1.6 CEQA DOCUMENTATION

Several types of EIRs are defined under CEQA. Each is tailored to a different situation or intended use; e.g., Project EIR, Subsequent EIR, Staged EIR, and Program EIR (PEIR). The QSA EIR is a PEIR, the purpose of which is to document a series of inter-related actions that can be assessed as one project for the purpose of CEQA analysis. The actions may be related in one or more of the following ways:

- by geographical proximity;
- as logical parts in a chain of contemplated actions;
- in connection with the issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program; or
- as individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects that can be mitigated in similar ways.

The proposal to implement the QSA fulfills the second criterion above (i.e., it consists of logical parts in a chain of contemplated actions) since it is composed of a number of terms, agreements, and projects, that when taken together, support the consensual agreement among CVWD, IID, MWD, and SDCWA regarding the allocation of Colorado River water among the agencies. This PEIR assesses the impacts of all of the components of the QSA. It is being prepared to ensure that the combined effects of the QSA components are evaluated and that where appropriate, program-wide mitigation measures are developed.

This PEIR also provides project-level CEQA compliance for several components of the Proposed Project, as identified in Table 2.3-1. Several other components of the Proposed Project have already been analyzed in approved CEQA documents. Although CEQA compliance has already been completed for these project components, this PEIR considers the aggregate impacts of the whole of the action as required by CEQA. Project-specific environmental documents addressing other specific QSA components are currently being prepared or will be prepared at the appropriate time once site-specific locations have been identified. If approved, these projects may be implemented independently from the QSA. These separate analyses are in various stages of the CEQA and/or NEPA process and are under the direction of the individual lead agencies that have the principal authority for carrying out these actions.

Potential mitigation measures have been identified for impacts that would result from the implementation of Project components that are receiving program-level analysis. Individual agencies that are responsible for implementing specific components of the QSA will be responsible for refining and adopting specific mitigation measures for these components in the project-level analyses being performed.

1.7 PURPOSE OF AND INTENDED USES OF THE PROGRAM EIR

This PEIR addresses the impacts associated with implementing the proposed QSA. This PEIR will serve as an informational document for decisionmakers, other public agencies and the

general public regarding the potential direct and indirect environmental consequences of implementing the proposed QSA. It will also serve as an information source evaluating broad alternatives and cumulative impacts to be incorporated in ongoing and future CEQA compliance documents. The PEIR complies with CEQA (PRC 21000 *et seq*.), the State CEQA Guidelines (Title 14, California Code of Regulations, 15000 et seq.), and any CEQA guidelines adopted by the co-lead agencies, where appropriate, which provide guidance for assessing project impacts.

1.8 PUBLIC INVOLVEMENT PROCESS

The public involvement process for this PEIR included the distribution of the NOP, the analysis of comments on the NOP and accompanying environmental checklist, and public and agency comments on the Draft PEIR. An NOP was distributed to the California State Clearinghouse and 284 potentially concerned agencies and other interested parties on June 6, 2000.

Comment letters on the NOP and environmental checklist were received from federal agencies, state agencies, regional authorities, local government agencies, and non-governmental organizations or individuals. Table 1.8-1 identifies the commenting parties and a summary of issues and potentially affected environmental resources raised by each comment. The comments received on the NOP were considered by the co-lead agencies and helped define the scope of analysis of the PEIR. A copy of the NOP and comments received are provided in Appendix B.

The Draft PEIR was circulated for a 45-day public review period, as mandated by CEQA. In response to public comments this review period was extended for 11 more days. The public review period began on January 30, 2002 and ended on March 26, 2002. Comments received during the public review period were considered by the co-lead agencies, and responses to comments raising environmental issues are included in the Final PEIR. As required by CEQA, responses to comments submitted by public agencies were distributed to those agencies for review prior to certification of the Final PEIR by the boards of directors of the co-lead agencies. Responses to comments by Indian tribes, organizations, and individuals were provided at this time, as well. The board of directors of each co-lead agency will independently consider whether the Final PEIR should be certified and adopt appropriate findings relative to each agency's respective responsibility for the QSA's environmental effects with the implementation of mitigation measures, prior to taking action on the Proposed Project.

1.9 PEIR ORGANIZATION

The QSA and the schedule for its implementation are described in detail in Chapter 2 of this PEIR; the affected environment, environmental impacts of the QSA as a whole, and mitigation measures for potentially significant effects are described in Chapter 3 for each resource considered; cumulative impacts of the QSA in combination with other related projects are addressed in Chapter 4; project alternatives, including alternatives eliminated from consideration, the no project alternative, and the environmentally superior alternative, are considered in Chapter 5; and growth inducing impacts are discussed in Chapter 6.The remaining sections include a list of preparers (Chapter 7); references (Chapter 8); list of persons, agencies, and organizations consulted (Chapter 9); and a list of acronyms and glossary of technical terms (Chapter 10).

Table 1.8-1. Summary of Comments Received in Response to the Notice of Preparation

Commenting Party	*Issues and Potentially Affected Environmental Resources*
FEDERAL	
U.S. Environmental Protection Agency (EPA)	Project description, water resources, biological resources, growth inducement, alternatives, utilities, recreation, socioeconomics, cultural resources, air quality, monitoring/mitigation, cumulative impacts, permits.
U.S. Fish and Wildlife Service (Service)	Biological resources.
STATE	
California Department of Fish and Game (CDFG)	Biological resources, water, land use planning, recreation, socioeconomics, geology, other (cumulative impacts, mitigation measures, permits).
California Department of Parks and Recreation	Recreation, water, air quality, aesthetics, biological resources, odors, cultural resources, population and housing.
California Regional Water Quality Control Board (RWQCB), Colorado River Basin Region	Water, biological resources, agriculture.
State of California Native American Heritage Commission	Cultural resources.
REGIONAL	
Southern California Association of Governments (SCAGs)	Land use planning (policies addressing socioeconomics, utilities, public services, traffic, air quality, water, recreation), alternatives.
South Coast Air Quality Management District (SCAQMD)	Air quality.
Salton Sea Authority	Water, aesthetics, geology, air quality, biological resources, recreation, land use planning, mitigation measures.
COUNTY, MUNICIPAL, AND LOCAL	
County of Imperial (Antonio Rossman, Special Counsel)	Responsible and lead agencies, cumulative impacts, project description.
County of Imperial Planning Department	Agriculture, land use planning, socioeconomics, aesthetics, biological resources, water, air quality, geology, cultural resources, hazardous materials/waste, recreation, utilities, growth inducement.
County of San Diego Department of Public Works	No comments relating to the scope of the analysis were provided.
City of San Diego Planning and Development Review	No comments relating to the scope of the analysis were provided.
City of Needles	Water, socioeconomics.
ORGANIZATIONS AND INDIVIDUALS	
California Audubon (Fred Cagle)	Agriculture, water, biological resources, cumulative impacts.
Pacific Institute for Studies in Development, Environment, and Security	Agriculture, water, socioeconomics, growth inducement, biological resources, cumulative impacts.
Harvey and Eleanor Roy	Growth inducement, land use planning.
Cliff Hurley	Project description, other (comment period extension).

1.10 DOCUMENTS INCORPORATED BY REFERENCE

A number of documents are incorporated by reference into the QSA PEIR in compliance with State CEQA Guidelines, §15150. The executive summaries from each of the documents incorporated by reference are included in Appendix C. A brief description of each project, and its status is provided below. All documents can be viewed at each of the following locations:

CVWD Headquarters	IID Headquarters	MWD Headquarters	SDCWA Headquarters
Highway 111 at Avenue 52	333 East Barioni Blvd.	700 North Alameda St.	4677 Overland Ave.
Coachella, CA 92236	Imperial, CA 92251	Los Angeles, CA 90012	San Diego, CA 92123

Final EIS/EIR for the All American Canal Lining Project

Reclamation prepared a Final EIS/EIR for the All American Canal Lining Project in March 1994 (State Clearinghouse Number 90010472). This EIS/EIR states that the approved project for reducing seepage from the All American Canal would conserve approximately 67.7 KAFY. The Final EIS/EIR was filed with the United States Environmental Protection Agency (EPA) on April 14, 1994 and noticed in the *Federal Register* on April 19, 1994. A ROD was prepared and signed by Reclamation's Regional Director for the Lower Colorado Region, on July 29, 1994. On November 22, 1999, Reclamation determined that the EIS and the ROD continued to meet the requirements of NEPA. The All American Canal Lining Project is a component of the QSA, and is evaluated at a program-level in this PEIR.

Final EIS/EIR for the Coachella Canal Lining Project

A revised and updated Draft EIS/EIR for the Coachella Canal Lining Project was circulated for public review by Reclamation and CVWD in September 2000; a Final EIS/EIR was released in April 2001 (State Clearinghouse Number 1990020408). The Final EIR was certified by CVWD in May 2001. The Coachella Canal lining project would conserve approximately 26 KAFY of Colorado River water for transfer purposes. The Coachella Canal Lining Project is a component of the QSA, and is evaluated at a program-level in this PEIR.

Final Program EIR on the Implementation of a Water Conservation Program and Initial Water Transfer

A Final Program EIR on the Implementation of a Water Conservation Program and Initial Water Transfer was prepared in 1986 by IID (State Clearinghouse Number 86012903). This document evaluates impacts associated with the existing water conservation program agreed to in the *Agreement for Implementation of a Water Conservation Program and Use of Conserved Water* (IID/MWD 1988 Agreement). Two additional agreements were implemented in 1989: (1) the IID/MWD/ PVID/CVWD 1989 Approval Agreement, which represents the approval of CVWD and PVID to the IID/MWD 1988 Agreement, and 2) the MWD/CVWD 1989 Agreement to Supplement Approval Agreement, which deals with a limitation on CVWD's net Colorado River diversions and the circumstances under which MWD would reduce its use of conserved water. The terms of the three agreements extend for a minimum of 35 years after full implementation of the conservation program and continue until terminated. As described in Chapter 2, under the terms of the QSA, the amounts of water available to MWD and CVWD under these agreements would be modified. Modifications to the IID/MWD 1988 Agreement

and subsequent agreements are a component of the QSA, and their implementation is evaluated at a project-level in this PEIR.

Final EIR for Modified East Lowline and Trifolium Interceptors, and Completion Projects

It was initially assumed that the 14 projects approved as part of the 1986 EIR described immediately above would adequately meet the conservation terms of the IID/MWD 1988 Agreement and subsequent agreements. It was subsequently determined, however, that additional water conservation measures would be needed. The Final EIR for Modified East Lowline and Trifolium Interceptors, and Completion Projects (State Clearinghouse Number 92071061) assesses the impacts of water conservation projects, including two new lateral interceptor systems (lined canals that extend across the lower reaches of lateral canals to capture unused flows) and a set of 13 potential "completion projects," such as additional lateral interceptor systems, seepage recovery, canal/lateral lining, water conservation/flood control through land retirement, and new reservoir construction. The IID Board of Directors certified the Final EIR on June 7, 1994. Modifications to the IID/MWD 1988 Agreement and subsequent agreements are a component of the QSA, and their implementation is evaluated at a project-level in this PEIR.

2.0 PROJECT DESCRIPTION

2.1 OVERVIEW

California's apportionment of Colorado River water is divided among Southern California water agencies in accordance with the Law of the River (refer to section 1.3.3.1). This water has been put to beneficial use to meet the water needs of agricultural and urban water users within the various agencies' service areas. From 1990 to 1999, the amount of Colorado River water used by California has varied between 4.5 MAFY and 5.2 MAFY (refer to Table 1.4-1). Quantities in excess of California's normal year apportionment of 4.4 MAF have been made available to California's Colorado River water users through the utilization of surplus water released to the Lower Division States and the use of water apportioned to, but unused by, Arizona and Nevada.

The Secretary has the responsibility and authority to manage deliveries of Colorado River water under the Law of the River. In 1996, the Secretary declared that California must implement a strategy to enable the state to limit its annual use of Colorado River water to 4.4 MAF in a normal year and develop a means of meeting its water needs from sources that do not jeopardize the use or delivery of Colorado River water to other states. Development of a strategy to reduce California's use of Colorado River water is considered by the Secretary to be a prerequisite for Secretarial approval of any further cooperative Colorado River water transfers between California agencies for the quantification period. The QSA is a proposed agreement between CVWD, IID, and MWD for the use of Colorado River water, which includes making water conserved in the IID service area available to SDCWA for the quantification period. The QSA is based on a series of proposed agreements, which include water conservation/transfer and exchange projects among IID, CVWD, MWD, and SDCWA (these water agencies are collectively referred to as the participating agencies). Implementation of the QSA (the Proposed Project) is an important part of California's strategy to reduce the state's annual use of Colorado River water to 4.4 MAF in a normal year.

The geographic areas affected by the implementation of the Proposed Project are shown in Figure 1.1-1 and include:

- IID service area and the All American Canal;
- CVWD service area and the Coachella Canal;
- MWD service area and the CRA;
- SDCWA service area (which is part of the MWD service area); and
- other areas, such as the mainstem of the Colorado River from Lake Mead to Imperial Dam, and the Salton Sea.

2.2 GOALS AND OBJECTIVES

The proposed QSA is designed to maintain the reliability of Colorado River water supplies to the participating agencies and provide part of the mechanism for California to reduce its use of Colorado River water to 4.4 MAF in a normal year.

The Proposed Project's goals and objectives are as follows:

- to settle, by consensual agreement, longstanding disputes regarding the priority, use, and transferability of Colorado River water;
- to agree upon a plan for the future distribution of Colorado River water among CVWD, IID, MWD, and SDCWA for up to 75 years, based upon agreed-to Colorado River water budgets for CVWD, IID, MWD, and SDCWA;
- to facilitate agreements and actions which, when implemented, would ensure the certainty and/or reliability of Colorado River water supplies available to CVWD, IID, MWD, and SDCWA;
- to assist these agencies in meeting their water demands without exceeding California's apportionment of Colorado River water;
- to identify agreed-upon terms and conditions for the conservation and transfer of specific amounts of Colorado River water within California; and
- to provide incentives to promote conservation of Colorado River water.

2.3 KEY CONCEPTS AND PROVISIONS OF THE QSA

The QSA is a proposed agreement among CVWD, IID, and MWD to budget their portion of California's apportionment of Colorado River water among themselves and to make water principally conserved in the IID service area available to CVWD, MWD, SDCWA, and others. Implementation of the QSA would not affect the diversion, distribution, and/or use of Colorado River water except within California. Within California, the QSA would only affect the diversion, distribution, and/or use of Colorado River water by the participating agencies (CVWD, IID, MWD, and SDCWA). The QSA would not affect the diversion, distribution, and/or use of Colorado River water by other agencies within California that hold rights to Colorado River water under the Seven Party Agreement (i.e., Priorities 1, 2, 3b, 6b, and 7); nor would the QSA affect the delivery, distribution, and/or use of Colorado River water by any PPR holders (including PPR holders in Arizona and Nevada) as identified in the 1964 Decree, and supplemental Decrees.

The QSA quantifies, by agreement, the amount of Colorado River water available to the participating agencies and calls for specific, changed distribution of that water among the agencies for the quantification period. The quantification period extends for up to 75 years. The water agencies that are affected by the implementation of the QSA are the participating agencies (CVWD, IID, MWD, and SDCWA). Although not a signatory to the QSA, SDCWA would benefit from the QSA since the QSA would facilitate implementation of the 1998 IID/SDCWA Water Conservation and Transfer Agreement.

The QSA is composed of related agreements, activities and projects, which, when taken together, support the consensual agreement among the four co-lead agencies regarding the use of Colorado River water. Section 2.4 describes the QSA components and the various CEQA

and/or NEPA review documents that have been, are being prepared, or will be prepared in the future to address impacts of these components.

The QSA includes provisions that would:

- voluntarily cap the share of Colorado River water that may be diverted and put to beneficial use by CVWD and IID;
- facilitate the various conservation and transfer agreements;
- modify existing conservation agreements to fit within the terms of the QSA; and
- establish other conditions that must be in place before the approval of the QSA.

The quantification of agency-specific diversion rights and implementation of voluntary conservation measures and water transfers/exchanges by the participating agencies would result in the annual, collective transfer of water from agricultural uses, principally in the IID service area, to other participating agencies. Water conservation would be achieved through a variety of means, including on-farm and system improvement measures within the IID service area and by the lining of portions of the All American and Coachella Canals (refer to section 2.5 for additional detail).

The QSA would facilitate the implementation of the San Luis Rey Indian Water Rights Settlement Act. The settlement parties are the La Jolla, Rincon, San Pasqual, Pauma, and Pala bands of Mission Indians in San Diego County, as well as the City of Escondido and Vista Irrigation District. Both Escondido and the Vista Irrigation District are within the SDCWA service area. Refer to section 2.4 for further discussion of the San Luis Rey Indian Water Rights Settlement Act.

Under the QSA, CVWD, IID, and MWD have agreed to divide responsibility for forgoing use of water to permit the Secretary to satisfy Miscellaneous PPRs and Federal Reserved Rights that were not encompassed by the priority system contained in the Seven Party Agreement executed in 1931. Refer to section 2.4 for further discussion of the satisfaction of Miscellaneous PPRs and Federal Reserved Rights.

2.4 QSA COMPONENTS

The proposed QSA is made up of various agreements and related actions. The various QSA components are summarized in Table 2.4-1. Various CEQA and/or NEPA review documents have been, are currently being, or will be prepared in the future that address impacts of these components. This PEIR evaluates the impacts from the aggregate of the QSA components. This PEIR also provides project-level CEQA compliance for some QSA components, as shown in Table 2.4-1. Further, several of the QSA components, while covered at a program level in this PEIR, also have independent CEQA documentation as noted in Table 2.4-1.

The QSA anticipates a transition period of approximately 25 years for the full implementation of water conservation/transfers and exchange projects. Many of the water conservation and transfer components of the QSA would be implemented incrementally over a period of several years. For example, the water transferred under the IID/SDCWA Water Conservation and Transfer Agreement, as implemented under the QSA, would be expected to begin in 2002, and

Table 2.4-1. QSA Components and Associated Environmental Review[1]

Description	*Water District(s) or Entity(s) Involved*	*Environmental Review and Assessment Document/ Anticipated Project Specific Environmental Documentation*
A. Priority 3a Colorado River water capped at 3.1 MAFY IID consensually limits its consumptive use of Priority 3a water to a specified amount of 3.1 MAFY, subject to adjustment as provided in the QSA and the IOP.	IID	1. This QSA PEIR provides program-level CEQA analysis for IID's Priority 3a Colorado River water cap, as defined in the QSA. 2. Project-level CEQA analysis for IID's Priority 3a Colorado River water cap, as defined in the QSA, is included in the IID Water Conservation and Transfer Project EIR/EIS.
B. QSA Changes to IID/MWD 1988 Agreement, IID/MWD/PVID/CVWD 1989 Approval Agreement, and MWD/CVWD 1989 Agreement to Supplement Approval Agreement MWD would forego, and would not be charged with, the use of 20 KAFY of IID conserved water. CVWD would be allowed the use of this 20 KAFY under terms of the 1989 IID/MWD/PVID/CVWD Approval Agreement, and MWD/CVWD Supplemental Agreement, as amended.	CVWD/ IID/ MWD/ PVID	1. This QSA PEIR provides program-level CEQA analysis for the IID/MWD 1988 Agreement and subsequent agreements, as modified by the QSA. 2. Project-level CEQA analysis for IID/MWD 1988 Agreement was included in the 1986 IID Proposed Water Conservation Program and Initial Water Transfer EIR. 3. Project-level CEQA analysis for the final projects associated with the IID/MWD 1988 Agreement was included in the 1994 IID Modified East Lowline and Trifolium Interceptors, and Completion Projects EIR. 4. Project-level CEQA analysis for MWD's use of conserved water for the 1989 Approval Agreement and 1989 Agreement to Supplement Approval Agreement was included in the 1986 IID Proposed Water Conservation Program and Initial Water Transfer EIR. 5. Project-level CEQA analysis for CVWD use of conserved water will be included in the Coachella Valley Water Management Plan PEIR, and/or subsequent site-specific environmental review documents. 6. This QSA PEIR provides project-level CEQA analysis for MWD reduction in use of conserved water. 7. This QSA PEIR provides project-level CEQA analysis for the change in point of diversion from Lake Havasu to Imperial Dam.
C. IID/SDCWA Transfer of conserved water (up to 200 KAFY) An amount of water equivalent to the amount of water conserved in IID service area would be transferred to SDCWA. At SDCWA's election, the water would be delivered to Lake Havasu.	IID/ SDCWA	1. This QSA PEIR provides program-level CEQA analysis for the IID/SDCWA Water Conservation and Transfer Agreement, as implemented under the Proposed Project. 2. Project-level CEQA and NEPA analysis for the IID/SDCWA Water Conservation and Transfer Agreement, including the change in point of diversion of up to 300 KAFY from Imperial Dam to Lake Havasu, SDCWA use of conserved water, water conservation by IID, and related Habitat Conservation Plan is included in the IID Water Conservation and Transfer EIR/EIS.

Table 2.4-1. QSA Components and Associated Environmental Review[1]

Description	*Water District(s) or Entity(s) Involved*	*Environmental Review and Assessment Document/ Anticipated Project Specific Environmental Documentation*
D. MWD/SDCWA Exchange of conserved water (up to 200 KAFY) SDCWA would exchange water conserved by IID under the IID/SDCWA Water Conservation and Transfer Agreement with MWD; MWD would divert that water at Lake Havasu; MWD would deliver an equivalent amount of water to SDCWA at the SDCWA/MWD delivery point in San Diego County.	SDCWA/ MWD	1. This QSA PEIR provides program-level CEQA analysis for the MWD/SDCWA Agreement for Exchange of Conserved Water. 2. This QSA PEIR provides project-level CEQA analysis for the MWD/SDCWA Agreement for Exchange of Conserved Water.. 3. Notice of Exemption for the MWD/SDCWA Exchange of Conserved Water Agreement was filed by SDCWA on November 19, 1998.
E. IID/CVWD/MWD Transfer of conserved water (up to 100 KAFY, also known as the First and Second 50 KAFY) **First 50 KAFY** An amount of water equivalent to the amount of water conserved in the IID service area, which CVWD elects to acquire, would be made available at Imperial Dam. Any amount not acquired by CVWD may be acquired by MWD, and could be diverted at Lake Havasu. **Second 50 KAFY** An amount of water equivalent to the amount of water conserved in the IID service area, which CVWD elects to acquire, would be made available at Imperial Dam. Any amount not acquired by CVWD may be acquired by MWD, and could be diverted at Lake Havasu. After Year 45, MWD would bear the obligation to provide the Second 50 KAFY to CVWD.	CVWD/ IID/ MWD	1. This QSA PEIR provides program-level CEQA analysis for the IID/CVWD/MWD transfer of conserved water (First and Second 50 KAFY) component of the Proposed Project. 2. Project-level CEQA and NEPA analysis for IID's proposed water conservation actions will be included in the IID Water Conservation and Transfer EIR/EIS. 3. This QSA PEIR provides project-level CEQA analysis for the change in point of diversion of up to 100 KAFY from Imperial Dam to Lake Havasu. 4. Project-level CEQA analysis for CVWD use of conserved water will be included in the Coachella Valley Water Management Plan PEIR, and/or subsequent site-specific environmental review documents. 5. This QSA PEIR provides project-level CEQA analysis for MWD acquisition and use of any amount of water equivalent to the amount of water conserved, up to 100 KAFY, not acquired by CVWD. 6. After Year 45, MWD would bear the obligation to provide the Second 50 KAFY to CVWD. The source of water and mechanisms for MWD to fulfill this obligation are speculative at this time and may be subject to further CEQA analysis in the future.
F. Transfer of conserved water (67.7 KAFY) An amount of water equivalent to the amount of water conserved by lining a section of the All American Canal would be diverted by MWD and/or IID (56.2 KAFY), and the San Luis Rey Indian Water Rights Settlement Parties (11.5 KAFY) via MWD and SDCWA facilities.	IID/ MWD/ SDCWA/ San Luis Rey Settlement Parties	1. This QSA PEIR provides program-level CEQA analysis for the All American Canal Lining Project, a component of the Proposed Project. 2. Project-level CEQA and NEPA analysis for the All American Canal Lining Project including the change in point of diversion of up to 67.7 KAFY from Imperial Dam to Lake Havasu, the diversion, transport, and use of conserved water in the MWD service area, and the diversion and transport of water by MWD and SDCWA and use of that water within the MWD and SDCWA service area for implementation of the San Luis Rey Indian Water Rights Settlement Act was included in the All American Canal Lining Project EIS/EIR.

Table 2.4-1. QSA Components and Associated Environmental Review[1]

Description	*Water District(s) or Entity(s) Involved*	*Environmental Review and Assessment Document/ Anticipated Project Specific Environmental Documentation*
G. Priority 6a Colorado River priorities and volume allocations Diversion of Priority 6a water in the following priorities and volumes: 38 KAFY to MWD, 63 KAFY to IID and 119 KAFY to CVWD, when available.	CVWD/ IID/ MWD	1. This QSA PEIR provides program-level CEQA analysis for the Priority 6a Colorado River priority and volume allocations. 2. This QSA PEIR provides project-level CEQA analysis for Priority 6a Colorado River priority and volume allocations, including quantification of Priority 6a water among CVWD, IID, and MWD and use of the water by CVWD, IID and MWD within their respective service areas.
H. Priority 3a Colorado River water capped at 330 KAFY CVWD consensually limits its consumptive use of Priority 3a water to a specified amount of 330 KAFY, subject to adjustment as provided in the QSA and the IOP. Water conserved and transferred to CVWD under the QSA shall not count against CVWD's Priority 3a cap.	CVWD	1. This QSA PEIR provides program-level CEQA analysis for CVWD's Priority 3a Colorado River water cap, as defined in the QSA. 2. Project-level CEQA analysis for CVWD's Priority 3a Colorado River water cap, as defined in the QSA, will be included in the Coachella Valley Water Management Plan PEIR, and/or subsequent site-specific environmental review documents.
I. Transfer of conserved water (26 KAFY) An amount of water equivalent to the amount of water conserved by lining a portion of the Coachella Canal would be diverted by MWD, and/or IID (21.5 KAFY), and the San Luis Rey Indian Water Rights Settlement Parties (4.5 KAFY) via MWD and SDCWA facilities.	CVWD/ MWD/ SDCWA/ San Luis Rey Settlement Parties	1. This QSA PEIR provides program-level CEQA analysis for the Coachella Canal Lining Project, a component of the Proposed Project. 2. Project-level CEQA and NEPA analysis for the Coachella Canal Lining Project including the change in point of diversion of up to 26 KAFY from Imperial Dam to Lake Havasu, the diversion, transport, and use of conserved water in the MWD service area, and the diversion and transport of water by MWD and SDCWA and use of that water within the MWD and SDCWA service area for implementation of the San Luis Rey Indian Water Rights Settlement Act was included in the Coachella Canal Lining Project EIS/EIR.
J. Transfer of water (35 KAFY) MWD would transfer 35 KAFY of its SWP entitlement to CVWD. CVWD would deliver 35 KAFY of its SWP entitlement to MWD at the Devil Canyon Afterbay; in exchange, MWD would forgo the use of 35 KAFY of Colorado River water for use by CVWD.	MWD/ CVWD	1. This QSA PEIR provides program-level CEQA analysis for the MWD/CVWD SWP Transfer and Exchange, a component of the Proposed Project. 2. This QSA PEIR provides project-level CEQA analysis for the change in point of diversion of up to 35 KAFY from Lake Havasu to Imperial Dam, and change of SWP entitlement 3. Project-level CEQA analysis for the use of this water by CVWD will be included in the Coachella Valley Water Management Plan PEIR, and/or subsequent site-specific environmental review documents.
K. MWD Priority 4 and 5 Colorado River water cap MWD consensually limits its consumptive use of Priority 4 and 5 water to a specified amount of 550 KAFY and 662 KAFY, respectively, pursuant to the conditions as specified in the QSA, and subject to adjustment as provided by the IOP.	MWD	1. This QSA PEIR provides program-level CEQA analysis for MWD's Priority 4 and 5 Colorado River water cap, as defined in the QSA. 2. This QSA PEIR provides project-level CEQA analysis for MWD's Priority 4 and 5 Colorado River water cap, as defined in the QSA.

Table 2.4-1. QSA Components and Associated Environmental Review[1]

Description	*Water District(s) or Entity(s) Involved*	*Environmental Review and Assessment Document/ Anticipated Project Specific Environmental Documentation*
L. Over and Under Run of Priorities 1, 2 and 3b MWD shall be responsible, when necessary, in conjunction with the IOP for repayment of any overrun as a result of the aggregate use by Priorities 1, 2 and 3b in excess of 420 KAFY; to the extent that Priorities 1, 2 and 3b use less than 420 KAFY, MWD shall have the exclusive right to consumptively use such unused water.	MWD/ Priority 1, 2, and 3b users	1. This QSA PEIR provides program-level CEQA analysis for MWD's repayment of any overrun as a result of the aggregate use by Priorities 1, 2 and 3b in excess of 420 KAFY, and for MWD's use of unused Priorities 1, 2 and 3b in the event that these priorities use less than 420 KAFY.
M. Use by Miscellaneous PPRs and Federal Reserved Rights, including certain Indian Reservations Water forborne, when necessary, by CVWD and IID in the amount of 3 and 11.5 KAFY respectively, and water forborne by MWD in the aggregate amount in excess of 14.5 KAFY necessary to satisfy Miscellaneous PPRs and Federal Reserve Rights, including Indian Reservations.	CVWD/ IID/ MWD/ Misc. PPRs and Federal Reserve Right holders	1. This QSA PEIR provides program-level CEQA analysis for the forbearance of water necessary to satisfy Miscellaneous PPRs and Federal Reserve Rights, including certain Indian Reservations, a component of the Proposed Project. 2. This QSA PEIR provides project-level CEQA analysis for the change in point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River, due to the future use by Miscellaneous PPRs and Federal Reserve Right holders, including certain Indian Reservations. 3. Project-level CEQA analysis for IID's forbearance is included in the IID Water Conservation and Transfer Project EIR/EIS. 4. Project-level CEQA analysis for CVWD's forbearance will be included in the Coachella Valley Water Management Plan PEIR, and/or subsequent site-specific environmental review documents.
N. QSA Shortage Sharing Agreement If there is less than 3.85 MAF of Colorado River water available under Priorities 1, 2, and 3 in any one year during the quantification period, shortages would be shared pursuant to the particular provisions of the Acquisition Agreements[2] and the Allocation Agreement[3].	CVWD/ IID/ MWD/ SDCWA	1. This QSA PEIR provides program-level CEQA analysis for the QSA Shortage Sharing Agreement. 2. This QSA PEIR provides project-level CEQA analysis for the effects of the shortage sharing provisions among IID, MWD, CVWD and SDCWA.

Key: PPR = Present Perfected Right SWP = State Water Project

(1) All QSA components would terminate prior to, or at the end of the quantification period pursuant to the terms and conditions of the QSA, with the exception of the water transferred to the San Luis Rey Indian Water Rights Settlement Parties.

(2) The Acquisition Agreements are collectively the IID/SDWCA Water Conservation and Transfer Agreement, the CVWD/MWD Acquisition Agreement, the IID/MWD Acquisition Agreement, the IID/CVWD Acquisition Agreement, and the MWD/CVWD SWP Transfer and Exchange Agreement.

(3) The Allocation Agreement is a proposed agreement among the City of Escondido, Palo Verde Irrigation District, SDCWA, San Luis Rey River Indian Water Authority, Vista Irrigation District, the La Jolla, Pala, Pauma, Rincon and San Pasqual bands of Mission Indians, MWD, CVWD, and IID, and the Secretary concerning the allocation of conserved water created by the All American and Coachella Canal lining projects.

increase by approximately 20 KAF yearly until full implementation between 2008 and 2011 (full implementation under the QSA is considered to be between 130 and 200 KAFY of water conserved in the IID service area and transferred to SDCWA). Full implementation of all QSA water conservation and transfer components is expected in 2026. Table 2.4-2 summarizes the estimated start dates of the core cooperative voluntary water conservation/transfer projects and associated exchanges.

Table 2.4-2. Cooperative Water Conservation/Transfer and Exchange Projects

Cooperative Water Conservation/ Transfer Project	*Annual Yield (AF)*	*Estimated Start Date*
IID/MWD 1988 Agreement and subsequent agreements	100,000 - 110,000	Ongoing
Modification to the IID/MWD 1988 Agreement and subsequent agreements	20,000[1]	2003
IID/SDCWA Water Conservation and Transfer Agreement as implemented under the QSA	130,000 – 200,000[2]	2002
CVWD/MWD SWP Water Transfer/Colorado River Water Exchange	35,000	2003
Coachella Canal Lining	26,000[4]	2006[5]
All American Canal Lining	67,700[4]	2006[5]
CVWD/IID/MWD Water Conservation and Transfer (First and Second 50 KAFY)	100,000[3, 6]	2007

Notes:
(1) Yield to CVWD.
(2) Yield to SDCWA; would ramp up at approximately 20 KAFY during Project implementation. IID would conserve and transfer Colorado River water to SDCWA in the following years and amounts: 2.5 KAF in 2005; 5 KAF in 2006; and 2.5 KAF in 2007
(3) IID would conserve and transfer Colorado River water to MWD in the following years and amounts: 2.5 KAF in 2005; 5 KAF in 2006; and, 2.5 KAF in 2007. In the event that CVWD elects to not take the First 50 KAFY in any year from 2007 to 2014, MWD would also receive a "secondary option" to acquire from IID conserved and transferred water in the following years and amounts: 5 KAF in 2007, and 10 KAF each year from 2008 to 2014.
(4) Yield to MWD, or IID under certain conditions, of 21.5 and 56.2 KAFY from the Coachella Canal and All American Canal lining respectively, and to the San Luis Rey Indian Water Rights Settlement Parties of 4.5 and 11.5 KAFY from the Coachella Canal lining and All American Canal lining respectively.
(5) Date by which full conservation benefits would be achieved.
(6) Yield to CVWD; would ramp up at 5 KAFY during Project implementation. MWD has option to utilize part or all water not utilized by CVWD.

Cooperative and voluntary water conservation measures that are the basis of the QSA consist of both agricultural conservation measures and conservation through reduction of canal seepage losses by lining sections of the All American and Coachella canals. Conservation measures that would be implemented in the individual service areas are discussed in detail in section 2.5 and summarized below.

Conservation measures within the IID service area are expected to conserve up to 300 KAFY for transfer purposes. These measures could include both on-farm conservation and water delivery system improvements and may include fallowing, subject to certain contractual limitations set forth in the IID/SDCWA Water Conservation and Transfer Agreement. On-farm measures

would improve the effectiveness and efficiency of irrigation by farmers. Water delivery system improvements would improve the effectiveness and efficiency of IID's water delivery system. IID envisions a flexible program that would permit the implementation of various methods of both on-farm conservation and water delivery system improvements to conserve water for up to a 75-year time period. The conservation of water in the IID service area is evaluated on a program level in this PEIR. IID has prepared a draft Habitat Conservation Plan (HCP) in support of IID's application for incidental take permits in conformance with the federal and California ESAs for impacts within the IID service area, the All American Canal right-of-way, and the Salton Sea. CEQA and NEPA evaluation for the IID/SDCWA Water Conservation and Transfer Agreement and related HCP is included in the IID Water Conservation and Transfer Project EIR/EIS, released for public review in January 2002.

Water conservation would also be achieved through lining a section of the All American Canal, and lining the unlined portions of the Coachella Canal, as discussed below.

The QSA water transfers are, for the most part, conserved Colorado River water from one area being made available to meet the needs of existing Colorado River water users in another area, resulting in a net reduction in consumptive use of Colorado River water by users within California. The following is a description of the various water conservation and transfer agreements that comprise the QSA.

A. IID'S PRIORITY 3A COLORADO RIVER WATER CAPPED AT 3.1 MAFY

Under the QSA, IID would agree to limit its consumptive use of Colorado River water under Priority 3a to 3.1 MAFY for the quantification period, less an amount of water equal to that conserved by IID for the benefit of others as identified in the QSA, and subject to adjustments as provided by the IOP. This consensual limitation of Priority 3a consumptive use constitutes a forbearance of IID's right to divert, for beneficial use, up to the entire balance (after Priorities 1 and 2, and in conjunction with Priority 3b) of the 3.85 MAFY amount allocated in the aggregate to Priorities 1, 2, and 3. This forbearance makes water available to agencies with lower priorities (or higher priority numbers). This PEIR provides program-level CEQA analysis for IID's Priority 3a Colorado River water cap, as defined in the QSA, including the conservation of water by IID necessary to comply with the Priority 3a cap, as defined in the QSA and assuming payback for exceedances in compliance with the IOP. Project-level CEQA analysis for IID's Priority 3a Colorado River water cap, as defined in the QSA, is included in the IID Water Conservation and Transfer Project EIR/EIS.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

The IID/MWD 1988 Agreement (entitled "Agreement for Implementation of a Water Conservation Program and Use of Conserved Water" and dated December 22, 1988) calls for MWD to bear the costs of various conservation projects implemented by IID within the IID service area. For bearing the costs, MWD is entitled to request and divert from the Colorado River an amount equal to the amount of water conserved by the conservation projects, estimated to range from 100 to 110 KAFY. Water conservation under this agreement began in 1990, and reached full implementation in 1998.

In 1989, two agreements, the IID/MWD/PVID/CVWD 1989 Approval Agreement and the MWD/CVWD 1989 Agreement to Supplement Approval Agreement, amended the IID/MWD 1988 Agreement. Under the above agreements, MWD is entitled to request and divert from the Colorado River an amount of water equal to the amount of water conserved by the conservation projects within the IID service area. This amount is estimated to range from 100 to 110 KAFY. Under certain conditions as specified in the above agreements, CVWD is entitled to divert up to 50 KAFY of this water. Since the above agreements were implemented, the conditions necessary for CVWD's diversion of 50 KAF have not occurred, and all water conserved under these agreements has been diverted by MWD. Therefore, for the purposes of this PEIR, the description of existing conditions assumes that the amount of water conserved and transferred under the above agreements is 110 KAFY, and that all conserved water is used by MWD.

Under the terms of the QSA, the IID/MWD 1988 Agreement, IID/MWD/PVID/CVWD 1989 Approval Agreement and MWD/CVWD 1989 Agreement to Supplement Approval Agreement would be modified so that MWD would be entitled to a maximum of 90 KAFY (a reduction from 110 KAFY), and CVWD would be entitled to 20 KAFY of water conserved by IID (therefore, CVWD would be entitled to annually divert 20 KAF in lieu of diverting 50 KAF only in years where the necessary conditions exist, as specified in the above agreements). Under the QSA, CVWD would begin receiving this 20 KAFY starting in 2003. Under the terms of the QSA, the IID/MWD 1998 Agreement would be modified to delete the parties' rights to terminate the agreement 35 years following the completion of the last project implemented under the agreement, in order to maintain the IID/MWD 1988 Agreement and subsequent agreements, as modified, throughout the quantification period.

The QSA PEIR provides project-level CEQA analysis for MWD's reduction in use of conserved water and for the change in flow and water surface elevation of the Colorado River as a result of the change in point of diversion of 20 KAFY from Lake Havasu to Imperial Dam. Potential environmental impacts associated with CVWD's use of conserved water are assessed at a program level in this PEIR, and will be subject to further analysis in the Coachella Valley Water Management Plan PEIR, and/or subsequent site-specific environmental review documents.

C. IID/SDCWA TRANSFER OF CONSERVED WATER

The IID/SDCWA Water Conservation and Transfer Agreement provides for the transfer of 130 to 200 KAFY of water conserved by IID to SDCWA, plus an optional, additional 100 KAFY. SDCWA would arrange to take delivery of the water at Lake Havasu. Under the QSA, SDCWA no longer has the right to the additional 100 KAFY. Transfers of water under the IID/SDCWA Water Conservation and Transfer Agreement, as implemented under the QSA, would be expected to begin in 2002, and increase by approximately 20 KAF yearly until full implementation under the QSA between 2008 and 2011 (full implementation as amended by the QSA, is considered to be between 130 and 200 KAFY). Under a proposed amendment to the IID/SDCWA Water Conservation and Transfer Agreement, which is conditioned upon implementation of the QSA, IID would conserve and transfer Colorado River water to SDCWA in the following years and amounts: 2.5 KAF in 2005; 5 KAF in 2006; and 2.5 KAF in 2007. This water is in addition to the water to be transferred to SDCWA under the IID/SDCWA Water Conservation and Transfer Agreement, although, the total amount of water transferred to SDCWA would not cumulatively exceed 200 KAFY, including years with early water transfers.

This PEIR provides program-level CEQA analysis for the IID/SDCWA Water Conservation and Transfer Agreement, as implemented under the QSA. This PEIR provides program-level CEQA analysis for the change in point of diversion of up to 200 KAFY of Colorado River water from Imperial Dam to Lake Havasu. Project-level CEQA and NEPA analysis for the IID/SDCWA Water Conservation and Transfer Agreement including, water conservation and transfers by IID, and related HCP, is included in the IID Water Conservation and Transfer Project EIR/EIS.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

The MWD/SDCWA Exchange of Conserved Water Agreement provides the mechanism for exchanging the IID conserved and transferred water to SDCWA. SDCWA would take delivery of the IID conserved water at Lake Havasu. MWD would divert this water at the Whitsett Pumping Plant in Lake Havasu and convey it through the CRA to its service area. MWD would deliver an equivalent amount of water to SDCWA at the existing delivery point in northern San Diego County. Since a similar amount of water has been conveyed in the CRA and existing MWD and SDCWA facilities and distributed throughout the SDCWA service area, no additional consequences of conveyance and use were anticipated from the MWD/SDCWA Agreement for Exchange of Conserved Water Agreement. This PEIR provides project-level CEQA analysis for the diversion and exchange of water under the MWD/SDCWA Agreement for Exchange of Conserved Water. A notice of exemption for the exchange was filed by SDCWA on November 19, 1998.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under the terms of the QSA, the parties would consent to the transfer of 130 to 200 KAFY to SDCWA pursuant to the IID/SDCWA Water Conservation and Transfer Agreement. The additional 100 KAFY optional water to SDCWA identified in the IID/SDCWA Water Conservation and Transfer Agreement would be replaced by what is referred to as the First and Second 50 KAFY transfers of conserved water to CVWD and/or MWD. CVWD would have the first option to acquire this conserved and transferred water and would divert this water at Imperial Dam. If CVWD chose not to exercise part of, or its full option to this water, MWD could exercise an option to divert this water at Lake Havasu. The First and Second 50 KAFY would be supplied by conservation measures implemented by IID from Year 1 to Year 45. After Year 45, the obligation to provide the Second 50 KAFY to CVWD would no longer be the obligation of IID, but would become the obligation of MWD. Transfers of water under the First 50 KAFY would be expected to begin in 2007, and increase by 5 KAF yearly until full implementation in 2016. Transfers of water under the Second 50 KAFY would begin in the year following the transfer of the full First 50 KAFY, which is expected to be 2017, and would increase by 5 KAF yearly until full implementation in 2026.

Associated Early Water Agreements – MWD would also receive an option to acquire water conserved by IID in the following years and amounts: 2.5 KAF in 2005; 5 KAF in 2006; and, 2.5 KAF in 2007. In the event that CVWD postpones the acquisition of the First 50 KAFY to a year later than 2007, MWD could also receive an additional 5 KAF in 2006, 7.5 KAF in 2007, and 10 KAFY from 2007 to 2014.

Environmental impacts associated with the above agreements are assessed at a program level in this PEIR. This PEIR provides project-level CEQA analysis for MWD's use of any conserved

water not acquired by CVWD. This PEIR also provides project-level CEQA analysis for the change in point of diversion of up to 100 KAFY from Imperial Dam to Lake Havasu in the event that MWD diverts all or a portion of the First and Second 50 KAFY. There is no change in point of delivery on the Colorado River associated with CVWD diversion of water conserved by IID. Project-level CEQA analysis for CVWD's use of conserved water will be provided by the Coachella Valley Water Management Plan PEIR, and/or subsequent site-specific environmental review documents. Project-level CEQA and NEPA analysis for IID conservation of water is included in the IID Water Conservation and Transfer Project EIR/EIS. MWD's fulfillment of their obligation to provide the Second 50 KAFY to CVWD after Year 45 may be subject to further CEQA evaluation in the future.

F. TRANSFER OF CONSERVED WATER (67.7 KAFY)

Water conservation under the QSA also would be achieved through lining a section of the All American Canal, which would reduce seepage from the canal. IID obtains water from the 82-mile long All American Canal, through which water is diverted from the Colorado River at Imperial Dam. An estimated 67.7 KAFY would be conserved by lining a section of this canal (USBR and IID 1994). Transfers of water conserved by lining a section of the All American Canal would be expected to begin in 2003 and be fully implemented (67.7 KAFY conserved and transferred) in 2006. Project-level CEQA and NEPA analysis for the All American Canal lining project, including the use of conserved water by MWD, was provided in the All American Canal Lining Project EIS/EIR (USBR and IID 1994). This PEIR provides program-level CEQA analysis for the change in flow and water surface elevation of the Colorado River resulting from the change in point of diversion of up to 67.7 KAFY from Imperial Dam to Lake Havasu, and for the diversion of conserved water from the All American Canal Lining Project for implementation of the San Luis Rey Indian Water Rights Settlement Act (discussed below).

San Luis Rey Indian Water Rights Settlement - The San Luis Rey Indian Water Rights Settlement Act, enacted by Congress in 1988 (Title I of PL 100-675, as amended), authorized a settlement of water rights claims to San Luis Rey River water among the La Jolla, Rincon, San Pasqual, Pauma, and Pala Bands of Mission Indians, and the City of Escondido, the Escondido Mutual Water Company (which is no longer in existence) and Vista Irrigation District. This settlement is to be facilitated through the use of 11.5 KAFY of water conserved by the All American Canal Lining Project and 4.5 KAFY of water conserved by the Coachella Canal Lining Project. Transfers of water conserved by lining a section of the All American Canal would be expected to begin in 2003 and be fully implemented in 2006. Transfers of water conserved by lining the unlined portion of the Coachella Canal would be expected to begin in 2003, with full implementation in 2006. It is anticipated that the Department of the Interior would arrange with MWD and SDCWA for conveyance of water for the San Luis Rey Indian Water Rights Settlement Parties as defined in PL 100-675, as amended, using existing MWD and SDCWA facilities.

This PEIR provides program-level CEQA analysis for the change in flow and water surface elevation of the Colorado River resulting from the change in point of diversion from Imperial Dam to Lake Havasu for the implementation of the San Luis Rey Indian Water Rights Settlement Act, and for the diversion of water associated with this settlement. This PEIR provides program-level CEQA analysis for use of the water by the City of Escondido and Vista

Irrigation District. Use of the water by the Indian bands is not included in this analysis. Project-level CEQA and NEPA analysis for the All American Canal and Coachella Canal lining projects was provided in the All American Canal Lining Project EIS/EIR and the Coachella Canal Lining Project EIS/EIR, respectively.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

If a surplus year is declared by the Secretary, or if unused Colorado River water apportionments are available to California users holding Priority 5a, 5b, 6a, 6b, and 7 water rights, the water would be made available in accordance with the existing priority system, with the exception of Priority 6a water. Priority 6a water would be divided as follows: the first 38 KAFY to MWD, the next 63 KAFY would go to IID, and the remaining 119 KAFY would go to CVWD. Under the QSA, Priority 6a and 6b would continue to have equal priorities to request and divert Colorado River water.

Priority 6a water is apportioned to IID and CVWD for use in the Imperial and Coachella valleys, and Priority 6b water is apportioned to PVID; MWD is not apportioned Priority 6a water under the water delivery contracts. Under the water delivery contracts, Priority 6a and 6b are capped at 300 KAFY, with both 6a and 6b having equal priorities to request and divert Colorado River water. This PEIR provides project-level CEQA analysis for Priority 6a Colorado River priority and volume allocations, including quantification of Priority 6a allocations to CVWD, IID, and MWD and use of the water by CVWD, IID and MWD within their respective service areas.

H. CVWD'S PRIORITY 3A COLORADO RIVER WATER CAPPED AT 330 KAFY

Under the terms of the QSA, CVWD would agree to limit its consumptive use of Colorado River water under Priority 3a to 330 KAFY for the quantification period, less an amount of water equal to that conserved by CVWD for the benefit of others as identified in the QSA, and subject to adjustments as provided by the IOP. This consensual limitation of Priority 3a consumptive use constitutes a forbearance of IID's right to divert, for beneficial use, up to the entire balance (after Priorities 1 and 2, and in conjunction with Priority 3b) of the 3.85 MAFY amount allocated in the aggregate to Priorities 1, 2, and 3. This QSA component also establishes an accounting method for water transfers under the Proposed Project. This PEIR provides program-level CEQA analysis for CVWD's Priority 3a Colorado River water cap, as defined in the QSA. Project-level CEQA analysis for CVWD's Priority 3a Colorado River water cap, as defined in the QSA, will be included in the Coachella Valley Water Management Plan PEIR, and/or subsequent site-specific environmental review documents.

I. TRANSFER OF CONSERVED WATER (26 KAFY)

Water conservation under the QSA also would be achieved through lining the unlined portions of the Coachella Canal, which would reduce seepage from the canal. CVWD obtains water from the 122-mile long Coachella Canal, through which water is diverted from the All American Canal. Lining the remaining unlined portions of the Coachella Canal would result in approximately 26 KAFY of conserved water that would be available for transfer under the QSA. Transfers of water conserved by lining the unlined portion of the Coachella Canal would be expected to begin in 2003, with full implementation (26 KAFY conserved and transferred) in

2006. This PEIR provides program-level CEQA analysis for this component of the QSA. Project-level CEQA and NEPA analysis for the Coachella Canal Lining Project, including change in point of diversion from Imperial Dam to Lake Havasu, and use of conserved water by MWD was provided in the Coachella Canal Lining Project EIS/EIR (USBR and CVWD 2001).

The Coachella Canal Lining Project would facilitate implementation of the San Luis Rey Indian Water Rights Settlement Act, discussed under component F, above.

J. TRANSFER OF WATER (35 KAFY) - MWD/CVWD SWP ENTITLEMENT TRANSFER AND EXCHANGE AGREEMENT

The QSA includes an entitlement exchange between CVWD and MWD involving water from the Colorado River and the SWP. The SWP is a large water supply, storage, and distribution system authorized by an act of the California State legislature in 1959 and operated by the California Department of Water Resources (DWR). Currently, the SWP includes 32 storage facilities, reservoirs, and lakes; 17 pumping plants; three pumping-generating plants; five hydroelectric power plants; and approximately 660 miles of aqueducts and pipelines. The primary purpose of the SWP is to distribute water to 29 urban and agricultural water contractors in Northern California, the San Francisco Bay Area, the San Joaquin Valley, Central Coast, and Southern California.

The MWD/CVWD SWP Entitlement Transfer and Exchange Agreement is composed of three individual actions are as follows:

- MWD would transfer 35 KAFY of its SWP entitlement to CVWD. This would reduce MWD's total SWP annual entitlement to 1,976.5 KAFY and would increase CVWD's total annual entitlement to 58.1 KAFY.
- CVWD would request and pay for SWP water deliveries via the existing system administered by DWR. The delivery would be made to MWD at the existing Devil Canyon Afterbay, located in San Bernardino, California.
- In exchange for the deliveries of SWP water requested by CVWD, MWD would arrange with Reclamation for the delivery of 35 KAFY of Colorado River water to CVWD. It is expected that the delivery would be made via the diversion structure at Imperial Dam to the All American Canal for diversion into the Coachella Canal. However, at MWD's option, the delivery may also be made from the CRA to CVWD.[1]

If diverted at Imperial Dam, this exchange would result in the delivery and diversion of 35 KAFY of Colorado River water at Imperial Dam that would have otherwise been diverted at the MWD facility at Lake Havasu. If diverted at the MWD facility at Lake Havasu and delivered to CVWD this exchange would not result in a change in point of delivery or diversion on the Colorado River since this water is currently being diverted by MWD. The MWD/CVWD SWP Entitlement Transfer and Exchange is expected to begin in 2003 and be fully implemented in 2007. This PEIR provides project-level CEQA analysis for the SWP entitlement transfer and

1 Under certain conditions, MWD will provide CVWD with a firm delivery of the 35 KAFY by making up the shortfall in deliveries through the existing Whitewater account. This provision would not affect the overall water budgets provided for in the QSA.

exchange. The Coachella Valley Water Management Plan PEIR, and/or subsequent site-specific environmental review documents, will include project-level CEQA analysis for the use of the water in the CVWD service area. Project-level CEQA analysis is provided in this PEIR for the change in point of diversion from Lake Havasu to Imperial Dam.

The Proposed Project would result in a change in entitlement held by CVWD and MWD. This change (35 KAF) is approximately 0.85 percent of the total entitlement held by SWP contractors. Water supplies are shared among SWP contractors depending on their entitlement category (agricultural and municipal and industrial [M&I]) and the requests by other SWP contractors. Interim and long-term implementation of contract amendments allow for entitlements to be shared equally and for a sharing of supplies based on short-term supplies and demands.

MWD and CVWD requests for and DWR deliveries of SWP water vary from year to year depending on a variety of conditions, including anticipated demands on the SWP, and the anticipated supplies available from various sources. The 35 KAFY entitlement transfer and exchange would not affect current or anticipated water diversions by the SWP. Implementation of the QSA would not affect the entitlement rights of other SWP contractors. Diversion of waters for the SWP system are consistent with State Water Resources Control Board (SWRCB) orders, the federal ESA, the CESA, and other regulations and agreements, as applicable.

Should the CVWD's requests associated with 35 KAF of entitlement exceed the amount that would have been requested by MWD the difference in water delivered to SWP contractors would be shared by all of these agencies. The amount of this difference would be small (averaging approximately 1.5 KAFY) since MWD anticipated requesting all of its entitlement by 2005.

K. MWD Priority 4 and 5 Colorado River Water Cap

Under the terms of the QSA, MWD would agree to limit its consumptive use of Colorado River water to 550 KAFY of Priority 4 water, and 662 KAFY of Priority 5 water, for the quantification period, pursuant to the conditions as specified in the QSA, and subject to adjustments as provided by the IOP. Under the existing Law of the River, MWD is currently limited to the same Priority 4 and 5 Colorado River water caps; this QSA component establishes an accounting method for water transfers under the Proposed Project, and does not change MWD's existing Priority 4 and 5 caps. This PEIR provides project-level CEQA analysis for MWD's Priority 4 and 5 Colorado River water cap, as defined by the QSA.

L. Over and Under Run of Priorities 1, 2 and 3b

With implementation of the QSA, MWD would be responsible, pursuant to the IOP, for repayment of any overrun as a result of aggregate use by Priorities 1, 2, and 3b in excess of 420 KAFY. (These priorities are established by the 1931 Secretarial regulations incorporating the recommendations of the Seven Party Agreement to PVID [Priorities 1 and 3b] and the Yuma Project Reservation Division [Priority 2]). If Priorities 1, 2, and 3b use less than 420 KAFY, MWD would have the exclusive right to consumptively use any remaining water under these priorities until the net diversion of water reached 420 KAFY. This PEIR provides project-level CEQA analysis for MWD's repayment of any overrun as a result of the aggregate use by

Priorities 1, 2 and 3b in excess of 420 KAFY, and for MWD's use of unused Priorities 1, 2 and 3b water in the event that these priority holders use less than 420 KAFY.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under the QSA, CVWD, IID and MWD have agreed, when necessary, to divide responsibility for foregoing the use of Colorado River water to permit the Secretary to satisfy the future use, up to the amount of each PPR, by holders of Miscellaneous PPRs and Federal Reserved Rights specified in the 1964 Decree and supplemental Decrees, and not within the priorities contained in the Seven Party Agreement. Water would be forborne by CVWD and IID in the amount of 3 and 11.5 KAFY, respectively, when necessary, for use by Miscellaneous PPRs and Federal Reserved Rights. Water would be forborne, when necessary, by MWD in the aggregate amount in excess of 14.5 KAFY necessary to satisfy Miscellaneous PPRs and Federal Reserved Rights. This QSA component would begin in 2003. Project-level CEQA analysis is included in this PEIR for the change in points of diversion between Lake Havasu and Imperial Dam to various points along the Colorado River as a result of this QSA component. CEQA analysis for IID's forbearance of water is included in the IID Water Conservation and Transfer Project EIR/EIS. CEQA analysis for CVWD's forbearance of water will be included in the Coachella Valley Water Management Plan PEIR, and/or subsequent site-specific environmental review documents. PPRs holders currently use water at numerous locations along the Colorado River, and the specific locations of these diversions would not change with the implementation of the QSA. The future use of water by holders of Miscellaneous PPRs and Federal Reserved Rights is not within the scope of this PEIR.

N. QSA SHORTAGE SHARING AGREEMENT

Shortage conditions as defined by the QSA would occur in years when there is less than 3.85 MAFY available to Priorities 1, 2, 3a, and 3b. (In this PEIR, shortage conditions under the QSA are referred to as "QSA shortage conditions." Note that the QSA shortage conditions are different than shortage years as defined by the Law of the River and specifically, the 1964 Decree, in which a shortage year is defined as a year when less than 7.5 MAFY is available for consumptive use in the Lower Division states. It should be noted that historically there have never been a condition on the River where less than 3.85 MAF is available to Priorities 1, 2, and 3.). In the unlikely event that a QSA shortage condition occurs, and less than 3.85 MAF of Colorado River water is available under Priorities 1, 2, 3a, and 3b in any one year during the quantification period, shortages would be shared pursuant to the particular provisions of the QSA, the associated Acquisition Agreements[2], and the Allocation Agreement[3].

In the event of a QSA shortage, the deficiency is borne by IID and CVWD. As specified in the IID/CVWD Acquisition Agreement, IID and CVWD shall negotiate a consensual sharing of the

2 The Acquisition Agreements collectively are the IID/SDWCA Water Conservation and Transfer Agreement, the IID/SDCWA Early Water Transfer Agreement, the CVWD/MWD Acquisition Agreement, the IID/MWD Acquisition Agreement, the IID/CVWD Acquisition Agreement, and the MWD/CVWD SWP Transfer and Exchange Agreement.

3 The Allocation Agreement is a proposed agreement among the City of Escondido, Palo Verde Irrigation District, SDCWA, San Luis Rey River Indian Water Authority, Vista Irrigation District, the La Jolla, Pala, Pauma, Rincon and San Pasqual bands of Mission Indians, CVWD, IID, and MWD, and the Secretary concerning the allocation of conserved water created by the All American and Coachella Canal lining projects.

shortfall. In the event that a consensual resolution is not obtained, either IID or CVWD may commence litigation to resolve the allocation of the shortfall. During the litigation process, shortfalls would be provisionally allocated seventy-five percent to IID and twenty-five percent to CVWD until IID is reduced to its PPR, at which time, all shortfalls would be borne entirely by CVWD. Under a QSA shortage, water conservation and transfer components of the QSA would continue, although some components would be reduced, as specified in the Acquisition Agreements and the Allocation Agreement. Although, in the event that IID is reduced to its PPR, transfers under the QSA would be suspended or reduced. This PEIR provides project-level CEQA analysis for the effects of the shortage sharing provisions among IID, MWD, CVWD and SDCWA.

This QSA component would change how water is allocated under Priority 3a. Currently, if less than 3.85 MAF were available, water would be allocated according to the priority system.

2.5 KEY ACTIONS BY GEOGRAPHIC AREA/SERVICE AREA

This section discusses the key actions, by geographic area/service area, that would occur either directly or indirectly as a result of the implementation of the Proposed Project, and that may result in a change to the physical environment. Figure 2.5-1 illustrates the changed water diversions by CVWD, IID and MWD, in a normal year, with the implementation of the Proposed Project.

Implementation of the Proposed Project would result in changes in Colorado River water diversions for CVWD, IID, and MWD. As a result of the canal lining projects, two factors need to be considered in understanding the implications of these changes for CVWD and IID: changes in water diversion, and changes in diversions for use in the agency service area. The current method of water accounting for consumptive use on the lower portion of the Colorado River by Reclamation includes incidental losses and water lost to canal seepage that is charged to a district's water budget even though the water may not be available for use within the district's service area. Discussions of the *changes in diversions* reflect the various water conservation and transfer components, including water previously diverted from the Colorado River and lost to canal seepage. Discussions of the *changes in diversions for use in the service area* reflect all conservation and transfer components, except the All American and Coachella Canal linings, as this water, although diverted from the Colorado River, was not previously received in the service area. Therefore, the *change in diversion* reflects the change in the agencies' diversion of Colorado River water with implementation of the Proposed Project. The *change in diversion for use in the service area* reflects the change in the amount of Colorado River water that may be available for use within the agencies' service area with implementation of the Proposed Project (although not reflecting any incidental and other losses).

2.5.1 Imperial Irrigation District

Under the QSA, IID would agree to limit its consumptive use of Colorado River water under Priority 3a to 3.1 MAFY for the quantification period, less an amount of water equal to that conserved by IID for the benefit of others as identified in the QSA, and subject to adjustments as provided by the IOP. With the implementation of the Proposed Project, IID's conservation measures within the service area would conserve from 230 to 300 KAFY (in addition to the 100 to 110 KAFY of water conserved under the existing IID/MWD 1988 Agreement). Conservation

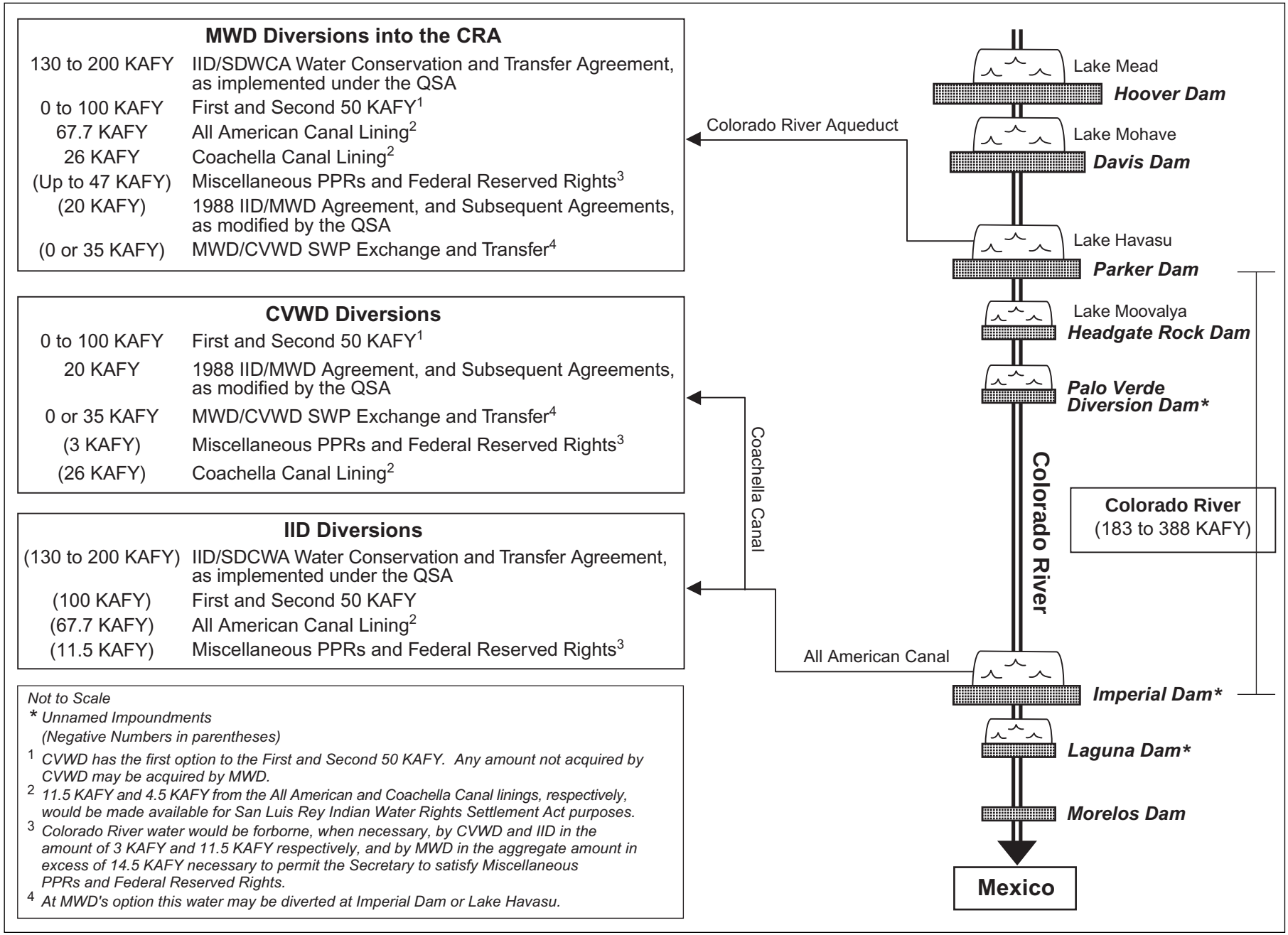

Figure 2.5-1. Changed Water Diversions by CVWD, IID, and MWD, with Implementation of the QSA and in a Normal Year with No Unused Water Available

would also be achieved through lining a section of the All American Canal. Additional conservation by IID may be needed to comply with IID's consensual Priority 3a Colorado River water consumptive use cap and the IOP. Amounts of water equivalent to the amount of water conserved by IID would be available for use by CVWD, MWD, SDCWA, and the San Luis Rey Indian Water Rights Settlement Parties. IID would also forbear 11.5 KAFY, when necessary, for use by Miscellaneous PPRs and Federal Reserved Rights.

Potential Water Conservation Measures within the IID Service Area

IID anticipates implementing a variety of methods in different combinations in order to achieve the desired amount of conservation within the service area. These may include the following:

- *On-farm Conservation Measures* – On-farm conservation measures would be implemented by individual landowners or farmers within the IID service area, and could include, although are not limited to, the following: use of tailwater return systems, use of cascading tailwater systems, use of level basins, shortening furrows/border strip improvements, use of narrow border strips, use of cutback irrigation techniques, laser-leveling of fields, multi-sloping of fields, and the use of drip irrigation. On-farm conservation measures may also include on-farm irrigation management techniques such as irrigation scheduling, water measurement, soil moisture measurements, and use of additional farm labor.

- *Water Delivery System Improvements* – These would entail construction and/or modification of the infrastructure of IID's water distribution system, including, but not limited to the following: lateral interceptors, reservoirs, seepage interceptors, and conveyance lining.

- *Fallowing* – Fallowing could be implemented within the IID service area by individual landowners or farmers, subject to certain contractual limitations set forth in the IID/SDCWA Water Conservation and Transfer Agreement, or by IID. Methods could include either removal of land from agricultural production or reduction of multiple crops to fewer crops (or a single crop) for one or more growing seasons or for multiple years.

Under terms of the IID/SDCWA Water Conservation and Transfer Agreement, the first 130 KAFY of conserved water within the IID service area would come from on-farm conservation measures unless this agreement is waived. For the purposes of this document, on-farm conservation measures do not include fallowing. The method of water conservation to conserve the remaining 170 KAFY (of the up to 300 KAFY to be conserved under this agreement) is not limited to on-farm conservation measures, and water can be conserved by water delivery system improvements or fallowing, or a combination of both water delivery system improvements and fallowing. IID's ability to implement a water conservation program would vary over time, depending on the availability and feasibility of water delivery system improvements, the extent of participation of IID water service area landowners and tenants, variations in climate and hydrological conditions, changes in agricultural economics, changes in technology, and other factors that are not within IID's control. Due to the need for variability and flexibility, the water conservation program to be implemented by IID includes a broad

range of conservation measures that could be implemented in various combinations, and the program could change from year to year, or even from agricultural season to season, over the term of the Project. A more detailed description of these measures is included in the IID Water Conservation and Transfer Project EIR/EIS.

All American Canal Lining

The approved project as identified in the Final EIS/EIR for the All American Canal Lining Project (USBR and IID 1994) is to construct a new, parallel canal from 1 mile west of Pilot Knob to Drop 3, a distance of 23 miles. The centerline of the new canal would be offset from the old centerline of the original canal by a distance of 300 to 600 feet, depending on terrain, ease of construction, and location of existing structures. At the Sand Hills, the new canal would be as close to the existing canal as possible to minimize the amount of excavation through the sand dunes. Excavation of 25 million cubic yards of earth would be required. Excess material would be placed in rows along the new canal. An estimated 530 acres of new right-of-way would be required, all of which is under federal control. Other land disturbances would include a 10-acre concrete batch plant and three, 5-acre staging areas, all of which would be on previously disturbed lands. Power lines would be relocated as required. Actual construction would last approximately 3 years. The canal would be in service year-round, as at the present, and would be operated at as high a water level as possible to maximize power generation at the drop structures. The old canal would be retained for emergency use. Details of the construction, safety, and operation components of the canal lining are included in the All American Canal Lining Project EIS/EIR (IID and USBR, 1994).

