CHAPTER 1

Introduction

This Habitat Conservation Plan (HCP) was prepared in support of the Imperial Irrigation District's (IID's) application for Incidental Take Permits (ITPs) in conformance with Section 10 of the Federal Endangered Species Act of 1973 (FESA) and 2081(b) of the California Endangered Species Act (CESA). Through this HCP, IID is committing to certain management actions that will minimize and mitigate the impacts of any take of covered species that may occur as a result of IID's implementation of the IID / San Diego County Water Authority (SDCWA) Transfer Agreement and Quantification Settlement Agreement (QSA), and continuation of its operation and maintenance (O&M) activities.

1.1 Background

The IID was formed under California law to deliver water for irrigation and domestic purposes. IID delivers water from the Colorado River to agricultural and domestic water users within the boundaries of its service area. This service area covers about 500,000 acres in Imperial Valley. Irrigated agriculture is the primary economic enterprise within IID's service area and the primary use of water delivered by IID.

The Imperial Valley is part of the Colorado Desert and is located in the Salton Trough in Imperial County in Southeastern California. The Salton Sea is located in the northern portion of Imperial Valley, with portions of the Sea in both Imperial and Riverside counties. The Salton Sea serves as a drainage repository for agricultural and urban runoff from the Imperial, Coachella, and Mexicali Valleys.

IID's diversion of Colorado River water is based upon water rights obtained pursuant to state law, which were perfected in the early 1900s. IID's diversions from the Colorado River also are accomplished pursuant to a 1932 water delivery contract with the U.S. Bureau of Reclamation (Reclamation) under the Boulder Canyon Project Act of December 21, 1928 (45 Stat. 1057, as amended, 43 U.S.C. § 617 et seq.). IID's senior water rights are part of California's apportionment of Colorado River water under the 1922 Colorado River Compact, the Boulder Canyon Project Act, and the U.S. Supreme Court decree in Arizona v. California, 373 U.S. 546 (1963).

IID diverts water from the Colorado River at Imperial Dam, located about 18 miles northeast of Yuma, Arizona. Water diverted at Imperial Dam first enters desilting basins, where sediment settles out of the water. IID operates both Imperial Dam and the desilting basins pursuant to a contract with Reclamation. From the desilting basins, the water enters the All American Canal (AAC). The 84-mile-long AAC runs in a westerly direction and conveys water to three main canals within IID's service area. These three canals (East Highline, Central Main, and Westside Main) generally run northerly and deliver water to lateral canal systems and subsequently to farm turnouts. IID owns and operates the canal and turnout system.

After the water is applied to farm fields for irrigation purposes, all unused water is collected in drains. Water may enter the drains as field runoff (tailwater) or through tile drains (tilewater). Tile drains collect salinized subsurface leach flow and convey it to the drains. The drains transport water directly to the Salton Sea or to the New or Alamo Rivers that discharge to the Salton Sea. IID maintains the network of drains. With no outlet, the Salton Sea is a terminal sink for drain water from Imperial Valley.

1.1.1 IID/SDCWA Water Conservation and Transfer Agreement

In mid-1995, IID and SDCWA began discussions regarding a water conservation and transfer agreement. As a result of these discussions, on April 29, 1998, IID and SDCWA executed an Agreement for Transfer of Conserved Water (IID/SDCWA Transfer Agreement; IID and SDCWA 1998. The IID/SDCWA Transfer Agreement is a long-term transaction between IID and SDCWA involving the voluntary conservation by IID of up to 300 KAFY (300 thousand acre-feet per year) and the subsequent transfer of all or a portion of the conserved water to SDCWA. The transferred, conserved water is intended for use within SDCWA's service area in San Diego County, California. Under certain circumstances, up to 100 KAFY of the water conserved by IID may be transferred to the Coachella Valley Water District (CVWD), the Metropolitan Water District of Southern California (MWD), or both.

The conserved water will consist of Colorado River water that otherwise would be diverted by IID at Imperial Dam for use within IID's service area in Imperial County, California. For conserved water transferred to SDCWA or MWD, IID's annual diversions of Colorado River water at Imperial Dam will be reduced by the amount of the conserved water, and this amount will be diverted at MWD's Whitsett Intake at Lake Havasu on the Colorado River for delivery through MWD's Colorado River Aqueduct. The Colorado River Aqueduct operated by MWD provides the only existing facilities for conveyance of conserved water from the Colorado River to SDCWA's service area. For conserved water transferred to CVWD, IID's annual diversions of Colorado River water at Imperial Dam will also be reduced by the amount of the conserved water; however, the amount CVWD will divert at Imperial Dam will increase by this same amount. This amount will be diverted into the Coachella Canal from the AAC.

Conservation methods employed to effect the IID/SDCWA Water Conservation and Transfer Agreement may consist of: (1) on-farm measures implemented by landowners and tenants within IID's service area; and/or (2) system-based measures implemented by IID and affecting its distribution and drainage facilities. The IID/SDCWA Transfer Agreement anticipates that on-farm conservation measures will be the principal means of conserving water for transfer to SDCWA and requires on-farm conservation of at least 130 KAFY, unless SDCWA and IID agree on a lower amount. On-farm conservation requires the voluntary cooperation of landowners and tenants within IID's service area. On-farm conservation measures will be developed and managed under contracts between IID and landowners that elect to participate. If a sufficient number of landowners participate to meet the minimum conserved water (130 KAFY unless otherwise agreed) amount from on-farm conservation described above, then IID may elect to transfer additional conserved water using system-based conservation measures, on-farm measures, or a combination of these measures.

