

### **3.8 SPECIAL STATUS SPECIES**

This section contains an analysis of the potential for adverse effects to species that have been afforded special protection status by laws that are enforced by federal (U.S. Fish and Wildlife Service) or state (California Department of Fish and Game) resource agencies or by other agreements, such as the nine-party Conservation Agreement for management of flat-tailed horned lizard populations.

#### **3.8.1 Affected Environment**

Several species of sensitive, unique, and protected plants and animals may occur in the project area, as described in this section. Species federally listed as, or that are candidates for listing as, threatened or endangered, or otherwise provided federal protection, are addressed first, followed by species listed or otherwise afforded special status by the State of California.

#### **Federally Listed or Protected Species**

In accordance with the Fish and Wildlife Service Coordination Act, Reclamation requested an up-to-date protected species list from the FWS, Carlsbad Field Office, and a determination on the need to supplement the Fish and Wildlife Service Coordination Report for the previous (1994) Draft EIS/EIR. FWS responded to the request with concurrence that the 1993 Fish and Wildlife Service Coordination Report was adequate for the purposes of the Revised and Updated Draft EIS/EIR, and that a supplement was not necessary (see Attachment H to this Final EIS/EIR).

In February 2001, Reclamation initiated informal consultation with FWS for the proposed action (letter, Jim Cherry, Manager, Reclamation, Yuma Area Office, to Ken Berg, Field Supervisor, Carlsbad Field Office, February 23, 2001). As a follow-up, Reclamation met with FWS staff at the Carlsbad Field Office on March 2, 2001, to review the contents of the letter, and to discuss FWS comments on the Revised and Updated Draft EIS/EIR as well as the need, if any, for further information and data collection, impacts analyses, and development of a mitigation plan to ensure no net loss of habitat for protected species if the project is implemented.

Since the previous Draft EIS/EIR was issued, additional species have been included on the list of those protected in the project area. There are presently six federally protected species, which include the following:

- endangered desert pupfish (*Cyprinodon macularius*);
- endangered Yuma clapper rail (*Rallus longirostris yumanensis*);
- endangered southwestern willow flycatcher (*Empidonax traillii extimus*);
- endangered least Bell's vireo (*Vireo bellii pusillus*);
- threatened desert tortoise (*Gopherus agassizii*);
- special protection species, flat-tailed horned lizard (*Phrynosoma mcalli*); and
- candidate for listing, Palm Springs round-tailed ground squirrel (*Spermophilus tereticaudus chlorus*).

The federally endangered razorback sucker (*Xyrauchen texanus*) has not been recorded as occurring in the Coachella Canal; however, it is also addressed in this section due to concerns expressed by DFG. Bighorn sheep may occasionally migrate down from the Chocolate and Orocopia Mountains to use the project area as a water source. These are not, however, the federally listed endangered and State-listed threatened Peninsular bighorn sheep (*Ovis canadensis cremnobates*), as had been reported in previous NEPA/CEQA documentation for the proposed project. Accordingly, Peninsular bighorn sheep are not expected to be affected by this project, and this species is not further addressed in this section.

Following are descriptions of the habitat requirements of each of these federally listed species and their documented or potential occurrence in the project area.

#### Desert Pupfish

The desert pupfish is listed as endangered by both the FWS and the State of California. In California, the species' habitat has been reduced to limited portions of the Salton Sea and a few of its tributaries, as shown in Figure 3-6, although it was once more widely distributed in the desert Southwest. Reasons for its decline include the introduction of exotic fish species which prey on or compete with desert pupfish for food and space. Desert pupfish occur in the north branch of Salt Creek and the lower main branch of Salt Creek in areas of slow, shallow water with an abundance of rooted aquatic plants. It also occurs in ponds in the vicinity of the Dos Palmas Springs Oasis.

Past introductions of tilapia and large-mouth bass may have reduced the population of pupfish in this area. Desert pupfish also occur at DFG's Oasis Springs Ecological Reserve.

No suitable pupfish habitat is present in the Coachella Canal, and there have been no reports of pupfish in the Canal. Areas at and in the vicinity of the Salton Sea that have resident pupfish populations are shown on Figure 3-6.

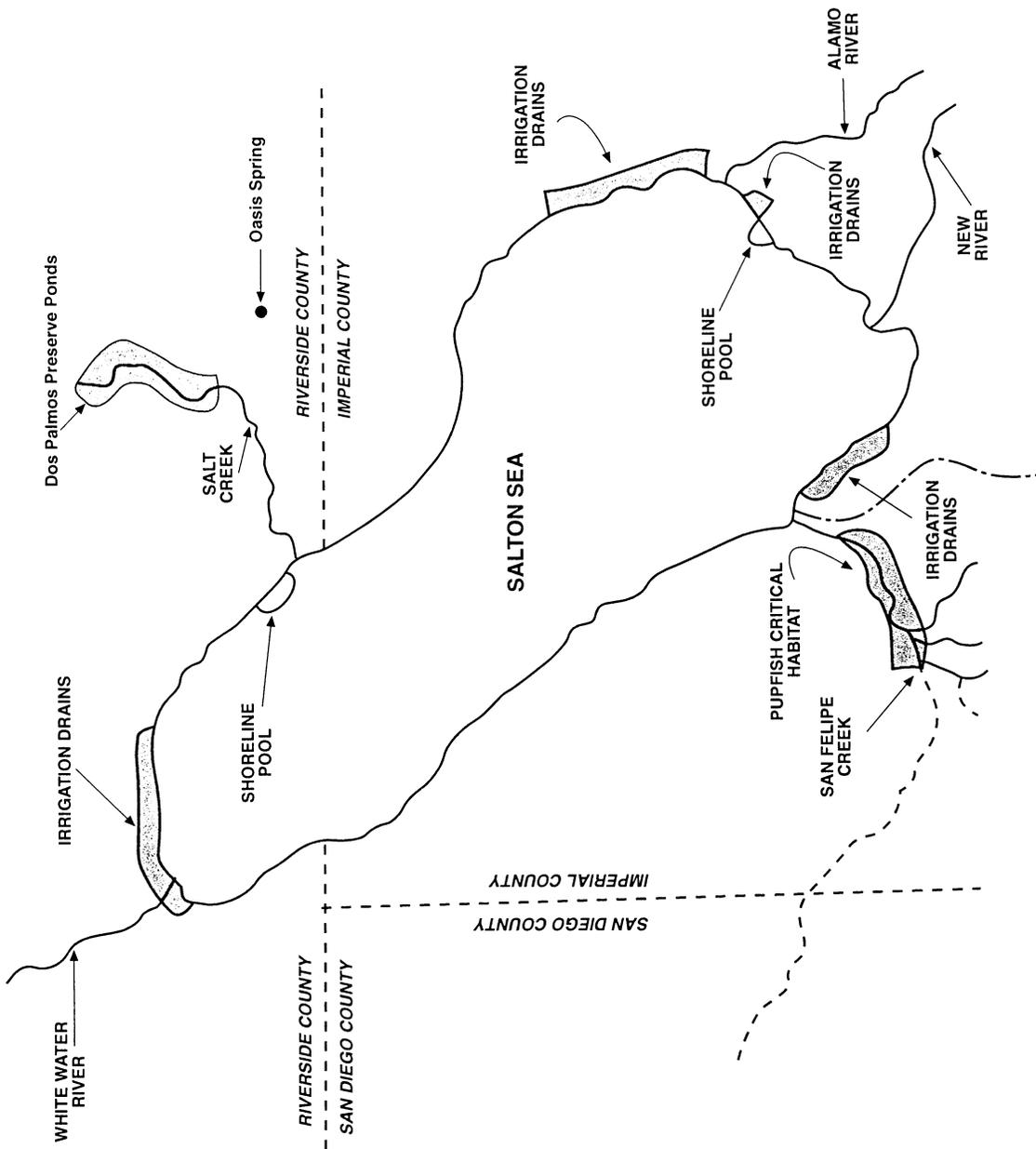
At Dos Palmas ACEC, pupfish occupy aquatic habitat in the BLM's upper and lower ponds (see Figure 3-5), reaches of perennial flow in the north fork tributary to Salt Creek; and in Salt Creek itself (see Figure 3-6). Pupfish are also present in a DFG aquatic refuge at Oasis Springs (see Figure 3-6 for approximate locations).

Reclamation studied the activity of the pupfish at the ACEC and in the vicinity of the Salton Sea from June through September 1999. Observations confirmed its presence in the lower reach of Salt Creek (Reclamation 1999). Further, over the period, the density of pupfish in this reach declined as fish moved to a shoreline pool connecting it and the Salton Sea.

