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STATE WATER RESOURCES CONTROL BOARD

STATE OF CALIFORNIA

IMPERIAL IRRIGATION DISTRICT and SAN DIEGO COUNTY WATER AUTHORITY,

Petitioners.

EXPERT QUALIFICATIONS AND WRITTEN TESTIMONY OF DR. JOHN ECKHARDT AND LAURA HARNISH IN SUPPORT OF IID-AUTHORITY JOINT LONG-TERM TRANSFER PETITION

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EXPERT QUALIFICATIONS AND WRITTEN TESTIMONY OF DR. JOHN ECKHARDT AND LAURA HARNISH

[Please note that the following testimony is provided by both Dr. John Eckhardt and Laura Harnish of CH2M HILL, who will be called as a Panel. To the extent this testimony concerns either one of their backgrounds, it is that person's own testimony, and not that of the other. However, as to the rest, the testimony is joint.]

A. Introduction

1. My name is John Eckhardt, and I am a Vice President of CH2M HILL. My business address is CH2M HILL, 100 Iverness Terrace East, Englewood, Colorado. I have been a Vice President of CH2M HILL since June of 2001. A true and accurate copy of my Curriculum Vitae is attached hereto as Exhibit "A," and is incorporated herein. The following testimony is provided under oath, as specified at the end of this document.

2. My name is Laura Harnish, and I am a Water Resources Planner and project manager at CH2M HILL. My business address is CH2M HILL, P. O. Box 12681, Oakland, California. I have been a planner and project manager at CH2M HILL for 13 years. A true and accurate copy of my Curriculum Vitae is attached hereto as Exhibit "B" and is incorporated herein. The following testimony is provided under oath, as specified at the end of this document.

3. The overall purpose of our joint testimony is to provide the State Water Resources Control Board ("SWRCB") and its staff with a general overview of our work reviewing the potential

environmental impacts resulting from the implementation of Imperial Irrigation District's ("IID") proposed water conservation and transfer project with the San Diego County Water SDCWA (the "Project"), as detailed in the Draft Environmental Impact Report/Environmental Impact Statement ("Draft EIR/EIS"). Our testimony is organized by headings covering different environmental issues relating to IID and the Imperial Valley, as addressed in the Draft EIR/EIS. The Draft EIR/EIS, a true and accurate copy of which is lodged with IID's exhibits as IID Exhibit 55, is a part of our testimony, and as such is incorporated herein.

4. The matters we testify to here are presented by us both as those who have first-hand knowledge of the development of the Draft EIR/EIS and the Project, and also as experts on the environmental aspects of the proposed water transfer between IID and the San Diego County Water Authority ("SDCWA"). If there is anything else the SWRCB would like answered, we will be present at the Phase II hearings and will be glad to answer any such questions.

B. Overview Of CH2M HILL And The Witnesses

a. CH2M HILL

5. We both work for CH2M HILL, the consulting firm which was hired to prepare the Draft and Final EIR/EIS for the Project.

6. CH2M HILL is a multinational firm providing engineering, construction, operations and related services to a wide variety of national and international clients in numerous industries. Some examples of our domestic projects include: (1) working with the U.S. Army to develop environmentally sound

approaches to the destruction of chemical weapons; (2) developing a Cybersolids program by which wastewater sludges could be used as agricultural fertilizer instead of being dumped in landfills; (3) developing a unique habitat protection plan for 1.6 million acres of land in Montana, Idaho and Washington on behalf of the U.S. Fish and Wildlife Service, the Plum Creek Timber Company and the National Marine Fisheries Service; and (4) aiding the Pennsylvania state government, non-profit organizations and utility officials develop efficient electric technologies to ensure cleaner energy for that state.

7. CH2M HILL also does a considerable amount of international work. For example, we deliver construction management services to Callahan Associates' $2 billion cable network system in Germany, and we operate a design center in Krakow, Poland. In Italy, to protect the U.S. Air Force's drinking water supply and manage regional groundwater contamination problems, CH2M HILL created a program to trace groundwater flows from the Alps to the Adriatic Sea. In Spain, we helped the Madrid Airport acquire an important eco-performance certification by creating a comprehensive environmental management system, analyzing reams of data and auditing waste management practices. In Taiwan, we designed a silicon chip wafer fabrication facility which is flexible enough to ride out the area's frequent seismic activity. In Thailand, the Bangkok Metropolitan Administration selected CH2M HILL to oversee the design, construction and operation of two new wastewater and treatment systems for a city of over 10 million

people, and in Northern Chile we produced a complete environmental impact assessment on the effects of mineral mining.

8. A more complete discussion of CH2M HILL's recent awards, firm history, and our major national and international projects can be found on the CH2M HILL website at www.ch2m.com.

b. Dr. John Eckhardt

9. I have over 30 years experience in water resources engineering, with a specialty in numerical modeling, water rights, and water operations, maintenance, and administration. I have a Ph.D. in civil engineering with a focus on water resources planning and management, and I also have an M.S. in civil engineering with a focus on groundwater hydrology and hydraulics. Additionally, I have taken special training courses in areas such as water systems management and operation and irrigation management scheduling.

10. Before working at CH2M HILL, I was a Program Manager and an Assistant General Manager of Water at the Imperial Irrigation District, where I directed the activities of over 500 staff in water operations, maintenance, design and water resources engineering, construction and project management. Prior to that, as a private consultant to IID, I was responsible for executive consulting to the Manager of the Water Department for engineering issues, including the implementation of water system automation, a water department strategic information system and a system-wide reservoir operations model.

11. In addition to my extensive experience in water resources at IID, I have also been a private consultant to a number of national and international clients. For example, I:

(1) developed model irrigation project manuals for the Government of Nepal; (2) advised the Peruvian Presidents' Committee about a new water rights system; and (3) here in the United States, I was responsible for the development of water rights planning models for the state of Colorado.

12. I have served as the Associate Director of the Colorado Water Resources Institute, and have taught a number of graduate courses in advanced water resources engineering at Colorado State University ("CSU"), including "Colorado Water Law - History and Theory" and "Water Rights - Engineering and Legal Aspects." During my tenure at CSU, I also received a special appointment in the Department of Civil Engineering, where I was responsible for teaching advanced water resources and hydropower and developing a multi-model framework for integrated watershed management and an integrated water operations-accounting information system.

13. As an Assistant State Engineer for the State of Colorado, Division of Water Resources, I was responsible for directing the work of seven statewide branches regarding water management studies, groundwater/surface water computer simulations, water quality issues and the administration of interstate compact and water rights litigation.

14. I have made dozens of water resources presentations to both national and international audiences. For example, in March of 2000, I gave a presentation entitled, "Vision of Water Institutions in 2025" before the Second World Water Forum at The Hague, Netherlands. Here in the United States, I have presented topics such as: "Colorado Water Rights Administration: Legal

and Technical Aspects," and "Modeling On-Farm Water Conservation."

15. For a fuller description of my background, please see my attached Exhibit "A" curriculum vitae, which is incorporated herein.

c. Ms. Laura Harnish

16. I have an extensive background in the water resources field, including water quality, water treatment, water supply alternatives analysis, recreation and socioeconomics. I received a Master's Degree in Landscape Architecture in Environmental Planning from the University of California at Berkeley. I have over 15 years experience preparing California Environmental Quality Act ("CEQA") documents, working with National Environmental Policy Act ("NEPA") documents, and have participated in the production of joint CEQA/NEPA documents as well.

17. I have managed several EIR projects prior to being involved in the current IID project. For example, when a court declared the Tulare Irrigation District's original EIR to be inadequate, I was brought in to manage the preparation of the revised EIR. Ultimately, after our work, the Court deemed the revised EIR to be proper.

18. Many of the EIR projects I have managed have involved water resources and diversion issues. For example, I was the project planner for the Stony Creek Water Resources Management Plan, which involved 22 government agencies and issues of erosion, flooding, and irrigation diversions. Additionally, when the East Bay Municipal Utility District considered banking high

river flows in the San Joaquin basin for use during dry periods, I was one of the project planners who analyzed the impacts associated with the proposed project.

19. For the Bay-Delta system, which provides roughly two-thirds of the water consumed in California, I prepared technical reports on recreation impacts and environmental justice and evaluated seventeen project alternatives. I also managed the preparation of an EIR for the City of Berkeley's proposed Saltwater Fire Fighting System, and I completed a mitigated negative declaration for a stream restoration project on Santa Rosa Creek, which included a detailed analysis of hydrologic, wetland and fisheries information.

20. In addition to the numerous EIR's I have managed here in the United States, I was engaged in Ecuador to develop watershed management policies, natural resource surveys, and to do environmental planning.

21. My Exhibit "B" curriculum vitae explains my background in more detail, and is incorporated herein.

C. Overview Of CH2M HILL's Work On The Project

22. CH2M HILL was hired to prepare the Draft and Final EIR/EIS for the Project and a habitat conversion plan (HCP") to address impacts to species and their habitats within the Imperial Valley and the Salton Sea. To date, the effort by CH2M HILL (and its subcontractors) on the Project has been extensive, involving approximately 40,000 labor hours (20 person years) by a range of technical experts including hydrologists, biologists, air quality specialists, water resource planners and engineers, CEQA and NEPA specialists, economists, archaeologists, acoustics and aesthetics

specialists, irrigation and agricultural engineers, and document production specialists.