2.5.2 Coachella Valley Water District

Under the terms of the QSA, CVWD would agree to limit its consumptive use of Colorado River water under Priority 3a to 330 KAFY for the quantification period, less an amount of water equal to that conserved by CVWD for the benefit of others as identified in the QSA, and subject to adjustments as provided by the IOP. CVWD would also receive Colorado River water and SWP water via transfers from both IID and MWD, resulting in an additional 52 to 152 KAFY of Colorado River water for use in the service area, of which 35 KAFY would be exchanged for SWP water. This water is part of the overall water supply addressed in the CVWMP, which was prepared by CVWD to establish an overall program for managing its surface and groundwater resources in the future. The CVWMP involves a number of actions to reduce the current overdraft of groundwater in the Coachella Valley. The 52 to 152 KAFY of Colorado River water for use in the service area under the Proposed Project would be used to the benefit of Improvement District No. 1 (ID-1), which includes the lower portion of the Coachella Valley and a small portion of the Upper Valley. (The Upper Valley consists of primarily open desert lands and resort areas, whereas the Lower Valley area is primarily agricultural land.)

With the implementation of the Proposed Project, from 52 to 152 KAFY of additional Colorado River and exchanged SWP water would be used to replace current groundwater use, or would be used for direct groundwater recharge. This would involve the use of the existing canal and expansion of the distribution system. Expansion of the distribution system, and construction of pumping stations and other facilities, may also be required, along with recharge facilities for direct groundwater recharge. The exact location of these potential facilities is not known at this stage of plan development. Among the sites under preliminary consideration for the recharge

facilities are the vicinity of Dike 4 (a flood control dike) and the Martinez Canyon alluvial fan located west of the community of Valerie Jean. If a groundwater recharge facility were constructed at Dike 4, the facility would be expected to include recharge ponds along with a pumping station and pipeline to convey water from Lake Cahuilla to the facility. If a recharge facility were to be constructed at Martinez Canyon, it would also include recharge basins, a pumping station, and a pipeline to convey water from the Oasis area to the facility. The recharge projects will be subjected to separate project-level environmental review when preferred sites are identified.

Coachella Canal Lining

A QSA component is to line the existing unlined section of the canal using conventional construction methods while diverting water around each section. Lining would occur between siphons 7 and 14 and siphons 15 and 32, a distance of approximately 33 miles. Existing, unpaved roads would be used for construction activities. Actual construction would take 2 years. The lined canal would continue to be operated on a year-round basis. A more detailed description of the Coachella Canal Lining Project including construction, operation, and safety components of the canal lining is provided in the Coachella Canal Lining Project EIS/EIR (USBR and CVWD, 2001).

2.5.3 The Metropolitan Water District of Southern California

Under the terms of the QSA, MWD would agree to limit its consumptive use of Colorado River water under Priorities 4 and 5 to 550 KAFY, and 662 KAFY, respectively, for the quantification period, pursuant to the conditions as specified in the QSA, and subject to adjustments as provided by the IOP. In a year where only 4.4 MAFY of Colorado River water is available in California, MWD is limited to 550 KAF of Priority 4 water, plus up to 110 KAF of water conserved by IID under the IID/MWD 1988 Agreement. With implementation of the Proposed Project and in a normal year, MWD would receive up to 52.6 KAFY from the All American Canal Lining Project, 21.5 KAFY from the Coachella Canal Lining Project, and up to 100 KAFY from the First and Second 50 KAFY (in the event that CVWD elects not to take this water); with implementation of the Proposed Project, MWD would exchange 35 KAFY of SWP water to CVWD under the MWD/CVWD SWP Exchange and Transfer Agreement, and would forebear use of and transfer 20 KAFY for CVWD under the amended IID/MWD 1988 Agreement and subsequent amended agreements. With implementation of the Proposed Project, MWD would be responsible, pursuant to the IOP, for repayment of any overrun as a result of aggregate use by Priorities 1, 2, and 3b in excess of 420 KAFY, and to the extent that Priorities 1, 2, and 3b use less than 420 KAFY, MWD shall have the exclusive right to such water, as described in section 2.4 above. With implementation of the Proposed Project, MWD would also divert into the CRA, between 130 to 200 KAFY of conserved IID water transferred to SDCWA and 16 KAFY to facilitate implementation of the San Luis Rey Indian Water Rights Settlement Act.

Implementation of the Proposed Project would not require the construction of new MWD facilities or the modification of existing MWD facilities. MWD would continue to divert Colorado River water available under the terms of the Proposed Project at its existing Whittset Intake in Lake Havasu. The amount of water diverted under the QSA is within the historic volumes currently diverted, and would not constitute a change in operations or an increase in the amount diverted.

The CRA is MWD's conveyance structure to transport Colorado River water to the MWD service area. Implementation of the Proposed Project would affect the amount of Priority 3a, 4, and 6a water carried in the CRA. During the quantification period, and particularly after the 15-year Interim Surplus period, the total amount of water carried by the CRA in a normal year may be less than current operations as California would be limited to 4.4 MAFY, and previously used surplus and unused apportionment water may not be available. MWD has a number of projects in the planning or pilot project stage that would assist in maintaining delivery of Colorado River water to the MWD service area (refer to section 1.5, Related Plans, Programs and Actions).

2.5.4 San Diego County Water Authority

With implementation of the Proposed Project, SDCWA would receive 130 to 200 KAFY of Colorado River water conserved by IID, replacing water currently received by MWD. Implementation of the Proposed Project would not require the construction of new SDCWA facilities or the modification of existing SDCWA facilities.

2.5.5 Lower Colorado River

The Proposed Project would result in a change in the amount of water the Secretary would deliver to MWD's diversion point at Lake Havasu (above Parker Dam), and Imperial Dam, CVWD's and IID's diversion point. In a normal year, in aggregate, deliveries to Imperial Dam would be reduced by 183 to 388 KAF, and this water would instead be delivered to the MWD facility at Lake Havasu. Therefore, there would be a reduction in flow in the Colorado River between 183 and 388 KAFY from Parker to Imperial Dam. The components of the Proposed Project that would reduce deliveries at Imperial Dam include the following:

- water conserved and transferred by IID (130 KAFY to 300 KAFY — minimum of 130 KAFY in the event that only 130 KAFY is transferred to SDCWA, and the First and Second 50 KAFY is transferred to CVWD — maximum of 300 KAFY in the event that the 200 KAFY is transferred to SDCWA and the First and Second 50 KAFY is transferred to MWD);

- reduced deliveries as a result of the All American and Coachella Canal lining projects (together totaling 93.7 KAFY);

- reduced deliveries by CVWD and IID to account for Miscellaneous PPRs and Federal Reserved Rights (together totaling 14.5 KAFY).

Conversely, some components of the Proposed Project could increase deliveries at Imperial Dam, including the 20 KAFY transfer from MWD to CVWD per the amendments to the IID/MWD 1988 Agreement and subsequent amended agreements, and potentially the 35 KAFY transferred from MWD to CVWD per the MWD/CVWD SWP Transfer and Exchange Agreement, depending on where MWD elects to have the water delivered (Imperial Dam for diversion into the All American and Coachella Canals or at Lake Havasu for diversion at the Whitsett Pumping Plant and delivery to CVWD). Table 2.5-1 outlines the various Proposed Project components that result in changes in river flows between Parker and Imperial Dams in a normal year.

Table 2.5-1. Anticipated Changes in River Flow from Parker to Imperial Dams in a Normal Year as a Result of the Proposed Project
(negative numbers in parentheses)

	Minimum (KAFY)	*Maximum (KAFY)*
Amendment to the IID/MWD 1988 Agreement and Subsequent Agreements	20	20
IID/SDCWA Conservation and Transfer	(130)	(200)
First and Second 50 KAFY	0	(100)
All American Canal Lining Project[1]	(67.7)	(67.7)
Coachella Canal Lining Project[1]	(26)	(26)
CVWD/MWD SWP Transfer and Exchange	35	0
Miscellaneous PPRs and Federal Reserved Rights	(14.5)	(14.5)
Total	**(183.2)**	**(388.2)**

1) 11.5 KAFY and 4.5 KAFY from the All American and Coachella Canal lining projects, respectively, would be made available for San Luis Rey Indian Water Rights Settlement Act purposes.

2.6 AGENCIES EXPECTED TO USE THE PEIR IN DECISIONMAKING

The co-lead agencies for this PEIR are CVWD, IID, MWD, and SDCWA. Each agency will independently evaluate and, if appropriate, certify this PEIR and make CEQA findings.

Although the County of Imperial, County of San Diego, and City of San Diego each has stated that it may be a Responsible Agency with regard to the preparation of this PEIR, the co-lead agencies have not identified any discretionary approvals by these agencies that would trigger Responsible Agency Status as defined in the State CEQA Guidelines (§ 15381). The California Department of Fish and Game (CDFG) is a Trustee Agency for fish, plant, and wildlife resources and may act as a Responsible Agency regarding potential impacts to listed species and the possible issuance of Incidental Take Permits (section 2081 of the Fish and Game Code) and Streambed Alteration Agreements pursuant to section 1600 of the Fish and Game Code, if required. Incidental Take Permits and Streambed Alteration Agreements are not anticipated for the Proposed Project but may be necessary for implementation of certain project level components that are a part of the Proposed Project.

2.6.1 Permits and Other Approvals Required to Implement the Proposed Project

Permits and approvals that may be required for implementation of certain components of the Proposed Project include the following:

- Air quality permits from the relevant air quality management or air pollution control districts for construction activities due to the implementation of water conservation measures;
- Section 2081 permits for incidental take of endangered species per the CESA;

- Section 1600 authorization from the CDFG for potential alteration of streambeds and lakes;
- Incidental take permits from the Service per the ESA for construction and implementation activities;
- California State Water Resources Control Board approval of the proposed water transfer from IID to SDCWA;
- National Pollutant Discharge Elimination System (NPDES) permits from the relevant Regional Water Quality Control Boards (RWQCB) during the construction of components of the Proposed Project;
- Secretary, U.S. Department of the Interior (DOI) execution of the IA; and
- Department of Water Resources approval of the 35 KAFY SWP water entitlement transfer.

3.0 AFFECTED ENVIRONMENT, ENVIRONMENTAL IMPACTS, AND MITIGATION MEASURES

The following sections describe the environmental resources that could be affected by the Proposed Project, potential impacts to these resources, and mitigation measures that would reduce the severity of these impacts. State CEQA Guidelines (§15125) state that an EIR must include a description of the physical environmental conditions in the vicinity of the project as they exist at the time the NOP is published. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant. This chapter provides appropriate descriptive information to meet this requirement. Because the impacts of the Proposed Project would be realized over a long period of time, it is appropriate to measure them against both current and projected conditions in order to provide a more accurate description of Proposed Project effects (see *Save Our Peninsula Committee v. Monterey County Board of Supervisors,* [2001] 87 Cal App. 4th 99). For this reason, this chapter makes reference to two separate baselines, referred to as "Existing Baseline" and "Future Baseline," which are described below. Where impacts are measured against more than one baseline, this is noted in the methodology section included under each resource.

EXISTING BASELINE

The term Existing Baseline specifically refers to physical environmental conditions in the project area that existed at the time the NOP was published, as required under the State CEQA Guidelines. For each of the geographic areas addressed, specific information is provided to describe the conditions of resources within that area. Existing Baseline information is used to provide a basis for assessing environmental impacts within each of the geographic areas.

FUTURE BASELINE

Many resources, such as the Colorado River and Salton Sea, exhibit variability from year to year. It is necessary to capture the reasonably foreseeable variability of a given environmental resource to adequately assess changes resulting from the Proposed Project. To capture future variability, a Future Baseline has been developed. The Future Baseline represents what is reasonably expected to occur in the future given well-defined trends and other parameters such as adopted or on-going programs (e.g., increased water use by other Lower Division states and flood control operations). The Future Baseline uses a sufficiently long period to allow consideration of long-term variability. By comparing the Proposed Project to the Future Baseline, effects caused by the Proposed Project can be isolated from effects that are reasonably expected to result from existing conditions and trends.

For the two major water bodies within the Project region, the lower Colorado River and the Salton Sea, Future Baselines were developed to provide a framework against which an assessment of environmental impacts from the Proposed Project could be measured. Throughout this chapter, the term Future Baseline, refers to future trends for the two water bodies based on analytical models of expected future conditions. These models are more fully described in detail under section 3.1, Water Resources.

Colorado River

The Future Baseline for river flow, reservoir elevation, and salinity is based on Reclamation's Colorado River Simulation System (CRSS) modeling performed for the *Implementation Agreement, Inadvertent Overrun and Payback Policy, and Related Federal Actions Draft EIS* (USBR 2002). This Future Baseline has been used throughout this chapter to assess impacts to the Colorado River. A summary of major lower Colorado River parameters comparing the Future Baseline to existing and historical conditions is provided below.

Average Annual Lake Mead Elevations

Under the Future Baseline, reservoir levels are expected to vary over time from 1,213 feet msl (mean sea level) to 1,001 feet msl. There is a 12 to 26 percent probability that Lake Mead levels would be 1,200 feet msl or higher throughout the period 2002 to 2076. Rarely (less than 10 percent of the time), Lake Mead is expected to be higher than 1,210 msl, and only seldom (10 percent of the time) is Lake Mead projected to be less than 1,000 feet msl. Modeled median water levels decline to approximately 1,108 feet msl by the year 2040 under the Future Baseline and fluctuate between 1,106 feet msl and 1,116 feet msl through the year 2076. Under historic conditions, Lake Mead has dropped below elevation 1,083 only twice, and has climbed above elevation 1,225 only once.

Colorado River Flows Between Parker and Imperial Dam

Under the Future Baseline, flows between Parker and Imperial dams (below Headgate Rock Dam) are predicated to vary from 6.48 MAFY to 9.58 MAFY. Historically (1990-1999), flows in this reach have averaged 7.362 MAFY, but have varied from 3.776 MAFY to 17.555 MAFY.

Colorado River Salinity

The Future Baseline assumes that additional programs operated under the Colorado River Salinity Control Program will continue to be implemented and that water quality will never exceed 747 mg/L (milligrams per liter) below Parker Dam and 879 mg/L at Imperial Dam. Under existing conditions, salinity below Parker Dam has varied from 549 to 673 mg/L, and salinity at Imperial Dam has varied from 655 to 803 mg/L in the period 1990 to 1999.

Salton Sea

The Imperial Irrigation District Decision Support System (IIDSS) and the Coachella Groundwater Model are used to predict changes to parameters such as water quantity and water quality in the IID and CVWD service areas given certain future actions such as on-farm conservation, fallowing, and groundwater recharge. Data from these models were used as inputs to Reclamation's Salton Sea Accounting Model. The Salton Sea Accounting Model was used to predict future trends in the Salton Sea's elevation, surface area, and salinity. This model provides future trending data about the Salton Sea assuming a continuation of existing conditions.

The Future Baseline for the three Salton Sea parameters assessed in the models is summarized below and in Table 3.0-1. This Future Baseline has been used throughout this chapter to assess impacts to the Salton Sea.

Sea Elevation

The current Salton Sea elevation is approximately –227 feet msl. Modeling conducted by Reclamation indicates that under the Future Baseline the mean surface elevation of the Salton Sea would drop approximately 7 to 10 feet over the next 75 years. The Proposed Project could cause an additional drop of 10 to 13 feet, depending on whether use of the First and Second 50 KAFY is by CVWD or MWD.

Salinity

The existing salinity of the Salton Sea is approximately 44,000 mg/L. Under the Future Baseline, the salinity is expected to increase to approximately 80,000 to 90,000 mg/L over the next 75 years. Over the same period, the Proposed Project would cause salinity concentrations to rise, resulting in salinity of 129,700 to 165,300 mg/L, depending on whether use of the First and Second 50 KAFY is by CVWD or MWD. Reclamation's model predicts that salinity would reach 60,000 mg/L between the years 2023 and 2030. Once the salinity increases to 60,000 mg/L, it is likely that the fish that live in the Salton Sea will be unable to complete their life cycle, which will result in the eventual disappearance of the fishery. This impact also affects fish-eating birds as their food supply diminishes and disappears.

Surface Area

The existing surface area of the Salton Sea is 235,000 acres. Reclamation's model predicts that under Future Baseline conditions, over the life of the project, the Salton Sea would decrease by approximately 15,400 to 23,400 acres, resulting in a surface area of 211,600 to 219,600 acres. The Proposed Project would cause additional decreases in surface area, resulting in a Salton Sea with an area of 167,774 to 186,383 acres, depending on whether use of the First and Second 50 KAFY is by CVWD or MWD.

Table 3.0-1. Comparison of Salton Sea Existing Baseline, Future Baseline, and Proposed Project Impacts at the Salton Sea

	Elevation (feet msl)			**Surface Area (acres)**			**Salinity (mg/L)**		
	Existing Baseline	*Future Baseline*	*Proposed Project*	*Existing Baseline*	*Future Baseline*	*Proposed Project*	*Existing Baseline*	*Future Baseline*	*Proposed Project*
2001	-227	NA	NA	235,000	NA	NA	44,000	NA	NA
2077	NA	-234 to -237	-245 to -250	NA	211,600 to 219,600	167,800 to 186,400	NA	80,000 to 90,000	129,700 to 165,300
Source: IID and USBR 2002.									

3.1 WATER RESOURCES

This chapter discusses the potential changes to hydrologic systems and facilities, water quality, and water supply associated with the implementation of the Proposed Project. Information in this section is primarily based on information provided by the potentially affected agencies, Reclamation, United States Geological Survey (USGS), Colorado River Board of California, and DWR.

3.1.1 Environmental Setting

The region of influence to hydrologic systems and facilities contains the Colorado River from Lake Mead to the Northerly International Boundary (NIB), the associated reservoirs, and the service areas of water districts that are affected by Proposed Project implementation (i.e. CVWD, IID, MWD, and SDCWA; refer to Figure 1.1-1 for service area boundaries). Potentially affected conveyance facilities for these diversions include the All American Canal, which diverts water from the Colorado River at Imperial Dam; the Coachella Canal, which receives deliveries from the All American Canal; and the CRA, which diverts water from Lake Havasu upstream of Parker Dam. These diversions and water transportation features are shown schematically in Figure 3.1-1. Related drainage features include the Whitewater River/Coachella Valley Stormwater Channel (CVSC) and drains in the Coachella Valley, the New and Alamo rivers, drains in the Imperial Valley, and the Salton Sea.

3.1.1.1 Regulatory Framework

The regulatory framework for water resources includes the following federal and state statutes and regulations.

Water Quality

PORTER-COLOGNE ACT OF 1969

The Porter-Cologne Act gave the SWRCB ultimate authority over state water quality and established nine regional water quality control boards. The regional boards prepare water quality plans (called basin plans) for their region. Basin plans identify the beneficial uses of water that should be protected, establish water quality objectives (limits or levels of water constituents based on both state and federal laws), and define an implementation program to meet water quality objectives. The area that would be affected by the implementation of the Proposed Project lies within the boundaries of four RWQCBs: Los Angeles (Region 4), Colorado River Basin (Region 7), Santa Ana (Region 8), and San Diego (Region 9).

WATER POLLUTION CONTROL ACT AND AMENDMENTS (CLEAN WATER ACT)

Similar to the Porter-Cologne Act, the federal Clean Water Act requires states to designate appropriate water uses to be protected and mandates that states set water quality standards based on these uses (EPA 2000a). States must review and revise these water quality standards every three years. The EPA has the responsibility for promulgating regulations under the Clean Water Act including the review and approval of state water quality standards. A 1997 EPA

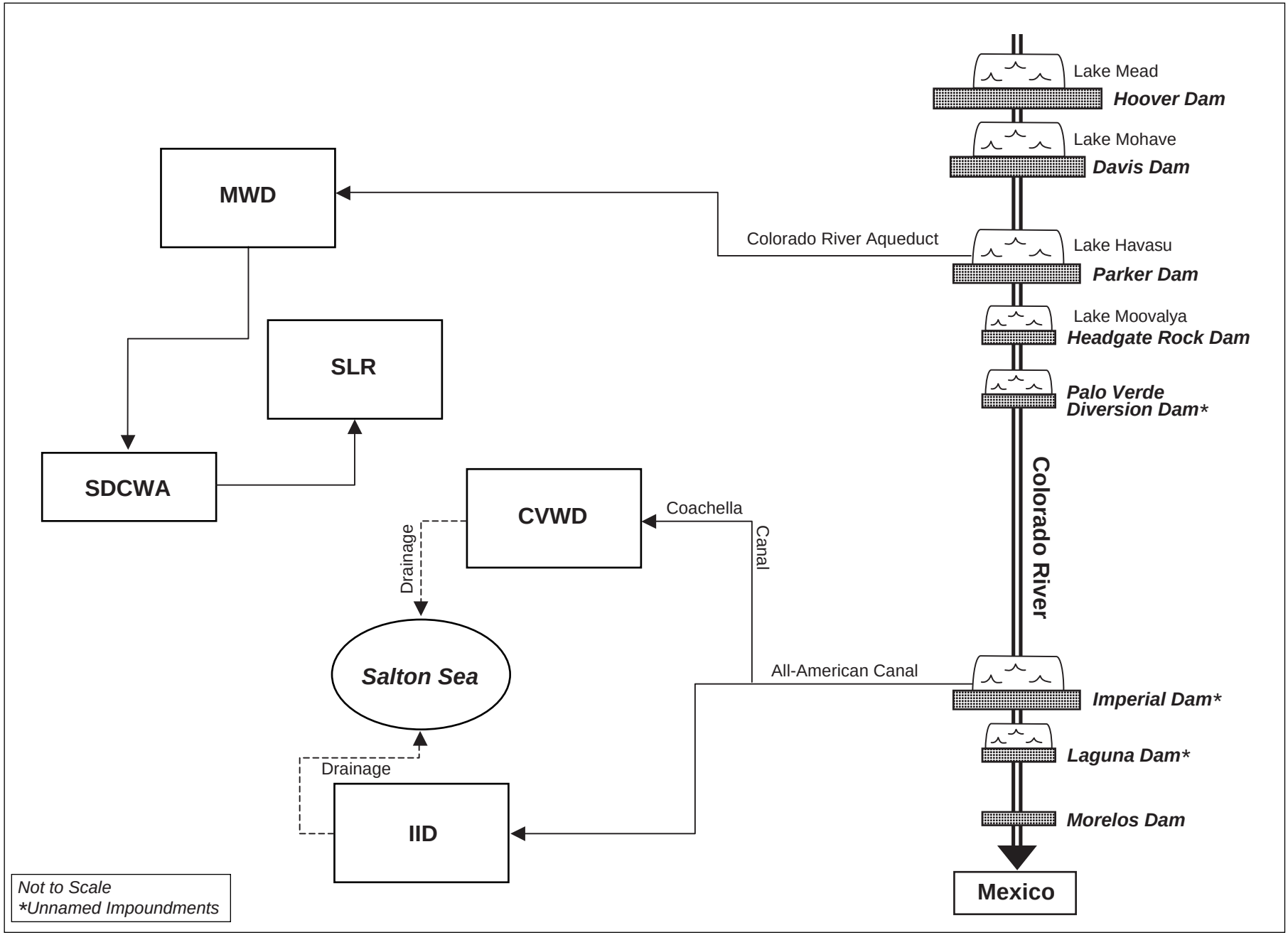

Figure 3.1-1. Schematic Diagram of Water Facilities, Water Bodies, and Agency Service Areas Potentially Influenced by the QSA

review of California water quality standards found a lack of criteria for several toxic pollutants. EPA, ruling that California was not meeting the provisions of the Clean Water Act, established criteria and a compliance schedule for eighty pollutants (EPA 2000b). In an attempt to resolve these issues, the SWRCB adopted a "Policy for Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries in California" on April 26, 2000 (SWRCB 2000).

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

One method for meeting water quality objectives under the Clean Water Act is the NPDES. This permit system regulates point-source surface discharges (33 U.S.C. §1342). In California the Regional Water Quality Control Boards administer NPDES permits in a manner intended to meet water quality criteria of both the Clean Water Act and Porter-Cologne Act (Littleworth and Garner 1995).

TOTAL MAXIMUM DAILY LOAD

Under section 303(d) of the Clean Water Act, states, territories, and authorized Indian tribes are to submit lists to the EPA detailing water bodies for which existing pollution controls are insufficient to attain or maintain water quality standards. After submitting the list of "impaired waters," states must develop a plan, called the Total Maximum Daily Load (TMDL) plan, to limit excess pollution. Within the TMDL process, states assess water quality problems, contributors to these problems, and establish actions needed to achieve water quality objectives. The focus is on setting total maximum daily loads for specific pollutants throughout the watercourse. TMDL plan implementation can be accomplished through revised NPDES permit requirements (for point source contaminants) and through implementation of Best Management Practices (BMPs) that include changes in agricultural practices (EPA 1999). The establishment of a TMDL conceptually consists of four phases, which are, water body assessment, development of allocations, development of an implementation plan, and amendment of the basin plan (SWRCB 2001b). A TMDL start date is the date (usually stated as a year) when the responsible agency begins development of a TMDL, while the completion date is the projected date that the TMDL Implementation Plan is complete and ready for adoption into the Basin Plan. Within the study area a TMDL of 200 milligrams per liter has been adopted by the Regional Board and approved by the State Board for silt in the Alamo River and a 200-membrane filter count per 100 milliliters (MPN/100 ml) for fecal coliform, 126 MPN/100 ml for E.Coli, and 33 MPN/100 ml for Enterocci have been have been adopted by the Regional Board and approved by the State Board for pathogens in the New River. Impaired waters and TMDL program details for water bodies in the project area are provided in Table 3.1-1.

COLORADO RIVER BASIN SALINITY CONTROL ACT AND AMENDMENTS; MINUTE 242 OF THE INTERNATIONAL BOUNDARY AND WATER COMMISSION

In 1974, the Colorado River Basin Salinity Control Act was enacted with the purposes of (1) resolving salinity issues associated with Mexican Treaty deliveries; and (2) creating a salinity control program within the U.S. portion of the Colorado River Basin to meet objectives and standards set by the Clean Water Act. The federal/state salinity control program is designed to maintain flow-weighted average annual salinity at or below the adopted numeric criteria. The program is not intended to counteract short-term salinity variations due to the highly variable flows caused by natural factors (DOI 2001).

Table 3.1-1. Impaired Water Bodies Potentially Affected by the QSA

Water Body	*Pollutant of Concern*	*TMDL Completion Date*
Whitewater River/Coachella Valley Stormwater Channel	Bacteria/Pathogens	2005
Alamo River	Pesticides Selenium Silt	2011 2010 Proposed Basin Plan Amendment[1]
Imperial Valley Drains	Pesticides Selenium Silt	2011 2010 2004
New River	Nutrients Pesticides Silt Dissolved Oxygen Trash Chloroform Toluene p-Cymene 1,2,4-trimethylbenzene m,p,-Xylene o-Xylenes p-DCB Bacteria/Pathogens	2010 2011 2002 2006 2007 2011 2011 2009 2009 2008 2008 2010 Proposed Basin Plan Amendment[1]
Salton Sea	Nutrients Salt Selenium	2004 undefined 2010
Lake Havasu	*Escherichia Coli* Turbidity	undefined 2002
Lower Colorado River	Turbidity	2002
Palo Verde Outfall Drain	Bacteria/Pathogens	2003

Sources: SWRCB 1999 and 2001, Arizona Department of Environmental Quality 2002, Colorado RWQCB 2001, NDEP 2000.

[1] Approval of the Basin Plan Amendments is at the discretion of the Colorado River Regional Water Quality Control Board and thus no adoption date can be given.

Per the directives of the Federal Water Pollution Control Act Amendments of 1972, the Colorado River Basin Salinity Control Forum (which is made up of the Seven Basin States) adopted numeric criteria for flow-weighted average annual salinity for three points along the Colorado River:

- Below Hoover Dam, 723 mg/L;
- Below Parker Dam, 747 mg/L; and
- At Imperial Dam, 879 mg/L.

The Colorado River Basin Salinity Control Forum reviews the numeric criteria and plan of implementation every 3 years and makes revisions to accommodate changes occurring in the Basin States, most recently in 1999. At each triennial review, the current and future water uses are analyzed for their impact on the salinity of the Colorado River, including projects proposed

as part of Reclamation, U.S. Department of Agriculture, and the Bureau of Land Management salinity control programs. If needed, additional salinity control projects are added to the implementation plan to assure compliance with standards. The need for one or more additional salinity control projects is determined by monitoring the salinity of the River and making near-term projections of changes in diversions from and return flows to the River system. When an additional project is needed it is selected from a list of potential projects that have undergone feasibility investigation. In selecting a project, considerable weight is given to the relative cost-effectiveness of the project. Environmental feasibility is another factor considered. For example, the January 2001 Progress Report on Quality of Water Colorado River Basin identified 22 cost-effective projects that could be implemented between 1998 and 2002 that could control up to 416,834 tons per year of salinity (DOI 2001).

Below Imperial Dam, salinity is a federal issue. Under Minute No. 242 of the United States-Mexico Treaty, the United States government took responsibility for ensuring that:

- The 1.36 MAF annual water delivery to Mexico upstream of Morelos Dam does not exceed the salinity of water received at Imperial Dam by more than 15 +/- 30 milligrams per liter: and,
- The 140 KAFY water delivery to Mexico downstream of Morelos Dam and/or south of San Luis Arizona, has salinity substantially the same as water customarily delivered to these areas.

SALTON SEA RECLAMATION ACT

The Salton Sea Reclamation Act of 1998 (Public Law 105-372) directs the Secretary of the Interior to conduct a feasibility study and construct a project to reclaim the Salton Sea while permitting the continued use of the Salton Sea as a repository for irrigation drainage, and:

- reducing and stabilizing the overall salinity of the Salton Sea;
- stabilizing the surface elevation;
- reclaiming, in the long term, healthy wildlife resources and their habitats; and
- enhancing the potential for recreational uses and economic development.

Public Law 105-372 specifically directed the Secretary not to include any option that would rely on the importation of any new or additional water source from the Colorado River, or any option that is not consistent with existing water rights and obligations of persons under treaties, decrees, contracts, and agreements that make up the Law of the River. Public Law 105-372 also directs the Secretary to apply assumptions regarding water inflows into the Salton Sea that encourage water conservation, account for transfers of water out of the Salton Sea Basin, and are based on a maximum likely reduction in inflows to the Salton Sea of 800 KAFY or less per year.

Rivers and Streambed Alteration

SECTION 404 OF THE CLEAN WATER ACT

Section 404 of the Clean Water Act requires that an entity obtain permits before discharging dredge or fill material into navigable waters, their tributaries, and associated wetlands.

Activities regulated by 404 permits include, but are not limited to, dredging, bridge construction, flood control actions, and some fishing operations. In order to issue a 404 permit, the Army Corps of Engineers must demonstrate compliance with the federal Endangered Species Act (see Chapter 3.2), the National Environmental Policy Act, the Wild and Scenic Rivers Act, and the Fish and Wildlife Coordination Act (Getches 1997).

CALIFORNIA FISH AND GAME STREAMBED ALTERATION AGREEMENT

Fish and Game Code §1601 mandates that any public entity must formally provide notice to the CDFG before engaging in any project that will:

- divert, obstruct, or change the natural flow of the bed, channel, or bank of any river, stream, or lake;
- use materials from a streambed; or
- result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake.

If the CDFG determines that a project will adversely affect fish or wildlife resources, the project applicant must enter into a Streambed Alteration Agreement with CDFG (CDFG 2000).

Water Allocation

The use of Colorado River water is governed by a group of federal and state laws, interstate compacts, an international treaty, court decisions, federal contracts, federal and state regulations, and multi-party agreements, commonly referred to as "The Law of the River." Refer to Chapter 1 for further discussion.

Water Transfers

Water transfers offer a way for an entity with a water entitlement to make available a portion of that supply to another water user. A water transfer does not confer a new "water right," rather a water transfer represents a change in place of use of an existing water right. Refer to section 2.4, QSA Components, for further discussion.

3.1.1.2 Imperial Irrigation District

The IID service area covers over 1 million acres in the Imperial Valley of which an average of approximately 461,000 acres are irrigated for agricultural production (IID 1999). Approximately 98 percent of the water managed by IID goes to agriculture, and 2 percent is treated for municipal use by 9 cities in the Imperial Valley.

All of IID's water supply is diverted from the Colorado River. IID obtains Colorado River water from the 82-mile long, All American Canal. The All American Canal diverts water from the Colorado River near Imperial Dam, located approximately 20 miles northeast of Yuma, Arizona. In addition to East Highline, Central Main, and Westside Main canals that serve the IID service area, several canals branch off of the All American including the Yuma Main Canal that diverts water for the Yuma Project Reservation Division and the Coachella Canal that

diverts water for CVWD. The capacity of the All American Canal varies with canal reach, with a maximum capacity of 15,155 cubic feet per second (cfs). The All American Canal is unlined.

Table 3.1-2 summarizes recent historic conditions for net diversions (gross diversions minus return flow) of Colorado River water by IID. In 1999, IID diverted 3,089 KAFY of Priority 3a Colorado River water; the 1990 to 1999 average was 2,992.5 KAFY. In 1999, IID conserved 108.5 KAFY of Priority 3a water and an equivalent amount of water was made available to MWD (accounted for under Priority 4, 5a or 5b, as available) per the IID/MWD 1988 Agreement and subsequent agreements; the 1990-1999 average was 67.3 KAFY. A 1990 to 1999 adjusted average was developed to simulate conditions that would have occurred if the water conservation under the IID/MWD 1988 Agreement and subsequent agreements had been fully implemented by the beginning of 1990. In this case, IID would have conserved and reduced its diversion of Colorado River water by a total of 110 KAFY for the entire 10-year period, and an equivalent amount of water would have been made available to MWD throughout the time period (for purposes of analysis, this is assumed to be 110 KAFY). The 1990 to 1999 adjusted average for IID is 2,949.9 KAFY.

Table 3.1-2. Recent Historic Conditions for IID Colorado River Water Diversions

All numbers in KAFY

	1999	*1990-1999 Average*
IID Colorado River Diversions	3,089	2,992.5

Source: Data based on USBR Annual Decree Accounting Reports

The majority of drainage from lands within the IID service area is collected and transported through a network of surface drains exceeding 1,400 miles that discharge system-wide into either the New or Alamo rivers or directly into the Salton Sea. Between 1990 and 1999, IID's drainage discharge into the Salton Sea has varied from 878 KAFY to 1,072 KAFY.

Water Quality

Surface water quality in the Imperial Valley is heavily dependent on the quality of imported supplies, and thus, on Colorado River quality at Imperial Dam. Water quality parameters of concern include salinity, selenium, sediments, pesticides, and temperature.

- *Salinity.* The main water quality concern for the lower portion of the Colorado River is salinity/total dissolved solids (TDS). Factors influencing salinity levels include regional geology, salinity levels in tributaries and other inflow sources, drainage from irrigation system return flows, municipal discharge, and concentration of salts due to evaporation and other losses. Approximately 47 percent of the salinity in the Colorado River System is from natural sources (DOI 1999). The remaining 53 percent is due to human activities including agricultural runoff, as well as industrial and municipal sources. The River increases in salinity from its headwaters to its mouth.

  The EPA primary drinking water standard for TDS is 500 mg/L, with a secondary standard of 1,000 mg/L. The Colorado River Basin RWQCB has set an average annual water quality objective of 4,000 mg/L for TDS in the New and Alamo rivers for any discharges, excepting discharges from agricultural sources (Colorado River RWQCB

1994). Higher salinity source water requires higher amounts of leaching (salt flushing) water during irrigation and may reduce agricultural productivity of some fruits and vegetables.

The average 1990-1999 TDS concentration at Imperial Dam has varied from 655 to 803 mg/L (USBR 2002).

- *Selenium.* Selenium in trace concentrations is an essential element for both plants and animals but can be toxic at higher levels. Selenium in the Colorado River naturally originates from shale sediment deposits along river tributaries. Within the river system, Lake Powell has the highest annual loading of dissolved selenium and the majority of selenium is thought to come from above Lake Powell. Selenium loads drop within Lake Powell and drop again as the Colorado River passes through downstream reservoirs. Due to this decline, it does not appear that selenium is added to the system in the Lower Basin (DOI 1999). Recent studies have indicated that selenium levels in the Lower Basin of the River and associated biota are below the DOI level of concern of 5 mg/L (USBR 2000b). Selenium is not considered a water quality problem in the lower portion of the Colorado River.

  However, selenium is a potential issue in irrigation drainage water. When water is applied to fields, evapotranspiration removes water and concentrates selenium, like salt, in or below the root zone. Additional irrigation water used to flush salts from the soil also flushes selenium out of the root zone.

- *Sediments.* Historically the Colorado River transported large amounts of sediment, but with the construction of dams and the regulation of flows, sediment loads have significantly decreased. Sediments can carry pesticides, may deposit in slow-moving drains, or deposit in vegetated areas and backwaters. The USGS sampled sediment/total suspended solids (TSS) from 1996 to 2000 in the lower Colorado River. In any given year, one to five samples were collected at various times. Average TSS concentration at Imperial for this period was 9 mg/L to 206.4 mg/L and the maximum ranged from 5 mg/L to 559 mg/L (IID and USBR 2002).

- *Pesticides.* DDT (dichlorodiphenyltrichlorethane), DDE (dichlorodiphenyldichloroethene), and DDD (dichlorodiphenyldichlorethane) are organopesticides found in the lower Colorado River. Pesticides can be picked up from soils and carried into the Colorado River via runoff or into the drainage systems by irrigation water. The main concern with pesticides is their toxicity to aquatic organisms. DDT has been detected at levels of 0.8 micrograms per kilogram (µg/kg) wet weight at Palo Verde Drain and 0.6 µg/kg wet weight below Cibola Lake (IID and USBR 2002). DDE has been detected in the river from 0.1 to 7.5 µg/kg wet weight in the river reach between Parker and Imperial. DDD has also been found in this reach at levels of 0.2 to 2.4 µg/kg wet weight (IID and USBR 2002).

  In addition to these, other pesticides, such as diazinon, chlorpyrifos, toxaphene (insecticides) and Dacthal (herbicide) are found in drainage waters.

- *Temperature.* Water temperature in the Colorado River varies by season but typically increases from the upper to the lower reaches. Average temperature ranges from 11 to

12 degrees Celsius between Parker and Imperial in January, increasing to 26 to 28 degrees Celsius in August (IID and USBR 2002).

Imperial Valley drain water quality is dependent on source water quality, soil type and agricultural practices. Water quality of the Alamo and New rivers is heavily dependent on agricultural practices in the Imperial Valley and wastewater treatment practices in the Mexicali Valley. Tables 3.1-3 and 3.1-4 summarize the major water quality parameters for drains in the Imperial Valley, along with water quality parameters of the Alamo and New rivers. This water quality data was collected by IID and compiled by the RWQCB from 1996 to 1999. In addition to the water quality parameters described above, IID drainage water may also contain boron, nitrogen, and phosphorus.

- *Boron.* In small amounts boron is can be beneficial, though in elevated concentrations born can adversely effect organisms. Boron may enter drainage system through leaching from irrigated soils (IID and USBR 2002).

- *Nitrogen and phosphorus.* These elements are primary components of fertilizers and are commonly found in drainage waters.

Imperial Valley groundwater has high salinity – in the 1,000 to 6,000 mg/L range – which severely limits its use for water supply. There are few groundwater users in the Imperial Valley due to the poor water quality.

Groundwater

The IID service area is underlain by a great thickness of water-saturated deposits. Due to the low permeability in much of the IID service area and the application of irrigation water, a perched water table exists through much of the Valley (IID and USBR 2002). While the amount of groundwater stored in the Imperial Valley Basin is large, few wells have been drilled for production because the yield is low and the water quality poor (IID and USBR 2002). As discussed earlier, there is limited use of groundwater in the Imperial Valley.

Seepage from the All American Canal is a source of shallow groundwater recharge in the vicinity. Seepage forms a groundwater mound under the canal that is hydraulically connected to the canal in some reaches. Annual seepage between Pilot Knob and Drop 4 is estimated to be approximately 91.6 KAF, or about 2 percent of the canal's annual flow (USBR and IID 1994). Due to the relatively higher permeability of the aquifers to the south of the All American Canal, 90 percent of the seepage moves south toward Mexico, while 10 percent of the seepage moves northward toward the East Mesa area in the Imperial Valley (USBR and IID 1994).

3.1.1.3 Coachella Valley Water District

CVWD uses Colorado River water, groundwater, and recycled water to serve the approximately 640,000 acres within its boundaries. Approximately 60,000 acres are irrigated, and CVWD serves an urban population of approximately 192,000 Coachella Valley residents (CVWD 2000). The total water demand in 1999 in the Coachella Valley was approximately 669 KAF, of which 310 KAF (46 percent) was for urban uses and 359 KAF (54 percent) was for agricultural uses. Current water use data for the Coachella Valley does not differentiate

Table 3.1-3. Water Quality in Drains Associated with the New River

Parameter	*Units*	*Water Quality Standard*	*New River Drainages 1996-1999*			
			AT INTERNATIONAL BOUNDARY	GREESON DRAIN	TRIFOLIUM 12 DRAIN	OUTLET TO SALTON SEA
TDS	mg/L	4000[a]	2,676	2,033	2,143	2,743
Selenium	µg/L	5.0[b]	ND	5.24	6.03	4.09
Turbidity	mg/L	NS	52.16	188.15	188.5	240.7
Pesticides						
DDD	µg/L	0.00083[c]	NA	NA	NA	NA
DDE	µg/L	0.00059[c]	NA	NA	NA	NA
DDT	µg/L	0.00059[c]	NA	NA	NA	NA
Toxaphene	µg/L	0.73[c], 0.0002[b]	NA	NA	NA	NA
Diazinon	µg/L	NS	NA	0.094	0.090	NA
Chlorpyrifos	µg/L	0.083[d], 0.041[b]	NA	0.025	0.030	NA
Boron	µg/L	NS	NA	456.47	583.89	905
Nitrogen (as Nitrate)	mg/L		0.5	4.2	12.98	4.34
Phosphorus	mg/L	NS	2.0	0.77	0.37	1.26

Source: IID and USBR 2002

NA= Not Available

NS = No Standard

[a] Colorado River RWQCB Water Quality Objective for average annual TDS discharges (does not apply to agricultural discharges)

[b] EPA Aquatic Life Criteria, Criterion Continuous Concentration

[c] EPA Aquatic Life Criteria, Criterion Maximum Concentration

[d] EPA Aquatic Life Criteria, Criterion Maximum Concentration

Table 3.1-4. Water Quality in Drains Associated with the Alamo River

Parameter	*Units*	*Water Quality Standard*	*Alamo River 1996-1999*		
			SOUTH CENTRAL DRAIN	HOLTVILLE MAIN DRAIN	OUTLET TO SALTON SEA
TDS	mg/L	4000[a]	2,269	2,347	2,318
Selenium	µg/L	5.0[b]	8.77	5.63	7.53
Turbidity	mg/L	200[c]	328.52	175.37	300.37
Pesticides					
DDD	µg/L	0.00083[d]	NA	NA	NA
DDE	µg/L	0.00059[d]	NA	NA	NA
DDT	µg/L	0.00059[d]	NA	NA	NA
Toxaphene	µg/L	0.73[e], 0.0002[b]	NA	NA	NA
Diazinon	µg/L	NS	0.032	0.055	NA
Chlorpyrifos	µg/L	0.083[e], 0.041[b]	0.025	0.025	NA
Boron	µg/L	NS	438.33	609.44	558.33
Nitrogen (as Nitrate)	mg/L	NS	9.89	8.3	6.4
Phosphorus	mg/L	NS	0.74	0.61	0.75

Source: IID and USBR 2002, Colorado River RWQCB 1994.

NA= Not Available

NS = No Standard

[a] Colorado River RWQCB Water Quality Objective for average annual TDS discharges (does not apply to agricultural discharges)

[b] EPA Aquatic Life Criteria, Criterion Continuous Concentration

[c] Draft TMDL Standard for Alamo River

[d] EPA Human Health Criteria

[e] EPA Aquatic Life Criteria, Criterion Maximum Concentration

between ID-1 (where Colorado River water can be used) and the remainder of the Coachella Valley, but rather breaks the Coachella Valley into the Upper and Lower Valley. ID-1 encompasses the entire Lower Coachella Valley and a small portion of the Upper Valley. Water use data for the Lower Coachella Valley is generally representative of ID-1, although actual water use data for ID-1 would be slightly higher than those of the Lower Valley.

Table 3.1-5 summarizes the recent historic conditions for diversion of Colorado River water by CVWD. In 1999, CVWD diverted 333.8 KAFY of Priority 3a and 6a Colorado River water. From 1990 to 1999, annual average diversions of Priority 3a and 6a Colorado River water by CVWD were 330.9 KAF. Between 1964 and 1999, CVWD diversions of Colorado River water ranged from a minimum of approximately 310 KAFY to a maximum of approximately 571 KAFY.

Table 3.1-5. Recent Historic Conditions for CVWD Colorado River Water Diversions

All numbers rounded and in KAFY

	1999	*1990-1999 Average*
CVWD Colorado River Diversions	333.8	330.9
Source: Data based on USBR Annual Decree Accounting Reports		

CVWD receives Colorado River water from the Coachella Canal. The Coachella Canal begins at a turnout on the All American Canal just upstream of Drop 1, and terminates at Lake Cahuilla near La Quinta in the Coachella Valley. The 122-mile-long Coachella Canal has been lined with the exception of 33.2 miles from siphon 7 to siphon 14 and from siphon 15 to siphon 32. The canal has a capacity of approximately 1,300 cfs. Annual seepage from the unlined reach to the shallow groundwater aquifers from the Coachella Canal is estimated to be approximately 32 KAF (USBR and CVWD 2001). Surface manifestations of the seepage include scattered natural and exotic vegetation in otherwise dry landscape, moist soil, surface trickles, and pools down slope from the canal, and the existence of phreatophytes in perennially wet areas (USBR and CVWD 2001). Seepage flows from the canal in the unlined reach move short distances toward the Salton Sea and either daylight above a perched lens of clay, or under confined conditions seep into regional groundwater, depending on the local geology.

CVWD operates and maintains a collector system of 166 miles of pipes and 21 miles of open ditches, to serve as a drainage network for irrigated lands within the valley. All agricultural drains empty into the CVSC except those at the southern end of the valley, which flow directly to the Salton Sea (CVWD 2000). This system serves nearly 38,000 acres and receives water from more than 2,293 miles of on-farm drain lines (CVWD 2000).

The Coachella Valley groundwater basin extends from the northwestern edge of the Upper Valley (roughly defined as the area northwest of Washington Street) near the unincorporated community of Whitewater to the Salton Sea in the Lower Valley (roughly defined as the area southeast of Washington Street). The hydraulic gradient in the Coachella Valley is towards the Salton Sea. The Upper Valley aquifer is generally unconfined, although there is a lens of clay in the southern portion that results in both confined and unconfined conditions. The Lower Valley aquifer occurs in four main hydrogeologic units: the semi-perched aquifer, the upper aquifer, the aquitard, and the lower aquifer. The semi-perched aquifer is unconfined, while the upper and lower aquifers are confined. In 1999, groundwater supplies accounted for approximately 56 percent of the Coachella Valley's water supply (CVWD 2000).

Since the early part of the previous century, the Coachella Valley has been dependent on groundwater as a source of supply. CVWD and Desert Water Agency (DWA) recognized the need to supplement the Valley's water supply and in 1963 became 2 of 29 agencies holding

long-term water supply contracts with the State of California for SWP water. CVWD's entitlement to SWP water is 23,100 AFY while DWA's is 38,100 AFY for a combined total of 61,200 AFY.

To avoid the estimated $150 million cost of constructing an aqueduct to bring SWP water directly to the Coachella Valley, CVWD and DWA entered into an agreement with MWD to exchange CRA water for SWP water. The exchange agreement allows the CVWD and DWA to trade its SWP entitlements to MWD on an "acre-foot for acre-foot" basis for Colorado River water. In 1972, CVWD began construction of the Whitewater River Spreading Facility to allow the exchange water as well as natural flows in the Whitewater River to seep into the valley's underground water supply. In 1973, CVWD and DWA began recharging the groundwater basin with exchanged SWP water.

Even with this artificial recharge, the demand for groundwater annually exceeded the inflows into the groundwater basin. The condition of a groundwater basin in which the outflows (demands) exceed the inflows (supplies) to the groundwater basin is called "overdraft." CVWD and DWA recognized the need for additional imported water to eliminate the groundwater overdraft. Since 1996, the two districts have purchased additional SWP water, as available, resulting in average purchases of 142,000 AFY. The Coachella Valley Water Management Plan addresses the future uncertainties of these additional SWP water supplies.

The annual overdraft in the Coachella Valley was still estimated to be 136 KAF (32 KAF in the Upper Valley and 104 in the Lower Valley) in 1999 even with the supplemental purchases. The cumulative Coachella Valley overdraft through 1999 was estimated to be 5,100 KAF (3,700 KAF in the Lower Valley and 1,400 KAF in the Upper Valley). Since 1973 nearly 1.7 MAF of Colorado River water has been delivered. CVWD issued the Coachella Valley Draft Water Management Plan in November 2000 to address groundwater overdraft and other water management issues. Environmental documentation for the Coachella Valley Water Management Plan is currently being prepared and a draft Program EIR is expected to be released in early 2002.

Water Quality

Water quality of the CVWD's water supply is heavily dependent on the quality of imported supplies, and thus, on Colorado River quality at Imperial Dam, CRA water quality and Coachella Valley groundwater quality. The water quality description for CVWD's Colorado River supplies is the same as IID's Colorado River water quality description discussed in section 3.1.1.2. CRA water quality is described in section 3.1.1.4.

Table 3.1-6 summarizes select water quality for the Coachella Canal for the period 1987 to 1999. For a description of general surface water quality parameters refer to the Water Quality discussion in section 3.1.1.2.

The water quality in the Upper Coachella Valley unconfined aquifer is characterized by TDS concentrations that are generally lower than those measured in the unconfined aquifers in the Lower Valley (CVWD 2000). TDS concentrations in both the Upper Valley confined and unconfined aquifers range from 180 to 750 mg/L. The Upper Valley TDS levels are affected by

Table 3.1-6. Coachella Canal Water Quality

Parameter	*Units*	*Water Quality Standard*	*Canal Water 1987-1999* AVERAGE
TDS	mg/L	500[a], 1000[b]	748
Selenium	µg /L	5.0[c]	3.5
Turbidity	mg/L	5[a]	NA
Pesticides	µg/L	varies	NA
Boron	µg/L	NS	NA
Nitrogen (as Nitrate)	mg/L	10[a]	0.03
Phosphorus	mg/L	NS	NA

Source: CVWD unpublished file data. Samples taken at Avenue 52.

NA= Not Available

NS = No Standard

[a] EPA primary drinking water standard

[b] EPA secondary drinking water standard

[c] EPA Aquatic Life Criteria, Criterion Continuous Concentration

surface water return flows percolating back into the basin and recharge of Colorado River water in spreading basins causing a gradual increase in TDS over time.

The Lower Valley aquifer is composed of three major water bearing "layers," a semi-perched aquifer (upper-most layer), the upper aquifer, and the lower aquifer (the deepest or furthest underground layer). The groundwater quality of the Lower Coachella Valley varies among these water bearing layers or aquifers. The upper portions and margins of the Lower Valley aquifer system are affected by percolation of relatively high TDS agricultural return flows. The semi-perched aquifer is of generally poor quality, with TDS concentrations averaging about 2,200 mg/L (CVWD 2000). In the upper aquifer, TDS concentrations average approximately 540 mg/L. In the lower aquifer, the average TDS concentration is approximately 160 mg/L. Unlike TDS levels in the upper portion of the aquifer system, TDS concentrations in the lower portions of the aquifer system have remained relatively unchanged since the 1930s.

Water quality in surface drains in the Coachella Valley and in the CVSC is dependent on the source water quality, soil type and agricultural practices. Table 3.1-7 summarizes water quality of surface drains in the Coachella Valley and the CVSC. With the exception of data for pesticides, and phosphorus, for which only one year of data is available, all data is summarized from samples taken from 1987 to 1999. Table 3.1-7 demonstrates that surface drains in the Coachella Valley currently exceed the 5 µg/L standard.

3.1.1.4 The Metropolitan Water District of Southern California

MWD is a public agency organized in 1928 under the authority of the Metropolitan Water District Act, with the primary purpose of developing, storing and distributing water to member public agencies within the southern California coastal plain for domestic and municipal uses. MWD sells water to 26 member agencies that serve a 5,200 square-mile area of Southern

California and over 17 million people, including SDCWA. MWD obtains most of its water supply from the Colorado River and the SWP.

Table 3.1-7. Water Quality of Surface Drains and the CVSC from 1987 to 1999 (unless otherwise noted)

Parameter	*Units*	*Water Quality Standard*	*Surface Drains Average*	*CVSC Average*
TDS	mg/L	2500[a]	1970	1,474
Selenium	µg/L	5.0[b]	5.3	3.3
Turbidity	mg/L	NS	NA	43 – 110[g]
Pesticides				
DDD	µg/L	0.00083[c]	NA	ND[e]
DDE	µg/L	0.00059[c]	NA	ND[e]
DDT	µg/L	0.00059[c]	NA	ND[e]
Toxaphene	µg/L	0.73[d], 0.0002[b]	NA	ND[e]
Diazinon	µg/L	NS	NA	ND[f]
Chlorpyrifos	µg/L	0.083[d], 0.041[b]	NA	ND[f]
Boron	µg/L	NS	0.55	0.57
Nitrogen (as Nitrate)	mg/L	NS	21	15.6
Phosphorus	mg/L	NS	NA	0.95 – 1.1[c]

Source: CVWD unpublished file data. Samples taken at Avenue 52 and Avenue 72
NA= Not Available
NS = No Standard
ND = Not Detected
[a] Colorado River RWQCB Water Quality Objective for maximum TDS (does not apply to agricultural discharges)
[b] EPA Aquatic Life Criteria, Criterion Continuous Concentration
[c] EPA Human Health Criteria
[d] EPA Aquatic Life Criteria, Criterion Maximum Concentration
[e] These constituents were not detected in three samples taken between May 2000 and May 2001
[f] These constituents were not detected in two samples taken between May 2000 and November 2000
[g] This is the range observed in three samples taken from June 2000 to June 2001

Table 3.1-8 summarizes recent historic conditions for diversion of Colorado River water by MWD. MWD diverts water from Priority 4, 5a and 5b of the priority system. Water available under the IID/MWD 1988 Agreement and subsequent agreements is accounted for, at MWD's option, under Priority 4, 5a, 5b, or MWD/Reclamation's Surplus Flows Contract. Priority 5a and 5b water is available only in surplus years as designated by the Secretary, as water designated to but unused by other Priority holders, or as water designated to but unused by the States of Arizona or Nevada.

In 1999, MWD diverted 1,212.1 KAFY from the Colorado River. This includes 550 KAF of Priority 4 water, and 662 KAF of Priority 5a and 5b water (which includes 108.5 KAFY of water conserved by IID and an equivalent amount made available to MWD), and 67 AF of surplus water under the MWD/Reclamation Surplus Flows Contract.

Table 3.1-8. Recent Historic Conditions for MWD Colorado River Water Diversions

All numbers rounded and in KAFY

	1999	*1990-1999 Average*	*1990-1999 Adjusted Average*
MWD Colorado River Diversions	1,212.1	1,191.2	1,233.8
Source: Data from USBR Decree Accounting			

From 1990 to 1999, MWD diverted, on average 1,191.2 KAFY of Colorado River water. This includes 550 KAFY of Priority 4 water in all 10 years, an average of 529.2 KAFY of Priority 5a and 5b water (including an average of 67.3 KAFY of Priority 3a water conserved by IID and made available to MWD), an average of 98.7 KAFY of unused Priority 3 water, and an average of 13.3 KAFY of surplus water under the MWD/Reclamation Surplus Flows Contract. The water available under the IID/MWD 1988 Agreement and subsequent agreements varied from a minimum of 6.1 KAFY to a maximum of 108.5 KAFY.

A 1990 to 1999 adjusted average was developed to simulate conditions that would have occurred if the water conservation under the IID/MWD 1988 Agreement and subsequent agreements had been fully implemented by the beginning of 1990. In this case, IID would have conserved, and reduced its diversion of Colorado River water by a total of 110 KAFY for the entire 10-year period, and an equivalent amount of water would have been made available to MWD throughout the time period (for purposes of analysis, this is assumed to be 110 KAFY). The 1990 to 1999 adjusted average for MWD is 1,233.8 KAFY.

The 242-mile long CRA, built and operated by MWD, carries Colorado River water from the Whitsett Intake Pumping Plant at Lake Havasu to the MWD service area. The capacity of the CRA is approximately 1.3 MAFY. MWD endeavors to operate the CRA at full capacity, and to maintain supplies to the CRA.

Water Quality

Table 3.1-9 summarizes water quality parameters for the Colorado River in Lake Havasu at the Whitsett Intake from 1984 to 1999 (unless otherwise noted).

3.1.1.5 San Diego County Water Authority

SDCWA is the largest water purchaser of the 26 member agencies of MWD. SDCWA serves approximately 2.8 million people in a service area of 1,420 square miles. Typically, 70 to 95 percent of the SDCWA water supply is imported from MWD. Local supplies make up the remainder of the water available to the SDCWA service area. Water use in the SDCWA service area during fiscal year 1999 (from July 1, 1998 to June 30, 1999) totaled 619.4 KAF, of which 453.7 KAF was imported water received from MWD (personal communication, Tim Bombardier).

Table 3.1-10 summarizes recent historic conditions for SDCWA deliveries from MWD. From fiscal year 1990 to 1999, SDCWA received an average of 469.3 KAFY from MWD. The amount of imported water delivered to SDCWA is heavily dependent on local weather patterns and economic conditions, ranging from 392.9 KAF to 642.8 KAF during the decade from 1990 to

1999. Water deliveries generally decline during years of abundant rainfall. In contrast, the SDCWA received 601.5 KAF from MWD during fiscal year 2000, a year when local supplies dwindled due to lack of rainfall.

Table 3.1-9. Water Quality in Lake Havasu

Parameter	*Units*	*Water Quality Standard*	*Lake Havasu*
			Average
TDS	mg/L	500[a], 1000[b], 747[c]	607.9
Selenium	µg/L	5.0[d]	NA
Turbidity	mg/L	5[a]	1.2
Pesticides	µg/L	Varies	NA
Boron	µg/L	NS	0.13[e]
Nitrogen (as Nitrate)	mg/L	10[a]	0.03
Phosphorus	mg/L	NS	NA

Source: IID and USBR 2002, unpublished data on the CRA water quality
NA= Not Available
NS = No Standard
[a] EPA primary drinking water standard
[b] EPA secondary drinking water standard
[c] Salinity Control Forum salinity objective below Parker Dam
[d] EPA Aquatic Life Criteria, Criterion Continuous Concentration
[e] Data from monthly samples 1990-1999

Within the SDCWA distribution system are connections to deliver water to two of the San Luis Rey Indian water rights settlement parties: the City of Escondido and Vista Irrigation District. The collective group consisting of the La Jolla, Rincon, San Pasqual, Pauma, and Pala Bands of Mission Indians, the City of Escondido, and the Vista Irrigation District are named in Public Law 100-675 (1988) that provides for settlement of water right claims and authorizes lining of the All American and Coachella Canals.

Table 3.1-10. Recent Historic Conditions for SDCWA

All numbers rounded and in KAFY

	1999	*1990-1999 Average*
SDCWA Deliveries from MWD	453.7	469.3

Source: personal communication, Tim Bombardier

Water Quality

SDWCA water quality is heavily dependent on the water quality of supplies delivered from MWD. SDCWA receives MWD Colorado River water from both Lake Skinner and from a bypass pipeline north of the lake. Generally, SDCWA receives a blend of SWP and Colorado River water. The mix varies depending on water management policies and practices at MWD, but the large majority of water delivered to SDCWA comes from the Colorado River. Historically, SDCWA has received up to 100 percent Colorado River water from MWD.

3.1.1.6 Other Areas

Colorado River

The lower Colorado River has a wide variation in annual inflows of source waters, which is typical of river systems within semi-arid and arid climate zones. This natural variation had historically resulted in wide variations in annual river flows. The development of dams and other facilities have significantly modified this natural variation by storing water for controlled releases. Agricultural, urban and power generation demands and the associated dam releases to meet these demands have led to daily and monthly variations in flows. The volume of flow in the River affects water levels (stage), surface area, and salinity levels (USBR 2000b).

The Lower Basin dams and reservoirs include Hoover, Davis, Parker, Headgate Rock, Palo Verde Diversion, Imperial, and Laguna. Morelos Dam, located just below the NIB is the last dam on the Colorado River. It is the operation of these reservoirs, particularly Lake Mead, that determine the existing hydrology in the Lower Basin.

Lake Mead provides the majority of the storage capacity for the Lower Basin. Historically, in the period 1980 to 2000, annual Lake Mead elevation ranged from 1,170 to 1,220 feet msl, a variation of 50 feet. In 1999, Lake Mead's average annual elevation was 1,210 ft msl; the 1990-1999 average annual elevation in the reservoir was 1,191 ft msl. Unless flood control is necessary, Lake Mead and Hoover Dam are operated to meet downstream demands, at least 9.0 MAF annually, for consumptive use by the Lower Division States plus the United States' obligation under the U.S.-Mexico Water Treaty. Within these operations, Hoover Dam releases are managed on an hourly basis to maximize the value of generated power.

The close proximity of Lake Mohave to Hoover Dam effectively dampens the short-term fluctuations below Hoover Dam. Since 1980, annual release from Lake Mead has varied from a low of 7.4 MAF to a high of 21.4 MAF. Within a given month, daily releases can vary by more than 22,000 cfs. Since 1980, within any given non-flood year, flows through Hoover Dam have ranged from 750 cfs to 27,000 cfs. Hourly flows are managed to optimize hydroelectric power production. The fluctuation within daily, monthly, and seasonal flows is generally less than that of hourly flows.

Parker Dam's primary purpose is to provide reservoir storage from which water can be pumped into MWD's CRA and the Central Arizona Project Aqueduct. The CRA delivers water to the MWD service area. Parker Dam also has a power plant function and may provide a minimal amount of flood control, capturing and delaying flash floods into the River from tributaries below Davis Dam. Parker also re-regulates water released from the Hoover and Davis power plants, thus regulating river flow for downstream irrigators. Releases at Parker Dam are scheduled on a daily basis to meet the short-term demands of Colorado River water users located downstream. The hourly release profile is determined by the electric service customer requirements.

Annual surface water flow in the River, measured just downstream from Parker Dam, averaged approximately 9,000 KAF for the period of record, from 1935 to 1999, but varied from a maximum of approximately 21,100 KAF to a minimum of approximately 5,500 KAF (USGS 2000). From 1990 to 1999, annual flow averaged 7,348 KAF downstream from Parker Dam

(USGS 2000). The overall effect of diversions, local surface inflows, evapotranspiration, and groundwater recharge, is a decrease in flow between Parker and Imperial dams. Long-term average annual flow just upstream of Imperial Dam from 1935 to 1999 was approximately 8,100 KAFY (USGS 2000). From 1990 to 1999, the average annual flow just upstream of Imperial Dam was 6,280 KAFY (USGS 2000).

Table 3.1-11 summarizes recent historic conditions for Lake Mead and the Colorado River below Parker Dam and above Imperial Dam. Colorado River flows below Parker Dam at the USGS gage 09427520 were 8,351 KAFY in 1999, and averaged 7,348 KAFY from 1990 to 1999 (USGS 2000). Colorado River flows above Imperial Dam at USGS gage 09429490 were 7,713 KAFY in 1999, and averaged 6,280 KAFY from 1990 to 1999 (USGS 2000).

Table 3.1-11. Recent Historic Conditions for the Colorado River

	1999	*1990-1999 Average*
Lake Mead Average Annual Elevation [a]	1,210	1,191
Colorado River Flows Below Parker Dam [b]	8,351 KAFY	7,348 KAFY
Colorado River Flows Above Imperial Dam [b]	7,173 KAFY	6,280 KAFY

[a] Data provided by R. Carson, USBR.
[b] USGS 2000

Water levels depend on the total volume of water moving through the River at any particular point in time. Dam releases are made by Reclamation according to operational policies. During periods when flood control releases are not required, releases from Parker Dam fluctuate daily to meet the water demands of downstream users. Releases can be adjusted hourly to meet power generation demands. The duration, timing and volume of high and low flows are controlled by the release schedules of the dams, which buffer water levels throughout the lower Colorado River from extreme volume changes.

The surface water levels in the Parker to Imperial dam reach of the Colorado River have daily variations, with a higher volume usually released from the reservoirs during the day. Just downstream of Parker Dam, the typical daily variation is about 5 feet in the summer when irrigation demand is high. In winter the daily variation in surface water levels is reduced to about 2.5 feet due to lower irrigation demand and a more consistent demand in general. By the time water reaches Imperial Dam, fluctuation is dampened to approximately 0.5 feet by the channel storage and daily variations in River stage (USBR and IID 1994).

In addition to the daily variations in water levels, there are seasonal and annual variations due to rainfall and reservoir releases. For example, the difference between maximum and minimum monthly stage for an individual month from October 1988 to September 1999 ranged from 0.11 to 7.09 feet. Monthly flows throughout the same time period varied from 100 to 1,000 KAF. The comparison of water levels to daily or annual water volumes indicates that volumes may vary widely.

There are a few lakes off the mainstem of the Colorado River that are affected by flow and surface elevations of the River. Cibola Lake, which is part of the Cibola National Wildlife Refuge has inlet and outlet control structures to maintain desired lake levels. Three Fingers Lake also has inlet and outlet control structures. Ferguson Lake, within the Imperial National Wildlife Refuge, does not have control structures, although the lake is separated from the River by a sandbar that blocks direct connection to the Colorado River. Water levels at Ferguson Lake

are maintained by percolation from the river. Other lakes such as Adobe and Martinez Lakes, have no flow control structures, and water levels are dependent on levels of the River or reservoirs on the River.

WATER QUALITY

In addition to salinity, sediments, and pesticides, described in section 3.1.1.2, perchlorate is also a water quality concern in the Colorado River system.

Ammonium perchlorate, the most common form of perchlorate contamination, is manufactured for use as an oxygen-adding component in solid propellant for rockets, missiles, and fireworks (EPA 1999, 2001). Perchlorate contamination in surface waters has been given increasing scrutiny due to potential health effects on human thyroid function (EPA 1999, 2001). With the development of analytical methods since 1997, perchlorate can now be detected at levels as low as 4 parts per billion (ppb). The use of new methods has allowed the identification of perchlorate in the water supply of over 15 million people in California, Nevada, and Arizona and in the surface water or groundwater in another eleven states throughout the country (EPA 1999).

There is currently no federal National Primary Drinking Water Regulation for perchlorate. Perchlorate is on the EPA's Safe Drinking Water Act's Contaminant Candidate List as of 1998 (EPA 1999, 2001) and the EPA has established 1 ppb as the provisional reference dose for adults (EPA 1999, 2001a; CA DHS 2002). California's Department of Health Services (CA DHS) has set 4 ppb as the action level for drinking water and has proposed 6 ppb as a public health goal (CA DHS 2002). .

In California, perchlorate is considered to be an "unregulated chemical for which monitoring is required" (Title 22, California Code of Regulations §64450) (CA DHS 2001). CA DHS advises water utilities to remove drinking water supplies from service if they exceed the 4 ppb action level. If the contaminated source is not removed from service due to system demands and if drinking water that is provided by the utility exceeds the action level, CA DHS will advise the utility to arrange for public notification to its customers (EPA 2001). The proposed 6 ppb public health goal is the level at which CA DHS feels the contaminant concentration in drinking water does not pose a significant risk to health (CA DHS 2002)

Perchlorate has been detected in the water of the Colorado River and Lake Mead. Perchlorate concentrations have ranged from less than 4 ppb to 176 ppb at the Southern Nevada Water Authority's water intake at Lake Mead (EPA 1999, SNWA unpublished data). The EPA identified two facilities that manufactured ammonium perchlorate in Henderson, Nevada, that were found to have released perchlorate to groundwater. Kerr-McGee Chemical Company, with the Nevada Division of Environmental Protection (NDEP) and Reclamation, worked together to begin intercepting a major surface flow of perchlorate-laden water along Las Vegas Wash. This program is now ongoing and has significantly reduced the amount of perchlorate entering the Las Vegas Wash, Lake Mead, and the Colorado River. This remediation program will continue into the future and will continue to reduce perchlorate contamination in groundwater and in Colorado River water in Lake Mead and downstream (USBR 2000b).

Salton Sea

The Salton Sea is a large saline lake, inundating the lowest elevations of the Imperial and Coachella valleys. The current Salton Sea was created when a temporary canal on the Colorado River failed in 1905, resulting in an uncontrolled diversion of the Colorado River into the Imperial and Coachella valleys for 18 months. The Salton Sea is a terminal lake without a surface water outlet. The water level in the Salton Sea has varied since it was created in the 1905 flood, and has been at approximately elevation –227 feet msl since the 1980s (IID and USBR 2002). The relatively consistent elevation indicates that annual inflow to the Salton Sea has approximately equaled the annual rate of evaporation. Recent trends indicate that inflows, and thus the Salton Sea elevation, are in decline (personal communication, P. Weghorst, 2001).

Inflow to the Salton Sea varies from year to year depending on rainfall and drainage from local runoff and irrigation districts. Table 3.1-12 summarizes the relative contributions of source inflows to the Salton Sea for the years 1950 to 1999. Agricultural flows reach the Salton Sea via the Alamo River, New River, agricultural drains, and Coachella Valley Stormwater Channel. Groundwater and direct precipitation account for only a small percentage of the Salton Sea's inflow. Further information regarding the surface hydrology associated with the Salton Sea is available in the IID Water Conservation and Transfer Project EIR/EIS. In the future, inflow to the Salton Sea is expected to decrease.