#### Yuma Clapper Rail

The Yuma clapper rail is federally listed as endangered, and it is considered a fully protected species by the State of California. The species inhabits freshwater marshes along the lower Colorado River from near the Nevada-California border to the Colorado Delta region of Mexico, marshes near the Salton Sea, and scattered locations in the Imperial Valley of California and east on the Gila River to central Arizona. The Yuma clapper rail prefers emergent wetlands vegetation, such as dense or moderately dense stands of cattails (*Typha latifolia* and *T. domingensis*) and bulrush (*Scirpus californicus*) (Eddleman 1989; Todd 1986). Rails also occur, in lesser numbers, in sparse cattail-bulrush stands or in dense reed stands (*Phragmites australis*) (Rosenberg et al. 1991). The most productive clapper rail habitat comprises a mosaic of uneven-aged marsh vegetation interspersed with open water of variable depth (Conway et al. 1993). Annual fluctuation in water depth and residual marsh vegetation are important factors in determining habitat use by Yuma clapper rails (Eddleman 1989).

Surveys conducted during the spring of 2000 indicate that the Yuma clapper rail occupies suitable marsh/aquatic habitat in the Dos Palmas Springs Oasis area including the ponds and associated flowing channels in the mainstem of Salt Creek from Highway 111 to the mouth at the Salton Sea and in the vicinity of Frink Springs. The observation of a Yuma clapper rail chick at the Dos Palmas Springs area indicates that successful breeding occurs at this location.



**Figure 3-6**  
**Distribution of Desert Pupfish**

### Southwestern Willow Flycatcher

The southwestern willow flycatcher is listed as endangered by both the FWS and the State of California. This subspecies of willow flycatcher is a summer breeding resident in riparian habitat in southern California, southern Nevada, southern Utah, Arizona, New Mexico, western Texas, southwestern Colorado, and northwestern Mexico. Suitable willow flycatcher breeding habitat includes two essential components: (1) dense riparian woodlands of willow (*Salix* spp.), Fremont cottonwood (*Populus fremontii*), mulefat (*Baccharis salicifolia*), arrowweed (*Pluchea sericea*), and/or to a lesser extent salt cedar (*Tamarix* spp.), and other shrubs and trees; and (2) flooded and/or saturated soils areas subtending the breeding/foraging territory.

An assessment of habitat within the project area (including seepage-dependent vegetation), coupled with surveys for this species, was conducted by Reclamation and a member of the San Bernardino County Museum, Biological Sciences Section (see Attachment E-1). During the field reviews, the habitat observed was, at best, rated marginal due to its linear nature, lack of saturated soil, and/or overall paucity of dense vegetation with associated (underlying) surface water or saturated substrate (pers. comm. R. McKernan 2000). Based on the results of that assessment, it was determined that there is no suitable breeding habitat for the southwestern willow flycatcher in areas that would be affected by canal lining, and there is only marginal habitat for transients and migrants of this species. This transient/migrant habitat is located in the Oasis Springs area within the Dos Palmas ACEC and at Frink Springs (where one individual was observed during spring 2000 surveys, see Attachment E-1).

### Least Bell's Vireo

Least Bell's vireo utilize similar breeding and foraging habitat as southwestern willow flycatcher. Accordingly, this species may occur as a migrant or transient within the project area but would not be expected to breed there.

### Desert Tortoise

The Mojave population of the desert tortoise, which occurs in California, southern Nevada, southwestern Utah, and northwestern Arizona, is listed as threatened by the FWS and the State of California. This species is in decline due to habitat destruction, illegal collection, predation on juvenile tortoises by ravens and coyotes, and an upper respiratory disease. Poor quality desert

tortoise habitat occurs sporadically along the Coachella Canal. No desert tortoise signs were observed along the canal during surveys conducted for this project in the spring of 2000.

#### Flat-tailed Horned Lizard

The flat-tailed horned lizard (*Phrynosoma mcalli*) is afforded protection under a Federal Conservation Agreement (FCA), signed in June of 1997 by nine federal and State agencies, including Reclamation, outlining a management strategy with the objective of maintaining viable populations of the species. Following the signing of the FCA, the FWS officially withdrew the petition to list the flat-tailed horned lizard as a threatened species. This withdrawal was made because, “some of the threats are less serious than at the time the proposed rule was published, a conservation agreement will ensure further reduction of threats, and data indicating a population decline are inconclusive” (*Federal Register* 62 F.R. 37852). The flat-tailed horned lizard inhabits areas of fine sand in desert washes and flats in the desert areas of San Diego, Imperial and Riverside counties in California, southwestern Arizona and northern Baja California and Sonora in Mexico. This lizard typically occurs in flat sparse desert scrub habitat dominated by creosote (*Larrea tridentata*) and bursage (*Ambrosia dumosa*) on fine, sandy, alkaline soils. A habitat reconnaissance conducted in 2000 indicated that no preferred habitat for the flat-tailed horned lizard occurs along the Coachella Canal, and none of the project area occurs within any of the FCA’s designated flat-tailed horned lizard management areas.

#### Razorback Sucker

The razorback sucker is federally listed as endangered and is listed as fully protected by the State of California. The razorback sucker is a large river fish found only in the Colorado River Basin, and it can grow to 2.5 feet and 10 pounds. Changes to the fish habitat in the Colorado River Basin and predation on juvenile sucker fish by nonnative fish and introduced recreational sport fish have contributed to this species’ decline. There is no record of the razorback sucker occurring in the Coachella Canal. However, to address DFG concerns regarding incidental take during project construction, the species has been included in this assessment of special status species.

#### **Federal Candidate Species (Palm Springs Ground Squirrel)**

In February 1996, the FWS discontinued the use of Candidate Category 1, 2, and 3 as viable sensitivity status descriptors. A new list of Candidate species was determined based on an analysis of the existing categories. The ensuing analysis resulted in the dropping of the majority of the C1, C2, and C3 species from the updated Candidate list. Although the DFG has placed the former

Candidates on the State's "Federal Species of Concern" (FSC) list, this designation does not confer any federal protection to these species. The FWS does not actively track data for any FSCs.

Currently, there is only one animal known from the region that is a Candidate for federal listing as endangered or threatened, the Palm Springs (round-tailed) ground squirrel (*Spermophilus tereticaudus chlorus*). The subspecies is restricted to the Coachella Valley in Riverside County. Its preferred habitat includes sand fields and dune formation, desert succulent scrub, desert wash, desert scrub, alkali desert scrub, and levees in agricultural lands. The presence or absence of the Palm Springs (round-tailed) ground squirrel in the project area is unknown. The subspecific identity of the round-tailed ground squirrels observed in the project area during the May 2000 survey is unknown.

### State-Listed Species

Subsequent to preparation of the previous Draft EIS/EIR, additional species have been included by the State on the list of those protected in the project area. State protection for the first six species listed below, which are also federally protected, differs from federal protection only in that the Yuma clapper rail and the California black rail are classified as *Fully Protected* species under Section 3511 of Fish and Game Code. What this means is that at no time may individuals of the species or parts thereof be taken or possessed and there are no provisions of the code or other law that authorize by permit or license the "take" of these species. The State requires that measures be incorporated into project design to fully avoid loss of habitat for and individual harm to the two species of rail. Species afforded protection by the State of California that may occur in the project area include:

- threatened Yuma clapper rail (*Rallus longirostris yumanensis*);
- endangered least Bell's vireo (*Vireo bellii pusillus*);
- endangered southwestern willow flycatcher (*Empidonax traillii extimus*);
- endangered desert pupfish (*Cyprinodon macularius*);
- threatened desert tortoise (*Gopherus agassizii*);
- threatened California black rail (*Laterallus jamaicensiscoturniculus*);
- special protection species, flat-tailed horned lizard (*Phrynosoma mcallii*);
- candidate for listing, Palm Springs round-tailed ground squirrel (*Spermophilus tereticaudus chlorus*);
- special concern species, LeConte's thrasher (*Toxostoma lecontei macmillanoura*);
- special concern species, burrowing owl (*Speotyto cunicularia*);
- special concern species, Palm Springs pocket mouse (*Perognathus longimembris bangsi*); and
- special plant species, fairy duster (*Calliandra eryophylla*).