23. In addition to the effort by CH2M HILL as the consultant on the Project, significant time and effort has been provided by staff from the Bureau of Reclamation ("Bureau") as the co-lead agency for the Project, IID (lead agency) staff and consultants, and United States Fish and Wildlife Service ("USFWS") and California Department of Fish and Game ("CDFG") personnel for development of the HCP.

24. A major effort by CH2M HILL involved the preparation of the Imperial Irrigation Decision Support System ("IIDSS") to predict impacts within the IID service area under various conservation scenarios. Due to the complexities of the IID water delivery and drainage systems, a simple model could not be used. As a result, decision support system technology was required to integrate a large hydro-meteorological water quality and agricultural crop spatial database with several models to compute crop water use, drainage characteristics, irrigation practices, and canal and drainage water flows and water quality. This modeling effort was ultimately expanded to link to the models prepared for the lower Colorado River and the Salton Sea by the Bureau to provide consistency between the models. This significant amount of work required the simulation of irrigation practices on every field and turnout within the IID water service area. All aspects of water flow, water losses, and water quality were simulated for the IID delivery system, the drainage system and on-farm irrigation. Not only past on-farm practices were simulated, but future conservation practices were predicted in

order to determine the effects of conservation on water quality and quantity within the IID delivery and drainage systems. This simulation included the effects to the New and Alamo Rivers. The output of this analysis was integrated into the USBR Salton Sea modeling to develop the effects of the conservation and transfer on the Salton Sea. The integration and coordination of the IID modeling effort with the USBR Colorado River and Salton Sea modeling required extensive time and effort to complete.

25. The Project also includes the HCP developed by IID to mitigate impacts to certain species and their habitats as a result of the conservation program and IID's normal operation and maintenance of its water delivery and drainage system. The HCP is intended to support issuance of incidental take permits under the state and federal Endangered Species Acts ("ESA's"). Development of the HCP for both the IID water service area portion and for the Salton Sea required a significant level of effort in developing a proposal and in ongoing consultation with the USFWS and CDFG. Consultation meetings have been continuing for over a year, with meetings nearly weekly over this time period. Mutually acceptable mitigation strategies were developed over this period to satisfy the needs of the Project and the ESA requirements.

D. <u>The Draft EIR/EIS And Environmental Impacts Of The Project</u>

26. The Draft EIR/EIS assesses the environmental impacts that could result from IID's proposed Project. The Project involves the conservation and transfer of up to 300,000 acre-feet of Colorado River water that otherwise would be diverted for use within the IID water service area. The Draft EIR/EIS has been

published for purposes of soliciting review and comment by federal and state agencies, interested parties, and members of the public.

27. In 1988, IID and the Metropolitan Water District ("MWD") developed and implemented an agreement to conserve and transfer up to 110,000 acre-feet of water per year from IID to MWD. The IID-MWD project construction was completed in 1998. It consisted primarily of system improvements such as lateral interceptors, regulating reservoirs, canal lining, and changes in canal delivery operations. Some minor on-farm conservation measures were also included in that project. However, additional conservation had been recommended by the State Water Resources Control Board ("SWRCB") in its earlier Decision 1600 and Water Rights Order 88-20 rulings, and so IID pursued further potential water transfers, culminating in the proposed Project.

a. Environmental Review Of The Proposed Project

28. In order to commence the environmental assessment, IID filed a Notice of Intent ("NOI") in the Federal Register on September 27, 1999, in accordance with the procedures provided in the National Environmental Protection Act ("NEPA"). IID also filed a Notice of Preparation ("NOP") with the California State Clearinghouse on September 29, 1999, in accordance with the procedures provided in the California Environmental Quality Act ("CEQA"). The Project was subsequently modified to reflect the negotiated terms of the Quantification Settlement Agreement ("QSA") which, among other things, provided for additional water allocations to MWD and Coachella Valley Water District ("CVWD"). From the time that IID filed its NOI and NOP until completion of

the Draft EIR/EIS, two years and three months had passed. This indicates the complexity of this Project and the level of effort required to identify potential environmental impacts, to develop reasonable project alternatives, and to evaluate potential mitigation measures. The Draft EIR/EIS and the underlying Project have required an extraordinary amount of coordination among multiple water agencies, the Bureau, and state and federal resource agencies.

29. The Project has been designed not only to respond to the SWRCB directives from the 1980's that IID develop and implement a conservation program, but also to provide a means for conserving and transferring a significant increment of Colorado River water, for the benefit of IID, the receiving water agencies, and such agencies' service areas in Southern California. In addition, the Project is intended to protect IID's historic water rights and assist the receiving water agencies in enhancing the long-term reliability of their water supply.

30. The conservation and transfer Project is intended to continue for up to 75 years. Thus, both the Project and the Project's mitigation measures have been designed to be implemented over an extended period of time, and are intended to be flexible enough to remain relevant and effective throughout the Project period. IID's ability to implement a water conservation program could vary over time, depending upon: (a) the availability and feasibility of on-farm and system conservation measures; (b) the extent of participation by landowners and farmers; (c) changes in climate, hydrological

conditions, technology, agricultural economics; and (d) other factors. To respond to the potential for change, the conservation program assessed in the Draft EIR/EIS is a flexible program that could include a variety of conservation measures which may vary over the Project term. Conservation measures could include on-farm irrigation measures, water delivery system improvements, and fallowing[1]. We conducted a broad environmental assessment of potential impacts of a variable program in order to provide IID with the flexibility to implement and modify the program to respond to changing conditions over the substantial Project term.

31. Once conserved, IID's water could be allocated according to the proposed transfer agreement between IID and SDCWA ("IID Transfer Agreement") or, if the QSA is approved and the conditions to implementation satisfied or waived, as modified and supplemented by the QSA. Under the QSA and the IID Transfer Agreement, IID would transfer between 130,000 and 200,000 acre-feet per year of conserved water to SDCWA, and CVWD would have the option to acquire up to 100,000 acre-feet of conserved water per year. MWD would also have the option to acquire all or any portion of the 100,000 acre-feet per year that CVWD does not acquire (all with potentially long "ramp-up" periods).

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[1] An alternative barred by the current terms of the proposed transfer between IID and the SDCWA, but the environmental impacts of which were studied nonetheless, since fallowing may mitigate certain environmental impacts.

32. The proposed IID water transfer reallocation would provide for the use of the transferred water by the receiving agencies, but they are not intended to transfer, or to reduce or impair, IID's historic Colorado River water rights. However, the Project does include IID's voluntary limitation of its annual diversions of Colorado River water at 3.1 million acre-feet per year, including the water conserved for transfer. Under the scenario that assumes QSA implementation, this limit on diversions is subject to adoption by the Bureau of its proposed Inadvertent Overrun Program (IOP), which would allow IID to pay back inadvertent exceedances of this diversion cap over a period of years.

33. The potential recipient(s) of IID's proposed conserved water are different, depending on how each agreement is implemented. The potential environmental impacts of IID's water transfers along the lower Colorado River also differ depending upon the diversion point required to deliver the conserved water to the transferees. For example, whereas IID normally diverts its Colorado River water at Imperial Dam and would continue to do so for water allocated to CVWD, water would be diverted into the Colorado River Aqueduct at Parker Dam for a transfer to SDCWA or allocation to MWD. Given such differences, this testimony (and the Draft EIR/EIS on which it is based) covers the potential environmental impacts resulting from implementation of possible variations of the agreements.

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E. Analysis Of Environmental Impacts

34. The Draft EIR/EIS (IID Exhibit 55) provides the complete environmental overview of the Project, and should be consulted for the full extent of our testimony. However, we provide a brief overview here, explaining the procedures by which the environmental impacts were identified and assessed, summarizing by geographic region several types of environmental impacts and the extent of their significance, and then discussing some of the proposed Project alternatives and potential mitigation measures.

F. Methodology Of Environmental Impact Identification And Assessment

35. In order to identify the potential environmental impacts of the Project, we determined the conditions that existed at the time the NOP was published[2], used those conditions to develop a "Baseline," compared Baseline conditions to potential conditions with Project implementation through the use of a predictive water quantity/quality computer model (the IIDSS)[3], and determined the significance of the impacts according to the CEQA Guidelines.

a. Developing A Baseline Against Which To Measure Changes Caused By The Project

36. The predictive water quantity/quality computer model, or IIDSS, was developed to determine the amount of water conservation that would result from implementation of the water conservation program, and the resultant impact of such

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[2] *See* CEQA Guidelines § 15125(a).
[3] *See* Draft EIR/EIS Appendix E and Section 3.1.4.1.

conservation on water flows and quality in the IID water service area and the Salton Sea. Utilization of such a model requires the establishment of a "Baseline" against which to measure change. CEQA also requires that an EIR include a description of the conditions that existed at the time the NOP was published to further measure change and assess the significance of Project impacts (see CEQA Guidelines § 15125[a]).

