal skirts the northwest edge of the study area boundary, but the study area contains none of the historic Yuma Project's facilities.

Identified Cultural Resources

Research was conducted in September 2001 and consisted of file searches at the Arizona State Parks, State Historic Preservation Office, Phoenix; ADOT, Phoenix; Arizona State Office of the Bureau of Land Management, Phoenix; and the Arizona State Museum, University of Arizona, Tucson. Phone inquires were made to the BLM, Yuma Area Office; Reclamation, Yuma Area Office, Arizona and Lower Colorado Regional Office, Boulder City, Nevada; and the Arizona State University, Anthropology Laboratory, Tempe. In addition, several online databases were consulted, including the National Register Information System and AZSite: Arizona=s Cultural Resource Inventory. A search of Reclamation's real property inventory system was also conducted.

As evidenced by this research, archeologists have paid relatively little attention to the area of the lower Colorado River in comparison to other regions of the Southwest. Early archaeological investigations in the Southwest have generally focused on groups that had rich material cultures, such as the Anasazi, Mogollon, and Hohokam. The region of the lower Colorado River was largely ignored, possibly due to the loss or destruction of the material remains of the groups that inhabited the area by annual flooding of the Colorado River.

Based on the research conducted in September 2001, only about 10 percent of the lands within the APE have been surveyed for archeological resources, and most of these surveys involved corridor or linear surveys associated with road, pipeline, or power line construction. Only two block surveys of any considerable size have been conducted within the APE.

A total of 11 linear surveys have been conducted in the project area. Two of those surveys run through the APE along the southern border of T. 11 S., Rs. 23 and 24 W., sections 1, 2, 3, 4, 5, and 6 (Lite, 1996; McQuestion, 1992). Four other surveys covered portions of the Lite and McQuestion surveys within the APE (Crownover, 1996; Effland, 1985; Lite, 1997; Dart, 1994). Lite (1996) reported one site (AZ X:10:17), described as two moderate-to-heavy concentrations of pre-historic ceramic artifacts with no associated lithic or other features. The site was designated as potentially eligible for listing on the National Register of Historic Places under criteria D (i.e., likely to hold important information which will contribute to our understanding of human history or prehistory). Avoidance of the site was recommended. McQuestion (1992) located one isolated find: a scatter of three brownware ceramic sherds. McQuestion also recorded three other isolated finds—a square metal pillbox, one rhyolite primary flake, and one brownware ceramic sherd—but those isolates were outside the APE for this study.

A survey conducted by SWCA Inc., Environmental Consultants (Doke, 1993) for a pipeline right-of-way recorded a single isolated find consisting of a single stuccoware sherd. Two other linear surveys (Middleton, 1981 and Darrington, 1995) within the APE located no other sites or isolates. One survey located along the international boundary was plotted on a survey map at the Arizona State Historic Preservation Office (SHPO), but no report of the survey findings could be located.

Two block surveys have been conducted in the APE. In 1985, Dewey and Middleton conducted a reconnaissance survey of approximately 1,280 acres covering the south half of sections 3 and 4, and the north half of sections 9 and 10, all in T. 11 S., R. 23 W. No cultural resources were located. In 1999, 360 acres constituting all of section 23 north of the international boundary, and the western quarter of section 24 north of the international boundary in T. 11 S, R. 24 W. were surveyed without locating any prehistoric resources (Wegener, 1999).

Two additional sites were located within the APE using AZSite (Arizona=s Culture Resource Inventory internet database) (Arizona State University, et al., 2001). Both sites were recorded in 1987 and are identified by BLM site numbers. Reports or site forms could not be located. Site No. AZ-050-1420 (AZSite No. 74775) was described as a single primary flake in the backdirt of a rodent burrow, indicating possible subsurface deposits. The site is located in T. 11 S., R. 23 W., sec. 25 and is considered eligible for listing on the Register under criteria D. Site No. AZ-50-1421 (AZSite No. 74776) is located in T. 11 S., R 24 W., sec. 23 and is described as a “pot smash” site. It is located in the same area surveyed by Wegener in 1999 but was not identified in that survey. It is considered eligible for listing under criteria D.