The State-listed endangered razorback sucker (*Xyrauchen texanus*) is also fully protected species. As indicated above, this species is not known to occur in the canal, but it has been included in this analysis of special status species due to concerns expressed by DFG. In addition to the species listed above, two special concern snail species may occur in springs at the Dos Palmas ACEC. These snails occur in springs that would not be affected by the proposed alternatives, and they are not further evaluated in this EIS/EIR.

Following are descriptions of the each of these species afforded protection by the State of California (except for those previously addressed as federally listed or protected species) and the extent of habitat found in the project area.

#### California Black Rail

The California black rail, a State fully protected species, was detected by R. McKernan at the Dos Palmas Preserve and in the vicinity of Frink Springs during surveys in June 2000. Typical California black rail habitat in the project area consists of wet or shallowly flooded bulrush or cattail.

#### LeConte's Thrasher

The LeConte's Thrasher is a California special concern species. Known distribution/occurrence for this species does not appear to include the project reach. There appears to be no currently accepted resource agency model to accurately predict species distribution.

This species is reported to occur within habitat types and features including desert dry wash woodland, desert saltbush scrub, alluvial fans, dissected alluvial fans, and dry washes throughout its range. Accordingly, potentially suitable habitat and potential species occurrence is presumed for portions of the construction corridor where these habitat types and features occur.

#### Burrowing Owl

The Burrowing Owl is a California special concern species. Known distribution/occurrence records for this species do not appear to include the project reach. Anecdotal information from CVWD employees does not include reports of species occurrence within berms and dikes associated with canal infrastructure, but undocumented burrows may exist along the canal.

### Palm Springs Pocket Mouse

The Palm Springs Pocket Mouse is a California concern species. Known distribution/occurrence records for this taxon include trapping studies conducted by Shana Dodd in 1999 that resulted in the capture of a few individuals in the Dos Palmas area. These individuals were found in association with Cansitas Series soils. The predicted distribution model for this taxon includes Fluvents, Carrizo, Myoma and Niland Series soils as well.

### Fairyduster

The fairyduster is on the DFG's special plant list. The fairyduster has been reported on alluvial fans at low elevations in the Chocolate Mountains, particularly on the eastern side of the range (Jaeger 1969). It could potentially occur in the project area.

### **3.8.2 Significance Criteria**

An alternative would have a significant impact on a special status species if the alternative would:

- have a substantial adverse impact, either directly or through habitat modifications, on any species identified as a candidate, sensitive or special status species in local or regional plans, policies or regulations, or by the DFG or FWS, or
- interfere substantially with the movement of any native resident or migratory fish or wildlife species or with the established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

### **3.8.3 Environmental Consequences**

#### **Conventional Lining Alternative**

Without mitigation, impacts to special status species as a result of this alternative would be considered significant. As mitigated, these impacts would be less than significant.

### Federally Protected Species

Desert Pupfish. The desert pupfish occurring at the Oasis Springs Ecological Preserve would not be affected because the source of this Artesian spring does not include canal seepage.

Without mitigation, elimination of canal seepage would substantially reduce the flow within the north branch of Salt Creek and the Dos Palmas Spring area (see Section 3.2, “Surface Water”), which could significantly reduce the aquatic habit of the desert pupfish. However, such a reduction would be avoided by maintaining the flow of water in the upper and lower ponds and in the north branch of Salt Creek. This would be achieved by providing extra water for that purpose from sources described under “Marsh/Aquatic and Desert Riparian Habitat Along the Coachella Canal, Water Supply for Mitigation Plan.” Sufficient flow would be provided to maintain the existing flow regime, as measured at USGS gauging station No. 10254050, thus lowering potential impacts below a level of significance. Maintained flows in salt creek would reflect seasonal variations similar to those that have been measured at USGS gauging station No. 10254050. Based on measured streamflows from 1996 through 1999, the mean annual flow at the USGS gauge is approximately 623 acre-feet (USGS 1996, 1997, 1998, 1999). This commitment will require vegetation management (salt cedar removal) upstream and in Salt Creek to maintain flow.

Yuma Clapper Rail. Eliminating canal seepage (if mitigation measures were not taken) could result in the loss of approximately 122 acres of marsh/aquatic habitat downslope from the canal. Of these 122 acres of marsh/aquatic habitat, 98 acres located in hydrologic unit D represent occupied or potential habitat areas for the federally endangered Yuma clapper rail. Of the other 14 acres of affected marsh/aquatic vegetation, four of these are located in units B and C and are not considered potential habitat because of their isolated locations and relatively small size. Additionally, the thin strip of emerging marsh/aquatic vegetation along the Eagle Mountain Railroad, totaling approximately 10 acres in hydrologic Unit D, is also fairly isolated and of little-to-no rail habitat value. The 122 acres of lost marsh/aquatic habitat would include areas where (1) dense cattail stands at the margins of ponds and along narrow channels of flowing water would be reduced in size, and (2) portions of the marsh/aquatic habitat would undergo a conversion from cattail/bulrush with standing water to salt cedar stands with no surface water.

If this were to happen, there could be an overall reduction in breeding, foraging, and escape habitat and an overall lower carrying capacity for clapper rails.

Impacts to Yuma clapper rail habitat would be avoided by providing a sufficient flow of water through the marsh/aquatic areas in the Dos Palmas ACEC and lower Salt Creek areas to maintain their habitat value. The sources of water are described under “Marsh/Aquatic and Desert Riparian Habitat Along the Coachella Canal, Water Supply for Mitigation Plan” in Section 3.5.4. Water would be supplied upslope of the existing marsh/aquatic habitat areas and allowed to flow downstream through the marsh, pond, and flowing channel areas, where it would be collected into the mainstream of the north branch tributary to Salt Creek (see Figure 3-5). The water distribution system would be designed to allow flexibility in the amount and location of delivered water. The plan to be developed during the project design phase would provide for O&M of the water supply. In addition, 7 acres of new marsh/aquatic habitat would be constructed in the Dos Palmas ACEC to replace small tracts of marsh/aquatic habitat that would be affected outside of the Dos Palmas/Salt Creek area, and 10 additional acres would be created to mitigate the loss of the thin strip of emerging vegetation along the edge of the Eagle Mountain Railroad. The mitigation measures described above would lower impacts below a level of significance.

Southwestern Willow Flycatcher. Lining of the Coachella Canal would result in the decrease in marsh/aquatic and desert riparian habitat types. Based on Reclamation’s assessment of the project area, this seepage-dependent vegetation is not considered suitable breeding habitat for the southwestern willow flycatcher (see Section 3.8.1 and Attachment E-1). Two locations within the project area—Oasis Springs in the Dos Palmas ACEC and Frink Springs—are considered marginal habitat for migrants or transients of this species. These habitat types are supported by non-canal seepage water and would not be impacted by the project. It should be noted that the replacement of salt cedar with native vegetation communities, which is part of the habitat replacement strategy specified in Section 3.5.4 under “Mitigation Requirements,” will provide habitat in the project area that is more suitable for the southwestern willow flycatcher. As FWS stated in the Final Rule listing the southwestern willow flycatcher as a federally endangered species under the federal Endangered Species Act (FESA),

*E. t. extimus* [southwestern willow flycatcher] sometimes nests in tamarisk [salt cedar], but does so at low densities, and apparently at lower success rates than in native vegetation (Hunter *et al.* 1988, Sogge *et al.* 1993, Muinieks *et al.* 1994). Therefore, tamarisk invasion likely represents replacement of native habitat with lower quality habitat... (50 *Federal Register* 10699, February 27, 1995).

Because the southwestern willow flycatcher was not listed as endangered until 1995, it was not addressed in the 1993 Biological Assessment (BA) for this project. Reclamation is currently reinitiating consultations with FWS pursuant to Section 7 of the FESA. Based on the factors

discussed above, it is not anticipated that any additional measures beyond those described in Section 3.5.4 would be required.

Least Bell's vireo. For reasons similar to those described above for the southwestern willow flycatcher, the Conventional Lining Alternative would not be expected to impact least Bell's vireo populations. Accordingly, no mitigation for impacts to this species is expected to be required in excess of those measures identified for impacts to marsh/aquatic and desert riparian habitat (see Section 3.5.4).

Razorback Sucker. No razorback sucker are expected to occur in the Coachella Canal, and therefore no impacts to this species are expected to result from the Conventional Lining Alternative. However, in response to concerns expressed by the FWS and DFG regarding the sucker, Reclamation and CVWD have identified precautionary measures to further reduce the potential for impacts to the razorback sucker. These measures would entail the installation of basket strainers on the intakes of bypass system pumps to avoid incidental take of razorback suckers. The basket strainers would be designed such that intake flow velocities at the periphery of the strainer mesh would be low enough to allow razorback suckers to escape, and with a mesh size small enough to restrict uptake of juvenile through adult size classes. As each section of the canal is drained for lining, a survey to locate, rescue, and relocate stranded razorbacks would be coordinated with DFG. See Section 3.11.3, Canal Fishery Mitigation, for a related discussion of possible fish-capture methods.