37. Because of the historic variability of hydrologic conditions in the Project area, a substantial historic record period was used to develop the Baseline. In order to identify potential Project impacts as distinct from natural changes and trends, our Baseline represented the projected variability of environmental resources that could reasonably be expected in the future, based on the present and historical state of such resources. The Baseline was projected over a 75-year period in order to allow assessment of long-term variability over the substantial Project term.

38. Development of the Baseline involved the following major steps: (1) adjustments to the available historical record to achieve accuracy and completeness; and (2) projection of the historic record to reflect existing trends carried into the future.

39. A 75-year predicted Baseline was developed using the IIDSS based on 12 years of available historical data (1987-1998 model calibration period). This data was adjusted based on reasonable anticipated future changes, such as an increase in Colorado River salinity and the effects of the conservation projects and water transfers implemented under the 1988 IID/MWD

Agreement (which is now fully implemented). Finally, the data was projected for 75 years using a correlation based on 75 years of historic weather data compared to the 12-year historical data period. The Baseline prediction also includes an adjustment to limit the diversion of Priorities 1, 2, and 3 for normal-year hydrology in the Colorado River to 3.85 million acre-feet per year (which is their normal year entitlement).

40. This description of existing and predicted future conditions is referred to as the "Baseline" throughout the environmental impact analysis. Additional detail regarding the development of the Baseline, and the IIDSS, is included in Section 3.1 Hydrology and Water Quality of the Draft EIR/EIS, and in Appendix E of the Draft EIR/EIS.

b. Using The Baseline To Assess Potential Impacts

41. Once Baseline conditions were established, we assessed potential Project impacts by comparing the anticipated Project conditions to the Baseline conditions. By including a future projection of existing conditions in the Baseline, impacts caused by the Project could be differentiated from impacts that are reasonably expected to result from existing conditions and trends.

G. Identifying And Assessing The Environmental Impacts

42. The Draft EIR/EIS assesses potential impacts and mitigation measures in the following environmental categories:

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- Hydrology and Water Quality
- Biological Resources
- Geology and Soils
- Land Use
- Agricultural Resources
- Recreation
- Air Quality
- Cultural Resources
- Indian Trust Assets
- Noise
- Aesthetics
- Public Services and Utilities
- Transportation
- Socioeconomics
- Environmental Justice
- Transboundary Impacts
- Growth Inducing Impacts
- Cumulative Impacts

a. Impacts At The Salton Sea

43. In order to identify and assess the environmental impacts at the Salton Sea, with respect to the Sea's elevation, salinity, and surface area, we developed a Baseline from which to measure changes, determined what environmental impacts would result from implementation of the proposed Project, and assessed the significance of those impacts.

i. Salton Sea Baseline

44. Because the impacts of the proposed Project and Project alternatives would be realized over a 75-year period, we measured those potential impacts against both current and projected conditions to provide an accurate description of Project effects. The use of the projected condition of the Sea as the Baseline for determining the significance of Project-related impacts is particularly relevant for the water and biological resources of the Sea, as well as socioeconomics, local recreation, air quality and aesthetics.

45. A computer model (Salton Sea Accounting Model) was developed as a joint effort by the USBR, IID and CVWD to simulate the dynamic conditions in the Salton Sea as a result of changes in hydrology and water quality. This model was used to develop a 75-year Salton Sea Baseline and a prediction of changes to the Baseline as a result of the proposed Project. The basic premise of the model is to maintain salt and water mass balance as a result of changes in hydrology and water quality. A more detailed description of this analysis is provided in Appendix F of the Draft EIR/EIS.

46. There have been several models developed that predict specific changes in the Salton Sea as a result of changes in hydrology and water quality. All of these predictive models show that the Salton Sea, without implementation of the Project, is deteriorating in terms of increased salinity and decreasing elevation and surface area. However the models differ as to the rate of increasing salinity and therefore the length of time the Salton Sea will support a fishery. Like all the other model predictions, our Baseline analysis also indicated that the Sea is becoming more saline and therefore its ability to support a fishery is being diminished over time.

47. The Project is expected to reduce inflows of agricultural drainage to the Salton Sea, as a result of conservation measures. The three parameters primarily used to determine the impacts that would result from the reduction of inflows to the Sea are elevation, salinity, and surface area. Table 3-3, which is attached as Exhibit "C," shows the Baseline predictions for each of these three parameters, which are further

described below. Additional information about the Salton Sea is presented in sections of both 3.1 Hydrology and Water Quality and 3.2 Biological Resources of the Draft EIR/EIS.

(a) Baseline Salton Sea Elevation

48. One of the Salton Sea factors we analyzed was the Sea's elevation. We developed a Baseline specifically for the Sea's elevation in order to assess the Sea's historical, present and future elevations. We also used this elevation Baseline to identify impacts of the Project resulting from a reduction in the Sea's elevation and to determine the significance of those impacts.

49. The current elevation of the Salton Sea is approximately -228 feet mean sea level (msl). Without implementation of the Project or its alternatives, the Sea is projected to decline seven feet to a level of approximately -235 feet msl. This decline is considered the Baseline condition, and additional declines associated with the Proposed Project and alternatives are measured against this Baseline. Impacts associated with a decline in elevation are discussed in Sections 3.3 Geology and Soils, 3.6 Recreation, 3.7 Air Quality, and 3.11 Aesthetics of the Draft EIR/EIS.

(b) Baseline Salton Sea Salinity

50. In addition to establishing the Sea's elevation Baseline, we also established the Sea's Baseline salinity, based upon the historical, current and projected salinity of the Salton Sea, without the Project. We determined that the existing salinity of the Sea is approximately 46 g/L and rising. It is important to note that even without the Project, the salinity of

the Sea is rapidly increasing. Specifically, without the Project, the salinity is expected to increase from 46g/L to 86 g/L by the year 2077. In its Baseline condition, the salinity of the Sea will be approximately 60g/L by the year 2023[4]. At that salinity level it is expected that fish will be unable to reproduce, and in turn, piscivorous (fish-eating) birds will be affected as their food supply diminishes and disappears. Thus, in addition to the natural decline of the Salton Sea's elevation, the natural increase in the Sea's salinity is causing the Sea, on its own, to die. This, therefore, is the Sea's Baseline condition. The impacts of the Project on the Sea's naturally increasing salinity are discussed below.

(c) Baseline Salton Sea Surface Area

51. In order to assess environmental impacts at the Salton Sea, we also considered the historical, current and projected surface area of the Salton Sea. We determined that the existing surface area of the Sea is approximately 364 square miles. Without the Project, the surface area of the Sea is projected to decrease by 20-25 square miles to approximately 339 square miles. This is the Sea's Baseline surface area. Impacts associated with a decreasing surface area are compared to this Baseline and discussed in Sections 3.4 Land Use, 3.6 Recreation, 3.7 Air Quality, and 3.11 Aesthetics of the Draft EIR/EIS and later in this testimony.

ii. Potential Project Impacts At The Salton Sea

52. Although we determined, from the Sea's declining elevation and surface area and increasing salinity, that the

[4] *See* Table 3-3.

Salton Sea is deteriorating under Baseline conditions, we considered what impacts the Project could have on the Sea. We found that the Project impacts were either beneficial (such as potential recovery of artifacts), less than-significant, significant but mitigable, or significant and unavoidable.

(a) No Impact On The Salton Sea

53. With respect to certain environmental issues at the Salton Sea, we found that the Project would likely have no impact. For example: (1) the effect of changes in selenium in the Salton Sea was determined to be less than significant on fish and birds; and (2) reduced drain flows caused by the Project were determined to have a less than significant effect on the cattail/bulrush vegetation in adjacent wetlands.

(b) Less than Significant Impacts On the Salton Sea

54. We also found that with respect to some environmental issues at the Sea, the Project's impact would be less than significant. For example: (1) the reduced load of COC concentrations in the Salton Sea water column and in Salton Sea sediments would be less than significant; (2) increased salinity would have a less than significant impact on invertebrate resources in the Salton Sea because brine shrimp and brine flies would increasingly replace pileworm communities; and (3) decreased water flow would create a less than significant impact on the odorous emissions from the Salton Sea area.

(c) Less Than Significant Impacts With Mitigation

55. Additionally, with implementation of specified mitigation efforts, we found that the Project would have a less

than significant impact on cultural resources. Also with the implementation of specific mitigation measures we found that a drop in the sea level would cause a less than significant impact on aesthetics and recreation facilities at the Salton Sea. Alternatively, if Approach 2 of the Draft HCP were to be implemented, these impacts would be avoided, as described below, by maintaining the Baseline conditions of the Salton Sea.

(d) Significant And Avoidable Impacts On The Salton Sea

56. Although the Sea is becoming more saline and decreasing in surface area and elevation under Baseline conditions, the Project is expected to accelerate and increase the severity of this process. As a result, some of the Project impacts at the Sea are significant and unavoidable (unless Approach 2 of the HCP is implemented.) Specifically, the Project would accelerate the inability of fishery populations to reproduce by 1, 5 and 11 years, for sargo, croaker and tilapia, respectively. While the Project is expected to impact these fish populations sooner than they otherwise would, the Sea's Baseline decline in elevation and increase in salinity means that even without the Project, these populations will be impacted, albeit 1, 5 and 11 years later than with the Project. The impact on fish is considered a significant unavoidable impact to recreation due to the acceleration of the impact on sportfishing; however, it is not considered to be a significant impact to fish as a biological resource due to the fact that the impacted fish species are non-native.