Few buildings and structures have been recorded within the APE. In 1999, Wegener reported on buildings and structures related to an international border livestock crossing station. Although his survey of the buildings and structures was very basic, he determined that they were not significant. Wegener also noted the existence of the 242 Lateral, which crosses the northern portion of the survey area. He did not record the structure or report on its potential significance.

A search of the records at the State Historic Preservation Office revealed no historic resources recorded within the APE. The East Main Canal, considered a contributing

element to the Register-eligible Yuma Irrigation Project, skirts the northwestern corner of the APE but does not extend into the project area (Pfaff et al., 1992 [1999]). A search of the National Register of Historic Places database showed 67 properties in Yuma County listed on the National Register of Historic Places but none are located within the APE (National Park Service, 2001). A search conducted in Reclamation=s real property inventory system did not identify any Reclamation-owned buildings or structures in the APE.

Information about traditional cultural properties within the APE is currently not available. During the planning process for any future Federal undertakings within the APE, Reclamation will consult with area Indian tribes to determine if any traditional cultural properties would be affected and, if so, will make every effort to avoid those properties.

Conclusions and Recommendations

Because the development of a resource management plan is considered a Federal undertaking under Section 106 of the NHPA, consultation with the SHPO and federally recognized Native American groups who may have an interest in the APE was initiated and is ongoing.

The relatively few archeological sites identified within the APE to date do not indicate the number of sites within the entire 5-mile zone, because, as noted, less than 10 percent of the APE has been surveyed. The number of sites in areas nearby and the rich pre-history of the region suggest that additional sites are likely to exist within the APE. In the absence of a systematic archaeological survey of the APE, intensive surveys of any areas subject to ground-disturbing or potentially ground-disturbing activities will be initiated, in accordance with Section 106 of the NHPA.

Likewise, the lack of historic structures or buildings recorded in the APE does not indicate the number of historic structures that actually exist in the area because a comprehensive survey of structures or buildings has not been conducted. As with the archeological resources, an intensive survey of historic structures would be required before any ground-disturbing or potentially ground-disturbing activities are initiated.

Environmental Consequences

Alternative A

Reclamation would continue to fully comply with Section 106 of the NHPA for Federal undertakings. Reclamation would consult with the SHPO and area Indian tribes, as required by 36 CFR 800, as revised to locate and identify any cultural resources within the study area before initiating any Federal undertaking. However, Reclamation would continue to provide only a limited level of land management oversight. Consequently, adverse effects on cultural resources that might be occurring under existing, largely unregulated land uses, including OHV uses, would continue. Without an RMP, Reclamation would not programmatically plan for necessary additional cultural

resource management activities to further survey, test excavate, or protect Register-eligible sites. Instead, cultural resource investigations would occur only in response to each new agency action, without a unified management approach.

Alternative B

Reclamation would comply with NHPA and would consult with the SHPO and area Indian tribes, as required by 36 CFR 800, as revised, as under Alternative A. Additionally, in consultation with the SHPO and area Indian tribes—and based on the Class I survey—Reclamation would develop a research design for conducting Class II or III surveys to determine areas of high or low potential for cultural resources, including traditional cultural properties, within the study area. Reclamation then would conduct intensive surveys of areas with high potential for cultural resources and/or any areas scheduled for ground-disturbing or potentially ground-disturbing activities to locate cultural resources. During ground-disturbing activities, Reclamation would make every effort to avoid significant cultural resources. These actions would further protect and benefit cultural resources in the study area for the long term.