Table 3.1-12. Sources of Salton Sea Inflow

Source of Inflow	*Average Total Annual Inflow 1950 – 1999 (AF)*	*Percent Contribution of Total Inflow*
Alamo River	623,678	46.4
New River	441,475	32.9
IID Agricultural Drains (that directly drain to the Salton Sea)	93,250	6.9
Surface Flows from CVWD (including Coachella Valley Stormwater Channel)	115,053	8.6
Subsurface flows from CVWD	1,539	0.1
Unmeasured inflows[a]	68,400	5.1
Total	1,343,395	100 percent

[a] Unaccounted for direct runoff, unmeasured inflows from IID and CVWD as well as errors and/or omissions resulting from development of historic water balance.
Source: Salton Sea Accounting Model (Weghorst, USBR 2001)

The water quality of the Salton Sea is a function of its source waters, agricultural and municipal wastewater. Because the Salton Sea has no natural outlet, salt loads entering the water tend to accumulate. Given the Salton Sea's evaporation rate of nearly 6 feet per year and minimal precipitation, the entire Salton Sea would evaporate within about 10 years if all inflows were stopped. In the 1950s and 1960s salinity fluctuated between about 31,000 and 39,000 mg/L. From 1990-1999, the average salinity was 42,600 mg/L and in year 1999, the average salinity of the Salton Sea (measured as TDS concentration) was approximately 43,918 mg/L (IID and USBR 2002).

The Colorado River RWQCB has identified the Salton Sea and a number of its tributaries as impaired and subject to planned TMDL requirements for pathogens, nutrients, pesticides, selenium, and silt. Nutrient loading (ammonia, nitrate, phosphate) is a result of agricultural practices and wastewater management practices within the Salton Sea basin as well as industrial and municipal effluent from Mexico (USBR and SSA 2000).

Table 3.1-13 summarizes approximate elevation and recent historic conditions for the Salton Sea.

Table 3.1-13. Recent Historic Elevation and Salinity Conditions for the Salton Sea

All numbers rounded and in KAFY

	1999	*1990-1999 Average*
Water Elevation (feet below msl)	227.5[a]	227.7[a]
Area (acres and sq. miles)	235,000 acres[b]	232,600 acres[b]
Salinity as TDS (mg/L)	42,929[c]	42,681[d]

(a) USGS 2000, Salton Sea Gage 10254005. Data through 09/1999.
(b) Area based on elevation/surface area data developed by Reclamation (USBR and SSA 2000)
(c) IID records.
(d) Personal Communication John Scott, Metropolitan Water District of Southern California, 2002.

The New and Alamo rivers are the main sources for nutrients (ammonia, nitrate, phosphate), pesticides, and herbicides to the Salton Sea. These are a result of farming and wastewater disposal practices within the Salton Sea basin, including the Mexicali Valley in Mexico.

The Republic of Mexico

The United States Treaty with Mexico provides Mexico with a right to receive 1,500 KAFY plus 200 KAF of surplus water, when available. Mexico received 1,700 KAF in compliance with the treaty in both 1999 and 2000 (USBR 1999). Flow in excess of treaty deliveries to Mexico can occur under three conditions, these are: (1) operational activities upstream (for example, cancelled water orders, maintenance activities, etc.); (2) Gila River flood events; and (3) flood control releases along the mainstream of the Colorado River (USBR 2000b).

The Colorado River Delta aquifer near the U.S. – Mexico border extends north and south from the All American Canal, from approximately 10 miles west of the Coachella Canal, and eastward to the Yuma Valley in Arizona. Seepage from the All American Canal contributes 10 to 15 percent of the volume of this aquifer. The remainder is recharge from the Colorado River, seepage from canals in Mexico, and percolation of irrigation return flow in the Bard and Yuma valleys in the U.S. and the Mexicali Valley, Mexico.

WATER QUALITY

The salinity of Colorado River water delivered to Mexico is the subject of Minute 242 of the International Boundary and Water Commission signed in 1974 (refer to section 3.1.1.1).

The average salinity of the Colorado River upstream of Morelos Dam at the NIB was 758 parts per million (ppm) in 1999 (International Boundary Water Commission [IBWC] 2001).

3.1.2 Impacts

3.1.2.1 Significance Criteria

The criteria listed below are based on Appendix G of the State CEQA Guidelines. The Proposed Project would have a significant impact on water resources if it would:

- violate (or cause the violation of) any water quality standards or waste discharge requirement;
- substantially deplete groundwater supplies or interfere substantially with naturally occurring groundwater recharge;
- substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
- create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- otherwise substantially degrade water quality;
- place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- expose people or structures to significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or,
- cause inundation by seiche, tsunami, or mudflow.

Alterations in elevation, depth, and surface area of water bodies, while not necessarily an impact to hydrology, can affect other resources such as aesthetics, biological resources and cultural resources. These potential effects are considered within the impact discussions for the specific resources affected.

3.1.2.2 Methodology

Baseline

Two baseline conditions were considered in the analyses of the impacts of implementation of the Proposed Project components. The first, the Existing Baseline condition is the status of the hydrologic resources during the recent historic period 1990-1999. This baseline is used to evaluate changes in flows in major facilities such as the All American Canal, Coachella Canal, and CRA. For example, for purposes of Existing Baseline, the CRA was assumed to be operated as it historically has at near or full capacity.

Agreement and subsequent agreements[1]. The QSA includes the quantification of Priority 6a water. Priority 6a water could be available in non-normal, surplus years as declared by the Secretary, and/or in years in which water apportioned to but unused by Arizona and/or Nevada is available to California entities.

The second baseline, the Future Baseline, is the projected trend of hydrologic resources during the next 75 years based on well-defined trends. Proposed project impacts on drainage in the IID and CVWD service areas, the Colorado River, and Salton Sea are measured against a Future Baseline. The Future Baseline for these resources was developed from previously prepared models. No additional simulations were necessary to evaluate the impacts of the Proposed Project on these resources. The following models were used to evaluate the potential impacts of the Proposed Project:

- Colorado River Simulation System to predict effects of reduced flows on Lake Mead reservoir levels, river flow, and salinity (details of this modeling process are provided in Appendix D and the Draft EIS Implementation Agreement, Inadvertent Overrun and Payback Policy, and Related Federal Actions, 2002). River operation parameters modeled and analyzed include the water entering the river system, storage in the system, reservoir releases from storage, and the water demands of, and deliveries to, the Basin States and Mexico. The model uses the 85-year natural flow record from 1906 through 1990 to estimate future inflows. Future Colorado water demands are based on demands and depletion projections supplied by the Basin States. The model simulates operation of Glen Canyon Dam, Hoover Dam and other Colorado River system elements consistent with the LROC.
- USBR Salton Sea Accounting Model, simulations developed as part of the IID Water Conservation and Transfer Project EIR/EIS (IID and USBR 2002). The Salton Sea accounting model predicted hydrologic response to possible changes in the Salton Sea, specifically changes in inflow, elevation, surface area, and salinity. The model assumes that the hydrologic and salt load variability of the Sea would repeat in the future in a similar pattern.
- Corps of Engineers HEC-RAS computer simulations developed to assess river stage and groundwater elevations under various flow regimes for the Biological Assessment for the Proposed Interim Surplus Guidelines (USBR 2000a). Very detailed river stage and groundwater elevation modeling was performed for specific reaches under various flow regimes; specifically, river stage at seven points between Parker Dam and Imperial Dam were examined:
    - River Mile 192.2, Parker Dam;
    - River Mile 177.7, Headgate Rock Diversion Dam;
    - River Mile 152.0, Waterwheel Gage;

1 As described in Chapter 2, CVWD is entitled to up to 50 KAFY of water through the 1988 and 1989 agreement, however since the above agreements were implemented, the conditions necessary for CVWD's diversion of 50 KAF have not existed, and all water conserved under these agreements has been diverted by MWD. For the purposes of this PEIR, the description of existing conditions assumes that the amount of water conserved and transferred under the above agreements is 110 KAFY, and that all conserved water was used by MWD.

- River Mile 133.8, Palo Verde Diversion Dam ;
- River Mile 106.6, Taylor Ferry Gage ;
- River Mile 87.3, Cibola Gage; and
- River Mile 49.2, Imperial Dam.

Assuming reductions in flow in the Parker to Imperial river reach from of 200 KAFY, 300 KAF, 400 KAF, 500 KAF, 675 KAF, 948 KAF, to 1,553 KAF and 1,574 KAFY (in increments of 100 KAF) river flow was calculated at these seven points. From these river flows, river elevations were computed using cross-sectional survey data for 20 representative type-areas distributed throughout the affect reach. In addition, water surface elevations were used to calculate the effect on groundwater levels in areas adjacent to, but not directly connected to the River. Reduction in surface area of backwater and open river also was based on cross sectional data and backwater areas delineated in GIS. Because the range of flows analyzed under the Biological Assessment (400 KAFY) captures the changes potentially occurring under the Proposed Project, where applicable the Biological Assessment analysis is included as part of this section.

- CVWD Groundwater Model is a three-dimensional, numerical groundwater flow model of the Coachella Valley developed to provide a scientific tool to assist in managing groundwater in the Coachella Valley. The model depends on groundwater pumpage, natural recharge, return flows from irrigation, drain flows, aquifer data from well records and pump tests have been interpreted together with regional geologic and hydrologic information to define the physical system within which the groundwater flows. The period 1936 through 1996 was used for calibration since this period represents a wide range of hydrologic conditions in the Valley. The model provides predictive simulations to estimate future hydrogeologic conditions throughout the Coachella Valley. In particular, model results were used to estimate annual drain flows, inflows from and outflows to the Salton Sea and flows between the Upper and Lower Valleys. For a more detailed discussion of the groundwater model, the reader is referred to the Water Management Plan (CVWD 2000).

- The Imperial Irrigation District Decision Support System (IIDSS) simulated the physical input and output processes that occur in delivering water to a farm, irrigating a crop, and predicting the resultant drainage outflow. Details of this modeling are provided in the Draft EIR/EIS IID Water Conservation and Transfer Project/Draft Habitat Conservation Plan (IID and USBR 2002). The model uses a projection of the historic record (1987 to 1998) to estimate future trends. The historic record contained information on river diversions, canal flows, farm turnout flows, climatic information, crops irrigated, drain flows, and water quality, Salton Sea elevation, and Salton Sea salinity. These data were adjusted based on reasonably foreseeable future changes, such as an increase in Colorado River salinity and then projected forward assuming similar weather as the past 75 years of record. The IIDSS provided the needed results to identify "wet water" conservation savings and changes in quality and quantity of drainage waters in the IID service area.

For both the Existing and Future baselines, two water diversion scenarios were analyzed to determine effects of the Proposed Project. The first, and most likely, scenario is where CVWD utilizes its options for the entire 100 KAFY of Priority 3a water conserved by IID. The second scenario is where CVWD does not exercise its option for the diversion of 100 KAFY of Priority 3a water conserved by IID at the Imperial Dam, and the water is diverted by MWD from Lake Havasu. For either scenario, a range of impacts would be expected given the variability of hydrology and changes in land and water use conditions from year to year. Ranges of impacts presented herein were based on the ranges expected from each Proposed Project component and on historical variations in return flow to the Salton Sea. Baseline conditions are outlined for each area of concern in sections 3.1.1.2 through 3.1.1.6.

The 1988 IID/MWD Conservation Program has undergone separate environmental analysis, and has been implemented. It is therefore considered as part of both the Existing and Future baselines. Within the analysis the full 110 KAFY from this agreement (which can range from 100 to 110 KAFY) is assumed to be conserved by IID and diverted by MWD, and is treated as a current and ongoing project.

3.1.2.3 Summary of Impacts

Under the Proposed Project, California water would be apportioned Colorado River Water per the Law of the River and allocated to the various users as modified by the implementation of the Proposed Project. Water made available through conservation actions within the IID service area would be transferred to other California agencies to assist the State in remaining within its normal year 4.4 MAF apportionment. Under the Proposed Project, these conservation actions would continue in surplus years, reducing California's demand for and use of Colorado River surplus water relative to the Baseline.

Imperial Irrigation District

The Proposed Project would reduce the amount of Colorado River water that IID would need to divert through the implementation of conservation measures. Table 3.1-14 outlines the changes in flows in the All American Canal and Colorado River water diversions by IID, including diversions for use in the service area, relative to Existing Baseline.

IID COLORADO RIVER WATER DIVERSIONS FOR USE IN THE SERVICE AREA

As shown in Table 3.1-14 ("IID Colorado River water diversions for use in the service area" column), assuming that all of the Proposed Project components are implemented, there would be a maximum of 311.5 KAF annual reduction in IID's Colorado River water diversion, relative to Existing Baseline, for use in the IID service area, subject with compliance to the IOP. IID plans to accomplish this level of conservation by both voluntary on-farm conservation (which could include fallowing) and system improvements as discussed in section 2.5. This decrease in delivery to the service area is not an impact to hydrologic resources although there are indirect effects to other resources.

IID COLORADO RIVER WATER DIVERSIONS

As shown in Table 3.1-14 ("IID Colorado River water diversion" column), implementation of QSA program components would result in an annual reduction in IID's Colorado River diversions of up to approximately 379 KAF (consisting of 300 KAFY from the conservation and transfer agreements, up to 11.5 KAFY to Miscellaneous PPRs and Federal Reserved Rights, and reduced another 67.7 KAFY through lining of the All American Canal), relative to Existing Baseline. However, canal lining would not result in a change in volume available for consumptive use in the IID service area. With implementation of the Proposed Project, IID

Table 3.1-14. QSA Changes in Flows in the All American Canal and Colorado River Water for Use in the IID Service Area in a Normal Year Relative to Existing Baseline

(All numbers rounded and in KAFY, negative numbers in parentheses)

QSA Component	ALL AMERICAN CANAL FROM IMPERIAL DAM TO PILOT KNOB		ALL AMERICAN CANAL FROM PILOT KNOB TO DROP 1		*All American Canal from Drop 1 to Drop 3*	*IID Colorado River Water Diversions for Use in the Service Area*	*IID Colorado River Water Diversions*
	CVWD use of First and Second 50 KAFY	*MWD use of First and Second 50 KAFY*	*CVWD use of First and Second 50 KAFY*	*MWD use of First and Second 50 KAFY*			
IID/MWD/PVID/CVWD 1989 Approval Agreement[a]	20	20	20	20	0	0	0
IID/SDCWA Water Conservation and Transfer Agreement[b]	(200)	(200)	(200)	(200)	(200)	(200)	(200)
CVWD/IID/MWD Water Conservation and Transfer Agreement (First and Second 50 KAFY)[c]	0	(100)	0	(100)	(100)	(100)	(100)
All American Canal Lining	(67.7)	(67.7)	(47.4)	(47.4)	(20.3)	0	(67.7)
Coachella Canal Lining	(26)	(26)	(26)	(26)	0	0	0
CVWD/MWD SWP Transfer and Exchange	35	35	35	35	0	0	0
Use of water by Miscellaneous PPRs and Federal Reserved Rights[d]	(14.5)	(14.5)	(14.5)	(14.5)	(11.5)	(11.5)	(11.5)
Change in Flow with the QSA	**(253.2)**	**(353.2)**	**(232.9)**	**(332.9)**	**(331.8)**	**(311.5)**	**(379.2)**

Note: This is a water balance table. Values are not actual river or canal flows or diversion volumes, but rather, amounts of water potentially affected by implementation of the proposed QSA.

(a) The 1988 IID/MWD Agreement is part of the Baseline.

(b) Yield to SDCWA can vary from 130 to 200 KAFY. Yield will ramp up at 20 KAFY during project implementation. Yield will also include an early transfer of 2.5 KAF in 2005, 5 KAFY in 2006 and 2.5 KAFY in 2007 to SDCWA and MWD.

(c) Also referred to as the First and Second 50 KAFY. Yield to CVWD, will ramp up at 5 KAFY during project implementation. MWD has an option to use this water if CVWD does not first exercise their option.

(d) Under the QSA, CVWD, IID and MWD have agreed, when necessary, to divide responsibility for foregoing the use of Colorado River to satisfy future water demands by holders of Miscellaneous PPRs and Federal Reserved Rights. Water would be forborne by CVWD and IID in the amount of 3 and 11.5 KAFY, respectively, when necessary, for use by Miscellaneous PPRs and Federal Reserved Rights. Water would be forborne, when necessary, by MWD in the aggregate amount in excess of 14.5 KAFY necessary to satisfy Miscellaneous PPRs and Federal Reserved Rights. .Diversions to satisfy Miscellaneous PPRs and Federal Reserved Rights holders will be along the lower Colorado River from Davis Dam to below Imperial Dam.

would voluntarily limit Priority 3a diversions to 3,100 KAFY as adjusted in the QSA and IOP. Implementation of the Proposed Project would result in the quantification of Priority 3a diversions by both IID and CVWD to approximately their current (1999) and historic diversion amounts (1990 to 1999), thereby allowing both agencies to better determine their annual water supply for their respective service areas.

This reduction in diversion of Colorado River water and limit on Priority 3a diversions by IID would not affect drainage patterns and runoff, or flood hazard and would not cause inundation. Therefore, this reduction in diversion of Colorado River water by IID, and IID's Priority 3a cap subject to compliance with the IOP are not considered a significant impact to hydrologic resources.

ALL AMERICAN CANAL

Flows in the All American Canal would be reduced between 229.2 and 350.2 KAFY, relative to Existing Baseline depending on the reach as outlined in Table 3.1-14. Seepage would be reduced by approximately 75 percent if the unlined portions of the All American Canal from Pilot Knob to Drop 3 were lined. This reduction of seepage (67.7 KAFY), would reduce groundwater inflow to the East Mesa area by approximately 7 KAFY. Shallow groundwater levels would drop near the newly lined sections and recharge of the local aquifer would be reduced, affecting groundwater levels and flow towards Mexico. This impact is not considered significant to local groundwater resources, as this water is not naturally occurring and subject to recovery. Loss of this use of groundwater recharged by the All American Canal is not considered significant as current users do not have rights to a continued supply of this seepage water (USBR and IID 1994). The All American Canal Lining Project would not conflict with the provisions of the 1944 water treaty with Mexico.

The All American Canal lining was addressed in a project specific EIS/EIR certified in 1994.

WATER QUALITY

The reduction in drainage water from IID's service area resulting from conservation measures implemented under the Proposed Project would cause an increase in concentration, although not total load, of various soluble constituents in drains in the Imperial Valley and the New and Alamo rivers, which discharge into the Salton Sea. This change in concentration has significant water quality impacts relative to Future Baseline conditions as illustrated in Table 3.1-15. As Table 3.1-15 illustrates, the decrease in the amount of water discharged from Alamo River and IID drains could result in selenium concentrations exceeding the EPA Aquatic Life Criteria for Continuous Concentration, and thus impact biological resources in these areas. This impact is considered a significant and unavoidable impact to water quality. Drainage water quality in the service area directly affects water quality in the New, Alamo, and Whitewater Rivers, as well as the Salton Sea. Table 3.1-16 describes overall trends in water quality in the service areas of IID and CVWD with implementation of the Proposed Project.

GROUNDWATER

The Proposed Project would result in a decrease in groundwater recharge in the IID service area, relative to Existing Baseline. This decrease would be a minor impact given the poor

quality and non-use of the groundwater in IID, and minor relative to the size of the IID groundwater aquifer. Overall the impact would be less than significant.

Coachella Valley Water District

Implementation of the Proposed Project would increase the amount of Colorado River water that could potentially be diverted by CVWD in a normal year, relative to Existing Baseline. This increase is within the historic range of Colorado River water diverted by CVWD. Table 3.1-17 outlines the changes in flows in the Coachella Canal, and Colorado River water diversions by CVWD including diversions for use in the Coachella's ID-1 service area (that portion of the Coachella Valley where Colorado River water can be used) in a normal year.

CVWD COLORADO RIVER WATER DIVERSIONS FOR USE IN THE SERVICE AREA

As shown in Table 3.1-17 ("CVWD Colorado River water diversions for use in the service area" column), implementation of the Proposed Project would result in a net increase in surface supplies available in a "normal year" to the CVWD service area from 52 to 152 KAFY, relative to Existing Baseline. This water would be used in place of local groundwater and would, therefore, reduce the need to use groundwater to meet demand. In conjunction with the Coachella Valley Water Management Plan, this is anticipated to correct the groundwater overdraft and result in an increase in drainage flows to the Salton Sea. This increase of Colorado River water supplies for use in the service area is a beneficial impact as it would correct the current groundwater overdraft problem in the Coachella Valley.

CVWD COLORADO RIVER WATER DIVERSIONS

As shown in Table 3.1-17 ("CVWD Colorado River water diversions" column), implementation of the Proposed Project components would result in an increase of between 26 and 126 KAFY available for diversion in a "normal year" by CVWD, relative to Existing Baseline. With implementation of the Proposed Project, CVWD would voluntarily limit their Priority 3a diversions to 330 KAFY. The voluntary limitation of Priority 3a diversions by CVWD at 330 KAFY would not adversely impact groundwater, drainage patterns and runoff, or flood hazard and would not cause inundation. The diversion limit would not be a significant impact.

COACHELLA CANAL

In 1999, the Coachella Canal flow was approximately 35 percent of capacity, and from 1990 to 1999, the annual average canal flow was also approximately 35 percent of capacity. The increase in diversions by CVWD would be approximately 6 to 16 percent of the canal's capacity, relative to Existing Baseline.

Seepage from the Coachella Canal would be reduced through the proposed canal lining project. Groundwater levels would be expected to decline near the newly lined section. This impact in and of itself, is not considered significant to local groundwater resources. Loss of this use of groundwater recharged by the Coachella Canal is not considered significant as current users do not have rights to a continued supply of this seepage water.

Table 3.1-15. QSA Changes to Hydrologic Features in the IID Service Area Relative to Future Baseline

Effect	*Impact*	*Impact Significance*
IID Surface Drainage Discharge to New River		
Decrease in the amount of water collected and discharged to the New River, concentrating certain constituents.	With implementation of the Proposed Project, relative to Future Baseline, TDS and selenium concentrations would increase, while concentration of TSS would decrease. TDS would increase to 3,294 mg/L, but remain less than its significance criterion. Selenium would increase to 8.3 µg/L, above the EPA Aquatic Life Criteria, Criterion for Continuous Concentration.	Significant and unavoidable impacts to water quality related to selenium in the IID drains.
New River at Outlet to Salton Sea		
Decrease in the amount of water collected and discharged from the New River, concentrating certain constituents.	With implementation of the Proposed Project, relative to Future Baseline, TDS and selenium concentrations would increase, while the concentration of TSS would decrease. TDS would increase to 3,075 mg/L, but would be less than the significance criteria of 4,000 mg/L. Selenium would increase to 3.77 µg/L, less than the significance criterion.	Less than significant.
IID Surface Drainage Discharge to Alamo River		
Decrease in the amount of water collected and discharged to the Alamo River, concentrating certain constituents.	With implementation of the Proposed Project, relative to Future Baseline, TDS and selenium concentrations would increase, while concentration of TSS would decrease. TDS would increase to 3,645 mg/L but remain less than its significance criterion. Selenium would increase to 9.25 µg/L, above the EPA Aquatic Life Criteria, Criterion for Continuous Concentration.	Significant and unavoidable impacts to water quality related to selenium in the IID drains.
Alamo River at Outlet to Salton Sea		
Decrease in the amount of water collected and discharged from the Alamo River, concentrating certain constituents.	With implementation of the Proposed Project, relative to Future Baseline, TDS and selenium concentrations would increase, while TSS would decrease. TDS would increase to 3,101 mg/L but still be below its significance criterion. Selenium would increase to 7.9 µg/L, above the EPA Aquatic Life Criteria, Criterion for Continuous Concentration.	Significant and unavoidable impacts to water quality related to selenium in the Alamo River.
IID Drains to Salton Sea		
Decrease in the amount of water collected and discharged by drains, concentrating certain constituents.	Under the Proposed Project, relative to Future Baseline, TDS and selenium concentrations would increase, while TSS concentration would decrease. Selenium would increase to 6.69 µg/L, above the EPA Aquatic Life Criteria, Criterion for Continuous Concentration. TDS would increase to 2,637mg/L, below the significance criterion.	Significant and unavoidable impacts to water quality related to selenium in the IID drains.

Table 3.1-16. General Water Quality Trends in the Service Areas With Implementation of the Proposed Project

	New River	*Alamo River*	*Whitewater River/CVSC*	*Salton Sea*
Perchlorate	Water from the Las Vegas Wash is considered the source of perchlorate in the Colorado River water system and thus the potential source of perchlorate in New River drains. IID reported perchlorate concentrations in the All American Canal of 4.2 to 5.3 ppb during 2001-2002. Kerr-McGee Chemical Company, working with the Nevada Division of Environmental Protection, began intercepting perchlorate-laden groundwater in the Las Vegas Wash in 1999. This effort has significantly reduced the amount of perchlorate entering the Las Vegas Wash. Even more significantly, Kerr-McGee is developing a system that is expected to intercept and eliminate the vast majority of perchlorate currently reaching the wash. The Proposed Project would not add perchlorate to the water system nor hinder efforts to remediate perchlorate. In fact the Proposed Project decreases the amount of Colorado River water delivered to California and thus decreases potential exposure to perchlorate.	Water from the Las Vegas Wash is considered the source of perchlorate in the Colorado River water system and thus the potential source of perchlorate in Alamo River drains. IID reported perchlorate concentrations in the All American Canal of 4.2 to 5.3 ppb during 2001-2002. Kerr-McGee Chemical Company, working with the Nevada Division of Environmental Protection, began intercepting perchlorate-laden groundwater in the Las Vegas Wash in 1999. This effort has significantly reduced the amount of perchlorate entering the Las Vegas Wash. Even more significantly, Kerr-McGee is developing a system that is expected to intercept and eliminate the vast majority of perchlorate currently reaching the wash. The Proposed Project would not add perchlorate to the water system nor hinder efforts to remediate perchlorate. In fact the Proposed Project decreases the amount of Colorado River water delivered to California and thus decreases potential exposure to perchlorate.	Water from the Las Vegas Wash is considered the source of perchlorate in the Colorado River water system and thus the potential source of perchlorate in the Whitewater River. CVWD water samples found no perchlorate in water from the Coachella Canal. Kerr-McGee Chemical Company, working with the Nevada Division of Environmental Protection, began intercepting perchlorate-laden groundwater in the Las Vegas Wash in 1999. This effort has significantly reduced the amount of perchlorate entering the Las Vegas Wash. Even more significantly, Kerr-McGee is developing a system that is expected to intercept and eliminate the vast majority of perchlorate currently reaching the wash. The Proposed Project would not add perchlorate to the water system nor hinder efforts to remediate perchlorate. In fact the Proposed Project decreases the amount of Colorado River water delivered to California and thus decreases potential exposure to perchlorate.	Water from the Las Vegas Wash is considered the source of perchlorate in the Colorado River water system and thus the potential source of perchlorate in drainage to the Salton Sea. Kerr-McGee Chemical Company, working with the Nevada Division of Environmental Protection, began intercepting perchlorate-laden groundwater in the Las Vegas Wash in 1999. This effort has significantly reduced the amount of perchlorate entering the Las Vegas Wash. Even more significantly, Kerr-McGee is developing a system that is expected to intercept and eliminate the vast majority of perchlorate currently reaching the wash. The Proposed Project would not add perchlorate to the water system nor hinder efforts to remediate perchlorate. In fact the Proposed Project decreases the amount of Colorado River water delivered to the Salton Sea drainage area, and thus decreases potential exposure to perchlorate.

Table 3.1-16. General Water Quality Trends in the Service Areas With Implementation of the Proposed Project

	New River	*Alamo River*	*Whitewater River/CVSC*	*Salton Sea*
Boron	With the implementation of the Proposed Project, boron is expected to increase from the Baseline of 671 µg/L to 798 µg/L.	With implementation of the Proposed Project, boron is expected to increase from the Baseline of 522 µg/L to 657 µg/L.	From 1987 to 1999, the average boron concentration was 0.57 mg/L in the CVSC. Assuming boron concentrations would increase in proportion to future salinity increases in Colorado River water, the average boron concentration in the drains and the CVSC is projected to increase to 0.67 mg/L. In studies conducted as part of the water management plan, CVWD did not identify boron as a concern with implementation of the Proposed Project.	No specific projections were made to measure boron trends in the Salton Sea. However, boron is expected to increase in the New River, Alamo River, and CVSC which could lead to an increase in boron in the Salton Sea.
Nutrients	Under the Proposed Project, it is anticipated that much of the water conservation would be achieved through reduction of tailwater. This would be expected to lead to a reduction in the mass of nutrients transported in the soluble phase by tailwater to IID drains. In addition, conservation of tailwater would reduce the mobilization of silt and lessen the mass of silt released to IID drains. Some nutrients, particularly phosphorus, tend to be adsorbed by fine soil particles. Therefore, a reduction in silt release would result in a reduction in release of these nutrients. Therefore, implementation of the Proposed Project would be likely to reduce mass loading of nutrients to the New River.	Under the Proposed Project, it is anticipated that much of the water conservation would be achieved through reduction of tailwater. This would be expected to lead to a reduction in the mass of nutrients transported in the soluble phase by tailwater to IID drains. In addition, conservation of tailwater would reduce the mobilization of silt and lessen the mass of silt released to IID drains. Some nutrients, particularly phosphorus, tend to be adsorbed by fine soil particles. Therefore, a reduction in silt release would result in a reduction in release of these nutrients. Therefore, implementation of the Proposed Project would be likely to reduce mass loading of nutrients to the Alamo River.	The average concentrations of nitrate and nitrite in the CVWD drains and the CVSC are 21 mg/L and 15.6 mg/L, respectively. No data is available for ammonia and phosphorus. Since agricultural cropping patterns are expected to remain the same in the future, no change in nutrient concentrations are expected as a result of the Proposed Project.	Under the Proposed Project, it is anticipated that much of the water conservation would be achieved through reduction of tailwater. This would be expected to lead to a reduction in the mass of nutrients transported in the soluble phase by tailwater to IID drains. In addition, conservation of tailwater would reduce the mobilization of silt and lessen the mass of silt released to IID drains. Some nutrients, particularly phosphorus, tend to be adsorbed by fine soil particles. Therefore, a reduction in silt release would result in a reduction in release of these nutrients. Therefore, implementation of the Proposed Project would be likely to reduce mass loading of nutrients to the Salton Sea and support Best Management Practices introduced under a future Salton Sea nutrient TMDL.

Table 3.1-16. General Water Quality Trends in the Service Areas With Implementation of the Proposed Project

	New River	*Alamo River*	*Whitewater River/CVSC*	*Salton Sea*
TDS	With the Proposed Project,, salinity in the New River would increase from 2,485 mg/L to 3,294 mg/L.	With the Proposed Project,, salinity in the Alamo River would increase from 2,492 mg/L to 3,645 mg/L.	Salinity in agricultural drainage water to the CVSC would increase, as Colorado River water is used for irrigation rather than lower TDS groundwater. Salinity in the CVSC is anticipated to increase from 1,400 mg/L to 2,900 mg/L with implementation of the Proposed Project. Salinity in the CVWD drains would increase from 2,000 mg/L to 2,800 mg/L with implementation of the Proposed Project.	Over the period of the project (2002 to 2076), salinity of the Salton Sea is expected to increase from 44,000 mg/L, surpassing 60,000 mg/L between the years 2023 and 2030 and by year 2077 be as high as 80,000 mg/L to 90,000 mg/L.
Sediment	With the Proposed Project sediment in IID drainage to the New River is expected to decrease from 294 mg/L to 232 mg/L.	With the Proposed Project sediment in IID drainage to the Alamo River is expected to decrease from 252 mg/L to 194 mg/L.	With the increase in Proposed Project flow, and thus sediment in CVWD drainage to the Whitewater River may increase. The specific increase is unknown as no background sediment data is available, but is expected to be small due to the low velocities in the drains and the CVSC. Sediment concentrations in the CVSC would be less than during high flows (e.g., floods).	Though CVWD drainage and sediment contribution to the Sea will increase, with the decrease in IID flows and sediment, overall the Sea would experience a decrease in pesticide/herbicide load.
Pesticides	Qualitative assumptions indicate that pesticides/herbicides decrease with a decrease in sediment load. Thus, under the Proposed Project, the amount of pesticides/herbicides entering the New River is expected to decrease.	Qualitative assumptions indicate that pesticides/herbicides decrease with a decrease in sediment load. Thus, under the Proposed Project, the amount of pesticides/herbicides entering the Alamo River is expected to decrease.	CVWD monitoring has not detected any pesticides in the CVSC. Although flows are expected to increase, there is no indication that pesticides would increase to detectable levels as a result of the Proposed Project.	Qualitative assumptions indicate that pesticides/herbicides decrease with a decrease in sediment load. Although CVWD drainage and sediment contribution to the Sea could increase, with the decrease in IID flows and sediment, overall the Sea would experience a decrease in pesticide/herbicide load. Thus, under the Proposed Project the amount of pesticides/herbicides entering the Sea is expected to decrease.

Table 3.1-16. General Water Quality Trends in the Service Areas With Implementation of the Proposed Project

	New River	*Alamo River*	*Whitewater River/CVSC*	*Salton Sea*
Metals	The decreased quantity of water in the New River due to a decrease in IID drainage would mean that more of the water in the river is attributable to Mexico. Flows in the New River from Mexico are traditionally high in heavy metals. The concentration (not load) of metals in the New River could increase with the Proposed Project.	The primary sources of metals in the Alamo River, other than boron and selenium, are feed lots and point source discharges that would not be affected by project implementation. However, decreased quantity of water in the Alamo River due to decreases in IID drainange would mean the concentration of metals in the Alamo River could increase with the Proposed Project.	The concentrations of metals in CVSC water is not identified as a significant issue as average concentrations are below published criteria. Zinc is elevated compared to source water due to grape farming practices, but does not exceed criteria. The Proposed Project would have no effect on farming practices and would not increase metals concentrations.	No specific projections were done to measure metal trends in the Salton Sea. However, the concentration of metals is expected to increase in the New and Alamo rivers, which could lead to an increase in metals in the Salton Sea.

There would be no significant impacts to the Coachella Canal as a result of increased diversions by CVWD as the increase in diversions would not exceed the capacity of the canal, would not affect groundwater users, water quality, drainage patterns and runoff, or flood hazard and would not cause inundation.

The project-specific aspects of the canal lining have been addressed the EIS/EIR by Reclamation and CVWD for the Coachella Canal Lining Project.

WATER QUALITY

Implementation of the Proposed Project would result in an increase in use of Colorado River water in the Coachella Valley, relative to Existing Baseline. The resulting changes are summarized in Table 3.1-18.

Table 3.1-17. QSA Changes in Flows in the Colorado River, Coachella Canal and Colorado River Water for Use in the CVWD Service Area During a Normal Year Relative to Existing Baseline

(All numbers rounded and in KAFY, negative numbers in parentheses)

QSA Component	*CVWD Colorado River Water Diversions (Coachella Canal From Drop 1 to Siphon 32*		*CVWD Colorado River Water Diversions for Use in the Service Area*	
	CVWD use of First and Second 50 KAFY	MWD use of First and Second 50 KAFY	CVWD use of First and Second 50 KAFY	MWD use of First and Second 50 KAFY
QSA Changes to IID/MWD/PVID/CVWD 1989 Approval Agreement[a]	20	20	20	20
IID/SDCWA Water Conservation and Transfer Agreement[b]	0	0	0	0
CVWD/IID/MWD Water Conservation and Transfer Agreement (First and Second 50 KAFY)[c]	100	0	100	0
All American Canal Lining	0	0	0	0
Coachella Canal Lining	(26)	(26)	0	0
CVWD/MWD SWP Transfer and Exchange	35	35	35	35
Use of water by Miscellaneous PPRs and Federal Reserved Rights [d]	(3)	(3)	(3)	(3)
Change in Flow with the QSA	**126**	**26**	**152**	**52**

Note: This is a water balance table. Values are not actual canal flows or diversion volumes, but rather, amounts of water potentially affected by implementation of the QSA.

(a) The 1988 IID/MWD Agreement is part of the Baseline.

(b) Yield to SDCWA can vary from 130 to 200 KAFY. Yield will ramp up at 20 KAFY during project implementation. Yield will also include an early transfer of 2.5 KAF in 2005, 5 KAFY in 2006 and 2.5 KAFY in 2007 to SDCWA and MWD.

(c) Also referred to as the First and Second 50 KAFY. Yield to CVWD, will ramp up at 5 KAFY during project implementation. MWD has an option to use this water if CVWD does not first exercise their option.

(d) Under the QSA, CVWD, IID and MWD have agreed, when necessary, to divide responsibility for foregoing the use of Colorado River to satisfy future water demands by holders of Miscellaneous PPRs and Federal Reserved Rights. Water would be forborne by CVWD and IID in the amount of 3 and 11.5 KAFY, respectively, when necessary, for use by Miscellaneous PPRs and Federal Reserved Rights. Water would be forborne, when necessary, by MWD in the aggregate amount in excess of 14.5 KAFY necessary to satisfy Miscellaneous PPRs and Federal Reserved Rights. Diversions to satisfy Miscellaneous PPRs and Federal Reserved Rights holders will be along the lower Colorado River from Davis Dam to below Imperial Dam.

This increased use of Colorado River water could increase the concentration of selenium in drain flows, potentially exceeding the EPA Aquatic Life Criteria, Criterion Continuous

Concentration of 5 µg/L. This is considered a potentially significant and unavoidable impact. The use of Colorado River water, which is high in TDS, for groundwater recharge could cause lower aquifer groundwater to exceed 500 mg/L and thus exceed EPA water quality standards. This is considered a significant and unavoidable impact.

GROUNDWATER

The reduction in groundwater use is a beneficial impact that is being addressed in a separate PEIR for the Coachella Valley Water Management Plan.

The Metropolitan Water District of Southern California

With implementation of the various conservation measures that are part of the Proposed Project, MWD would receive a supply of Priority 3a Colorado River water. This conserved and transferred Priority 3a Colorado River water could be diverted for use in the MWD service area and would replace a portion of the surplus and unused apportionment water that was previously diverted by MWD. Table 3.1-19 outlines the changes in Colorado River diversions and the amount of water available for use in the MWD service area resulting from the Proposed Project, relative to Existing Baseline.

Table 3.1-18. QSA Changes to Hydrologic Features in the CVWD Service Area

Effect	*Impact*	*Impact Significance*
Impacts to CVSC and Salton Sea Drains		
Use of Colorado River water rather than groundwater for irrigation	Increase in TDS of agricultural return flows. Water quality objectives would not be exceeded.	Less than significant
Use of Colorado River, which is higher in selenium, rather than groundwater for irrigation	Increase in selenium in drain flows. Selenium concentrations could exceed 5 µg/L, above the EPA Aquatic Life Criteria, Criterion for Continuous Concentration.	Significant and unavoidable
Additional flow in the CVSC and drains	Potential increase in turbidity.	Less than significant
	Dilution of bacterial concentrations.	Beneficial
Impacts to Groundwater Quality		
Recharge with Colorado River water in Lower Valley	Increase in TDS of lower aquifer groundwater. Salinity could exceed 500 mg/L, above EPA's drinking water standards.	Significant and unavoidable
Increase drain flows and salt flushing	Decrease in TDS of semi-purged aquifer groundwater.	Beneficial

As the 1988 IID/MWD Conservation Program has undergone separate environmental analysis and has been implemented, it is considered part of the Existing Baseline. The diversion numbers in Table 3.1-18 do not account for the 110 KAFY that is available under the 1988 IID/MWD Agreement, as this agreement is treated as a current and ongoing project (without

implementation of the Proposed Project this 110 KAFY could be accounted for at MWD's option to Priority 4, 5a or 5b). A proposed amendment to the 1989 IID/MWD/PVID/CVWD agreement, which is part of the QSA, would reduce the amount of water made available to MWD to a maximum of 90 KAFY, and provide CVWD with 20 KAFY (with implementation of the Proposed Project this 90 KAFY to MWD and 20 KAFY to CVWD would be accounted for under IID's Priority 3a water budget). This reduction of 20 KAFY of Colorado River water made available to MWD under these agreements is accounted for in the following analysis.

MWD COLORADO RIVER WATER FOR USE IN THE SERVICE AREA

As shown in Table 3.1-19 ("MWD Colorado River water diversions for use in the service area" column) relative to Existing Baseline, implementation of the Proposed Project and CVWD use of

Table 3.1-19. QSA Changes in Diversions of the Colorado River Aqueduct, and Colorado River Water for Use in the MWD Service Area

(All numbers rounded and in KAFY, negative numbers in parentheses)

QSA Component	CRA Diversion at the Whitsett Intake		CRA Diversions for Use in the MWD Service Area	
	CVWD use of First and Second 50 KAFY	MWD use of First and Second 50 KAFY	CVWD use of First and Second 50 KAFY	MWD use of First and Second 50 KAFY
QSA Changes to IID/MWD/PVID/CVWD 1989 Approval Agreement[a]	(20)	(20)	(20)	(20)
IID/SDCWA Water Conservation and Transfer Agreement[b]	200	200	200	200
CVWD/IID/MWD Water Conservation and Transfer Agreement (First and Second 50 KAFY)[c]	0	100	0	100
All American Canal Lining[d]	67.7	67.7	56.2	56.2
Coachella Canal Lining[e]	26	26	21.5	21.5
CVWD/MWD SWP Transfer and Exchange	(35)	(35)	(35)	(35)
Change in diversions with the QSA[f]	**239**	**339**	**223**	**323**
Previously diverted unused apportionment and surplus waters	(239)	(339)	(223)	(323)
Change in Flow with the QSA	**0**	**0**	**0**	**0**

Note: This is a water balance table. Values are not actual aqueduct flows or diversion volumes, but rather, amounts of water potentially affected by implementation of the QSA.

(a) The 1988 IID/MWD Agreement is part of the Baseline.

(b) Yield to SDCWA can vary from 130 to 200 KAFY. Yield will ramp up at 20 KAFY during project implementation. Yield will also include an early transfer of 2.5 KAF in 2005, 5 KAFY in 2006 and 2.5 KAFY in 2007 to SDCWA and MWD.

(c) Also referred to as the First and Second 50 KAFY. Yield to CVWD, will ramp up at 5 KAFY during project implementation. MWD has an option to use this water if CVWD does not first exercise its option.

(d) Yield to MWD is 56.2 KAFY. Yield to San Luis Rey (SLR) Settlement Parties is 11.5 KAFY. All or a portion of this water may be used by the City of Escondido and Vista Irrigation District, within the MWD service area, depending on the provisions of the settlement agreement (to be negotiated) among the SLR Indian Water Rights Settlement parties.

(e) Yield to MWD is 21.5 KAFY. Yield to SLR Settlement Parties is 4.5 KAFY. All or a portion of this water may be used by the City of Escondido and Vista Irrigation District, within the MWD service area, depending on the provisions of the settlement agreement (to be negotiated) among the SLR Indian Water Rights Settlement parties.

(f) Under the QSA, CVWD, IID and MWD have agreed, when necessary, to divide responsibility for foregoing the use of Colorado River water to satisfy future water demands by holders of Miscellaneous PPRs and Federal Reserved Rights. Water would be forborne by CVWD and IID in the amount of 3 and 11.5 KAFY, respectively, when necessary, for use by Miscellaneous PPRs and Federal Reserved Rights. Water would be forborne, when necessary, by MWD in the aggregate amount in excess of 14.5 KAFY necessary to satisfy Miscellaneous PPRs and Federal Reserved Rights. Diversions to satisfy Miscellaneous PPRs and Federal Reserved Rights holders will be along the lower Colorado River from Davis Dam to below Imperial Dam.

the First and Second 50 KAFY, MWD would have up to 223 KAFY of Priority 3a Colorado River water for use in the service area (less any water necessary to satisfy Miscellaneous PPRs and Federal Reserved Rights, plus an additional 90 KAFY of Priority 3a water under the 1988 IID/MWD Agreement, 1989 agreements and proposed amendments). With the implementation of the Proposed Project and in the event that CVWD would forgo its use of the First and Second 50 KAFY, MWD would have up to 323 KAFY of Priority 3a Colorado River water for use in the service area (less any water necessary to satisfy Miscellaneous PPRs and Federal Reserved Rights, plus an additional 90 KAFY of Priority 3a water under the 1988 IID/MWD Agreement, 1989 agreements and proposed amendments).

Without implementation of the Proposed Project in a normal year, MWD has the ability to divert a total of 660 KAF of Colorado River water, 550 KAF of which is Priority 4 water and 100 to 110 KAF of which is IID conserved water, subject to the provisions of the IID/MWD 1988 Agreement and subsequent agreements (without implementation of the Proposed Project this 110 KAFY could be accounted for at MWD's option to Priority 4, 5a or 5b). With the implementation of the Proposed Project in a normal year, MWD would have the ability to divert a total of 883 to 983 KAFY of Priority 3a and 4 water (Priority 3a diversions resulting from conservation measures by IID and CVWD), less any water necessary to satisfy Miscellaneous PPRs and Federal Reserved Rights. Under the terms of the QSA, if overruns occur for priorities 1,2, and 3b, MWD would reduce diversion of Colorado River water in an amount equivalent to the overrun. The ability to divert other Priority and surplus water would not change under the Proposed Project, with the exception of the quantification of Priority 6a water for CVWD and IID, and the ability of MWD to divert a quantity of Priority 6a water.

MWD COLORADO RIVER WATER DIVERSIONS

As shown in Table 3.1-19 ("CRA Diversion at the Whitsett Intake"' column) relative to Existing Baseline, implementation of the QSA program components would not increase Colorado River water diversions through MWD facilities. The implementation of the QSA program components and CVWD use of the First and Second 50 KAFY would result in an increase in Priority 3a Colorado River diversions at the CRA intake by up to 239 KAFY, less any water necessary to satisfy Miscellaneous PPRs and Federal Reserved Rights. The implementation of the QSA program components and in the event that CVWD would forgo their use of the First and Second 50 KAFY, would result in an increase in Priority 3a Colorado River diversions at the CRA intake by 339 KAFY, less any water necessary to satisfy Miscellaneous PPRs and Federal Reserved Rights. Although with implementation of the Proposed Project, CRA diversions of priority 3a water would increase, the overall amount of water diverted into the CRA would not increase.

As compared to the 1999 and 1990 to 1999 Existing Baseline, Colorado River water diversions by MWD would replace a portion of the previously diverted surplus and unused apportionment water with Priority 3a water. This change in diversions is not considered a significant impact to water resources, as this water would replace previously diverted surplus and unused apportionments water, and would not impact water quality, groundwater, drainage patterns and runoff, or flood hazard and would not cause inundation.

Changes to hydrologic features in the MWD Service Area relative to Existing Baseline are summarized in Table 3.1-20.

Table 3.1-20. QSA Changes to CRA and Hydrologic Features in the MWD Service Area Relative to Existing Baseline

Effect	*Impact*	*Impact Significance*
Maintain reliability of existing water supplies (see Table 3.1-18)	No change from historic diversion volume or system capacity.	No impact

San Diego County Water Authority

With the implementation of the Proposed Project, SDCWA would receive, by exchange with MWD, up to 200 KAFY of Priority 3a Colorado River water. This would replace water previously purchased by SDCWA from MWD. The water conservation and transfer component is assessed in the IID Water Conservation and Transfer EIR/EIS (USBR and IID 2002). Implementation of the Proposed Project would not result in a substantial change to the total quantity or quality of water delivered by MWD to SDCWA; would not impact groundwater, drainage patterns and runoff, or flood hazard; and would not cause inundation. Changes to water quality are less than significant.

Table 3.1-21. Potential Hydrologic Effects of the QSA in the SDCWA Service Area

Effect	*Impact*	*Impact Significance*
Diversification of SDCWA's water supplies	No change in local water supply volume, or system capacity.	Less than significant.

Other Areas

COLORADO RIVER

Lake Mead. Changes in system storage due to the Proposed Project relative to Future Baseline are expected to be minor. The Proposed Project allows transfers of water between California entities within the State's total apportionment of 4.4 MAF. Therefore under normal conditions, these transfers would have no impact on Lake Mead's storage. However, under surplus conditions, the total delivery to California would be somewhat less under the Proposed Project compared to Future Baseline conditions, the result of reduced agricultural use due to transfers and the Interim Surplus Guidelines (ISG), which do not provide surplus water to the agricultural entities at the "Full" and "Partial Domestic" surplus levels. The impact of the reduced California deliveries under these surplus levels would be a slight increase in the amount of water stored in Lake Mead.

In 1999 Lake Mead's average annual elevation was 1,210 ft msl; the 1990-1999 average annual elevation in the reservoir was 1,191 ft msl. Reclamation's modeling estimated that *average* annual Lake Mead elevations, with implementation of the Proposed Project, would vary between 1,145 and 1,176 feet msl during the ISG period (2002-2016) and then steadily decline until leveling-off at between 1,106 and 1,115 feet msl after year 2040. Historically, in the period 1980 to 1999 annual Lake Mead elevation ranged from 1,170 to 1,220 feet msl, a variation of 50 feet. Modeling indicates that with the Proposed Project, Lake Mead would fluctuate between a

high of 1,215 feet msl and a low of 1,085 during the ISG period, and between 1,215 and 1,001 feet msl after year 2016.

Hoover Dam to Parker Dam. The Proposed Project would cause only minor changes to flows between Hoover Dam and Parker Dam, relative to the Future Baseline. These minor changes would be due to reduced water orders for California under some surplus conditions for the Proposed Project. Hourly flows fluctuate with power releases, and the Proposed Project is not expected to have any impact on these short-term operations at either Hoover, Davis, or Parker Dams; therefore it would have no impact on short-term fluctuations in river reaches downstream of Hoover Dam.

Reclamation modeling found that over the study period 2002 to 2076, the Proposed Project could increase salinity by approximately 1 mg/L below Hoover Dam. This increase in salinity would be within the current fluctuation observed from month to month and would not constitute a significant impact. However, it is assumed that additional salinity control measures would be implemented consistent with the Colorado River Salinity Control Program.

Parker Dam to Imperial Dam. The focus of this analysis is the reach between Parker Dam and Imperial Dam where transfers proposed under the Proposed Project could have impacts. Transfers under the Proposed Project would shift diversion of between 183 KAF and 388 KAF from Imperial Dam to Parker Dam, decreasing flow in this reach. With full implementation of QSA transfer diversions, the change in median water surface elevation below Parker Dam would be no more than 0.4 feet. (USBR 2000a)[2].

Annual surface water flow in the River, measured 14 miles downstream from Parker Dam, at Headgate Rock Dam, averaged approximately 6,114 KAF for the period of record from 1980 to 1999, but varied from a maximum of approximately 7,010 KAF to a minimum of approximately 5,395 KAF. From 1990 to 1999, annual flow averaged 6,272 KAF at Headgate Rock Dam. Under Future Baseline average annual flows are anticipated to vary between 6,786 to 6,762 KAF. Reclamation's modeling estimates that with implementation of the Proposed Project average annual flow at Headgate Rock Dam would vary between 6,717 KAFY and 6,435 KAFY during the ISG period (2002-2016) and then slightly decline, varying between 6,431 KAFY and 6,374 KAFY after year 2016.

The reduction in flows due to the Proposed Project could result in a decrease in open water in the main river, loss of backwaters, and loss of vegetation in backwaters in the Parker to Imperial reach. The Biological Opinion (U.S. Fish and Wildlife Service [USFWS] 2001) found that the greatest effect, due to a change in point of diversion of 400 KAFY (which captures the change in flow from the Proposed Project), would occur in April. As much as 35 surface acres of the open water in the main channel, 17 surface acres of open water in backwaters, and 28 acres of emergent vegetation in backwaters could be affected by implementation of the Proposed Project, relative to Future Baseline.

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2 This data comes from the Biological Assessment for the Proposed Interim Surplus Guidelines and the EIS for the Implementation Agreement, Inadvertent Overrun and Payback Policy and Related Federal Actions (USBR 2000a, USBR 2002). The Biological Assessment data assumed a decrease in annual river flows of 400 KAF, whereas the QSA would actually only result in a reduction of flows up to 388 KAF.

Changes in water surface elevation in Lake Mead and the Colorado River between Hoover Dam and Imperial Dam are not an impact to hydrologic resources, but could impact other resources. Reductions in flow to the River in the Parker to Imperial reach, resulting from implementation of the Proposed Project, while not a significant impact to hydrologic resources, could affect other resource areas.

Reclamation modeling found that over the study period, 2002 to 2076, the Proposed Project could increase salinity by as much as 8 mg/L at Imperial Dam. This increase in salinity would be within the current fluctuation observed from month to month and would not constitute a significant impact. However, it is assumed that additional salinity control measures would be implemented under the provisions of the Colorado River Salinity Control Act and water quality objectives would be met; the greater, albeit minor, salinity levels anticipated under the Proposed Project could require that salinity control measures be implemented on a different schedule than would be necessary under existing conditions.

SALTON SEA

Under Future Baseline conditions flows to the Salton Sea would decrease and this, combined with evaporation, would act to lower the mean surface elevation, decrease surface area, and increase salinity concentrations. Modeling conducted by Reclamation indicates that under the Future Baseline the mean surface elevation of the Salton Sea would drop approximately 7 to 10 feet over the next 75 years to –234 to –237 feet msl. In addition, Reclamation's model predicts that over the life of the project the surface area of the Salton Sea would decrease by approximately 25,400 to 23,400 acres resulting in a surface area of 219,600 to 211,600 acres, while salinity would reach 60,000 mg/L between the years 2023 and 2030 and by year 2077 be as high as 80,000 mg/L to 90,000 mg/L.

Impacts to the Salton Sea resulting from implementation of the Proposed Project relative to Future Baseline would primarily result from a change in drainage quantity and quality within the IID service area. A decrease in discharge could reduce Salton Sea elevation, reduce Salton Sea surface area, and result in an increase in the salinity concentration. Table 3.1-22 summarizes the major impact findings of the IID Water Conservation and Transfer Project EIR/EIS related to the Salton Sea.

THE REPUBLIC OF MEXICO

Mexico would experience a decrease in the amount of groundwater recharge to the local shallow aquifer due to the lining of a portion of the All American Canal. Impacts of the All American Canal lining on Mexico are summarized in the USBR and IID 1994 All American Canal Lining EIS/EIR. This impact is not considered significant, as current users do not have rights to a continued supply of this seepage water.

Reclamation modeling found that over the study period, 2002 to 2076, the Proposed Project could increase salinity by approximately 8 mg/L at Imperial Dam. This increase in salinity would be within the current fluctuation observed from month to month. However, it is assumed that additional salinity control measures would be implemented consistent with the Colorado River Salinity Control Program and water quality objectives to Mexico would be met.

Table 3.1-22. Potential Hydrologic Effects of the QSA to the Salton Sea Relative to Future Baseline

Effect	*Impact*		*Impact Significance*
	CVWD use of First and Second 50 KAFY	MWD use of First and Second 50 KAFY	
Decrease in IID's discharge to the Salton Sea.	Relative to Future Baseline, Salton Sea elevation would decrease by approximately an additional 10 feet resulting in elevations of to –245 to –247 feet msl in year 2077.	Relative to Future Baseline, Salton Sea elevation would decrease by approximately an additional 12 to 13 feet resulting in elevations of to –247 to –250 feet msl in year 2077.	Less than significant impacts to hydrology, potentially significant impacts to other resource areas.
	Relative to Future Baseline, Salton Sea surface area would decrease by approximately an additional 33,200 to 35,800 acres, resulting in a surface area of 175,785 to 186,383 acres.	Relative to Future Baseline, Salton Sea surface area would decrease by approximately an additional 42,400 to 43,800 acres, resulting in a surface area of 167,774 to 177,226 acres.	Less than significant impacts to hydrology, potentially significant impacts to other resource areas.
	Salinity of the Salton Sea, relative to Future Baseline would be as much as 49,700 to 59,700 mg/L higher in year 2077, resulting in salinity of 129,700 to 149,700 mg/L.	Salinity of the Salton Sea, relative to Future Baseline would be as much as 60,700 to 75,300 mg/L higher in year 2077, resulting in salinity of 140,700 to 165,300 mg/L.	No water quality criteria for salinity in the Salton Sea and therefore no significant impact. Potentially significant impact to other resource areas.
	Potential decrease in pesticides entering Salton Sea due to decrease in sediments entering Salton Sea.	Potential decrease in pesticides entering Salton Sea due to decrease in sediments entering Salton Sea.	Potentially beneficial.

Analysis of the Environmental Impact of Project Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in significant changes to the

hydrologic regime of the Colorado River or cause any violation of water quality standards. A reduction in the amount of conserved water dedicated to MWD would not effect hydrologic resources, groundwater, or drainage patterns. Diversion of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would impact drainage pattern, generate substantial amounts of runoff, or violate waste discharge requirements.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River contemplated under the Proposed Project. Because no changes in river levels would result or construction of new diversion structures would be required with implementation of this Project component, no significant impacts to water resources would occur. The exchange of water with SDCWA would occur from existing infrastructure and would not require construction activities that would impact drainage patterns, generate substantial amounts of runoff or violate waste discharge requirements.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that would impact drainage patterns, generate substantial amounts of runoff, or violate waste discharge requirements. The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause significant impacts to water resources.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore no change in Colorado River conditions would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD, nor would it increase the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause significant impacts to water resources.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAF of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial

dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause significant impacts to water resources of the Colorado River. No impacts to drainage pattern, groundwater resources, or water quality would occur from the diversion or conveyance of the water to CVWD because no new facilities would be required to be constructed. Similarly, the exchange of SWP entitlements under this Project component would be accomplished through existing facilities and would not result in physical changes to environmental conditions that would cause a significant impact to water resources.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts to water resources because it does not change the amount of water diverted, conveyed, or used and no changes to existing environmental conditions would result.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect to hydrologic resources of the Colorado River would be a minor decrease in river flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These potential changes are within historic normal fluctuations and therefore, no significant hydrologic impacts would occur. Also under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the river under this component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities, and would not increase the amount of water used within its service area. Therefore, no impact to hydrologic or recreational resources would result.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

The change in the point of diversion on the Colorado River from Imperial Dam to Lake Havasu to support PPR water use was analyzed in the above analysis for the Colorado River. Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. Because these changes of flow are within the range of normal River fluctuations, no significant impacts to water resources would occur.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The

minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would either agree to an allocated sharing between them or file litigation to allocate shortage sharing. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and/or IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management is minor with respect to overall deliveries to IID and CVWD. Additional shortage management could temporarily exacerbate water quality impacts in the IID service area discussed earlier (section 3.1.2.3). In the IID service area selenium concentrations in the Alamo and New rivers and IID drains could temporarily increase. In CVWD, decreased use of Colorado River water during a shortage would temporarily decrease selenium levels in CVWD drains, but would exacerbate groundwater overdraft.

3.1.3 Mitigation Measures

No feasible mitigation measures have been identified for significant water quality impacts to the Alamo River, IID and CVWD drains, and lower aquifer groundwater in the CVWD service area. However, should the impact to lower aquifer groundwater in the CVWD service area as a result of groundwater recharge cause any Torres Martinez Indian Reservation domestic drinking water well to exceed any recognized health-based water quality standard, CVWD will work with the Tribe to bring the drinking water supply of the Tribe into compliance by either providing domestic water service to the Tribe from the district's domestic water system or by providing appropriate well-head treatment. This could require the construction of pipelines to connect the reservation with CVWD's nearby domestic lines, which could result in short-term impacts to water resources, hazards and hazardous materials, public services and utilities, noise, air quality, transportation, geology and soils, agricultural resources, recreational resources, and aesthetics. Potential impacts to cultural resources and biological resources also could occur. Mitigation measures identified in this PEIR for construction of other pipelines in the CVWD service area would reduce these impacts to less than significant. If well-head treatment is required, any residue would be disposed of in accordance with appropriate regulatory standards, depending on the nature of the material.

3.1.4 Significant Unavoidable Adverse Impacts

Increase in selenium levels in the Alamo River, as well as the IID and CVWD drains would be significant and unavoidable adverse impacts. Increase in TDS of lower aquifer groundwater in the CVWD service area would also be significant and unavoidable.

3.1.5 Significant Irreversible Environmental Changes

Significant irreversible environmental changes would occur related to selenium levels of the Alamo River, and the IID and CVWD drains.

3.2 BIOLOGICAL RESOURCES

3.2.1 Environmental Setting

3.2.1.1 Regulatory Framework

The regulatory framework for biological resources includes the following federal, state, and local statutes and regulations.

River and Harbor Act of 1899 (33 U.S.C. 401 et seq.)

This Act protects the public's right to free navigation in navigable waters of the United States as described by the U.S. Army Corps of Engineers (USACE) Section 10/404 implementing regulations at 33 CFR Part 329. The Act also prohibits unauthorized construction or work in navigable waters of the United States.

Clean Water Act of 1972, as amended (33 U.S.C. 1251 et seq.)

This Act provides for the restoration and maintenance of the physical, chemical, and biological integrity of the nation's waters. Sections 401 and 404 of the Act prohibit discharges of dredged or fill materials into waters of the United States, including wetlands, except as permitted under separate regulations by the USACE and the EPA. An important aspect of these regulations is that discharges into waters of the United States, and the placement of fill in wetlands in particular, should be avoided if there are practicable alternatives.

Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.)

The ESA protects threatened and endangered species (and their designated critical habitat), as listed by the Service, from unauthorized take, and directs federal agencies to ensure that their actions do not jeopardize the continued existence of such species. Section 7 of the Act defines federal agency responsibilities for consultation with the Service, including the preparation of Biological Assessments and Biological Opinions. The Service may authorize take of a listed species under Section 10, which also provides for the preparation of habitat conservation plans.

In 1994, areas of the lower Colorado River were designated as critical habitat for two endangered fish—bonytail chub (*Gila elegans*) and razorback sucker (*Xyrauchen texanus*)—under the ESA. In 1995, the southwestern willow flycatcher (*Empidonax traillii extimus*), a native of the lower Colorado River region, was listed as endangered under the ESA.

In 1995, DOI agencies; water, power, and wildlife resources agencies from Arizona, California, and Nevada; Native American tribes; water and power providers; environmental interests; and recreational interests agreed to form a partnership to develop and implement a long-term endangered species compliance and management program for the historic floodplain of the lower Colorado River, the MCSP. The purpose of the program is to develop a multi-species conservation program aimed at contributing to the recovery of endangered, threatened, and sensitive species of wildlife and their habitats, and attempting to reduce the likelihood of additional species listings, while accommodating current and future water and power uses. Further information may be obtained from the MSCP website at http://www.lcrmscp.org. The

MSCP is expected to have long-term beneficial effects on biological resources of the lower Colorado River.

Pursuant to the ESA, Reclamation issued a final Biological Assessment for Operations, Maintenance, and Sensitive Species of the Lower Colorado River in August 1996 (USBR 1996). This Biological Assessment was intended to serve as (1) initial documentation for the ongoing ESA Section 7 consultation between Reclamation and the Service for discretionary operations of the River, and (2) initial reference for development and implementation of the MSCP by lower Colorado River stakeholders pursuant to federal ESA Section 7 (federal actions) and Section 10 (non-federal actions). In May 1997, the Service released a Biological Opinion on Lower Colorado River Operations and Maintenance (USFWS 1997).

The 1996 Biological Assessment and 1997 Biological Opinion form the basis for the MSCP, as River stakeholders seek to establish a long-term framework for compliance with the federal ESA, the CESA, and other environmental regulations for ongoing, proposed, and potential future projects.

Reclamation prepared a Biological Assessment in 2000 to address the effects of the Interim Surplus Guidelines and the Implementation Agreement on federally listed threatened and endangered species in and along the lower Colorado River. The Service issued a Biological Opinion in January 2001 that outlined conservation measures to offset potential impacts to listed species from the two actions.

Migratory Bird Treaty Act of 1918, as amended (16 USC 703-712) and Executive Order 13186 (2001)

The Act provides for the protection of migratory birds by making it illegal to possess, take, or kill any migratory bird species, unless specifically authorized by a regulation implemented by the Secretary of the Interior, such as designated seasonal hunting.

The Executive Order requires federal agencies to obtain permits from the Service for the "taking" of any migratory bird species.

Executive Orders 11988 and 11990, Floodplain Management and Protection of Wetlands, Respectively

These Executive Orders require federal agencies to provide leadership to protect the natural and beneficial values served by floodplains and wetlands. Federal agencies are directed to avoid development in floodplains where possible, and to minimize the destruction or degradation of wetlands.

California Lake and Streambed Alteration Program (Fish and Game Code Section 1600 et seq.)

These sections of the Fish and Game Code require that any person, state, or local government agency, or public utility proposing a project that may divert, obstruct, or change the natural flow of any bed, channel or bank of a river, stream, or lake to notify the CDFG before beginning the project. If CDFG determines that the project may adversely affect existing fish and wildlife resources, a Lake or Streambed Alteration Agreement is required.

California Endangered Species Act of 1984 (Fish and Game Code Section 2050 et seq.)

These sections provide for the protection of rare, threatened, and endangered plants and animals, as recognized by CDFG, and prohibits the taking of such species without authorization by the CDFG.

California Fully Protected Birds, Mammals, Reptiles/Amphibians and Fish (Fish and Game Code Sections 3511, 4700, 5050 and 5515)

These sections of the Fish and Game Code prohibit the take or possession of any fully protected bird, mammal, reptile/amphibian, or fish. A number of these fully protected species occur within the Project area and are identified in the sections below under each region.

California Natural Community Conservation Planning (Fish and Game Code Sections 2810 & 2835)

These sections of the Fish and Game Code provide that the CDFG may enter into agreements with any person for the purpose of preparing and implementing a natural community conservation plan to provide comprehensive management and conservation of multiple wildlife species.

Counties, federal agencies, and local municipalities also may maintain lists of species of special concern.

3.2.1.2 Imperial Irrigation District

The IID service area extends from the southern shore of the Salton Sea to the Mexican border and is located in the Colorado (a.k.a. Sonoran) Desert (see Figure 1.1-1). The All American Canal enters the service area from the east and extends across the southern edge of the service area. The Coachella Canal takes water from the All American Canal. It extends northward along the eastern side of the Salton Sea and passes through the edge of the East Mesa Unit of the IID service area.

Vegetation

The EIS/EIR for the IID Water Conservation and Transfer Project (IID and USBR 2002) identifies four habitat types in the IID service area and along the All American Canal. These are drain, tamarisk (salt cedar) scrub, desert scrub, and agricultural field habitat.

Wet area habitats in the IID service area are collectively referred to as drain habitat. Drain habitat occurs in association with the drainage and conveyance systems and in managed marshes on state and federal refuges and private duck clubs. Vegetation in drainage and conveyance systems occurs in the embankment slopes and typically consists of non-native invasive species. Cattail, bulrushes, rushes, and sedges occur in patches in the drain channels. Water seepage has induced phreatophytic vegetation to develop along the All American Canal within areas formerly dominated by desert scrub. Approximately 100 acres of scattered phreatophytic vegetation are supported by seepage from the All American Canal between Drops 2 and 3. About 1 acre is emergent wetland vegetation with the remainder of the

vegetation consisting of mesquite, tamarisk, and arrowweed. Managed marsh occurs primarily on state and federal refuges and on private duck clubs within the IID service area.

Tamarisk scrub is found along the New and Alamo rivers. The dominant species are the non-native, invasive tamarisk (*Tamarix* spp.), with some native screwbean mesquite (*Prosopis glandulosa* var. *torreyana*). Typically, the dense stand of tamarisk extends about 50 feet from the River, but there are locations where the stands may stretch out as far as 500 feet.

Desert habitat occurs along areas of the All American Canal and in some isolated areas within the IID service area. Sand dunes in the Sand Hills, along the unlined portion of the All American Canal, support a distinct plant community. Plants found on the sand dunes of the Sand Hills include giant Spanish needle (*Palafoxia arida* var. *gigantea*), desert buckwheat (*Eriogonum desertorum*), sand food (*Pholisma sonorae*), and Wiggin's croton (*Croton wigginsii*). The Algodones Dunes sunflower (*Helianthus niveus* ssp. *tephrodes*) and Peirson's milkvetch (*Astragalus magdalenae* var. *peirsonii*), both federally listed species discussed below, also occur in this area (USBR and IID 1994).

Other desert scrub habitat along the All American Canal and in portions of the IID service area is dominated by creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*) (Barbour and Major 1977). Wild burro weed (*Haplopappus tenuisectus)*, brittle bush (*Encelia farinosa*), cheesebush (*Hymenoclea salsola*), saltbush (*Atriplex* spp.), and chollas (*Opuntia* spp.) occur in varying concentrations within creosote bush scrub habitats (IID 1986). Plant density is low; 65 to 75 percent of the ground surface is often bare. When ground cover is present in desert scrub habitat, it is dominated by the introduced Mediterranean grass (*Schismus* spp).

Much of the vegetation in the IID service area has been cleared for agriculture. Ruderal (weedy) vegetation is found in areas cleared for agriculture but not currently in production. Saltbush-alkali scrub is a transitional community type that appears when soil salinity and moisture reach concentrations high enough to exclude most other vegetation. Common species of shrubs include allscale (*Atriplex polycarpa*), shadscale (*A. confertiflora*), and four-wing saltbush (*A. canescens*).