57. Another significant and unavoidable impact the Project may have is an increase in the amount of dust generated by the

exposed shoreline around the Sea. Because the Project would cause more of the Sea's shoreline to be exposed, this may result in indirect air quality impacts due to the potential for windblown dust from the exposed shoreline. Without the Project, under the Baseline conditions, approximately 15,000 acres are predicted to be exposed. Under the Project, about an additional 50,000 acres would be exposed. Because of the non-attainment status of the air basin for PM-10, the Draft EIR/EIS has concluded that this impact is an unavoidable significant impact.

58. The attached Exhibit "C" shows the predicted elevation, surface area, and salinity of the Salton Sea for the Baseline, and for the Proposed Project.

b. Impacts In The Lower Colorado River Area

59. As we did for the Salton Sea area, we also developed a Baseline to identify and assess potential Project impacts in the Lower Colorado River area ("LCR"). After determining the LCR Baseline, we found that the Project would have beneficial impacts, no impacts or less than significant impacts, in the LCR.

i. Beneficial Impacts On The LCR

60. The Project would have beneficial impacts on the LCR. For example, the Project would cause reduced diversions from the LCR at Imperial Dam, which could beneficially impact special-status fish species such as the razorback suckers. Reduced diversions would reduce the risk of canal entrainment (a situation where individual fish could be potentially diverted from the LCR into the canals of the IID WSA). A reduction in diversion should translate into a reduction in the risk of entrainment.

ii. No Impact On The LCR

61. With respect to certain environmental issues, we found that the Project would have no impact on the LCR. For example: (1) the Project would have no impact on recreation in the LCR; (2) cultural resources and Indian Trust assets in the LCR would not be impacted; (3) the Project would not impact traffic in the LCR; and (4) socioeconomics in the LCR would also not be impacted by the Project.

iii. Less Than Significant Impacts On The LCR

62. The Draft EIR/EIS notes that many of the Project's impacts on the LCR would be less than significant. For example, we determined that (1) the effects on groundwater, LCR flows, and LCR water quality would be less than significant; (2) although the reduced flow levels of the LCR could reduce the acreages of the honey mesquite bosque and the screwbean mesquite bosque communities, this would not be a significant impact; (3) with respect to air quality, fugitive dust from exposed riverbanks and de-watered backwaters would have a less than significant effect on the LCR area; and (4) the diversion of water at Parker Dam would have a less than significant impact on power generation capacities at Parker and Headgate Rock dams.

iv. Less Than Significant Impacts With Mitigation

63. Additionally, with implementation of the biological conservation measures included in the USFWS Biological Opinion, we found that the Project would have other less than significant impacts. For example, with the implementation of biological conservation measures, the reduced flow levels in the LCR which could cause a reduction in the acreage of cottonwood-willow would

be a less than significant impact. Also, the reduced acreage of aquatic habitat would not have a significant impact on special-status fish species.

c. Impacts In The IID Water Service Area

64. As with the Salton Sea and the LCR area, we developed a Baseline for the WSA. The WSA extends from the southern shore of the Salton Sea down to the Mexican border. (*See* Draft EIR/EIS Figure 1-3 attached as Exhibit "D.") We found that the Project would have beneficial, less than significant, and significant but mitigable, and significant and unavoidable impacts in the water service area.

i. Beneficial Impacts In The Water Service Area

65. The Draft EIR/EIS notes that the proposed Project would have several beneficial impacts in the WSA. For example, (1) the Project would cause a reduction in the amount of total suspended solids concentrations in IID surface drains discharging to the Alamo River; (2) reducing irrigation would cause a reduction of soil erosion in the WSA; and (3) with regard to socioeconomic impacts in the WSA, the Project could cause a net addition of 710 jobs and increase business output by $55 million if conservation is achieved using on-farm system improvements and/or water delivery system improvements.

66. In addition to these beneficial impacts, the Project's HCP, discussed below, would also create a number of beneficial impacts in the WSA. For example, the wetland creation element of the Draft HCP provides an additional high value water resource area. The creation of a managed marsh habitat would benefit wildlife associated with the drain habitat; under the Draft HCP,

IID would more than double the acreage of habitat for both special-status species associated with drain habitat and species without special status. Furthermore, the Draft HCP would benefit tamarisk scrub, wildlife associated with a desert habitat, the burrowing owl, and desert pupfish. The presence of marsh and tree habitats created by the Draft HCP would also have a beneficial impact on recreation. If HCP Approach 2 is implemented, the Project's use of conserved water would avoid impacts to Salton Sea water quality. Thus, both on its own and in conjunction with the Draft HCP, the Project would have many beneficial impacts in the WSA.

ii. Less Than Significant Impacts In The Water Service Area

67. The Project would also have a number of less than significant impacts in the WSA. For example: (1) with implementation of the HCP, the Project's water conservation measures would have a less than significant impact on special-status species, such as the mountain plover, sandhill cranes and white faced-ibis, which are associated with agricultural fields; (2) the Project would have a less than significant impact on burrowing owls; (3) Imperial Valley's groundwater would not be significantly affected; (4) reduced flows in drains would have a less than significant impact on vegetation and wildlife; (5) the installation of on-farm irrigation system measures would not have a significant effect on wildlife using the agricultural fields; (6) the Project's reduction of opportunity for sport-fishing in canals from system improvements would be less than significant;

and (7) the Project would cause no impact to Indian Trust assets in the WSA.

68. Additionally, in conjunction with the Draft HCP discussed below, several other impacts in the WSA would also be less than significant. For example, the potential increased salinity in the drains would not have a significant impact on vegetation and wildlife. Reduced flows in the drains would have a less than significant impact on desert pupfish. Thus, many of the Project impacts in the WSA would not be significant.

iii. Significant And Mitigable Impacts In The Water Service Area

69. With the implementation of specified mitigation measures some potentially significant impacts within the WSA were found to be less than significant. For example: 1) air quality impacts from both the construction of on-farm and water delivery system -- based conservation measures were found to be less than significant with mitigation; and 2) dust emissions from fallowed lands can also be reduced to less than significant with the use of specified mitigation measures.

iv. Significant And Unavoidable Impacts In The WSA

70. Our analysis found that the Project would have some significant impacts in the WSA. With the exception, however, of the increase in selenium concentrations in surface drains and in the Alamo River, most of the impacts would result only if fallowing were allowed as a conservation measure. For example, with respect to agricultural resources, one significant and unavoidable impact would be the reclassification of up to approximately 50,000 acres of prime farmland or farmland of

statewide importance if fallowing takes such land out of agricultural production for more than four years. If fallowing is utilized, the Project could also cause socioeconomic impacts, by causing a net loss of 1,400 jobs and a reduction in business output of $97.5 million.

d. Mitigation Measures And The HCP

71. While the above sections discuss the Baseline conditions and the potential Project impacts on the Salton Sea, the LCR and the IID WSA, this section provides the mitigation measures available to reduce or avoid potential Project impacts in those areas.

72. Table ES-1 included in the Draft EIR/EIS, indicates where mitigation measures have been identified to reduce impacts and whether the impacts are significant after incorporating the mitigation.

73. The Draft EIR/EIS thus concludes that, in most cases, the potential environmental impacts will be reduced to a level that is less than significant. However, the Draft EIR/EIS identifies the following significant impacts that cannot be avoided by mitigation measures:

- Increased selenium concentration in IID surface drain discharges to the Alamo River, in the Alamo River at the outlet to the Salton Sea, in IID surface drain discharges to the New River, and in IID surface drains discharging directly to the Salton Sea.

- The classification of Prime farmland or farmland of Statewide Importance if fallowing takes such land out of agricultural production for more than four years.
- Reduced sportfishing opportunities unless the Salton Sea mitigation approach described in the Draft HCP as Approach 2 is implemented, which would require IID to provide continued inflows to the Sea at a rate equal to projected inflows without implementation of the Project.
- Indirect air quality impacts due to the potential for windblown dust from exposed shoreline, as the Salton Sea level recedes due to reduced inflows.

e. HCP

74. The HCP is a comprehensive plan to mitigate impacts to certain species and their habitats as a result of the conservation program and IID's normal operation and maintenance of its water delivery and drainage system. It is also intended to support issuance of permits under the state and federal Endangered Species Acts to allow IID's conservation program and its operation and maintenance activities to result in the incidental take of federal and/or state listed species, certain other unlisted species, and their habitats. Under the Draft HCP, IID would commit to certain management actions that would avoid, minimize and mitigate the impacts of any incidental take of covered species and habitats.

75. IID prepared the Draft HCP (see Appendix C of the Draft EIR/EIS) as part of the Project to support its Incidental Take

Permit applications in conformance with § 10(a)(1)(B) of ESA and § 2081(b) of CESA. The Incidental Take Permits would allow IID to conduct otherwise lawful activities that incidentally take federal and/or state-listed and other specified unlisted species that are proposed for coverage in IID's Draft HCP. These activities are discussed in Section 2.2.6.4 and further defined in Appendix C.