During construction, if cultural resources are discovered, work in the immediate areas would cease until a qualified archeologist evaluates the site, takes appropriate measures, and consults with the SHPO. Reclamation would ensure that any project-specific agreements regarding cultural resources are included as specifications in construction contracts. Reclamation would also inform construction contractors about the presence of cultural resources within or near the project area and about their protection under Federal and State laws. When granting easements on or across Reclamation-owned lands, Reclamation would review the proposal for potential effects on cultural resources and ensure that the entity receiving the easement complies with all applicable cultural resource laws for any activities within the boundaries of the easement. These actions also would benefit cultural resources.

In addition, eliminating recreational OHV use would protect cultural resources in the study area for the long term.

Alternative C

Under Alternative C, designating certain areas for recreational OHV use could adversely affect cultural resources. However, conducting intensive cultural resource surveys and preparing a comprehensive OHV plan could offset any potential adverse effects.

Alternative D

The effects would be the same as under Alternative B.

Cumulative Impacts

No cumulative impacts have been identified.

Mitigation

Alternative A

Reclamation would continue to fully comply with Section 106 of the NHPA for Federal undertakings, and Reclamation would consult with the SHPO and area Indian tribes, as required by 36 CFR 800, as revised, to locate and identify any cultural resources within the study area before initiating any Federal undertaking.

Action Alternatives

Reclamation would do the following:

- In consultation with the SHPO and area Indian tribes—and based on the Class I survey—develop a research design for conducting Class II or III surveys (1) to determine areas of high or low potential for cultural resources, including traditional cultural properties, (2) to determine sources of impacts and (3) to define additional investigation or protective actions appropriate for each site. The plan would serve to support requests for funding to implement necessary actions.
- Conduct intensive surveys of areas with high potential for cultural resources and / or any areas scheduled for ground-disturbing or potentially ground-disturbing activities to locate cultural resources. During ground-disturbing activities, Reclamation would make every effort to avoid significant cultural resources.
- During construction, if cultural resources are discovered, ensure that work in the immediate areas ceases until a qualified archeologist evaluates the site, takes appropriate measures, and consults with the SHPO.
- Ensure that any project-specific agreements regarding cultural resources are included as specifications in construction contracts and inform construction contractors about the presence of cultural resources within or near the project area and about their protection under Federal and State laws.
- When granting easements on or across Reclamation-owned lands, review the proposal for potential effects on cultural resources and ensure that the entity receiving the easement complies with all applicable cultural resource laws for any activities within the boundaries of the easement.

Specific mitigation cannot be identified until the intensive surveys are completed to determine if cultural resources are present that are eligible for the Register. The following mitigation strategies presume that one or more archeological sites or traditional cultural properties will be determined eligible for the Register and will be affected by the proposed action. The exact nature of mitigation would be determined in consultation with the SHPO and others, as appropriate, and documented in a memorandum of agreement with the consulting and interested parties.

- Periodically monitor Register-eligible or unevaluated sites to assess impacts and the need for investigative or protection action.
- Place protective materials over portions of sites affected by erosion or trail construction or use to prevent additional disturbance.
- Recover site data through systematic surface collection or excavation and provide resulting reports to the professional community and interested public.
- Further consult with area tribes about appropriate actions to protect endangered traditional cultural property sites and implement those actions where reasonable and feasible.
- Incorporate information about cultural resources into brochures and other educational materials created for use in the study area.

Residual Impacts

Some level of relic collection may continue to occur.

INDIAN SACRED SITES

Affected Environment

Indian sacred sites are defined in Executive Order 13007 as

> "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site."

Federal agencies are required, to the extent practicable, to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sites.

Reclamation has initiated consultation with area Indian tribes to notify them of its proposed action and will continue to seek their assistance in identifying sacred sites within the study area.

Environmental Consequences

Alternative A

Under normal conditions, Indian sacred sites would not be affected under Alternative A. Reclamation would continue to consult with area Indian tribes to locate and identify any sacred sites within the study area before initiating any Federal undertaking. However, unauthorized OHV use, which could lead to incursions onto the land, would still have the potential to adversely affect Indian sacred sites.