Desert Tortoise. The desert tortoise has a slight potential to occur in the affected environment. Impacts are possible, but unlikely. If encountered during preconstruction surveys and during construction monitoring, desert tortoises would be relocated as prescribed by the FWS to avoid impacts, thus lowering impacts below a level of significance.

The likelihood of desert tortoise having burrows along the canal is similarly considered low; however, the possibility for occurrence of burrows exists. Accordingly, the Conventional Lining Alternative would include pre-construction tortoise surveys by a qualified biologist. If encountered, desert tortoises would be relocated by a biologist permitted by the FWS, following FWS protocol and pending the specific terms of the Section 7 consultation (See Final EIS/EIR Section 3.9). If tortoise burrows are detected, replacement burrows would be constructed (also following FWS protocol and pending the specific terms of the Section 7 consultation). As such, potential impacts to this species are considered to be less than significant and mitigated.

Flat-tailed Horned Lizard. Since no preferred habitat occurs within the vicinity of the Coachella Canal, this species would not likely be affected through implementation of the proposed project. The project site does not occur within a flat-tailed horned lizard management area designated in this species' FCA. Since any potential impact would occur outside a management area, only the standard conservation measures outlined in the FCA would be required during construction (see Attachment E-2). Because no significant impact to this species is anticipated, these conservation measures are not considered mitigation pursuant to NEPA or CEQA; rather, they represent Reclamation's commitment to implement the FCA.

Palm Springs Ground Squirrel. One candidate animal species, the Palm Springs (round-tailed) ground squirrel, has a low-to-moderate potential to occur in the project area. Although a species of round-tailed ground squirrel was observed during the May 2000 survey, the subspecific identification of the federal candidate Palm Springs (round-tailed) ground squirrel was inconclusive. If the subspecies were to inhabit the project area, it would likely be at low levels due to its habitat requirements, and impacts would not be significant.

#### State Protected Species

State protected species that are also afforded federal protection are addressed above.

California Black Rail. The potential impact of the project on the California black rail is the same as that for the Yuma clapper rail, as are the means that would be taken to avoid such impacts.

Fairyduster. The fairyduster, which is on DFG's special plant list, has a widespread distribution and seasonal occurrence. Although the fairyduster has not been recorded in the project's area of potential effect, given the presence of alluvial fans near the canal and this species' documented presence in other locations near the Chocolate Mountains, some individuals may occur within the proposed construction footprint. While some individuals of this species may be lost during project construction, this impact would be negligible in relationship to the overall fairyduster population and would be less than significant.

Palm Springs Pocket Mouse. With regard to the Palm Springs pocket mouse, there would be no to minimal take of individuals, and there would be only minimal temporal disturbance of potentially suitable habitat. This temporal disturbance would be limited to within certain portions of the construction corridor subject to actual ground disturbance that traverse any of the soil series listed for this species in Section 3.8.1. Since (1) the majority of construction activities would be restricted

to currently disturbed areas along the canal, (2) existing roads would be used to the extent feasible, (3) preference would be given to siting batch plants and staging areas in currently disturbed areas or areas that are not within areas of the above soils series to the extent feasible; and (4) disturbed soil areas would be returned to grade and rehabilitated; potential impacts to the Palm Springs pocket mouse would be considered to be less than significant.

LeConte's Thrasher. Potential impacts to the LeConte's thrasher would also not be significant. This assessment reflects that there would be no to minimal take of individuals, and there would be minimal temporal disturbance of potentially suitable habitat/features within certain portions of the construction corridor subject to actual ground disturbance. Since (1) the majority of construction activity would be restricted to currently disturbed areas along the canal; (2) existing roads would be used to the extent feasible; (3) preference would be given to siting batch plants and staging areas in currently disturbed areas or areas that do not demonstrate the habitat types and features specified in Section 3.8.1 for this species; and (4) disturbed soil areas with the necessary habitat types and features would be returned to grade and rehabilitated, potential impacts to LeConte's thrasher are considered to be less than significant.

Burrowing Owl. Since there is a potential for the burrowing owl to occur at the site, a qualified biologist would conduct a pre-construction survey and notify FWS and DFG if individuals are present. If present, permission would be granted to these agencies to access the property for the purpose of collecting and relocating individuals. As such, potential impacts to this species are considered to be less than significant and mitigated.

#### Measures for Listed and Candidate Species

Measures developed during previous and ongoing consultation with FWS are expected to avoid impacts to species that are federally threatened or endangered species or that are fully protected by the State of California. These measures are summarized above and in Chapter 7.0. Significant impacts to species that are candidates for listing as federally threatened or endangered, and impacts to other state-listed species would either be mitigated to less than significant levels or would not be significant without mitigation.

### Net Impacts

Reclamation has concluded that the project would not have an effect on special status species addressed during the informal consultation. This finding was confirmed with FWS in 1993 for the threatened and endangered species listed at the time. For the reasons described above, Reclamation has also determined that the project is not likely to adversely affect the southwestern willow flycatcher, least Bell's vireo, or other threatened or endangered species. Table 3-8 summarizes impacts to special status species. These findings are being addressed as part of the reinitiated consultations with FWS.

### **Underwater Lining Alternative**

The effects of this alternative, and the required mitigation, would be the same as for the Conventional Lining Alternative. However, the pre-construction surveys for tortoise and burrowing owl burrows would need to cover the footprint of the slurry discharges, which may extend further from the canal than the construction footprint of the Conventional Lining Alternative. As mitigated, impacts to special status species would be less than significant.

### **Parallel Canal Alternative**

The effects of this alternative would be the same as for the Conventional Lining Alternative for the species dependent on marsh/aquatic and desert riparian habitat. However, the use of additional land for the parallel canal would increase the chance of disturbing desert tortoise, Palm Springs (round-tailed) ground squirrel habitat, and potentially the fairyduster. Impacts to the desert tortoise would be mitigated to below a level of significance by implementing the mitigation measures outlined in the Conventional Lining Alternative (except that these measures would be applied to the larger area of construction disturbance that would be associated with the Parallel Canal Alternative).

Impacts to the Palm Springs ground squirrel would not be considered significant even though a larger area would be affected by the Parallel Canal Alternative, due to extent of this impact area in comparison to the amount of suitable habitat available to this species and in consideration of the number of individuals that would potentially be affected. Impacts to the fairyduster would similarly not be significant because the area of impact would still be negligible in consideration of the plant's distribution and range.

Table 3-8. Summary of Impacts to Special Status Species

Listed species	Impacts without mitigation/avoidance	Mitigation and conservation measures
<b>Federally listed endangered species</b>		
Southwestern willow flycatcher	Loss of potential migration habitat; no loss of potential breeding habitat	Marsh/aquatic and desert riparian habitat mitigation expected to improve habitat quality for migration and potentially new breeding uses
Least Bell's vireo	Loss of potential migration habitat; no loss of potential breeding habitat	Marsh/aquatic and desert riparian habitat mitigation expected to improve habitat quality for migration and potentially new breeding uses
Yuma clapper rail	Impact from loss of marsh habitat without avoidance/mitigation measures	Impact would be avoided by maintaining marsh/aquatic habitat and replacing affected habitat
Desert pupfish	Impact probable from reduced streamflow	Impact would be avoided by maintaining streamflows
Razorback sucker	Not expected to occur in the canal; no impact.	As a precautionary measure, basket strainers would be installed at bypass pump intakes
<b>Federally listed threatened species</b>		
Desert tortoise	Impacts unlikely; few individuals in a large area	Tortoises would be relocated during pre-construction surveys and during construction monitoring to avoid impacts. Any burrows, if present, would be reconstructed outside of the construction footprint
<b>Federally protected species</b>		
Flat-tailed horned lizard	Impacts unlikely; sub-optimal habitat in project area; project outside of species management areas	Follow measures outlined in the Federal Conservation Agreement (see Attachment E-3)
<b>Federal candidate species</b>		
Palm Springs (round-tailed) ground squirrel	Impacts unlikely; potential impacts to a few individuals in a large area would not significantly affect continued viability in the project vicinity	No mitigation necessary

**Table 3-8. Summary of Impacts to Special Status Species (continued)**

Listed species	Impacts without mitigation/avoidance	Mitigation and conservation measures
<b>State-listed endangered species</b>		
Least Bell’s vireo, southwestern willow flycatcher, and desert pupfish are addressed above as federally protected species		
<b>State-listed threatened species</b>		
Yuma clapper rail and desert tortoise are addressed above as federally protected species		
California black rail	Impact from loss of marsh habitat	Impacts would be avoided by maintaining marsh/aquatic habitat and replacing affected habitat
<b>State special protection species</b>		
Flat-tailed horned lizard is addressed above as a federally protected species		
<b>State special concern species</b>		
LeConte’s thrasher	Less than significant impact	None necessary
Burrowing owl	Impact from damage to burrows	Impacts would be mitigated through pre-construction survey(s) for burrows and by allowing FWS or DFG to relocate individuals from project area
Palm springs pocket mouse	Less than significant impact	None necessary
<b>State special plant species</b>		
Fairyduster	Less than significant impact	None necessary

### **No Action Alternative**

Under this alternative, marsh/aquatic and desert riparian habitat along the canal used by special status species would remain as at present. However, some continued decline in marsh/aquatic habitat is possible, as discussed under “Marsh/Aquatic and Desert Riparian Habitat Along the Coachella Canal.”