76. Through the Draft HCP, IID is committing to certain management actions that would avoid, minimize, and mitigate the impacts of any take of proposed covered species that might result from covered activities, including aspects of IID's implementation of the IID/SDCWA Transfer Agreement, the QSA, and continuation of its routine water-related O&M activities. Operation and maintenance activities are included to ensure that IID obtains all ESA and CESA approvals required to continue operation of its irrigation and drainage system for the duration of the Proposed Project. Issuance of an Incidental Take Permit by USFWS constitutes a federal action that requires evaluation under NEPA.

77. This section summarizes the timing of Draft HCP implementation, the geographic extent of Draft HCP coverage, the duration for which the Draft HCP would be enforced, the species covered by the Draft HCP, and the Project activities covered by the Draft HCP. The full text of the Draft HCP is provided in Appendix C in the Draft EIR/EIS. The Draft EIR/EIS provides the environmental analysis required under NEPA and CEQA support approval of the HCP and issuance of ESA and CESA permits and

approvals for IID's water-related operations and the Proposed Project.

i. Timing Of Draft HCP Implementation

78. IID would commence compliance with the Draft HCP measures immediately upon issuance of the Incidental Take Permits by the USFWS and CDFG.

ii. Geographic Area Covered By The Draft HCP

79. IID conveys and delivers water diverted from the Colorado River at Imperial Dam to customers in the Imperial Valley in IID's WSA via the All American Canal. The Draft HCP area includes all lands comprising the approximately 500,000 acres of IID's WSA (including canal rights-of-way), the Salton Sea, lands owned by IID outside of its water service area that are currently submerged beneath the Salton Sea, and IID's rights-of-way along the AAC downstream from the point of diversion on the LCR, including the desilting basins at Imperial Dam. In addition, the Draft HCP covers any take of covered species that use the Salton Sea if the take results from IID's activities.

iii. Species Covered By The Habitat Conservation Plan

80. IID is seeking Incidental Take Permits that would authorize the take of 96 listed and unlisted species under ESA and CESA. Table 1.5-1 in the Draft EIR/EIS (and attached as Exhibit E) lists the common names of the species proposed for coverage by the Draft HCP. Further detail on the individual species and habitats used by the species are found in Section 1.5 of the Draft HCP (Appendix C in the Draft EIR/EIS).

iv. Duration Of The Draft HCP

81. The Incidental Take Permits would have a permit life of 75 years, which is commensurate with the duration of the Proposed Project. During that time, incidental take coverage for species currently unlisted would provide IID with regulatory assurance that no additional mitigation would be required by IID should a covered species become listed in the future. Further information on the duration of the Draft HCP and Incidental Take Permits can be found in Section 1.6 of the Draft HCP (Appendix C in the Draft EIR/EIS).

v. Activities Covered By The Draft HCP

82. As stated above, the Draft HCP and Incidental Take Permits would cover the activities necessary to implement the Project that would be undertaken by IID or farmers within the IID WSA. The Draft HCP and Incidental Take Permits also would cover ongoing O&M activities conducted by IID. The general activities covered by the Draft HCP include:

- Water conservation and water use activities, including irrigation and drainage by farmers, tenants, and landowners to whom IID delivers water;
- Water conservation activities undertaken by IID;
- Activities by IID in connection with the diversion, conveyance, and delivery of Colorado River water to users within IID's water service area; and

- Activities by IID in connection with the collection of irrigation or drainage waters within its service area and conveyance to the Salton Sea.

83. Further description of the activities covered by the Draft HCP is provided in Section 1.7 of the Draft HCP (Appendix C in the Draft EIR/EIS).

vi. Implementation Of The Draft HCP Conservation Strategies

84. IID would implement conservation strategies to avoid, minimize, and mitigate, to the maximum extent practicable, the impact of any take of proposed covered species. In coordination with USFWS and CDFG, IID has developed conservation strategies for the five main habitat types used by proposed covered species within the geographic area covered by the Draft HCP, including: 1) Salton Sea; 2) tamarisk scrub; 3) drain; 4) desert; and 5) agricultural habitats. In addition, specific strategies were developed for desert pupfish, burrowing owl, razorback sucker, and 25 other species. These strategies are summarized below and described in detail in the Draft HCP in Appendix C in the Draft EIR/EIS. Within each of the resource areas, the Draft HCP is evaluated as follows:

- Draft HCP (IID WSA): This category includes the conservation strategies in the IID water service area for tamarisk scrub, drain, desert, and agricultural habitats; and

- Draft HCP (Salton Sea Portion): This category includes two approaches to mitigate the potential take of piscivorous birds in the Salton Sea as follows:
  - Approach 1: Hatchery and Habitat Replacement
  - Approach 2: Use of Conserved Water as Mitigation

(a) Draft HCP Regarding The IID WSA

85. The habitat conservation strategies associated with the Draft HCP (IID WSA Portion) are listed below and described in detail in Appendix C of the Draft EIR/EIS.

- Tamarisk Scrub Habitat Conservation Strategy
- Drain Habitat Conservation Strategy
- Desert Habitat Conservation Strategy
- Agricultural Habitat Conservation Strategy
- Desert pupfish Habitat Conservation Strategy
- Burrowing Owl Habitat Conservation Strategy
- Razorback Sucker Conservation Strategy

(i) Approach To Other Species

86. Of the 96 species proposed for coverage by the Draft HCP, the USFWS and CDFG identified 25 species for which existing information on the ecology and distribution in the Draft HCP area is limited or that might not occur in the Draft HCP area. These species are listed in Table 3.9-1 of the Draft HCP attached as Exhibit "F." The approach to covering these species is to implement a research program to better understand the presence, distribution, and ecological requirements of these species in the Draft HCP area. Based on the results of the research program,

IID would implement measures to avoid, minimize, and mitigate the impacts of any take of these activities resulting from the covered activities. Further information on this conservation strategy can be found in Section 3.9 of the Draft HCP.

(b) Draft HCP Regarding The Salton Sea

87. The primary potential effects of the covered activities on proposed covered species associated with the Salton Sea relate to an increased rate of salinization and increased rate and magnitude of decline in the surface elevation. To address the earlier reduction in fish abundance expected from the acceleration of the salinization of the sea, IID and the resource agencies developed two possible approaches. In identifying potential mitigation approaches to address the earlier reduction in fish availability at the Salton Sea, IID recognized and considered the following:

- The salinity of the Salton Sea will continue to increase in the absence of the proposed water conservation and transfer project and reduce the suitability of the Salton Sea for fish-eating birds.
- It is unreasonable and impractical for the water conservation and transfer project to bear the burden of restoring the Salton Sea, which is deteriorating under Baseline conditions.
- The level of mitigation should be scaled to the impact attributable to the water conservation and transfer project

88. In accordance with these considerations, IID and the wildlife agencies have developed and are considering two approaches for minimizing and mitigating the impact of the anticipated take of piscivorous birds. IID has not identified a preferred approach for addressing piscivorous birds, but presents the two approaches, which are under consideration in the Draft HCP, as means to seek input on which approach, or combination of approaches, is most appropriate. Both approaches are evaluated in the Draft EIR/EIS (Approach 1 is evaluated programmatically and Approach 2 is evaluated at a project level of detail) and are described generally below. Other approaches that were considered but eliminated from consideration are described in the Draft HCP.

89. As described in Section 1.4.3 in Chapter 1 and Section 2.2.3.4, IID holds the rights to Colorado River water use in the Imperial Valley in trust for landowners within the IID WSA. The Salton Sea is an agricultural drainage repository that has no legal entitlement to Colorado River water. In order to implement a mitigation strategy which requires the provision of Colorado River water to the Sea for the benefit of the Sea, IID intends to require confirmation by state and federal authorities that such water use constitutes a reasonable and beneficial use in full compliance with the Law of the River and would not adversely affect IID's entitlement to Colorado River water.

(i) Draft HCP Salton Sea Approach 1: Hatchery And Habitat Replacement

90. Under the Draft HCP Salton Sea Approach 1: Hatchery and Habitat replacement, IID would implement a phased approach for maintaining fish to provide foraging opportunities for

piscivorous birds at the Salton Sea. In the first phase, IID would construct a hatchery to ensure continued availability of tilapia as forage base for piscivorous birds. It is expected that as salinity in the Salton Sea increases, tilapia reproduction would be affected before adult survival is threatened. IID would stock tilapia in the Salton Sea when CDFG determines that natural reproduction of tilapia has ceased in the Salton Sea based on annual young-of-year abundance surveys conducted by CDFG. IID would continue stocking tilapia in the Salton Sea for as long as they could continue to survive and grow or until the Salton Sea Restoration Project was funded and its implementation initiated, whichever occurs first. If the Salton Sea Restoration Project were initiated, that project could fund continued operation of the stocking program until the salinity level of the Salton Sea was low enough to allow fish to naturally reproduce.