Alternative B

As under Alternative A, Reclamation would continue to consult with area Indian tribes regarding Indian sacred sites within the APE before initiating any ground-disturbing activities. In implementing ground-disturbing activities, Reclamation would avoid areas that potentially contain any cultural resources. However, eliminating recreational OHV use would tend to reduce incursions onto the land, thereby reducing potential adverse effects to Indian sacred sites.

When granting easements on or across Reclamation-owned lands, Reclamation would review the proposal for potential effects on cultural resources and ensure that the entity receiving the easement complies with all applicable cultural resource laws for any activities within the boundaries of the easement.

Alternative C

Recreational OHV use, although it would be limited to designated areas, could lead to incursions onto the land and potential adverse effects to Indian sacred sites. However, these adverse effects could be offset by the OHV use plan.

Alternative D

The effects of Alternative D would be the same as for Alternative B.

Cumulative Impacts

No cumulative impacts have been identified.

Mitigation

Executive Order 13007 does not authorize agencies to mitigate for the impact of their actions on Indian sacred sites. However, it does direct agencies to avoid adverse impacts when possible. If consultations determine that adverse impacts are occurring (Alternative A) or would occur from implementation of any action alternative, then Reclamation would seek means to avoid these adverse impacts.

Residual Impacts

If sacred sites were present and were adversely affected by operations or land use and Reclamation could not find the means to avoid these impacts, then residual impacts would occur.

INDIAN TRUST ASSETS

Affected Environment

Indian trust assets are legal interests in property held in trust by the United States for Indian tribes or individuals. Examples of trust assets are lands, minerals, hunting and fishing rights, and water rights. The United States has an Indian trust responsibility to protect and maintain rights reserved by or granted to Indian tribes or Indian individuals by treaties, statutes, and Executive orders, which are sometimes further interpreted through court decisions and regulations. This trust responsibility requires Reclamation to take all actions reasonably necessary to protect trust assets.

Reclamation contacted the U.S. Bureau of Indian Affairs (BIA) and area tribes about Indian trust assets within the study area. In response, the Hopi Tribe advised Reclamation they have interests in the Little Colorado and the Colorado Rivers. No other potential trust assets in the study area have been identified.

The draft RMP / environmental assessment was provided to BIA and area tribes for review and comment. No comments or additional trust asset information were received from BIA or area tribes.

During implementation of the RMP, Reclamation will be in contact with the BIA and local tribes. Should trust assets be identified, potential impacts will be identified and analyzed, and action taken to avoid adverse impacts. If adverse impacts cannot be avoided, mitigation will be implemented.

Environmental Consequences

No effects on Indian trust assets have been identified under any of the alternatives.

Cumulative Impacts

No cumulative impacts have been identified.

Mitigation

If adverse impacts to trust assets in the study area are occurring (Alternative A) or would occur from implementation of any action alternative, Reclamation would seek

means to avoid these impacts. If adverse impacts cannot be avoided, Reclamation would provide appropriate mitigation or compensation.

Residual Impacts

No residual impacts have been identified.

ENVIRONMENTAL JUSTICE

Executive Order 12898, AFederal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,@ dated February 11, 1994, requires agencies to identify and address disproportionately high and adverse human health or environmental effects of their actions on minorities and low-income populations and communities, as well as the equity of the distribution of the benefits and risks of their decisions. Environmental justice addresses the fair treatment of people of all races and incomes with respect to actions affecting the environment. Fair treatment implies that no group of people should bear a disproportionate share of adverse effects from an environmental action.

To comply with the environmental justice policy established by the Secretary of the Interior, all Department of the Interior agencies are to identify and evaluate any anticipated effects, direct or indirect, from the proposed project, action or decision on minority and low-income populations and communities, including the equity of the distribution of the benefits and risks. Accordingly, this section examines the anticipated distributional equity of alternative-associated impacts with respect to potentially affected minority and economically disadvantaged groups.