### **3.9 ENDANGERED SPECIES CONSULTATION (SECTION 7 CONSULTATION)**

In February 2001, Reclamation initiated informal consultation with FWS for the proposed action (letter, Jim Cherry, Manager, Reclamation, Yuma Area Office, to Ken Berg, Field Supervisor, Carlsbad Field Office, February 23, 2001). As a follow-up, Reclamation met with FWS staff at the Carlsbad Field Office on March 2, 2001, to review the contents of the letter, and to discuss FWS comments on the Revised and Updated Draft EIS/EIR as well as the need, if any, for further information and data collection, impacts analyses, and development of a mitigation plan to ensure no net loss of habitat for protected species if the project is implemented. This ongoing informal consultation is an extension of the Endangered Species Act consultations that occurred in association with the previous environmental documentation for the proposed Coachella Canal Lining Project, as summarized below.

In compliance with the federal Endangered Species Act, Reclamation requested and received a list of federal threatened, endangered, and candidate species from FWS in 1988. This list was updated in 1991, 1993, and 2000. Reclamation prepared a Biological Assessment (BA) in July 1989 and a supplemental BA in July 1993. In July 1993, Reclamation entered into formal consultation with FWS because of potential effects to the Yuma clapper rail, desert pupfish, and desert tortoise. FWS recommended addressing California black rail during formal consultation because of its potential listing in the near future. When the project was postponed in 1994, the consultations with the FWS were also put on hold. They have been reinitiated as described above. The canal lining project will not be implemented until the Section 7 consultation process is complete.

### **3.10 LARGE MAMMAL ESCAPE**

#### **3.10.1 Affected Environment**

In the desert environment, wildlife are attracted to canals as a water source. An estimated 300 mule deer range in the north end of the Chocolate Mountains northeast of the project area. During the summer when water becomes critical, a large segment of the population moves to the desert washes within a few miles of the Coachella Canal. During this time, the deer use the canal as a water source. If summer rains occur, many of the mule deer move back into the more mountainous terrain and stop using the canal as a source of water. Fawning starts in late July. Although use of the Coachella Canal by fawns has not been documented, yearlings do drink from the canal.

An increasing population of wild mules ranges to the east of the Coachella Canal. Apparently, mules use the unlined sections of the canal and the lined section between siphons 14 and 15 as a water source.

A population of desert bighorn sheep inhabits the Chocolate and Orocopia Mountains near the project area. Bighorn use the reach of the canal near siphon 20 as a water source because suitable cover is located nearby. Use is frequent and predictable in this area between May and September.

#### **3.10.2 Significance Criteria**

An alternative would have a significant impact on large mammals if it creates a situation where large mammals would not be able to escape the canal if they fell in.

#### **3.10.3 Environmental Consequences**

##### **Conventional Lining Alternative**

Without mitigation, this alternative could have a significant impact on large mammals that drink from the canal. As mitigated, the impact would be less than significant.

The newly lined canal would have 1.5:1 concrete side slope and up to 45 percent faster velocities than the present canal. These conditions could pose an increased drowning risk to large mammals that fall into the canal while attempting to drink from it or that attempt to cross the canal. FWS and DFG are concerned about this hazard to mule deer and to other wildlife associated with the desert

environment. Both agencies recommend inclusion of wildlife escape measures to avoid potentially significant impacts.

Two types of measures for wildlife escape would be used for the lined canal. A standard method is to construct escape ramps on the sidewalls of the canal at intervals of 1,000 feet or more along the canal. Because of the spacing, wildlife would be exposed to fatigue and injury attempting to escape while floating between ramps. Accordingly, escape ramps every 1,000 feet would not be installed; rather, the project would rely primarily on escape ridges to minimize hazards to large mammals. Although escape ramps would not be required every 1,000 feet, to further ensure the safety of large mammals, escape ramps would be added in areas of high wildlife visitation, such as at siphon 20.

The “escape ridges” would consist of slipform ridges installed while placing the concrete lining in the canal<sup>5</sup>. Such escape ridges were included on a section of the Coachella Canal as part of the Coachella Canal In-Place Lining Prototype Project. Wildlife biologists from DFG and Reclamation tested the effectiveness of those escape ridges in 1989 by leading a tame mule deer into the canal. The mule deer was able to walk down the side of the canal, drink without slipping into the water, and walk out of the canal. This test was valid for bighorn sheep, which are more agile than mule deer. The canal side slope was 2.5:1, and the test showed the escape ridges to be effective for safe wildlife entry and exit at that slope (White 1989).

The ridges would be placed at 18-inch intervals on both sides of the canal, beginning 9 inches from the top edge of the lining and ending below the low canal operating water level. The ridges would have a rough finish and protrude 1.5 inches from the canal side slope. Deflector cables with buoys and booms would be used upstream from siphons to channel swimming wildlife to the ridged canal sides. The beneficial effect of this proposal on human safety is discussed in Section 3.20 under “Public Safety.”

Under the Conventional Lining Alternative, the side slope proposed for the canal would be 1.5-to-1, which would be steeper than that of the prototype section. Accordingly, the ridges cannot automatically be assumed to be as effective for wildlife. Reclamation does have post-construction monitoring records from the Towoac Canal near Cortez, Colorado which indicate deer can traverse a concrete-lined canal with 1.5-to-1 side slopes. However, to ensure that the concrete ridges would be effective for the Coachella Canal, a post-construction monitoring program to document the effectiveness of the entry/escape ridges would be conducted. Monitoring would be completed during

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<sup>5</sup> This method was originally suggested by Desert Wildlife Unlimited, a local Imperial Valley wildlife group.

the first summer following construction. If the first season's observations conclusively reconfirm the effectiveness of the entry/escape ridges, the monitoring program would be concluded.

If not, monitoring would continue for a second season. If the monitoring program indicates that the ridges were insufficient, additional conventional escape ramps or other escape mechanisms would be added to the lined canal, or the ridge design could be modified to be effective.

By incorporating escape ridges and escape ramps into the project design, the potentially significant effect of large mammals drowning in the canal would be mitigated to below a level of significance.

### **Underwater Lining Alternative**

The concrete layer of the proposed underwater lining would have a 2.5:1 slope, much flatter than the 1.5:1 slope usually used for a concrete lined canal. Escape ridges and ramps described under the Conventional Alternative would be incorporated into lining construction. As discussed above, ridges have shown to be effective for safe wildlife entry and exit at that slope.

### **Parallel Canal Alternative**

The impacts and mitigation for this alternative would be the same as for the Conventional Lining Alternative.

### **No Action Alternative**

Under this alternative, the shape and vegetation cover of the canal bank would remain as at present, and there would be no change in the hazard posed to wildlife that drink from the canal.

### 3.11 CANAL FISHERY

The Coachella Canal supports populations of game and non-game fish, which are derived from four sources: (1) reproduction within the canal, (2) upstream immigration (AAC and Colorado River), (3) stocking of channel catfish between 1974 and 1986 by DFG, and (4) stocking of triploid grass carp by CVWD. Because the DFG no longer stocks the canal with fish, the current population of channel catfish probably consists primarily of offspring from their initial stocking effort.