91. The hatchery element would be intended to extend the period of time when fish would be present in the Salton Sea. Juvenile and adult tilapia are capable of withstanding high salinity levels; tilapia have been collected at a salinity as high as 120 parts per trillion (ppt). However, the ability of tilapia to reproduce is more sensitive to salinity. At salinity above 60 ppt, tilapia reproduction has been predicted to decline. The hatchery under this approach would be used to replace reproduction of tilapia lost in the Sea because of high salinity. Because juvenile and adult tilapia can tolerate higher salinity levels, the hatchery would extend the time that the Sea supports fish. This extension would have the dual benefit of continuing

to support fish as prey for fish-eating birds and providing additional time for implementation of a long-term restoration project. Hatchery operations likely would be located near the Salton Sea on land not currently under cultivation. The acreage could vary depending on the level of production needed to augment natural reproduction. For the purpose of planning, it is anticipated that up to 50 acres would be needed to accommodate the hatchery operation. The facility would be designed to ensure that any discharge hatchery effluent to the Salton Sea would be adequately treated to avoid adverse water quality impacts. Water requirements would vary depending on the volume of production.

92. The second component of the approach would be initiated if a long-term Salton Sea Restoration Project were not implemented before the Sea could no longer support fish. Under this component of the approach, IID would create ponds at the Salton Sea that would support fish and provide a forage base for piscivorous birds. The purpose of these ponds would be to maintain some foraging opportunities at the Salton Sea for piscivorous birds for the remainder of the permit term. The objective of creating ponds would be to maintain a level of foraging habitat that would help ensure that piscivorous birds would continue to be represented at the Salton Sea. IID would stock the ponds with tilapia (from continued hatchery operations) and manage the ponds to provide foraging opportunities for covered piscivorous bird species for the remainder of the 75-year permit term. If the Salton Sea Restoration Project were implemented at any time during the term of the permit, IID would contribute the remaining funding committed to the creation and

operation of a hatchery and for creation and management of ponds to the Salton Sea Restoration Project.

93. The timing of hatchery operation and possible pond construction would vary depending on the amount of water conserved. Current salinity projections suggest that hatchery operations to augment fish reproduction could be necessary as early as 2012 under conservation for the proposed project. Pond construction, if needed, would take place sometime after 2012, depending on how long fish survive in the Salton Sea. Tilapia have been recorded at a salinity of 120 ppt, although the ultimate salinity tolerance of tilapia at the Salton Sea could be less. If tilapia were to persist in the Salton Sea until the salinity reaches 120 ppt, salinity projections suggest that pond construction under the proposed project would not take place until about 2052. The precise timing of the construction would not substantially influence the impact of implementing this component of the approach.

94. In addition to the measures addressing impacts to piscivorous birds, IID would implement measures to address:

- Potential impacts to pupfish resulting from the acceleration of salinization of the Sea.
- Potential impacts to the suitability of nesting islands for gull-billed terns and black skimmers that could result from an accelerated decline in the water surface elevation.

- Potential impacts to proposed covered species associated with tamarisk scrub that could result from an accelerated decline in the water surface elevation.

95. The measures to address these impacts that IID would implement are as follows: For desert pupfish, IID would ensure that connectivity is maintained among pupfish drains in the event that the Salton Sea becomes unsuitable for pupfish. For potential impacts to nesting island for gull-billed terns and black skimmers, IID would construct nesting islands suitable for these species. To address potential impacts to proposed covered species associated with tamarisk scrub, IID would monitor areas of tamarisk scrub adjacent to the Salton Sea and create or acquire, and protect native tree habitat if monitoring shows a net loss in the amount of tamarisk scrub. An additional description of these measures is contained in Section 3.3 of the Draft HCP (Appendix C of the EIR/EIS).

(ii) Approach 2: Use Of Conserved Water As Mitigation

96. Approach 1 outlines an approach to mitigate the potential take of piscivorous birds using hatchery production and creating replacement habitat. In lieu of this approach, IID could reduce or avoid Project effects on salinity and mitigate impacts on piscivorous birds by providing additional water inflow to the Salton Sea. This approach, which could be used in combination with other approaches, would avoid or mitigate Project-related reductions in flow to the Sea. This mitigation strategy would maintain salinity and elevation changes on the

Baseline trajectory, thereby avoiding salinity increases and elevation decreases resulting from the Project.

97. Under this approach, water for mitigation purposes could be provided from additional conservation, including on-farm irrigation system improvements, water delivery system improvements, and/or fallowing, or from any other water source, or any combination of these measures.

98. For example, IID could fallow or otherwise conserve an amount of water equivalent to the Project-related inflow reduction and allow the conserved water to flow to the Sea. (This amount would be in addition to the amount of water conserved for transfer.) If all water conservation were achieved through fallowing, approximately 50,000 acres of fallowed land would be required to generate the 300,000 acre-feet necessary for transfer, and an additional approximately 25,000 acres of fallowing would be required to generate the water necessary to offset changes in inflow to the Sea. The fallowing of an additional approximately 9,800 acres would be required to provide water necessary for the compliance with the IOP.

vii. Other Habitat Conservation Plan Commitments

99. As part of the Draft HCP, IID would implement a monitoring and adaptive management program to assess the effectiveness of the HCP conservation measures and guide management decisions to meet the HCP's overall conservation goals. Appendix C to the Draft EIR/EIS contains a detailed description of the monitoring and compliance measures that would be implemented under the HCP. Funding assurances are also included to guarantee that the HCP conservation measures are

successfully implemented. The funding assurances also address changed circumstances that could arise during the life of the Incidental Take Permits.

H. Project Alternatives

100. To assess ways in which the impacts of the Project could be reduced, alternatives to the Project are analyzed in the Draft EIR/EIS. The alternatives incorporate variations in the total amount of water transferred and the conservation measures used to generate the conserved water. Alternative 1 is the No Project Alternative that is required to be evaluated by both CEQA and NEPA. Alternative 2 involves the transfer of only 130,000 acre-feet per year to the SDCWA using on-farm conservation measures as the exclusive conservation approach. Alternative 3 involves the transfer of only 230,000 acre-feet per year to the SDCWA, CVWD and/or MWD utilizing all types of conservation measures, including fallowing. Finally, Alternative 4 involves the transfer of up to 300,000 acre-feet using fallowing as the exclusive conservation measure. IID decided early on in the scoping process for the Draft EIR/EIS, in response to public comments, to analyze fallowing as a conservation measure. Fallowing as the exclusive method of conservation was isolated as a separate alternative in order to identify the environmental benefits and impacts of this conservation measure.

101. A comparison of the impacts of results of the above Project Alternatives and the Proposed Project is part of the Draft EIR/EIS.

I. Other Related Environmental Processes

102. The Draft EIR/EIS is closely related to the following pending environmental processes:

- Draft QSA PEIR. As described above, one implementation scenario for the Project assumes that the QSA will be executed and implemented. The QSA incorporates a series of proposed agreements that, collectively, constitute a consensual reallocation of Colorado River water. In order to assess the environmental effects of all of the QSA components, IID, MWD, CVWD and SDCWA, as co-lead agencies, have prepared, under CEQA, a Draft Program EIR for the Implementation of the Colorado River Quantification Settlement Agreement (Draft QSA PEIR), a true and accurate copy of which is attached to IID's exhibits as IID Exhibit 56. The Draft QSA PEIR is a programmatic assessment of the environmental effects of implementation of the QSA by these California water agencies. The Draft QSA PEIR was made available for public review and comment on January 30, 2002. The Draft EIR/EIS incorporates the analysis in the QSA PEIR to address the cumulative impacts of the Project and other QSA components.

IA EIS. The Secretary of the Interior must agree to take certain actions to implement the Colorado River water reallocation provided for under the QSA, by execution of an Implementation Agreement. The Bureau has prepared a Draft EIR for the Implementation Agreement (IA), Inadvertent Overrun Payback Policy (IOP), and related federal actions (Draft IA EIS), which was made available for public review on January 30, 2002. The Draft IA EIS assesses the federal actions involved in implementation of the IA, adoption of the IOP, and implementation of certain biological conservation measures developed to avoid potential impacts to federally listed fish and wildlife species and their habitat along the LCR as a result of the water transfers and the Interim Surplus Guidelines adopted by the Bureau to facilitate the California Plan.

103. The Project is related to the projects and actions described in the QSA PEIR and the IA EIS, as well as certain other prior, pending and future assessments. Table 1-2 in the Draft EIR/EIS, attached as Exhibit G, further describes the relationship between the Project and related environmental assessments.

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J. Conclusion

104. The Draft EIR/EIS process confirmed that under Baseline conditions the salinity of the Salton Sea is increasing, and the elevation and surface area of the Sea is declining. Implementation of the Project will accelerate the timing of impacts resulting from these changing Sea conditions and in some cases will increase the severity of the impact. The ability to fully mitigate for impacts to the Salton Sea is dependent on the selection of an HCP Approach. HCP Approach 1: Hatchery and Habitat Restoration would mitigate for impacts to piscivorous birds resulting from the elimination of the fishery population of the Salton Sea. However, recreation impacts and air quality impacts would remain significant and unavoidable. With implementation of HCP Approach 2: Use of conserved water for mitigation, impacts to the Salton Sea (including impacts to piscivorous birds, recreation impacts and air quality impacts) would be avoided and salinity, elevation and surface area conditions would be maintained at Baseline levels. Water quality impacts to the drains are not affected by the selection of an HCP Approach and would remain significant and unavoidable regardless of which Approach is selected.