Affected Environment

This section provides baseline demographic information used to analyze environmental justice impacts.

Race and Ethnicity

Yuma County and the communities near the 5-mile zone would potentially be most affected by implementation of the alternatives. Population data from the 2000 Census for the State of Arizona, the county, two nearby Indian reservations, and four communities are shown in table V-8. The population is shown for seven racial categories: White, Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, Some Other Race, and Two or More Races. The percentages of total racial minority population and the Hispanic or Latino population, a minority ethnic group, are also shown.

Table V-8—Population, Race, and Ethnicity, 2000

Geographic Area	Total Population	Race								Hispanic or Latino (of any race) (percent)
		One Race						Two or More Races	Total Racial Minority Population[1] (percent)	
		White	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some Other Race			
Arizona	5,130,632	3,873,611	158,873	255,879	92,236	6,733	596,774	146,526	1,257,021 (24.5)	1,295,617 (25.3)
Yuma County	160,026	109,269	3,550	2,626	1,486	197	37,743	5,155	50,757 (31.7)	80,772 (50.5)
Cocopah Reservation	1,025	474	1	519	0	0	17	14	551 (59.1)	47 (4.6)
Fort Yuma Reservation	2,376	650	42	1,350	1	0	196	137	1,726 (72.6)	662 (27.9)
Gadsden	953	390	0	34	3	2	511	13	563 (59.1)	894 (93.8)
San Luis	15,322	9,007	452	224	25	3	5,265	346	6,315 (41.2)	13,657 (89.1)
Somerton	7,266	3,235	27	47	25	1	3,714	217	4,031 (55.5)	6,915 (95.2)
Yuma	77,515	52,968	2,491	1,168	1,164	145	16,557	3,022	24,547 (31.7)	35,400 (45.7)

[1] Includes Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, Some Other Race, Two or More Races.
Source: US Census, 2000.

Yuma County, the reservations, and communities each have a greater percentage of total racial minority populations than the State of Arizona as a whole. All of the areas (except the Cocopah Reservation) also have a greater percentage of ethnic (Hispanic or Latino) populations than the State.

Low-Income Populations

Low-income populations in the area are identified by several socioeconomic characteristics. As categorized by the 2000 Census, specific characteristics used in this description of the existing environment are income (per capita and median family), the percentage of the population living below poverty level (all persons and families), substandard housing, and unemployment rates.

As shown in table V-9, based on 1999 income as reported in the 2000 Census, the per capita and median family incomes for all areas are less than the State per capita and family income; and all areas have a greater percentage of persons and families living below the poverty level. For both reservations, Gadsden, and San Luis, the percentages of persons and families living below the poverty level are more than double the State rate.

Table V-9.—Income and Poverty, 1999

Area	Money Income (Dollars)		Percent Below Poverty Level	
	Per Capita	Median Family	All Persons	Families
Arizona	20,275	46,723	13.9	9.9
Yuma County	14,802	34,659	19.2	15.5
Cocopah Reservation	12,094	25,600	31,4	20.7
Fort Yuma Reservation	8,402	23,750	34,1	30.5
Gadsden	6,562	21,000	45,2	41.7
San Luis	5,377	22,368	35.8	36.3
Somerton	7,960	27,944	26.6	24.0
Yuma	16,730	39,693	14.7	12.1

Source: U.S. Census, 2000.

Other measures of low income, such as substandard housing and employment (shown in table V-10), also characterize demographic data in relation to environmental justice. Substandard housing units are those overcrowded and those lacking complete plumbing facilities. The percentage of occupied housing units in the areas with 1.01 or more occupants per room for all but the Cocopah Reservation was greater than for the State. Except for the city of Yuma, the percentage of housing units lacking complete plumbing facilities for all areas was greater than for the State. The 2000 unemployment rates for the local areas ranged from 9.0 to 27.3 percent, compared to the State unemployment rate of 5.6 percent.