Fish and Wildlife

Fish and wildlife resources are described in relation to the habitat types identified above. Wildlife in the canal and drain systems are heavily influenced by adjacent community types, and the high diversity of species is attributed to the high degree of community interface. Approximately 90 species of birds and 20 species each of mammals and reptiles/amphibians are associated with the canal and drain systems. Black-tailed (hare) jackrabbit (*Lepus californicus*), cottontail, and Gambel's quail (*Callipepla gambelii*) are more abundant in the canal and drain system community than in the creosote bush scrub community. The most commonly observed birds in the reeds along the larger canals are black phoebe (*Sayornis nigricans*) and western kingbird (*Tyrannus verticalus*). Mourning dove and red-winged blackbird are found on levee berms. Along the All American Canal, great blue heron (*Ardea herodias*) roost in dense reeds, apparently associated with seepage wetlands; killdeer (*Charadrius vociferus*), roadrunner, American coot, common yellowthroat (*Geothlypis trichas*), and brown-headed cowbird (*Molothrus ater*) are also found. Other birds use the canal and drain system community seasonally, including American coot, ruddy duck (*Oxyura jamaicensis*), cinnamon teal, and blue-

winged teal (*A. discors*). Northern rough-winged swallow (*Stelgidopteryx serripennis*) and burrowing owl (*Athene cunicularia hypugia*) are found along lateral and secondary canals. A limited number of mammals are considered true associates of the canal riparian/levee community. Muskrat is the dominant species. Also present are round-tailed ground squirrel (*Spermophilus tereticaudus*), kangaroo rat (*Dipodomys* spp.), pocket gopher (*Thomomys* spp.), and common house mouse. Bullfrog and Woodhouse's toad are the dominant herpetofauna.

The larger areas containing emergent vegetation near the mouth of the rivers in the IID service area provide important nesting sites for yellow-headed blackbirds (*Xanthocephalus xanthocephalus*) and fulvous whistling ducks (*Dendrocygna bicolor*). Red-winged blackbirds (*Agelaius phoeniceus*) and black-crowned night herons (*Nycticorax nycticorax*) roost in smaller wetlands. The most common waterfowl species found in the IID service area are the cinnamon teal (*Anas cyanoptera*), American coot (*Fulica americana*), and black-necked stilt (*Haematopus bachmani*). Large mammalian visitors that frequent the IID service area are coyote, fox, cottontail rabbit, and raccoon (*Procyon lotor*). The most abundant small mammals are hispid cotton rat (*Sigmodon hispidus*) and brush mouse (*Peromyscus boylii*). Western harvest mouse (*Reithrodontomys megalotis*), house mouse (*Mus musculus*), and white-throated woodrat (*Neotoma albigula*) are also present. The native red-spotted toad (*Bufo punctatus*) is known to occur in wetlands within the IID service area and the non-native bullfrog (*Rana catesbeiana*) is common.

Managed marsh areas including the wildlife refuges and gun clubs, are primarily managed for waterfowl. A wide variety of ducks and geese use these areas, as well as a wide variety of shorebirds. The New and Alamo rivers contain tamarisk habitat in the IID service area. River riparian communities, consisting primarily of tamarisk scrub, are important to birds as breeding areas, food sources, roosting/loafing areas, and migration corridors. Mourning doves (*Zenaida macroura*) are abundant in tamarisk vegetation. Ducks, including large flocks of teal (*Anas* spp.), favor mud bars, banks, and other shoreline features as resting sites. Stands of arrowweed provide roost sites for many bird species, notably the black-crowned night heron. Large mammals are distinctively absent in river riparian communities due to the limited extent of the habitat type and the high level of human activity. Deer mouse (*Peromyscus maniculatus*) and cotton rat are rarely present, as are insectivorous bats, muskrat (*Ondatra zibethicus*), raccoon, gray fox (*Urocyon cinereoargenteus*), and coyote. Beaver (*Castor canadensis*) used to be a major component of the mammalian fauna, but it is presently scarce, as its preferred food, cottonwood and willow, is no longer abundantly present. Bullfrog, lowland Woodhouse's toad (*Bufo woodhouseii*), and spiny softshell turtle (*Trionyx spiniferus*) have also historically been found in the tamarisk scrub habitat (IID 1986).

Approximately 50 species of birds, 50 species of mammals, and 40 species of reptiles and amphibians are associated with the desert scrub habitat. Larger mammals present include Audubon's (desert) cottontail (*Sylvilagus audubonii*) and San Diego black-tailed jackrabbit (*Lepus californicus bennettii*). Striped skunk (*Mephitis mephitis*) and coyote (*Canis latrans*) are also present in the small mesquite thickets scattered throughout the creosote bush scrub. Mesquite thickets are also centers for bird activity. White-crowned sparrow (*Zonotrichia leucophrys*) is the most abundant bird species in the winter. Other species of birds present include roadrunner (*Geococcyx californianus*) and loggerhead shrike (*Lanius ludovicianus*). Reptiles are generally diverse in species and abundant in numbers in creosote bush scrub habitat. Zebra-tailed lizard

(*Callisaurus draconoides*) and western whiptail (*Cnemidophorus tigris*) dominate the reptilian fauna, and side-blotched lizard (*Uta stansburiana*) is common in mesquite thickets (IID 1986).

The agricultural habitat is dominated by wildlife species relatively tolerant of or adapted to human disturbance and presence. Flocks of ring-billed gulls (*Larus delawarensis*), red-winged blackbirds, cattle egrets (*Bubulcus ibis*), and other egrets feed on insects from freshly harvested or recently plowed fields. Red-winged blackbirds, English sparrows, pigeons (*Columba* spp.), brown-headed cowbirds, and starlings *(Sturnus vulgaris*) are often observed in the vicinity of cattle feedlot operations. Waterfowl and game birds that range into agricultural areas to feed on grains and leafy crops are hunted during the fall and winter. These include ducks and geese, white-winged dove (*Zenaida asiatica*), and mourning dove. Some mammals and reptiles have increased in abundance as a result of lands being converted to agricultural use such as the western harvest mouse and pocket gopher. These are considered "generalist" species; i.e., they survive under a wide variety of environmental conditions. However, an overall low density and abundance of reptiles and amphibians occur throughout the agricultural/ruderal community type (IID 1986).

Fish present in the All American Canal include channel catfish (*Ictalurus punctatus*), carp (*Cyprinus carpio*), threadfin shad (*Dorosoma petenense*), and largemouth bass (*Micropterus salmoides*) (USBR and IID 1994). These are all introduced species, and the catfish and bass are game fish.

Sensitive Species

PLANTS

One federally listed plant species, Peirson's milkvetch, occurs in the IID service area (Table 3.2-1). This species and the Algodones Dunes sunflower are state-listed as endangered, and the Wiggin's croton is state-listed as rare (Table 3.2-1). In addition, 16 other special status plant species are present in the IID service area (See Appendix E, Table E-2). Most of these species are concentrated in areas of native habitat within sand dunes or blow-sand areas.

A total of five sensitive plant species were found during surveys for the All American Canal Lining Project. These include the three state and federally listed species in Table 3.2-1 plus two other special status species, giant Spanish needle and sand food. Complete information on these species is contained in the All American Canal Lining Project EIS/EIR (USBR and IID 1994).

FISH AND WILDLIFE

Species that are state or federally listed, California fully protected species, or species of special concern with the potential to occur in the IID service area or along the AAC are listed in Table 3.2-1. Habitat for one sensitive invertebrate occurs in the Sand Hills along the unlined portion of the All American Canal.

Table 3.2-1. Special Status Species Potentially Occurring in the IID Service Area or Along the AAC

Common Name	Scientific Name	Status[1]		
		FEDERAL	STATE	CNPS
Algodones Dunes sunflower	*Helianthus niveus* ssp. *tephrodes*		E	1B
Peirson's milkvetch	*Astragalus magdalenae* var. *peirsonii*	T	E	1B
Wiggin's croton	*Croton wigginsii*		R	2
Desert tortoise	*Gopherus agassizii*	T	T	
Desert pupfish	*Cyprinodon macularius*	E	E	
Razorback sucker	*Xyrauchen texanus*	E	E-CFP	
American peregrine falcon	*Falco peregrinus anatum*		E-FP	
Arizona Bell's vireo	*Vireo bellii arizonae*		E	
California black rail	*Laterallus jamaicensis coturniculus*		T-CFP	
California least tern	*Sterna antillarum browni*	E	EC-FP	
Elf owl	*Micrathene whitneyi*		E	
Gila woodpecker	*Melanerpes uropygialis*		E	
Gilded flicker	*Colaptes auratus*		E	
Greater sandhill crane	*Grus canadensis tabida*		T-CFP	
Least Bell's vireo	*Vireo bellii pusillus*	E	E	
Mountain plover	*Charadrius montanus*	PT	CSC	
Southwestern willow flycatcher	*Empidonax traillii extimus*	E	E	
Swainson's hawk	*Buteo swainsoni*		T-CFP	
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*		E	
Yuma clapper rail	*Rallus longirostris yumanensis*	E	T-CFP	
Peninsular bighorn sheep	*Ovis canadensis cremnobates*	E	E-CFP	
Allen's big-eared bat	*Idionycteris phyllotis*		CSC	
Big free-tailed bat	*Nyctinomops macrotis*		CSC	
California leaf-nosed bat	*Macrotus californicus*		CSC	
Cave myotis	*Myotis velifer brevis*		CSC	
Colorado River hispid cotton rat	*Sigmodon arizonae plenus*		CSC	
Greater western mastiff bat	*Eumops perotis californicus*		CSC	
Mexican long-tongued bat	*Choeronycteris mexicana*		CSC	
Occult little brown bat	*Myotis lucifugus occultus*		CSC	
Pale big-eared bat	*Corynorhinus townsendii pallescens*		CSC	
Pallid bat	*Antrozus pallidus*		CSC	
Spotted bat	*Euderma maculatum*		CSC	
Western red bat	*Lasiurus blossevillii*		CSC	
Yuma hispid cotton rat	*Sigmodon hispidus eremicus*		CSC	
Ring-tailed cat	*Bassariscus astutus*		CFP	

1. E=endangered; T=threatened; P=proposed; R=rare; state CSC = California Species of Concern, CFP = California Fully Protected; CNPS = California Native Plant Society - list 1B is rare and endangered throughout range, list 2 is rare and endangered in California but found elsewhere.

The following discussion is based on information supplied by IID (IID and USBR 2002), supplemented by Childs (1990) and Lane (1979). The IID service area contains important habitat for several special status wildlife species. Approximately 10 miles southeast of the south shore of the Salton Sea are Finney and Ramer lakes, which provide nesting habitat for Yuma clapper rail and California black rail. These species are also found within the managed marsh land around the Salton Sea. On February 1, 2001, the Service designated an area from Interstate 10 in the Thousand Palms-Palm Springs vicinity south to the Mexican border as critical habitat for peninsular bighorn sheep (Federal Register 2001). The eastern border of the critical habitat, near the Salton Sea and in the area between Highway 78 and Mexico, extends into the IID service area.

Desert pupfish inhabit irrigation drains along the southeast and southwest sides of the Salton Sea within the IID service area as well as San Felipe Creek (USBR and CVWD 2001). Razorback sucker have been found on rare occasion in the All American Canal and its tributary canals. The Colorado pikeminnow may have historically been in the All American Canal, but the species has been extirpated.

3.2.1.3 Coachella Valley Water District

The CVWD service area is located in the Colorado Desert around the north end of the Salton Sea and extending northwest of the Sea in the Coachella Valley. The Coachella Canal enters the service area from the southeast. The unlined portion is southeast of the CVWD service area. Many of the plant communities and wildlife present are the same as or similar to those described for the IID service area.

Vegetation

Natural vegetation in the Coachella Valley is predominantly Sonoran Creosote bush scrub. Other representative natural plant communities include Sonoran mixed woody and succulent scrub; desert dry wash woodland; desert saltbush scrub; desert fan palm oasis woodland; desert sink scrub; and dunes and sandfields. Palm oases can be found at natural springs and are dominated by the native fan palm (*Washingtonia filifera).* Saltbush scrub occurs in areas that are generally moist, with sandy loam soil, and a total salinity in the range of 0.2 to 0.7 percent. Many species of saltbush can be found in saltbush scrub including allscale, shadscale, and four-wing saltbush. Desert sink scrub occurs on poorly drained soils with high alkalinity and/or salt content and is dominated by succulent chenopods.

Dune and blow-sand areas are characterized by actively moving and partially stabilized sand dunes. Plant cover is sparse and consists of species adapted to this habitat. A variety of annual plant species are also present in years with optimal rainfall and temperature (USBR and IID 1994).

The Desert dry wash woodland community typically occurs on deep, sandy soils in canyons; on alluvial fans; and along normally dry stream courses (arroyos) throughout the Colorado Desert, including the lower Colorado River and Coachella Valley; and on the elevated fringes surrounding the Salton Sea. The vegetation is open woodland characterized by drought deciduous shrubs and trees whose deep roots enable them to reach the water that percolates

seasonally through sandy soils along drainages. Typically dominant species include catclaw (*Acacia greggii*), palo verde (*Cercidium floridum*), desert willow (*Chilopsis linearis*), smoke tree (*Dalea spinosa*), desert lavender (*Hyptis emoryi*), ironwood (*Olneya tesota*), and honey mesquite (*Prosopis glandulosa* var. *torreyana*). The wetter and more poorly drained areas are likely to support the non-native, invasive tamarisk (*Tamarix chinensis*) as well.

A component of the Proposed Project is the proposed lining of a portion of the Coachella Canal. The portion of the Coachella Canal that is within the CVWD service area is concrete lined. However, approximately opposite the Salton Sea (between siphons 7 and 14 and siphons 15 and 32, a distance of approximately 33 miles) the canal is unlined. About 5,223 acres, or approximately 66 percent, of the desert riparian vegetation types along that unlined portion of the canal is relatively pure stands of tamarisk. Seepage from the unlined section of the canal supplies water to desert riparian vegetation that is also known as phreatophytic vegetation (USBR and CVWD 2001). Seepage water also supports, in combination with natural artesian springs and developed groundwater well discharges, about 456 acres of marsh/aquatic habitats in the project area. The desert riparian habitat contains, in order of relative dominance: tamarisk, honey mesquite, screwbean mesquite, arrowweed, and California fan palm (less than 19 percent). There is relatively minor occurrence of Fremont cottonwood and willow in the project area. Desert riparian vegetation thrives over elevated groundwater levels and benefits from occasional flooding, but is not adapted to permanently saturated soil. Marsh/aquatic habitats supported by canal seepage contain cattail (*Typha* spp.), bulrush (*Scirpus* spp.), and other wetland plants. Marsh/aquatic areas normally occur as seeps, constructed ponds, and flowing reaches of creeks. About 40 percent of the phreatophytic vegetation and 85 percent of the marsh/aquatic vegetation along the unlined section of the Coachella Canal are located in Reach D (Siphons 23 through 29) adjacent to the Dos Palmas Area of Critical Environmental Concern (ACEC), outside the CVWD service area. This ACEC is recognized by the BLM and CDFG for its biological significance. Habitat value (and wildlife use) is higher where the community composition includes more native vegetation species and less tamarisk. Tamarisk is an invasive, non-native species providing minimal habitat value. It displaces native vegetation by competing for water and causing a build-up of salt on the surface of the ground. The BLM and The Nature Conservancy have worked to remove tamarisk from springs in the Dos Palmas ACEC (USBR and CVWD 2001).

Fish and Wildlife

The overall CVWD service area and the Dos Palmas ACEC along the unlined portion of the Coachella Canal contain a variety of wildlife typical of desert habitats. Desert riparian and marsh/aquatic plant communities supported by canal seepage are important wildlife habitats, especially in the Dos Palmas ACEC (USBR and CVWD 2001). One hundred sixty species of birds, 27 species of mammals, and 5 species of reptiles and amphibians may use these habitat types. Agricultural and native desert areas support many of the same species discussed in the IID section previously. In addition, the lined and unlined portions of the Coachella Canal contain sport fish, such as largemouth bass and catfish.

Sensitive Species

PLANTS

Two federally listed endangered plant species are known to occur in the CVWD service area, Coachella Valley milkvetch (*Astragalus lentiginosus* var. *coachellae*), and the triple-ribbed milkvetch (*Astragalus tricarinatus*). These species are reported to occur primarily in the Whitewater and Big Morongo canyons, Snow Creek, Edom Hill/Willow Hole, and the Whitewater River Preserve areas. Another 22 special status species are also present. See Appendix E, Table E-2. The fairyduster (*Calliandra eriophylla*) (no federal or state sensitivity classification) may potentially be present near the unlined section of the Coachella Canal (USBR and CVWD 2001).

FISH AND WILDLIFE

Sixteen state or federally listed species, or species proposed for such listing, potentially occur in the CVWD service area (Table 3.2-2). In addition, 30 other special status species occur in the CVWD service area (see Appendix E, Table E-1).

Table 3.2-2. State and Federally Listed Species Potentially in the CVWD Service Area

Common Name	*Scientific Name*	STATUS[1]		
		Federal	*State*	*CNPS*
Coachella Valley milkvetch	*Astragalus lentiginosus* var. *coachellae*	E		1B
Triple-ribbed milkvetch	*Astragalus tricarinatus*	E		1B
Arroyo southwestern toad	*Bufo microscaphus microscaphus*	E	CSC	
Razorback sucker	*Xyrauchen texanus*	E	E-CFP	
Desert slender salamander	*Batrachoseps aridus*	E	E	
Coachella Valley fringe-toed lizard	*Uma inornata*	T	E	
Desert tortoise	*Gopherus agassizii*	T	T	
Desert pupfish	*Cyprinodon macularius*	E	E	
American peregrine falcon	*Falco peregrinus anatum*		E-CFP	
Bald eagle	*Haliaeetus leucocephalus*	T	E	
California black rail	*Latterallus jamaicensis coturniculus*		T-CFP	
California brown pelican	*Pelecanus occidentalis californicus*	E	E-CFP	
Palm Springs ground squirrel	*Spermophilus tereticaudus chlorus*	candidate	CSC	
Greater Sandhill Crane	*Grus Canadensis tabida*		T-CFP	
Least Bell's vireo	*Vireo bellii pusillus*	E	E	
Mountain plover	*Charadrius montanus*	PT	CSC	
Southwestern willow flycatcher	*Empidonax traillii extimus*	E	E	
Swainson's hawk	*Buteo swainsoni*		T	
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*		E	
Yuma clapper rail	*Rallus longirostris yumanensis*	E	T-CFP	
Ring-tailed Cat	*Bassariscus astutus*		CFP	
Peninsular bighorn sheep	*Ovis canadensis cremnobates*	E	E-CFP	

1. E = endangered; T = threatened; P = proposed; state = California; CSC = California Species of Special Concern; CFP = California Fully Protected Species CNPS = California Native Plant Society - list 1B is rare and endangered throughout range, list 2 is rare and endangered in California but found elsewhere.

The Coachella Valley fringe-toed lizard is found in the CVWD service area, and the least Bell's vireo may still be found in Whitewater Canyon, in the northern tip of the service area. The Coachella Valley Preserve contains dune habitat for Coachella Valley fringe-toed lizard, and the general study area may also contain some desert tortoise. The upper Whitewater River is historic habitat for the southwestern arroyo toad. Peninsular bighorn sheep occur in the mountains west of Rancho Mirage and La Quinta, where they occasionally are observed at the urban interface. On February 1, 2001, the Service designated an area in the Santa Rosa Mountains and adjacent valley floor from Interstate 10 in the Thousand Palms-Palm Springs area south to the Mexican border as critical habitat for peninsular bighorn sheep (*Federal Register* 2001). Part of the northern portion of this habitat lies within the boundaries of the CVWD service area. The Palm Springs ground squirrel is occurs in a wide variety of habitats in the Coachella Valley. The species is a federal candidate species.

The federally endangered Yuma clapper rail and state-listed black rail use the marsh/aquatic habitats in the project area, mostly in the Dos Palmas ACEC. In addition, 39 species of birds that have been designated rare or endangered by CDFG or species of concern by the National Audubon Society commonly occur in such desert riparian and marsh/aquatic habitat types.

The marsh/aquatic habitat at the Dos Palmas ACEC (outside of the CVWD service area) and the marshes at the mouth of Coachella Valley Stormwater Channel support resident Yuma clapper rail and California black rail populations. Some CVWD irrigation drains near the Salton Sea and the lower reach of Salt Creek and its north branch contain populations of desert pupfish (USBR and CVWD 2001). There is also a potential that the razorback sucker could occur within the Coachella Canal. No recent documentation of this species in the canal has been found.

3.2.1.4 The Metropolitan Water District of Southern California

Much of MWD service area consists of urban areas where little natural habitat remains. However, there are valuable biological resources including coastal marshes, riparian systems, oak woodlands, and coastal sage scrub in the MWD service area. The area supports over 35 listed state and/or federally listed threatened and endangered plant and animal species as well as a number of sensitive habitats.

These species include the California least tern, Belding's savannah sparrow, Pacific Coast population of the snowy plover, and brown pelican. Riparian species include the least Bell's vireo, southwestern willow flycatcher, and the southwest arroyo toad. Species associated with the coastal sage scrub community are also of substantial concern. California gnatcatcher and the Stephen's kangaroo rat also exist within coastal sage scrub communities.

3.2.1.5 San Diego County Water Authority

The biological characteristics of the SDCWA service area are similar to those of the MWD service area discussed in the previous section. Much of the SDCWA service area consists of urban areas, although there is a significant amount of agricultural land in the northeast area and a large military base in the northwest area. The SDCWA service area includes habitats covered by both pending and approved broad-based, multi-species HCPs. HCPs have already been prepared for over 1 million acres of habitat in San Diego County.

3.2.1.6 Other Areas

Other areas that could be affected by the Proposed Project include the lower Colorado River between Parker Dam and Imperial Dam and the Salton Sea. Each of these areas is described below.

Colorado River

The following information is summarized from baseline technical reports prepared for the MSCP, the *Biological Assessment for Proposed Interim Surplus Criteria, Secretarial Implementation Agreements for California Water Plan Component and Conservation Measures on the Lower Colorado River (Lake Mead to the Southerly International Boundary)* (USBR 2000a), and other relevant literature and reports.

VEGETATION

Vegetation along the lower Colorado River was historically dominated by cottonwood-willow riparian forest. This plant community requires periodic flooding for short periods of time for seed germination and establishment. The events that are necessary to the continued regeneration of this plant community are generally absent on the present-day lower Colorado River because flows are controlled through the use of reservoirs. Existing stands of cottonwood-willow riparian forest are considered relict and, for the most part, are not expected to persist over the next several decades unless focused management plans are initiated.

Present-day vegetation is largely dominated by tamarisk, an invasive exotic weed species. It displaces native vegetation by competing for water and causing a build-up of salt on the surface of the ground. Tamarisk grows in pure stands in washes, streams, and ditches, and can establish quickly. Associations with honey mesquite (*Prosopis glandulosa*) and screwbean mesquite (*Prosopis pubescens*) are present in some areas, particularly on higher floodplain areas, but tamarisk appears to take over areas as other plants die.

Upland areas adjacent to the Colorado River are dominated by desert plant communities, most commonly creosote bush scrub. The primary component of this plant community is creosote bush (*Larrea tridentata*), although several other smaller shrub and succulent species are commonly found in association with this plant community including white bursage (*Ambrosia dumosa*), brittle bush (*Encelia farinosa*), cheesebush (*Hymenoclea salsola*), saltbush (*Atriplex* spp.), and chollas (*Opuntia* spp.). Creosote bush scrub grades into saltbush scrub in areas that experience occasional flooding and have higher levels of salt. Many species of saltbush can be found in saltbush scrub including allscale (*Atriplex polycarpa*), shadscale (*A. confertiflora*), and four-wing saltbush (*A. canescens*). Much of the area formerly dominated by saltbush scrub has been converted to agricultural use.

A distinctive desert wash woodland community occurs on deep, sandy soils in canyons, on alluvial fans, and along normally dry stream courses (arroyos) throughout the Colorado Desert, including the Colorado River Valley within the Lower Basin. The vegetation is open woodland characterized by drought-resistant deciduous shrubs and trees whose deep roots enable them to reach the water that percolates seasonally through sandy soils along drainages. Typically dominant species include catclaw (*Acacia greggii*), palo verde (*Cercidium floridum*), desert willow

(*Chilopsis linearis*), smoke tree (*Dalea spinosa*), desert lavender (*Hyptis emoryi*), ironwood (*Olneya tesota*), and mesquite (*Prosopis juliflora*). The wetter and more poorly drained areas are likely to support invasive tamarisk (*Tamarix* spp.).

Reclamation (USBR 2000a) has estimated that there are approximately 13,900 acres of tamarisk-honey mesquite, over 30,000 acres of tamarisk, and 5,000 acres of tamarisk-screwbean mesquite within the area from Parker Dam to Imperial Dam. Only approximately 3,000 acres of honey mesquite and 1,500 acres of cottonwood-willow habitat exist in a relatively undisturbed form.

FISH AND WILDLIFE

The lower Colorado River supports several hundred species of wildlife. Over 100 of these are special status species. Large numbers of more common species of mammals, fish, birds, reptiles, and amphibians either breed or migrate to this area and depend on it for their habitat requirements. It is an extremely important migratory corridor for birds, especially waterfowl. Riparian and wetland areas sustained by the lower Colorado River support a wide variety of raptors, including sharp-shinned hawk (*Accipiter striatus)*, Cooper's hawk (*Accipiter cooperii)*, northern harrier (*Circus cyaneus)*, red-tailed hawk (*Buteo jamaicensis)*, rough-legged hawk (*Buteo lagopus johannis),* common black-hawk (*Buteogallus anthracinus),* Harris' hawk (*Parabuteo unicinctus),* bald eagle (*Haliaeetus leucocephalus)*, golden eagle (*Aquila chrysaetos)*, white-tailed kite (*Elanus leucurus)*, Mississippi kite (*Ictinia mississippiensis)*, American kestrel (*Falco sparverius)*, prairie falcon (*Falco mexicanus),* and peregrine falcon (*Falco peregrinus*). Egrets, herons, flycatchers, and woodpeckers are especially well represented along the River. Mammals, including the Colorado River cotton rat (*Sigmodon arizonae plenus*) and more than a dozen species of bats, are also found here. Reptiles and amphibians include Colorado River toad (*Bufo alvarius)*, Arizona toad (*Bufo microscaphus microscaphus*), several species of leopard frog (*Rana* spp.*),* banded gila monster (*Heloderma suspectum cinctum)*, chuckwalla (*Sauromalus obesus)*, Sonoran mud turtle (*Kinosternon sonoriense)*, desert tortoise (*Gopherus agassizii)*, and desert rosy boa (*Lichanum trivirgata gracia)*.

Backwater areas are important to native fish, because substantial changes within the main channel have rendered this area unsuitable for many species. Backwater habitats also support a variety of other wildlife, including clapper rails, flycatchers and warblers, woodpeckers, and waterfowl.

Most of the native riverine fishes have been extirpated from the study area. The razorback sucker is currently being reintroduced and is the only native fish in notable numbers in the Colorado River between Hoover and Imperial dams. Bonytail chub have been reintroduced in Lake Havasu, formed by Parker Dam, and may occur within the study area, although they have not been documented to date. The fish community in the study area is dominated by non-native species, which provide a substantial sport fishery. Predation and competition by non-native fish have been identified as major reasons for the demise of the native fish populations in the lower Colorado River. One state endangered species, the Algodones Dunes sunflower, may occur in dunes or sandy areas in and near the Algodones Dunes.

SENSITIVE SPECIES

Plants. As shown in Table 3.2-3, no federally listed species are known to occur in riparian areas within the lower Colorado River.

Table 3.2-3. State and Federally Listed Species Potentially Along the Lower Colorado River

Common Name	Scientific Name	STATUS[1]		
		Federal	State	CNPS
Algodones dunes sunflower	*Helianthus niveus* ssp. *tephrodes*		E	1B
Colorado River toad	*Bufo alarius*	E	E	
Lowland leopard frog	*Rana yavapaiensis*		SC/A	
Northern leopard frog	*Rana pipiens*		SC/A	
Relict leopard frog	*Rana onca*		A	
Desert tortoise	*Gopherus agassizii*	T	T	
Sonoran mud turtle	*Kinosternon sonoriense sonoriense*		SC	
Bonytail chub	*Gila elegans*	E	E	
Desert pupfish/Colorado River pupfish	*Cyprinodon macularius*	E	E	
Flannelmouth sucker	*Catostomus latipinnis*		A	
Mojave tui chub	*Gila bicolor mohavensis*	E	E	
Razorback sucker	*Xyrauchen texanus*	E	E-CFP	
Arizona Bell's vireo	*Vireo bellii arizonae*		E	
American bittern	*Botaurus lentiginosus*		A	
American peregrine falcon	*Falco peregrinus anatum*		E-CFP	
Bald eagle	*Haliaeetus leucocephalus*	T	E-CFP	
Belted kingfisher	*Ceryle alcyon*		A	
Brown crested flycatcher	*Myiarchus tyrannulus*		SC	
Burrowing owl	*Athene cunicularia*	SC	SC	
California black rail	*Latterallus jamaicensis coturniculus*		T-CFP	
California brown pelican	*Pelecanus occidentalis californicus*	E	E-CFP	
Clark's grebe	*Aechmophorus clarkii*		A	
Common black hawk	*Buteogallus anthracinus*		A	
Cooper's hawk	*Accipiter cooperii*		SC	
Crissal thrasher	*Toxostoma crissale*		SC	
Elf owl	*Micrathene whitneyi*		E	
Fulvous whistling-duck	*Dendrocygna bicolor*	SC	SC	
Gila woodpecker	*Melanerpes uropygialis*		E	
Gilded flicker	*Colaptes auratus*		E	
Gilded northern flicker	*Colaptes auratus chrysoides*		E	
Golden eagle	*Aquila chrysaetos*		SC-CFP	
Greater sandhill crane	*Grus Canadensis tadiba*		T	
Harris hawk	*Parabuteo unicinctus*		SC	
Large-billed savannah sparrow	*Passerculus sandwichensis rostratus*	S		
Long-eared owl	*Asio otus*		SC	
Mississippi kite	*Ictinia mississippiensis*		A	
Mountain plover	*Charadrius montanus*	PT	SC	
Southwestern willow flycatcher	*Empidonax traillii extimus*	E	E	
Summer tanager	*Piranga rubra*		SC	
Swainson's hawk	*Buteo swainsoni*		T	
Vermillion flycatcher	*Pyrocephalus rubinus*		SC	
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*		E	
Western least bittern	*Ixobrychus exilis*		A	
Willow flycatcher	*Empidonax traillii*		E	

Table 3.2-3. State and Federally Listed Species Along the Lower Colorado River (continued)

Yellow warbler	*Dendroica ptechia*		SC	
Yuma clapper rail	*Rallus longirostris yumanensis*	E	T-CFP	
Allen's big-eared bat	*Idionycteris phyllotis*		A	
Big free-tailed bat	*Nyctinomops macrotis*		SC	
California leaf-nosed bat	*Macrotus californicus*		SC	
Cave myotis	*Myotis velifer brevis*	SC	SC	
Colorado River hispid cotton rat	*Sigmodon arizonae plenus*		SC	
Greater western mastiff bat	*Eumops perotis californicus*		A	
Mexican long-tongued bat	*Choeronycteris mexicana*	SC	SC	
Occult little brown bat	*Myotis lucifugus occultus*	S	SC	
Pale big-eared bat	*Corynorhinus townsendii pallescens*		SC	
Pallid bat	*Antrozus pallidus*		SC	
Spotted bat	*Euderma maculatum*		A	
Western red bat	*Lasiurus blossevillii*		A	
Yuma hispid cotton rat	*Sigmodon hispidus eremicus*		SC	
Ring-tailed Cat	*Bassariscus astutus*		CFP	
CNPS 1B=California Native Plant Society E=endangered, T=threatened SC=California Sensitive, CFP=California Fully Protected, A=Arizona sensitive,				

Fish and Wildlife. Table 3.2-3 lists federally and state listed fish and wildlife species known to occur along the lower Colorado River. The Service has designated much of the lower Colorado River as critical habitat for two federally listed endangered fish species: the razorback sucker and bonytail chub. Reclamation, in conjunction with the Service, USGS Biological Resources Division, National Park Service, Arizona Game and Fish Department, Arizona State University, and the Nevada Division of Wildlife, have formed the Native Fish Work Group, with the specific goal of establishing and maintaining a population of 50,000 adult razorback suckers in Lake Mohave. Reclamation also has formed partnerships with other agencies to protect and enhance native riparian habitats and to create multipurpose wetlands. Following is a discussion of the occurrence of several federally and state of California listed threatened and endangered wildlife species, fully protected species, and other species of concern that may be affected by the implementation of the Proposed Project. This discussion is not meant to be exhaustive, but rather to highlight a few high profile species.

The southwestern willow flycatcher (*Empidonax trailli extimus*) is federally listed as endangered. This species occurs along the lower Colorado River in stands of cottonwood, willow, and tamarisk, and in mixed stands of willow and tamarisk. Sixty-four nesting attempts were documented by McKernan and Braden (1999) in 1998 along the Colorado River. The bald eagle is a federally listed threatened species and a state of California listed endangered and fully protected species. The lower Colorado River is not a major breeding area for this species, but the birds may forage and could occasionally nest in the area. The area may be most important as winter foraging habitat for the species. The western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) is a state of California endangered species and is proposed for federal listing as endangered. It is found along the lower Colorado River in riparian forests characterized by a canopy and mid-story of cottonwood, willow, and tamarisk. The California brown pelican (*Pelecanus occidentalis*) is a state- and federally listed endangered species that may occur occasionally along this portion of the River as a post-breeding wanderer. The California brown pelican does not breed along the lower Colorado River. The Yuma clapper rail (*Rallus longirostris yumanensis)* and California black rail have also been known to occur along the lower

Colorado River primarily in emergent wetland vegetation, such as dense or moderately dense stands of cattails and bulrushes. Both species are listed as threatened and fully protected species by the state of California. The Yuma clapper rail is also listed as a federally endangered species. The elf owl (*Micrathene whitneyi*) and Arizona Bell's vireo (*Vireo bellii arizonae*), both California listed endangered species, may occur within the riparian and marsh areas along the lower Colorado River.

The desert tortoise is state- and federally listed as threatened and occurs within the desert scrub habitat along the lower Colorado River. A number of bat species that are considered sensitive by the CDFG may potentially occur along the Colorado River. For the most part they would roost in caves or mines and may feed upon the insects within the River and backwaters.

The razorback sucker is a federally and state-listed fish species that occurs in the lower Colorado River as well as the mainstem reservoirs of the River. The razorback sucker was re-introduced below Parker Dam, and the backwaters and mainstem of the River are habitat for this species. Bonytail chub is a state- and federally listed endangered fish species found in Lake Mohave and Lake Havasu, but it is not found downstream of Parker Dam. Long-term plans for re-establishment of the bonytail chub in the area downstream of Parker Dam are being formulated. The desert pupfish is also a federally listed endangered fish species that once occurred along the Colorado River but no longer occurs between Parker Dam and Imperial Dam.

Salton Sea

The following baseline information is summarized from the Salton Sea Restoration Project Draft EIS/EIR (USBR and SSA 2000) and the IID Water Conservation and Transfer Project EIR/EIS (IID and USBR 2002). Both the IID and CVWD service areas abut the Salton Sea, and the plant communities and species described for those areas adjacent to the Salton Sea also apply. For the purposes of this analysis, the study area for the Salton Sea includes both the Sea itself and upland areas within an approximately 2-mile radius of the shoreline.

VEGETATION

Terrestrial vegetation in the Salton Sea area generally can be grouped into the following categories: managed and unmanaged marshes, unvegetated areas (including open water and mudflats), alkali playa, tamarisk scrub desert scrub and developed areas (including urban and agriculture). Marsh areas can be freshwater or alkaline. Freshwater marshes are generally dominated by common reed, cattail, golden dock (*Rumex maritimus*), and rabbits foot grass (*Polypogon monspeliensis*), while alkaline marshes have species such as salt grass (*Distichlis spicata*), alkali bulrush (*Scirpus robustus*), and spreading alkali grass (*Cressa truxillensis*). Marsh areas generally occur in the deltas of the New and Alamo rivers (in the IID service area), Coachella Valley Stormwater Channel, the outlets of small irrigation drains, and the mouths of Salt Creek and San Felipe Creek. Marsh areas also occur around the margin of Imperial Waterfowl Management Area, Sonny Bono Salton Sea National Wildlife Refuge, and private hunting clubs. Marsh habitats that are also wetlands are considered sensitive habitats and are regulated by the USACE under Section 404 of the Clean Water Act. Open water habitats are always inundated. Mudflats are typically exposed for a period of time and then inundated. Neither open water nor mudflats have any appreciable vegetation.

Alkali playas form in low-lying areas where water runs off and soil permeability is low. These conditions lead to high levels of salinity and alkalinity in the soil and support a plant community of widely spaced gray-leaved and succulent shrubs. Understory in such areas is minimal.

There are substantial riparian areas containing tamarisk and other non-native species. Dry wash woodlands are typically found along sandy or gravelly washes of the desert areas. Drought deciduous woodlands are typically dense.

The desert scrub community is found in relatively undisturbed upland areas in the vicinity of the Salton Sea. Cover and species vary with environmental conditions including slope, aspect, and water capacity of the soils. Areas that are well drained and on exposed slopes contain widely spaced shrubby species with dense grasses and herbs in the understory. Areas that are low and flat typically contain a dense scrub community, such as creosote bush scrub. Semi-desert chaparral can be found in valleys where water availability is higher. Non-native grassland areas are typically found in areas that have been disturbed in the past and are generally sparse in vegetative cover.

Urban and agricultural areas are developed for human use, and little-to-no native vegetation is present. However, various types of landscaping are planted in urban areas and around agricultural areas.

The Salton Sea will continue to change over time as evaporation continues to exceed freshwater inflows. This will eventually reduce the surface area of the Salton Sea. The rivers, streams, and drains flowing into the Salton Sea will have a longer path to reach the smaller Sea, and the margins of these freshwater flows will likely be colonized by riparian and wetland plant species adapted to the particular moisture and salinity regimes present. Thus, these habitats could increase gradually in amount. The fate of marsh vegetation in areas currently managed for such habitats (e.g., waterfowl and refuge areas) will depend on whether management continues as the Salton Sea recedes.

FISH AND WILDLIFE

The Salton Sea is characterized by high algal productivity, which also sustains high secondary levels of zooplankton and benthic worms. The fish present tolerate high temperatures, high salinity, and low concentrations of dissolved oxygen. Marine fish were first introduced into the Salton Sea in the early 1950s for aquaculture, mosquito control, and recreational fisheries. Fish now occur in the canals, irrigation ditches, rivers, and the Salton Sea itself. However, the channelized canals are less productive fish habitats than the unchannelized rivers due to lower habitat diversity and higher water velocity in the former. The Salton Sea and estuaries where drains, creeks, and rivers enter the Salton Sea currently support numerous species of fish including sailfin molly (*Poecilia latipinna*), porthole livebearer (*Poeciliopsis gracilis*), longjaw mudsucker (*Gillichthys mirabilis),* mosquitofish (*Gambusia affinis*), tilapia (*Oreochromis mossambicus* and *Tilapia zillii*), sargo (*Anisotremus davidsonii*), bairdiella (*Bairdiella icistia*), and orange mouth corvina (*Cynoscion xanthulus*). The Mozambique tilapia was the most abundant species captured in 1999 gill-net surveys, with highest numbers found in nearshore and estuarine areas (Costa-Pierce and Riedel 2000). Mosquitofish, carp, channel catfish, and

flathead catfish (*Pylodictis olivaris*) were only found in riverine habitats. Desert pupfish are present and discussed below in the Sensitive Species section.

Since the Salton Sea has no outlet, the high evaporation rates in the area have resulted in increasing salinity of the Salton Sea. Reclamation, in the recent Salton Sea Restoration Project EIS/EIR, has projected that the Salton Sea will eventually reach salinity levels that will change the fish species present (USBR and SSA 2000). Substantial fish kills occur on a frequent basis, especially during summer months, due to a decline in dissolved oxygen. The gradual increase in salinity is expected to change the current biotic community composition (plants, invertebrates, and fish) over time. As salinity increases to exceed the tolerances of existing invertebrates, the species composition will change to those with higher salinity tolerances. Increased salinity will also reduce fish reproductive capacity within the main body of the Salton Sea and eventually cause a decline in the number of species and individuals within a species, even with the current inflows to the Salton Sea. Ultimately, fish will no longer be able to survive in the Salton Sea (away from the estuaries where freshwater inflow occurs), although a number of invertebrate species will likely survive. The timing of the eventual elimination of the Salton Sea fisheries is uncertain as it involves a number of external environmental factors as well as the adaptation potential of the fish.

Over 400 species of birds have been recorded at the Salton Sea. The 1999 census by Point Reyes Bird Observatory (PRBO) found that eared grebes (*Podiceps nigricollis*) number 47,000 in the spring and over 320,000 in the winter at the Salton Sea, while populations of black-necked stilts, American avocets (*Recurvirostra americana)*, and ring-billed gulls each numbered in the hundreds of thousands. The Salton Sea also has experienced die-offs of birds, especially the brown pelican. As noted above, the structure of the biotic community currently in the Salton Sea will change over time due to increasing salinity. Pollutants and eutrophication may also exacerbate the effects of salinity. A loss of fish (numbers and species) and changes in the invertebrate community will affect bird species that feed on these organisms at the Salton Sea. As the number of fish declines, the prey base for fish-eating birds will decline. How changes in the invertebrate community will affect birds will depend on the extent to which the new invertebrate populations are accessible and acceptable to foraging birds. Bird populations could change in abundance and species composition as a result of the changes in the invertebrate and fish prey base. An effort is underway to reduce and stabilize the overall salinity of the Salton Sea and stabilize its surface elevation. However, no final commitment has been made and no federal funds have been allocated for implementation of a restoration program.

SENSITIVE SPECIES

Plants. Four species that are state and/or federally listed as threatened, endangered, or rare are known from habitats around the Salton Sea (Table 3.2-4). Another 13 special status plant species are known to occur within the general area of the Salton Sea (see Appendix E, Table E-2). None of the species known from the area are apparently adapted to conditions at the shore of the Salton Sea. A complete listing and discussion of these species can be found in the Salton Sea Restoration Project Draft EIS/EIR (USBR and SSA 2000).

Table 3.2-4. State and Federally Listed Species at the Salton Sea

Common Name	*Scientific Name*	STATUS[1]		
		Federal	*State*	*CNPS*
Algodones Dunes sunflower	*Helianthus niveus* ssp. *tephrodes*		E	1B
Coachella Valley milkvetch	*Astragalus lentiginosus* var. *coachellae*	E		1B
Peirson's milkvetch	*Astragalus magdalenae* var. *peirsonii*	T	E	1B
Wiggin's croton	*Croton wigginsii*		R	2
Arroyo southwestern toad	*Bufo microscaphus microscaphus*	E	CSC	
California red-legged frog	*Rana aurora draytonii*	T	CSC	
Desert slender salamander	*Batrachoseps aridus*	E	E	
Coachella Valley fringe-toed lizard	*Uma inornata*	T	E	
Desert tortoise	*Gopherus agassizii*	T	T	
Desert pupfish	*Cyprinodon macularius*	E	E	
Greater Sandhill Crane	*Grus Canadensis tabida*		CFP	
Aleutian Canada goose	*Branta Canadensis leucopareia*	T		
American peregrine falcon	*Falco peregrinus anatum*		E-CFP	
Bald eagle	*Haliaeetus leucocephalus*	T	E-CFP	
California black rail	*Latterallus jamaicensis coturniculus*		T-CFP	
California brown pelican	*Pelecanus occidentalis californicus*	E	E-CFP	
California least tern	*Sterna antillarum browni*	E	E-CFP	
Yuma clapper rail	*Rallus longirostris yumanensis*	E	T-CFP	
Jaguar	*Felis onca arizonensis*	E		
Peninsular bighorn sheep	*Ovis canadensis cremnobates*	E	E-CFP	

1. E=endangered; T=threatened; R=rare; state=California; CSC=California Species of Special Concern; CFP=California Fully Protected, CNPS=California Native Plant Society - list 1B is rare and endangered throughout range, list 2 is rare and endangered in California but found elsewhere

Fish and Wildlife. Sixty-nine special status animal species are found at or near the Salton Sea (Appendix E, Table E-1), Nineteen species are state and/or federally listed as threatened or endangered (Table 3.2-4). Of the over 400 species of birds that have been recorded at the Salton Sea, 58 are considered special status species. Thirty of these special status bird species nest at the Salton Sea, of which five are federal special status species and seven are state special status species. In many cases, a substantial proportion of the population of a species may be found at the Salton Sea. The Yuma clapper rail is a federally endangered species and a state of California threatened and fully protected species that occurs in the marsh areas around the Salton Sea and near the irrigation drains. Over 200 individuals were noted in 1999 around the Salton Sea, with the major concentrations at the Wister Unit of the Imperial Wildlife Area and the Salton Sea National Wildlife Refuge. Smaller populations were recorded at Barnacle Beach and the Holtville drain. On average, about 365 Yuma clapper rails are counted each year, which is 25 to 40 percent of the entire United States population. The Salton Sea also serves as a foraging area for some individuals. Over 5,000 California brown pelicans have been found here, and some breeding of brown pelicans has occurred at the Salton Sea in the last few years.

The California black rail, a state-listed threatened species and a fully protected species, occurs around the Salton Sea in habitat similar to the Yuma clapper rail. February 1999 PRBO surveys found 2,486 snowy plovers (*Charadrius alexandrinus nivosus*) in the Salton Sea basin, representing about half of the California population. The Salton Sea serves as important nesting areas for the snowy plover and is considered one of the best inland nesting areas for this population.

Although Pacific Coast populations of snowy plover are a federally listed threatened species, the inland population at the Salton Sea is not. Inland populations of the snowy plover are, however, a California Species of Special Concern. In addition, as many as 33,000 American white pelicans (*Pelecanus erythrohynchos*) may also winter here. It is estimated by the Service that 80 to 90 percent of the entire population stops at the Salton Sea in the winter. The Salton Sea hosts the second largest wintering population of white-faced ibis in California, with over 24,000 counted in the 1999 PRBO census. The Salton Sea is also an important nesting area in California for the gull-billed tern.

Desert pupfish still exist at various locations in and around the Salton Sea, but in relatively low numbers. However, the agricultural drains at their interface with the Salton Sea support the largest number of pupfish within the Salton Sea system. The non-native fish species have adversely affected pupfish population through competition, predation, and behavioral interference. The limited populations around the Salton Sea appear to be occupying habitat marginally suited for pupfish.

As shown in Table 3.2-4, there are also a number of bird species that overwinter or otherwise use the Salton Sea on an occasional basis.

3.2.2 Impacts

3.2.2.1 Significance Criteria

The criteria used to determine the significance of impacts on biological resources are based on the model initial study checklist in Appendix G of the State CEQA Guidelines. The Proposed Project would result in a significant impact if it 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 CDFG or the Service; or

- have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFG or the Service; or

- adversely impact federally protected wetlands (including marsh, vernal pool, coastal, etc.) either individually or in combination with the known or probable impacts of other activities through direct removal, filling, hydrological interruption, or other means; or

- interfere substantially with the movement of any 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; or

- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or

- conflict with the provisions of an adopted HCP, Natural Community Conservation Plan, or other approved, local, regional, or state habitat conservation plan.

3.2.2.2 Methodology

Potential impacts to biological resources were assessed by comparison of project-induced changes to the biological baseline. The exception to this approach is the evaluation of potential impacts to the biological resources of the Salton Sea. The Potential impacts at the Salton Sea are different when measured against Existing and Future Baselines at the Salton Sea. The Future Baseline at the Salton Sea is described in Section 5.0. Potential changes associated with the implementation of the Proposed Project were measured against the appropriate baseline conditions, and impacts were determined using the significance criteria in section 3.2.2.1.

3.2.2.3 Summary of Impacts

Implementation of the Proposed Project has the potential to adversely affect biological resources as a result of the following:

- A decrease in seepage-fed areas adjacent to both the All American and Coachella canals, as a result of lining the Coachella Canal and construction of a lined parallel canal to the All American Canal.
- Minor, short-term construction disturbances associated with construction and lining of the canals.
- An increase in the rate of salinity change in the Salton Sea due to a net decrease in the drainage inflows to the Salton Sea as a result of conservation measures by IID.
- Changes in the quantity and quality of flows within the rivers and drains of the IID associated with implementation of on-farm water conservation.
- A change in habitat due to a decrease in median water level of the lower Colorado River between Parker Dam and Imperial Dam due to a change in the point of diversion. The decrease in flows would range from 183 to 388 KAFY.
- Site-specific activities associated with construction of recharge basins, pipelines, and pump stations as part of implementation of the Proposed Project portion of the CVWMP.
- Short-term construction activities associated with construction of canals, reservoirs, and pump stations associated with on farm conservation measures within the IID service area.

Imperial Irrigation District

VEGETATION

Impacts to vegetation would be restricted to the vicinity of the portions of the All American Canal that would be lined under the Proposed Project. Construction of a parallel lined canal would reduce seepage into adjacent wet areas and areas supporting phreatophytic vegetation. It would also remove wetland plants inside the canal. Losses of wet areas due to seepage and

phreatophytic vegetation are anticipated to be significant, but would be mitigated to less-than-significant levels by habitat replacement and enhancement that are part of that project. Specific impacts and mitigation measures for the All American Canal Lining Project were delineated by Reclamation and IID in the All American Canal Lining Project EIS/EIR issued in 1994.

On-farm conservation programs in the IID service area have the potential to decrease drain water flows and to increase the salinity of these flows (although not total salt load). This could result in alteration of the amount and characteristics of emergent and in-channel vegetation along these drains. This impact to vegetation is considered significant because emergent vegetation provides habitat for the Yuma clapper rail, a California- and federally listed species.

Construction activities associated with water conservation improvements, such as tailwater return systems, lateral interceptions, reservoirs, seepage interceptors, and conveyance lining also have the potential to cause both temporary and permanent losses of phreatophytic or emergent vegetation, depending on the exact location and extent of such activities (including staging/storage areas and access routes). The level of impact will be determined by the amount and type of vegetation affected as well as the restoration (revegetation) to follow the work. Impacts will likely be less-than-significant.

FISH AND WILDLIFE

Construction of a new lined canal parallel to the All American Canal would decrease vegetation along the canal banks and increase water velocity in the canal. This would reduce habitat in the form of shade (cover) and the food base (plant material and insects falling into the water) for non-native fish (including sport species) residing in the canal. Reclamation and IID have proposed to mitigate this impact by installing artificial reefs in the canal to provide protective cover and reduce flow velocity in the canal. Stabilizing or enhancing regulating reservoirs would then be implemented.

Lining the parallel canal would also decrease seepage-fed areas adjacent to the canal. These habitats are important to wildlife species, especially birds, for a variety of reasons. Reclamation and IID have proposed to mitigate impacts to a less-than-significant level in these areas by replacing these marshes and desert riparian habitats.

Canals typically transect normal movement patterns of terrestrial wildlife (other than birds), and in the desert environment, attract wildlife as a drinking water source. There is also a potential for large mammals to enter and drown in the canals. Reclamation and IID have proposed escape routes along the entire length of the new canal. If that is not effective, then a series of structures to allow animals entering the canals to escape would be constructed (USBR and IID 1994).

Construction activities associated with canal lining that occur in adjacent uplands could cause temporary and permanent impacts to wildlife habitat. These impacts have been addressed in the Final EIS/EIR for that project.

Changes in amount or composition of vegetation resulting from reduced flow or increased salinity of drain water due to conservation measures in the IID service area could adversely impact bird and amphibian species using that habitat. This would be considered a significant

impact. Implementation of measures identified in IID's HCP for the Water Conservation and Transfer Project would reduce those impacts to less-than-significant levels. Loss of phreatophytic or emergent plant habitats as a result of constructing water conservation improvements, such as recharge basins, pipelines, and pump stations, would have less-than-significant impacts to common and typical wildlife species using those habitats because most activities would be in previously disturbed areas.

SENSITIVE SPECIES

Plants. None of the rare, threatened, or endangered plant species that are known to occur in the IID service area occur in wetland or riparian habitats. There is a chance that sensitive plant species may occur in areas selected for staging or other construction-related activities associated with the All American Canal Lining Project and could be impacted by those activities. However, selection of sites for construction-related disturbances would consider environmental concerns and sensitive plants species. Potential impacts and mitigation measures to sensitive plant species from the All American Canal lining were identified in the project-specific environmental document (USBR and IID 1994). Any impacts to sensitive plant species would be mitigated to a less-than-significant level.

Construction-related activities associated with other conservation measures are unlikely to adversely affect any listed or special concern plant species because the work would be primarily in previously disturbed areas. Locations for such activities, however, would need to be checked for the presence of sensitive plant species prior to the work, and mitigation developed and implemented if any are found.

Fish and Wildlife. Altering drain flows and salinity as a result of water conservation measures in the IID service area has the potential to impact desert pupfish residing in the drains through a reduction in the quantity and quality of habitat available as well as by altering interactions between this species and non-native fish species present in the drains. Impacts could range from less-than-significant, if little change in habitat or species interactions occur, to significant if the changes reduce the population size of the pupfish. Restoration or enhancement of pupfish habitat could reduce any specific potentially significant impacts to less-than-significant levels.

Effects of reducing the volume of water in the drains has the potential to adversely affect special status species using the Salton Sea within the IID service area. These impacts are discussed below, under the Salton Sea. Impacts to sensitive wildlife within the river and drains are potentially significant. Mitigation measures outlined below will reduce any significant impact to less-than-significant levels.

Construction of the canal parallel to the All American Canal section and water conservation measures within the IID service area would not have any adverse effects on peninsular bighorn sheep or American peregrine falcon. The proposed water transfers would have no significant impacts to sensitive birds using agricultural fields for food because the amount and type of agriculture present are not expected to change substantially due to water conservation, and thus, food for special status species using agricultural fields would not decrease.

Coachella Valley Water District

Potential physical impacts associated with the implementation of the Proposed Project within the CVWD service area are described below. Additional water provided to the CVWD service area would reduce the current groundwater overdraft conditions. It is anticipated that the use of Colorado River water and conserved water would not result in modification of existing farmland or conversion of additional natural areas to farmland since this water would replace current overdrafted groundwater supplies.

VEGETATION

Lining the unlined portions of the Coachella Canal outside the CVWD service area would decrease seepage into adjacent wetlands and riparian areas, which has the potential to impact marsh and desert riparian vegetation supported by canal seepage. It would also remove wetland plants inside the canal. One area of concern is Salt Creek where canal seepage supports riparian and marsh habitats. Losses of wetland and riparian plant communities are potentially significant impacts that would require mitigation. Construction activities could also result in a temporary loss of upland native vegetation where staging areas and access routes are developed. The area thus affected would be small and can be restored after construction is complete. Impacts and mitigation for this project have been addressed in the Coachella Canal Lining Project EIS/EIR.

It is expected that the alleviation of overdrafted groundwater conditions would result in the eventual rise in groundwater levels, which would increase the levels of drain water and water flowing into the Salton Sea. No changes in vegetation are expected since the drains are currently maintained to allow free flow of water. Construction activities associated with installation of recharge basins, pipelines, and pump stations that are part of the CVWMP have the potential to cause both temporary and permanent impacts to native vegetation. Based on a review of the potential facilities associated with the CVWMP, it is estimated that the facilities required may result in the loss or disturbance of approximately 250-600 acres in total. Much of the area where pipelines may be placed has been previously disturbed from agriculture and other activities such as road construction; however, it is anticipated that some areas of desert scrub and desert wash habitat could be impacted by the construction of other facilities. Impacts would be less-than-significant, particularly in previously disturbed areas, but could potentially be significant if native vegetation is permanently lost. Therefore, site-specific studies and mitigation measures would be developed when specific projects are developed.

FISH AND WILDLIFE

Constructing groundwater recharge facilities may impact wildlife habitat. It is anticipated that many of these facilities would be located primarily in disturbed areas such as roadways or adjacent to existing facilities. No substantive impacts to wildlife are expected in these areas. Construction of recharge basins in other areas have a potential to impact wildlife resource. It is anticipated that these adverse impacts would be less than significant. Site-specific surveys may be required when specific sites and a project design are provided.

SENSITIVE SPECIES

CVWD is participating in a multi-agency, multi-species habitat conservation plan with others in the Coachella Valley (the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP). Potential impacts to sensitive species from CVWD's delivery and use of water related to the Proposed Project will be addressed in the CVMSHCP and the Program EIR, both of which are currently in development. Locations for recharge basins and additional delivery facilities have not been identified. Increased flow in drains is not expected for 10-15 years, based on the build-up schedule for Proposed Project water deliveries and time lag in recharging the aquifer. However, based on available information, the following is a discussion of the potential impacts to sensitive species of plants and fish and wildlife.

Plants. Construction of facilities for groundwater recharge and expansion of the existing water distribution system are unlikely to impact sensitive plant species since most activities would be in previously disturbed areas. Any native plant community areas that could contain sensitive species would be evaluated for such species prior to approval of the facility and any avoidance or mitigation measures necessary would be implemented as part of those specific projects.

Fish and Wildlife. Lining of the unlined portions of the Coachella Canal has the potential to adversely affect habitat for the Yuma clapper rail, California black rail, desert pupfish, and desert tortoise. Mitigation for these impacts has been developed in the EIS/EIR for canal lining project (USBR and CVWD 2001) and consultation under Sections 7 of the ESA.

The Yuma clapper rail and California black rail would not be impacted by changes in the marsh habitat in or near agricultural drains. The drains are currently maintained to remove vegetation and are not a current habitat for these species. Currently, desert pupfish reside within the drains in the CVWD service area. It is anticipated that the flows in the drains would increase. The increase in the quantity of water plus the increased velocity of the drain flows has a potential to affect the pupfish in the drains. The exact effect is not well known, however, there is a potential significant impact to these species due to these changes in flows. A monitoring program, plus additional measures deemed necessary should an impact to these species be identified, will reduce any significant impacts to less-than-significant levels. Construction of groundwater recharge basins and expansion of the distribution system within the CVWD service area are not expected to have any adverse impacts on the American peregrine falcon, Swainson's hawk (*Buteo swainsoni*), or mountain plover because activities associated with these measures are not likely to occur in habitat for these species. However, if the Dike 4 recharge facility is ultimately constructed within critical habitat for the peninsular bighorn sheep (*Ovis canadensis*), specific mitigation measures would be developed to avoid any impact to the sheep during site-specific verification studies.

The Metropolitan Water District of Southern California

Because water diverted under the Proposed Project is within the normal operating parameters of MWD's existing Whitsett intake at Lake Havasu and its conveyance into MWD's service area would be via the existing CRA, no impacts to biological resources would result from MWD's diversion or delivery of QSA-related water. The implementation of the Proposed Project would not result in any physical changes within the MWD service area that would impact biological resources. There would be no construction associated with implementation of the Proposed

Project in the MWD service area, involving the Whitsett Diversion or along the CRA. Therefore, there would be no direct impact to biological resources. Implementation of the Proposed Project would not alter any general plans or other planning activities implemented by those local and regional agencies planning land use in the MWD service area. Population growth and development within the region would likely continue at their projected rates, but this growth would occur whether or not the Proposed Project were implemented. Therefore, no significant biological impact in the MWD service area would occur from implementation of the Proposed Project. Similarly, the implementation of the Proposed Project would not result in impacts to biological resources because no physical changes to the environment would occur that would be attributable to the Proposed Project.

San Diego County Water Authority

As discussed above under MWD, there would be no physical/construction impacts associated with the implementation of the Proposed Project within the SDCWA service area. Additionally, maintaining reliability of a portion of the water supply as a result of the implementation of the Proposed Project is not expected to have an effect on current planning within the SDCWA service area. Although continued planned growth within the service area may impact biological resources, this would occur whether or not the Proposed Project were implemented. Therefore, no significant adverse impacts associated with the implementation of the Proposed Project would occur.

Other Areas

COLORADO RIVER AREA

The environmental baseline for this assessment includes the effects of past and ongoing human and natural factors leading to the current status of biological resources within the LCR. The environmental baseline includes existing facilities, ongoing operations and maintenance activities, the existing extent of land cover types, and the existing species abundance and distribution and is considered the Existing Baseline.

The Proposed Project covers transfers that will influence flows on the lower Colorado River between Parker Dam and Imperial Dam. Some components of the Proposed Project would result in increased diversions of water at Lake Havasu and reduce the amount of river flow to Imperial Dam. Conversely, some Proposed Project components would increase deliveries at Imperial Dam. As discussed in section 2.5 and shown in Table 2.5-1, the net effect of the QSA is that deliveries to Imperial Dam would be reduced by 183 to 388 KAFY and this water would instead be delivered to the MWD facility at Lake Havasu. MWD's intake is an existing structure, and the volume of water to be diverted to account for the QSA transfer is within the range of diversion volumes at this point over the past several decades.

Historically, the CRA has transported up to approximately 1.3 MAFY of Colorado River water into southern California. Implementation of the transfer would only change the agency's entitled apportionment from which the Colorado River water is derived. Historically, the water in the CRA has consisted of some combination of MWD's basic apportionment, water from a previous conservation agreement with IID, any unused higher priority agricultural water within California, unused apportionment from the states of Arizona and Nevada, and water

declared by the Secretary to be surplus. Under the transfer (and related lining actions), the CRA would continue to transport approximately the same amount of Colorado River water each year, with a greater proportion of that water coming from agricultural conservation efforts.

The Whitsett Intake and CRA are existing facilities that have been operating at or near full capacity since the 1960s, and would continue to operate unchanged with implementation of the Proposed Project. Therefore, these physical structures and diversion volumes represent Existing Baseline conditions and thus no project-related impact would result from divergence or conveyance of Proposed Project-related Colorado River Water. This assessment is focused upon potential biological effects on the lower Colorado River between Parker Dam and Imperial Dam in which physical changes from Existing Baseline conditions may occur. The assessment of impacts is based on the modeling efforts conducted by Reclamation in association with the Biological Assessment (USBR 2000a) and the Service's Biological Opinion (USFWS 2001).

Reclamation modeled potential impacts to open water, marsh habitat, and riparian habitat as a result of the potential decrease in flow. Reclamation used a hydrologic model coupled with a GIS vegetation database to predict potential impacts. Reclamation modeled a conceptual change in river flows of over 1.574 MAFY, which is a theoretical maximum cumulative change in flow that could occur in the future. Assuming that the model was linear in its prediction of impacts, Reclamation then interpolated these results to estimate habitat loss associated with implementation of the IA and QSA components, which accounts for approximately one quarter of the annual river flow reductions modeled by Reclamation. The impact assessment by Reclamation assumed a maximum change in river flows of 400 KAFY associated with the Proposed Project components.

Based on this methodology, it was determined that the Proposed Project would reduce Colorado River flows in the Parker Dam to Imperial Dam reach by 183 to 388 KAFY. Therefore, under the most conservative assumptions, the flow between Parker Dam and Imperial Dam could be reduced by 388 KAFY (see further discussion in section 3.1 of this document). The resulting overall change in the river flow is small (no more than 0.4 feet[1]) and is within the historical hourly, daily, and weekly fluctuation of water levels for the area.[2]

The Proposed Project components that would alter diversion volumes would occur incrementally over a period of 10 to 20 years or more. Assuming the minimum time of 10 years

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1 For total annual flow reduction of 400 KAF, reduction in median water surface elevations throughout the segment of the River from Parker to Imperial dams ranged from a low of 0.03 feet (0.5 inch) to a high of 0.37 feet (4.4 inches). This 2000 model result is very consistent with the previous 1991 analysis which concluded that: "Reduction of the river's discharge below Parker Dam by 480,000 acre-feet per year…would cause, at most, a 4-inch reduction in median water surface elevations when more or less normal flows occur" (USBR 1991). For more information, refer to the EIS for the Implementation Agreement, Inadvertent Overrun Policy, and Related Federal Actions.

2 During the spring, summer, and fall, the average monthly flow of the river as it approaches Imperial Dam varies between 9,000 and 11,000 cfs. During winter months, the average monthly flow drops to about 5,000 cfs. River flows are determined by release schedules from the dams, and water levels vary throughout the day. At Parker Dam, this daily variation is on the order of 5 feet (60 inches) during summer peak irrigation season, and about 2.5 feet (30-inches) in winter low demand periods. Flow variations are dampened by channel storage downstream of Parker Dam; the daily fluctuation at Imperial Dam is about 0.5 feet (6 inches).

for purposes of conservatively estimating maximum potential impacts, and diversion of up to 400 KAFY, median water surface elevations are predicted to decrease by no more than 0.4 feet. At completion of full diversion volumes (assuming a maximum of 400 KAFY), the change in median water surface elevation would be no more than 0.4 feet.

The 10- to 20-year implementation time factor permits biological resources substantial adjustment to this change in median water levels, as successional colonization of plants occurs naturally along the newly wetted perimeter. Even in backwater and slough areas, plant root systems should be able to adjust to the very minor water levels reductions occurring in minute increments over a prolonged period.

The assessment of potential effects on biological resources covers a wide variety of habitat types and the species that rely upon that habitat and its specific characteristics for feeding, cover, nesting, breeding and rearing young. Federal and state special-status species are addressed using this habitat-based approach as well, under the premise that if the underlying habitat is protected or mitigated for sensitive species, potential impacts on more common species and general habitat conditions will be avoided and mitigated as well. Exhaustive evaluation of water surface elevation effects on every individual species encountered in the project region has therefore not been performed, and is not needed to reach meaningful conclusions regarding potential impacts of implementation of the changes in the location of diversions from Imperial Dam to Lake Havasu and the changes in river flow.

Based on all available evidence for determining water surface elevation changes, the transfer may have potentially significant adverse impacts to habitat in riparian and backwater marsh areas along the River. As an individual project, this small increment of water level reduction would not substantially diminish the value of habitat for any species or cause the direct demise of any species associated with those habitats. However, using the worst-case cumulative methodology based upon a total flow reduction of 1.574 MAFY, the reduction of river flows by about 400,000 acre-feet annually could be found to contribute to a potentially significant cumulative impact on habitat areas along the river corridor between Parker Dam and Imperial Dam.

A Biological Opinion for the IA was issued by the Service on January 12, 2001. The impacts to habitat and sensitive species would be the same as those of the Proposed Project along the Colorado River. Using Reclamation's cumulative hydrologic model, the Biological Opinion estimated that there could be a loss of 35 acres of main channel open water habitat (used by fish), 17 acres of backwater habitat, 28 acres of marsh habitat, and up to 372 acres of riparian habitat. Depending upon the diversion of water, a reduction in flow by 188 to 388 KAFY would account for approximately 46 to 97 percent of the aforementioned habitat loss.

Vegetation. As a result of the Proposed Project, groundwater levels are predicted to drop a maximum of 0.4 feet (USFWS 2001), which has the potential to impact riparian vegetation with shallow roots along the outward fringes of the riparian zone. Deeply rooted plants would not be impacted. However, only 8 percent of the total riparian vegetation is relatively undisturbed native riparian woodland. Cottonwood and willow trees as well as marsh vegetation are more susceptible to lowering of groundwater levels than are other riparian plants such as mesquite, salt cedar, and arrow weed (USBR 2000a). Potential impacts to aquatic, marsh and riparian habitats would be considered potentially significant. However, with implementation of habitat

restoration actions these can be reduced to levels that are less-than-significant. Impacts to mesquite areas would not be significant due to less dependency of this habitat type on river flows.

Fish and Wildlife. No increase in the quantity of water diverted to the CRA would result from the Proposed Project. Therefore, there would be no impact to fish in Lake Havasu due to entrainment or other impacts associated with diversion of additional water into the CRA. No changes to reservoir levels would occur that would significantly impact fish within the reservoir.

Implementation of the Proposed Project would result in lower river flows between Parker Dam and Imperial Dam. Since the flows would be within the range of normal fluctuations, and because sport fishes are more adaptable to changing conditions and are in greater abundance than native species, an adverse impact to sport fisheries would not occur. As discussed above, implementation of the Proposed Project has the potential to reduce wetland and riparian habitat along the Colorado River that is used by amphibians, reptiles, riparian and marsh obligate birds, and mammals. This potential loss of habitat would potentially be a significant impact, but can be fully mitigated by habitat restoration.

SENSITIVE SPECIES

Plants. The Proposed Project would not impact any sensitive plant species because no sensitive plant species are known to be located within the potential area of impact (i.e., along the margins of and within wetlands associated with the Colorado River).

Fish and Wildlife. As discussed above, Reclamation (USBR 2000a) and the Service's Biological Opinion (USFWS 2001) anticipate a potential loss of 35 acres of open water, 17 acres of backwater and 28 acres marsh habitat within backwaters due to the implementation of the Proposed Project. Loss or modification of main channel (35 acres) and backwater (17 acres) open-water areas, such as through making them shallower (and warmer), has the potential to affect habitat that razorback suckers use for rearing and foraging. This potential loss of open water and backwater habitat would be a potentially significant impact, but can be fully mitigated by habitat restoration and fish enhancement measures.

No impact to the desert tortoise would occur, since the desert habitat occupied by this species would not be impacted by the implementation of the Proposed Project. No significant adverse impact to the southern bald eagle or California brown pelican would occur since they are occasional visitors to the area and no substantial reduction to their foraging habitat would result from the Proposed Project. There is also expected to be no significant impact to the sensitive raptor species since little impact would occur to potential nesting or foraging habitats.