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We declare under penalty of perjury under the laws of the state of California that the foregoing is true and correct.

Executed on April 9, 2002, at Englewood, Colorado.

JOHN R. ECKHARDT

Executed on April _____, 2002, at Oakland, California.

LAURA HARNISH

We declare under penalty of perjury under the laws of the state of California that the foregoing is true and correct.

Executed on April _____, 2002, at Englewood, Colorado.

JOHN R. ECKHARDT

Executed on April 9, 2002, at Oakland, California.

LAURA HARNISH

CURRICULUM VITAE

JOHN R. ECKHARDT

EDUCATION

B.S. Civil Engineering, Magna cum Laude, Colorado State University, June 1970

M.S. Civil Engineering, Ground Water Hydrology and Hydraulics, June 1976
Colorado State University

Ph.D. Civil Engineering, Water Resources Planning and Management, May 1991
Colorado State University

MANAGEMENT AND SPECIAL TRAINING COURSES

Project Management, Mediation/Arbitration, and Business Communications - University of Denver
Water Systems Management & Operations - U.S. Bureau of Reclamation
Computer Systems and Personnel Management - Digital Equipment Corporation
Irrigation Management Scheduling - University of Nebraska
Pump Efficiency/Management - Colorado State University

MEMBERSHIPS AND AFFILIATIONS

Professional Engineer – Colorado
Fellow - American Society of Civil Engineers
Member – American Water Resources Association
Life Member - United States Committee on Irrigation and Drainage
Member - American Water Works Association
Faculty Affiliate - Colorado State University
Past President - Salton Sea Technical Advisory Committee
Past Board Member - City of Loveland Water Board
Past Board Member - Longs Peak Federal Credit Union

HONORS

Listed in Who's Who in the West
Listed in Who's Who of Emerging Leaders in America
Listed in International Who's Who of Professional Management
ASCE and ASTM Outstanding Civil Engineer

HONOR SOCIETIES

Kappa Mu Epsilon - Mathematics Honorary
Chi Epsilon - Civil Engineering Honorary
Sigma Tau - Engineering Honor Society
Phi Kappa Phi - Natural Science Honorary

SUMMARY OF WORK EXPERIENCE

June 2001 – Present: CH2M Hill

Vice President
Responsible for water resources programs in the Southwest United States and serves as a technical expert in water resources. Program manager for the IID/SDCWA water conservation and transfer joint EIR/EIS and the related hydrologic modeling effort for the on-farm and system conservation program.

May 1998 – June 2001: Imperial Irrigation District

Program Manager
Direct the IID/SDCWA water conservation and transfer program and joint EIR/EIS. Lead modeling efforts for EIR/EIS, water operations, and Colorado River. Provide leadership and expertise for the safe drinking water initiative. Represent IID in negotiations for intrastate water transfers and Colorado River operations with other basin states.

Assistant General Manager, Water
Supervise, coordinate and direct the activities of over 500 staff in the following sections: Water Operations, Maintenance, Drainage, Design Engineering, Water Resources Engineering, Construction, Project Management, Facilities and Mechanical Shops. Represent IID in negotiations for water transfers.

November 1995 - May 1998: Private Consulting

Executive Consultant, Imperial Irrigation District
Responsible for executive consulting to the Manager of the Water Department for engineering and technical issues. Work included water rates evaluation; District-County sharing of GIS resources; implementation of water system automation and SCADA; implementation and management of a Water Department Strategic Information System; and development of a system-wide reservoir operations model.

Expert - Irrigation District Operations and Maintenance - Nepal
Developed and implemented model operations and maintenance manuals for irrigation projects being transferred from the Government of Nepal to local farm districts.

Task Leader. - Colorado River Decision Support System (CRDSS) – State of Colorado
Responsible for the development, calibration, and implementation of water rights planning models for the Colorado River mainstem, and tributaries. These models are key components of the CRDSS I developed and promoted to the Colorado State Legislature. Work included supervising and directing engineers to set up data files, develop base flows, calibrate models, and link basin models.

Expert - Water Rights Engineering - Peru
Advised the Peruvian Presidents' committee concerning a new water rights system. Presented training seminar to review American water rights systems and water administration.

November 1993 - May 1995: Colorado State University

Associate Director, Colorado Water Resources Research Institute
Responsible for CSU water expertise technology transfer and research initiation. Direct university-wide water excellence initiative through the development of an e-mail water information system and the organization of special discussion seminars. Responsibilities included computer models inventory and assessment of data needs for the South Platte River Basin.

Special Appointment, Department of Civil Engineering
Responsible for teaching advanced courses in water resources and hydropower. Developed a multi-model framework for integrated watershed management; an intelligent based ground water pumping decision system; Platte River integrated ground water, surface water, water quality and water rights model; and an integrated water operations-accounting information system.

Consultant, Imperial Irrigation District
Completed special water resources projects for the Manager of the Water Department. Work included GIS-GPS evaluation for operations; formulation of water system automation and SCADA; concept development of a Water Department Strategic Information System; and development of a system-wide reservoir operations model.

November 1992 - November 1993: Imperial Irrigation District, Imperial, California

Assistant Manager, Water Department
Responsible for directing and supervising engineering and technical services within the Water Department to support the operation and maintenance activities of power and irrigation, including the planning, design and construction of a district-wide water conservation program and treated water project. Coordinated and directed the work of four units: Engineering, Water Resources, Project Management, and Computer Services. Additional work included the creation and direction of a regional drinking water task force, master planning for regional storm water district and the development of a drinking water task force.

July 1987 - November 1992: State of Colorado, Division of Water Resources, Office of the State Engineer, Denver, Colorado

Assistant State Engineer, July 1990 - November 1992:
Responsible for directing and supervising the administration of statutes, court decrees, and policies of the State Engineer. Coordinated and directed the work of seven branches with the following responsibilities statewide; Engineering, geologic, and water management studies; Conjunctive ground water/surface water computer simulations; Interstate compact administration and water rights litigation; Public safety of dams and reservoirs; Water quality issues related to water rights administration; Hydrologic and water use measurements and records related to water supply and diversion; and Computer support to all branches of the Division of Water Resources. Additional duties included budget and program development and presentation to various State Legislative committees. Responsible for the concept development and direction of a feasibility study for a state-wide computer based Colorado River Decision Support System.

Assistant Division Engineer, July 1987 - July 1990:
Responsible for special projects to support the administration of water rights within the South Platte River basin. In charge of developing river - water rights simulation model, and accounting and scheduling systems used by the Water Commissioners for river operations. Work included the concept development and prototype implementation of a state-of the-art computer based Decision Support System for the South Platte River Basin.

May 1976 - July 1987: Northern Colorado Water Conservancy District, Loveland, Colorado

Project Engineer/Project Manager, June 1977 - July 1987:
Responsible for planning, feasibility studies, environmental studies, EIS, preliminary design, ROW acquisition, final design, and construction of a 48,000 horsepower 600 cfs pumping plant, reservoir and 23 mile 9-foot diameter pipeline. Duties included direction and administration of eight consulting firms, two major construction contracts, and five procurement contracts. Performed factory inspection and acceptance of all major equipment. Additional work included the specification of a state-of- the-art supervisory control and data acquisition system and a hydrologic data collection network and forecasting system. Developed closed loop control algorithms and operations computer models for unmanned, optimal plant operations.

Department Head, Engineering and Computer Service, June 1980 - July 1987:
Supervised engineers and programmers to provide engineering and computer support required by other departments within the Water District. Worked with regional committees, city councils, agricultural groups and special boards. Provided water rights advise and support to Board of Directors.

Expert - Water Resources Engineering - Japan
Project manager in charge of design, factory prototype testing and factory acceptance of four150 cfs pumps and four 12,000 Hp motors from Hatachi.

Senior Water Resources Engineer, June 1978 - June 1980:
Responsible for the planning and development of special projects. Duties included developing a real time snow melt-runoff forecasting system and a reservoir and distribution system simulation/optimization operations model. Developed hydropower models for evaluation of potential sites on the Colorado-Big Thompson Project. Designed and implemented reservoir operations models using Dynamic Programming to develop optimal reservoir operations rule curves. Work included the development and operations of Colorado River Models (CORSIM AND CRSS).

Ditch Rider, Maintenance Man, Office Dispatcher and Water Resources Engineer, May 1976 - June 1978:
Performed the following duties:

1) Operate canal systems and perform canal maintenance
2) Administer ROW crossing and meter licenses.
3) Design and inspect new construction.
4) Complete water rate and hydrologic studies.
5) Assess water requirements for lands within District.
6) Develop computerized Allotment Contract System, Right-of Way System, Water Accounting. System, and Water Operations System.

September 1974 - May 1976: Colorado State University/Colorado Division Of Water Resources

Water Resources Engineer
Completed a Master of Science Degree in Civil Engineering with a specialty in ground water hydrology/hydraulics. Developed a finite difference ground water surface water model for the Colorado Division of Water Resources to evaluate requests for ground water plans of augmentation and interstate ground water issues. Additional work included the development of ground water recharge and stream depletion models using the Glover methodology.