#### 3.11.1 Affected Environment

The canal bottom is covered with wind- and water-borne sand and silt, which forms an undulating, shifting bottom. Periodic canal cleaning operations have tended to limit the depth of sand and silt accumulation to about two feet. The canal bank was constructed as an upward continuation of the 2:1 canal side slope, extending four to ten feet above the water level. Washing of soil at the water line and erosion above and below have caused irregularities in the slope. Along much of the canal, the bank is slightly benched just above the water line, and the shallow water along the canal bank has an accumulation of silt and organic materials.

The vegetation at the canal waterline includes nonnative grasses and herbaceous species interspersed with occasional small patches of rushes (*Juncus* spp.) The grass and other vegetation trails into the water when the canal is full. The lower water velocities, irregular bankline, and vegetation provide feeding, resting, and shelter for fish. This band of vegetation is systematically removed under the canal maintenance program, with the result that the vegetation exists along roughly half of the canal at any time. Shoreline habitat is the most biologically important type of habitat in the Coachella Canal, and shoreline gamefish are considered in this analysis to be the indicator species for shoreline habitat.

Forage for the gamefish is provided by smaller fish (juvenile gamefish plus red shiners, mosquito fish, and an occasional shad) and invertebrates. The dominant aquatic invertebrates are caddisfly larvae found on solid substrates, such as the siphons, and the Asiatic clam *Corbicula fluminea*. Terrestrial insects from the shoreline vegetation are also a source of food, particularly for largemouth bass (Thiery 1990). Limited numbers of crayfish also are found in the shoreline habitat.

The water surface area of the existing canal under typical flow conditions of 500 ft<sup>3</sup>/s is estimated to be approximately 270 acres. The water velocity at that flow varies between 1.5 feet per second (ft/s) and 2.0 ft/s. Water depth varies between 6.0 and 4.8 feet.

The fish community in the Coachella Canal between siphons 7 and 32 is dominated by channel catfish, the species most sought by anglers along the canal (Thiery 1990). Other gamefish inhabiting the canal are less adapted to flowing water than channel catfish and are hereafter grouped as shoreline gamefish. These species include largemouth bass, bluegill sunfish, and flathead catfish, with occasional smallmouth bass and red ear sunfish.

Other species in the canal include triploid grass carp<sup>6</sup>, introduced by CVWD for aquatic weed control, and common carp. In addition, uncounted numbers of goldfish, red shiners, mosquito fish, and threadfin shad are also present.

Based on the studies summarized in the following paragraph, the canal's estimated carrying capacity for gamefish and carp is 35,200 fish.

The number of shoreline gamefish was estimated by averaging data collected in 1980 and 1984 by the CVWD grass carp research program (Beaty et al. 1986). Sampling in these years was conducted by draining and seining siphons 25 and 26 and their adjacent (downstream) sections of canal. Between 1980 and 1984, siphon 25 was equipped with a one-inch mesh traveling screen to prevent movement of large fish. The prelining channel catfish population, therefore, was estimated using 1984 data only to minimize the influence of DFG's channel catfish stockings, which took place upstream from siphon 25. No fish have been stocked in the canal since the previous (1994) Draft EIS/EIR for this project was distributed. It is assumed that reproduction is only replacing fish lost and that the population of fish in the canal is not increasing.

### **3.11.2 Significance Criteria**

An alternative would have a significant channel fishery impact if it would substantially reduce the fish carrying capacity of the canal.

### **3.11.3 Environmental Consequences**

Without mitigation, the Conventional Lining Alternative would have a significant impact on the canal fishery. As mitigated, this impact would be less than significant.

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<sup>6</sup> An Asiatic species of carp (*Ctenopharyngodon idells* Val.) that is herbivorous. The fish being stocked have been reared from eggs in a way that causes them to be sterile to avoid proliferation of an exotic species.

## **Conventional Canal Lining Alternative**

### Construction Impacts

Short-term impacts on the fish community would occur when some fish are lost as each section of canal is drained for lining. See Section 3.8.3 for mitigation pertaining to razorback sucker.

Fish lost when a section of canal is drained could be recovered by seining, but this is an arduous and unreliable process. Sampling efforts during CVWD's grass carp research program showed that it is difficult to capture fish in the unlined canal. Irregularities in the bottom allow fish to escape under nets (Beaty et al. 1986). However, CVWD may attempt to recover some of its triploid grass carp since their population cannot be replenished by reproduction or immigration. In addition, after the canal has been drained down, the fish will migrate to areas in the lower reaches where they could be more easily captured and relocated.

The numbers of fish that would be lost is not known. As a worst case estimate, all the fish presently occupying the sections of canal to be lined could be lost, which would constitute a significant impact requiring mitigation. However, it is expected that more than half of the fish could be recovered as the water in the canal is drained out. It is assumed that the fish population would achieve the post-lining carrying capacity within a few years following from: (1) reoccupation from contiguous reaches; (2) reintroduction of the recovered fish described above; and/or (3) stocking as described in subsequent discussions.

### Permanent Impacts

After the newly lined sections of canal are put in service, fish would recolonize the canal. Without mitigation, however, the newly lined canal would support fewer fish than at present. The estimated reduction would occur because (1) the lined canal would lack shoreline habitat, (2) the invertebrate community (an important food source for the fish) would change, and (3) the lined canal would have a different flow regime. As described below, mitigation measures would offset these impacts.

The primary permanent impact to fish from concrete lining would come from the loss of shoreline habitat, the irregular, undercut bank of the unlined canal. This rough edge of the canal creates a large boundary layer, providing refuge from the canal's current and, for smaller fish, some protection from predation. The uniform side slope and straight shoreline of a lined canal would provide neither of these benefits. This loss would inhibit recolonization of the canal by fish, particularly the shoreline gamefish.

Invertebrates would be temporarily reduced after lining, but would soon restore themselves. With the added concrete substrate, caddisfly population would probably increase after lining. The *Corbicula* population would reestablish itself as soon as sufficient sediment accumulated in the canal. Experience with the lined canal between siphons 14 and 15 indicates that the canal bottom would return to its present condition of drifting sand and silt after a year of operation. Terrestrial insects would decline but would still be found on fugitive nonnative grasses, which are expected to grow in sediment collected in mammal escape steps just above water level. Such growth has been observed between siphons 14 and 15.

This alternative would reduce the total surface area of the aquatic habitat by approximately 80 acres (29 percent), to a new area of approximately 190 acres, under typical flow conditions of 500 ft<sup>3</sup>/s. Water depth would increase, varying between 11.2 and 7.6 feet. The water velocity would increase slightly, varying between a new minimum velocity of 1.4 and a new maximum velocity of 2.9 ft/s. Higher water velocity would impact fish in several ways: (1) some species are simply unable to maintain their position in flows beyond a certain speed; (2) species that can withstand the higher water velocity expend more energy moving about; and (3) the eggs of nesting species may be swept away. Higher water velocity can also impact nesting species indirectly by reducing the accumulation of sediment necessary for construction of their nests.

Without mitigation, the effect of these changes on fish habitat would be the reduction or elimination of several shoreline gamefish, such as largemouth bass, sunfish, and flathead catfish. This alternative is estimated to reduce their number by 3,130 fish, as shown in Table 3-9. Channel catfish numbers would also decrease, but they would continue to dominate in terms of numbers. The triploid grass carp population would decrease because CVWD would need to stock fewer of them for aquatic weed control. Table 3-9 shows the fish populations before and after lining.

The estimate of the post-lining fish population is based primarily on sampling of the first 49-mile section of the Coachella Canal after lining by the parallel canal method in 1980. In that section of the canal, the estimates in the reduction in fish numbers was the combined result of all the canal changes described above. Although this sampling occurred 20 years ago, it is considered adequate for this analysis because conditions in the post-project (i.e., lined) canal between siphons 7 and 32 would be similar to the 1980 conditions in the first 49 miles of the canal.

**Table 3-9. Fish Population Between Siphon 7 and Siphon 32 at Present and After Lining, If No Mitigation Were Implemented**

Species	Present condition		Lined condition		Change <sup>1,2</sup>	
	Number	Percentage of total	Number	Percentage of total	Number	Percentage
<b>Shoreline gamefish</b>						
Largemouth bass	1,277	3.6	23	<1.0	(1,254)	(98.2)
Sunfish	904	2.6	0	0	(904)	(100.0)
Flathead catfish	972	2.8	0	0	(972)	(100.0)
Subtotal	3,153	9.0	23	<1.0	(3,130)	(99.2)
<b>Other game fish</b>						
Channel catfish	28,702	81.5	25,832	88.6	(2,870)	(10.0)
<b>Other Fish</b>						
Common carp	893	2.5	859	3.0	(34)	4.0
Triploid grass carp	2,452	7.0	2,000	7.0	452	(18.4)
Subtotal	3,345	9.5	3,311	11.5	(486)	(0.6)
<b>Total</b>	<b>35,200</b>	<b>100.0</b>	<b>28,714</b>	<b>100.0</b>	<b>(6,486)</b>	<b>(18.4)</b>

<sup>1</sup> Parentheses indicate negative values

<sup>2</sup> The changes reflect the permanent impacts (without mitigation) stemming from changed habitat conditions in a lined canal, after fish populations have a chance to stabilize. Fish losses from construction impacts may temporarily exceed the numbers shown.