Table V-10.—Housing, Labor Force, and Employment, 2000

Area	Housing Units				Civilian Labor Force	
	Total Occupied	Percent Substandard[1]	Total	Percent Sustandard[2]	Percent in Labor Force	Unemployment Rate (Percent)
Arizona	1,901,327	8.6	21,088	1.1	61.1	5.6
Yuma County	53,848	14.7	598	1.1	50.3	12.1
Cocopah Reservation	419	7.4	14	3.3	21.0	15.6
Fort Yuma Reservation	793	19.7	36	4.5	45.5	9.0
Gadsden	227	36.1	35	15.4	59.5	19.2
San Luis	3,023	42.3	58	1.9	40.4	27.3
Somerton	1,821	34.5	53	2.9	54.6	9.1
Yuma	26,697	12.1	211	0.8	59.6	9.1

[1] 1.01 or more occupants per room.
[2] Lacking complete plumbing facilities.
[3] Population 16 years and over in the labor force.
Source: U.S. Census, 2000.

Environmental Consequences

This section addresses whether any group of people, including racial, ethnic, or socioeconomic group, would bear a disproportionate share of negative impacts from implementation of the alternatives.

The immediate study area and other communities potentially affected by implementation of the RMP contain high percentages of racial and ethnic minorities and persons and families below the poverty level. Unemployment is significantly higher in these counties than in other areas of the State. Consequently, the potential exists for low-income and minority populations to be disproportionately affected.

Alternative A

Existing environmental justice conditions in the area would continue.

Alternative B

As discussed under "Economics," transferring or exchanging the Hillander "C" tract and removing this tract from agricultural production would adversely affect the agricultural sector of the economy. In 1990 (the latest available Census data), 50.7 percent of the farm workers in Yuma County were racial minorities, while 92.3 percent were ethnic minorities. Thus, any decrease in agricultural production could adversely affect minority farm workers.

Providing water stations would benefit illegal immigrants, who are typically minority and low-income individuals.

Alternative C

The effects would be the same as for Alternative B. In addition, there would be a potential for short-term employment for minority or low-income individuals.

Alternative D

The effects would be the same as for Alternative C.

Cumulative Effects

No cumulative effects have been identified.

Mitigation

No mitigation has been identified.

Residual Impacts

No residual impacts have been identified.

UNAVOIDABLE ADVERSE IMPACTS

Unavoidable adverse impacts are those environmental consequences that cannot be avoided, either by changing or mitigating the action.

None of the alternatives are expected to have unavoidable adverse impacts.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Irreversible commitments are decisions affecting renewable resources, such as soils, wetlands, and riparian areas. Such decisions are considered irreversible because their implementation would affect a resource that has deteriorated to the point that renewal can occur only over a long period of time or at a great expense, or because their implementation would cause the resource to be destroyed or removed.

Irretrievable commitments of natural resources occur when a decision causes a loss of production or use of resources. They represent opportunities foregone for the time that a resource cannot be used.

None of the alternatives would result in irreversible or irretrievable commitments of resources.

RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

For this Federal action, short term is defined as the 10-year planning life of the RMP, during which time the proposed management actions will be accomplished. Although rehabilitating and revegetating certain OHV areas to their natural state may require more than 10 years, the process will begin during this time.

Long term is defined as any time period beyond the 10-year planning life of the RMP and the remaining life of the PRPU. As long as the PRPU is used for Reclamation project purposes, other legal purposes, and to accommodate proposed land uses from community development, pressure on natural resources within the study area will continue. This long-term pressure can be attributed to (1) Reclamation's efforts to accommodate public use and (2) the use of the study area for congressionally mandated Reclamation projects.

The proposed management actions are intended to reverse the deterioration of the environment occurring under current conditions. It is assumed that the short-term and long-term goals and objectives for managing the area would not change over time, and there will be no loss of productivity of the natural and social environment.