The projected reduction in emergent vegetation (28 acres) that would result from implementation of the Proposed Project (USBR 2000a) may result in the reduction of feeding and breeding habitat for the Yuma clapper rail and the California black rail. This potential loss of habitat would be a potentially significant impact that can be fully mitigated by the proposed mitigation measures.

There is a potential, but less well-defined impact to riparian vegetation along the lower Colorado River due to decreased river flows and the resultant decline in surface and groundwater levels that would lower water in the root zone of riparian species. This impact would be gradual and some of the riparian vegetation may be redistributed as ground water levels change. Loss of up to 372 acres of riparian habitat currently used by southwestern willow flycatchers along the lower Colorado River was predicted (USFWS 2001). Using the worst-case projections based upon the 1.574 MAFY total river depletions, there is a potentially significant impact to riparian vegetation that is habitat for the southwestern willow flycatcher and the western yellow-billed cuckoo. Since the Arizona Bell's vireo, elf owl, Gila woodpecker, and gilded flicker occupy similar habitat, there would also be a potential loss to their habitat. Although this represents less than 1 percent of the total riparian habitat present, impacts to this habitat would be considered potentially significant, but will be fully mitigated by the proposed mitigation measures.

SALTON SEA

Implementation of the Proposed Project would result in the acceleration in the decline of the Salton Sea levels as described in section 3.1. The salinity of the Salton Sea has been increasing since its formation, caused primarily by high evaporative water loss and salt input through irrigation drainage. Reduced inflow to the Salton Sea would accelerate the rate of salt accumulation (IID and USBR 2002). Refer to section 3.1 for further discussion of projected Salton Sea salinity.

Vegetation. The accelerated decline in Salton Sea levels caused by the implementation of the Proposed Project has the potential to result in the loss of tamarisk scrub vegetation. The Salton Sea maintains several thousand acres of tamarisk scrub. The water source supporting tamarisk-dominated wetlands is most likely a combination of shallow groundwater and seepage from the Salton Sea. Therefore, a change in the surface elevation of the Salton Sea could decrease the amount of tamarisk habitat (IID and USBR 2002). Declining Salton Sea level could affect water-dependent vegetation along the drains, rivers, and streams entering the Salton Sea. If the decline is too rapid, plant adaptation and colonization may not be able to keep up with the changing location of the Salton Sea shoreline. This impact to vegetation is considered adverse, but not significant since the impact will be to non-native vegetation. No significant impact to managed marsh vegetation is anticipated since the hydrology of these areas is not dependent upon the Salton Sea.

Fish and Wildlife. Implementation of the Proposed Project is expected to result in the lowering of the Salton Sea level and to accelerate the increased salinity of the Salton Sea. An acceleration of the increase in salinity of the Salton Sea will likely change the species composition of the invertebrate and fish populations and cause a decline in their general population size. Fish may also become concentrated within areas where freshwater inflow would continue. This impact to fisheries (more rapid loss) is considered less–than-significant since these species are not native to the Salton Sea. The reduced surface area of the Salton Sea would also reduce the length of shoreline. Increased salinity in the Sea is not expected to affect upland wildlife species using habitats adjacent to the Salton Sea. Any loss of wetland or riparian habitat as described above for vegetation would reduce wildlife habitat, however, and could have adverse, but not significant impacts for species dependent upon those habitats.

The accelerated increase in salinity levels and subsequent loss of fish, particularly tilapia, would reduce food sources for fish-eating bird populations; thus these fish-eating bird populations may decline sooner. Some fish would likely remain in the portions of the Salton Sea where substantial freshwater inflow remain and provide forage for birds so that some smaller bird populations would use the Salton Sea. This loss of food sources for fish eating birds is considered a potentially significant impact. Bird populations that feed on invertebrates may potentially be affected sooner as well, but the level of impact is considered adverse, but not significant since the invertebrate populations that birds would feed upon is expected to remain. Birds that only use the Salton Sea surface for resting, but forage in upland areas, would not be affected by the Proposed Project.

SENSITIVE SPECIES

Plants. No impacts to sensitive plant species in the vicinity of the Salton Sea are anticipated as a result of the implementation of the Proposed Project, which would cause a more rapid reduction in size and increased salinity to the Salton Sea because none of the species are found in the habitats

Fish and Wildlife. The accelerated lowering of the Salton Sea level combined with the projected increase in salinity levels would shorten the time over which these changes would affect the desert pupfish population. These changes would affect individuals within the shallow portions of the Salton Sea itself as well as individual populations within the lower portions of drains. This accelerated change in the natural habitat of the desert pupfish is considered a significant impact since there is a potential that the lowered sea level and increased salinity can isolate the populations of pupfish within the mouths of drains or rivers.

Implementation of the Proposed Project would not create significant impacts to populations of the Yuma clapper rail and the California black rail since their primary habitat is within the managed marshes not directly affected by the decline in the Salton Sea. There also could be a decline or change in invertebrate food sources for these species.

Impacts from increased salinity of the Salton Sea to the California brown pelican, American black skimmer, double-crested cormorant, and other resident and migratory birds that forage on fish would also be accelerated. The fish that are food sources for many of the species will decline more rapidly, thus decreasing the length of time that the Salton Sea can support these bird species. This impact is considered significant.

Species associated with uplands adjacent to the Salton Sea, such as desert tortoise, Coachella Valley fringe-toed lizard, and desert slender salamander, would not be adversely affected by a reduction in size of the Salton Sea.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would result in significant impacts to biological resources along the Colorado River. A reduction in the amount of conserved water dedicated to MWD would not result in any changes to the physical environment that would impact biological resources. Diversion of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would impact biological resources.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River contemplated under the Proposed Project and changes to biological resources from a change in point of diversion and diversion of water for the Proposed Project (including this component) was analyzed above for the Colorado River. No other impacts to biological resources would result from this action because no construction of water conveyance facilities would be required.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that could cause significant impacts to biological resources. The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause significant impacts to biological resources or that would increase seismic-related risks.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore, no change in Colorado River conditions or potential impacts to biological resources would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD nor would it increase the amount of water used within these service areas. Therefore, no impacts to biological resources would result from the conveyance or use of water tied to this Project component.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAFY of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from

Parker to Imperial dams. This would create a slight beneficial impact to biological resources associated with river flows. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial dams would occur. No impacts to biological resources would result from the diversion or conveyance of the water by CVWD because no new facilities would be required to be constructed. Use of this water within CVWD's service area would be used to offset groundwater overdraft conditions and therefore no impacts to biological resources would occur. Similarly, the exchange of SWP entitlements under this Project component would not result in significant impacts to biological resources because no physical changes to environmental conditions would occur and no construction of water conveyance infrastructure would be required.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER CAP

This Project component establishes an accounting method for water transfers and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts to biological resources since it would not physically change the amount of water diverted or conveyed.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead. This change in river flows is within historic fluctuations and would not create a significant impact to biological resources associated with river flows. Also under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the river under this component would be within the historic amount of water diverted by MWD, would not require the construction of any new facilities, and would not increase the amount of water used within its service area. Therefore, no impacts to biological resources would result.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

The change in the point of diversion on the Colorado River from Imperial Dam to Lake Havasu to support PPR water use was analyzed in the above analysis for the Colorado River. Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. Because these changes of flow are within the range of normal River fluctuations, no significant impacts to biological resources would occur.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would share this shortage. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. Additional conservation/shortage management would also be short-term and is not anticipated to involve ground disturbance or construction activity. The potential impacts to biological resources due to this additional conservation/shortage management would be so minor as to be indiscernible from the impacts of the Proposed Project.

3.2.3 Mitigation Measures

Imperial Irrigation District

Mitigation measures for the All American Canal Lining Project have been developed in the EIS/EIR for this project and consist of the following:

1. Site-specific surveys for sensitive species will be conducted. Species will be avoided or programs will be developed for replacement of the habitat or other compensation.

2. The canals will be restocked with channel catfish after completion of construction.

3. Structures will be constructed to allow wildlife to escape if they enter the canals.

4. Structures will be constructed in the canals to increase edge areas for fisheries.

5. Marsh and other seepage-fed habitats will be replaced, as necessary.

IID is preparing an HCP to address the impacts to sensitive species and the overall habitats within the IID service area as a result of conservation by IID in connection with the Project and IID's normal operations and maintenance. Non-Salton Sea components of the HCP that are intended to mitigate the impacts of any take of covered species that might occur as a result of the activities covered by the HCP, including the Proposed Project, within the IID service area and the Salton Sea potentially could include the following:

- *Tamarisk Scrub-Habitat Conservation Strategy*: Replacement of habitat disturbed through planting of mesquite bosques and/or cottonwood willow habitat. Additional habitat

replacement where subsurface drainage is affected by canal construction or other activities.

- *Drain Habitat Conservation Strategy*: IID would create at least 190 acres of managed marsh habitat to a maximum of 652 acres.
- *Desert Habitat Conservation Strategy*: This strategy involves an extensive monitoring program and habitat replacement associated with construction of canals and other facilities within desert habitat.
- *Burrowing Owl Conservation Strategy*: This strategy would involve pre-construction monitoring; avoidance, where possible, of nesting and foraging areas; and other methods, such as nest boxes, to mitigate any impact to the species.
- *Desert Pupfish Conservation Strategy*: IID would manage its drains to minimize water quality impacts to the species and develop measures to enhance habitat within the drains. IID would also minimize impacts during maintenance of the drains to reduce any impact to the species.
- *Razorback Sucker Conservation Strategy*: Any fish found within the canals would be transported back to the Colorado River.

Implementation of the HCP measures would reduce the significant impacts to biological resources to less-than-significant levels. There may be short-term biological, water quality, cultural resource, and air quality impacts associated with the implementation of these mitigation measures. Furthermore, to the extent farmland is converted to non-agricultural use, there may be unavoidable significant impacts to agricultural resources.

Coachella Valley Water District

Mitigation measures for the lining of the Coachella Canal have been adopted as part of the EIS/EIR prepared for that project and include the following:

1. Site-specific surveys for desert tortoise. Avoidance or relocation will be conducted for any tortoises found within construction areas.

2. The canals will be restocked with channel catfish one time after completion of construction.

3. Structures will be constructed to allow large mammals to escape if they enter the canal.

4. Structures will be constructed in the canals to increase edge areas for fisheries.

Reclamation and CVWD have developed a plan to provide flow into Salt Creek to provide water for the marsh areas downstream of the Coachella Canal.

Implementation of the QSA portion of the CVWMP would involve the construction of facilities such as recharge basins, pipelines, and pump stations. The exact location of these facilities is not known at this time although location, near Dike 4 and Martinez Canyon are being considered as potential sites for the recharge basins. Subsequent CEQA documents will address site-specific mitigation measures. In general, site-specific surveys will be conducted on all

potential sites early in the planning stage. Any potential impacts to biological resources will be determined and mitigation measures developed. These measures could include habitat restoration on site or nearby, or use of an alternative site that does not have significant biological impacts.

Specific mitigation measures for bighorn sheep and other resources could include the following:

- No persistent pesticides would be used at the recharge basin sites.
- No sheep would be handled unless they are in immediate danger.
- Vehicle travel on the basin site would be no more than 20 mph.
- Hydroseeding with native species (palette specified) for erosion control would be provided for disturbed areas that were vegetated before project construction, as appropriate.
- Construction would be conducted outside the lambing season (February 1 through June 30).
- Workers would be prohibited from bringing dogs, or other pets, or firearms to the site during construction or operation of the facilities.
- A Worker Environmental Awareness Training Program for construction personnel would be conducted before and during construction by a qualified biologist approved by the Service. The program would provide workers with information on their responsibilities with regard to bighorn sheep and an overview of the life history of the species.
- Site-specific surveys would be conducted at each potential facility site once those sites have been defined in order to determine if sensitive plant and animal species may be on the site. These include such species as the desert tortoise, flat-tailed horned lizard, and Palm Springs ground squirrel. Site-specific mitigation measures would then be formulated.
- A monitoring program would be developed for the pupfish in the drain system of CVWD. If the monitoring indicates a potential adverse effect to these species, specific mitigation measures would be developed in coordination with the Service and CDFG. These measures could include creation of additional habitat, modification of drain flows, or other measures identified in the CVMSHCP or a site-specific HCP.

Colorado River

The following mitigation/conservation measures were identified in the Biological Opinion (USFWS 2001) and are incorporated herein to mitigate impacts to sensitive habitat and special status species along the lower Colorado River. A summary of the measures follows:

1. Stock up to 20,000 razorback suckers (25cm or greater in length) into the Colorado River between Parker and Imperial dams.

2. Restore or create 44 acres of backwater habitat along the lower Colorado River between Parker and Imperial dams.

3. Provide 5-year funding for the capture of wild-born or F1 generation of bonytails from Lake Mohave to be incorporated into the broodstock for the species or to support rearing at a satellite rearing facility.

4. Implement a two-tiered conservation plan to minimize the impact to willow flycatcher and other riparian species. This will involve the following:

    a. Identifying and monitoring up to 372 acres of currently occupied willow flycatcher habitat that may be impacted by implementation of the QSA.

    b. Restoring and maintaining 372 acres of new replacement willow flycatcher habitat along the lower Colorado River.

    c. In a second tiered program, restoring up to 1,116 total acres of willow flycatcher habitat depending upon the results of initial monitoring and the overall status of the willow flycatcher along the lower Colorado River.

The mitigation measures listed above were developed using a habitat–based approach with the federally listed willow flycatcher as a representative riparian species. Based on an assessment of the Proposed Project, implementation of these measures would mitigate potential impacts to species using similar habitat types along the Colorado River to less-than-significant levels. If impacts to California-listed species require issuance of a take authorization pursuant to the CESA, consultation with CDFG will be initiated. Other actions, similar to measures described above may be employed, as appropriate, to further reduce impacts to California-listed species. These potential actions may include the following:

1. Removal and control of exotic species and other pest management measures;

2. Purchase of conservation easements or fee title lands for long-term preservation;

3. Construction of nesting boxes or other platforms.

Potential short-term significant impacts to biological resources, water quality, air quality, and cultural resources may occur due to the activities associated with the restoration of habitat. It is expected that these significant impacts will be reduced to less-than-significant levels through implementation of site-specific mitigation measures once mitigation sites have been identified. If existing farmland is used to develop habitat, there may also be a significant unavoidable impact of loss of agricultural resources since these areas would be removed from production for the foreseeable future.

Salton Sea

A mitigation strategy has been developed by IID, in consultation with the Service and CDFG, to mitigate the earlier reduction in fish abundance expected from the acceleration of the salinization of the Salton Sea as a result of the Proposed Project. This measure is outlined below; it may be subject to refinement in the course of the permitting process. It is referred to as Mitigation Strategy 2 for consistency with the Draft PEIR, which included another mitigation

strategy (Mitigation Strategy 1) that was eliminated during the public review period in response to concerns expressed by the Service and CDFG.

Mitigation Strategy 2

This mitigation strategy would involve providing water to the Salton Sea to offset reductions in inflow to the Salton Sea as a result of the Proposed Project. On-farm irrigation system improvements, water delivery system improvements, and/or fallowing, or any combination of these methods, could be used to generate this mitigation water. For example, if all water conservation was achieved through fallowing, approximately 50,000 acres of fallowed land would be required to generate the water necessary for transfer and an additional 25,000 acres of fallowing would be required to generate the water necessary to offset changes in inflow to the Salton Sea. This mitigation strategy would maintain salinity and elevation changes on the baseline trajectory and thus avoid biological impacts to the Salton Sea resulting from Project-related inflow reductions. Implementation of this mitigation strategy could result in significant unavoidable impacts to agricultural resources due to long-term loss of agricultural lands if fallowing is used to conserve the water and farmland is converted to non-agricultural use.

3.2.4 Significant Unavoidable Adverse Impacts

The mitigation measures described above would reduce impacts in the CVWD service area and along the Colorado River to less-than-significant levels. The goal of IID's HCP is to reduce significant impacts within the IID service area and the Salton Sea to less-than-significant levels. Implementation of the measures outlined above will accomplish this goal.

3.2.5 Significant Irreversible Environmental Changes

No significant irreversible environmental changes to biological resources have been identified as a result of the implementation of the Proposed Project.

3.3 GEOLOGY, SOILS, AND MINERALS

3.3.1 Environmental Setting

3.3.3.1 Geology and Soils

The description of the environmental setting focuses primarily on those areas in which physical changes would occur if the Proposed Project were implemented. Because there would be no physical changes such as new construction within the MWD or SDCWA service areas, these areas have not been addressed in detail in this section. To the extent possible, the discussions of existing conditions are grouped according to service area or other geographic area, such as the lower Colorado River and Salton Sea. In some cases, however, geologic conditions are applicable to a wider region.

The Imperial and Coachella valleys are located in the Salton Trough of the Basin and Range Physiographic Province. The Salton Sea is in the lowest part of the trough. The trough is an extension of the Gulf of California, separated by the delta of the Colorado River. The southern part of the trough consists of the Imperial Valley, which is bounded by the Chocolate Mountains to the northeast and the Peninsular Range on the southwest. The land in the Imperial Valley slopes gently from sea level at the international boundary with Mexico, northwest to the Salton Sea. The majority of the cultivated land in the Imperial Valley is within the area of the prehistoric Lake Cahuilla. The silty clay loam to silty clay soils of the cropland were formed from these fine- to moderately fine-textured lakebed sediments. To the east of the Lake Cahuilla basin are the East Mesa, a terrace of the Colorado River, and the Algodones Sand Hills, formed from wind-blown sand from the beach and terrace sediments (United States Department of Agriculture – Soil Conservation Service [USDA-SCS], UC Agricultural Experiment Station, and IID 1981). The main part of the aquifer in the Imperial Valley is composed of Pliocene and Quaternary, predominantly nonmarine, alluvial deposits of sand, silt, and clay from the Colorado River. These deposits are thousands of feet thick, increasing in depth near the center of the valley (Loeltz et al. 1975).

The soil texture along the All American Canal ranges from fine sand to silty clay. The sands are rapidly permeable with low shrink-swell potential, and most of the finer-textured soils are very slowly permeable to impermeable with moderate to high shrink-swell potential. Salinity in the soils along this canal ranges from very slight to slight. The coarser soils are slightly to moderately susceptible to water and wind erosion; the finer-textured soils are moderately susceptible to water and wind erosion.

The soils along the Coachella Canal are much lighter in texture than those described above. They range from loam to sand, with all but one having low shrink-swell potential and moderately rapid to rapid permeability throughout the soil profiles. The Holtville loam has a clay subsoil layer with high shrink-swell potential and low permeability. Other than the Holtville loam soil, wind and water erodibility is low. The Holtville soil is highly susceptible to water erosion and moderately susceptible to wind erosion.

The area along the lower Colorado River contains young, unstable alluvial and floodplain surfaces, subject to periodic flooding, sedimentation, and dynamic alteration. The soils along

the silt-filled channels have a high organic matter content. Desert pavement is locally present, consisting of a thin, sheet-like concentration of wind-polished, closely packed pebbles (Parsons et al. 1986).

The soils in and along the shoreline of the Salton Sea are predominantly silty clay loam to silty clay in texture with moderate to high shrink-swell potential. They are subject to water erosion if left bare and are moderately susceptible to wind erosion. They are slightly to moderately saline and have very low permeability (USBR and SSA 2000; USDA-SCS 1980, 1981).

Prime and Unique Farmland and Farmland of Statewide Importance are classified on the basis of physical and chemical features of the soil types, as well as climate and water supply. These soils are discussed in section 3.5, Agriculture Resources.

Earthquakes are the main geologic hazard in the area affected by the Proposed Project. The Project area, particularly along the San Andreas, Imperial, and San Jacinto faults, is seismically active (California Department of Conservation [CDC], Division of Mines and Geology 2000). The surface geologic materials near these major faults are predominately hard rock, but they include a substantial amount of softer materials that can amplify shaking and lead to increased damage from an earthquake (CDC Division of Mines and Geology 2000). Other natural hazards include floods, landslides, and other mass wasting.

3.3.3.2 Mineral Resources

Significant geothermal resources and oil and gas fields exist primarily in the western part of the Project area (CDC Division of Mines and Geology 1980). According to the CDC, Division of Mines and Geology (1998), a variety of mineral resources are scattered throughout the Project area, as shown on the following table.

Table 3.3-1. Mineral Resources by County

County	*Mineral Resources*
Ventura	Clay, gypsum, shale, specialty sand, sand and gravel
Los Angeles	Clay, decorative rock, sand and gravel, crushed stone, titanium, tungsten
Orange	Silica, sand and gravel
Riverside	Clay, crushed stone, dimension stone, sand and gravel
San Bernardino	Alumina, clay, crushed stone, decorative rock, feldspar, sand and gravel, limestone, gold, talc, rare earths, salt, saline compounds, pumice, volcanic cinders, zeolites
San Diego	Crushed stone, dimension stone, gemstones, specialty sand, sand and gravel
Imperial	Clay, gypsum, sand and gravel, gold
Source: CDC Division of Mines and Geology 1998.	

3.3.2 Impacts

3.3.2.1 Significance Criteria

The criteria used to determine the significance of an impact regarding geology, soils, and mineral resources are based on the model initial study checklist in Appendix G of the State CEQA Guidelines. The Proposed Project would have a significant impact on these resources if it would:

- expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;
  - strong seismic ground shaking;
  - seismic-related ground failure, including liquefaction;
  - landslides; or
- result in substantial soil erosion or the loss of topsoil; or
- involve construction located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse; or
- be located on expansive soil, as defined in the Uniform Building Code, creating substantial risks to life or property; or
- result in the substantial loss of availability of a known mineral resource that would be of value to the region and the residents of the state; or
- result in the substantial loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

3.3.2.2 Methodology

Potential impacts to geology, soils, and mineral resources in the IID and CVWD service areas would result primarily from construction activities and resulting operational changes and were assessed by comparing Project-induced changes to the Existing Baseline. The exception to this approach is the evaluation of liquefaction potential. This analysis is based on the groundwater modeling described in section 3.1, which uses a predictive Future Baseline for groundwater conditions. The extent and nature of ground disturbance and new facilities were considered, along with the potential proximity of new construction to population centers. Information regarding impacts of the All American and Coachella Canal lining projects is based on the EIS/EIRs prepared specifically for those projects (USBR and IID 1994, and USBR and CVWD 2001).

No construction would occur in or adjacent to the Colorado River and Salton Sea. Potential impacts to these geographic areas would result from changes in water surface elevation and are based on the hydrologic modeling discussed in section 3.1, which assesses impacts compared to Future Baseline conditions. No impacts to the MWD or SDCWA service areas would occur since no construction or other physical or operational changes would take place in these service areas.

3.3.2.3 Summary of Impacts

Imperial Irrigation District

The All American Canal Lining Project EIS/EIR identified no significant impacts to geology, soils, or minerals from construction or operation of this component of the Proposed Project. The following references to canal lining refer to additional actions that would be taken within the IID service area.

Earthmoving during construction of on-farm water conservation measures (such as tailwater return systems) and water delivery system-based conservation measures (such as new lateral interceptors, reservoirs, seepage interceptors, and canal lining) could cause a temporary increase in wind and water erosion of bare soils. This is a potentially significant impact that is mitigable through the use of standard construction practices.

Operation of water conservation measures could increase the long-term potential for soil erosion, and wind and water erosion could occur within any new unlined interceptors/canals and reservoirs. The amount of erosion would not be substantial, however, because relatively small areas would be involved, and standard Best Management Practices would be implemented. Impacts would not be significant. Lining canals would have the long-term effect of reducing erosion because the concrete lining would stabilize the canals' banks. Fallowing could be implemented within IID's service area as a means of conserving water. No water would be applied to fallowed areas; thus, no water erosion of soils would occur. The potential for wind erosion of fallowed farmland is addressed in section 3.7, Air Quality.

In general, the water conservation measures would not involve the type of construction that is highly susceptible to geologic hazards, such as liquefaction, ground shaking, and fault rupture. If damage were to occur due to a seismic event, impacts would be localized and would not result in increased risk to the public. This is particularly true since the Proposed Project would be located in a largely undeveloped and unpopulated rural area. Additionally, lined canals are structurally stronger than unlined canals.

Soil erosion from irrigation water applied to fields could be reduced, since water conservation measures would reduce the amount of tailwater entering the drains, which could diminish the amount of soils removed from each field. This would be a beneficial impact.

Project components would affect relatively small areas and would not result in a substantial loss of availability of a mineral resource with local, regional, or state-wide importance. No new risks to life and property would result from construction on expansive soils given the nature of the facilities that would be constructed and the sparsely populated locations in which they would be located.

Coachella Valley Water District

The Coachella Canal Lining Project EIS/EIR identified no significant impacts to geology, soils, or minerals from construction or operation of this component of the Proposed Project. It concluded that lining the Coachella Canal would have the long-term effect of reducing erosion because the concrete lining would stabilize the canal's banks. The addition of a concrete lining also would strengthen the canal structurally.

Certain facilities, such as pumping stations, recharge facilities, and pipelines, may be constructed by CVWD as part of the Proposed Project. Earthmoving during construction could cause a temporary increase in wind and water erosion of bare soils. It is estimated that approximately 250 and 600 acres could be disturbed, which could significantly increase the short-term potential for localized wind and water erosion. This impact would be mitigated through the implementation of standard construction practices.

Structures such as pumping stations, recharge facilities, and pipelines could fail during an earthquake, which could result in a release of water in the immediate vicinity of the facility. Pipelines and pumping stations would likely be located in sparsely populated agricultural areas. Two sites currently under preliminary consideration for the recharge facilities, among others, are in the vicinity of Dike 4 (a flood control dike) and the Martinez Canyon alluvial fan located west of the community of Valerie Jean. If selected, since these facilities would be located in remote areas, the release of water would not cause a public hazard. Shallow excavations would not create unstable earth conditions or cause changes in geologic substructures that would increase earthquake hazards.

Implementing the Proposed Project would allow the use of Colorado River water to stabilize or raise groundwater levels in the Lower Valley (although not above historic levels). Agricultural drains have been installed in this area, which maintain a fairly constant water level even if water levels rise. If water levels increase as a result of the Proposed Project to within 30 feet of the ground surface under habitable structures or important infrastructure, such as bridges, the liquefaction hazard could increase, which would be a potentially significant but mitigable impact.

The Proposed Project would assist in the increase of groundwater levels to historic levels, which would reduce the potential for subsidence. This would be a beneficial impact. The Proposed Project could result in the disturbance of approximately 250 to 500 acres. This would not result in a substantial loss of availability of a mineral resource with local, regional, or state-wide importance. No new risks to life and property would result from construction on expansive soils given the nature of the facilities that may be constructed and the sparsely populated locations in which they would probably be located.

The Metropolitan Water District of Southern California

No new construction or changes in the operation of existing facilities would occur in this service area that would impact geology, soils, or minerals. Implementation of the Proposed Project would not increase the exposure of people and structures to potential risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides. The Proposed Project would not

result in substantial soil erosion or the loss of topsoil or involve construction located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project. Nothing would be constructed on expansive soils or would result in the substantial loss of availability of a known mineral resource.

San Diego County Water Authority

No new construction or changes in the operation of existing facilities would occur in this service area that would impact geology, soils, or minerals. Implementation of the Proposed Project would not increase the exposure of people and structures to potential risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides. The Proposed Project would not result in substantial soil erosion or the loss of topsoil or involve construction located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project. Nothing would be constructed on expansive soil or would result in the substantial loss of availability of a known mineral resource.

Other Areas

COLORADO RIVER

The only change to the Colorado River would be the very slight lowering of the median water surface elevation by an amount that is within historic levels. The shoreline would be exposed very gradually, minimizing the potential for erosion until the soils stabilize. This impact would not be significant in either California or Arizona. People and structures would not be exposed to potential risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides. The Proposed Project would not result in substantial soil erosion or the loss of topsoil or involve construction located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project. Nothing would be constructed on expansive soil or would result in the substantial loss of availability of a known mineral resource.

SALTON SEA

The lowering of the Salton Sea's elevation over time, as described in Chapter 3.0, would cause additional bare soil to be exposed. The newly exposed soil would be subject to wind and water erosion; however, the high salt content of the Salton Sea and the underlying soils would cause a crust to form as the soils dried. The soil system at the Salton Sea is predominately sodium sulfate and sodium chloride. These salts do not change in volume significantly with fluctuations in temperature, so the crust at the Salton Sea should be fairly stable and resistant to erosion (IID and USBR 2002). Impacts would be less than significant.

No other elements of the Proposed Project would impact geology, mineral, or soils in this area. People and structures would not be exposed to potential risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides. The Proposed Project would not result in substantial soil erosion or the loss of topsoil or involve construction located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project. No construction

on expansive soils would be required, nor would the Proposed Project result in the substantial loss of availability of a known mineral resource.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would result in significant impacts to geology, soils, or mineral resources or increase seismic-related risks along the Colorado River. A reduction in the amount of conserved water dedicated to MWD would not result in any changes to the physical environment that would impact soils, geology, or mineral resources. Diversion of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would impact geology, soils, or mineral resources or that would result in an increase of seismic-related risks.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River contemplated under the Proposed Project and would not require the construction of water conveyance facilities. Therefore, no impacts to geology, soils, and minerals, or an increase in seismic risks would result from implementation of this Project component.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that could cause significant impacts to geology, soils or mineral resources or otherwise increase seismic-related risks. The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause significant impacts to geology, soils, or mineral resources or that would increase seismic-related risks.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore no change in Colorado River conditions that could potentially impact geology, soils, or mineral resources along the Colorado River would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD nor would it increase the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical environment that would impact geology, soils, or mineral resources or cause an increase in seismic-related risks.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAFY of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause significant impacts to geology, soil, or mineral resources or increase seismic-related risks. No impacts to geology, soils, or mineral resources or increased seismic-related risks would occur from the diversion or conveyance of the water to CVWD because no new facilities would be required to be constructed. Similarly, the exchange of SWP entitlements under this Project component would not result in significant impacts to geology, soils, or mineral resources or increase the risks associated with seismic-related events because no physical changes to environmental conditions would occur and no construction of water conveyance infrastructure would be required.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts to geology, soils, or mineral resources because it does not change the amount of water diverted, conveyed, or used and no changes to existing environmental conditions would result.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD by reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These changes are within historic fluctuations and would not result in changes to the physical environment that would create a significant impact to geology, soils, or mineral resources or create an

increased risk from seismic-related events. Also under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the River under this component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities, and would not increase the amount of water used within its service area. Therefore, no changes to environmental conditions would result from implementation of this Project component that would significantly impact geologic, soils, or mineral resources or increase the risk from seismic-related events.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would create a significant impact to geology, soils, or mineral resources or create an increased risk from seismic-related events.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would share this shortage. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. Additional conservation/shortage management would also be short-term and is not anticipated to involve ground disturbance or construction activity. The potential impacts to geological resources, such as the potential for wind erosion, due to this additional conservation/shortage management would be so minor as to be indiscernible from the impacts of the Proposed Project.

3.3.3 Mitigation Measures

The following measure will be implemented to mitigate the potential significant impact from increased risk of liquefaction in the Coachella Valley.

- CVWD shall monitor water levels in the vicinity of recharge basins and manage recharge operations such that water levels will remain greater than 30 feet below the ground surface near the recharge site.

To minimize soil erosion from construction in the CVWD and IID service areas, one or more of the following measures could be implemented as standard operating practices during construction activities (this list does not preclude the use of additional mitigation measures as needed):

1. Apply water to areas where vehicles and equipment are involved in ground-disturbing activities.
2. Pave dirt roads or keep them wet.
3. Increase water applications or reduce ground-disturbing activities with increasing wind speeds.
4. Minimize the amount of disturbed area and vehicle speeds onsite.
5. Cover inactive soil stockpiles or treat them with soil binders, such as crusting agents.
6. Designate personnel to monitor erosion control program activities to ensure that they are effective in minimizing soil erosion.

3.3.4 Significant Unavoidable Impacts

No significant unavoidable impacts would occur.

3.3.5 Significant Irreversible Environmental Changes

No significant irreversible environmental changes would occur.

3.4 LAND USE AND PLANNING

3.4.1 Environmental Setting

3.4.1.1 Regulatory Framework

Land use is under the jurisdiction of local municipalities and counties. Each city and county in Southern California has a general plan that guides its future growth. In addition to general planning, cities and counties also provide land use planning for smaller areas within their jurisdictions. These more localized land use planning documents include community and specific plans. All of these plans must be consistent with the sub-regional and regional plans, which in turn must be consistent with state land use planning and zoning laws.

The DOI, U.S. Department of Agriculture (USDA), and the U.S. Department of Defense are primarily responsible for land use on federal property, and the California State Lands Commission, Parks and Recreation Department, Coastal Commission, Department of Fish and Game, and the University of California are among the agencies that govern land uses on state-owned lands.

Section 15125 of the State CEQA Guidelines requires that an EIR discuss any inconsistencies between the Proposed Project and applicable general and regional plans. This PEIR section addresses the planning programs and policies of the Southern California Association of Governments (SCAG) and the San Diego Association of Governments (SANDAG), the regional planning entities within the Project area, as well as the BLM and IID.

Southern California Association of Governments - Regional Comprehensive Plan and Guide

SCAG is a regional agency whose functions include regional transportation planning, air quality planning, demographic projections, and the review of Proposed Projects of regional significance to determine consistency with regional plans, including SCAG's Regional Comprehensive Plan and Guide (RCPG). SCAG's RCPG (1996) contains the following relevant planning principles:

3.03 The timing, financing, and location of public facilities, utility systems, and transportation systems shall be used by SCAG to implement the region's growth policies.

3.09 Support local jurisdictions' effort to minimize the cost of infrastructure and public service delivery, and efforts to seek new sources of funding for development and the provision of services.

3.20 Support the protection of vital resources such as wetlands, groundwater recharge areas, woodlands, production lands, and land containing unique and endangered plants and animals.

5.11 Through the environmental document review process, ensure that plans at all levels of government (regional, air basin, county, subregional and local) consider air quality, land use, transportation and economic relationships to ensure consistency and minimize conflicts.

Water Resources Chapter Recommendations

SCAG signed a Memorandum of Understanding (MOU) with MWD, as the largest wholesale water agency in the region, to develop the Water Resources Chapter (WRC). The WRC,

published in 1996, includes projections of water supply and demand for areas outside the MWD service area within the SCAG region. The recommendations contained in this chapter do not create new legal mandates for local governments or other regional organizations. The WRC identifies potential programs that would help meet the projected future water supply needs for the region. These include programs related to Colorado River water supply and use, and thus the QSA, such as the All American Canal and Coachella Canal lining projects, Phase II water conservation program with IID, and IID's modified irrigation practices and land fallowing proposal. The WRC also recognizes currently planned State Water Project transfer programs, water transfer and exchange programs, and local management strategies.

San Diego Association of Governments – Regional Growth Management Strategy

SANDAG works with local cities within San Diego County, the County of San Diego, and other local agencies to conduct certain planning activities at a regional level. These activities consist of planning for public facilities financing, housing, energy, land use, growth management, open space/environmental/habitat conservation, waste management, airport land use, bi-national coordination, watershed/water quality, and shoreline erosion on a regional scale. A Memorandum of Agreement between SDCWA and SANDAG was adopted in 1992 (SANDAG and SDCWA 1992) whereby SDCWA agrees to use SANDAG's most recent regional growth forecasts for planning purposes. These forecasts are to provide a basis for SDCWA to plan the amount of land and types of facilities needed to serve the forecast population. While the region's cities and the County of San Diego have control over local land use policies, SANDAG provides a forum for these jurisdictions to coordinate planning for the San Diego region as a whole (SANDAG 1999).

In 1999, SANDAG launched REGION 2020, which is its regional growth management strategy update. The strategy consists of five interrelated elements and is based on the idea that most growth-related issues can be addressed within the context of one or more of the elements. The elements include economic prosperity, transportation, housing, open space and environment, and fiscal reform/infrastructure financing. REGION 2020 provides a comprehensive, cohesive framework for dealing effectively with the impacts of growth in the San Diego region. The actions contained in the REGION 2020 are intended to preserve or improve the region's quality of life. The following policy related to the water supply/water quality of life factor is applicable to the Proposed Project:

> *Ensure a sufficient supply of water, and improve the quality of our coastal waters, bays, reservoirs, streams and groundwater.*

Bureau of Land Management – California Desert Conservation Area

The BLM administers extensive lands in the Southern California desert region. Portions of the Project area are located within the California Desert Conservation Area (CDCA). The CDCA is a 25-million-acre area that was created by the Federal Land Policy and Management Act of 1976. The act directed the Secretary of the Interior to prepare and implement a comprehensive, long-range plan for the management, use, development, and protection of public lands within the CDCA.

The goal of the CDCA plan is to "Provide for the use of the public lands and resources of the CDCA, including economic, scientific, educational, and recreational uses, in a manner which enhances wherever possible—and which does not diminish, on balance—the environmental, cultural, and aesthetic values of the Desert and its future productivity" (BLM 1980).

Land Use Plans and Policies – Western Arizona

The Western Arizona Council of Governments (WACOG) is a regional agency that includes Mohave, La Paz, and Yuma Counties in western Arizona. Currently, WACOG does not have a regional plan in place that addresses water resources policy issues for western Arizona.

Many Arizona counties and municipalities are currently in the process of updating their general plans in accordance with recent growth management legislation by the State. In western Arizona, La Paz County does not currently have a general plan in place, but will be developing a plan in late 2001 and 2002. Mohave County is currently revising water-related policies in the natural resources element of its general plan. Yuma County is currently preparing a general plan update that will include water resources policies.

Local Planning Programs

Each of the counties within the area maintains a general plan that guides land use and development decisions within the respective county jurisdictions. These plans include population and housing projections established by the regional planning agencies, SCAG and SANDAG. Comparable plans are in place for each of the cities. These plans are required to be consistent with regional plans.

3.4.1.2 Regional Issues

The region of influence includes much of Southern California, a region that has a diverse array of land uses. A large portion of the area is urbanized, with major centers in metropolitan Los Angeles, Orange, San Bernardino, Riverside, and San Diego counties. Urban development is also rapidly occurring in portions of Riverside and San Bernardino counties. Agriculture is a major land use in certain counties, particularly Imperial, Riverside, and San Diego counties. There also are large, relatively undeveloped land areas that are in private ownership or owned by state and federal governments. The region of influence also includes a small portion of western Arizona extending along the lower Colorado River.

SCAG is the regional planning entity for six of the seven counties (Ventura, Los Angeles, Orange, San Bernardino, Riverside and Imperial counties) that are served by the four co-lead agencies. As the designated Metropolitan Planning Organization, SCAG is mandated by the federal government to research and draw up plans for transportation, growth management, hazardous waste management, and air quality. Additional mandates exist at the state level. A number of subregional agencies are members of SCAG, including the Coachella Valley Association of Governments, Imperial Valley Association of Governments, and the Western Riverside Council of Governments. The regional planning entity for San Diego County, is SANDAG.

3.4.1.3 Imperial Irrigation District

The IID service area is within Imperial County, and includes the local municipalities of Calipatria, Westmorland, Brawley, Holtville, El Centro, and Calexico. Agricultural lands with scattered suburban and rural development occupy the majority of the IID service area. Actions that would occur within the IID service area as a result of the implementation of the Proposed Project would take place in rural areas.

Constructing a new canal parallel to the existing All American Canal would begin downstream from the Fort Yuma Indian Reservation (see Figure 1.1-2) and the Pilot Knob ACEC. This is archaeologically important land located outside of the Fort Yuma Indian Reservation (Pilot Knob is west of the western boundary of the reservation). The parallel canal would be constructed on federal land previously withdrawn from the public domain for irrigation development in the IID service area and for construction of the All American Canal.

3.4.1.4 Coachella Valley Water District

The CVWD service area is located primarily in Riverside County with small portions in Imperial and San Diego counties. It includes numerous municipalities, including the cities of Coachella, Indio, Palm Desert, Cathedral City, La Quinta, Indian Wells, and Rancho Mirage. Based on the existing land use acreage compiled by the Coachella Valley Association of Governments (as of 1995), over 90 percent of the Coachella Valley is open space (including agriculture), and only 3 percent of the land is residential. Most of the lands within the service area are either private lands or are public lands administered by the BLM, although land owned by Indian tribes is also present. Actions that would take place in the CVWD service area as a result of the implementation of the Proposed Project would primarily take place in the lower Coachella Valley. Land uses in the lower Coachella Valley include extensive agricultural uses and recreational uses such as resorts and golf courses.

Most of the land bordering the Coachella Canal right-of-way is federal land. The area east of the canal and part of the area west of the canal is part of the U.S. Navy's Chocolate Mountain Aerial Gunnery Range. The area west of the canal also contains land administered by the BLM under the CDCA Plan. A portion of land on the west bank is owned by the State of California. Approximately 97 percent of the land adjacent to the canal is undeveloped desert. Approximately 2 percent of the land along the southern and western boundaries of the canal right-of-way has been developed with single-family residences and with spaces that include mobile home/recreational vehicle (RV) parks. Minor amounts of agricultural and quarry operations also are present.

3.4.1.5 The Metropolitan Water District of Southern California

The MWD service area includes the California coastal plain. It extends about 200 miles along the Pacific Ocean from the city of Oxnard on the north to the Mexican border on the south. It extends about 70 miles inland from the coast. The service area includes portions of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. Much of the area is urbanized; only 13 percent of the land area of these six counties is within the MWD service area, but nearly 90 percent of the population of those counties lives within the service area boundaries (MWD 1995). The urbanized areas contain a wide variety of land use patterns,

including residential, commercial, recreational, educational, and industrial/manufacturing uses. The service area also includes largely undeveloped lands in areas such as the Santa Monica Mountains in Los Angeles County, and the Santa Margarita Mountains, Merriam Mountains, and Agua Tibia Wilderness Area in San Diego County. Some agricultural uses are present in the service area, including, but not limited to, rural portions of Ventura and San Diego counties.

3.4.1.6 San Diego County Water Authority

The SDCWA service area is located in the western portion of San Diego County. It extends from the U.S.-Mexico border in the south to Orange and Riverside counties in the north and from the Pacific Ocean to the foothills that end the coastal plain in the east. It is characterized primarily by urban and suburban uses, but it currently includes approximately 74,000 acres of land in agricultural production (SDCWA 2000). The urbanized areas contain a wide variety of land use patterns, including residential, commercial, recreational, educational, and industrial/manufacturing uses. Largely undeveloped areas are found in the Santa Margarita Mountains, Merriam Mountains, and Agua Tibia Wilderness Area. The military has a substantial presence in San Diego County, including the Naval Air Station Miramar and the Marine Corps' Camp Pendleton. Camp Pendleton alone comprises about 135,000 acres, or about 15 percent of the total service area. Both Naval Air Station Miramar and Camp Pendleton contain large open spaces next to urbanized areas.

3.4.1.7 Other Areas

Colorado River

Land uses along the lower Colorado River are under a number of jurisdictions, including La Paz and Yuma counties, Arizona; and San Bernardino, Riverside, and Imperial counties, California. Incorporated cities along the River include Needles and Blythe, California; and Parker, Arizona. Several Indian reservations are located along the River, as well, including the Colorado River Indian Tribes Reservation and Yuma Project Reservation Division. Indian tribes are sovereign nations and reservation lands are not subject to local land use controls. A number of federal agencies manage federally owned land along the River, including the BLM, the Service, and the Department of Defense. Other land is under the jurisdiction of individual states. The majority of the Colorado River region is undeveloped, although scattered suburban and rural development is present.

Salton Sea

The Salton Sea crosses the Riverside and Imperial County boundaries and borders upon San Diego County. It is the dominant feature in the region and covers 376 square miles. Agricultural lands with scattered suburban and rural development occupy the majority of the lands surrounding the Salton Sea. A number of unincorporated communities surround the Sea and consist primarily of single-family residences, RV and trailer parks, beaches, marinas, and commercial uses. The latter provide services for tourists and area residents.

Recreational uses, including the Salton Sea State Recreation Area, are prevalent in the immediate vicinity of the Sea, as described in section 3.6. The Sonny Bono Salton Sea National

Wildlife Refuge is located in and along the southern portion of the Sea, and the Imperial Wildlife Refuge Area-Wister Unit is located along the east shore of the Sea. Geothermal hydroelectric facilities are present on the southwest shore. The U.S. Navy's Salton Sea Test Base covers 12,180 acres of water in the southwest portion of the Sea, as well as 7,240 acres of the adjoining land.

3.4.2 Impacts

3.4.2.1 Significance Criteria

The criteria used to determine the significance of an impact on land use and planning are based on the model initial study checklist in Appendix G of the State CEQA Guidelines. The Proposed Project would be considered to have a significant environmental impact if it would:

- physically divide an established community; or
- conflict with any applicable land use plan, policy, or regulation of any agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect; or
- conflict with any applicable habitat conservation plan or natural community conservation plan.

3.4.2.2 Methodology

Potential impacts to land use in the IID and CVWD service areas would result primarily from construction activities and resulting operational changes and were assessed by comparing Project-induced changes to the Existing Baseline. No construction would occur in or adjacent to the Colorado River and Salton Sea. Potential impacts to these geographic areas would result from changes in water surface elevation and are based on the hydrologic modeling discussed in section 3.1, which assesses impacts compared to Future Baseline conditions. No impacts to the MWD or SDCWA service areas would occur since no construction or other physical or operational changes would take place in these service areas. Information regarding impacts of the All American and Coachella Canal lining projects is derived from the EIS/EIRs prepared specifically for those projects (USBR and IID 1994, USBR and CVWD 2001). The consistency of the Proposed Project with existing regional land use policies was analyzed, along with the potential for physical changes to land uses. Given the programmatic level of analysis, this EIR focuses on regional policies and plans. Consistency with specific local plans and policies will be evaluated in subsequent project-level environmental analyses once specific sites are identified.

3.4.2.3 Summary of Impacts

Consistency with Regional Land Use Plans and Policies

Table 3.4-1. Consistency with Regional Land Use Plans and Policies

SCAG Regional Comprehensive Plan and Guide	
3.03 The timing, financing, and location of public facilities, utility systems, and transportation systems shall be used by SCAG to implement the region's growth policies.	Policy 3.03 provides planning guidance to SCAG with regard to the implementation of growth policies. The Proposed Project would be consistent with this policy because it would not conflict with the timing, financing, and location of public facilities, utility systems, and transportation systems.
3.09 Support local jurisdictions' effort to minimize the cost of infrastructure and public service delivery, and efforts to seek new sources of funding for development and the provision of services.	Policy 3.09 addresses the costs and funding sources of infrastructure and public service systems. The Proposed Project would be implemented in a manner that would maximize cost-effectiveness and efficiency for all parties involved and would thus be consistent with this policy.
3.20 Support the protection of vital resources such as wetlands, groundwater recharge areas, woodlands, production lands, and land containing unique and endangered plants and animals.	Policy 3.20 addresses protection of important natural resources. This PEIR includes mitigation measures for significant impacts that may occur from implementation of the Proposed Project. In addition, a number of related programs are being planned by various agencies to address resource conservation issues. These programs include the lower Colorado River Multi-Species Conservation Program, CVWD's proposal to recharge groundwater using Colorado River water, and IID's HCP. The Proposed Project would be consistent with this policy.
5.11 Through the environmental document review process, ensure that plans at all levels of government (regional, air basin, county, subregional and local) consider air quality, land use, transportation and economic relationships to ensure consistency and minimize conflicts.	Policy 5.11 deals with issues of consistency during the environmental review process for planning projects. As documented in this PEIR, the Proposed Project is being thoroughly reviewed as required under CEQA. Because the Proposed Project is being evaluated at a programmatic level, appropriate environmental review would be conducted in the future for specific projects as appropriate.
SANDAG Regional Growth Management Strategy	
Ensure a sufficient supply of water, and improve the quality of our coastal waters, bays, reservoirs, streams and groundwater.	The Proposed Project is intended to maintain a reliable water supply to meet demands in the SDCWA service area. The Proposed Project would not specifically improve water quality in the SANDAG region, but neither would it have adverse impacts. Implementation of the Proposed Project would be consistent with this policy.

Table 3.4-1. Consistency with Regional Land Use Plans and Policies

California Desert Conservation Area	
Provide for the use of the public lands and resources of the CDCA, including economic, scientific, educational, and recreational uses, in a manner which enhances wherever possible – and which does not diminish, on balance – the environmental, cultural, and aesthetic values of the Desert and its future productivity.	The Proposed Project would result in the implementation of water conservation measures in the IID service area that would cause the Salton Sea water elevation to decline at a more rapid rate and to a greater extent than would occur under current conditions. The Proposed Project also would result in an acceleration of salinity increases. This would result in significant or potentially significant impacts to biology, recreation, air quality, aesthetics, and cultural resources. This PEIR includes mitigation measures that would mitigate impacts to the Sea to a less than significant level, with the exception of potential fugitive dust emissions. Should the Proposed Project not be implemented, the Sea level would decline and salinity would increase, although at a slower rate. No mitigation would be provided to offset this impact, unless it were included as part of another project. Other significant impacts to environmental resources or public lands within the CDCA area (including those identified in the IID and CVWD service areas and along the Colorado River) are mitigable to less than significant levels with the exception of short-term air quality impacts from the Coachella Canal Lining Project and water quality impacts to the Alamo River and the lower aquifer groundwater of CVWD's Upper Valley. With mitigation, the Proposed Project would be consistent with the goal of the CDCA. It would not diminish, on balance, the environmental, cultural, and aesthetic values of the Desert and its future productivity.

Imperial Irrigation District

No significant land use impacts were identified in the EIS/EIR for the All American Canal Lining Project.

Implementation of the Proposed Project would result in water conservation programs to implement IID's consensual cap on Priority 3a diversions and the proposed water transfers to CVWD, MWD and SDCWA. The water conservation measures, which may include on-farm measures and/or system measures, would be implemented on agricultural land and would not result in changes in land use that would meet the significance criteria described above. As discussed in section 3.5, farmland may be fallowed within the IID service area to generate conserved water for purposes of transfer or to comply with the consensual cap on Priority 3a diversions. As discussed in section 3.5, if this resulted in the conversion of Important Farmland to non-agricultural use, this would be a significant impact to agricultural resources in the Imperial Valley. It would not represent a significant land use impact, however, because this change would not physically divide an established community; conflict with any applicable

land use plan, policy, or regulation of any agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect; or conflict with any applicable habitat conservation plan or natural community conservation plan (IID and USBR 2002).

Coachella Valley Water District

As noted in the EIS/EIR for the Coachella Canal Lining Project, lining the existing canal would be consistent with land use plans and policies and would not otherwise significantly affect land use.

No aspects of the Proposed Project would significantly alter land uses in the CVWD service area. The additional water transferred to CVWD would be used to replenish overdrafted groundwater aquifers, which is consistent with current regional planning and therefore would not create additional water supply for new users. Other facilities would likely be located in rural or remote areas, such as the vicinity of Dike 4 or Martinez Canyon. Pipelines and pumping stations are common in such areas, as are water retention facilities. These facilities would not physically divide an established community. CVWD is participating in a multi-agency, multi-species habitat conservation plan (CVMSHCP) with others in the Coachella Valley. Potential impacts to sensitive species from CVWD's delivery and use of water related to the Proposed Project will be addressed in the CVMSHCP and the CVWMP EIR currently in preparation.

Metropolitan Water District

No new construction or operational changes would occur in this service area. The Proposed Project would not physically divide communities, and since no physical or operational changes would occur, no conflicts with applicable land use plans, policies, or regulations of agencies with jurisdiction over the Project adopted for the purpose of avoiding or mitigating an environmental effect would occur; nor would the Project conflict with an applicable habitat conservation plan or natural community conservation plan.

San Diego County Water Authority

No new construction or operational changes would occur in this service area. The Proposed Project would not physically divide communities, and since no physical or operational changes would occur, no conflicts with applicable land use plans, policies, or regulations of agencies with jurisdiction over the Project adopted for the purpose of avoiding or mitigating an environmental effect would occur; nor would the Project conflict with an applicable habitat conservation plan or natural community conservation plan.

Other Areas

COLORADO RIVER

The Proposed Project would not result in any construction or changes to land use patterns around the Colorado River, either in California or Arizona. There would be a slight reduction (within the normal range of variability) in the median water surface elevation between Parker and Imperial dams, although this would not affect land uses. No new construction or

operational changes would occur in this service area. The Proposed Project would not physically divide communities. The slight reduction in median water surface elevation would not conflict with applicable land use plans, policies, or regulations of agencies with jurisdiction over the Project adopted for the purpose of avoiding or mitigating an environmental effect; nor would the Project conflict with an applicable habitat conservation plan or natural community conservation plan. The potential biological impacts of the Proposed Project to the Colorado River geographic area are being addressed in the Lower Colorado River Multi-Species Conservation Program, which is in preparation.

SALTON SEA

The Proposed Project would result in decreased inflows to the Salton Sea and would accelerate the increase in the Sea's salinity. These consequences would not physically divide the local community or otherwise result in a direct change to land use patterns, although this could affect the area's desirability for recreational use, as described in section 3.6. This potential decrease in recreational activities would eventually occur whether or not the Proposed Project were implemented as salinity levels of the Sea would increase independently of implementation of the Proposed Project. Currently submerged land would be exposed sooner and to a greater extent than under Future Baseline conditions.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would result in significant impacts to land uses along the Colorado River or affect local land use planning efforts. A reduction in the amount of conserved water dedicated to MWD would not change land use patterns nor affect land use planning activities of local planning agencies. Diversion of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would impact current land uses or affect local land use planning efforts.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River water contemplated under the Proposed Project. Because no changes in river levels would result or construction of new diversion structures would be required with implementation of this Project component, no significant impacts to

existing or future land uses would occur. The exchange of water with SDCWA would occur from existing infrastructure and would not require construction activities that would impact current land uses or effect local land use planning efforts.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Because the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that would impact current land uses or change local land use planning efforts. The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause significant impacts to current or future land uses or effect local land use planning efforts.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore no change in Colorado River conditions or potential impacts to land uses along the Colorado River would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD nor would it increase the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause significant impacts to current or future land uses or effect local land use planning efforts.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAF of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu, no change in river flows between Parker and Imperial dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause significant impacts to existing land uses along the Colorado River or affect local land use planning efforts. No impacts to land use patterns would occur from the diversion or conveyance of the water to CVWD because no new facilities would be required to be constructed. Similarly, the exchange of SWP entitlements under this Project component would be accomplished through existing facilities and would not result in physical changes to environmental conditions that would cause a significant impact to land uses or affect land use planning efforts.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts to land uses or land use planning efforts

because it does not change the amount of water diverted, conveyed, or used and no changes to existing environmental conditions would result.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These changes are within historic fluctuations and would not result to changes to the physical environment that would create a significant impact to land uses or land use planning efforts. Also under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the River under this component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities, and would not increase the amount of water used within its service area. Therefore, no changes to environmental conditions would result from implementation of this Project component that would significantly impact land uses or local land use planning efforts.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would create a significant impact to land uses or land use planning efforts.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would share this shortage. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. This additional conservation/shortage management would also be short-term. The potential impacts to land use, such as increased

farmland fallowing, due to this additional conservation/shortage management would be so minor as to be indiscernible from the impacts of the Proposed Project.

3.4.3 Mitigation Measures

No mitigation measures are required.

3.4.4 Significant Unavoidable Environmental Changes

No significant unavoidable land use changes would result from the implementation of the Proposed Project.

3.4.5 Significant Irreversible Environmental Changes

No significant irreversible land use changes would result from the implementation of the Proposed Project.

3.5 AGRICULTURAL RESOURCES

3.5.1 Environmental Setting

3.5.1.1 Regulatory Framework

Individual counties and municipalities regulate agricultural land uses primarily through the adoption of land use plans, policies, and agricultural zoning that restrict the location, type, and intensity of land development and use that is allowed. The California Department of Conservation has the primary responsibility for regulation and reporting related to statewide agriculture. Some agricultural land in Southern California is under Williamson Act contracts. Under the Williamson Act (formally referenced as the California Land Conservation Act of 1965), local governments may enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, landowners receive property tax assessments that are much lower than normal because they are based upon farming and open space uses as opposed to full market value. Local governments receive an annual subvention of forgone property tax revenues from the State via the Open Space Subvention Act of 1971. The minimum term of a Williamson Act contract is 10 years.

3.5.1.2 Regional Issues

Existing Agricultural Resources

Table 3.5-1 presents the amount of agricultural land present in each county served by the four co-lead agencies and the percentage of land in each county that is in agricultural use. The categories in Table 3.5-1 are defined in Table 3.5-2 and are based on the Important Farmland maps for California. These maps are compiled from USDA Natural Resources Conservation Service soil surveys and current land use information.

Table 3.5-1. Agricultural Land in 1998 by County (in acres)

County	*Important Farmland*[1]	*Grazing Land*	*Total Agricultural Land*[2]	*Urban & Built-Up Land*	*Total County Area*	*Agricultural Land as a Percentage of Total Land*
Imperial	554,889	0	554,889	23,952	2,868,426	19.3%
Los Angeles	57,292	218,118	275,410	159,533	2,529,470	10.9%
Orange	18,200	38,517	56,717	269,987	509,460	11.1%
Riverside	501,740	134,597	636,337	240,889	4,673,095	13.6%
San Bernardino	50,927	954,229	1,005,156	234,981	12,867,789	7.8%
San Diego	196,813	142,355	339,168	311,491	2,712,200	12.5%
Ventura	123,235	207,853	331,088	95,522	1,173,973	28.2%

Source: CDC 2000a-g.
Notes: 1. Important Farmland includes Prime Farmland, Farmland of Statewide Importance, Unique Farmland and Farmland of Local Importance.
2. This category includes both Important Farmland and Grazing land.

IMPERIAL COUNTY

In 1998, agricultural land in Imperial County consisted of 554,889 acres of Important Farmland (as defined in Table 3.5-2), or 19.3 percent of the county's total land area. Unlike the other counties listed in Table 3.5-1, none of the agricultural lands in Imperial County were categorized as grazing land in 1998. All agricultural land in Imperial County is also considered Important Farmland. Of the seven counties in Southern California, Imperial provides the largest amount of Important Farmland, and the second largest proportion of agricultural land. In 1997, Imperial County was ranked as 10th in California in terms of agricultural production, with a value of $1,039,928,000 (personal communication, J. Tippett 2001). In 1998, Imperial County was the state's top producer of carrots (producing about 57 percent of the total statewide value), sugar beets (about 38 percent of the statewide value), onions (about 22 percent of the statewide value), wheat (about 19 percent of the total statewide value), alfalfa hay (about 17 percent of the statewide value), and sweet corn (about 17 percent of the statewide value). Imperial County also produces approximately 27 percent of the statewide value of cantaloupes, 22 percent of dates, and 18 percent of watermelons (California Department of Food and Agriculture 1998).

LOS ANGELES COUNTY

In 1998, Los Angeles County contained 275,410 acres of agricultural land, about 10.9 percent of the total land area in the county. Of the seven counties in Southern California, Los Angeles had the second lowest percentage of agricultural land, behind only San Bernardino County. Between 1992 and 1997, the market value of agricultural products sold increased by 19 percent to $237,665,000. Crops accounted for 94 percent of the market value, while livestock made up 6 percent (USDA 1997a). In 1997, Los Angeles County ranked 27th in the state in terms of market value of agricultural products. Los Angeles County's top five crops (by value) were ornamental trees and shrubs, bedding plants, dry onions, peaches, and carrots (California Department of Food and Agriculture 1997a).

ORANGE COUNTY

In 1998, agricultural land in Orange County comprised 56,717 acres, or 11.1 percent of the total land area in the county. Between 1992 and 1997, the market value of agriculture products sold increased 23 percent to $228,881,000, with crops and livestock accounting for 99 percent and 1 percent of the market value, respectively (USDA 1997b). In 1997, Orange County ranked 23rd in the state in terms of market value; its top five crops (by value) were nursery stock/flowers, strawberries, tomatoes, bell and miscellaneous peppers, and avocados (California Department of Food and Agriculture 1997b).

RIVERSIDE COUNTY

In 1998, agricultural land in Riverside County comprised 636,337 acres, or 13.6 percent of the county's total land area. Between 1992 and 1997, the total farmed land increased 20 percent (from 423,602 acres to 509,031 acres). During the same period, the market value of agricultural products sold increased by 24 percent to $1,047,525,000. Crops and livestock accounted for 55 and 45 percent of the market value, respectively (USDA 1997c). In 1997, Riverside County

ranked 9th in the state in terms of market value. Its top five crops were milk, table grapes, eggs, nursery, and hay products (California Department of Food and Agriculture 1997c).

Table 3.5-2. Definitions of Categories Used in Important Farmland Maps

Farmland Category	*Definition*
Prime Farmland	Land that has the best combination of physical and chemical characteristics for the production of crops. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed, including water management, according to current farming methods. Prime Farmland must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date. Prime farmland includes all land that qualifies for rating as Class I or Class II in the NRCS land use capability classifications.
Farmland of Statewide Importance	This land is similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to hold and store moisture. Farmland of Statewide Importance must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date.
Unique Farmland	This is land of lesser quality soils used for the production of specific high economic value crops at some time during the two update cycles prior to the mapping date. It has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained high quality or high yields of a specific crop when treated and managed according to current farming methods. Unique farmland is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Examples of crops on Unique Farmland include oranges, olives, avocados, rice, grapes, and cut flowers. This category does not include publicly owned lands for which there is an adopted policy preventing agricultural use.
Farmland of Local Importance	This is land of importance to the local agricultural economy and is determined by each county's Board of Supervisors and local advisory committees. Examples of this type of land could include dairies, dryland farming, aquaculture, and uncultivated areas with soils qualifying for Prime Farmland and Farmland of Statewide Importance.
Grazing Land	Grazing land is land on which the existing vegetation, whether grown naturally or through management, is suitable for grazing or browsing of livestock.
Urban and Built-up Land	This is used for residential, industrial, commercial, construction, institutional, and public administrative purposes; railroad yards; cemeteries; airports; golf courses; sanitary landfills; sewage treatment plants; water control structures; and other development purposes.
Other Land	Other land is that which is not included in any of the other mapping categories. The following types of land are generally included: low-density rural development; brush, timber, and other lands not suitable for livestock grazing; government lands not available for agricultural use; roads systems for freeway interchanges; vacant and nonagricultural land larger than 40 acres in size and surrounded on all sides by urban development; confined livestock facilities of 10 or more acres; strip mines and borrow and gravel pits; a variety of other rural land uses.
Water	Water areas with an extent of at least 40 acres.

Source: CDC, undated.
Note: None of these categories include publicly owned lands for which there is an adopted policy preventing agricultural use.

SAN BERNARDINO COUNTY

In 1998, agricultural land in San Bernardino County comprised 1,005,156 acres, or 7.8 percent of the county's total land area. San Bernardino had the largest amount of agricultural land of the seven Southern California counties, but also had the lowest proportion in relation to total county area. Between 1992 and 1997, the market value of agriculture products sold increased by 9 percent to $617,833,000. Crops accounted for 12 percent of the market value, and livestock accounted for 88 percent (USDA 1997d). In 1997, San Bernardino County ranked 14th in the state in terms of market value of agricultural products. Its top five crops included milk, cattle and calves, eggs, hay/alfalfa and greenchop, and nursery stock (California Department of Food and Agriculture 1997d).

SAN DIEGO COUNTY

In 1998, agricultural land in San Diego County comprised 339,168 acres, or 12.5 percent of the county's total land area. Between 1992 and 1997, the market value of agricultural products sold increased by 27 percent to $1,139,276,000 (personal communication, J. Tippett 2001). Crops accounted for 87 percent of the market value, and livestock accounted for 13 percent (USDA 1997e). In 1997, San Diego County ranked 8th in the state in terms of market value of agricultural products. The top five crops were indoor decoratives, bedding and turf plants, avocados, trees and shrubs, and eggs (California Department of Food and Agriculture 1997e).

VENTURA COUNTY

In 1998, agricultural land in Ventura County comprised 331,088 acres, or 28.2 percent of the county's total land area. Of the seven counties in Southern California, Ventura contains the largest proportion of agricultural land. Between 1992 and 1997, the total land farmed in Ventura County increased by 8 percent, from 320,597 acres to 346,279 acres. During the same period, the market value of agricultural products sold increased by 9 percent to $942,267,000 (personal communication, J. Tippett 2001). Crops accounted for 98 percent of the market value and livestock accounted for 2 percent (USDA 1997f). In 1997, Ventura County ranked 11th statewide in terms of market value of agricultural products. Its top five crops were lemons, strawberries, nursery stock, celery, and Valencia oranges (California Department of Food and Agriculture 1997f).

Agricultural Conversion

The loss of agricultural lands by conversion to other uses is a critical concern throughout California. Between 1994 and 1996, 45,641 acres of agricultural lands were converted to nonagricultural uses in Southern California, and the seven-county Southern California region trailed only the San Joaquin Valley in the amount of agricultural land converted to urban uses (CDC 2000a-g). Between 1996 and 1998, 56,306 acres of agricultural land were converted to nonagricultural use (CDC 2000a-g), which represents an 18.9 percent increase over the previous 2-year period. Between 1998 and 2000, an additional 20,000 acres were converted to nonagricultural use (no data are currently available from the CDC for San Diego and Orange counties, and they are not included in this total) (CDC 2001). Table 3.5-3 outlines the net change in agricultural areas between 1996 and 1998 in Southern California. The first two columns of Table 3.5-3 present the net change in acres of agricultural land between 1996 and 1998, by

county, and the percentage change for this period. The third column presents the net change and percentage change in the amount of urban and built-up land by county from 1996 to 1998. The last column presents the cumulative amount of agricultural land committed to nonagricultural use, but not yet physically converted.

Table 3.5-3. Net Change in Agricultural Lands between 1996 and 1998 (in acres)

County	*Change in amount of Agricultural Land*	*Percent Change in Agricultural Land*	*Change in amount of Urban & Built-up Land*	*Percent Change in Urban & Built-up Land*	*Agricultural Land Committed to Non-Agricultural Use in 1998*
Los Angeles	525	0.2%	3,873	2.5%	2,672
Orange	-2,472	-4.2%	7,740	3.0%	1,029
San Bernardino	-2,274	-0.2%	2,376	1.0%	15,716
Riverside	-6,556	-1.0%	8,902	3.8%	28,459
Imperial	-703	-0.1%	454	1.9%	data not available
San Diego	-1,635	-0.5%	4,322	1.4%	8,430
Ventura	-1,001		2,639	2.8%	7,740

Source: CDC 2000a-g.

Between 1996 and 1998, the amount of Prime Farmland converted to urban or built-up land in Southern California was approximately 5,244 acres (CDC 2000a-g) (1998 numbers are used since more current data are not available for all counties). While Los Angeles County actually increased its Important Farmland base (i.e., the combined amount of Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance), the remainder of the counties in the region experienced sharp declines. Riverside County experienced the greatest net loss of agricultural land acreage and Orange County suffered the largest proportional decrease of its agricultural land base.

3.5.1.3 Imperial Irrigation District

The IID service area is located entirely within Imperial County. The Imperial County region is a major agricultural area with one of the lowest agricultural land conversion rates in the state. Of all the Southern California counties affected by this project, Imperial County has the largest acreage of Important Farmland; the total county land area is composed of nearly 20 percent agricultural lands.

3.5.1.4 Coachella Valley Water District

The CVWD service area lies within the Coachella Valley, which is also a major agricultural area located primarily in Riverside County. Although the Coachella Valley is among the top five producers of artichokes, bell peppers, cantaloupes, honeydew melons, sweet corn, and watermelons (California Department of Food and Agriculture 1998), it has also experienced tremendous pressure from urbanization. Urban growth has contributed to Riverside County's having a large amount of agricultural land either converted or committed to nonagricultural use. As shown in Table 3.5-3, 6,556 acres of agricultural land were converted in Riverside County between 1996 and 1998, more than any of the other Southern California counties. In

addition, in 2000, Riverside County had the largest cumulative amount of agricultural land committed to nonagricultural use but not yet physically converted, a total of 28,459 acres.

3.5.1.5 The Metropolitan Water District of Southern California

As indicated in Table 3.5-1, the counties that are served by the MWD contain a substantial amount of agricultural land, although the District serves the largest concentration of urban population in Southern California. The service area includes portions of Los Angeles and Orange counties, southern Ventura County, the western portions of San Bernardino and Riverside counties, and the western portion of San Diego County. This region is among the fastest growing urban areas in the state and has experienced substantial conversion of agricultural lands. Orange County has experienced the largest proportional loss of agricultural land and is among the top in urban and built-up land. Los Angeles County has actually experienced an increase in agricultural lands in production over the past two years.

3.5.1.6 San Diego County Water Authority

The SDCWA service area covers the western third of San Diego County. The county as a whole contains a substantial amount of agricultural land despite urban growth pressures. Approximately 12.5 percent of the county's land is devoted to agricultural uses, and its agricultural land conversion rate was below 1 percent between 1996 and 1998.

3.5.1.7 Other Areas

Colorado River

The historic floodplain of the Colorado River area is located within the easternmost portions of San Bernardino, Riverside, and Imperial counties in California and the westernmost portions of La Paz and Yuma counties in Arizona.

As shown on Table 3.5-1, the three California counties contain approximately 1,107,556 acres of Important Farmlands, or 80.3 percent of the Important Farmlands in the Southern California region. With the exception of the Palo Verde Valley and Fort Yuma Indian Reservation, the majority of these Important Farmlands are located to the west, outside of the Colorado River area.