The IID/SDCWA Transfer Agreement is described in greater detail in the IID Water Conservation and Transfer Project Environmental Impact Report/Environmental Impact Statement (EIR/EIS) (IID 2001).

1.1.2 California's Colorado River Water Use Plan

The Colorado River Compact of 1922 quantified the allocation of Colorado River water among the seven states that comprise the Colorado River Basin. The compact allocates approximately 7.5 MAFY (7.5 million acre-feet per year) to the four Upper Basin states—Colorado, Utah, Wyoming, and New Mexico—and 7.5 MAFY to the three Lower Basin states—California, Nevada, and Arizona. Rapidly growing metropolitan areas and vast irrigated acreage have contributed to a history of contentious relations among the Lower Basin states and individual users in the states, as well as between the Upper and Lower Basins. Because of acrimonious and litigious relations among the Lower Basin states, they have not self-apportioned Colorado River supplies in the same manner as the Upper Basin states. As a result, the Secretary of the Interior (Secretary) acts as water master (typically through actions of Reclamation) for the Lower Colorado River (LCR; Arizona v. California, 1964). The decree of the court set California's apportionment at 4.4 MAF (plus 50 percent of any surplus water); Arizona at 2.8 MAF (plus 46 percent of any surplus); and Nevada at 300 KAF (and 4 percent of any surplus). Recent California diversions have been up to 800 KAF above its normal year (i.e., non-surplus) allocation. California's efforts to reduce its use to 4.4 MAFY were the subject of negotiations among the states and the Secretary.

California recently published the Draft California Water Use Plan (Water Use Plan), formerly known as the "4.4 Plan," in which the steps necessary to comply with the court decree were outlined. The Water Use Plan is a programmatic effort intended to reduce California's use of the Colorado River to comply with its Lower Basin entitlement. The Water Use Plan provides California's Colorado River water users with a framework by which programs, projects, and other activities will be cooperatively implemented to allow California to satisfy its annual water supply needs within its annual normal-year apportionment of Colorado River water. The Water Use Plan will require operational changes in the Colorado River to allow water wheeling and other actions necessary to transfer water among users.

The Water Use Plan identifies a suite of actions that will reduce total Colorado River water use in the state. Finalization of the Water Use Plan will require the four major linchpins:

- Cooperative water conservation and transfers from agricultural to urban use
- Further quantification of the third priority of the Seven-Party Agreement, which established the priority of use for California's 4.4 MAF among the seven major water users: Palo Verde Irrigation District, IID, CVWD, MWD, City of San Diego, City of Los Angeles, and the County of San Diego
- Improved reservoir management and operations
- Water storage and conjunctive use programs

The IID/SDCWA Water Conservation and Transfer project is an example of the first linchpin.

1.1.3 Quantification Settlement Agreement

Subsequent to execution of the IID/SDCWA Transfer Agreement, a settlement agreement was negotiated by and among IID, CVWD, and MWD, with the participation of the State of California and the Department of the Interior (DOI). The proposed terms of the settlement agreement are incorporated in a draft QSA, which was released for public review in December 2000. (A copy of the draft QSA and a Summary of the QSA are available for review at the IID Headquarters in Imperial.) The QSA is intended to settle, for a period of up to 75 years, long-standing disputes among IID, MWD, and CVWD regarding the priority, use and transfer of Colorado River water by establishing a consensual sharing of Colorado River water among these agencies. The QSA facilitates a number of component agreements and actions which, when implemented, will enhance the certainty and reliability of Colorado River water supplies available to the signatory agencies and will assist these agencies in meeting their water demands within California's normal-year apportionment of Colorado River water. The QSA thus implements the goals and programs of the Water Use Plan.

In addition to establishing water budgets for IID, MWD, and CVWD, the QSA sets forth the approved parameters of various water transfers and exchanges, including the conservation by IID of up to 300 KAFY for transfer to SDCWA, CVWD, and/or MWD. The QSA allocates the water to be conserved by the AAC and Coachella Canal lining projects. The QSA also incorporates a consensual limit by IID on its total Priority 3 diversions of Colorado River water at 3.1 MAFY. IID's limit is further reduced by the amounts IID conserves and transfers to others under the QSA, by the amount to be conserved by the AAC lining project, and by any Priority 3 water made available by IID to holders of miscellaneous present perfected Colorado River water rights (PPRs) and Indian reserved rights, resulting in a net Priority 3 diversion of approximately 2.61 to 2.70 MAFY for use within the IID service area. The QSA also includes a consensual cap on CVWD's Priority 3 diversions at 330 KAFY, reduced by the amount to be conserved by the Coachella Canal lining project and by any Priority 3 water made available by CVWD for holders of miscellaneous PPRs and Indian reserved rights. A Program EIR is being prepared by IID, MWD, CVWD, and SDCWA, as joint lead agencies, to identify and assess the environmental impacts of the QSA program.

The Secretary of DOI, in its role as water master for the LCR, must implement the terms of the QSA by delivering Colorado River water in accordance with its terms. The actions required of the Secretary are set forth in a proposed Implementation Agreement (IA), which is intended to be effective concurrently with the QSA. As a condition precedent to implementation of the QSA, certain other federal actions are required, including the adoption of Interim Surplus Criteria and the adoption of an Inadvertent Overrun Program to facilitate the payback of inadvertent exceedances by IID or CVWD of their respective Priority 3 diversion caps. Reclamation has prepared a final EIS for the proposed Interim Surplus Criteria, and a Record of Decision (ROD) was signed in January 2001. Reclamation is preparing an EIS pursuant to National Environmental Policy Act (NEPA) to assess the environmental impacts of the IA and related federal actions.