Table 3-10 summarizes the estimated changes in fishery biomass from the current fishery to the anticipated future lined conditions in the absence of mitigation. Biomass per unit area is a parameter that indicates the relative fish productivity of a body of water.

Mitigation

Although not considered significant from a CEQA perspective, P.L. 100-675, in which the Congress authorized the canal lining project, requires the implementation of measures for the replacement of incidental fishery values lost.

**Table 3-10. Biomass of Fishery Between Siphon 7 and Siphon 32 at Present and After Lining, If No Mitigation Were Implemented**

Species	Biomass (pounds/acre)		
	Unlined	Lined	Percent change <sup>1</sup>
Largemouth bass	2.23	0.18	(91.9)
Sunfish	0.18	0	(100.0)
Flathead catfish	5.35	0	(100.0)
Channel catfish	5.26	4.72	(10.2)
Common carp	11.51	9.64	(16.3)
Triploid grass carp	27.75	18.29	(34.0)
Total	52.28	32.83	(37.2)

<sup>1</sup> Parentheses indicate negative values.

Construction Impacts Mitigation. Short-term fish losses during construction would be mitigated by a one-time stocking of channel catfish. Portions of the canal would be stocked with a number of channel catfish based on the estimated gamefish lost during construction. As a worst case estimate, 105 pounds of channel catfish would be stocked per mile because the total biomass of gamefish (channel and flathead catfish, largemouth bass, and bluegill) in the canal is approximately 3,500 pounds. Alternatively, the stocking could be done after the entire canal is lined. In either case, the stocking would occur after artificial reefs are installed, as discussed below.

Permanent Impacts Mitigation. To maintain existing fishery values, the most efficient mitigation is to maintain the numbers of shoreline gamefish. Thus, the goal of the fishery mitigation is to create sufficient shoreline habitat in the lined canal. In order to maintain total fish biomass levels in the canal despite the reduction in surface area that would result from this alternative, there would be an increase in fish biomass per unit area (i.e., an increase in the relative fish productivity in the canal). This represents a conservative approach to mitigation to help ensure that post-mitigation impacts would not be significant.

The primary proposed mitigation technique is to place artificial reefs into the lined canal to provide protective fish cover essential to maintaining shoreline gamefish. These artificial reefs would, to some extent, replace the shoreline habitat of the unlined canal. Reclamation has conducted research into the effectiveness of tire reefs (each consisting of 45 discarded automobile tires) in the Hayden-Rhodes Aqueduct of the Central Arizona Project and in the first 49-mile section of the Coachella Canal, which is lined with concrete (Mueller and Liston 1991). Monitoring of the experimental reefs

shows that cover-oriented species, such as largemouth bass, bluegill sunfish, and flathead catfish, are using the reefs for cover and, in some cases, for spawning cavities.

Based on the results of the research, the proposed mitigation consists of placing a total of 82 reefs in the Coachella Canal to compensate for project impacts to fishery resources, as shown in Table 3-11. The reefs would be made of tires bound together into mats. Each tire reef would measure about 16 by 50 feet and would be anchored to the canal side at a level to ensure submergence. Reclamation, in cooperation with FWS, DFG, and CVWD, would determine the location of the reefs in the canal.

Current studies indicate that each reef would support 38 gamefish and 28 channel catfish. In total, artificial reefs would provide habitat for an estimated 3,130 shoreline gamefish and 2,300 channel catfish. This would prevent the loss of shoreline gamefish shown in Table 3-9 but would result in a net loss of roughly 570 channel catfish (2 percent) along the entire channel.

**Table 3-11. Artificial Reef Mitigation for Coachella Canal**

Parameter	Amounts
Number of shoreline gamefish (reduction) <sup>1</sup>	3,130
Number of artificial reefs <sup>2</sup>	82
Spacing of artificial reefs	0.4 mile
Cost estimates:	
Installation and replacement	\$170,000
Annual maintenance	\$ 12,000

<sup>1</sup> Largemouth bass, sunfish, and flathead catfish.

<sup>2</sup> Based on data from Mueller and Liston 1991. Assumes reef size approximately 16 by 50 feet and 38 shoreline gamefish per reef.

If the artificial reefs are not as effective as expected, a one-time stocking of channel catfish at a maximum rate of 105 pounds per canal mile would be implemented. This stocking would be considered adequate to augment the reproductive potential of the fish population to achieve a self-sustaining demographic based on the post-lining carrying capacity. Channel catfish would be stocked instead of other species because they are the best suited of all the gamefish in the canal for the post-lining channel habitat conditions.

With mitigation, the Conventional Lining Alternative would result in a slight reduction in the total number of fish in the section of canal to be lined, and a slight change in relative species abundance. However, mitigation would maintain the shoreline gamefish population. With the implementation

of the mitigation measures described above, the construction and permanent impacts on fisheries would be mitigated to below levels of significance.

### **Underwater Lining Alternative**

Without mitigation, this alternative would have a significant impact on the canal fishery. As mitigated, impacts would be less than significant.

#### Construction Impacts

Construction activities would pose no significant hazards to fish in the canal. There were concerns that the underwater lining process might cause fish mortality because of increases in turbidity, un-ionized ammonia, or pH in the canal water. A number of tests in connection with the construction of the in-place lining prototype project, described in this chapter under “Water Quality,” showed no significant increases in these parameters.

During construction of that test project, a net was placed downstream from the construction activity. While some dead fish were caught by this net, most were in an advanced state of decomposition, indicating they had died before underwater lining began. Thus, the underwater lining was found to cause no detectable increase in fish mortality.

#### Permanent Impacts

This alternative would increase the total surface area of the aquatic habitat by approximately 70 acres, or by 26 percent, under typical flow conditions of 500 ft<sup>3</sup>/s, to a new area of approximately 340 acres. Water depth would increase, varying between 9.0 and 4.5 feet. The water velocity would vary between 0.8 and 2.0 ft/s.

After the underwater lining is put in service, it would have the same impact on the fishery as the Conventional Lining Alternative, except for the following: the flatter side slope would probably promote more growth of fugitive Bermuda grass and other vegetation, resulting in the restoration of a minor amount of the lost shoreline habitat. Through stocking, CVWD would maintain a sufficient number of triploid carp in the canal to control the growth of aquatic vegetation.

Mitigation

Construction Impacts Mitigation. No mitigation would be required for construction impacts.

Permanent Impacts Mitigation. Mitigation for the permanent impacts would be the same as for the Conventional Lining Alternative and would have the same effect in reducing impacts to below the level of significance.

**Parallel Canal Alternative**

Impacts to the canal fishery would be significant under this alternative, but they would be mitigated to less than significant levels.

Construction Impacts

Construction activities would impact the fish community through the loss of fish as each section of existing canal is drained and withdrawn from use. The impacts and mitigation would be the same as for the Conventional Lining Alternative. This alternative would present the same opportunities for recovering stranded fish as discussed under “Conventional Lining Alternative.”

Permanent Impacts

The permanent impacts and their mitigation would be the same as for the Conventional Lining Alternative.

**No Action Alternative**

This alternative would have no effect on the canal fishery.

### **3.12 CULTURAL RESOURCES**

Cultural resources are sites, districts, structures, buildings, remains, and objects significant in archaeology, history, architecture, culture, or science.

This section addresses existing cultural resources at and along the unlined portion of the Coachella Canal and the potential impacts to those resources pursuant to NEPA and CEQA. In addition to this NEPA and CEQA analysis, Reclamation has reinitiated the process of complying with Section 106 of the National Historic Preservation Act. Initial Section 106 compliance activities, including a reconnaissance survey of the unlined canal and consultations with the State Historic Preservation Officer, had been initiated in the early 1990s. As with preparation of the Final EIS/EIR, that effort was placed on hold when the project was postponed. The current effort includes new consultations with the State Historic Preservation Officer, as well as a Native American tribal group contact program.