Table 3.5-4 provides a summary of agricultural lands within the two western Arizona counties.

Table 3.5-4. Western Arizona Agricultural Land in 1997 (in acres)

County	*Total Land in Farms*	*Total Cropland*	*Total Pastureland*	*Total County Area*	*Farmland as a Percentage of Total Land*
La Paz	278,854	121,826[1]	Not available	2,891,520	9.6%
Yuma	237,742	214,774	14,949	3,559,040	6.7%

[1] Estimated acreage; exact acreage not available
Source: Oregon State University 2001a and b.

The amount of land in western Arizona used as farmland has changed substantially during the past ten to 15 years. Within La Paz County, the total farmland acreage increased by approximately 23 percent between 1987 and 1997. However, in Yuma County, farmland acreage decreased by approximately 13 percent

Salton Sea

A portion of the Salton Sea is located in the IID and CVWD service areas. These service areas contain significant agricultural resources, as discussed above. The Salton Sea itself does not contain agricultural resources, but it is affected by drainage from agricultural lands.

3.5.2 Impacts

3.5.2.1 Significance Criteria

The criteria used to determine the significance of impacts on agricultural resources are based on the model initial study checklist in Appendix G of the State CEQA Guidelines. The Proposed Project would result in a significant impact if it would

- convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Important Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency to non-agricultural use; or
- conflict with existing zoning for agricultural use or a Williamson Act contract; or
- involve other changes in the existing environment, which due to their location or nature, could individually or cumulatively result in substantial loss of farmland to non-agricultural use.

3.5.2.2 Methodology

The Proposed Project components were evaluated to identify whether any of the potential changes that would result from implementation of the Proposed Project would result in a loss of Important Farmland to non-agricultural use or conflict with existing zoning for agricultural use or a Williamson Act contract. The exact locations of improvements in the IID and CVWD service areas are not known; therefore, the potential impacts were assessed programmatically based on the general types of areas in which the improvements could occur.

This PEIR analyzes the impacts of utilizing fallowing as the exclusive conservation method in order to assess the worst-case scenario for impacts to agricultural resources. In this analysis, an average per-acre conservation rate of 6 AF per acre fallowed is used, based on the hydrologic model developed for the IID Water Conservation and Transfer Project EIR/EIS (IID and USBR 2002). It represents the average annual water use, per acre, within the IID service area, based on the historic cropping patterns over the model's 12-year period of record. If 300 KAFY of water were conserved by fallowing alone, this would result in the fallowing of approximately 50,000 acres of agricultural land.

Potential impacts to agricultural resources in the IID and CVWD service areas would result primarily from construction activities and operational changes and were assessed by comparing Project-induced changes to the Existing Baseline. The extent and nature of ground disturbance and new facilities were considered, along with the potential proximity of new construction to population centers. Information regarding impacts of the All American and Coachella Canal lining projects is derived from the EIS/EIRs prepared specifically for those projects (USBR and IID 1994, and USBR and CVWD 2001).

No construction would occur in or adjacent to the Colorado River and Salton Sea. Potential impacts to these geographic areas would result from changes in water surface elevation and are based on the hydrologic modeling discussed in section 3.1, which assesses impacts compared to Future Baseline conditions. No impacts to the MWD or SDCWA service areas would occur since no construction or other physical or operational changes would take place in these service areas.

The baseline conditions used for assessing impacts are dependent on geographic location. Existing conditions at the time the NOP was released are used as the baseline for all areas except the Salton Sea. For the Salton Sea, Future Baseline conditions were used.

3.5.2.3 Summary of Impacts

Imperial Irrigation District

The EIS/EIR prepared for the All American Canal Lining Project (USBR and IID 1994) did not find impacts to agricultural resources from this component of the Proposed Project to be significant.

The Proposed Project involves conservation by IID within the IID service area of up to 300 KAFY of Colorado River water for transfer to SDCWA, CVWD, and/or MWD. Additional conservation by IID may be required for compliance with IID's Priority 3a cap on Colorado River water diversions. IID proposes to use any combination of conservation measures, including on-farm irrigation system improvements, delivery system improvements, and/or fallowing. If conservation measures other than fallowing are used, only small amounts of land would be required to implement the conservation measures, and they would not result in the conversion of Important Farmland to non-agricultural use or conflict with Williamson Act Contract Lands in the Imperial Valley.

If fallowing is used exclusively to conserve the 300 KAFY required for transfer, approximately 50,000 acres of land could be fallowed annually. This represents 11 percent of the total amount of Important Farmland in Imperial County. If fallowing is implemented so as to take farmland out of production on a short-term basis, it would not result in the conversion of Important Farmland to non-agricultural use. Historically, an average of 20,000 acres are fallowed each year in the Imperial Valley, and rotational fallowing involving the short-term removal of land from agricultural production is a common agricultural practice.

However, if fallowing is implemented so as to take farmland out of production on a longer-term or permanent basis, resulting in the conversion of Important Farmland to non-agricultural use, it would be a significant impact to agricultural resources in the Imperial Valley.

Coachella Valley Water District

Implementation of the Proposed Project would not have significant impacts to agricultural resources within the Coachella Valley. The same quantity of water would be available for agricultural purposes, although the source would be primarily Colorado River water rather than a mix of Colorado River water and groundwater. Colorado River water generally has a higher TDS concentration than Coachella Valley groundwater, and would require the application of additional water to some lands irrigated with Colorado River water to leach salts from the soil. The additional water necessary to leach salts would be minimal and water supplies for agricultural uses would remain adequate. Colorado River water contains relatively high concentrations of gypsum, which improves drainage on heavy or clayey soils, as well as relatively high percentages of calcium and magnesium compared to sodium, which is beneficial for infiltration and prevention of sodium build-up.

Using greater volumes of Colorado River water within the CVWD service area would involve the use of the current canal and distribution systems and potential expansion of those systems, including construction of pumping stations and other facilities. Pipelines and pumping stations are common in agricultural areas, and any new pipelines and pumping stations would be located primarily in roadways or on the edges of agricultural fields. Some pipelines may traverse agricultural fields, but this would impact the use of the agricultural area only temporarily and would not affect their designation as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The construction of these facilities would not permanently conflict with property use, and therefore would not interfere with the provisions of a Williamson Act contract or be inconsistent with agricultural zoning.

Recharge facilities for direct groundwater recharge also could be constructed. The precise location of these facilities is not known; however, it is expected that they would be located on the edges of the valley in areas not generally used for agriculture. Sites in the vicinity of Dike 4 and the Martinez Canyon alluvial fan are currently under preliminary consideration, and since these are not farmlands, their use would not impact agricultural resources. The construction of recharge facilities could have a significant effect on agricultural resources if they were located in an agricultural areas, however, because they could convert farmland to a non-agricultural use. As specific sites are located, additional environmental review will be conducted that will identify project level impacts to agricultural resources.

The Metropolitan Water District of Southern California

No change to agricultural uses within the MWD service area (which includes Escondido and the Vista Irrigation District) would occur as a result of the Proposed Project because the amount of water available for agricultural use would not change, nor would any aspects of the Project cause the conversion of farmland or otherwise impede the use of agricultural lands. No construction or other physical changes would occur; therefore, the Project would in no way interfere with Williamson Act contracts or conflict with agricultural zoning.

San Diego County Water Authority

Implementation of the Proposed Project would not result in a physical loss of agricultural lands since it involves operational changes to the Colorado River water delivery system with no physical changes within the SDCWA service area. The water being transferred to SDCWA

replaces Colorado River water previously purchased from MWD. No change to agricultural uses within the SDCWA service area would occur as a result of the Proposed Project because the amount of water available for agricultural use would not change, nor would any aspects of the Project cause the conversion of farmland or otherwise impede the use of agricultural lands. No construction or other physical changes would occur; therefore, the Project would in no way interfere with Williamson Act contracts or conflict with agricultural zoning.

Other Areas

COLORADO RIVER

Implementation of the Proposed Project would not result in any changes in water supply to or otherwise affect any agricultural land immediately adjacent to the Colorado River in either California or Arizona. It would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use or conflict with Williamson Act contract lands immediately adjacent to the Colorado River. Any changes in River elevation resulting from implementation of components of the Proposed Project would be minor and within current fluctuations and would not affect agricultural land. Therefore, no significant impact to agricultural resources would occur.

SALTON SEA

The Salton Sea itself does not contain agricultural resources; however, if the Sea's elevation were lower, this would reduce the risk of dikes that protect prime farmland from breaking and would also prevent salt spray onto the fields behind the dikes.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would result in significant impacts to agricultural resources along the Colorado River. A reduction in the amount of conserved water dedicated to MWD would not result in a conversion of farmland to non-agricultural uses or cause any changes to the physical environment that would result in a loss of farmland. Diversion of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that could impact agricultural resources.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River water contemplated under the Proposed Project. Because no changes in river levels would result or construction of new diversion structures would be required with implementation of this Project component, no significant impacts to agricultural resources along the Colorado River would occur. The exchange of water with SDCWA would occur from existing infrastructure and would not require construction activities that would impact agricultural resources.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that could cause the conversion of farmland or otherwise impact agricultural resources. The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause a conversion of agricultural resources or significant impact agricultural resources.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore, no change in Colorado River conditions that could potentially impact agricultural resources along the Colorado River would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD, nor would it increase the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical environment that would otherwise cause the conversion of farmland to non-farmland uses or would cause significant impacts to agricultural resources.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAFY of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause significant impacts to agricultural resources along the Colorado River. No impacts to farmland or conversion to non-agricultural uses would occur from the diversion or conveyance of the water to CVWD because no new facilities would be required to be constructed. Similarly, the exchange of

SWP entitlements under this Project component would be accomplished through existing facilities, and not result in physical changes to environmental conditions that would cause a significant impact to agricultural resources or result in conversion of farmland to non-agricultural uses.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts agricultural resources since it does not change the amount of water diverted, conveyed, or used and no changes to existing environmental conditions would result.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These changes are within historic fluctuations and would not result in changes to the physical environment that would cause the conversion of farmland to non-agricultural uses or significantly impact agricultural resources. Also under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the river under this component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities and would not increase the amount of water used within its service area. Therefore, no changes to environmental conditions would result from implementation of this Project component that would significantly impact agricultural resources or cause the conversion of farmland to non-agricultural uses.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. This change in river flows is within historic fluctuations and would not result to changes to the physical environment that would create a significant impact to agricultural resources or cause the conversion of farmland to non-agricultural uses.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and

CVWD would share this shortage. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. This additional conservation/shortage management would also be short-term. The potential impacts to agriculture, such as increased farmland fallowing, due to this additional conservation/shortage management would be so minor as to be indiscernible from the impacts of the Proposed Project.

3.5.3 Mitigation Measures

Potential impacts to agricultural uses in the CVWD service area from constructing any proposed recharge basins or other facilities constructed as a part of the Proposed Project would be reduced to a less than significant level by implementing the following measure:

- Recharge basins in the CVWD service area would not be located on land that is designated as Important Farmland, or subject to a Williamson Act contract.

The only way to avoid or reduce the impact associated with the conversion of Important Farmland in the IID service area, as a result of fallowing as a conservation measure, is to utilize non-fallowing conservation measures or to utilize short-term fallowing which does not result in conversion of Important Farmland to non-agricultural use; however, exclusive use of short-term fallowing may not be feasible for generating conserved water and use of agricultural land on a long-term basis may be required.

3.5.4 Significant Unavoidable Adverse Impacts

To the extent that conversion of Important Farmland to non-agricultural use cannot be avoided or mitigated, the conversion would be a significant unavoidable impact to agricultural resources in the Imperial Valley.

3.5.5 Significant Irreversible Environmental Changes

To the extent conversion of Important Farmland to non-agricultural use cannot be avoided or mitigated, the conversion would be a significant irreversible change, at least for the duration of the QSA quantification period.

3.6 RECREATIONAL RESOURCES

3.6.1 Environmental Setting

3.6.1.1 Regulatory Framework

Public recreational resources are subject to the regulations of either federal, state, or local agencies depending on the agency that has jurisdiction over the resource. For example, State Recreation Areas (SRAs) are regulated by the State of California, and National Wildlife Refuges are under the jurisdiction of the federal government.

3.6.1.2 Imperial Irrigation District

Imperial County is a popular recreational area for both water- and desert-based activities. Opportunities for recreation occur along the All American Canal and in the surrounding area, primarily on BLM lands. BLM-managed lands include the Imperial Sand Dunes Recreation Area, a 40-mile-long dune system. These dunes are managed for different uses: a portion consists of a popular off-highway vehicle (OHV) recreation area, and another portion contains two campgrounds. Other areas offer opportunities for solitude and a chance to view picturesque scenery and rare plants and animals. The North Algodones Dunes Wilderness and Wildlife Viewing Area is another popular recreational site. Activities in this area include hunting, hiking, and nature viewing. Primitive camping is available. The area also contains historic mine districts, and other trails and natural areas. The Imperial Sand Hill and Algodones Dunes are adjacent to the All American Canal and contain a heavily used camping area. The OHV area is a major regional attraction. Sand dunes line the spoil bank along the north side of the existing canal. The sand road along the spoil bank is used by OHVs for travel around the south end of these dunes and by the BLM for patrol and emergency purposes. Three RV camping parks are located near the Pilot Knob area, and five more are located near El Centro. The Imperial Wildlife Management Area (WMA) is composed of the Wister unit, which is along the southern end of the Salton Sea, and the Finney-Ramer unit, which is further south of the Salton Sea, near the Alamo River. These areas are used for hunting, fishing, bird watching, and other passive recreational activities.

Fishing is permitted in IID canals, including the All American Canal, and IID provides public access for fishing at three of its reservoirs. Swimming is prohibited in the canals. Water contact sports also are restricted near the mouth of the New River, which flows into the Salton Sea, because its water is considered a health hazard by Imperial County due to contamination from agricultural drains, wastewater treatment facilities, and unregulated discharge from Mexico.

3.6.1.3 Coachella Valley Water District

The CVWD service area is located in a region that contains a wide array of recreational opportunities associated with water, mountain, and desert-based activities. In addition, the service area is part of the regional Southern California desert recreation and long-term visitation area. Many of the lands used for recreational purposes within the CVWD service area are under the jurisdiction of the BLM. These lands include the Coachella Valley Preserve, a system of sand dunes comprising a 20,000-acre sanctuary that is home to sensitive wildlife species and palm oases. Wildlife viewing is among the key attractions of this preserve. The Coachella

Valley Preserve is also a prime location for wildlife observation, study, and photography. Hiking and horseback riding are permitted along specific trails. There are approximately 100 golf courses in the Coachella Valley, although not all are located within the service area boundaries.

Some of the area along the Coachella Canal is bordered by sand dunes (the Sand Hills) and contains several private RV parks. Most of the canal is posted against trespassing by the CVWD because of the risk of drowning, but the canal attracts fishermen who use the canal illegally. The concrete lining has escape ridges, and a public fishery is being established in this reach of the canal. Another important fishery is Lake Cahuilla, the terminal reservoir of the Coachella Canal. This 120-acre lake provides a public fishery managed by the Riverside County Parks Department and is stocked in part by the California Department of Fish and Game. The Lake Cahuilla Recreation Area is a popular campground with fishing, picnic grounds, hiking, and horseback riding.

3.6.1.4 The Metropolitan Water District of Southern California

The MWD service area covers portions of Ventura, Los Angeles, Orange, San Bernardino, San Diego, and Riverside counties, which include large developed and undeveloped areas containing a wide variety of urban and natural recreational amenities. Large expanses of undeveloped land offer recreational opportunities such as camping, picnicking, hunting, boating, and fishing. Nature trails and fire roads traverse many of the more remote locations and are used by OHVs, mountain bike enthusiasts, equestrians, and hikers. Popular areas include Boney Mountain State Wilderness Area, South Mountain, Oak Ridge, and Point Mugu State Park (Ventura County); Los Padres National Forest and Santa Monica Mountains National Recreation Area (Los Angeles County); Caspers Wilderness Park, Laguna Coast Wilderness Park, and portions of the Cleveland National Forest (Orange County); Chino Hills State Park (Orange County and San Bernardino County); and Maze Stone County Park, Lake Perris State Recreational Area, and portions of the San Bernardino National Forest (Riverside County). Regional, community, and neighborhood parks offer everything from mountain biking, equestrian activities, and hiking, to camping, boating and fishing. Many facilities include sports fields and courts, nature centers, picnic areas, lakes, and streams.

3.6.1.5 San Diego County Water Authority

Much of the SDCWA service area is located within urbanized areas that contain a wide variety of recreational amenities. Nature trails and fire roads traverse many locations, including the Santa Margarita Mountains and Merriam Mountains, and are used by OHVs, mountain bike enthusiasts, equestrians, and hikers. Recreational opportunities such as camping and picnicking are available in areas such as the Agua Tibia Wilderness Area. Fishing and boating are offered at several inland locations such as Miramar Reservoir, Lake Ramona, Lake Wohlford, and Lake Hodges. Regional, community, and neighborhood parks offer everything from mountain biking, equestrian activities, and hiking, to camping, boating and fishing. Many facilities include sports fields and courts, nature centers, picnic areas, lakes, and streams.

Batiquitos Lagoon, Buena Vista Lagoon, and several bays including San Diego and Mission bays, offer opportunities for observing birds and other wildlife. Many of the state beaches have

fire rings, tide pools, and volleyball courts and are used for swimming, surfing, fishing, boating, and beach walking.

3.6.1.6 Other Areas

Colorado River

The Colorado River is used for a variety of recreational purposes, as are a number of lakes formed by dams on the River. Common activities include camping, fishing, boating, kayaking, hunting, and water-skiing. There are over 90 miles of navigable water between Blythe and Imperial Dam. Lake Havasu, formed by Parker Dam, contains a number of coves and inlets, and is a popular spot for fishing. A multi-agency fishery enhancement program is underway to create artificial habitat to increase the game fish population, and additional shore access is being developed for fishermen. The waters of the lake also are used for water-skiing, speed-boating, jet-skiing, sailing, and canoeing. Camping and swimming also occur along the lake's shoreline. A number of campgrounds and marinas line the River and some offer boating and fishing facilities, picnic grounds, and swimming lagoons; other campgrounds are largely undeveloped. The campgrounds include the Picacho SRA, which is bordered by 8 miles of the River about 24 miles north of the U.S.-Mexico boundary. The Cibola National Wildlife Refuge is located about 15 miles south of Blythe. The largest concentration of Canada geese and sandhill cranes on the lower Colorado River winter at the refuge. Visitors to the refuge engage in hiking, wildlife observation, photography, canoeing, hunting, and fishing.

Salton Sea

Many recreational opportunities are available in the Salton Sea area, although many previously popular activities such as swimming, water-skiing, boat racing, and personal watercraft racing have declined considerably or no longer are present due to water quality concerns and a lack of land-based facilities. Recreational uses near the northern shore of the Salton Sea include hunting at private duck ponds located near the Coachella Valley Stormwater Channel and offshore fishing and boating.

On the northeastern shore, Salton Sea frontage is almost entirely owned by the State of California and operated by the State Parks Department as the Salton Sea State Recreational Area. The park was built about 45 years ago when water levels were lower. During the late 1970s, water levels increased and flooded between ¼ and ½ of the park. The campgrounds, harbor, and associated facilities subsequently were reestablished outside of the flooded area. Recreational uses within this area include camping, RV camping, power boating, sailing, windsurfing, shore fishing, boat fishing, and sunbathing. Boat launching and mooring facilities are available at the five campgrounds in the area. Facilities associated with the North Shore Yacht Club and Marina, also located on the northeastern shore, are currently unused, and other private recreational facilities are in need of repair and/or non-operational. The rise in the Salton Sea's water level has created problems at some facilities, particularly with paving, picnic tables, and landscaped areas (USBR and SSA 2000).

The southern shore of the Salton Sea contains such areas as the Imperial County Wildlife Area-Wister Unit and the Sonny Bono Salton Sea National Wildlife Refuge. The types of recreational uses that occur in this area are strongly tied to the presence of wildlife and include hunting,

fishing from the shore and boats, boating, and wildlife viewing. The western shore of the Salton Sea contains recreational rental housing, RV camping, shore fishing, boating (four boat ramps are present), sunbathing, hiking, and bird watching. A number of closed and/or dilapidated resorts and restaurants are present in this area (USBR and SSA 2000).

3.6.2 Impacts

3.6.2.1 Significance Criteria

The following criteria used to determine the significance of an impact related to recreation are based on the model initial study checklist in Appendix G of the State CEQA Guidelines and modified to address the potential for impacts to other recreational uses. The Proposed Project would result in a significant impact if it would:

- increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial deterioration of the facility would occur or be accelerated; or
- result in the construction or expansion of recreational facilities that may result in adverse environmental impacts not discussed as part of the Project; or
- cause the direct, substantial physical degradation of either public recreation uses or public recreational facilities; or
- substantially decrease opportunities for sport fishing, bird watching, or waterfowl hunting.

3.6.2.2 Methodology

Proposed Project components were evaluated to determine the extent to which they would impact existing recreational resources. The analysis considered whether these actions would diminish the quality of or preclude a recreational opportunity and drew on the findings of the water and biological resources analyses. Potential impacts to recreational resources in the IID and CVWD service areas would result primarily from construction activities and resulting operational changes and were assessed by comparing Project-induced changes to the Existing Baseline. No construction would occur in or adjacent to the Colorado River and Salton Sea. Potential impacts to these geographic areas would result from changes in water surface elevation and are based on the hydrologic modeling discussed in section 3.1, which assesses impacts compared to Future Baseline conditions. No impacts to the MWD or SDCWA service areas would occur since no construction or other physical or operational changes would take place in these service areas. Information regarding impacts of the All American and Coachella Canal lining projects is based on the EIS/EIRs prepared specifically for those projects (USBR and IID 1994, USBR and CVWD 2001).

3.6.2.3 Summary of Impacts

Imperial Irrigation District

As noted in the EIS/EIR for the All American Canal Lining Project (USBR and IID 1994), construction of a canal parallel to the existing All American Canal would temporarily disrupt camping that occurs in the area, primarily on the south side of I-8. This impact would be less than significant due both to its temporary nature and the fact that camping opportunities are available elsewhere in the area. Construction in the Pilot Knob area would not affect seasonal RV camping. Construction within the Sand Hills would restrict the use of the spoil bank road on the north side of the canal for travel around the dunes abutting the canal. The road could be blocked for up to 12 months; after construction the road would be available for travel. Use of the area around the canal by OHVs could present a hazard during construction, which would be a potentially significant but mitigable impact.

The existing canal would be maintained as an emergency canal and would not be available for recreational use. As noted in the canal lining EIS/EIR, hazards to OHVs associated with the existing canal would be avoided by taking steps necessary to prohibit and discourage use within the channel (USBR and IID 1994) and would be less than significant.

Construction of a parallel canal would adversely affect recreational fishing by reducing the habitat for gamefish. Lining also could reduce downstream numbers of gamefish by reducing in-canal reproduction. These impacts would be significant but mitigable.

The Proposed Project would not cause a population increase in the IID service area and therefore would not increase the use of existing neighborhood and regional parks or other recreational facilities or result in their construction or expansion (see section 3.13, Population, Housing, and Employment and Chapter 6.0, Growth Inducing Impacts). The proposed water conservation measures, including fallowing, would be located in remote farm areas well removed from recreational areas used by the public and therefore would not impact recreational resources. Agricultural drains, which could be lined under the Project, are not used for public recreation because they are on privately owned farmland. The proposed water transfers would not change water levels within the Imperial Valley irrigation delivery canals; therefore, impacts to fish and recreational fishing would be minimal.

The concentration of pesticides, herbicides, and other nutrients in the New and Alamo rivers would be increased by the reduction in drainage water from IID (see section 3.1); while these rivers are recognized by the Imperial County General Plan as potential recreational resources, their use is not encouraged because this would jeopardize public health and safety. Therefore, this would not constitute a significant impact. Conservation of water through canal lining would impact the amount of available aquatic habitat for fish, and specifically would reduce habitat for several cover-oriented fish species, such as largemouth bass, green sunfish, long-ear sunfish, and flathead catfish, that are important to sport fishing. Because canal lining would be limited to certain sections of the canals only and because recreational anglers would be able to fish in other areas (such as the Imperial WMA), the impact to recreational fishing would be less than significant. Additionally, mitigation measures identified in section 3.2, Biological Resources, would reduce the impact.

Coachella Valley Water District

Construction activities associated with lining the Coachella Canal were evaluated in the EIS/EIR prepared for that project. These activities may temporarily disrupt some recreational uses of the area. Construction could block access to a recreational trail on BLM lands, the Bradshaw Trail, which would be a significant impact if access is not maintained. Other minor, adverse impacts would include the temporary closure of access on top of siphons, which provide a local means of crossing the canal and a temporary increase in local traffic caused by construction forces and materials delivery trucks.

Additionally, construction would require the use of some areas that have convenient access to paved county roads and are used by the public for camping or day use. Seasonal RV campers would be exposed to construction traffic but would not be constrained by construction. Once completed, the canal lining would have no effect on access or general recreational opportunities in the area.

As discussed in section 3.12, Public Services, Utilities, and Transportation, a traffic control plan has been incorporated as a project feature of the Coachella Canal lining project (USBR and CVWD 2001) and would minimize impacts to recreational visitors. The plan would include signs at public access points to inform the public of temporary closures to public access, construction hazards, and alternative access points.

Without mitigation, lining the canal would result in a reduction in the amount of fish available to anglers. Fishing is prohibited in this canal; however, it does take place. The impact to recreation was not considered significant. The mitigation for the fishery that is required by P.L. 100-675, in which Congress authorized the canal lining project, would maintain fish populations at approximately the same level. These measures are delineated in the EIS/EIR for the Coachella Canal Lining Project and summarized below in section 3.6.3. The EIS/EIR notes that following the completion of the canal lining project legal fishing may be established between siphons 7 and 14 and siphons 15 and 32 if associated liability issues can be resolved. It is anticipated that angler pressure in the lined portion of the canal would remain at about the current level.

The Proposed Project would not cause a population increase in the CVWD service area and therefore would not increase the use of existing neighborhood and regional parks or other recreational facilities or result in their construction or expansion (see section 3.13, Population, Housing, and Employment and Chapter 6.0, Growth Inducing Impacts).

Flows to the Coachella Valley Stormwater Channel would increase as a result of implementation of the Proposed Project. Unauthorized swimming currently occurs here (the channel does not meet bacterial water quality standards for swimming) and fishing takes place in the lower channel where flows are higher. The increase in flows would have no significant effect on the use of the channel for swimming in terms of water quality. With respect to fishing, fish in the higher reaches may move further upstream with higher flows in the drains.

No change to the level of Lake Cahuilla water levels or water quality would result from the Proposed Project. Thus, there would be no impact on fish and fishing or any other recreational activities in the lake.

Under the Proposed Project, golf courses could be watered with canal water instead of groundwater. Canal water has higher total dissolved salts content, which may require additional watering of bentgrass greens to flush salts out of their root zone, or consideration of separate piping for greens irrigation. The impact on area golf courses would be less than significant since few of them still have bentgrass greens.

Construction of pumping stations, pipelines, and recharge basins would be unlikely to affect recreational resources since they would be located in agricultural or remote areas, such as the vicinity of Dike 4 and Martinez Canyon. Such construction would be evaluated in future site-specific environmental documents once specific sites are identified.

The Metropolitan Water District of Southern California

The Proposed Project would not cause a population increase in the MWD service area and therefore would not increase the use of existing neighborhood and regional parks or other recreational facilities or result in their construction or expansion (see section 3.13, Population, Housing, and Employment and Chapter 6.0, Growth Inducing Impacts). No construction would occur in this service area, nor would any operational changes that would cause the direct, substantial physical degradation of either public recreation uses or public recreational facilities. No impacts to recreational resources would occur.

San Diego County Water Authority

The Proposed Project would not cause a population increase in the SDCWA service area and therefore would not increase the use of existing neighborhood and regional parks or other recreational facilities or result in their construction or expansion (see section 3.13, Population, Housing, and Employment and Chapter 6.0, Growth Inducing Impacts). No construction would occur in this service area, nor would any operational changes that would cause the direct, substantial physical degradation of either public recreation uses or public recreational facilities. No impacts to recreational resources would occur.

Other Areas

COLORADO RIVER

No significant recreational impacts to the Colorado River area (either in California or Arizona) would result from the Proposed Project. Implementation of the Proposed Project would not affect water quality perceptibly, nor would it significantly affect river flows. The water surface elevation of the River would change slightly, but the change would be within the normal range of variability. Because the change in water surface elevation is within the historic range of fluctuation, no changes to recreational facilities, such as docks or launch ramps, would occur. Power boating, jet skiing, kayaking, and other water-oriented activities would continue unimpeded. No significant changes in the water surface elevation of the lakes that are fed by the River would occur, and the Proposed Project would not significantly affect wildlife, fish, or any recreational activities that are dependent upon these resources, including sport fishing.

SALTON SEA

Implementing the Proposed Project would result in a decrease in inflow to the Salton Sea, which would substantially reduce its water surface elevation, thus exposing currently submerged land. As described in Chapter 3.0, the decrease would occur more rapidly and to a greater extent than would occur under Future Baseline conditions. The decreased surface area of the Salton Sea would reduce the area that could be used for water-based recreational activities such as fishing and boating. This decrease is not significant given the size of the area that would remain. The newly exposed shoreline would be located primarily in the southern portion of the Salton Sea. When water levels within the Salton Sea SRA drop to 230 feet below mean sea level, it would be necessary to relocate facilities such as Varner Harbor and campgrounds that are now located near the water (personal communication, S. Horvitz 2000). It also would be necessary to re-establish existing roads and trails that lead to the water, particularly in areas such as Mecca Beach, Sneaker Beach, and Old Camp. Decreasing water levels would expose footings and other remnants of the campgrounds that were covered when the water elevation increased during the late 1970s. Other public docks/launch facilities also may have to be relocated. The impact to developed recreational facilities from decreased water levels is considered significant.

As discussed in Chapter 3.0, reduced inflow resulting from the Proposed Project would accelerate the rate at which salinity is increasing in the Salton Sea. As described in section 3.2, Biological Resources, increased salinity would hasten the decrease in the number of fish that live in the Salton Sea, adversely affecting sport fishing opportunities. This would be a significant impact. The accelerated decrease in fish populations would result in an accelerated decrease in the food supply for fish-eating birds at the Salton Sea. Avian habitat and hunting opportunities provided by managed wetlands in the vicinity of the sea (including the Imperial County Wildlife Area-Wister Unit and the Sonny Bono Salton Sea National Wildlife Refuge) would not be directly impacted by loss of habitat because the wetlands and waterfowl management areas are hydraulically separate from the Salton Sea and are managed independently (IID and USBR 2002). These areas will continue to provide opportunities for bird watching and waterfowl hunting.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would result in significant impacts to recreational opportunities along the Colorado River. Recreational uses such as boating and sports fishing will not be decreased or degraded due to implementation of this Project component. A reduction in the amount

of conserved water dedicated to MWD would not adversely impact recreational opportunities within MWD's service area. Diversion of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would impact or impair existing recreational opportunities.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River contemplated under the Proposed Project. Since no changes in river levels would result or construction of new diversion structures would be required with implementation of this Project component, no significant impacts to recreational opportunities along the Colorado River would occur. The exchange of water with SDCWA would occur from existing infrastructure and would not require construction activities that would decrease or degrade existing recreational facilities.

E. CVWD/IID/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that would impact existing recreational facilities or that would degrade or diminish recreational opportunities. The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause significant impacts to recreational resources.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore, no change in Colorado River conditions that would impact recreational opportunities such as boating and sports fishing would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD nor would it increase the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause significant impacts to recreational facilities or diminish or degrade recreational opportunities.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAF of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial

dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause significant impacts to recreational facilities or opportunities along the Colorado River. No impacts to recreational facilities would occur from the diversion or conveyance of the water to CVWD because no new facilities would be required to be constructed. Similarly, the exchange of SWP entitlements under this Project component would be accomplished through existing facilities and would not result in physical changes to environmental conditions that would cause a significant impact to recreational facilities or recreational opportunities.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts to existing recreational facilities because it does not change the amount of water diverted, conveyed, or used and no changes to recreational opportunities would result.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These changes are within historic fluctuations and would not result to changes to the physical environment that would create a significant impact to boating, fishing, or other recreational activities. Also under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the river under this component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities, and would not increase the amount of water used within its service area. Therefore, no changes to environmental conditions would result from implementation of this Project component that would significantly impact recreational facilities or opportunities.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. This change in river flows is within historic fluctuations and would not result to changes to the physical environment that would significantly impact recreational activities such as boating and sports fishing along the Colorado River.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would share this shortage. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. This additional conservation/shortage management would also be short-term. The potential impacts to recreation would relate to decreased flow in the New and Alamo rivers and decreased inflow to the Salton Sea. In the New and Alamo rivers decreased flow would adversely affect water quality, decreasing these rivers suitability for fishing and swimming. Decreased flow to the Salton Sea would accelerate salinity, decrease the Sea's surface area, and decrease quality of the sport-fishery. However, these decreased inflows to the New and Alamo rivers and Salton Sea due to this additional conservation/shortage management would be so minor as to be indiscernible from the impacts of the Proposed Project.

3.6.3 Mitigation Measures

The EIS/EIR for the All American Canal Lining Project (USBR and IID 1994) identified mitigation measures to maintain sport fishing opportunities. The primary mitigation measure that was proposed consisted of placing artificial reefs within the lined portion of the canal. Alternative measures included conducting a channel catfish stocking program or developing a recreational fishery resource in one or more regulating reservoirs in IID's distribution system. These measures were determined to reduce impacts to a less-than-significant level.

To minimize public inconvenience during construction of the All American Canal Lining Project and to ensure public safety, the following measure was included in the EIS/EIR for that project and was determined to reduce impacts to a less-than-significant level.

- An interim recreation management plan would be developed jointly with BLM. The plan would include temporary closure of acreage needed for construction activities, signs at public access points, literature (handouts) informing visitors about the program and safety hazards, and modifications of public access to compensate for construction activities and to provide safe public access to observe construction at selected locations. The plan would address the patrol and surveillance requirements of the Immigration and Naturalization Service's Border Patrol.

To mitigate the impact to canal fisheries resulting from lining the Coachella Canal, the following measures, defined in the EIS/EIR for the lining project (USBR and CVWD 2001), will be

implemented. These measures are to mitigate impact to the fisheries; no significant recreational impact associated with fishing was identified:

- To mitigate short-term construction impacts to canal fisheries, once construction is completed, channel catfish shall be stocked (one time only) at rates of up to 105 pounds per mile.

- To mitigate permanent impacts to the canal fishery, 82, 16 x 15-foot artificial reefs shall be installed and maintained in the newly lined portions of the canal. CVWD shall determine the location of the reefs in consultation with the relevant resource agencies. If the artificial reefs do not function as expected, the canal shall be stocked with channel catfish at a rate that would maintain the fish population at pre-Project levels or an alternative method of supporting the fish population will be identified by Reclamation and CVWD.

The following measure would mitigate the potential impact from temporary obstruction of the Bradshaw Trail as a result of the Coachella Canal lining project to a less-than-significant level.

- OHV access along the Bradshaw Trail will be maintained during construction (for example, by posting signs directing visitors to alternate locations where they may cross the Coachella Canal when siphon 24 is blocked by construction activity).

If the decrease in the water surface elevation of the Salton Sea results in the exposure of public docks, launch ramps, or other public structures as a result of the Proposed Project, thus precluding their intended use, then the following measure could be implemented. This measure would reduce the impact to a less-than-significant level.

- Funding would be provided for the relocation of public docks, launch ramps, or other public structures in proportion to the water elevation decrease that is attributable to the Proposed Project. The relocation of these facilities may be temporary and ongoing until the Sea reaches its minimum and stable elevation, at which point permanent facilities would be provided.

The following measure could be implemented to reduce the potential impact from the exposure of footings and other remnants of campgrounds due to the accelerated decline in water surface elevation of the Salton Sea as a result of the Proposed Project.

- Footings and other remnants of campgrounds that are exposed due to the accelerated decline in water surface elevation of the Salton Sea would be removed.

Alternatively, implementation of Mitigation Strategy 2, outlined in section 3.2.3 of this PEIR, would avoid impacts associated with the decline in Salton Sea water surface elevation. This potentially feasible measure would reduce the impacts to recreational facilities, such as newly exposed docks, launch ramps, and campground remnants, to a less-than-significant level. Mitigation Strategy 2 also would mitigate impacts to sport fishing to a less-than-significant level. Potential environmental impacts of this mitigation measure are addressed in section 3.2.3.

3.6.4 Significant Unavoidable Adverse Impacts

The mitigation measures identified above would reduce impacts of the All American and Coachella Canal lining projects to a less-than-significant level. As noted above, the implementation of Mitigation Strategy 2 would reduce all recreational impacts from the decline in water surface elevation at the Salton Sea to a less-than-significant level.

3.6.5 Significant Irreversible Environmental Changes

The impacts to sport fishing at the Salton Sea would represent a potentially significant irreversible change should Mitigation Strategy 2 not be implemented.

3.7 AIR QUALITY

3.7.1 Environmental Setting

Air quality in a given location is defined by pollutant concentrations in the atmosphere and is generally expressed in units of parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). One aspect of significance is a pollutant's concentration in comparison to a national and/or state ambient air quality standard. These standards represent the maximum allowable atmospheric concentrations that may occur and still protect public health and welfare with a reasonable margin of safety. The national standards, established by the EPA, are termed the National Ambient Air Quality Standards (NAAQS). The NAAQS generally are defined as the maximum acceptable ground-level concentrations that may not be exceeded more than once per year except for annual standards, which may never be exceeded. State standards, established by the California Air Resources Board (ARB), are termed the California Ambient Air Quality Standards (CAAQS). The CAAQS are at least as restrictive as the NAAQS and include pollutants for which national standards do not exist.

The main pollutants of concern within the Project region include ozone (O_3), volatile organic compounds (VOCs), nitrogen oxides (NO_x), and particulate matter less than 10 microns in diameter (PM_{10}). Large portions of the region affected by the Proposed Project presently do not attain the national and/or California ambient air quality standards for O_3 and PM_{10}. Although there are no ambient standards for VOCs or NO_x, they are important as precursors to O_3 formation.

3.7.1.1 Regulatory Framework

Air quality regulations were first promulgated with the Federal Clean Air Act of 1969 (CAA). This act established the NAAQS and delegated the enforcement of air pollution control regulations to the states. In California, the ARB is responsible for enforcing air pollution regulations. The ARB has in turn delegated the responsibility of regulating stationary emission sources to local air agencies. In areas that exceed the NAAQS, the CAA requires preparation of a State Implementation Plan (SIP), detailing how the state will attain the standards within mandated time frames. The Clean Air Act Amendments of 1990 (1990 CAA) revised the attainment planning process. The 1990 CAA identifies new emission reduction goals and compliance dates based upon the severity of the ambient air quality standard violation within a region.

The following five air pollution agencies, whose geographic jurisdictions are shown in Figure 3.7-1, regulate air quality within the broad Project region:

1. Imperial County Air Pollution Control District (ICAPCD), which includes all of Imperial County.

2. South Coast Air Quality Management District (SCAQMD), including the non-desert portions of Los Angeles and San Bernardino Counties, all but the eastern portion of Riverside County, and all of Orange County.

Figure 3.7-1. Locations of California Regional Air Agencies that Encompass the QSA Project Region

3. Mojave Desert Air Quality Management District (MDAQMD), which includes the northern portion of San Bernardino County and the eastern portion of Riverside County.

4. San Diego County Air Pollution Control District (SDCAPCD), which includes all of San Diego County.

5. Ventura County Air Pollution Control District (VCAPCD), which includes the County of Ventura.

These regional air agencies have developed air quality attainment plans designed to reduce emissions to a level that will bring their jurisdictions into attainment of the ambient air quality standards. Plans intended to attain the NAAQS are incorporated into the California SIP. Each air agency has also developed rules to regulate stationary sources of air pollution within their jurisdictions.

3.7.1.2 Existing Air Quality

Implementation of the Proposed Project would potentially affect the Southern California region between the lower Colorado River and the Pacific Ocean, which includes five separate air basins (see Figure 3.7-2).

Identifying the ROI for air quality requires knowledge of the types of pollutants being emitted, emission rates of pollutant sources, and meteorological conditions. The ROI for inert pollutants (generally pollutants other than O_3 and its precursors) is generally limited to a few miles downwind from a source. The ROI for O_3 can extend much farther downwind than for inert pollutants. Ozone is a secondary pollutant formed in the atmosphere by photochemical reactions of previously emitted pollutants, or precursors. Ozone precursors are mainly the reactive portion of VOCs and NO_x. In the presence of solar radiation, the maximum effect of VOCs and NO_x emissions on O_3 levels usually occurs several hours after they are emitted and many miles from the source.

Ozone concentrations are highest during the warmer months and coincide with the season of maximum insolation. Inert pollutant concentrations tend to be the greatest during periods of light winds and surface-based temperature inversions. These conditions limit atmospheric dispersion. However, in the case of PM_{10} impacts from fugitive dust episodes, maximum dust impacts within the Project region often occur during high wind events and in proximity to manmade ground disturbing activities.

The EPA designates all areas of the U.S. as having air quality better (attainment) or worse (nonattainment) than the NAAQS. The criteria for nonattainment designation varies by pollutant: (1) an area is in nonattainment for O_3 or 24-hour PM_{10} if its NAAQS has been exceeded more than three discontinuous times in 3 years and (2) an area is in nonattainment for any other pollutant if its NAAQS has been exceeded more than once per year. Former nonattainment areas that have achieved attainment of the NAAQS are designated as maintenance areas. In regard to the NAAQS for O_3, the portions of the Project region that do not attain this standard include Los Angeles, Orange, San Diego, and Imperial counties

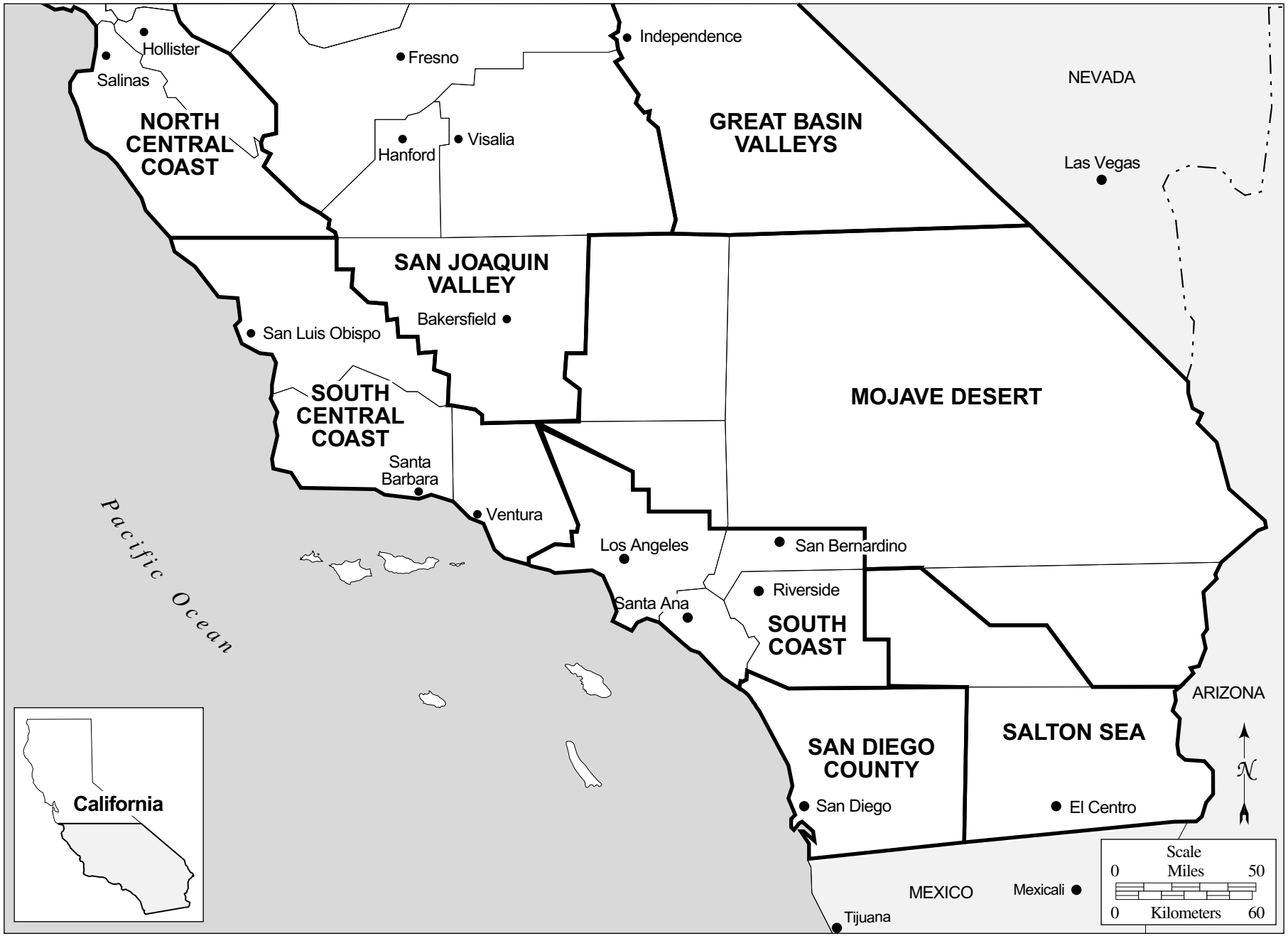


Figure 3.7-2. Air Basins that Encompass the QSA Project Region

and the southwestern portions of San Bernardino and Riverside counties. The portions of the Project region that do not attain the NAAQS for PM_{10} include Los Angeles, Orange, and San Bernardino counties, the southwestern half of Riverside County, and the southwestern two-thirds of Imperial County. The South Coast Air Basin (SCAB) (the non-desert portions of Los Angeles and San Bernardino counties, the western portion of Riverside County, and all of Orange County) also does not attain the NAAQS for carbon monoxide (CO) and the western portion of San Diego County has also been redesignated as a maintenance area for this pollutant.

The ARB also designates areas of California as being either in attainment or nonattainment of the CAAQS. An area is in nonattainment if a CAAQS has been exceeded more than once in three years. In regard to the CAAQS, the entire Project region within California presently does not attain the O_3 and PM_{10} standards. Additionally, Los Angeles County and the greater El Centro area in Imperial County do not attain the CO standard.

In Arizona, both counties are currently in attainment for each of the NAAQS with the exception of southwestern Yuma County, south of Imperial Dam, which is in a moderate nonattainment status for PM_{10}.

In September 1997, the EPA promulgated 8-hour O_3 and 24-hour and annual $PM_{2.5}$ national standards (particulate matter less than 2.5 microns in diameter). However, due to a lawsuit in May 1999, the U.S. District Court rescinded these standards and EPA's authority to enforce them. Subsequent to an appeal of this decision by the EPA, the U.S. Supreme Court in February 2001 upheld these standards. As a result, this action initiates a new planning process to monitor and evaluate emission control measures for these pollutants. The EPA is moving forward to develop policies to implement these standards.

3.7.1.3 Climate and Meteorology

The effects of the Pacific Ocean and the Coastal Mountain ranges produce two distinct climate zones within the region. West of the Coastal Ranges, the climate is classified as Mediterranean, characterized by mild summers and winters. This region experiences higher humidity and precipitation than other parts of the Project region, due to its proximity to the Pacific Ocean. East of the Coastal Ranges, within the Mojave and Lower Colorado River deserts, the climate is classified as arid continental, with hot summers, low humidity, and large diurnal variations in temperature. The aridity of this region is due to a combination of factors, including (1) a semi-permanent high pressure system that produces atmospheric subsidence, (2) a cool ocean to the west that provides limited amounts of moisture, and (3) the rain shadow effects of the Coast Ranges, which blocks the flow of moisture into the region from the Pacific Ocean. This arid condition produces low soil moisture, which is responsible for one of the main air pollution problems in the region, fugitive dust (PM_{10}). The interior climate is characterized by more extreme temperatures compared to coastal locations.

The annual average precipitation within the region varies from a low of 3 inches in the Imperial and Coachella valleys to over 40 inches in the higher coastal ranges to 10 to 15 inches along the coast of Southern California. Although most of the precipitation in the region is produced by winter storms from the North Pacific, summer rainfall from tropical air masses occasionally

occurs. However, most of this activity occurs in the Coastal Ranges and desert regions to the east. Summer precipitation produces a large percentage of the annual precipitation totals for the southeast desert portion of the Project region.

3.7.2 Impacts

3.7.2.1 Significance Criteria

The criteria used to define the significance of an air quality impact are based on the model Initial Study checklist contained in Appendix G of the State CEQA Guidelines. An impact would be significant if proposed air pollutant emissions:

- substantially conflict with the implementation of an applicable air quality plan; or
- violate any air quality standard or contribute substantially to an existing or projected air quality violation; or
- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors); or
- expose sensitive receptors to substantial pollutant concentrations; or
- create objectionable odors affecting a substantial number of people.

The SCAQMD and MDAQMD have also developed emission thresholds to assess the significance of air quality impacts for CEQA purposes. The majority of these thresholds range from daily to annual pollutant emission limits whose values depend on (1) whether a Proposed Project is a construction and operational activity and (2) the severity of the air quality levels within each jurisdiction. These thresholds often represent levels that define a potentially significant air quality impact for the first three criteria mentioned above.

3.7.2.2 Methodology

Potential air quality impacts from the Proposed Project are evaluated qualitatively in this PEIR. Except as noted within this section, specific actions associated with implementation of the Proposed Project components will be evaluated in future project-level environmental documents.

Potential impacts to air quality in the IID and CVWD service areas would result primarily from construction activities and resulting operational changes and were assessed by comparing Project-induced changes to the Existing Baseline. No construction would occur in or adjacent to the Colorado River and Salton Sea. Potential impacts to these geographic areas would result from changes in water surface elevation and are based on the hydrologic modeling discussed in section 3.1, which assesses impacts compared to Future Baseline conditions. No impacts to the MWD or SDCWA service areas would occur since no construction or other physical or operational changes would take place in these service areas. Information regarding impacts of the All American and Coachella Canal lining projects is based on the EIS/EIRs prepared specifically for those projects (USBR and IID 1994, and USBR and CVWD 2001).

3.7.2.3 Summary of Impacts

Imperial Irrigation District

CONSTRUCTION EMISSIONS

Impacts from lining the All American Canal were evaluated in the EIS/EIR for that project and found to be not significant since fugitive dust from construction activities, which was the principal impact, would be controlled by the application of water onto disturbed areas (USBR and IID 1994).

Air quality impacts due to the construction of on-farm water conservation measures and water delivery system improvements would result from combustive emissions due to the use of fossil fuel-fired construction equipment and fugitive dust (PM_{10}) emissions due to ground-disturbing activities. The impact of combustive emissions would be less than significant, as most emission sources would be mobile and intermittent in nature and their resulting pollutant impacts would not be large enough in a localized area to cause an exceedance of an ambient air quality standard. Fugitive dust emissions could be significant from activities that disturb large amounts of soil. However, implementation of fugitive dust control measures outlined in section 3.7.3 of this PEIR would ensure that PM_{10} emissions from proposed construction activities would be reduced to less than significant levels.

OPERATIONS EMISSIONS

Air quality impacts due to the operation of on-farm water conservation measures and water delivery system improvements would result primarily from the periodic maintenance of these systems. Maintenance activities would produce combustive emissions from worker commuter vehicles and mobile and quasi-stationary equipment, such as pumps and generators, and fugitive dust (PM_{10}) emissions due to ground-disturbing activities. The minor amounts of emissions that would result from these activities would cause less than significant air quality impacts.

Fallowing could be used to reduce water usage in the IID service area. Fallowing would produce certain beneficial air quality impacts since the reduction in equipment usage associated with this measure would lessen combustive emissions in the fallowed areas. Fugitive dust emissions from ground disturbing activities would not occur under this scenario; however, there is a potential for significant but mitigable fugitive dust emissions from the fallowed land.

With the exception of fugitive dust emissions from fallowing, neither construction nor operation of the Proposed Project components within the IID service area would (1) interfere with attainment of any national or state ambient air quality standard, (2) result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is in nonattainment under an applicable national or state ambient air quality standard, (3) or create objectionable odors affecting a substantial number of people.

Coachella Valley Water District

CONSTRUCTION EMISSIONS

The air quality analysis provided in the EIS/EIR for the Coachella Canal Lining Project (USBR and CVWD 2001) determined that PM_{10} emissions (due to fugitive dust) would constitute a significant impact even after mitigation. However, this impact would only last for the duration of construction activities.

Development of other specific components of the Proposed Project (such as pipelines, pumping stations, and recharge basins) would generate air pollutant emissions (NO_x and PM_{10}) from construction equipment, earth moving activities, construction workers' commutes, and materials deliveries. These activities would cause temporary impacts to local air quality and would be significant if they exceeded air pollutant thresholds established by the SCAQMD within the SCAB Project region. If mitigated construction emissions exceeded air pollutant thresholds established by the SCAQMD within the SCAB project region, these actions would therefore not comply with significance threshold (2) above. However, due to their short-term nature, construction activities would not interfere with attainment of the national and state ambient air quality standards over the long term.

OPERATIONS EMISSIONS

Operation of facilities associated with implementation of the Proposed Project within the CVWD service area would have minimal impacts to air quality. Although some pumping of Colorado River water would be required, it would be less than the amount needed to pump groundwater replaced by the Proposed Project. Since some of the power required for pumping likely would be provided by fossil fuel-fired electrical generating facilities within and outside the ROI, air pollutant emissions from these facilities would slightly decrease, which would be a beneficial impact.

Operation of the Proposed Project components would not (1) interfere with attainment of any national or state ambient air quality standard, (2) result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable national or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors), or (3) create objectionable odors affecting a substantial number of people.

The Metropolitan Water District of Southern California

No construction or substantial changes in operations would occur within the MWD service area. As a result, implementation of the Proposed Project would not result in potentially significant air quality impacts within the MWD service area. The Proposed Project would not (1) interfere with attainment of any national or state ambient air quality standard, (2) result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable national or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors), or (3) create objectionable odors affecting a substantial number of people.

San Diego County Water Authority

No construction or substantial changes in operations would occur within the SDCWA service area. As a result, implementation of the Proposed Project would not result in potentially significant air quality impacts within the SDCWA service area. The Proposed Project would not (1) interfere with attainment of any national or state ambient air quality standard, (2) result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable national or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors), or (3) create objectionable odors affecting a substantial number of people.

Other Areas

COLORADO RIVER

Implementation of the Proposed Project would reduce Colorado River flows and the water surface elevation between Parker and Imperial dams. Over the long-term, this would intermittently expose land in California and Arizona that is currently submerged along this reach of the Colorado River. However, this change would be within the range of historic fluctuations of the river and would not increase the amount of land that would be exposed and subject to increased fugitive dust emissions. This impact would be less than significant. The Proposed Project would not (1) interfere with attainment of any national or state ambient air quality standard, (2) result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable national or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors), or (3) create objectionable odors affecting a substantial number of people.

SALTON SEA

FUGITIVE DUST FROM EXPOSED SHORELINES

As described in section 3.0, under Future Baseline conditions the Salton Sea is expected to decline substantially from its current elevation. As part of the Proposed Project, IID proposes to implement water conservation measures that would reduce inflows to the Salton Sea. As a result, the water surface elevation of the Salton Sea would decline at a faster rate and to a greater extent under the Proposed Project than under the Future Baseline. The soils along the Salton Sea shoreline are predominantly silty clay in texture and consequently have a moderate potential for wind-blown dust. Once exposed, most of these soils would dry with a mineral crust, which would minimize the ability of winds to generate dust (PM_{10}) emissions from the underlying soils. However, the potential exists for the crust to break down with time and to produce wind blown PM_{10} emissions. The greatest potential for PM_{10} emissions from the exposed shoreline would occur in areas of human disturbances, such as vehicle activities, or from subsequent wind erosion from these areas. Therefore, the level of dust emissions from the Proposed Project would be proportional to the amount of human disturbance that would occur on these exposed soils. Although the new shoreline created by the Proposed Project would only marginally increase the total land area within the ROI that presently generates fugitive dust emissions, fugitive dust emissions from these areas are conservatively considered to be significant due to the PM_{10} nonattainment status of the region.

Odorous Emissions

At the present, odors are emitted from the Salton Sea as a result of algae blooms and flora and fauna die-offs, particularly during the warmer months of the year. These odors affect the people in the vicinity of the Salton Sea and they will continue to do so in the future. Odors emitted from the Salton Sea are most likely primarily associated with the effects of eutrophication, which occurs as a result of nutrient inflows from agricultural drainage. In this process, algae production is limited by the availability of phosphorus. When the algae respire, dissolved oxygen is consumed from the Sea. Dissolved oxygen deficits are thought to be responsible for fish die-offs, which contribute to odor problems at the Salton Sea. Decomposition and sulfate reduction processes are also likely contributors to odors. Implementation of TMDLs proposed for the New and Alamo rivers would reduce loading of phosphates in the Salton Sea, which would be expected to reduce odor occurrences.

Given the complexity of the interrelationship of phosphate inputs, water quantity, and water quality, it is not possible to quantify the effect the Proposed Project would have on odorous emissions in the Salton Sea. However, compared to the existing conditions and projected continuation of eutrophication conditions at the Salton Sea, the effects of the Project on odors would be less than significant.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would create substantial pollutants or create objectionable odors or cause the violation of any air quality standard or conflict with any applicable air quality plan. A reduction in the amount of conserved water dedicated to MWD would not result in any physical change that would cause the generation of pollutants or odors or that result in an activity that would cause the violation of any air quality standard or conflict with any applicable air quality plan. Diversion of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would generate air emissions or odors or cause the violation of any air quality standard or air quality plan.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River contemplated under the Proposed Project. Since no

changes in river levels would result or construction of new diversion structures would be required with implementation of this Project component, no significant impacts to air quality would occur. The exchange of water with SDCWA would occur through existing infrastructure and would not require construction activities that would generate air emissions or odors, or cause the violation of any air quality standard or applicable air quality plan.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that would generate air emissions or odors, or cause the violation of any air quality standard or applicable air quality plan. The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause the generation of pollutants or odors or that would result in an activity that would cause the violation of any air quality standard or conflict with any applicable air quality plan.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore no change in Colorado River conditions or potential impacts to air quality along the Colorado River would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD nor would it increase the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause the generation of pollutants or odors or that would result in an activity that would cause the violation of any air quality standard or conflict with any applicable air quality plan.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAF of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause the generation of pollutants or odors or that would result in an activity that would cause the violation of any air quality standard or conflict with any applicable air quality plan. No impacts to air quality would occur from the diversion or conveyance of the water to CVWD since no new facilities would be required to be constructed. Similarly, the exchange of SWP entitlements under this Project component would be accomplished through existing facilities and would not result in physical changes to environmental conditions that would the generation of pollutants or

odors or that would result in an activity that would cause the violation of any air quality standard or conflict with any applicable air quality plan.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts to air quality since it does not change the amount of water diverted, conveyed or used and would not result in any activity that would cause the generation of pollutants or odors or that would result in an activity that would cause the violation of any air quality standard or conflict with any applicable air quality plan.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These changes are within historic fluctuations and would not result to changes to the physical environment that would create a significant impact to air quality. Under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the river under this component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities and would not increase the amount of water used within its service area. Therefore, no changes to environmental conditions would result from implementation of this Project component that would cause the generation of pollutants or odors or that would result in an activity that would cause the violation of any air quality standard or conflict with any applicable air quality plan.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. This change in river flows is within historic fluctuations and would not result to changes to the physical environment that would cause the generation of pollutants or odors or that would result in an activity that would cause the violation of any air quality standard or conflict with any applicable air quality plan.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY.

With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would share this shortage. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. This additional conservation/shortage management would also be short-term. Potential impacts to air quality, such as additional fugitive dust from farmland fallowing and dust from acceleration of Salton Sea bank exposure, due to this additional conservation/shortage management would be so minor as to be indiscernible from the impacts of the Proposed Project.

3.7.3 Mitigation Measures

3.7.3.1 Construction Impacts

Construction activities could exceed NO_x and PM_{10} emission thresholds within the SCAB portion of the CVWD service area or contribute to an exceedance of an ambient PM_{10} standard within the CVWD or IID Project regions. If proposed construction activities within the SCAB exceed a SCAQMD NO_x emission threshold, one or more of the following measures could be implemented to reduce NO_x emissions from construction equipment (this list does not preclude the use of additional mitigation measures):

1. Retard injection timing by two degrees on diesel-powered equipment. This measure would reduce NO_x emissions by about 15 percent from these sources. Retarding injection timing by more then two degrees would further reduce NO_x emissions. However, this level of control would adversely decrease fuel efficiency.

2. Properly tune and maintain all construction equipment.

3. Use low-NO_x engines, alternative fuels, electrification, and other advanced technologies, whenever feasible.

The following measures could be implemented as standard operating practices to minimize combustive particulate matter (PM_{10}/$PM_{2.5}$) and fugitive dust (PM_{10}) emissions (this list does not preclude the use of additional mitigation measures):

1. Minimize the use of diesel-powered equipment where feasible.

2. Use alternative diesel fuels in construction equipment where feasible.

3. Use particulate traps on diesel-powered equipment.

4. Properly tune and maintain all construction equipment.

5. Apply water to areas where vehicles and equipment are involved in ground-disturbing

activities.

6. Pave dirt roads, keep them wet, or apply non-toxic soil stabilizers, such as salts or detergents.
7. Increase water applications or reduce ground-disturbing activities with increasing wind speeds.
8. Minimize the amount of disturbed area and limit vehicle speeds onsite.
9. Cover inactive soil stockpiles or treat them with soil binders, such as crusting agents or water them to keep moist.
10. Cover trucks that haul soils or fine aggregate materials.
11. Designate personnel to monitor dust control program activities to ensure that they are effective in minimizing fugitive dust emissions.
12. Clean dirt from construction vehicle tires and undercarriages when leaving the construction site and before entering local roadways.
13. Sweep streets near the construction area at the end of the day if visible soil material is present.
14. Per SCAQMD Rule 403, for large construction sites (greater than 100 acres of disturbed area or daily earth-moving or throughput volume of 7,700 cubic meters) or medium operations (50 to 100 acres of disturbed area or daily earth-moving or throughput volume of 3,850 – 7,700 cubic meters) under a contingency notification, an approved fugitive dust emissions control plan must be prepared.
15. For applicable construction areas (such as pipeline alignments), establish a vegetative groundcover as soon as feasible after active operations have ceased. Groundcover will be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting.

3.7.3.2 Operational Impacts

One or more of the following BMPs could be implemented to reduce fugitive dust emissions related to fallowing to a less than significant level. This list does not preclude the use of additional measures as appropriate.

- Implement conservation cropping sequences and wind erosion protection measures as outlined by the USDA Natural Resources Conservation Service, such as:
  - Plan ahead to start with plenty of vegetative residue and maintain as much residue on fallowed fields as possible. Residue is more effective for wind erosion protection if left standing.
  - If residues are not adequate, small grain can be seeded to take advantage of winter rains and lightly irrigated as needed to get adequate growth.
  - Avoid any tillage, if possible.

  - Avoid any traffic when fields are dry to avoid pulverization.
- Apply soil stabilization chemicals to fallowed fields.
- Re-apply drain or other unused water to allow protective vegetation to be established.
- Reuse irrigation return flows to irrigate windbreaks across blocks of land including many fields to reduce emissions from fallowed, farmed, and other lands within the block. Windbreak species, management, and layout would be optimized to achieve the largest feasible dust emissions reduction per unit water available for their irrigation. Windbreak corridors would provide ancillary aesthetic and habitat benefits.

Implementation of Mitigation Strategy 2, outlined in section 3.2.3 of this PEIR, would avoid fugitive dust impacts associated with the decline in Salton Sea water surface elevation since additional water would be conserved by IID and would be allowed to flow to the Salton Sea. This potentially feasible measure would reduce impacts to air quality to a less than significant level. Potential environmental impacts of this mitigation measure are addressed in section 3.2.3. As the IID Water Conservation and Transfer Project becomes more defined, additional mitigation measures to address air quality impacts may be identified.

3.7.4 Significant Unavoidable Adverse Impacts

Temporary significant and unavoidable impacts would result from construction of the Coachella Canal lining project. As noted above, the implementation of Mitigation Strategy 2 would reduce the impact from increased fugitive dust emissions at the Salton Sea to a less-than-significant level. If this strategy were not adopted as mitigation for biological impacts, increased fugitive dust emissions would be considered a significant and unavoidable impact.

3.7.5 Significant Irreversible Environmental Changes

The increase in wind-blown dust from newly exposed shoreline along the Salton Sea would be a significant irreversible change to air quality should Mitigation Strategy 2 not be implemented.

3.8 CULTURAL RESOURCES

3.8.1 Environmental Setting

3.8.1.1 Regulatory Framework

Cultural resources include prehistoric and historic archaeological sites, districts, and objects; standing historic structures, buildings, districts, and objects; and locations of important historic events, or sites of traditional/cultural importance.

Section 15064.5 (State CEQA Guidelines) provides that a project may have a significant environmental effect if it causes "substantial adverse change" in the significance of an historical resource. Historical resources are defined in State CEQA Guidelines section 15064.5 as any of the following:

(1) A resource listed in, or determined to be eligible by the State Historical Resources Commission for listing in the California Register of Historical Resources (Pub. Res. Code §5024.1, Title 14 California Code of Regulations [CCR], section 4850 et seq.).

(2) A resource included in a local register of historical resources, as defined in section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements of section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.

(3) Any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code §5024.1, Title 14 CCR, section 4852), including the following:

(A) is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

(B) is associated with the lives of persons important in our past;

(C) embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

(D) has yielded, or may be likely to yield, information important in prehistory or history.

Federal actions may be required for subsequent specific actions associated with the Proposed Project. If so, federal laws, regulations, and guidelines regarding cultural resources may be applicable, including but not limited to the National Historic Preservation Act of 1966 (NHPA) (16 USC 470f, as amended) and its implementing regulations, the American Indian Religious Freedom Act (AIRFA), and the Native American Graves Protection and Repatriation Act (NAGPRA).

3.8.1.2 Regional Issues

Human beings have been living within the regions of Southern California affected by the implementation of the Proposed Project for over 10,000 years. The analysis of cultural resources, including both prehistoric and historic sites, can provide valuable information on the cultural heritage of both local and regional populations. Prehistoric sites range from small lithic scatters left behind by early stone-tool makers to the remains of large village sites found along the coast. Historic resources include small adobe homes as well as large historic districts encompassing numerous architectural structures and acres of land.

In general, urban areas are often located adjacent to natural resources such as springs or estuaries that had also attracted Native American settlement. Therefore, urban development is often located in areas of high prehistoric archaeological site sensitivity. Although historic and modern development within highly urbanized areas have caused extensive impacts to prehistoric resources, buried archaeological sites with portions that are relatively unaffected by previous development have been commonly encountered during urban construction. Urbanized areas also have a higher likelihood of containing historic architectural resources than rural or non-developed areas.

Agricultural land has been less impacted by historic and modern development and, therefore, has a higher likelihood of containing relatively intact cultural resources despite the ground disturbances associated with plowing and other agricultural activities. In addition, coastal areas, including those within San Diego, Orange, Los Angeles, and Ventura counties, have a high probability of containing Native American archaeological sites because many Native American communities congregated along the coast to take advantage of the rich marine resources.

Paleontologic resources are the recognizable remains of once-living, non-human organisms. Identified as fossils, these resources represent a record of the history of life on the planet dating as far back as approximately 4 billion years ago. Paleontologic resources can include shells, bones, leaves, trails, and other fossilized floral or faunal materials. These resources provide valuable information on evolution, climatology, and taxonomy and can provide information for measuring time in earth history as well as for understanding ancient environments and geographies.