If the QSA is finally approved and implemented, it would change the project described in the IID/SDCWA Transfer Agreement in certain respects. The QSA would limit the amount of conserved water transferable to SDCWA to a maximum of 200 KAFY, and would provide for CVWD's option to acquire up to 100 KAFY of water conserved by IID, in lieu of transfer of this increment of conserved water to SDCWA. The QSA also provides for MWD's option to acquire any portion of the 100 KAFY of conserved water available to, but not acquired by, CVWD. Under both the QSA and the IID/SDCWA Transfer Agreement, the conserved water transferred by IID to SDCWA, CVWD, and/or MWD retains the priority of IID's senior water rights. However, IID retains ownership of its water rights.

The EIR/EIS for the IID Water Conservation and Transfer Project addresses the environmental impacts of IID's consensual limit on its Priority 3 diversions and the conservation by IID of up to 300 KAFY for transfer pursuant to the IID/SDCWA Water Transfer Agreement and/or the QSA. This HCP is intended to support the issuance of ITPs for that project within the covered area (i.e., Imperial Valley, the Salton Sea, and the area of the AAC).

1.2 Purpose and Need for the HCP

The purpose and need for the HCP stem from IID's requirement for long-term regulatory certainty in committing to the IID/SDCWA Transfer Agreement and the QSA. Both the IID/SDCWA Transfer Agreement and the QSA establish long-term water supply arrangements designed to assist California in meeting its Colorado River entitlement of 4.4 MAFY. The IID/SDCWA Transfer Agreement continues in effect for an initial term of 45 years after transfers have commenced and provides for an optional renewal term of 30 additional years. A substantial term is required by SDCWA, so that it can rely upon the IID conserved water as a key element of its future water supply plans. To implement the transfer, SDCWA must enter into a long-term agreement with the MWD to provide for acceptance of the conserved water at the new point of diversion and conveyance through MWD's Colorado River aqueduct. Similarly, the QSA establishes water budgets for a period of up to 75 years, including long-term obligations on the part of IID to limit its overall Colorado River water diversions and to generate conserved water for transfer to SDCWA, CVWD, and/or MWD. Long-term, no-surprises assurances regarding the FESA and CESA compliance measures and costs are needed by IID to commit to the long-term obligations set forth in the IID/SDCWA Transfer Agreement and the QSA.

Whether the IID/SDCWA Transfer Agreement becomes a reality depends largely on whether the IID and its participating farmers can conclude that the benefits of implementing the IID/SDCWA Transfer Agreement project are balanced by the risks and costs to be borne by the IID and farmers. The conservation of up to 300 KAF of water within the IID service area will require changes in current farming practices and substantial capital investments in water conservation equipment and technologies.

Of the initial 200 KAF anticipated to be conserved for transfer to SDCWA, 130 KAF is projected to come from on-farm conservation programs adopted by farmers in the Imperial Valley. The on-farm conservation programs are voluntary. Farmers will enter into agreements with IID ranging from 1 to 75 years, committing to the implementation of conservation measures. These measures, in turn, will require the farmers to make capital investments in various types of water

conservation equipment and facilities. In many cases, farmers will be required to obtain financing and pay for construction costs and implement and maintain conservation measures. The farmers will be unable to obtain financing if they can not estimate the direct and indirect costs of implementing the water conservation programs.

As such, farmers may be unwilling to enter into binding agreements to undertake significant costs and risks associated with implementing on-farm conservation measures unless they can determine the total costs of the measures and the additional associated cost of complying with the FESA and CESA. The greater the cost of the mitigation program the fewer funds available for IID to compensate farmers for water conservation measures. In the absence of this certainty, IID and farmers within IID's service area will be at risk and the costs of implementing the water conservation measures could increase substantially in the future to address additional costs associated with: (1) the listing of new species as endangered or threatened; (2) the designation of critical habitat for listed species; and (3) the imposition of additional mitigation obligations on IID in the event of changed or unforeseen circumstances. The IID seeks incidental take authorization and no surprises assurances to provide certainty and predictability regarding the habitat conservation measures that IID will be required to implement during the term of the IID / SDCWA Water Conservation and Transfer Agreement and QSA to comply with the state and federal endangered species acts.

The effect of the QSA is to establish obligations and incentives for the long-term conservation by IID of a substantial amount of Colorado River water. The agencies proposing to acquire conserved water from IID need to rely upon the long-term availability of the conserved water for water supply planning purposes. As a result, the QSA allows only very limited flexibility to modify or terminate IID's obligations. Therefore, IID must have certainty regarding the scope, feasibility, and cost of implementing the water conservation and transfer program, including the required environmental mitigation measures, on a long-term basis, prior to committing to implement the QSA. This HCP is intended to establish a definitive program, which will set forth the obligations of IID, and limitations on those obligations, to provide certainty regarding IID's ability to implement the program.

With respect to biological resources, the purpose of the HCP is to minimize and mitigate the effects of implementing the water conservation and transfer programs on covered species. The HCP consists of a combination of measures to minimize the effects of implementing the water conservation and transfer programs as well as measures that will ensure habitat availability for covered species over the term of the HCP. The commitments to create habitat under the HCP will provide a net benefit to covered species by improving habitat availability and quality.