No Native American grave sites or associated funerary objects are expected to be encountered during construction; however, should any of these be discovered, they will be treated in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA) (25 U.S.C. § 3001 (1996)). NAGPRA addresses the rights of lineal descendants and members of Indian Tribes and Native Hawaiian organizations to certain Native American human remains and cultural items with which they are affiliated. NAGPRA concerns burials and funerary materials that currently are contained in museum collections, as well as those unearthed in connection with any federal undertaking.

#### **3.12.1 Existing Environment**

Cultural resources in the project area span three time periods: (1) prehistoric, associated with Native American cultures, (2) historic, from Spanish exploration to the late 1800s, and (3) recent history, associated with agricultural and commercial development in the Salton Sea basin. Additionally, the area holds a present-day cultural significance for the Cahuilla Indian community.

The present-day Salton Sea occupies the lower part of the ancient Lake Cahuilla lakebed. When prehistoric Lake Cahuilla existed, the Coachella and Imperial Valleys supported a population of Native Americans. Archaeological sites have been recorded along the old lakeshore (250 to 300 feet above the present level of the Salton Sea), in the adjacent mesas and dunes, and in the bordering mountains and canyons. The remains of prehistoric fishing camps lie along the old lakeshore zone. The Salt Creek area was used for ceremonial purposes, such as shaman training and cremation ceremonies.

The location of the Coachella Canal along the beach terraces of ancient Lake Cahuilla places it directly within a recognized archaeologically sensitive region. This prehistoric lakefront zone has been dated by radiocarbon and geological techniques to infilling episodes occurring from the 10th to 17th centuries. The greatest site density is from 40 feet below sea level to 40 feet above sea level. Within the project area, the canal generally runs parallel to the sea level contour and, in places, is as close as one-quarter mile to the sea level contour.

Fishing camps are the most common type of sites because of the proximity of occupation remains to old shoreline features. The fish campsite is defined by the presence of firehearth stones, broken pottery, tools related to food preparation, fish and mammal bone, and lack of structural remains or other evidence of permanent habitation.

Cremation sites, villages, fish traps, and beach terrace rock alignments have been reported on the western side of Imperial-Coachella Valley but have not been identified.

Ethnographic Cahuilla interviews positively identify the Salt Creek area as a sacred ground for shamanistic ritual, including the cremation ceremony, and as a food gathering area. This area contains a prehistoric trail, which became a stage road, and accommodates a branch railroad line.

Ethnographic reports attest to the potential for locating cremation or village sites. The ethnographic accounts and known archaeological site types such as the Chocolate Mountains petroglyphs and the Cocomaricopa Trail present conditions similar to those at Pilot Knob. All suggest that the Salt Creek area may still contain evidence of former village sites with rock art, geoglyph, or other special status site evidence.

There is considerable research potential for undiscovered cultural remains in the eastern part of the valley. Subsurface deposits, reported for some camp sites, may yield data not offered by surface remains. Aboriginal trails have been reported, and these may connect to ceramic clay sources in the hills to the north, which in turn can aid in finer classification of pottery collections. The significance of hot springs located in the Salt Creek area to prehistoric and historic settlement patterns has not been explored.

The historic period encompasses early Spanish and Mexican explorations that sought to establish an overland route from Sonoran Mexico to the Alta California settlements. Resistance by the native inhabitants stalled permanent occupation by Euro-Americans until after the United States acquired the former Mexican territory in 1848. United States military forces explored the new territory for feasible travel routes and provided protection for the ensuing influx of settlers. The historic evidence

for this period exists in the ruins and artifact scatters of mine camps, ranches, wagon roads, and railroad lines.

Recent modern history may be called the United States Reclamation Service era and is characterized by agricultural development in the Coachella Valley. The AAC system provided the enabling factor—water—to convert the Colorado desert and Imperial and Coachella Valleys into a region offering prime conditions for agriculture, military training and weapons development, and expanding recreational and retirement community demands.

The Coachella Canal played a role in the cultural history of the region, but it has not been officially recognized as a historical property.

### **3.12.2 Significance Criteria**

An alternative would cause a significant cultural resource impact if it would:

- cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5 of the State CEQA guidelines or a historical resource eligible for listing in the National Register of Historic Places,
- cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5 of the State CEQA guidelines or the National Historic Preservation Act, or
- disturb any human remains, including those interred outside of formal cemeteries.

### **3.12.3 Environmental Consequences**

#### **Conventional Lining Alternative**

Without mitigation, the Conventional Lining Alternative could have significant cultural resource impacts to archaeological resources that may be present along the canal, and it could also have a significant historic resource impact on the canal itself. These potential impacts would be mitigated to less than significant levels.

### Impacts to Archeological Resources

The canal itself and much of the immediately adjacent land have been disturbed previously. However, the canal lining process would disturb some additional ground, which may affect cultural resources. In addition, the establishment of additional marsh/aquatic and desert riparian habitat would disturb ground. Potential impacts are not known, so the following process is proposed.

Prior to construction, a detailed construction plan would be developed. To minimize impacts, existing roads and staging areas would be used wherever possible. New borrow areas and access roads on undisturbed land would require a Class III survey. Existing borrow areas (other than the canal-bank spoil piles) and access roads would require a Class III survey unless the compliance process was completed within the past five years. Areas to be disturbed for new habitat planting would also have Class III surveys.

Evaluation of data collected during the Class III survey would provide information to determine areas to avoid or areas of impact where avoidance is not possible. Continuation of consultations with the Cahuilla Indian community and other area Native American tribal organizations should serve to recognize their interests and develop appropriate solutions to any issues. If impacts occur, mitigation would consist of professional recovery of cultural resources or development, where possible, of means to avoid impacts. Therefore, the project would not have significant effect on cultural resources.

The noise and visual presence of heavy construction activity within several hundred feet of an area sacred to the Cahuilla Indian community would be adverse to the spiritual values held by the community. It would be a short-term impact (approximately one year at any specific location along the canal) that would not permanently affect the spiritual value of the area. Accordingly, this impact would not be significant.

The Class III surveys performed prior to construction should help avoid the discovery of Native American burial sites or other archaeological resources. However, placement of the bypass pipelines could lead to the discovery of some subsurface Native American burial or cremation sites not detected during the surveys. Placement of the pipelines is flexible and can be adjusted to avoid unearthing of sites. This would provide the option of preserving the sites in place. Should disturbance of such sites be necessary during construction, it would be conducted pursuant to the procedures outlined in NAGPRA.

Based on the implementation of the measures described above, impacts to archaeological resources along the canal would be mitigated to less than significant levels.

#### Impacts to the Coachella Canal

The proposed project would modify the 51-year-old canal by lining a currently unlined section with concrete. Based on the canal's age and its importance to the development of the Coachella Valley, the canal may be eligible for (and is therefore assumed to be eligible for) the National Register of Historic Places. Without mitigation, the effects of lining the canal may be considered a significant historical resource impact. These impacts would be reduced to less than significant level through appropriate documentation of pertinent information about the canal, such as a Historic American Engineering Record. The extent to which additional measures may be required for compliance with Section 106 of the National Historic Preservation Act would be determined in consultation with the State Historic Preservation Officer.

#### **Underwater Lining Alternative**

The effects of this alternative, and the required mitigation, would be the same as for the Conventional Lining Alternative. However, construction would have less potential to affect resources along the canal because there would be less land disturbance. As mitigated, impacts to cultural resources would be less than significant.

#### **Parallel Canal Alternative**

Without mitigation, the Parallel Canal Alternative could have significant cultural resource impacts to archaeological resources that may be present along the canal. These impacts would be mitigated to less than significant levels. Pending consultation with the State Historic Preservation Officer, this alternative may be considered to have a significant and potentially unmitigable historical resource impact on the canal itself.

#### Impacts to Archaeological Resources

The effects of this alternative would be similar to those associated with the Conventional Lining Alternative. However, more undisturbed land would be used for the project, increasing the potential for affecting archaeological resources along the canal. These impacts would be mitigated to less than significant levels as described for the Conventional Lining Alternative.

Impacts to the Coachella Canal

Unlike the Conventional Lining or Underwater Lining alternatives, the Parallel Canal Alternative would essentially result in the abandonment and replacement of the existing unlined canal section. Based on this factor, the historical resource impacts of this alternative may be unmitigable, but this would need to be determined as part of the reinitiated consultations with the State Historic Preservation Officer.

**No Action Alternative**

This alternative would have no effect on cultural resources.