3.8.1.3 Imperial Irrigation District

The IID service area was traditionally inhabited by the Digueño and Cahuilla groups (Figure 3.8-1). There is often great fluidity between ethnographic territories; therefore, there is often uncertainty in demarcating exact boundary lines between neighboring groups. The approximate boundary lines given in Figure 3.8-1 are based on the *Handbook of North American*

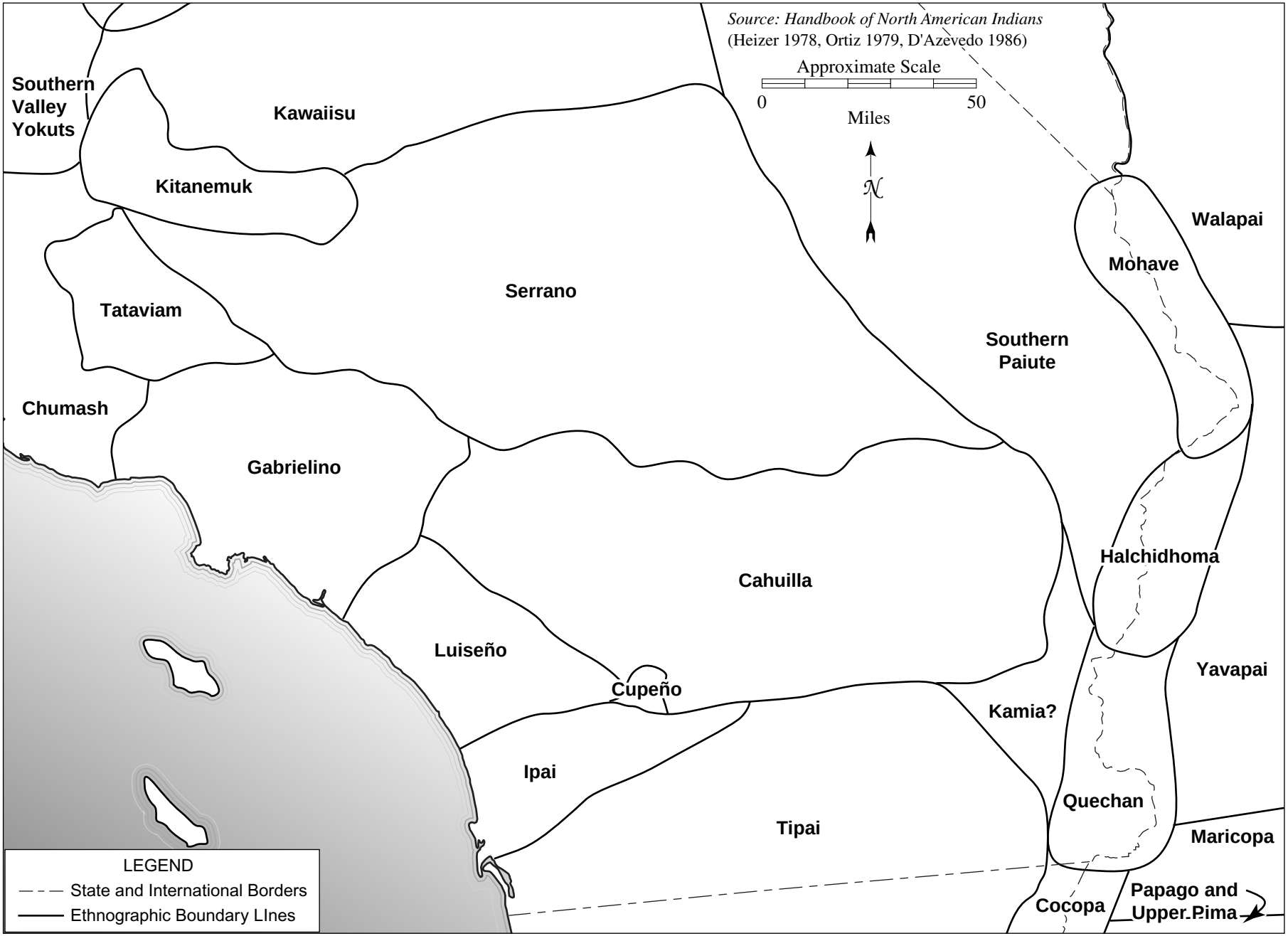


Figure 3.8-1. Approximate Boundary Lines of the Ethnographic Groups of Southern California at the Time of European Contact

Indians (Heizer 1978, Ortiz 1979, D'Azevedo 1986). The district boundary also encompasses agricultural lands with scattered suburban and rural development, which could contain historic architectural resources. The district area may contain fossil-bearing geologic strata with the potential for yielding significant paleontologic resources.

Digueño (Ipai/Tipai/Kumeyaay). The Ipai, Tipai, and Kumeyaay are three groups subsumed under the name Digueño because they are linguistically and culturally similar to each other. The Digueño territory covers most of the extreme southern part of California, from the mouth of the San Luis Rey River in the north, to the Todos Santos Bay near Ensenada, Mexico, in the south, and to the Sand Hills bordering the Imperial Valley in the east (Luomala 1978). They speak a Yuman language similar to the Colorado River groups such as the Mohave, Halchidhoma, and Quechan. The Digueño used various types of wild plants and supplemented their diet with small game, some large game, and fish (Luomala 1978). During the early years of Spanish Missionization, the Digueño violently resisted Mission control and several attacks on the San Diego Mission ended with fatalities (Luomala 1978). Despite strong resistance, the Mission had 1,405 Native American neophytes living within the Mission system by 1779 (Luomala 1978).

Cahuilla and Serrano. The Cahuilla territory was located near the geographic center of Southern California. It was bounded to the north by the San Bernardino Mountains, to the south by Borrego Springs and the Chocolate Mountains, to the east by the Colorado Desert, and the west by the San Jacinto Plain and the eastern slopes of the Palomar Mountains (Bean 1978). The Serrano territory encompassed the San Bernardino Mountains east of Cajon Pass and continued north to Victorville, east to Twentynine Palms, and south to Yucaipa Valley (Bean and Smith 1978a). Both groups used a wide range of wild resources, such as acorns and piñon nuts, deer, sheep, rabbits, fish, and quail, among others. They also had similar settlement patterns, with higher elevation villages situated in well-watered canyons or on fans near streams and springs and lower elevation villages located near natural springs (Moratto 1984). The Cahuilla had well-developed trade networks with neighboring Serrano, Luiseño, and Diegueño groups (Bean and Saubel 1963).

3.8.1.4 Coachella Valley Water District

The CVWD service area lies within land traditionally occupied by the Digueño and Cahuilla (see section 3.8.1.3) (Figure 3.8-1). The Salt Creek area in particular has been identified as a sacred ground for shamanistic ritual by the ethnographic Cahuilla (USBR and CVWD 2001). The district boundary also encompasses urbanized areas that could contain historic architectural resources. This district area contains fossil-bearing geologic strata with the potential for yielding significant paleontologic resources.

3.8.1.5 The Metropolitan Water District of Southern California

The MWD service area was traditionally inhabited by the Ventureño Chumash, Gabrielino, Cahuilla (see section 3.8.1.3), Luiseño/Juaneño, and possibly the Tataviam and Serrano (see section 3.8.1.3) (Figure 3.8-1). The district boundary also encompasses urbanized areas, which could contain historic architectural resources. This district area contains fossil-bearing geologic strata with the potential for yielding significant paleontologic resources.

Ventureño Chumash. The Chumash occupied a large, ecologically diverse region stretching from San Luis Obispo to Malibu Canyon on the coast, west as far as the San Joaquin Valley, and the Channel Islands (Glassow 1991). Within this territory, the historic Chumash were divided into seven groups. Each group occupied a different territory, had its own adaptation, and played a different role in the overall economic system. Ventureño Chumash territory was mountainous with the exception of the coastal areas of the Oxnard Plain between Ventura and Point Mugu. The northern portion of their historic territory included the headwaters of the Ventura and Santa Clara rivers, and their easternmost settlement was along Malibu Creek (Grant 1978). The Chumash economic system was complex, involved widespread formalized trading networks, and was closely tied to kinship, political, and religious systems (Blackburn 1975). Shell bead currency was used throughout Southern California and it appears that the Chumash were the primary makers of this standardized money (Blackburn 1975).

*Gabrielino***.** Gabrielino territory covered most of present-day Los Angeles and Orange counties, from Aliso Creek in the south to Topanga Creek in the north as well as all of the Los Angeles Basin (Bean and Smith 1978b). Settlements were situated near water courses and consisted of both sedentary (year-round) villages and smaller short-term campsites. The geographic territory of the Gabrielino contains different types of environmental zones (e.g., interior mountains, prairie, coast), which provided a wide range of resources. The Gabrielino collected acorns, yucca, and piñon nut, and hunted various types of small mammals, deer, fish, and shellfish. Houses were normally domed structures thatched with tule, fern, or carrizo (Bean and Smith 1978b).

Luiseño/Juaneño. The Shoshonean inhabitants of northern San Diego County and southwestern Riverside County were called Luiseños by Franciscan friars, who named the San Luis Rey River and established the San Luis Rey Mission in the heart of Luiseño territory. Luiseño territory encompassed an area roughly from Agua Hedionda Creek north to Aliso Creek on the coast, and inland to Santiago Peak and Palomar Mountain (Bean and Shipek 1978). Less is known about the Juaneño, whose name derives from an association with the Mission San Juan Capistrano. The territory ascribed to them by Kroeber extended from Aliso Creek on the north to the area between San Onofre and Las Pulgas drainages on the south, with the Pacific Ocean forming the western boundary and the crest of the Santa Ana Mountains forming the boundary on the east (Kroeber 1925). Acorns were an important food source to the Luiseño and Juaneño groups, but they also utilized various seeds, greens, bulbs, roots, and fruits. The Luiseño hunted large and small terrestrial game, including black-tailed deer, pronghorn, jackrabbits, various birds, grasshoppers, and rodents.

Tataviam. The Tataviam occupied the area just south of Castaic Lake to the vicinity of Newhall. Their area spread westward to Piru on the Santa Clara River and eastward to the southwestern edge of the Antelope Valley. Their settlements ranged in size from 10-15 people to villages of approximately 200 people (King and Blackburn 1978). The total population was probably less than 1,000. Larger villages were located along creeks and what is now Elizabeth Lake. Like other interior Native American groups, rock art and ritual was highly developed; trade was central to their economy. The Tataviam subsisted on similar foods to their Gabrielino neighbors, except that yucca was relied upon more heavily as a major staple (King and Blackburn 1978).

3.8.1.6 San Diego County Water Authority

The SDCWA service area was traditionally occupied by the Luiseño/Juaneño (see section 3.8.1.5), Digueño (see section 3.8.1.3), and possibly the Cahuilla (see section 3.8.1.3) (Figure 3.8-1). The service area also encompasses urban uses that could contain historic architectural resources. This service area contains fossil-bearing geologic strata with the potential for yielding significant paleontologic resources.

3.8.1.7 Other Areas

Colorado River

The region of influence includes the reach of the Colorado River in California (San Bernardino, Riverside, and Imperial counties) and Arizona (La Paz and Yuma counties) primarily between Parker and Imperial dams. This portion of the Colorado River lies within areas historically occupied by the Mohave, Halchidhoma, Quechan, and Southern Paiute (Chemehuevi) (Figure 3.8-1). The majority of the Colorado River region is undeveloped, but does include scattered suburban and rural development, which could contain historic architectural resources. It may also contain fossil-bearing geologic strata with the potential for yielding significant paleontologic resources.

Mohave, Halchidhoma, and Quechan. The Mohave, Halchidhoma, and Quechan or Yuma were lower Colorado River agriculturists who spoke languages from the Yuman language family (Moratto 1984). The Mohave is the northernmost and largest of the three groups. The Quechan is the southernmost, and the Halchidhoma occupied the land between the Mohave and Quechan (see Figure 3.8-1). The Kamia from the neighboring Colorado Desert later joined them during historic times, and the Chemehuevi (see below) actually displaced the Halchidhoma during the early historic period (Moratto 1984). Maize was the primary agricultural crop, which was supplemented by collecting wild plants, fishing, and hunting. A typical Colorado River settlement consisted of a scattering of houses up and down the riverbank (Moratto 1984). The lower Colorado River groups were organized militarily and traveled great distances to fight, visit, or trade (Moratto 1984). The Mohave and Quechan often united to fight the Halchidoma or other western Arizona groups.

Southern Pauite (Chemehuevi). The Chemehuevi are one of 16 identified Southern Paiute groups whose main territory was west of the Colorado River, extending from Blythe to just north of Needles and then from the California border westward halfway to Twentynine Palms. Although the Chemehuevi were neighbors of the Serrano and Cahuilla (see section 3.8.1.3), they were more aligned linguistically and culturally with the Great Basin groups (e.g., Western Shoshone, Ute, Kawaiisu). The Chemehuevi shared the Great Basin pattern of living in nonsedentary small bands that used a wide range of resources and traveled over great distances (Moratto 1984). During historic times, the Chemehuevi displaced the Halchidhoma along the Colorado River (with the help of the Mohave) and practiced some agricultural pursuits (Kroeber 1925).

Salton Sea

The Salton Sea lies within territory traditionally utilized by the Cahuilla and the Digueño (see section 3.8.1.3), although neighboring groups (i.e., Cupeño, Mohave, Quechan, Serrano) may also have used this land at some point (Figure 3.8-1). The majority of the Salton Sea region is occupied by agricultural lands with scattered suburban and rural development, which could contain historic architectural resources. It also contains fossil-bearing geologic strata with the potential for yielding significant paleontologic resources.

3.8.2 Impacts

3.8.2.1 Significance Criteria

State CEQA Guidelines section 15064.5 provides that a project may have a significant environmental effect if it causes "substantial adverse change" in the significance of an "historical resource" or a "unique archaeological resource" as defined or referenced in State CEQA Guidelines section 15064.5[b, c]. Such changes include "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired."

An impact on cultural resources is considered significant, therefore, if it adversely affects a resource that is listed in or eligible for listing in the California Register of Historical Resources or is otherwise considered a unique or important archaeological resource under CEQA. In general, a project may have an adverse effect on a cultural resource if it would:

- cause a substantial adverse change in the significance of a historical resource as defined in State CEQA Guidelines section 15064.5; or
- cause a substantial adverse change in the significance of an archaeological resource pursuant to State CEQA Guidelines section 15064.5; or
- directly or indirectly destroy a unique paleontologic resource or site or unique geologic feature; or
- disturb any human remains, including those interred outside of formal cemeteries.

3.8.2.2 Methodology

Impacts to cultural resources were evaluated on a region-by-region basis to identify whether any of the potential changes that would result from implementation of the Proposed Project would result in a significant impact to archaeological, paleontologic, or architectural resources. With the exception of the All American and Coachella Canal lining projects, the exact locations of improvements in the IID and CVWD service areas are not known; therefore, the potential impacts were assessed programmatically based on the general types of areas in which the improvements could occur. Potential impacts to cultural resources in the IID and CVWD service areas would result from construction activities and were assessed by comparing Project-induced changes to the Existing Baseline. Potential impacts to the Salton Sea and Colorado River areas would result from changes in water elevation and are based on the hydrologic modeling discussed in section 3.1, which assesses impacts compared to Future Baseline conditions. Impacts associated with the All American and Coachella Canal lining projects are

based on the EIS/EIRs prepared for those projects (USBR and IID 1994, USBR and CVWD 2001). No impacts would occur in the MWD and SDCWA service areas since no construction or other physical or operational changes would take place.

3.8.2.3 Summary of Impacts

Both structural and non-structural components of the Proposed Project could affect significant prehistoric, historic, and paleontologic resources. Structural components, especially those involving construction-related activities and ground disturbance, could impact an archaeological, architectural, or paleontologic site. Some non-structural components, such as reducing drainage flows, have the potential to impact significant cultural resources. For example, reduced drainage flows would lower the water level of the Salton Sea, exposing previously submerged cultural resources. Newly exposed cultural resources may be susceptible to site erosion and looting.

Imperial Irrigation District

The Proposed Project includes construction of various water conservation measures, such as building a lined canal parallel to the existing All American Canal, installing flow metering equipment, automating control gates and building lateral interceptors, regulating reservoirs, fallowing, and implementing extensive on-farm water conservation measures. These types of construction-related water conservation measures may involve ground disturbance and could impact an archaeological or paleontologic site or human remains. Most ground disturbance would take place in previously disturbed areas and, therefore, impacts to cultural resources would be unlikely. However, ground-disturbing activities still have the potential to impact a significant archaeological or paleontologic resource or human remains, particularly if those activities occur in previously undisturbed areas. Potentially significant impacts could also result if implementation of Project components would require demolition or relocation of a significant historic architectural resource. Fallowing would not involve any physical changes that have the potential to impact cultural resources.

Coachella Valley Water District

As described in the Coachella Canal Lining Project EIS/EIR (USBR and CVWD 2001), lining the Coachella Canal would involve ground disturbance that could impact an archaeological or paleontologic site. The Coachella Canal has not been officially recognized as a historical property, but because of its age and importance to the cultural history of the region, it is presumed to meet the criteria for listing on the National Register of Historic Places and the California Register of Historical Resources (USBR and CVWD 2001). Any physical alteration of the Canal would be a potentially significant impact.

Construction of other Proposed Project components, such as pumping stations, recharge basins, and the expansion of the current distribution system would involve ground disturbance. Ground disturbance associated with pipelines and pumping stations likely would take place in previously disturbed areas, and impacts to cultural resources therefore would be unlikely. However, ground-disturbing activities in such areas still would have the potential to impact buried archaeological or paleontologic resources or human remains. Preliminary recharge basin locations are being considered that could be located in undisturbed areas such as the vicinity of

Dike 4 and the Martinez Canyon alluvial fan. Ground disturbance from construction in such locations could impact archaeological or paleontologic resources or human remains. Potentially significant impacts could also result if implementation of Project components would require demolition or relocation of a significant historic architectural resource.

The Metropolitan Water District of Southern California

Implementation of the Proposed Project would not require the construction of new MWD facilities or the modification of existing MWD facilities and, therefore, impacts to archaeological, architectural, or paleontologic resources or human remains would not occur because no new ground-disturbing activities or construction would be required within the MWD service area.

San Diego County Water Authority

Implementation of the Proposed Project would not require the construction of new SDCWA facilities or the modification of existing SDCWA facilities and, therefore, impacts to archaeological, architectural, or paleontologic resources or human remains would not occur because no new ground-disturbing activities or construction would be required within the SDCWA service area.

Other Areas

COLORADO RIVER

The implementation of the Proposed Project would decrease the flow of the Colorado River between Parker and Imperial dams, but the resulting reduction in median water surface elevation is within historic fluctuations. The reduction in water flow to backwaters would result in a slight reduction in median water surface area to some lakes, but these slight reductions are within historical ranges. Although reducing the surface water area of a river or lake may expose previously submerged cultural resources on both the California and Arizona sides of the River, the changes in water surface area to the River or backwaters from the implementation of the Proposed Project would be insignificant in comparison to the daily and seasonal fluctuations that are currently occurring. Impacts to cultural resources, including archaeological, architectural, and paleontologic resources, would therefore be less than significant.

SALTON SEA

Implementation of the Proposed Project would result in a reduction of the current and projected surface area of the Salton Sea. Under the Proposed Project, the Sea level would decrease more rapidly and to a greater extent than under the Future Baseline (refer to section 3.1 for additional discussion) over the quantification period. This may expose previously submerged cultural resources, which would leave those resources susceptible to site erosion and looting. If reduction of the surface area of the Salton Sea exposed a previously submerged significant archaeological or paleontologic resource, then it could be a significant adverse impact to cultural resources.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would result in significant impacts cultural or paleontologic resources along the Colorado River or cause a substantial change to historic resources. A reduction in the amount of conserved water dedicated to MWD would not result in any physical change that would impact any archaeological or paleontologic resources. Diversion of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would impact archaeological or paleontologic resources.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River contemplated under the Proposed Project. Since no changes in river levels would result or construction of new diversion structures would be required with implementation of this Project component, no significant impacts to cultural resources would occur. The exchange of water with SDCWA would occur from existing infrastructure and would not require construction activities that would result to changes to the physical environment that would significantly impact archaeological, historical, or paleontologic resources.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that would result in changes to the physical environment that would significantly impact archaeological, historical, or paleontologic resources. The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause significant impacts to cultural resources.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore, no change in Colorado River conditions or changes to the physical environment that would significantly impact archaeological, historical, or paleontologic resources along the Colorado River would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD nor would it increase the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause significant impacts to cultural resources.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAF of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause significant impacts to archaeological, historic or paleontologic resources. No impacts to cultural resources would occur from the diversion or conveyance of the water to CVWD since no new facilities would be required to be constructed. Similarly, the exchange of SWP entitlements under this Project component would be accomplished through existing facilities and would not result in physical changes to environmental conditions that would cause a significant impact to archaeological, historic or paleontologic resources.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts to cultural resources since it does not change the amount of water diverted, conveyed, or used and no changes to existing environmental conditions would result.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These changes are within historic fluctuations and would not result to changes to the physical environment that would cause significant impacts to archaeological, historic, or paleontologic resources. Also under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use

within its service area. The amount of water diverted from the river under this component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities, and would not increase the amount of water used within its service area. Therefore, no changes to environmental conditions would result from implementation of this Project component that would significantly impact cultural resources.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. This change in river flows is within historic fluctuations and would not result to changes to the physical environment that would cause a significant impact to archaeological, historic, or paleontologic resources.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would share this shortage. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. This additional conservation/shortage management would also be short-term. Because this additional conservation/shortage management would not involve ground disturbance, no impacts to cultural resources are anticipated.

3.8.3 Mitigation Measures

Mitigation measures for potential impacts to cultural resources were identified for both the All American and Coachella Canal lining projects. Mitigation measures included in the All American Canal Lining EIS/EIR include:

- Prior to construction, class III surveys would be conducted in the Pilot Knob area and along the entire length of the canal to be lined to determine the locations of cultural resources. Surveys also would be conducted at gravel quarries not previously surveyed.

- If a site cannot be avoided, mitigation would include professionally recovering, documenting, and preserving the cultural resources as appropriate. Surveys and

recovery activities would be coordinated with the California State Historic Preservation Officer (SHPO) and the tribe with whom project coordination is in progress. To fulfill the requirements of the NHPA, Reclamation will enter into an agreement with the California SHPO, Native American tribes, BLM, other interested persons, and the Advisory Council on Historic Preservation. A Native American observer will be given the opportunity to participate in archaeological surveys in the Pilot Knob ACEC.

- Steps would be taken as part of an Interim Recreation Management Plan to deter the public from sensitive areas. Incidental contractor activity at the construction site would be restricted to a predetermined area. Each onsite construction contract would include provisions requiring the contractor to report cultural resources located during the construction activities and to cease construction activities in the immediate area of the located resources until the site is inspected by professional cultural resources personnel. In the event that cultural resources are discovered during construction, work would be suspended until evaluation and mitigation are complete.

The following environmental commitments and mitigation measures were included in the Coachella Canal Lining Project EIS/EIR:

- All cultural resource activities will be conducted in accordance with 36 CFR 800 and in consultation with the California SHPO, BLM for public domain land, and as appropriate, the Federal Advisory Council on Historic Preservation.

- Should any burial sites be encountered during construction, they will be treated pursuant to the procedures outlined in the Native American Graves Protection and Repatriation Act.

- Prior to construction, a detailed construction plan will be developed. To minimize impacts, existing roads and staging areas will be used wherever possible. New borrow areas (other than the canal-bank spoil piles) and access roads will require a Class III survey unless the compliance process was completed within the past 5 years. All areas potentially affected, as well as areas to be disturbed for new habitat planting, will also have Class III surveys.

- Avoidance will be utilized to the extent 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.

- Appropriate documentation about the Coachella Canal will be prepared that is equivalent to a Historic American Engineering Record.

Construction of other components of the Proposed Project within the CVWD and IID project regions could affect prehistoric, historic, and paleontologic resources. Depending on the nature of the cultural resource, the impact, and the ability to modify project design to avoid or

minimize the impact, impacts on cultural resources could be potentially significant. The following measures could be implemented as appropriate to mitigate impacts to cultural resources (note this list does not preclude the use of additional measures):

Archaeological Resources

- Conduct archaeological and historical surface surveys during site-specific CEQA review to identify any cultural resources that may be affected. Areas that may contain buried archaeological resources also would be identified.

- Modify project design, when feasible, to avoid significant cultural resources.

- Develop and implement a pre-construction Phase II Testing and Evaluation Plan for all unavoidable potentially significant archaeological sites that would be directly impacted by the implementation of the Proposed Project to evaluate the significance of the resource in terms of applicable criteria.

- Develop and implement a pre-construction Phase III Data Recovery Plan for all significant archaeological sites that would be directly impacted by the implementation of the Proposed Project if the sites cannot be avoided through project re-design.

- Develop a Cultural Resources Construction Monitoring Plan prior to construction if ground disturbance would occur within any areas of potential archaeological sensitivity.

- In the event of an unanticipated cultural resource discovery during construction, construction would be re-directed to other areas until the discovery has been documented by a qualified archaeologist and its potential significance evaluated in terms of applicable criteria. Resources considered significant would be avoided or subject to a data recovery program as described above.

- If human remains are discovered, the County Coroner would be contacted.

Architectural Resources

- If a significant resource is not avoidable or incorporated into the Proposed Project design, then recordation would be conducted in accordance with applicable standards through large-format black-and-white archival photographs, building descriptions, and archival research to establish their regional context.

Paleontologic Resources

- Conduct an appropriate literature review and paleontologic field survey as part of site-specific CEQA review to identify potential impacts to sedimentary formation units that may contain significant fossil remains.

- Construction monitoring by a qualified paleontologist would be recommended for project locations within paleontologically sensitive sediments. A Paleontologic Monitoring Plan would be prepared prior to ground disturbance in sensitive areas.

- In the event of an unanticipated discovery during construction, construction would be re-directed to other areas until the discovery has been investigated by a qualified paleontologist.

- All paleontologic resources recovered would be appropriately described, processed, and curated in an appropriate institution.

Newly Exposed Cultural Resources of the Salton Sea

The following measure would mitigate impacts associated with the potential exposure of significant archaeological or paleontological resources of the Salton Sea as a result of declining water levels.

- The decline in Salton Sea elevation would result from water conservation measures implemented in the IID service area. Therefore, IID could conduct a series of archaeological/paleontologic surveys at regular intervals (once every 3 years) to check the freshly exposed lands for the presence/absence of archaeological or paleontologic sites. Discovered sites would be properly recorded with the appropriate California Historic Resource Information System (CHRIS) office. Future ground-disturbing projects would be subject to CEQA analysis (or in the case of tribal lands, would be subject to federal oversight by the Bureau of Indian Affairs following Section 106 compliance pathways). Sites recorded with CHRIS offices would be evaluated for their integrity and significance and appropriate avoidance measures and/or measures to reduce physical harm would be developed. Data recovery excavations to mitigate for loss of archaeological data resulting from unavoidable impacts would be conducted as needed. Monitoring of construction by qualified archaeologists would take place as appropriate. Tribal permission would be obtained before entry onto tribal lands.

Alternatively, implementation of Mitigation Strategy 2, outlined in section 3.2.3 of this PEIR, would avoid impacts associated with the decline in Salton Sea elevation. This measure would reduce impacts to cultural resources to a less than significant level. Potential environmental impacts of this mitigation measure are addressed in section 3.2.3.

3.8.4 Significant Unavoidable Adverse Impacts

The mitigation measures defined above would reduce the potential for significant adverse impact on cultural resources to a less than significant level. No significant unavoidable adverse impacts have been identified.

3.8.5 Significant Irreversible Environmental Changes

With implementation of the mitigation measures identified above, no significant, irreversible environmental changes associated with cultural resources would occur.

3.9 NOISE

3.9.1 Environmental Setting

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. Several noise measurement scales are used to describe noise in a particular location. A decibel (dB) is a unit of measurement that indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 dBs represents a ten-fold increase in acoustic energy, while 20 dBs is 100 times more intense, 30 dBs is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10 dB increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities.

There are several methods of characterizing sound. The most common in California is the A-weighted sound level, or dBA. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 3.9-1. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

Because the sensitivity to noise increases during the evening and at night—excessive noise interferes with the ability to sleep—24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The Community Noise Equivalent Level (CNEL) is a measure of the cumulative noise exposure in a community, with a 5-dB penalty added to evening (7:00 P.M. to 10:00 P.M.) and a 10-dB addition to nocturnal (10:00 P.M. to 7:00 A.M.) noise levels. The Day/Night Average Sound Level (L_{dn}) is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this 3-hour period are grouped into the daytime period.

3.9.1.1 Regulatory Framework

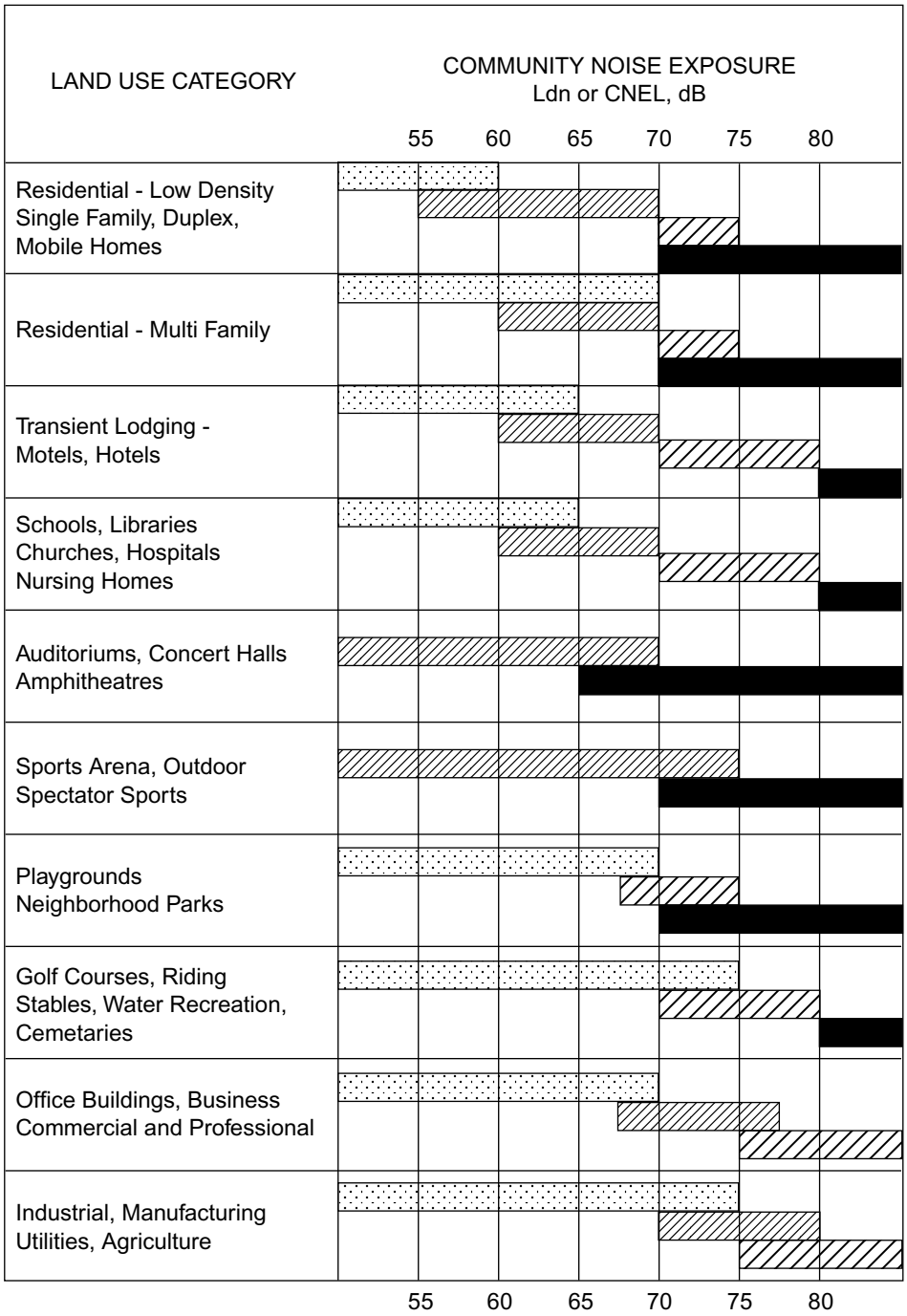
State of California

The State of California has not adopted any quantitative noise regulations that are applicable to the Proposed Project, although the Department of Health Services, Environmental Health Division has established guidelines regarding land use compatibility. These guidelines are shown in Figure 3.9-1. Noise levels for single-family residential land uses are "normally acceptable" up to 60 dB L_{dn} or CNEL assuming that buildings are of normal conventional construction. Noise levels are "conditionally acceptable" for single-family residential projects up to 70 dB L_{dn} or CNEL assuming that a detailed noise analysis is conducted and noise insulation features are included in the design of the project. Above 70 dB L_{dn} or CNEL, noise levels are "normally unacceptable" or "clearly unacceptable." New construction is generally

Table 3.9-1. Typical Sound Levels Measured in the Environment and Industry

At a Given Distance From Noise Source	*A-Weighted Sound Level in Decibels*	*Noise Environments*	*Subjective Impression*
	140		
Civil Defense Siren (100')	130		
Jet Takeoff (200')	120		Pain Threshold
	110	Rock Music Concert	
Diesel Pile Driver (100')	100		Very Loud
	90	Boiler Room	
Freight Cars (50')		Printing Press Plant	
Pneumatic Drill (50')	80		
Freeway (100')		In Kitchen with Garbage Disposal Running	
Vacuum Cleaner (10')	70		Moderately Loud
		Data Processing Center	
	60		
		Department Store	
Light Traffic (100')	50		
Large Transformer (200')			
	40	Private Business Office	Quiet
Soft Whisper (5')	30	Quiet Bedroom	
	20	Recording Studio	
	10		Threshold of Hearing
	0		

Source: U.S. Department of Housing and Urban Development. 1985



NORMALLY ACCEPTABLE
Specified land use is satisfactory, based upon the asumption that any buildings involved are of normal conventional construction, without any special noise insulation requirement.

CONDITIONALLY ACCEPTABLE
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

NORMALLY UNACCEPTABLE
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise reduction features included in the design.

CLEARLY UNACCEPTABLE
New construction or development should generally not be undertaken.

Source: California Department of Health, Office of Noise Control, Guidelines for the Preparation and Content of Noise Elements of The General Plan, February 1976

Figure 3.9-1. California Department of Health Services Noise and Land Use Compatibility Guidelines

discouraged under "normally unacceptable" community noise exposure and should only proceed if a detailed noise analysis is conducted and noise insulation features are included in the design of the project. New construction or development should generally not be undertaken when community noise exposure falls into the "clearly unacceptable" category.

Local Jurisdictions

Local jurisdictions also have noise regulations that govern stationary noise sources. Typically, these are included in noise ordinances, although policies that limit public exposure to noise may be included in the general or community plans of individual cities or counties. Local noise regulations may be more stringent than the guidelines identified by the Department of Health Services. Many jurisdictions also have specific provisions addressing construction noise impacts that often limit the hours and days of construction and may establish noise thresholds that may not be exceeded at specific locations, such as the property line of the site that is under construction.

The only activities that would generate noise as a result of the Proposed Project would occur within Riverside and Imperial counties. The following discussion addresses noise standards of these two counties. Individual cities within Riverside County have their own noise ordinances, as do cities within Imperial County.

RIVERSIDE COUNTY

Riverside County has no noise ordinance in place at the present. Instead, the County evaluates compatibility of noise producers and receptors based on land use categories and has developed a land use compatibility chart with respect to community noise levels. The Riverside County Code does not provide construction noise limits; however, it does restrict construction activities within one-quarter mile of an occupied residence(s) to the hours of 6 A.M. to 6 P.M. during the months of June through September, and between 7 A.M. to 6 P.M. during the other months. Exceptions can be developed with the consent of a County building official. According to the Riverside County Department of Industrial Hygiene, stationary source noise that would occur during operation, as projected to any portion of any surrounding property containing an occupied residential structure, must not exceed the following worst-case noise levels: 45 dBA 10-minute L_{eq} between 10 P.M. and 7 A.M. (nighttime standard) and 65 dBA 10-minute L_{eq} between 7 A.M. and 10 P.M. (daytime standard).

IMPERIAL COUNTY

The Noise Element of the Imperial County General Plan contains standards for construction noise. Impacts from construction are defined as construction noise from a single piece of construction equipment or a combination of equipment that exceeds 75 dBA L_{eq} when averaged over an 8-hour period and measured at the nearest sensitive receptor (e.g., residences, schools, hospitals, parks, office buildings, and certain non-human species, including riparian bird species).

The Imperial County General Plan Noise Element includes Property Line Noise Limits that apply to noise generation from one property to an adjacent property. If a noise-sensitive receptor is not present on the adjacent property, an exception to the standards may be

appropriate. Depending on the time of day, the applicable 1-hour average sound level may not exceed 45 to 50 dB in residential zones, 50 to 55 dB in multi-residential zones, 55 to 60 dB in commercial zones, 70 dB in light industrial/industrial park zones any time, or 75 dB in general industrial zones (including agricultural operations).

Imperial County defines Noise Impact Zones as areas that may be exposed to noise greater than 60 dB CNEL or 75 dB L_{eq} (averaged over 1 hour). Any property within ¼ mile of existing farmland that is in an agricultural zone is included in the definition of a Noise Impact Zone. The purpose of such a zone is to define areas and properties where an acoustical analysis of a Proposed Project is required to demonstrate project compliance with land use compatibility requirements and other applicable environmental noise standards.

The noise/land use compatibility guidelines for agricultural land use specified in the Noise Element of the Imperial County General Plan indicate that specified land uses are normally acceptable when the CNEL is less than 70 dB. New construction or development is conditionally acceptable when the CNEL ranges from 70 to 75 dB. It is normally unacceptable when the CNEL ranges from 75 to 80 dB, and clearly unacceptable when the CNEL is over 80 dB.

According to the Noise Element, if future noise levels from a project are within the "normally acceptable" noise level guideline, but result in an increase of 5 dB CNEL or greater, the project would have a potentially significant impact and mitigation measures must be considered. If the future noise level after the project is completed is greater than the "normally acceptable" noise level, a noise increase of 3 dB CNEL or greater should be considered a potentially significant noise impact, and mitigation measures must be considered.

In recognition of the role of agriculture in Imperial County, the County has adopted a "Right to Farm" ordinance (Division 2, Title 6 of the Codified Ordinances of the County of Imperial). This ordinance requires a disclosure to land owners near agricultural land operations or areas zoned for agricultural purposes. The disclosure advises persons that discomfort and inconvenience from machinery resulting from conforming and accepted agricultural operations are a normal and necessary aspect of living in the agricultural areas of the county.

3.9.1.2 Regional Issues

Regional issues include increased noise from vehicular and air traffic, as well as from increased industrial development located in proximity to expanding residential areas. Noise-sensitive receptors that could be affected by this increased noise include residential areas, facilities such as schools and hospitals, and certain types of recreational uses where a quiet setting is considered to be an integral part of the recreational experience.

3.9.1.3 Imperial Irrigation District

Much of the district is in agricultural use or open space, although some urban development is present and concentrated primarily between the southeastern side of the Salton Sea and the Mexican border and along Interstate 8. The main noise sources are from agricultural uses, vehicular traffic (particularly along Interstate 8) and aircraft from the Naval Air Facility located

just west of El Centro. Aircraft noise also dominates the noise environment in the vicinity of the National Parachute Test Range, which is just south of the Salton Sea.

3.9.1.4 Coachella Valley Water District

The predominant noise source is vehicular traffic, which is concentrated along Interstate 10 and major roadways connecting communities such as Cathedral City and Indio. Other sources of noise include aircraft overflights and rail traffic. The CVWD service area also contains undeveloped desert and mountains, which have low ambient noise levels. Agricultural equipment also generates noise in localized areas.

3.9.1.5 The Metropolitan Water District of Southern California

The area served by the MWD is largely urbanized, although portions of undeveloped land remain and agricultural uses are present in some areas. Primary noise sources are vehicular and air traffic and other urban uses, such as industrial and commercial activities.

3.9.1.6 San Diego County Water Authority

The area served by the SDCWA is largely urbanized, although portions of undeveloped land remain and agricultural uses are present in some areas. Primary noise sources are vehicular and air traffic and other urban uses, such as industrial and commercial activities.

3.9.1.7 Other Areas

Colorado River

The Colorado River traverses a sparsely developed area. The primary noise sources along many parts of the River are natural (e.g., from wind and water) or related to recreational activities such as camping, boating, and fishing. Traffic noise also contributes to the noise environment along some reaches of the River, particularly in the immediate vicinity of Interstates 10 and 40 and along the portion of State Highway 95 that parallels the River north of Blythe. Aircraft flying over the area also create noise. Noise-sensitive receptors include residential uses in the communities that border the River and the Imperial, Cibola, and Havasu national wildlife refuges.

Salton Sea

The primary sources of noise in the Salton Sea area include vehicular traffic on State Routes 86 and 111, which border the Salton Sea on the north, east, and west; rail traffic along the Union Pacific Railway, which is located near the eastern shore; and agricultural equipment from operations located to the south and north. Noise also results from recreational use associated with developed areas within the Salton Sea State Recreation Area, including boating and other active recreational use of this area. Existing noise sources along the south shore of the Salton Sea include State Route 86 and State Route 111, which are located further from the shoreline than along the rest of the Salton Sea's perimeter, agricultural operations, and geothermal hydroelectric facilities on the southwest shore.

3.9.2 Impacts

3.9.2.1 Significance Criteria

The criteria used to determine the significance of noise impacts are based on the model initial study checklist in Appendix G of the State CEQA Guidelines. The Proposed Project would result in a significant impact if it would

- expose persons to or generate noise levels in excess of standards established in the local General Plan or Noise Ordinance, or applicable standards of other agencies; or
- expose persons to or generate excessive ground-borne vibration or ground-borne noise levels; or
- cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or
- cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project; or
- for a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels; or
- for a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

3.9.2.2 Methodology

The Proposed Project components were evaluated, and it was determined that noise would result only from construction activities and resulting operational changes in the IID and CVWD service areas. Information developed by the EPA was used to assess the amount of noise that would be generated by these activities. The potential for noise-sensitive receptors to be located near Project-induced noise was considered in determining impact significance, which is based on the above-listed significance criteria. The Existing Baseline was used in assessing noise impacts. Information regarding impacts of the All American and Coachella Canal lining projects is summarized from on the EIS/EIRs prepared specifically for those projects (USBR and IID 1994, and USBR and CVWD 2001).

3.9.2.3 Summary of Impacts

Imperial Irrigation District

The All American Canal Lining Project EIS/EIR identified no significant impacts to noise from construction or operation of this component of the Proposed Project.

The Proposed Project includes construction of water conservation measures, such as tailwater return systems lateral interceptors, reservoirs, seepage interceptors, and conveyance lining, in addition to construction of a canal parallel to the All American Canal. Construction of these

components would create short-term, noise impacts from the use of equipment such as backhoes, trenchers, compactors, concrete mix trucks, dozers, end loaders, excavators, loaders, scrapers, slipform pavers, and trucks. The estimated noise from typical construction activities is shown in Table 3.9-2 where the noise identified for "Public Works Roads & Highways, Sewers, and Trenches" would be most comparable to that generated by the Project. These types of equipment typically generate noise in excess of 80 dBA at 50 feet from the source (EPA 1971). The components would generally be implemented in rural, unpopulated areas, well away from noise sensitive receptors. However, should noise-sensitive receptors, including riparian birds, be exposed to noise in excess of 75 dBA L_{eq} when averaged over an 8-hour period, which would exceed the Imperial County construction noise standards, the impact would be significant, but mitigable.

Table 3.9-2. Noise Levels by Construction Phases

TYPICAL RANGES OF ENERGY EQUIVALENT NOISE LEVELS AT 50 FEET, LEQ IN dBA, AT CONSTRUCTION SITES								
	Domestic Housing		*Office Building, Hotel, Hospital, School, Public Works*		*Industrial Parking Garage, Religious, Amusement, Recreation, Store, Service Station*		*Public Works Roads, Highways, Sewers, Trenches*	
	I	II	I	II	I	II	I	II
Ground Clearing	83	83	84	84	84	83	84	84
Excavation	88	75	89	79	89	71	88	78
Foundations	81	81	78	78	77	77	88	88
Erection	81	65	87	75	84	72	79	78
Finishing	88	72	89	74	89	74	84	84

I - All pertinent equipment present at site.

II - Minimum required equipment present at site.

Source: EPA, Legal Compilation on Noise, Vol. 1, p. 2-104, 1973.

Operation of certain water conservation measures, such as tailwater return systems, drip irrigation, lateral interceptor systems, and mid-lateral reservoirs, would require the operation of pumps that could generate long-term noise in excess of 70 dBA at 50 feet. Table 3.9-3 describes noise emissions from the types of pumps that could be used within the IID service area. Depending on the location of these pumps in relation to noise-sensitive receptors, noise from the pumps could exceed the Normally Acceptable noise/land use compatibility guideline of 70 dBA and the operational standards of the Imperial County General Plan, which would be a significant but mitigable impact.

The types of construction/operation activities that would occur are fairly commonplace and would not expose people to or generate excessive ground-borne vibration or ground-borne noise levels. The Proposed Project would not generate noise impacts affecting people working or living near airports or private airstrips. Fallowing would not cause noise or vibration impacts.

Table 3.9-3. Typical Noise Emissions for Electric Pumps

Conservation Measure	*Type of Pump*	*Sound Level at 50 ft. (dBA)*	*Duration of Operation*
Tailwater Return System	Nondiesel, truck-mounted	77	Intermittent
Drip Irrigation	25-50 horsepower (hp)	69-72	Intermittent, running approximately 40% of the time
Lateral Interceptor System	Max 500 hp	78	Intermittent, running approximately 50% of the time
Mid-Lateral Reservoirs	25 hp	Up to 69	If necessary, running approximately 30% of the time
Seepage Interceptors	25-50 hp	69-72	Continuous

* Pump size is an estimate. Actual size of pump would depend on exact system built for the different conservation measures.

Source: IID and USBR 2002.

Coachella Valley Water District

The Coachella Canal Lining Project EIS/EIR identified no significant impacts to noise from construction or operation of this component of the Proposed Project.

The Proposed Project includes potential construction of facilities such as pipelines, pumping stations, and recharge basins. Construction would create short-term, noise impacts from the use of equipment such as backhoes, trenchers, compactors, concrete mix trucks, dozers, end loaders, excavators, loaders, scrapers, slipform pavers, and trucks. The estimated noise from typical construction activities is shown in Table 3.9-2 where the noise identified for "Public Works Roads & Highways, Sewers, and Trenches" would be most comparable to that generated by the Project. These types of equipment typically generate noise in excess of 80 dBA at 50 feet from the source (EPA 1971). Two sites that are currently under preliminary consideration for the recharge basins, near Dike 4 and Martinez Canyon, are located in remote areas, well removed from noise sensitive receptors, and other facilities are expected to be similarly located in rural, sparsely populated areas. Should they be constructed in proximity to noise sensitive receptors, however, impacts could be significant but mitigable.

Operations-related noise would be generated by pumping stations and routine maintenance activities. Although pumps likely would be located in rural, sparsely populated areas and generally would be equipped with electric motors, if they were located in proximity to noise sensitive receptors, impacts could be significant but mitigable. Routine maintenance activities would not cause significant noise impacts.

The types of construction/operation activities that would occur are fairly commonplace and would not expose people to or generate excessive ground-borne vibration or ground-borne noise levels. The Proposed Project would not generate noise impacts affecting people working or living near airports or private airstrips.

The Metropolitan Water District of Southern California

The Proposed Project would not generate noise in the MWD service area since no construction or operational changes would occur. The Proposed Project would not expose people to or generate excessive ground-borne vibration or ground-borne noise levels. In addition, the Project would not generate noise impacts affecting people working or living near airports or private airstrips.

San Diego County Water Authority

The Proposed Project would not generate noise in the SDCWA service area since no construction or operational changes would occur. The Proposed Project would not expose people to or generate excessive ground-borne vibration or ground-borne noise levels. In addition, the Project would not generate noise impacts affecting people working or living near airports or private airstrips.

Other Areas

COLORADO RIVER

The only changes to the Colorado River area would be associated with different water levels, flow rates, etc. No noise would be generated from Proposed Project components in this area either in California or Arizona. The Proposed Project would not expose people to or generate excessive ground-borne vibration or ground-borne noise levels. In addition, the Project would not generate noise impacts affecting people working or living near airports or private airstrips.

SALTON SEA

The only changes to the Salton Sea area would be associated with reduced inflow. No activities that generate noise would occur as a result of implementing the Proposed Project. The Proposed Project would not expose people to or generate excessive ground-borne vibration or ground-borne noise levels. In addition, the Project would not generate noise impacts affecting people working or living near airports or private airstrips.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would generate excessive noise or vibrations or substantially increase ambient noise levels. A reduction in the amount of conserved water dedicated to MWD would not result in an activity that would generate noise or vibrations or expose persons to excessive noise levels. Diversion of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would generate noise or vibrations or substantially increase ambient noise levels.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River contemplated under the Proposed Project. Since no changes in river levels would result or construction of new diversion structures would be required with implementation of this Project component, no significant impacts from generation of noise and vibrations or exposure of persons to excessive noise levels would occur. The exchange of water with SDCWA would occur from existing infrastructure and would not require construction activities that would generate noise or vibrations or substantially increase ambient noise levels.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather that CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that would generate noise or vibrations or substantially increase ambient noise levels. The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause the generation of noise and vibrations or that would result in an activity that would expose persons to excessive noise levels.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore, no change in Colorado River conditions or potential impacts to acoustic resources along the Colorado River would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD nor would it increase the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical

environment that would cause the generation of noise and vibrations or that would result in an activity that would expose persons to excessive noise levels.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAF of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause the generation of noise or vibrations or that would result in an activity that would expose persons to excessive noise levels. No impacts to ambient noise levels or sensitive noise receptors would occur from the diversion or conveyance of the water to CVWD because no new facilities would be required. Similarly, the exchange of SWP entitlements under this Project component would be accomplished through existing facilities and thus would not result in physical changes to environmental conditions that would generate noise or vibrations or that would result in an activity that would expose persons to excessive noise levels.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts to ambient noise levels since it does not change the amount of water diverted, conveyed, or used and would not result in any activity that would cause the generation of pollutants or odors or that would result in an activity that would cause the violation of any air quality standard or conflict with any applicable air quality plan.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These changes are within historic fluctuations and would not result to changes to the physical environment that would create a significant impact to ambient noise levels. Under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the river under this component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities and would not increase the amount of water used within its service area. Therefore, no changes to environmental conditions would result from implementation of this Project component that would cause the generation of noise or vibrations or that would result in an activity that would expose persons to excessive noise levels.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. This change in river flows is within historic fluctuations and would not result to changes to the physical environment that would cause the generation of noise or vibrations or that would result in an activity that would expose persons to excessive noise levels.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would share this shortage. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. This additional conservation/shortage management would also be short-term. The potential impacts to noise, such as increased pumping and increased operation of tailwater return systems, related to this additional conservation/shortage management would be so minor as to be indiscernible from the impacts of the Proposed Project.

3.9.3 Mitigation Measures

When construction in the IID and CVWD service areas occurs sufficiently close to noise-sensitive receptors so that noise from construction activities exceeds local regulatory standards or causes a substantial increase in ambient noise levels, one or more of the following measures could be implemented. This list does not preclude the use of additional mitigation measures if appropriate.

- Use hydraulically or electrically powered impact tools when possible. If the use of pneumatically powered tools is unavoidable, use an exhaust muffler on the compressed air exhaust.
- Install manufacturer's standard noise control devices, such as mufflers, on construction equipment.
- Locate stationary equipment as far as possible from noise-sensitive receptors.
- Notify nearby property users whenever extremely noise work might occur.

- Use stockpiles as noise barriers when feasible.
- Keep idling of construction equipment to a minimum (no more than 30 minutes) when not in use.
- Install temporary or portable acoustic barriers around stationary construction noise sources.
- As appropriate, modify noise enclosures with acoustical louvers, baffle walls, and/or acoustical panels.
- Limit construction activities to non-mating, non-nesting seasons of noise-sensitive species.

The following measures could be implemented to mitigate operational noise impacts from pumps in the IID and CVWD service areas:

- Pumps would be located at sufficient distances from sensitive receptors to ensure that noise levels at the receptor do not exceed local noise standards. If there is no flexibility in their placement, the pumps would not be located at sufficient distances from sensitive receptors, and barriers or enclosures would be constructed to ensure adherence to local standards.

3.9.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts associated with noise would occur.

3.9.5 Significant Irreversible Environmental Changes

No significant irreversible changes to the noise environment would occur.

3.10 AESTHETICS

Visual resources consist of the natural and manmade features that give a particular environment its aesthetic qualities. These features may be natural appearing or modified by human activities. Together, they form the overall impression of an area, referred to as its *landscape character*. Landforms, water surfaces, vegetation, and manmade features are treated as characteristic of an area if they are inherent to the formation, structure, and function of the landscape. Landscape character is evaluated to assess whether a Proposed Project would appear compatible with the existing setting or would contrast noticeably with the setting and appear out of place.

Visual resources also have a social setting, which includes public values, goals, awareness, and concern regarding visual quality. Social setting is addressed as *visual sensitivity*, or the relative degree of public interest in visual resources and concern over adverse changes in the quality of that resource. Visual sensitivity is key in assessing how important an effect on the visual resource would be and whether it represents a significant impact. Recreational uses are generally considered to have high visual sensitivity, as are views from scenic routes or corridors.

3.10.1 Environmental Setting

The region of influence of the Proposed Project includes much of Southern California, an area that has a diverse array of visual environments, ranging in character from urban centers to agricultural lands to natural woodlands to desert areas. The variety of features within the Southern California region is a result of the mixture of climates, topography, and flora and fauna found in the natural environment. Natural features include parks and open space, mountain and desert wilderness areas, beaches, and natural and artificial water bodies.

3.10.1.1 Regulatory Framework

Adopted plans and policies of local jurisdictions provide the primary regulatory guidance regarding the maintenance of aesthetic resources in the Project area, although federal and state agencies also adopt plans that determine allowable changes to visual resources within their jurisdictions. The areas considered to have the greatest visual sensitivity are typically along scenic highways and wilderness or other natural areas. The primary areas of concern generally are associated with changes to prominent topographic features, changes in the character of an area with high visual sensitivity, removal of vegetation, or blockage of public views of a visually sensitive landscape.

3.10.1.2 Regional Issues

The visual resources of the area vary according to the type of land use, the amount of open space, and the existence of prominent topographic features such as mountains and ridgelines or other unique features. Visual resources within the seven-county area as a whole include intensively urbanized areas within metropolitan Los Angeles, Orange, and San Diego counties, along with major agricultural areas within the Coachella Valley of Riverside County and the Imperial Valley of Imperial County. Less developed and open-space areas occur on the

hillsides and in the mountains of all counties and in the deserts of Riverside, San Bernardino, San Diego, and Imperial counties.

The designated state scenic highways in the area are a portion of SR-2 in Los Angeles County; a portion of SR-38 in San Bernardino County; a portion of SR-91 in Orange County; portions of SR-76, SR-78, SR-125, and SR-163 in San Diego County; portions of SR-62 in Riverside and San Bernardino counties, SR-243 in Riverside County; and SR-74 in Riverside and Orange counties. In addition to state designations, counties have their own scenic highway designations, which are intended to preserve and enhance existing scenic resources.

The region of influence includes a large number of state parks and national forests. These include, but are not limited to, the Cleveland National Forest in San Diego and Riverside counties; the San Bernardino National Forest in San Bernardino County; the Angeles National Forest and Santa Monica Mountains National Recreation Area in Los Angeles County; and the Salton Sea State Recreation Area in Imperial and Riverside counties, Imperial Sand Dunes Recreation Area in Imperial County, and Anza-Borrego Desert State Park in San Diego and Imperial counties.

3.10.1.3 Imperial Irrigation District

The IID service area is located in Imperial County. Visual resources of the IID service area include large agricultural areas in the Imperial Valley, a portion of the Salton Sea, mountains, deserts, and some urban areas. The area along the All American Canal is generally undeveloped.

3.10.1.4 Coachella Valley Water District

CVWD is located primarily in Riverside County, but also includes portions of Imperial and San Diego counties. Visual resources of the CVWD service area include agricultural areas in the Coachella Valley, sparsely developed desert areas, portions of the Salton Sea, mountains, and some urban areas. The area along the section of the Coachella Canal that would be lined is generally undeveloped.

3.10.1.5 The Metropolitan Water District of Southern California

MWD serves portions of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. This large region has diverse visual resources, including heavily urbanized areas, mountains, agricultural areas, deserts, and the Pacific Ocean.

3.10.1.6 San Diego County Water Authority

SDCWA's service area is located entirely in San Diego County. The SDCWA service area is characterized by a variety of visual resources, including intensively urbanized areas, mountains, agricultural areas, deserts, and the Pacific Ocean.

3.10.1.7 Other Areas

Colorado River

The Colorado River borders the eastern portion of Riverside, San Bernardino, and Imperial counties and the state of Arizona. Visual features of this area include the River itself, which is a visually sensitive resource, along with Lake Havasu, Parker Dam, and Imperial Dam. Other features adjacent to the River that contribute to the overall landscape character include large agricultural areas, deserts, mountains, and some urban development.

Salton Sea

The Salton Sea is located in the lowest portion of the desert valley in Imperial and Riverside counties. The Salton Sea is 35 miles long and 15 miles wide and is considered a visually sensitive resource. The surrounding area has a mixed visual character. The elements that define the visual environment include a largely undeveloped wildlife refuge and marshlands, a State Recreation Area developed with campgrounds and boating facilities, agricultural operations, and geothermal hydroelectric facilities. Other dominant natural features include the mountains, sand dunes, and desert.

3.10.2 Impacts

3.10.2.1 Significance Criteria

The criteria used to determine the significance of impacts to visual resources are based on the model initial study checklist contained in Appendix G of the State CEQA Guidelines. The Proposed Project would have a significant environmental impact if it would do any of the following:

- have a substantial adverse effect on a scenic vista; or
- substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway; or
- substantially degrade the existing visual character or quality of the site and its surroundings; or
- create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

3.10.2.2 Methodology

Each Project component was evaluated with regard to its potential to create visual impacts resulting from changes in scenic vistas, changes or damage to scenic resources, or degrading the visual character of a site. Potential impacts to aesthetic resources in the IID and CVWD service areas would result primarily from construction activities and resulting operational changes and were assessed by comparing Project-induced changes to the Existing Baseline. No construction would occur in or adjacent to the Colorado River and Salton Sea. Potential impacts to these geographic areas would result from changes in water elevation and are based on the hydrologic

modeling discussed in section 3.1, which assesses impacts compared to Future Baseline conditions. No impacts to the MWD or SDCWA service areas would occur since no construction or other physical or operational changes would take place in these service areas. Impacts from potential light sources were also considered, but it was determined that no project components would require substantial lighting. Odors are addressed in section 3.7, Air Quality. Information regarding impacts of the All American and Coachella Canal lining projects is based on the EIS/EIRs prepared specifically for those projects (USBR and IID 1994, and USBR and CVWD 2001).

3.10.2.3 Summary of Impacts

Imperial Irrigation District

The All American Canal Lining Project EIS/EIR identified no significant impacts to aesthetics from construction or operation of this component of the Proposed Project.

Other water conservation measures would be located in irrigated parts of the service area and would be visually compatible with the surrounding agricultural uses. If conservation for transfer were to be achieved through fallowing, up to about 50,000 acres of farmland could be affected either temporarily or permanently. Currently, many farms are fallowed for at least part of the year, so this would not represent a notable visual change.

The Proposed Project would not have a substantial adverse effect on a scenic vista; substantially damage scenic resources, substantially degrade the existing visual character or quality of any sites and its surroundings; or create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

Coachella Valley Water District

The Coachella Canal Lining Project EIS/EIR identified no significant impacts to aesthetics from construction or operation of this component of the Proposed Project.

Implementation of the Proposed Project would involve the construction of recharge basins, pumping stations, and some pipelines in the CVWD service area. The pipelines likely would be buried along existing roadways or would be located on the edges of agricultural fields, and thus would not change the area's visual qualities. Pumping stations also would likely be located in agricultural areas, where they are a common use. Should these facilities be located in a visually sensitive area, however, impacts could be significant but mitigable.

The recharge basins, which typically have low earthen berms, would be located in undeveloped areas, such as the vicinity of Martinez Canyon and Dike 4. The Lower Coachella Valley already has numerous storage basins for agricultural irrigation. The new facilities would be visually compatible with existing uses of the area and would not be highly visible to the public. These components of the Proposed Project would not have a substantial adverse effect on a scenic vista; substantially damage scenic resources, substantially degrade the existing visual character or quality of the site and its surroundings; or create a new source of substantial light or glare that would adversely affect day or nighttime views in the area. Impacts would not be significant.

The Metropolitan Water District of Southern California

Because no construction or changes in development patterns would occur in this service area as part of the Proposed Project, no visual impacts would occur. The Proposed Project would not have a substantial adverse effect on a scenic vista; substantially damage scenic resources, substantially degrade the existing visual character or quality of the site and its surroundings; or create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

San Diego County Water Authority

Because no construction or changes in development patterns would occur in this service area as part of the Proposed Project, no visual impacts would occur. The Proposed Project would not have a substantial adverse effect on a scenic vista; substantially damage scenic resources, substantially degrade the existing visual character or quality of the site and its surroundings; or create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

Other Areas

COLORADO RIVER

Implementation of the Proposed Project would not result in significant visual changes to the Colorado River and adjacent areas in California and Arizona. No construction activities associated with the Proposed Project would occur in the area. Although the Proposed Project would result in a slight decrease in the median water surface elevation, the decrease would be within the River's normal range of fluctuation and would not produce a perceptible change to its visual qualities.

SALTON SEA

Implementation of the Proposed Project would result in a gradual decline in the water level of the Salton Sea, as described in Chapter 3.0. The decline would occur more rapidly and to a greater extent than would occur under Future Baseline conditions. This drop in the water surface elevation would expose more land area around the Sea. Currently submerged lands in the southern part of the Salton Sea would be particularly affected. In particular, views from public areas at Salton Sea Beach, Red Hill, Marina County Park, Bombay Beach, and Sneaker Beach would include increased dry land and decreased open water. The exposed area would look like the existing beach; however, views of the water, considered a scenic vista, would be possible only from a much greater distance from the developed public viewing facilities at these locations. The change would be very gradual and the visual impact would not be perceptible except over a long period, but ultimately, the impact would be significant.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require

such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would substantially damage scenic resources or the visual character along the Colorado River or create new sources of light and glare. A reduction in the amount of conserved water dedicated to MWD would not result in any physical change that would cause the degradation of aesthetic resources or result in an activity that would substantially damage scenic resources. Diversion and conveyance of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would substantially damage scenic resources or create new sources of light and glare.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River contemplated under the Proposed Project. Since no changes in river levels would result or construction of new diversion structures would be required with implementation of this Project component, no significant impacts to aesthetic resources would occur. The exchange of water with SDCWA would occur from existing infrastructure and would not require construction activities that would substantially damage scenic resources or create new sources of light and glare.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that would substantially damage scenic resources or create new sources of light . The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause any significant impact to aesthetic resources.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore no change in Colorado River conditions or potential impacts to aesthetic resources along the Colorado River would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD nor would it increase

the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical environment that would substantially damage scenic resources or the existing visual character or create new sources of light and glare.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAF of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause damage to scenic resources or the existing visual character or create new sources of light and glare. No impacts to aesthetic resources would occur from the diversion or conveyance of the water to CVWD because no new facilities would be required to be constructed. Similarly, the exchange of SWP entitlements under this Project component would be accomplished through existing facilities and would not result in physical changes to environmental conditions that would impact aesthetic resources by damaging scenic resources or creating new sources of light or glare.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER WATER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts to aesthetic resources since it does not change the amount of water diverted, conveyed, or used and would not result in any activity that would cause damage to scenic resources or the existing visual character or create new sources of light and glare.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These changes are within historic fluctuations and would not result to changes to the physical environment that would create a significant impact to aesthetic resources. Under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the river under this component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities, and would not increase the amount of water used within its service area. Therefore, no changes to environmental conditions would result from implementation of this Project component that would cause damage to scenic resources or the existing visual character or create new sources of light and glare.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. This change in river flows is within historic fluctuations and would not result to changes to the physical environment that would cause damage to scenic resources or the existing visual character or create new sources of light or glare or that would result in an activity that would result in significant impacts to aesthetic resources.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would share this shortage. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. This additional conservation/shortage management would also be short-term and is not anticipated to involve activities that could have aesthetic impacts such as ground disturbance or construction activities. No additional impacts to aesthetics, beyond those of the Proposed Project, are anticipated.

3.10.3 Mitigation Measures

The following measure would reduce the potential impacts from the construction of pipelines and pump stations in the CVWD service area to a less than significant level:

- To the extent feasible, pipelines and pump stations would be located in agricultural areas. As appropriate, pipelines would be buried along existing roadways or located on the edges of agricultural fields. To the extent feasible, pumping stations would be small, low structures painted in pale earth tones to blend with the native soils.

The following measures could be implemented to mitigate the impact to visual resources of the Salton Sea to a less than significant level. If so, they would be implemented on an on-going basis as the Sea recedes until the full extent of the Project impact has been reached.

- Recreational facilities that would become further removed from the waters of the Salton Sea would be relocated to an appropriate site adjacent to the Salton Sea and access will be extended to the new shoreline so as to provide quality public viewing opportunities of the Salton Sea and its shoreline.

- Interpretive facilities and materials would be developed and made available to the public at recreation areas and along public roadways. Interpretive displays may include historic photographs of the Salton Sea landscape and information about water conservation measures, including their effects on Salton Sea water levels.

Implementation of Mitigation Strategy 2, outlined in section 3.2.3 of this PEIR, would avoid impacts associated with the decline in Salton Sea elevation. This potentially feasible measure also would reduce aesthetic impacts to a less than significant level. Potential environmental impacts of this mitigation measure are addressed in section 3.2.3.

3.10.4 Significant Unavoidable Environmental Changes

No unavoidable long-term changes to aesthetic resources would result from implementation of the Proposed Project.

3.10.5 Significant Irreversible Environmental Changes

No significant irreversible changes to aesthetic resources would result from implementation of the Proposed Project.

3.11 HAZARDS AND HAZARDOUS MATERIALS

3.11.1 Environmental Setting

3.11.1.1 Regulatory Framework

Types of Hazardous Materials

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency, or if it has characteristics defined as hazardous by such an agency. Chemical and physical properties cause a substance to be considered hazardous, including the properties of toxicity, ignitability, corrosivity, and reactivity. These properties are defined in CCR, Title 22, §§66261.20-66261.24. Within typical construction sites, materials that could be considered hazardous include fuels, motor oil, grease, various lubricants, solvents, soldering equipment, and glues. Also, excavation may expose buried hazardous materials resulting from prior use of the proposed site or adjacent property.

A "hazardous waste" is any hazardous material that is discarded, abandoned, or recycled. The criteria that render a material hazardous also make a waste hazardous (California Health and Safety Code, §25117).

Hazardous Materials Management

Federal and state laws require detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed, and in the event that such materials are accidentally released, to prevent or to mitigate injury to health or the environment. The Federal Emergency Planning and Community Right-to-Know Act of 1986 imposes hazardous materials planning requirements to help protect local communities in the event of accidental release.

Storage of hazardous materials in underground tanks is regulated by the SWRCB, which has overall responsibility for implementing all regulations set forth in Title 23 of the CCR. State standards cover installation and monitoring of new tanks, monitoring of existing tanks, and corrective actions for removed tanks. State underground storage tank regulations, including permitting for all hazardous materials storage, are enforced by local fire departments.

Hazardous Materials Transport

The U.S. Department of Transportation (DOT) regulates hazardous materials transportation between states. State agencies with primary responsibility for enforcing federal and state regulations and responding to hazardous materials transportation emergencies are the California Highway Patrol and the California Department of Transportation. Together, these agencies determine container types used and license hazardous waste haulers for hazardous waste transportation on public roads.

Hazardous Waste Management

The California Department of Toxic Substances Control (DTSC) regulates the generation, transportation, treatment, storage, and disposal of hazardous waste under the federal Resource

Conservation and Recovery Act (RCRA) and the state Hazardous Waste Control Law. Both laws impose "cradle to grave" regulatory systems for handling hazardous waste in a manner that protects human health and the environment.

Laws Regulating Hazardous Materials and Wastes

The EPA regulates the management of hazardous materials and wastes. The primary federal hazardous materials and waste laws are contained in RCRA; the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); and the Toxic Substances Control Act (TSCA). These laws apply to hazardous waste management, soil and groundwater contamination, and the controlled use of particular chemicals. In California, EPA has delegated most of its regulatory responsibilities to the state. TSCA allows EPA to ban (or phase out) the use of chemicals that may present unreasonable risks to public health or the environment.

The state agencies most involved in enforcing public health and safety laws and regulations include the Cal-EPA DTSC, the California Occupational Safety and Health Administration (Cal-OSHA), SWRCB, the local RWQCBs, the local air quality management districts, and the California Integrated Waste Management Board.

In California, Cal-OSHA assumes primary responsibility for enforcing worker safety regulations such as the federal Hazard Communication Program regulations. Cal-OSHA regulations are found in CCR Title 8. Although Cal-OSHA regulations have incorporated federal OSHA standards, Cal-OSHA regulations are generally more stringent than those of the federal government.

3.11.1.2 Regional Issues

A wide variety of potential safety hazards are present throughout the region affected by implementation of the Proposed Project. Industries, military installations, and other entities, use many types of hazardous materials ranging from fuels and solvents to radioactive materials. Numerous fuels, chemicals, and other hazardous materials are also transported via roadways and railways.

A substantial portion of the area affected by the Proposed Project is used for agricultural purposes (refer to section 3.5, Agricultural Resources, for additional detail). Above-ground petroleum storage tanks and pesticide storage facilities are present in many locations and increase the risk of human exposure to potentially hazardous substances. Additionally, storage tanks may leak petroleum products into the soil, where they could migrate to water supplies. Pesticides and fertilizers used for agricultural operations may accumulate in the soil and may over time contaminate surface water and groundwater supplies.

Another potential hazard is the risk of disease transmitted by vectors. Mosquitoes are the primary insect disease vector of concern in the Project area. They are not only annoying pests, but some are known carriers of human and animal diseases. In the Project area, the only significant diseases associated with mosquitoes are western equine encephalomyelitis and Saint Louis encephalitis. These are not common diseases, however. For example, no cases of mosquito-borne diseases in the human population have been reported in Imperial and Riverside counties (USBR and SSA 2000) and very few encephalitis cases of mosquito origin

have occurred in San Diego County (USFWS and San Dieguito River Park Joint Powers Authority 2000). Many local jurisdictions implement mosquito abatement programs to reduce their populations.