1.3 Relationship to Other Endangered Species Act Approvals

Implementation of the IID Water Conservation and Transfer Project requires changes in water management that could potentially influence habitats and species over a broad geographic area. In addition to the potential effects in areas (i.e., AAC, Imperial Valley, and the Salton Sea) covered by this HCP, potential effects on listed species could occur along the LCR between Parker and Imperial dams, in the Coachella Valley, in San Diego County and potentially in MWD's Service Area. To achieve compliance with the FESA and CESA, several regulatory approval processes in addition to this HCP will be required. Reclamation's changed operation in the Colorado River between Parker and Imperial dams, including

implementation of the Interim Surplus Criteria and the change in the point of diversion required for the water transfer projects and the AAC and Coachella Canal lining projects pursuant to the QSA, is a federal action that is addressed through a Section 7 consultation. The Biological Opinion was issued by the USFWS on January 12, 2001, and provides incidental take authorization for federally listed species potentially affected by this change in operation. Coverage under CESA for state-listed species potentially affected by the change in the point of diversion on the Colorado River is expected to be obtained through a Section 2081 permit issued by CDFG for the benefit of IID, SDCWA, and MWD. It is anticipated that long-term coverage for state and federally listed species as well as selected unlisted species in the affected reach of the LCR will be provided by the LCR Multi-Species Conservation Plan.

Potential effects on state and federally listed species in the Coachella Valley resulting from use of conserved water transferred from IID will be addressed through separate FESA and CESA processes. Incidental take coverage as necessary for this element of the project will be obtained by CVWD through a regional HCP process or a process specific to the use of the transferred water.

Delivery of conserved water to San Diego County and MWD's Service Area is not anticipated to result in the take of any state or federally listed species. SDCWA has indicated that the conserved water transferred by IID will replace water that it otherwise would acquire from MWD, its primary supplier. Similarly, if water is transferred to MWD, the water would replace other historic supplies. The transferred water will retain IID's high-level Priority 3 status and thus will provide better protection from impacts of drought and increased reliability compared to SDCWA's existing supply. As such, the transfer of water from IID will not result in an increased water supply for SDCWA, although it will increase the reliability of water in the SDCWA service area. No additional FESA / CESA compliance actions are anticipated.

1.4 Area Covered by the HCP

IID conveys and delivers water diverted from the LCR at Imperial Dam to customers in the Imperial Valley in IID's service area via the AAC. The HCP area includes all lands comprising the approximately 500,000 acres of IID's service area (including canal rights-of-way), the Salton Sea, lands owned by IID outside of its service area that are currently submerged by the Salton Sea, and IID's rights-of-way along the AAC downstream from the point of diversion at Imperial Dam. In addition, the HCP covers any take of covered species using the Salton Sea that could occur as a result of IID's activities. Figure 1.4-1 shows the HCP area.

1.5 Species Covered by the HCP

The IID prepared this HCP in support of an application for ITPs from the USFWS and CDFG to cover federally and state listed species and certain unlisted species that are present or potentially present in IID's service area, the Salton Sea, or along the AAC. The HCP covers 96 fish, wildlife, and plant species with the potential to occur in the HCP area. These species and their current federal and state status are shown in Table 1.5-1.

1.6 Term of the HCP

IID is applying for ITPs for 75 years (2002 through 2077). This HCP was prepared in support of IID's applications, and will be in effect for the full 75-year term of the ITPs.

The IID / SDCWA Transfer Agreement continues in effect for an initial term of 45 years with an optional renewal term of 30 additional years. The QSA remains in effect for a period of up to 75 years. Long-term assurances regarding FESA and CESA compliance measures and costs are needed by the parties to commit to the obligations required under the IID / SDCWA Transfer Agreement and the QSA. For this reason, IID is seeking coverage under this HCP for a 75-year term.

1.7 Activities Covered by the HCP

The activities covered by this HCP include the following:

- Water conservation and irrigation and drainage of lands to which IID delivers water
- Water conservation activities undertaken by IID
- Activities of IID in connection with the diversion, conveyance, and delivery of Colorado River water to users within IID's service area
- Activities of IID in connection with the collection of unused irrigation or drainage waters within its service area and conveyance to the Salton Sea

The covered activities specifically include all conservation and mitigation measures, whether undertaken by IID or by farmers, tenants, or landowners, in connection with either the conservation and transfer of up to 300 KAFY of Colorado River water pursuant to the IID / SDCWA Transfer Agreement and / or the QSA; or compliance with the cap on IID's annual diversions of Colorado River water established by the QSA.

1.7.1 Overview of Covered Activities

IID is an irrigation district, a limited purpose public agency, formed under the laws of the State of California. IID holds rights to take water from the Colorado River and deliver it to water users in Imperial County. To do so, IID diverts water from the Colorado River at Imperial Dam. After being desilted, this water is conveyed through the AAC to three main canals (Figure 1.7-1). The water is then diverted from the main canals into lateral canals. While a small number of farms take water directly from the AAC or main canals, most take water from lateral canals. Water is diverted out of the lateral canals and into farm fields by turnouts. Most farmers then use flood irrigation techniques after the water flows through the turnout.

The majority of water delivered to a field is absorbed and stored in the soil for use by the crops. The remaining water evaporates or leaves the field in the form of either tailwater or tilewater. Tailwater is surface runoff; tilewater is water that has leached through the soil and has been collected by drain pipes (called tile) installed underneath the field. The brackish tail and tile water are discharged into drains maintained by IID.