Certain risks are associated with the use of rivers and lakes in general, such as boating accidents and drowning. Other risks include exposure to contaminants present in some water bodies. For example, the New River, which leads into the Salton Sea, is known to be highly polluted due to runoff from agricultural operations and the influx of untreated wastes from Mexico. Warning signs along the New River have been posted by Imperial County advising people to avoid contact with the river, primarily due to the high fecal coliform concentrations found in the water. The Regional Water Quality Control Board, Colorado River Basin Region, plans to develop a TMDL for the New River by 2005. Municipal wastewater discharged into the Alamo River, which flows into the Salton Sea, has contributed to high fecal coliform concentrations in this water, although background levels are substantially higher than the concentrations in the treatment plant effluent. Water containing fecal coliform bacteria also may contain other bacteria and viruses, some of which may be human pathogens. Tuberculosis bacteria, for example, have been found in the New River, which is a health risk to persons exposed to its waters.

3.11.2 Impacts

3.11.2.1 Significance Criteria

The criteria used to determine the significance of an impact are based on the model initial study checklist in Appendix G of the State CEQA Guidelines, modified as appropriate to address impacts specific to the implementation of the proposed action, such as drowning and vehicular accidents. The Proposed Project would result in significant impacts if it would do any of the following:

- create a significant hazard to the public or the environment through the routine transport, storage, use, or disposal of hazardous materials; or
- create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment; or
- emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school; or
- be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5, and as a result could create a significant hazard to the public or the environment; or
- be located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the project area; or

- impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands; or
- result in exposure of the public to significant new hazardous situations; or
- create sufficient mosquito habitat to pose a threat to public health.

3.11.2.2 Methodology

Impacts were evaluated by identifying the change in the potential for hazards that would result from each Project component and comparing this change to the above significance criteria. Potential impacts associated with hazards and hazardous material in the IID and CVWD service areas would result primarily from construction activities and resulting operational changes and were assessed by comparing Project-induced changes to the Existing Baseline. No construction would occur in or adjacent to the Colorado River and Salton Sea. Potential impacts to these geographic areas would result from changes in water surface elevation and are based on the hydrologic modeling discussed in section 3.1, which assesses impacts compared to Future Baseline conditions. No impacts to the MWD or SDCWA service areas would occur since no construction or other physical or operational changes would take place in these service areas. Information regarding impacts of the All American and Coachella Canal lining projects is based on the EIS/EIRs prepared specifically for those projects (USBR and IID 1994, USBR and CVWD 2001).

3.11.2.3 Summary of Impacts

Imperial Irrigation District

The EIS/EIR for the All American Canal Lining Project determined that the flow velocity would be increased as a result of the lining due to the reduction in canal cross section. This increase in velocity would vary according to the season, the canal flow rates, and the extent to which water is ponded behind the existing check gates. Under typical conditions, the maximum velocity would increase from 3.5 ft/sec to 6.5 ft/sec, which could tend to increase the difficulty of human escape from the canal. Public safety impacts would be avoided by constructing slipform ridges on the sideslopes of the canal while the concrete is being installed in order to provide reliable handholds and footholds. Field testing would be conducted to confirm the effectiveness of the ridges. If field testing indicates that the ridges are not completely effective, safety ladders would be added to the canal design in addition to the ridges. Using this method of lining the canal would benefit public safety, for it would greatly improve the potential for escaping from the canal. The improvement of the maintenance roads along the canals would tend to promote higher-speed travel by off-road vehicles, which could increase the accident rate. This in itself is not considered a significant impact because the design features of the roads would not be unsafe. No other impacts associated with hazards or hazardous materials were identified.

During construction of other conservation measures, heavy equipment and vehicles would be present in the Project area. All contractors would be required to adhere to mandatory federal Occupational Safety and Health Administration regulations. Most of this equipment requires a number of petroleum products such as fuel, hydraulic fluids, and lubricants for effective operation. Lubricant and hydraulic fluid changes and replenishment would be required less frequently. Typically, service trucks would deliver these types of fluids onsite and perform the necessary fuel and oil transfers. The risk of small fuel or oil spills is considered likely but would have a negligible impact on public health. Any spills would be cleaned up in accordance with permit conditions.

The fuel tanks on board some of this equipment can contain fuel volumes ranging from 100 to 500 gallons. Accidental ignition could result in a fire, which, depending on the location, could spread. All such equipment is required to have fire suppression equipment on board or at the work site. Emergency fire services are located nearby. The associated risk of a vehicle fire is considered unlikely with a negligible to minor potential impact on public health.

During off working hours, heavy equipment and vehicles in areas that could be accessed by the public would be secured in a general contractor's staging area that would not pose a safety hazard. Impacts to public health and safety resulting from heavy equipment operations and fueling would be less than significant.

The project may temporarily impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan if such activities coincide with construction in evacuation or other emergency routes. This would be a potentially significant but mitigable impact.

The amount of land in agricultural production would not increase as a result of implementing the Proposed Project, and may decrease if fallowing is implemented; therefore, the use of pesticides or other hazardous materials would not increase.

As noted in section 3.1, the reduction in drainage water from IID's service area resulting from conservation measures implemented under the Proposed Project would cause an increase in concentration, although not total load, of various soluble constituents in the New and Alamo rivers. As noted above, these rivers are already polluted, and this would not constitute a significant new hazardous situation.

No tall or inhabited structures would be constructed as part of the Proposed Project. Therefore, Project components would not affect or be affected by proximity to an airport. The Proposed Project would be subject to existing codes and regulations regarding the routine transport, storage, use, or disposal of hazardous materials and would not create a significant hazard to the public or environment. The proposed improvements would be located in agricultural areas and are not likely to be located on sites that are known to contain hazardous materials or are included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5. If they were, impacts would be significant but mitigable. No pools of standing water or other forms of mosquito habitat would be created.

Coachella Valley Water District

The EIS/EIR for the Coachella Canal Lining Project determined that the flow velocity would be increased as a result of the lining due to the reduction in canal cross section. Impacts of canal lining would be as described above for the All American Canal, although the water velocity would be somewhat different. Under typical conditions, the maximum velocity would increase from 2.0 ft/sec to 2.9 ft/sec, which, as described for the All American Canal, could tend to increase the difficulty of human escape from the canal. The same construction methods to avoid safety impacts would be used as described for the All American Canal lining project.

The construction and operation of other Project-related facilities such as water pipelines, pumping stations, and recharge basins would not have significant safety impacts. Standard safety precautions would be taken during construction. The pumping stations would be totally enclosed and would have electric motors; therefore, they would not require the use of flammable fuels. The recharge basins would be located in remote areas, such as the vicinity of Dike 4 or Martinez Canyon, and would not affect public safety. The Project could cause an increase in water levels and flows in agricultural drains and the Coachella Valley Storm Channel. This would not result in an increase in mosquitoes, however, since they breed in standing water. However, mosquito habitat could be created in the new recharge basins, which would be a potentially significant impact. No public health impacts from increased use of Colorado River water would occur since the water that would be used for domestic (potable) uses would be treated at water treatment plants in accordance with state and federal requirements.

During construction, heavy equipment and vehicles would be present in the Project area. All contractors would be required to adhere to mandatory federal Occupational Safety and Health Administration regulations. Most of this equipment requires a number of petroleum products such as fuel, hydraulic fluids, and lubricants for effective operation. Lubricant and hydraulic fluid changes and replenishment would be required less frequently. Typically, service trucks would deliver these types of fluids onsite and perform the necessary fuel and oil transfers. The risk of small fuel or oil spills is considered likely but would have a negligible impact on public health. Any spills would be cleaned up in accordance with permit conditions.

The fuel tanks on board some of this equipment can contain fuel volumes ranging from 100 to 500 gallons. Accidental ignition could result in a fire, which, depending on the location, could spread. All such equipment is required to have fire suppression equipment on board or at the work site. Emergency fire services are located nearby. The associated risk of a vehicle fire is considered unlikely with a negligible to minor potential impact on public health.

During off work hours, heavy equipment and vehicles in areas that could be accessed by the public would be secured in a general contractor's staging area that would not pose a safety hazard. Impacts to public health and safety resulting from heavy equipment operations and fueling would be less than significant.

The project may temporarily impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan if such activities coincide with construction in evacuation or other emergency routes. This would be a potentially significant but mitigable impact.

No tall or inhabited structures would be constructed as part of the Proposed Project. Therefore, Project components would not affect or be affected by proximity to an airport. The Proposed Project would be subject to existing codes and regulations regarding the routine transport, storage, use, or disposal of hazardous materials and would therefore not create a significant hazard to the public or environment. The proposed facilities would likely be located in agricultural or remote areas and are not likely to be located on sites that are known to contain hazardous materials or are included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5. If they were, impacts would be significant but mitigable.

The Metropolitan Water District of Southern California

No aspects of the Proposed Project would cause safety impacts in the MWD service area since no construction or operational changes would occur. No transport, storage, use, or disposal of hazardous materials would be required, and no aspects of the Project would impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan or increase the risk of or public exposure to wildland fires. The transfer of water that would occur under the Proposed Project would not result in exposure of the public to new hazardous situations or create sufficient mosquito habitat to pose a threat to public health. No impacts associated with airports would occur.

San Diego County Water Authority

No aspects of the Proposed Project would cause safety impacts in the SDCWA service area since no construction or operational changes would occur. No transport, storage, use, or disposal of hazardous materials would be required, and no aspects of the Project would impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan or increase the risk of or public exposure to wildland fires. The transfer of water that would occur under the Proposed Project would not result in exposure of the public to new hazardous situations or create sufficient mosquito habitat to pose a threat to public health. No impacts associated with airports would occur.

Other Areas

COLORADO RIVER

Implementation of the Proposed Project would not affect public safety or result in significant impacts associated with hazards and hazardous materials along the river either in California or Arizona. The median water surface elevation would decrease only minimally (a matter of several inches, which is within the normal range of variability), and water flow, river surface area, and water quality would be virtually the same as under current conditions. No additional sandbars would be exposed. No construction or other changes would occur that would in any way affect public safety. No transport, storage, use, or disposal of hazardous materials would be required, and no aspects of the Project would impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan or increase the risk of or public exposure to wildland fires. The public would not be exposed to new hazardous situations, and mosquito habitat would not be created. No impacts associated with airports would occur.

SALTON SEA

The Proposed Project would accelerate the decline in the Sea's water surface elevation, which would expose additional shoreline (refer to section 3.0 for additional detail). The amount of bottom sediment that would be exposed would be relatively small, however, which would limit the potential for public exposure to significant new hazardous conditions. The impact would be less than significant. The receding shoreline would likely reduce the amount of brackish marsh, which would reduce the area's mosquito population.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would create a significant hazard to the public from hazardous. A reduction in the amount of conserved water dedicated to MWD would not result in any physical change that would cause the generation of or of hazardous materials or that would result in an activity that would create a significant hazard to the public. Diversion and of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would generate or use hazardous materials or create a significant hazard to the public.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River contemplated under the Proposed Project. Since no changes in river levels would result or construction of new diversion structures would be required with implementation of this Project component, no significant impacts related to hazardous materials would occur. The exchange of water with SDCWA would occur from existing infrastructure and would not require construction activities that would generate or use hazardous materials or create a significant hazard to the public.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that would generate hazardous materials or create a significant hazard to the public. The

use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause the generation hazardous materials or odors or that would result in an activity that would create a significant hazard to the public.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore no change in Colorado River conditions or potential impacts to from increase public hazards or hazardous materials along the Colorado River would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD nor would it increase the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause the generation of hazardous materials or that would result in an activity that would create a significant hazard to the public.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAF of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause the generation of hazardous materials or that would result in an activity that would create a significant hazard to the public. No impacts from increased public hazards or hazardous materials would occur from the diversion or conveyance of the water to CVWD because no new facilities would be required to be constructed. Similarly, the exchange of SWP entitlements under this Project component would be accomplished through existing facilities and would not result in physical changes to environmental conditions that would cause the generation of hazardous materials or that would result in an activity that would create a significant hazard to the public.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER WATER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts due to increase public hazards since it does not change the amount of water diverted, conveyed, or used and would not result in any activity that would cause the generation of hazardous materials or that would result in an activity that would create a significant hazard to the public.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These changes are within historic fluctuations and would not result to changes to the physical environment that would create a significant impact from hazards. Under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the river under this component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities, and would not increase the amount of water used within its service area. Therefore, no changes to environmental conditions would result from implementation of this Project component that would cause the generation of hazardous materials or that would result in an activity that would create a significant hazard to the public.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. This change in river flows is within historic fluctuations and would not result to changes to the physical environment that would cause the generation of hazardous materials or that would result in an activity that would create a significant hazard to the public.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would share this shortage. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. This additional conservation/shortage management would also be short-term and is not anticipated to involve activities that present hazards or hazardous materials, such as additional ground disturbance or

construction activity. No additional impacts related to hazards and hazardous materials, beyond those of the Proposed Project, are anticipated.

3.11.3 Mitigation Measures

The following measure could be implemented to reduce potential temporary impacts to the implementation of an adopted emergency response plan or emergency evacuation plan to a less than significant level.

- Once specific sites are selected, it would be determined whether construction would occur in a location that could interfere with the implementation of an emergency response plan or emergency evacuation plan. If so, the duration and location of construction and contacts for responsible parties would be given to providers of emergency services well before construction.

The following measures would be implemented to mitigate potential impacts from locating facilities on sites that are known to contain hazardous materials or are included on a list of hazardous materials sites to a less than significant level.

- If warranted, records searches will be conducted through California Environmental Protection Agency (Cal EPA), Long Beach Office and through a database search firm such as VISTA Info.

- The results of the search and any mitigation required if proposed construction encounters contaminated soils will be considered in the subsequent environmental documents prepared for the facilities. If required, mitigation measures may include but are not limited to relocating the facility to avoid the contamination or removal of contaminated soils.

The following measure could be implemented to reduce the potential for mosquitoes to breed in any CVWD recharge basins to a less than significant level, if the basins are constructed as part of the Proposed Project.

- The design of the recharge basins would incorporate design and operation parameters that discourage mosquitoes and the establishment of their habitat. Measures may include the following:
  - creating basins that are larger than 1 acre to allow wind action on the water surface, which disrupts egg-laying;
  - designing bank slopes as steep as allowable given local soil stability conditions;
  - keeping the bank slopes free of vegetation that creates habitat and reduces wave action; and
  - allowing recharge basins to dry out during the year, if operationally feasible, which would eliminate mosquito and other insect larvae.

3.11.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse hazards and hazardous materials impacts would result from implementation of the Proposed Project.

3.11.5 Significant Irreversible Environmental Changes

No significant irreversible environmental changes would occur.

3.12 PUBLIC SERVICES, UTILITIES, AND TRANSPORTATION

3.12.1 Environmental Setting

Public services and utilities addressed in this PEIR include the systems, facilities, and services that are provided by cities, counties, and public and private agencies to maintain the public health and general welfare. These systems, facilities, and services include the following:

- Fire and police protection.
- Public education services and facilities.
- Potable water supply, treatment and distribution.
- Wastewater collection, treatment and disposal.
- Power generation and distribution.
- Transportation facilities including highways, public transportation and airports.

3.12.1.1 Regulatory Framework

The areas affected by the Proposed Project are part of SCAG and SANDAG. Public services and utilities within the seven-county area are provided by counties and cities special agencies, and large private utilities such as the Southern California Edison Company, The Gas Company, and San Diego Gas and Electric Company. The public agencies are controlled by local governing bodies, and the private utilities are under the regulation of the California Public Utilities Commission. SCAG and SANDAG have each prepared a regional transportation plan to address transportation problems in Southern California.

Utilities and public services are regulated primarily by public agencies or utility companies. These regulations are generally based on local policies included in general plans or building codes or ordinances or resolutions that establish growth-managing or growth-control standards. Traffic thresholds and roadway design standards are established by the agency with jurisdiction over a particular roadway. Reclamation is the federal agency authorized to generate electric power at the federally owned facilities on the lower Colorado River. The Western Area Power Administration is the federal agency authorized to market this power to contractors. Specific agencies with jurisdiction over public services, utilities, and transportation in the area affected by the Proposed Project are discussed below.

The Federal Energy Regulatory Commission is an independent regulatory agency within the Department of Energy that performs a variety of functions, including regulating the transmission and wholesale sales of electricity in interstate commerce; licensing and inspecting private, municipal and state hydroelectric projects; and overseeing environmental matters related to natural gas, oil, electricity and hydroelectric projects.

3.12.1.2 Imperial Irrigation District

Public Services

Police services within the IID service area are provided by the Imperial County Sheriff's Department and by local municipalities, including the cities of Brawley, El Centro, and Calexico. The California Highway Patrol (CHP) also provides law enforcement support on major roadways. Fire protection is provided by the County of Imperial, California Department of Forestry, and by local municipalities. Several local school districts serve the communities of Niland, Calipatra, Westmorland, Brawley, Imperial, Holtville, El Centro, Heber, and Calexico.

Public Utilities

Irrigation water is provided by IID. Domestic water is provided by IID and local municipalities and water districts. Wastewater treatment is provided by municipal systems or via individual systems.

IID operates its own power generation and transmission facilities, providing power to more than 90,000 customers in Imperial County and parts of Riverside and San Diego counties. IID operates eight hydroelectric generation plants, one generating station, and eight gas turbines. There are five drop structures in the All American Canal, where the water "falls" through the structure to a lower level canal. These are ideal for capturing hydroelectric power, and IID has installed hydroelectric plants at four of these drop structures. Electrical power generated within the IID system is sold to district customers and to others via the regional power grid. Total generation within the IID system in 1998 was 1.026 million megawatt-hours (IID 1999). Currently, IID has 72.4 megawatts (MW) of installed hydropower plants within the canal (USBR undated, IID 1999). IID generates 352 MW of power; approximately 49 MW of which is hydroelectric (IID 1994). The average hydroelectric power generated by IID (1980 to 1999) was 226,592 kilowatt-hours (kWh) (approximately 227 MWh [megawatt-hours]) (IID 2000).

Transportation Infrastructure

The primary highways in the service area are Interstate 10 and Highways 78/111. The larger municipalities provide limited public transportation, and there is a regional airport in Imperial, California.

3.12.1.3 Coachella Valley Water District

Public Services

The County of Riverside and various municipalities provide police protection within the CVWD service area. The CHP also provides law enforcement support on major roadways. Fire protection within the CVWD service area is provided by the County of Riverside, California Department of Forestry, and the various municipalities in the area. Several local school districts serve the communities of Desert Hot Springs, Cathedral City, Rancho Mirage, Indian Wells, Bermuda Dunes, Palm Desert, Indio, La Quinta, Coachella, Thermal, Mecca, and Oasis.

Public Utilities

Irrigation water is provided by CVWD to portions of the district eligible to receive irrigation service. Within the CVWD service area, domestic water is provided by CVWD, the City of Indio, the City of Coachella, and Myoma Dunes Water Company. Wastewater treatment is provided by CVWD, the City of Coachella, and Valley Sanitary District. Electrical service is provided by IID and Southern California Edison.

Transportation Infrastructure

Major highways within CVWD boundaries are Interstate 10, State Highway 74, State Highway 111, Highway 86, and Highway 195. Local roadways outside the cities are typically 2-lane, paved, and located on section (1 square mile) or half-section lines. Some local municipalities provide public transportation, and a main line of the Southern Pacific Railroad is also within district boundaries. A regional airport is located in Palm Springs, which is just west of the service area, and the Thermal and Bermuda Dunes airports also are located in the Coachella Valley. The Coachella Valley Association of Governments (CVAG), a subregion of SCAG, and Riverside County Transportation Commission are currently planning improvements to the transportation network to accommodate future growth.

3.12.1.4 The Metropolitan Water District of Southern California

Public Services

Fire and police protection and public schools are provided by a wide range of city and county municipalities within the MWD service area. CHP also ensures safety and assists the public that utilizes the highway transportation system. It also aids local governments during emergencies when requested.

Public Utilities

Water service is provided by a wide variety of local agencies and municipalities, and MWD serves as the major water wholesaler for the area. Wastewater treatment is provided by a number of municipalities and agencies. Electricity is provided by Southern California Edison, the Los Angeles Department of Water and Power, and other municipalities and public utilities.

Transportation Infrastructure

The MWD service area has an extensive network of roadways, freeways, public transit, and air service provided by federal, state, county, and city agencies. Overall planning and coordination is conducted at several levels, including the California Department of Transportation, SCAG, and local transportation authorities. SCAG's Regional Transportation Plan guides the development of future transportation improvements.

3.12.1.5 San Diego County Water Authority

Public Services

Public services, including fire and police protection, are provided by the CHP, County of San Diego, municipalities, and a variety of local districts. A number of school districts also serve the area.

Public Utilities

SDCWA, a member agency of MWD, is the water wholesaler for the area. A number of municipalities and local districts provide wastewater treatment. Electricity is provided primarily by San Diego Gas and Electric.

Transportation Infrastructure

As described for the MWD service area, a substantial transportation infrastructure is provided by federal, state, county, and city agencies. Overall planning and coordination is conducted at several levels, including the California Department of Transportation, SANDAG, and local transportation authorities. SANDAG's 2020 Regional Transportation Plan guides the development of future transportation improvements.

3.12.1.6 Other Areas

Colorado River

PUBLIC SERVICES

Public services, including fire, police, schools, and similar services, are provided by a series of state and local agencies and districts. The CHP (in California) and the Department of Public Safety (in Arizona) have the primary authority for the major roadways in the area with support from the county sheriff departments and local police departments. Fire protection is provided by the California Department of Forestry as well as county and special district fire departments. Schools are provided by the local districts within the area.

PUBLIC UTILITIES

Domestic water service is provided by municipalities and special districts; most water is from groundwater, which is defined as Colorado River water. Wastewater service is provided by local municipalities as well as local treatment companies. Electricity is provided primarily by Southern California Edison in California and by Arizona Public Service in Arizona.

Releases from dams and flow through canals are used to generate hydroelectric power. Dams on the Colorado River are a few of many sources of power for the Western Area Power Administration grid. Power from this grid is delivered to nearby contractors and can be supplied to any of 15 western states. The rated capacity of Parker and Headgate Rock dams, which are the only two dams in California whose hydropower production could be affected by implementation of the Proposed Project, are 108 MW and 19.5 MW, respectively. (Power is also produced at Davis and Hoover dams, which are north of Parker Dam on the Arizona-Nevada

border.) Between Calendar Year (CY) 1987 and CY 2000, the average net energy generated annually at Parker Dam was 498,666 MWh. During CY 1996 and CY 1997, the average net energy generated annually for Headgate powerplant was 87,165 MWh. CY 1996 and CY 1997 were the only years available with complete data for Headgate (USBR 2002). In comparison, the total rated capacity of all hydroelectric facilities in the 17 western states that are operated by Reclamation is 14,693 MW (USBR and CVWD 2000). (This total does not include Headgate Rock Dam, which is operated by the Bureau of Indian Affairs on behalf of the Colorado River Indian Tribes.)

TRANSPORTATION INFRASTRUCTURE

Major highways on the California side of the River include Interstate 10 and Interstate 8, which are the major east-west routes, and United States Highway (U.S.) 95 and U.S. 78, which are the primary north-south routes. On the Arizona side of the River, major roads include U.S. 95, Interstate 10, and Interstate 8. A substantial network of local roads serves the agricultural areas.

Salton Sea

PUBLIC SERVICES

Public services in the vicinity of the Salton Sea are provided by state and local agencies in addition to local communities. Fire service is provided by the California Department of Forestry, Riverside and Imperial counties, and by local volunteer departments. Police services are provided by the CHP, local county sheriff's departments, and the California Department of Parks and Recreation. Schools are provided by the local districts.

PUBLIC UTILITIES

Water service within CVWD boundaries is provided by CVWD. Water service outside of CVWD boundaries is provided by local water service districts or by individual landowners. Wastewater treatment and disposal is generally provided by local treatment firms. Electricity is primarily provided by IID.

TRANSPORTATION INFRASTRUCTURE

Access to the area is provided by State Routes (SRs) 78 and SR-86, and SR-111, which are located on the western and eastern shores of the Salton Sea, respectively.

3.12.2 Impacts

3.12.2.1 Significance Criteria

The criteria used to determine the significance of an impact related to public services, utilities, and transportation are based on the initial study checklist in Appendix G of the State CEQA Guidelines.

Public Services

The Project would result in a significant impact to public services if it would do the following:

- result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or
- result in the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services including but not limited to, fire protection, police protection, schools, and parks.

Utilities

The Project would result in a significant impact to utilities if it would do the following:

- exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board; or
- require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; or
- require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; or
- have insufficient water supplies available to serve the project from existing entitlements and resources or require new or expanded entitlements; or
- result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments; or
- be served by landfill(s) with insufficient permitted capacity to accommodate the project's solid waste disposal needs; or
- not comply with federal, state, and local statutes and regulations related to solid waste; or
- substantially reduce a hydroelectric facility's contractual ability to produce power (by reducing the amount of flow through the respective dam's powerplant).

Transportation

The Project would result in a significant impact to transportation if it would do the following:

- cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections); or
- exceed either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways; or
- substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); or
- result in inadequate emergency access; or
- result in inadequate parking capacity; or
- conflict with adopted policies supporting alternative transportation (e.g., bus turnouts, bicycle racks).

3.12.2.2 Methodology

The Proposed Project components were analyzed to determine whether they could impact the facilities described in section 3.12.2.1 (e.g., would they produce wastewater or affect stormwater drainage facilities). The potential for population increases or construction or operational changes to affect the demand for utilities or public services also was considered. Potential impacts to hydropower would result from decreased flow in the lower Colorado River and All American Canal, and the analysis is based on that performed by Reclamation for the Implementation Agreement EIS (USBR 2002). The impact analysis is consistent with the hydrology analysis in section 3.1, which relies on a Future Baseline. With the exception of hydropower impacts, impacts in the IID and CVWD service areas were assessed by comparing Project-induced changes to the Existing Baseline. No impacts to the MWD or SDCWA service areas or Salton Sea geographic area would occur since no construction or other physical or operational changes would take place, nor would the population increase. Impacts of the All American and Coachella Canal lining projects are based on the EIS/EIRs for those projects (USBR and IID 1994, USBR and CVWD 2001).

3.12.2.3 Summary of Impacts

Imperial Irrigation District

PUBLIC SERVICES/UTILITIES

The All American Canal Lining Project EIS/EIR identified no significant impacts to public services or utilities from construction or operation of this component of the Proposed Project.

The other water conservation measures implemented in the IID service area would not cause a change in population or otherwise impact public services. The Proposed Project would result in

changes to the water delivery system to farms, but would not change the potable water supply or distribution system. On-farm irrigation management would not create a substantial demand for electricity. On-farm conservation measures and water delivery system-based conservation measures would require only small amounts of electricity (e.g., for operating sprinklers, pumps, and gates) and would not require the expansion of power systems. The Project would not require or result in the construction of new stormwater drainage facilities or expansion of existing facilities.

The flow to the All American Canal would be decreased by up to 353 KAF, which would reduce the average annual amount of power generated at Drop Nos. 1, 2, 3, 4, 5, and East Highline by approximately 11 percent. Implementation of the Proposed Project would not cause average power production to be less than the minimum amount of power generation over the last 15 years. This is not considered a substantial reduction in the facility's ability to produce power; therefore, the impact would not be significant.

On-farm conservation, water delivery, and on-farm irrigation management measures would not increase solid waste production.

TRANSPORTATION

Traffic associated with the construction of water conservation measures, including the parallel canal adjacent to the All American Canal, would occur in rural, sparsely developed areas. Construction vehicles primarily would use county roads, farm access roads, and existing service roads. The minimal amount of short-term traffic that would be generated would not significantly impact traffic conditions. Construction would take place in rural, undeveloped areas away from schools or providers of emergency services and thus would not restrict emergency access to and from these facilities; nor would the limited amount of construction restrict emergency access to other areas.

Minimal maintenance of on-farm conservation measures and water delivery systems would be required and would be indistinguishable from routine farm activities. Maintenance would occur over short periods of time, using on-site equipment. The existing roadways are not heavily traveled since this area is not densely populated, and the number of trips that would be required (probably fewer than 15 per day) would not significantly impact the local transportation system.

Parking capacity would not be affected by either construction or operations of any Project-related facilities given the limited amount of vehicular traffic that would be required and the fact that most, if not all, activities would be in a sparsely populated area. Project implementation would have no conflicts with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

Fallowing would not generate traffic or affect public services or utilities.

Coachella Valley Water District

PUBLIC SERVICES/UTILITIES

The Coachella Canal Lining Project EIS/EIR identified no significant impacts to public services or utilities from construction or operation of this component of the Proposed Project.

The construction and operational changes that would be implemented in the CVWD service area as a result of other components of the Proposed Project would not cause a change in population. The Proposed Project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or result in the need for new or physically altered governmental facilities.

Construction and operation of Project elements would not require or result in the construction of new water or wastewater treatment facilities or expansion of those existing facilities since the Proposed Project components would be proposed for the purpose of water distribution and recharge. Regarding the adequacy of water supplies available to serve the Project from existing entitlements and resources, the aspects of the Project that would directly affect the CVWD are intended to alleviate an existing groundwater overdraft condition and thus benefit the water supply in this area. The Proposed Project itself would not create a demand for water.

Prior to pipeline installation, existing buried utilities in the area would be identified. As necessary, CVWD would coordinate with the agencies responsible for these utilities to avoid impacts during pipeline construction. The proposed pipelines and pumping stations would not affect existing drainage. Recharge basins may require storm flow management facilities; this determination will be made once specific sites are identified.

The demand for utility service within CVWD would not change substantially under Project implementation; however, higher groundwater levels would decrease the amount of electricity used for pumping, which would be a beneficial impact.

No significant impacts associated with solid waste disposal would occur. Soil excavated during recharge basin construction would be used onsite, and only incidental amounts of solid waste would result from the construction of pipelines and pumping stations. There is adequate landfill capacity for disposal of any materials generated from construction and operation.

TRANSPORTATION

The Coachella Canal Lining Project EIS/EIR identified no significant impacts to transportation from construction or operation of this component of the Proposed Project.

The specific locations of facilities such as pipelines, pumping stations, and recharge basins are not known at this time, although sites near Dike 4 and Martinez Canyon are under preliminary consideration as locations for the recharge basins. Pipelines likely would be constructed in road shoulders; pumping stations likely would be in agricultural field corners or desert areas; and recharge basins likely would be constructed on undeveloped land. Temporary disruption of present traffic patterns and increases in traffic hazards, or availability of parking on local roadways could occur during construction of these facilities. Temporary (less than two weeks)

changes in level of service (LOS) may occur if heavily traveled intersections were adjacent to pipeline construction. However, the majority of roadways in the Valley, particularly in the Lower Valley, are classified as LOS "A" (free-flowing traffic), with very low average daily traffic. Given the existing favorable conditions and the short duration of construction, impacts would not be significant unless construction occurred in the immediate vicinity of heavily traveled roadways and intersections.

Pipeline construction could affect parking capacity near the construction sites for a few days in developed areas of the Lower Valley; this would not be a significant impact given the brief duration of the construction period. The construction and operation of the pipelines, pumping stations, and recharge basins would not conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

Any pipelines, pumping stations, and recharge basins that may be constructed would likely be located in rural or undeveloped areas, such as the vicinity of Dike 4 and Martinez Canyon, away from schools or providers of emergency services. However, if construction occurred near such facilities, it could restrict emergency access, which would be a significant but mitigable impact.

Operation of the proposed facilities would result in minor increases in vehicle trips related to routine maintenance. No long-term effects of Project operations on patterns of circulation or waterborne or rail traffic would occur.

As noted in the Coachella Canal Lining Project EIS/EIR (USBR and CVWD 2002), a traffic control plan is incorporated as a project feature, which would avoid significant transportation impacts from construction of this project. No significant long-term impacts would therefore occur.

The Metropolitan Water District of Southern California

No significant impacts associated with public services, utilities, or transportation would occur in the MWD service area. The proposed water transfers would not require the provision of new or physically altered governmental facilities or result in the need for new or physically altered governmental facilities. No wastewater discharge would be required, nor would the construction of new water or wastewater treatment facilities or expansion of existing facilities be needed. Stormwater drainage facilities would be unaffected. The Proposed Project would not create a demand for water; rather, it would maintain the reliability of the service area's water supply. No impacts to wastewater treatment or landfills would occur since no wastewater or solid waste would be generated as a result of the Proposed Project. No impacts associated with hydropower would occur in this service area. No traffic-related impacts would result from implementation of the Proposed Project since no new facilities would be constructed, nor would population increase as a result of the Proposed Project.

San Diego County Water Authority

No significant impacts associated with public services, utilities, or transportation would occur in the SDCWA service area. The proposed water transfers would not require the provision of new or physically altered governmental facilities or result in the need for new or physically

altered governmental facilities. No wastewater discharge would be required, nor would the construction of new water or wastewater treatment facilities or expansion of existing facilities be required. Stormwater drainage facilities would be unaffected. The Proposed Project would not create a demand for water; rather, it would maintain the reliability of the service area's water supply. No impacts to wastewater treatment or landfills would occur since no wastewater or solid waste would be generated as a result of the Project. No impacts associated with hydropower would occur in this service area. No traffic-related impacts would result from implementation of the Proposed Project since no new facilities would be constructed, nor would population increase as a result of the Project.

Other Areas

COLORADO RIVER

Over the life of the Proposed Project, the estimated reduction in average energy production at Parker Dam would be less than 5 percent as a result of the Proposed Project. The maximum reduction during this period is estimated to be less than 6 percent. The estimated reduction in average energy production at Headgate Dam would be slightly more than 5 percent. The maximum reduction during this period is estimated to be slightly over 6 percent (USBR 2002). This is not considered a substantial reduction in these facilities' ability to produce power, and the impact would not be significant.

The Project would not cause construction, population changes, or any other actions that would affect public services, utilities, or transportation systems near the Colorado River, either in California or Arizona. The Proposed Project would not require the provision of new or physically altered governmental facilities or result in the need for new or physically altered governmental facilities. No wastewater discharge would be required, nor would the construction of new water or wastewater treatment facilities or expansion of existing facilities be required. Stormwater drainage facilities would be unaffected. The Proposed Project would not create a demand for water. No impacts to wastewater treatment or landfills would occur since no wastewater or solid waste would be generated as a result of the Project. No traffic-related impacts would result from implementation of the Proposed Project in this geographic area since no new facilities would be constructed, nor would population increase as a result of the Project.

SALTON SEA

Because impacts to this area would only involve change in water levels of the Salton Sea, impacts to public utilities, public services, and transportation systems would not occur. The Proposed Project would not require the provision of new or physically altered governmental facilities or result in the need for new or physically altered governmental facilities. No wastewater discharge would be required, nor would the construction of new water or wastewater treatment facilities or expansion of existing facilities be required. Stormwater drainage facilities would be unaffected. The Proposed Project would not create a demand for water. No impacts to wastewater treatment or landfills would occur since no wastewater or solid waste would be generated as a result of the Project. No traffic-related impacts would result from implementation of the Proposed Project in this geographic area since no new facilities would be constructed, nor would population increase as a result of the Project.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would impact any existing public utility or create an need for new or increased utilities or public services. A reduction in the amount of conserved water dedicated to MWD would not result in insufficient water supplies to meet existing and projected demands or result in any physical change that would cause the need for new or expanded utilities or public services. Diversion and of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would significantly impact public services or utilities.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River water contemplated under the Proposed Project. Since no changes in river levels would result or construction of new diversion structures would be required with implementation of this Project component, no significant impacts to public services or utilities would occur. The exchange of water with SDCWA would occur from existing infrastructure and would not require construction activities that would cause the need for new or expanded utilities or public services.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that would cause the need for new or expanded utilities or public services. The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause the need for new or expanded public services or utilities or that would result in an activity that would create a need for significant public services or utilities.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore, no change in Colorado River conditions or potential impacts to public services or utilities would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD, nor would it increase the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause the need for expanded or new public facilities or utilities.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAF of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause the need for new or expanded public services or utilities or that would result in an activity that would create a significant to public services and utilities. No impacts to public services or utilities would occur from the diversion or conveyance of the water to CVWD since no new facilities would be required to be constructed. Similarly, the exchange of SWP entitlements under this Project component would be accomplished through existing facilities and would not result in physical changes to environmental conditions that would cause the need for new or expanded public services and utilities.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER WATER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts that would cause the need for increased public services or utilities.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These changes are within historic fluctuations and would not result to changes to the physical environment that would require new or expanded public utilities or alter existing governmental facilities or services. Under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the river under this

component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities, and would not increase the amount of water used within its service area. Therefore, no changes to environmental conditions would result from implementation of this Project component that would create the need for new or expanded utilities or impact current levels of public services.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would cause the need for new or expanded utilities or alter existing public service facilities or levels of service.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would share this shortage. Actions taken in the IID and CVWD service areas to manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. This additional conservation/shortage management would also be short-term. The potential impacts to public services, such as increased electrical use for pumping and increased operation of tailwater return systems, related to this additional conservation/shortage management would be so minor as to be indiscernible from the impacts of the Proposed Project.

3.12.3 Mitigation Measures

The following mitigation measure could be implemented to reduce the potential impact from construction in the vicinity of schools or emergency services facilities in the CVWD service area:

- Nearby schools and emergency service providers would be notified of construction prior to its onset, and a traffic control plan would be developed to ensure that access and emergency response are possible at all times.

The potential for transportation impacts will be evaluated more specifically in project-level environmental documents once proposed sites have been identified. Although not expected, if a significant transportation impact is identified near high-volume roadways and intersections in

the CVWD service area, one or more of the following measures could be implemented to reduce impacts to a less-than-significant level (note that this list does not preclude the use of additional measures):

- To mitigate temporary traffic disruption and ensure public safety, traffic control plans would be prepared for construction sites in or near higher traffic volume roadways. The plans could be provided to and approved by, as applicable, Caltrans, the individual City departments, the County of Riverside, and local providers of emergency services.
- High-volume intersections would be avoided if possible.

3.12.4 Significant Unavoidable Environmental Changes

No significant unavoidable environmental changes to public services, utilities, or transportation would result from implementation of the Proposed Project.

3.12.5 Significant Irreversible Environmental Changes

No significant irreversible environmental changes to public services, utilities, or transportation would result from implementation of the Proposed Project.

3.13 POPULATION, HOUSING, AND EMPLOYMENT

3.13.1 Environmental Setting

This section provides current and projected demographic data for the study area, which includes much of Southern California. The geographic areas served by IID, CVWD, MWD, and SDCWA include all or parts of the following counties: Imperial, Los Angeles, Orange, Riverside, San Diego, San Bernardino, and Ventura. These counties participate in regional planning under the auspices of either of two agencies with regional planning responsibilities: SCAG and SANDAG. A number of subregional agencies are members of SCAG, including the Coachella Valley Association of Governments, Imperial Valley Association of Governments, and the Western Riverside Council of Governments.

3.13.1.1 Regional Characteristics

Population

Southern California historically has been one of the fastest growing areas in the state. However, in the decade of the 1990s, the population of the seven-county region comprised of member counties of the SCAG and SANDAG grew at a slightly slower rate than the state as a whole. The population of the seven-county region grew at 1.21 percent annually compared with 1.3 percent for the state. The most rapid growth took place in Riverside County that experienced an average annual rate of 2.82 percent between 1990 and 2000 followed by Imperial County (2.68 percent). Los Angeles County experienced the slowest rate of growth (0.72 percent annually). The population of the region increased by over 2,190,000 persons over the ten-year period while its share of total state population remained almost constant at 57 percent. The Southern California region contributed 53 percent of the statewide population growth in the decade (see Table 3.13-1).

Population change is attributable to the combined effect of three components of change: natural increase (difference between births and deaths); migration to and from other states; and immigration from foreign countries. The contribution made by each component of change can vary significantly over time. For California over the period 1990 to 1999 it is estimated by the California Department of Finance that the population increased by 3.282 million persons. Of this total increase, 3.076 million (almost 94 percent) was attributable to natural increase. The remainder of the increase was the result of a net migration into the state of just over 206,000 persons. The figure of 206,000 persons, however, resulted from the arrival of 2.205 million immigrants from other countries and the departure of 1.999 million persons to other states in the nation. During the 1990s, only the period 1998 to 1999 showed net positive domestic migration, i.e., more people came to California from other states than left. In all other periods of the decade, California experienced net domestic out-migration that reached a peak in 1993 to 1994 with a net loss of over 485,000 persons. Immigration was positive in all years with an average of about 245,000 persons annually and variation between 201,000 and 288,000 persons.

Over the period 1990 through 1999 in the seven counties of Southern California, 1.508 million persons immigrated to the region, 1.832 million out-migrated to other states in the nation, and there were 2.025 million births that resulted in a population increase of 1.701 million persons.

Table 3.13-1. Population Projections by County

County	*1990*	*2000 (a)*	*Average annual % Change (1990-2000)*	*Numeric Change (1990-2000)*	*2010 (b)*	*2020 (b)*	*Average annual % Change (2000-2020)*	*Numeric Change (2000-2020)*
California	29,760,021	33,871,648	1.30%	4,111,627	40,262,400	45,821,900	1.52%	11,950,252
Imperial	109,303	142,361	2.68%	33,058	217,500	294,200	3.70%	151,839
Los Angeles	8,863,164	9,519,338	0.72%	656,174	10,605,200	11,584,800	0.99%	2,065,462
Orange	2,410,556	2,846,289	1.68%	435,733	3,266,700	3,541,700	1.10%	695,411
Riverside	1,170,413	1,545,387	2.82%	374,974	2,159,700	2,817,600	3.05%	1,272,213
San Bernardino	1,418,380	1,709,434	1.88%	291,054	2,231,600	2,800,900	2.50%	1,091,466
San Diego	2,498,016	2,813,833	1.20%	315,817	3,388,400	3,863,500	1.60%	1,049,667
Ventura	669,016	753,197	1.19%	84,181	877,400	1,007,200	1.46%	254,003
Seven-County Region	17,138,848	19,329,839	1.21%	2,190,991	22,746,500	25,909,900	1.48%	6,580,061
Percent of State	57.59%	57.07%		53.29%	56.50%	56.54%		55.06%

Source: (a) 2000 Census; (b) California DOF, June, 2001

Net domestic out-migration occurred in all years but was most pronounced in the years 1993 through 1995 when about 350,000 persons left the region annually for other states. Over the period 1990 through 1999 all counties, with the exception of Riverside County, experienced negative net domestic migration. Riverside County saw positive net domestic migration in each year. Immigration varied from a high of 203,000 persons in 1993 to a low of 130,000 persons in 1996 (see Table 3.13-2).

Table 3.13-2. Southern California Counties, Components of Population Change (1990-1999)

Year	*Natural Increase*	*Net Domestic Migration*	*Net Immigration*	*Population Change*	*Total Population*
1990					17,672,800
1991	261,696	-111,280	159,284	309,700	17,982,500
1992	262,390	-198,423	200,633	264,600	18,247,100
1993	245,130	-341,399	203,469	107,200	18,354,300
1994	235,647	-357,155	198,408	76,900	18,431,200
1995	222,609	-345,708	167,499	44,400	18,475,600
1996	211,530	-250,600	130,170	91,100	18,566,700
1997	202,603	-107,319	153,916	249,200	18,815,900
1998	192,021	-114,741	146,320	223,600	19,039,500
1999	191,441	-5,693	148,752	334,500	19,374,000
Sum	**2,025,067**	**-1,832,318**	**1,508,451**	**1,701,200**	
Average	**225,007**	**-203,591**	**167,606**	**189,022**	
Aggregate Change	*Natural Increase*	*Net Domestic Migration*	*Net Immigration*	*Population Change*	*Total Population*
Imperial	16,633	-5,249	18,716	30,100	
Los Angeles	1,067,288	-1,655,671	997,483	409,100	
Orange	305,602	-124,813	199,511	380,300	
Riverside	122,929	144,923	53,448	321,300	
San Bernardino	184,458	-561	58,403	242,300	
San Diego	257,949	-154,772	144,923	248,100	
Ventura	70,208	-36,175	35,967	70,000	
Region	**2,025,067**	**-1,832,318**	**1,508,451**	**1,701,200**	
Average Annual Change	*Natural Increase*	*Net Domestic Migration*	*Net Immigration*	*Population Change*	*Total Population*
Imperial	1,848	-583	2,080	3,344	
Los Angeles	118,588	-183,963	110,831	45,456	
Orange	33,956	-13,868	22,168	42,256	
Riverside	13,659	16,103	5,939	35,700	
San Bernardino	20,495	-62	6,489	26,922	
San Diego	28,661	-17,197	16,103	27,567	
Ventura	7,801	-4,019	3,996	7,778	
Region	**225,007**	**-203,591**	**167,606**	**189,022**	

Over the period 2000 through 2020 the population of the Southern California region is projected to increase by over 6.5 million persons. Such an increase would account for 55 percent of the total statewide projected population increase. The projections, prepared by the California Department of Finance forecast population increases in excess of 1 million persons each in

Riverside, San Bernardino, and San Diego counties and over 2 million persons in Los Angeles County (see Table 3.13-3).

While the populations of the Arizona counties are small compared to those in the California and Nevada counties, their growth rates in all cases exceed those of the California counties. La Paz County experienced a 10-year growth rate of 3.6 percent (1990 to 2000), while Yuma County had a 4.12 percent growth rate during the same period. Between 2000 and 2020, La Paz County is projected to have an average annual population growth rate of 1.96 percent. Over the same period, Yuma County is projected to have a 1.36 percent change in population per year.

Table 3.13-3. Population Projections by County, 2010 and 2020

County	*2000*	*2010*	*2020*	*Numeric Change 2000-2020*	*Average Annual Percent Change (2000-2020)*
Imperial	142,361	217,500	294,200	151,839	3.70%
Los Angeles	9,519,338	10,605,200	11,584,800	2,065,462	0.99%
Orange	2,846,289	3,266,700	3,541,700	695,411	1.10%
Riverside	1,545,387	2,159,700	2,817,600	1,272,213	3.05%
San Bernardino	1,709,434	2,231,600	2,800,900	1,091,466	2.50%
San Diego	2,813,833	3,388,400	3,863,500	1,049,667	1.60%
Ventura	753,197	877,400	1,007,200	254,003	1.46%
Seven-County Region	19,329,839	22,746,500	25,909,900	6,580,061	1.48%

Housing

Table 3.13-4 presents information describing the number of housing units in each of the counties in the study area for the years 1990 and 2000. Both the magnitude and rate of increase mirror the changes previously described for population. The size of the housing stock increased most rapidly in Riverside and Imperial counties. However, the largest number of units were added to the housing stock in Los Angeles County.

Table 3.13-4. Housing Units by County, 1990 and 2000

County	*1990*	*2000*	*Numeric Change (1990-2000)*	*Average Annual Percent Change (1990-2000)*
Imperial	36,559	43,891	7,332	1.84%
Los Angeles	3,163,343	3,270,909	107,566	0.33%
Orange	875,072	969,484	94,412	1.03%
Riverside	483,847	584,674	100,827	1.91%
San Bernardino	542,332	601,369	59,037	1.04%
San Diego	946,240	1,040,149	93,909	0.95%
Ventura	228,478	251,712	23,234	0.97%
Seven-County Region	6,273,881	6,760,188	486,307	0.75%

Source: U.S. Department of Commerce, Census Bureau, Census of Population and Housing, 2001.

The rate at which housing units were added to the existing stock on a year-by-year basis can be seen from the information presented in Table 3.13-5. For the counties of California, new residential units authorized by building permits continued to grow throughout the late 1990s. However, as the region emerged from the recession of the early 1990s, the total number of

permits issued in 1999 was almost 70 percent below the high point of the 1980s (SCAG 1999). As housing prices have increased in the employment centers in Los Angeles, Orange, and San Diego counties, many workers have been excluded from home ownership and have opted for lower cost housing located on the urban fringe of Riverside and San Bernardino counties.

Virtually all counties in the study area experienced a sharp decline in residential construction activity in the first half of the 1990s. Building activity gradually increased after mid-decade and by 1999 had surpassed the 1990 level in the cases of Orange, San Diego, and Ventura counties. Construction activity in all other counties of the study area lagged behind their respective 1990 levels.

During a recent 10-year period in Arizona (1990 to 1999), La Paz County experienced an average annual change in housing units of 4.04 percent. In Yuma County, the average annual change was 4.77 percent.

Table 3.13-5. Regional and County Residential Building Permits, 1990-1999

County	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*Annual Average*
Imperial	1,087	837	1,001	627	834	492	352	342	433	339	634
Los Angeles	25,125	15,914	11,965	7,432	7,754	7,763	7,731	9,829	11,226	14,050	11,879
Orange	11,983	6,555	5,821	6,344	12,640	8,193	10,173	12,251	9,704	12,239	9,590
Riverside	15,362	9,283	8,220	7,247	8,015	6,806	7,540	9,747	12,527	14,154	9,893
San Bernardino	13,250	6,809	7,251	5,778	4,809	3,892	4,822	5,448	6,127	6,767	6,495
San Diego	15,732	7,891	6,071	5,750	6,943	6,633	6,848	11,139	11,891	16,295	9,519
Ventura	2,620	2,194	1,720	1,372	2,456	2,142	2,321	2,329	3,298	4,418	2,487
7-County Region	85,159	49,483	42,049	34,577	43,451	35,921	39,787	51,085	55,206	68,262	50,498

Employment

Employment is one of the major indicators of a region's economic health. Total employment in the seven-county region over the period 1990 through 2000 increased by about 906,000 jobs from 7.149 million to 8.055 million jobs at an average annual rate of 1.20 percent. Relative job growth, as measured by average annual change, was most pronounced in Riverside (3.79 percent), San Bernardino (2.66 percent) and San Diego (2.19 percent) counties. The largest numeric increases in employment occurred in Orange County (27 percent of the region-wide increase) followed by San Diego County (26 percent of the region-wide increase) (see Table 3.13-6).

At the regional level in 2000, industries in the service sector of the economy contribute the largest share (31.58 percent) of non-farm employment followed by retail trade (16.70 percent), government (14.74 percent), and manufacturing (14.37 percent). Of the seven counties comprising the region, Imperial County deviates most significantly from this industrial sector

profile. In the case of Imperial County in 2000, the government sector contributed 31.12 percent of non-farm employment. Farm employment contributed 22.69 percent of total employment.

Unemployment in Southern California has recently been at an all-time low. Since the recession in the early 1990s, the economy has diversified. As manufacturing jobs have been lost, new jobs have been created in information technology, entertainment, services, and apparel and fashion design (SANDAG 1998).

Between 1990 and 1999, La Paz County, Arizona experienced an average annual change in employment of 2.5 percent. Yuma County had an average annual change of 3.1 percent.

Table 3.13-6. Regional and County Employment, 1991 and 2000

County	*1991*	*2000*	*Numeric Change (1991-2000)*	*Average Annual Percent Change (1991-2000)*
Imperial	44,600	49,800	5,200	1.11%
Los Angeles	3,992,600	4,091,900	99,300	0.25%
Orange	1,150,800	1,398,600	247,800	1.97%
Riverside	322,700	468,000	145,300	3.79%
San Bernardino	418,800	544,400	125,600	2.66%
San Diego	973,000	1,208,300	235,300	2.19%
Ventura	246,000	293,800	47,800	1.79%
Seven-County Region	7,148,500	8,054,800	906,300	1.20%
Source: *California Employment Development Department, 2001.*				

3.13.1.2 Regulatory Framework

SCAG is a regional planning agency whose functions include regional transportation planning, air quality planning, and the development of demographic projections. In addition, SCAG reviews proposed projects of regional significance to determine consistency with regional plans, including SCAG's RCPG. SCAG adopted the RCPG in 1996 for the purpose of setting regional growth goals and identifying strategies for agencies to use in implementing the proposals in the plan through the year 2015. The RCPG includes goals for the economy, growth management, transportation, air quality, housing, open space, and water resources. The plan gives primacy to economic recovery and identifies three overall goals for the region: improving the standard of living for all; improving the quality of life for all; and enhancing equity and access to government. Specific RCPG policies are identified in the land use section.

SANDAG, in collaboration with San Diego County and the 18 cities, adopted a Regional Growth Management Strategy in 1993. The Regional Growth Management Strategy provides goals for improving the quality of life in San Diego County through specific growth management, conservation, and social measures. The county and cities have since incorporated the basic provisions of the strategy in their individual general plans (SANDAG 1998). The strategy comprises four basic components: quality of life factors, standards, and objectives; recommended actions; consistency with local/regional plans; and monitoring of growth forecasts and strategy.

A number of sections of the California Water Code indirectly address potential economic effects associated with water transfers. Section 386 pertains to water transfers and states that they may be approved by the State Water Resources Control Board only in the absence of injury to any legal users of the water and in the absence of unreasonable effects to fish, wildlife or other in-stream beneficial uses. Unreasonable effects on the overall economy of the area from which the water is being transferred must also be avoided. Section 1810(d) stipulates identical criteria regarding the use of conveyance facilities used in water transfers. Section 1745.05(b) states that "The amount of water made available by land fallowing may not exceed 20 percent of the water that would have been applied or stored by the water supplier in the absence of any contract entered into pursuant to this article in any given hydrologic year, unless the agency approves, following reasonable notice and public hearing, a larger percentage."

3.13.1.3 Imperial Irrigation District

IID is located in Imperial County, where farming is the main source of income. The Imperial Valley currently is undergoing steady growth in excess of the overall state growth rate. Like other agricultural counties in the state, Imperial County's employment growth has been relatively slow but is projected to increase by over 32 percent by 2020 (SCAG 1999).

3.13.1.4 Coachella Valley Water District

Most of the CVWD lies in Riverside County, but the District also extends into Imperial and San Diego counties. Riverside County has been growing rapidly and is now the sixth most populous county in the state. The growth rate of population, housing, and employment in the Coachella Valley is projected to increase through the year 2010 and then start to decline between 2010 and 2020. This service area contains a number of resorts, as well as agricultural uses, both of which provide employment opportunities.

3.13.1.5 The Metropolitan Water District of Southern California

MWD provides wholesale water service to portions of Orange, Los Angeles, Ventura, San Diego, San Bernardino, and Riverside counties. The region has the largest and fastest growing population and employment base in the state; Los Angeles and Orange counties are two of the California's largest counties. This service area has a diverse employment base.

3.13.1.6 San Diego County Water Authority

SDCWA is located in the western portion of San Diego County. San Diego population, employment, and housing projections show a continuation of current growth trends. This service area has a diverse employment base.

3.13.1.7 Other Areas

Colorado River

The eastern portions of Riverside, San Bernardino, and Imperial counties border the west side of the Colorado River. These counties are growing in population, housing, and employment, as

noted above. The same trends are applicable in Arizona in La Paz and Yuma counties. Areas surrounding the River are used for recreation and agriculture.

Salton Sea

The Salton Sea is located in Imperial and Riverside counties. It is an important recreational and aesthetic resource, attracting visitors from both southern California and throughout the United States, and it generates employment and tax revenues from tourism.

3.13.2 Impacts

3.13.2.1 Significance Criteria

The criteria used to determine the significance of impacts related to population, housing, and employment are based on the model initial study checklist in Appendix G of the State CEQA Guidelines. The Project would result in significant impacts if it would:

- induce substantial population growth in an area either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure); or
- displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or
- displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

3.13.2.2 Methodology

Each Project component was evaluated for its potential to influence future population and housing. This was accomplished by identifying potential effects of Project implementation on economic activity, especially with regard to employment levels. Project components were also evaluated as to their potential to displace people, housing, or businesses or create other economic impacts on a local or regional scale. Impacts to the CVWD service area were compared against the Existing Baseline. Potential impacts to the Colorado River and Salton Sea geographic areas would result from changes in surface water elevation and are based on the hydrologic modeling discussed in section 3.1, which assesses impacts compared to Future Baseline conditions. No impacts to the MWD or SDCWA service areas would occur since no construction or other physical or operational changes would take place in these service areas.

The impact analysis for the IID service area is based on that performed for the IID Conservation and Transfer Project EIR/EIS (IID and USBR 2002). The methodology used to support the socioeconomic analysis of the IID Water Conservation and Transfer Project EIR/EIS is based on a regional economic model using the software and data package IMPLAN PRO. IMPLAN PRO is an input-output (I-O) model that estimates the total impacts to a regional economy of changes to local business conditions, expenditures, or employment levels. Economic changes were estimated and used as inputs to the IMPLAN PRO model, which predicts the total effects on the regional economy. The effect of the IID Water Conservation and Transfer Project on the

regional economy was evaluated using: (1) changes in employment; and (2) the value of business output as the primary indicators.

Changes in business activity that would be caused by the IID Water Conservation and Transfer Project are attributed to one of the following three categories, which were individually modeled to estimate their impact on the regional economy:

- **Non-Agricultural Sectors –** Changes in local expenditures for goods, materials, and services associated with the construction, operation, maintenance, and replacement of on-farm and water delivery system improvements.
- **Transfer Revenue Expenditures** - Changes in the local expenditure of disposable income by farmers participating in the water conservation program.
- **Agricultural Production Sectors** - Reductions in agricultural output resulting from the fallowing of agricultural lands.

More detailed results of the impact analysis, including a breakdown of the total effect into the I-O components of direct, indirect, and induced effects, can be found in the IID Water Conservation and Transfer Project EIR/EIS. IMPLAN PRO takes into consideration annual changes in local expenditures and agricultural production during the quantification period and therefore is considered to use a Future Baseline.

Information regarding impacts of the All American and Coachella Canal lining projects is summarized from the EIS/EIRs prepared specifically for those projects (USBR and IID 1994, and USBR and CVWD 2001).

3.13.2.3 Summary of Impacts

Imperial Irrigation District

The All American Canal Lining Project EIS/EIR identified no significant impacts to population, housing, or employment from construction or operation of this component of the Proposed Project.

A number of implementation scenarios potentially could take place in the IID service area depending on the amount of water that is conserved, the manner in which it is conserved (on-farm and water delivery system improvements versus land fallowing), and the eventual destination (and transfer fees paid) of the transferred water. This analysis is based on a worst-case scenario, which assumes that 300 KAFY of water would be conserved for transfer through fallowing. (Additional conservation by IID may be required for compliance with IID's Priority 3a cap on Colorado River water diversions.) It also assumes that the first 50 KAFY of water conserved under the QSA would be transferred to CVWD rather than to MWD. Under the terms of the QSA, if CVWD purchased the first 50 KAFY of water from IID, IID would be paid a base price of $50 per AF. If CVWD purchased the second 50 KAFY of water from IID, IID would be paid a base price of $125 per AF. If CVWD did not purchase water from IID under the QSA, MWD could purchase the water at a base price of $125 per AF. Thus, Imperial County would receive less economic benefit if CVWD purchased the first 50 KAFY rather than MWD.

If the reduction in water use was accomplished solely through land fallowing, Imperial County could experience a net loss of up to 1,400 jobs, mostly in the agricultural sectors. Such a change would comprise just under 3 percent of the Year 2000 county employment level. Net agricultural sector job losses would total up to 1,300, representing about 12 percent of the total county agricultural employment. The net decrease in the value of business output is estimated to be up to $98 million. This represents approximately 2 percent of the estimated $4.8 billion total value of business output for Imperial County (IID and USBR 2002). This would not represent a significant impact to population, housing, or employment.

As noted in Chapter 6, Growth Inducing Impacts, implementing the Proposed Project would not involve the construction of new housing or businesses or the creation of roads or other infrastructure that could serve an increased population; nor would it displace people or housing in the IID service area. Water diversions by IID would be reduced as a result of the Proposed Project, which provides for the transfer of the conserved water outside the IID service area. Water supplies are considered adequate to maintain the current level of agricultural productivity given the use of conservation or land fallowing measures identified in Chapter 2.

Coachella Valley Water District

The Coachella Canal Lining Project EIS/EIR identified no significant impacts to population, housing, or employment from construction or operation of this component of the Proposed Project.

Water supply to the CVWD service area would increase under the Proposed Project; however, the additional water would be used only to offset the existing groundwater overdraft. The increased water supply that would result from the Proposed Project is considered in the Draft Coachella Valley Water Management Plan prepared by CVWD (CVWD 2000), the specific purpose of which is to address and reduce basin overdraft. Sufficient water is currently available in the Valley groundwater basins to meet the demands of the projected growth with or without the Proposed Project (CVWD 2000). Therefore, the same rates, magnitudes, and distribution of growth would occur regardless of whether or not the Proposed Project was implemented.

Implementing the Proposed Project could require the construction of pipelines, pumping stations, and other facilities in the CVWD service area; but this would not displace any existing housing or people because these facilities are expected to be located in agricultural or remote areas, such as the vicinity of Dike 4 and Martinez Canyon, two preliminary locations being considered for a recharge basin. This infrastructure would be used only for implementation of the Proposed Project and would not serve increased population. Because population trends would not change and since no significant impacts to agriculture would occur, the Proposed Project would not significantly impact employment or housing in the CVWD service area.

The Metropolitan Water District of Southern California

Implementation of the Proposed Project would not affect population, housing, or employment in the MWD service area. No new homes or businesses would be constructed, nor would any infrastructure that could serve new residents. No Project elements would displace people

and/or housing or require the construction of replacement housing. No infrastructure that could serve increased population would be constructed in this service area.

San Diego County Water Authority

Implementation of the Proposed Project would not affect population, housing, or employment in the MWD service area. No new homes or businesses would be constructed, nor would any infrastructure that could serve new residents. No Project elements would displace people and/or housing or require the construction of replacement housing. No infrastructure that could serve increased population would be constructed in this service area.

Other Areas

COLORADO RIVER AREA

The only change to this area would be a slight decrease in surface water elevation between Parker and Imperial dams, which would not be sufficient to adversely affect tourism or other economic activities in California or Arizona. Any such reductions in revenues from tourist activities and the associated jobs would be negligible.

SALTON SEA

Implementing the Proposed Project would accelerate the rate at which the surface water elevation is declining in the Salton Sea and thus would accelerate the rate of increase in salinity. These changes would impact the fisheries and other recreational resources of the Salton Sea, which may indirectly affect employment opportunities in the area, and possibly lead to a reduction in population, depending on the severity of the impact. This potential loss of employment opportunities, while having social consequences, would not constitute a significant change to the environment.

Analysis of the Environmental Impact of Project-Level Components

This section addresses the CEQA project-level analysis of potential environmental impacts associated with the implementation of those components of the Proposed Project that require such an analysis. All Project components are described and numbered in Table 2.4-1; the following discussion addresses only those for which project-level approvals are being obtained.

B. QSA CHANGES TO IID/MWD 1988 AGREEMENT, IID/MWD/PVID/CVWD 1989 APPROVAL AGREEMENT, AND MWD/CVWD 1989 AGREEMENT TO SUPPLEMENTAL APPROVAL AGREEMENT

MWD's reduction in the use of conserved water under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would displace existing housing or people or cause population growth. A reduction in the amount of conserved water dedicated to MWD would not result in an activity that would directly or indirectly induce population growth or cause the displacement of people or existing housing. Diversion of this water by CVWD would be through existing facilities and would therefore not require construction-related activities that would cause the displacement of people or existing housing.

D. MWD/SDCWA EXCHANGE OF CONSERVED WATER (UP TO 200 KAFY)

This Project component involves the exchange of Colorado River water diverted at MWD's existing intake at Lake Havasu for a like quantity and quality of water delivered through existing infrastructure to SDCWA. Implementation of the exchange agreement would not increase the diversion of Colorado River contemplated under the Proposed Project. Since no changes in river levels would result or construction of new diversion structures would be required with implementation of this Project component, no significant impacts to existing population, housing, or employment levels would occur. The exchange of water with SDCWA would occur through existing infrastructure and would not require construction activities that would cause the displacement of people or existing housing.

E. IID/CVWD/MWD TRANSFER OF CONSERVED WATER (FIRST AND SECOND 50 KAFY)

Under this Project component, some portion of the first and section 50 KAF of water would be utilized by MWD rather than CVWD. Since the diversion and conveyance of this water by MWD would be through existing facilities, no construction-related activities would occur that would cause the displacement of people or existing housing. The use of the First and Second 50 KAF of water would not increase the amount of Colorado River water currently being diverted by MWD and used within its service area. Therefore, implementation of this Project component would not result in changes to the physical environment that would impact existing population, housing, or employment levels.

G. PRIORITY 6A COLORADO RIVER PRIORITIES AND VOLUME ALLOCATIONS

This Project component quantifies the amount of Priority 6a surplus water available to IID, CVWD, and MWD. The diversion and use of this water would be within the historic range of surplus and unused apportionment diverted by these three districts. Therefore, no change in Colorado River conditions or potential impacts to population, housing, or employment levels along the Colorado River would occur. This quantification and use of Priority 6a surplus water would not require the construction of any new facilities by IID, CVWD, or MWD nor would it increase the amount of water used within these service areas. Therefore, implementation of this Project component would not result in changes to the physical environment that would cause the displacement of people or housing or that would result in an activity that would cause substantial population growth.

J. TRANSFER OF WATER (35 KAFY)/SWP ENTITLEMENT TRANSFER AND EXCHANGE

The change in point of diversion of 35 KAF of water from Lake Havasu to Imperial Dam under this Proposed Project component would result in a slight increase in river flow from Parker to Imperial dams. If MWD exercises the option to divert this water for CVWD at its existing facilities at Lake Havasu no change in river flows between Parker and Imperial dams would occur. Diversion of this water at either Lake Havasu or Imperial Dam would not result in changes to physical conditions that would cause the displacement of people or housing or that would result in an activity that would cause substantial population growth. No impacts to population, employment, or housing levels would occur from the diversion or conveyance of the water to CVWD since no new facilities would be required to be constructed. Similarly, the exchange of SWP entitlements under this Project component

would be accomplished through existing facilities and would not result in physical changes to environmental conditions that would cause the displacement of people or housing or cause substantial population growth.

K. MWD PRIORITY 4 AND 5 COLORADO RIVER CAP

This component of the QSA establishes an accounting method for water transfers under the Proposed Project and does not change the existing Priority 4 and 5 caps for MWD. This component would not result in any impacts to existing population employment or housing levels since it does not change the amount of water diverted, conveyed, or used and would not result in any activity that would cause the displacement of people or housing or that would result in an activity that would generate substantial population growth.

L. OVER AND UNDER RUN OF PRIORITIES 1, 2, AND 3B

Under this QSA component, MWD would be responsible for the repayment of any overrun as a result of the aggregate use by Priorities 1, 2, and 3b in excess of 420 KAF. Repayment would be accomplished by MWD reducing diversion of water of an amount equivalent to the amount of overrun. The resulting effect would be a minor decrease in Colorado River flows upstream of MWD's intake facilities in Lake Havasu to Lake Mead and a corresponding increase in the amount of water in Lake Mead. These changes are within historic fluctuations and would not result to changes to the physical environment that would create a significant impact to existing population, employment, or housing levels. Under this Project component, MWD would be entitled to any unused Priorities 1, 2, and 3b water. MWD would divert this water from its existing facilities for conveyance and use within its service area. The amount of water diverted from the river under this component would be within the historic amount of water diverted by MWD, would not require the construction any new facilities and would not increase the amount of water used within its service area. Therefore, no changes to environmental conditions would result from implementation of this Project component that would cause displacement of people or housing or that would result in an activity that would cause substantial population growth.

M. USE BY MISCELLANEOUS PRESENT PERFECTED RIGHTS AND FEDERAL RESERVED RIGHTS, INCLUDING CERTAIN INDIAN RESERVATIONS

Under this Project component, the change in the point of diversion from Lake Havasu and Imperial Dam to various points along the lower Colorado River would result in minor changes in river levels. This change in river flows is within historic fluctuations and would not result in changes to the physical environment that would significantly impact existing population employment or housing levels.

N. QSA SHORTAGE SHARING PROVISIONS

The frequency and magnitude of future shortages cannot be known with certainty, but in the CRSS modeling, QSA shortage conditions occurred once in the 85-year model runs. The minimum level of diversion for the State of California was estimated to be 3.847 MAFY. With this magnitude of shortage, Priority 3 would be reduced by up to 3,000 AF. IID and CVWD would share this shortage. Actions taken in the IID and CVWD service areas to

manage shortage would be similar with or without the QSA. IID would undertake additional conservation, demand control measures, or other actions to manage a shortage. CVWD would reduce or suspend groundwater recharge and undertake demand control measures and other actions to manage a shortage. Under QSA provisions, CVWD and IID would have to intensify shortage management efforts to account for up to an additional 3,000 AF.

This additional increment of conservation/shortage management would be minor with respect to overall deliveries to IID and CVWD. This additional conservation/shortage management would also be short term. The potential impacts to population, housing, and employment would relate to job losses from fallowing or decreased recreational use of the Salton Sea. However, additional conservation/shortage management would be so minor as to be indiscernible from the impacts of the Proposed Project.

3.13.3 Mitigation Measures

No mitigation measures are required.

3.13.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts to population, housing, and employment would occur as a result of the implementation of the Proposed Project.

3.13.5 Significant Irreversible Environmental Changes

No significant irreversible environmental changes to population, housing, and employment would occur as a result of the implementation of the Proposed Project.