North Shore

Desert Shores

Salton City

Salton Sea

SAN DIEGO CO

RIVERSIDE CO
IMPERIAL CO

New River

Alamo River

Colorado River

CALIFORNIA

ARIZONA

Imperial Dam

U.S.
MEXICO

Map Location

CALIFORNIA

HCP BOUNDARY
DRAINS
AQUEDUCT/CANAL
ALL AMERICAN CANAL
RIVERS
COUNTY BOUNDARY

Source:
University of Redlands, 1999; DOI, 1999; USBR, 1999

N

5 0 5 Miles

SCALE IS APPROXIMATE

Figure 1.4-1
IID HCP AREA
IID Water Conservation and Transfer Project Draft HCP

TABLE 1.5-1
Species Covered by the IID HCP

Common Name	Scientific Name	Federal Status	State Status
Invertebrates			
Cheeseweed moth lacewing	*Oliarces clara*	S	-
Andrew's dune scarab beetle	*Pseudocatalpa andrewsi*	S	-
Fish			
Desert pupfish	*Cyprinodon macularius*	E	E
Razorback sucker	*Xyrauchen texanus*	E	E/FP
Amphibians and Reptiles			
Colorado River toad	*Bufo alvarius*	-	CSC
Desert tortoise	*Gopherus agassizi*	T	T
Banded gila monster	*Helodema suspectum cinctum*	-	CSC
Flat-tailed horned lizard	*Phrynosoma mcalli*	PT	CSC
Lowland leopard frog	*Rana yavapaiensis*	S	-
Western chuckwalla	*Sauromalus obesus obesus*	S	-
Couch's spadefoot toad	*Scaphiopus couchii*	-	CSC
Colorado desert fringed-toed lizard	*Uma notata notata*	S	CSC
Birds			
Cooper's hawk	*Accipiter cooperii*	-	CSC
Sharp-shinned hawk	*Accipiter striatus*	-	CSC
Tricolored blackbird	*Agelaius tricolor*	S	CSC
Golden eagle	*Aquila chrysaetos*	-	CSC/FP
Short-eared owl	*Asio flammeus*	-	CSC
Long-eared owl	*Asio otus*	-	CSC
Burrowing owl	*Athene cunicularia*	S	CSC
Aleutian Canada goose	*Branta canadensis leucopareia*	DM	-
Ferruginous hawk	*Buteo regalis*	S	CSC
Swainson's hawk	*Buteo swainsoni*	-	T
Western snowy plover	*Charadrius alexandrinus nivosus*	-	CSC
Mountain plover	*Charadrius montanus*	PT	CSC
Vaux's swift	*Chaetura vauxi*	-	CSC
Black tern	*Chlidonias niger*	S	-
Northern harrier	*Circus cyaneus*	-	CSC
Western yellow-billed cuckoo	*Coccyzus americanus*	-	E
Gilded flicker	*Colaptes chrysoides*	-	E
Black swift	*Cypseloides niger*	-	CSC
Fulvous whistling-duck	*Dendrocygna bicolor*	S	CSC
Yellow warbler	*Dendroica petechia*	-	CSC
Reddish egret	*Egretta rufescens*	S	-
White-tailed kite	*Elanus leucurus*	-	FP
Southwestern willow flycatcher	*Empidonax trailii extimus*	E	E
Merlin	*Falco columbarius*	-	CSC
Prairie falcon	*Falco mexicanus*	-	CSC

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TABLE 1.5-1
Species Covered by the IID HCP

Common Name	Scientific Name	Federal Status	State Status
Peregrine falcon	*Falco peregrinus*	DM	E/FP
Greater sandhill crane	*Grus canadensis tadiba*	-	T/FP
Bald eagle	*Haliaeetus leucocephalus*	T	E/FP
Yellow-breasted chat	*Icteria virens*	-	CSC
Least bittern	*Ixobrychus exilis*	S	CSC
Loggerhead shrike	*Lanius ludovicianus*	S	-
Laughing gull	*Larus atricilla*	-	CSC
California black rail	*Laterallus jamaicensis coturniculus*	S	T/FP
Long-billed curlew	*Numenius americanus*	-	CSC
Osprey	*Pandion haliaetus*	-	CSC
Black skimmer	*Rhynchops niger*	-	CSC
Bank swallow	*Riparia riparia*	-	T
Gila woodpecker	*Melanerpes uropygialis*	-	E
Elf owl	*Micrathene whitneyi*	-	E
Wood stork	*Mycteria americana*	-	CSC
Brown-crested flycatcher	*Myiarchus tyrannulus*	-	CSC
Harris' hawk	*Parabuteo unicinctus*	-	CSC
Large-billed savannah sparrow	*Passerculus sandwichensis rostratus*	S	-
American white pelican	*Pelecanus erythrorhynchos*	-	CSC
Brown pelican	*Pelecanus occidentalis*	E	E/FP
Double-crested cormorant	*Phalacrocorax auritus*	-	CSC
Summer tanager	*Piranga rubra*	-	CSC
White-faced ibis	*Plegadis chihi*	S	CSC
Purple martin	*Progne subis*	-	CSC
Vermilion flycatcher	*Pyrocephalus rubinus*	-	CSC
Yuma clapper rail	*Rallus longirostris yumanesis*	E	T/FP
California least tern	*Sterna antillarum browni*	E	E/FP
Elegant tern	*Sterna elegans*	S	-
Van Rossem's gull-billed tern	*Sterna nilotica vanrossemi*	S	CSC
Crissal thrasher	*Toxostoma crissale*	-	CSC
LeConte's thrasher	*Toxostoma lecontei*	-	CSC
Arizona Bell's vireo	*Vireo bellii arizonae*	-	E
Least Bell's vireo	*Vireo bellii pusillus*	E	E
Mammals			
Pallid bat	*Antrozous pallidus*	-	CSC
Mexican long-tongued bat	*Choeronycteris mexicana*	S	CSC
Pale western big-eared bat	*Corynorhinus townsendii pallescens*	-	CSC
Spotted bat	*Euderma maculatum*	S	CSC
Western mastiff bat	*Eumops perotis californicus*	S	CSC
California leaf-nosed bat	*Macrotus californicus*	S	CSC
Western small-footed myotis	*Myotis ciliolabrum*	S	-

TABLE 1.5-1
Species Covered by the IID HCP

Common Name	Scientific Name	Federal Status	State Status
Occult little brown bat	*Myotis lucifugus occultus*	S	CSC
Southwestern cave myotis	*Myotis velifer brevis*	S	CSC
Yuma myotis	*Myotis yumanensis yumanensis*	S	CSC
Pocketed free-tailed bat	*Nyctinomops femorosaccus*	-	CSC
Big free-tailed bat	*Nyctinomops macrotis*	-	CSC
Nelson's bighorn sheep	*Ovis canadensis nelsoni*	BLMSS	
Jacumba little pocket mouse	*Perognathus longimembris internationalis*	S	CSC
Yuma Hispid cotton rat	*Sigmodon hispidus eremicus*	S	CSC
Colorado River hispid cotton rat	*Sigmodon arizonae plenus*	-	CSC
Plants			
Peirson's milk-vetch	*Astragalus magdalenae* var. *peirsonii*	T	E
Flat-seeded spurge	*Chamaesyce platysperma*	S	-
Wiggin's croton	*Croton wigginsii*	-	R
Foxtail cactus	*Escobaria vivipara* var. *alversonii*	S	-
Algodones Dunes sunflower	*Helianthus niveus* ssp. *tephrodes*	S	E
Munz's cactus	*Opuntia munzii*	S	
Giant Spanish needle	*Palafoxia arida* var. *gigantea*	S	-
Sand food	*Pholisma sonorae*	S	-
Orocopia sage	*Salvia greatae*	S	-
Orcutt's aster	*Xylorhiza orcuttii*	S	-

Status Codes:
BLMSS: Bureau of Land Management Sensitive Species
CSC: California Species of Special Concern
DM: Delisted – monitored
E: Endangered
FP: Fully protected
PT: Proposed threatened
R: Rare
S: Federal Species of Concern
T: Threatened

The drains carry three kinds of water: tailwater and tilewater discharged from farm fields, and operational discharge. Three kinds of water make up operational discharge: carriage water, lateral fluctuations, and change order. Carriage water is the extra volume of water needed in the laterals to deliver a specific volume of water to a turnout. Because open channel gravity flow water delivery is not exact, additional water is required to ensure deliveries are made in the amounts ordered. Lateral fluctuations are caused by delivery operations and maintenance activities. Laterals may need to be emptied for maintenance activities; the water that was in the lateral at the time must be removed and is discharged into a drain. Finally, a reduction or change by a farmer in his delivery order may not be timed exactly to efficiently implement the change by IID, resulting in extra water being delivered to a lateral or onto a field and then discharged into a drain.

Drains discharge water into one of three locations: the New River, Alamo River, or Salton Sea. Both the New and Alamo Rivers discharge to the Salton Sea. The Alamo River flows in

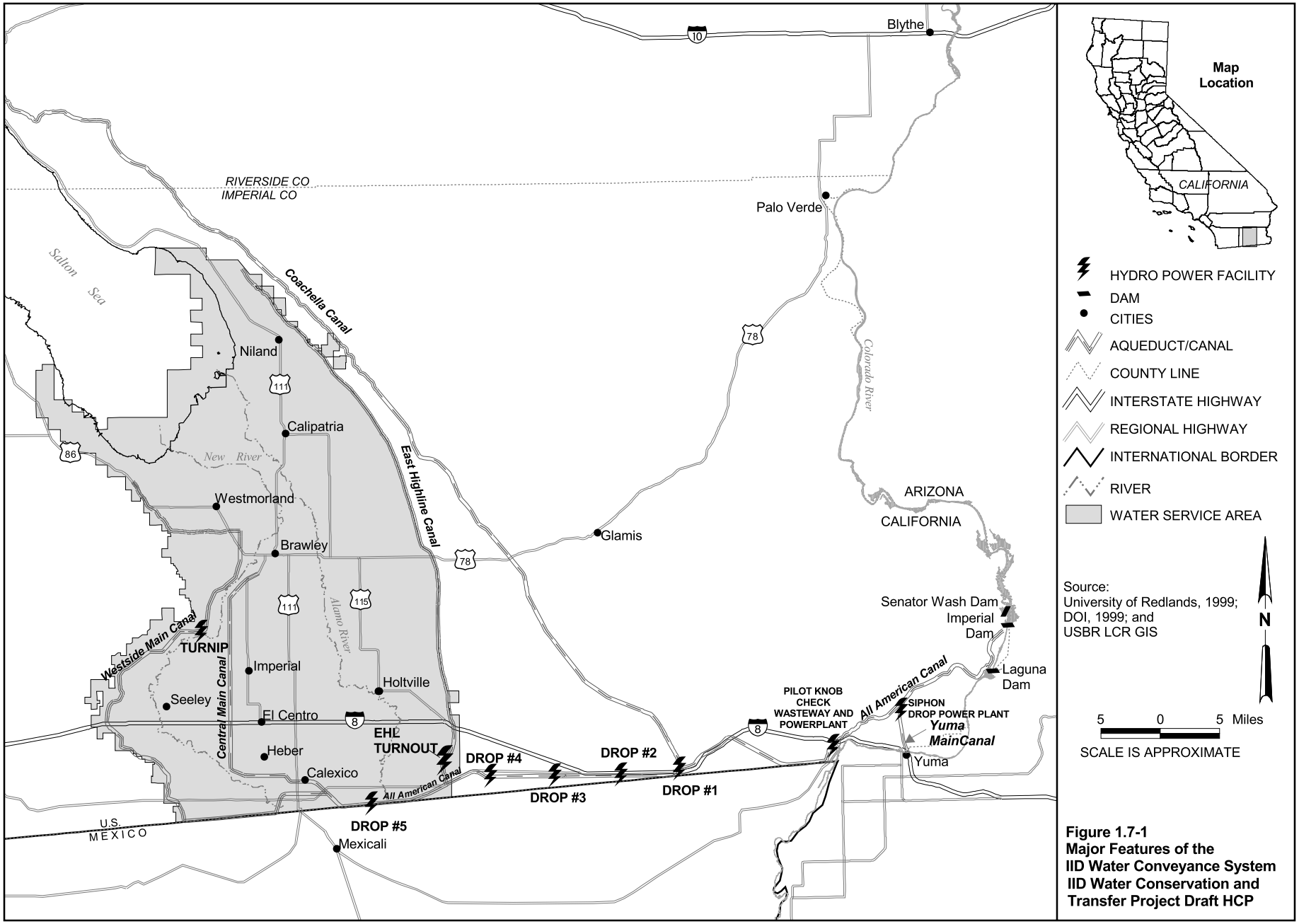

Figure 1.7-1
Major Features of the
IID Water Conveyance System
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Transfer Project Draft HCP

CH2M Hill RDD ArcView Project File \\rddgis\iid\pwer_gen_maps.apr 8:34 a.m. 06-1-2001

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a natural desert dry wash drainage channel, while the New River flows in a channel carved by the Colorado River to the Salton Sea. When the Colorado River flooded its banks in 1906, it flowed north and created the Salton Sea. The New River originates south of the International Boundary in the Mexicali Valley and conveys treated and untreated municipal and industrial wastewater, in addition to agricultural drainage from irrigated areas south of the border.

1.7.2 Water Use and Conservation Activities

As described in Section 1.1.1 of this chapter, IID will implement a water conservation program to generate up to 300 KAFY of conserved water for transfer to SDCWA, CVWD, and MWD. In addition, conservation measures or other water use activities also may be implemented by IID, farmers or landowners to comply with the annual cap on IID's Priority 3 diversions of Colorado River water established by the QSA. All water conservation and use activities by IID, farmers, tenants, and landowners and the effects of those activities are covered by this HCP.

Implementation of water conservation measures and transfer of the water to SDCWA, CVWD, and MWD would occur gradually. The IID/SDCWA Transfer Agreement and the QSA specify the quantities of water to be transferred and the ramp-up schedule for the transfer. The IID/SDCWA Water Conservation and Transfer Agreement requires a ramp-up of the conservation and transfer of water to SDCWA in increments of 20 KAFY. The QSA also specifies the amount and timing of transfers to CVWD and MWD. Based on the schedules in these agreements, a total conservation and transfer of 130 KAFY would be reached about six to seven years after initiation of the conservation and transfer program. About 10 years after initiation of the conservation and transfer program, 200 KAFY of water would be transferred with 300 KAFY of conservation and transfer achieved 24 years after the start of the water conservation and transfer programs.

Water conservation will be accomplished through a combination of on-farm and system-based conservation measures. On-farm measures consist of actions taken by individual farmers or landowners to conserve water under voluntary water conservation agreements with IID. System-based conservation measures consist of actions that would be undertaken by IID to conserve water. The exact mix of conservation methods that would be employed is anticipated to vary over the term of the HCP. The following describes the suite of conservation methods that could be implemented to conserve water.

1.7.2.1 On-farm Water Use and Conservation Activities

To commit to implementing the IID Water Conservation and Transfer Project, IID and participating farmers within the IID service area must be able to conclude that the benefits of the project justify the risks and costs to be assumed by IID and farmers. The conservation of 200 to 300 KAF of water within the IID service area will require changes in current farming practices and substantial capital investments in water conservation equipment and technologies. Thus, covered activities include irrigation practices by farmers and landowners otherwise required by the QSA and water conservation measures undertaken by farmers participating in the water conservation program.

Of the 130 to 200 KAF to be conserved for transfer to SDCWA pursuant to the IID/SDCWA Water Transfer Agreement, at least 130 KAFY is anticipated to come from on-farm

conservation programs adopted by farmers in the Imperial Valley. The on-farm conservation programs are voluntary. Farmers will enter into agreements with IID, committing to the implementation of conservation measures. These measures, in turn, will require the farmers to make capital investments in various types of water conservation equipment and facilities. In many cases, farmers will be required to obtain financing for construction costs to implement and maintain conservation measures. The farmers' ability to obtain financing will depend on the estimate of the direct and indirect costs of implementing the water conservation measures.

As such, farmers and lending institutions may be unwilling to enter into binding agreements to undertake significant costs and risks associated with implementing on-farm conservation measures unless they can determine the total costs of the measures and the associated additional cost of complying with the FESA and CESA. In the absence of this certainty, IID and farmers within IID's service area will be at risk that the costs of implementing the water conservation measures will increase substantially in the future. Therefore, incidental take authorization for water use and conservation activities is critical.

Farmers also need incidental take authorization to remove water conservation practices. Farmers may install water conservation measures and participate in the program for a period of time and subsequently stop participating in the program and remove water conservation measures. For example, a farmer could install a tailwater pond and participate in the water conservation program for a period of years but convert the tailwater pond back to agricultural production at a later date. To participate in the water conservation program, farmers need the assurance that they can stop implementing and remove water conservation measures on their property and that future use of their property for agricultural purposes would not be impaired because of participation in the water conservation program. Thus, if covered species use tailwater ponds or other water conservation features, farmers need incidental take authorization to remove the features or otherwise cease using a water conservation method.

Many farmers own their own land within the IID service area. Some lease their land from third parties and others lease their land from IID. This HCP covers water use activities on land in the IID service area irrespective of who owns the land and who conducts the activities. Water use activities include all activities associated with moving water from IID's conveyance system to farm fields, irrigating crops, and draining water from fields into the IID drainage system.

As part of the conservation program described in Section 1.1.1, a portion of the conserved water will be generated by on-farm conservation measures implemented by individual farmers, tenants, and landowners. Participation in the program by farmers will be voluntary and will vary during the term of the permit, probably from year to year. The amount of water conserved and the on-farm conservation techniques used will be at the discretion of the individual farmer. The options for conserving water that are available to farmers generally fall into the following categories:

- Installation of structural or facility improvements, or conversion to irrigation systems that increase efficiency and reduce water losses
- Irrigation management
- Land use practices

Compliance with the cap on IID's Priority 3 diversions of Colorado River water (see Chapter 1.1.3: Quantification Settlement Agreement) could result in conservation by farmers and landowners over the term of the permit. Compliance with the cap also may necessitate water conservation measures to pay back inadvertent overruns. IID does not anticipate rationing water to ensure as a means to comply with the cap or generate water to pay back inadvertent overruns. It is more likely that IID would fallow land it owns for short periods to achieve compliance with these requirements. Implementation and cessation of water conservation practices by individual farmers, tenants, landowners, and IID within the IID service area are covered under this HCP.

Installation of Structures/Facilities and Conversion of Irrigation Systems

On-farm water conservation can be achieved through various techniques using existing technology. On-farm conservation measures may include the following:

- Tailwater return systems
- Cascading tailwater systems
- Level basins
- Shorten furrows and border strip improvements
- Narrow border strips
- Cutbacks
- Laser leveling
- Multi-slope
- Drip irrigation

The techniques for achieving water conservation would be at the discretion of the individual farmer. It is expected that some combination of the techniques listed would be employed. These water conservation techniques are briefly described in Table 1.7-1 and depicted in Figure 1.7-2. Additional information is provided in Chapter 2 of the IID Water Conservation and Transfer EIR/EIS.

In addition, farmers have and continue to experiment with new and/or developing irrigation technology. Additionally, evolving crop technology often requires farmers to grow crops with varying methods to improve production. The activities associated with the installation and conversion of irrigation systems from one technology to another is covered under this HCP.

Irrigation Management

Certain farmers may be able to conserve water and cultivate the same acreage through better irrigation management without constructing facilities or changing irrigation methods. Irrigation management refers to controlling the timing and amount of each irrigation application to provide adequate crop water for maximum yield and to achieve adequate soil leaching. Irrigation management on-farm will continue to evolve as the science of crop/soil water develops and understanding of the farmers to put that knowledge to practical use increases. As greater demands are put on agricultural areas to conserve more water in California, IID expects that irrigation water management will become a more important tool for farmers to conserve water.

TABLE 1.7-1
On-Farm Water Conservation Techniques

Conservation Technique	Brief Description
Tailwater return or pump back systems	Pumps surface irrigation tailwater back to the head ditch reducing both the delivery requirement and the volume of water discharged to the drains.
Cascading tailwater	Allows the tailwater to cascade by gravity to the head ditch of a lower field adjacent to the tailwater ditch. This can be accomplished by placing drainpipes with drop box inlets through the embankment between the fields just upstream of each head ditch check.
Level basins	Dividing a field into basins and flooding each basin at a relatively high flow rate.
Shorten furrows and border strip improvements	The distribution uniformity of furrow and border strip irrigation can be improved by shortening the length of irrigation runs, particularly in soils with higher infiltration rates.
Narrow border strips	Narrowing the width of border strips can improve distribution uniformity both along the length of fields by improving the advance time, and across the width of fields by increasing the depth of flow.
Cutback	Irrigation is initiated with a high flow rate to advance the water down the field as quickly as possible without causing erosion. When the water reaches a predetermined distance down the field, the flow is reduced to minimize tailwater.
Multi-slope	Distribution uniformity can be improved for furrow and border strip irrigation by varying the slope of the field with the head of the field having a greater slope than the end of the field.
Drip irrigation	Water is run through pipes (with holes in them) either buried or lying slightly above the ground next to the crop. Water slowly drips onto the crop roots and stems. Water can be directed only to the plants that need it, cutting back on tailwater runoff.

Land Use Practices

Fallowing could be used to meet water conservation objectives by reducing IID's requirement to deliver irrigation water in the service area. Fallowing can be described as the reduction or cessation of certain farmland operations for a specified or indefinite period of time. For the purposes of this HCP, fallowing is defined as:

- Long-term land retirement (greater than 1 year), whereby crop production ceases indefinitely or during the term of the water conservation and transfer agreements. A cover crop may be maintained during the period of inactivity or the land is returned to natural vegetation.
- Rotational fallowing, whereby crop production ceases for one calendar year. No water is applied, and no cover crop is grown.
- Single crop fallowing, whereby multiple crops are reduced to a single crop rotation on an annual or longer term basis.

The IID/SDWCWA Transfer Agreement provides that at least 130 KAFY of conserved water must be generated by on-farm conservation measures and fallowing is not an acceptable

Laser Leveling

USDA NRCS Practice Code 466

Multi-Slope

USDA NRCS Practice Code 464

Drip Irrigation

USDA NRCS Practice Code 441

Figure 1.7-2a
On-Farm Conservation Measures
IID Water Conservation and Transfer Project Draft HCP

Tailwater Return or Pump Back System

USDA NRCS Practice Code 447

Shorten Furrow or
Border Strips,
Narrow Border Strips

USDA NRCS Practice Code 388

Figure 1.7-2b
On-Farm Conservation Measures
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