May 1971 - September 1974: Nelson, Haley, Patterson and Quirk, Greeley, Colorado

Project Engineer
Supervised engineers to complete the design and construction of bridges and roads for Weld County, Colorado ($1,200,000 construction costs). Work included preliminary surveys, design, and administration of eight contractors.

Design Engineer

Major design projects:
City of Aurora, Colorado: Storm sewer collection system
City of Erie, Colorado: Water Treatment plant, Treated water storage tank, and water mains
City of Berthoud, Colorado: Sewage treatment plant
Weld County, Colorado: Five concrete bridges, roads and related structures

Resident Engineer
Responsible for field design, inspection, survey layout and location, plan interpretation, and materials testing. Major Projects:

City of Telluride, Colorado:
Water mains, service lines, streets, curbs, gutters and sidewalks
City of Erie, Colorado:
Water treatment plant, treated water storage tank, water mains, and meters
City of Greeley, Colorado and surrounding areas:
Subdivision construction; water lines, sewer lines, curbs, gutters, sidewalks and streets
City of Berthoud, Colorado:
Sewage treatment plant
City of Fort Lupton, Colorado:
Water mains and treated water storage tank
Atomic Energy Commission at Rocky Flats, Colorado:
Zoned earth fill dam and reservoir
American Oil Company:
Purchase 30 miles of ROW and settle damages for oil transmission line

June 1970 - May 1971: Standard Oil Company of California, Civil and Architectural Division

Design Engineer
Engineering Department, San Francisco, California
Performed structural analysis of super tankers and off-shore platforms using finite element methods developed by NASA for the space program.

TEACHING EXPERIENCE

November 1993 - May 1995: Colorado State University

Graduate Courses in Advanced Water Resources Engineering
Water Rights - Engineering and Legal Aspects
Colorado Water Law - History and Theory
Decision Support Systems for Water Rights Administration

Decision Support Systems for Reservoir Operations
SCADA and real-time control for open channel operations

PAPERS PRESENTED

- Voluntary On-Farm Water Conservation and Transfer Decision Support System"
  AWRA/UCOWR Summer Specialty Conference, Decision Support Systems for Water Resources Management, Snowbird, Utah, June, 2001.

- "Modeling On-Farm Water Conservation"
  Bay-Delta Modeling Forum, Pacific Grove, CA. February 28, 2001

- "IID-SDCWA Water Transfer"
  ASCE/APWA El Centro Chapter, El Centro, CA. January 31, 2001

- "Agriculture and Water Transfers"
  Imperial Grain Growers, Inc. 75th Annual Meeting, Brawley, CA. January 25, 2001

- "Future Vision of Water Institutions in 2025"
  San Diego County Council of Water Utilities, Poway, CA. January 16, 2001

- "Dynamics of the Imperial Valley Situation – Alfalfa or Water"
  2000 National Alfalfa Symposium, Las Vegas, Nevada, December 11, 2000

- "Water Religion – Colorado River Transfer"
  ASCE San Diego Chapter, San Diego, CA November 28, 2000

- "Imperial Irrigation District San Diego Water Transfer"
  Urban Water Institute, San Diego, CA, August 2000.

- "Vision of Water Institutions in 2025"
  Second World Water Forum, The Hague, Netherlands, March 2000.

- " A Colorado River Water Transfer"
  Colorado River Stakeholder Symposium, Keystone, CO, September 1999.

- "Colorado Water Resources Research Institute"
  Colorado Water Congress, Breckenridge, CO, August 1994.

- "Reservoir Operations Under the Appropriation Doctrine"
  ASCE Fourth Water Resources Operations Management Work Shop, Mobile, AL, Mar. 1994.

- "A View of the Colorado River From Two Districts: NCWCD and IID'
  Colorado ASCE Meeting at Colorado State University, Fort Collins, CO, Feb. 24, 1994

- "Decision Support For Water Rights Administration"
  CADSWES Training Video, Boulder CO, Nov. 18, 1992

- "Colorado Water Rights Administration: Legal and Technical Aspects"
  University of Colorado Seminar Series, Boulder, CO, April 10, 1992

- "DSS for Water Rights Administration: Background and Problems"
  University of Colorado Engineering Seminar Series, Boulder, CO, Feb. 14, 1992

- "The Colorado River: A River Diverted Never More?"
  ASCE Meeting at Colorado State University, Fort Collins, CO, Feb. 3, 1992

- "Tools for Water Administration, Where We Have Been and Where We Are Going"
  Colorado Water Congress, Denver, CO, Jan. 20, 1992

- "Conjunctive Ground Water - Surface Water Use"
  Central Plains Irrigation Short Course at North Platte, Nebraska, Feb., 1991

- "River Administration Today"
  Colorado Water Congress Convention, Vail, CO, Jan. 17, 1991

- "South Platte River Water Rights Decision Support"
  Colorado Water Congress Convention, Vail, CO, Jan. 17, 1991

- "The Office of the State Engineers"
  Colorado Water Congress Convention, Denver, CO, Jan. 20, 1990

- "The Windy Gap SCADA System"
  ASCE Spring Convention, Denver, CO, May 3, 1985

- "Windy Gap Project Streamflow Forecasting"
  Western Snow Conference, Boulder, CO, April 16-18, 1985

- "The Windy Gap Project"
  Four States Irrigation Council, Colorado Springs, CO, Jan. 9, 1985

PUBLICATIONS

Eckhardt, J. R., Miller, D., Keller, A., Baldo, M. and Hill, T., "Voluntary On-Farm Water Conservation and Transfer Decision Support System," Proceedings of AWRA/UCOWR Summer Specialty Conference, Decision Support Systems for Water Resources Management, Snowbird, Utah, June, 2001.

Eckhardt, J. R., " A Colorado River Water Transfer," Proceedings of the First Colorado River Stakeholder Symposium, Keystone, Colorado, September, 1999.

Eckhardt, J. R., Grigg, N. S., and Danielson, J. A., "Reservoir Operations Under the Appropriation Doctrine," Proceedings of the ASCE fourth Water Resources Operations Management Workshop, Mobile, Alabama, March, 1992.

Eckhardt, J.R., "River Administration Today," Proceedings of Colorado Water Congress Thirty - Third Annual Convention, Invited Speaker, Northglenn, Colorado, January 1991.

Eckhardt, J. R., "The Windy Gap Project Supervisory Control and Data Acquisition System, Journal of Water Resources Planning and Management, ASCE, Vol. 112, No. 3, July 1986, pp. 336-381, presented 1985, ASCE Spring Convention, Denver, Colorado, May, 1985.

Eckhardt, J. R., "Real-Time Reservoir Operation Decision Support Under the Appropriation Doctrine," Ph.D. Dissertation, CWRRI Technical Report No. 57, Colorado State University, Fort Collins, Colorado, May 1991.

Eckhardt, J. R., and Leaf, C. F., "Computerized Streamflow Forecasting Model for Windy Gap Project, Colorado," Proceedings of the conference on Emergency Planning, San Diego, California, January 1985.

Eckhardt, J. R., "Colorado Water Rights Administration: Legal and Technical Aspects," Proceedings of Boulder Water Resources and Environmental Engineering Seminar Series, Invited Speaker, Boulder, Colorado, April 1992.

Eckhardt, J. R., "Simultaneous Solution for Distribution of Head in a Two Aquifer System" M.S. Thesis Colorado State University Fort Collins, Colorado, June 1970.

Eckhardt, J. R., and Leaf, C. F., "Satellite Data Input to Windy Gap Computerized Streamflow Forecasting Model," Proceedings of the International Workshop on Hydrology Applications of Space Technology: Input to Hydrological Models and Geographic Information Systems, Cocoa Beach, Florida, August 1985.

Eckhardt, J., Llafet, G.l, and Altenhofen, J., "Saving $ with Improved Irrigation Management," A cooperative publication of the Northern and Central Colorado Water Conservancy Districts 1978.

Eckhardt, J. and Ward, T., "Analysis of Potential Downstream Effects of a Diversion Reservoir on the Colorado River Near Granby, Colorado," Proceedings of a Symposium on Aquatic Resources Management of the Colorado River Eco System, Las Vegas, Nevada, November, 1981.

Numerical Modeling

- Developed conjunctive ground/surface water model for the State of Colorado Division of Water Resources to evaluate requests for plans for augmentation (WATSHED).
- Developed modules and implemented a ground/surface water - water rights model to daily administer well stream depletion according to the prior appropriation system (SAMSON).
- Developed and implemented Colorado River models for feasibility of water diversion projects (CORSIM and CRSS).
- Developed modules and implemented snowmelt runoff forecasting model (Leaf Model).
- Developed water operations model for water accounting and ditch rider run sheets (Spread Sheet Model).
- Developed modules and implemented a linked node system model to simulate operations based on forecasted inflows and demands on system (MODSIM and HEC5).
- Developed optimal reservoir model of Colorado Big Thompson using Dynamic Programming to develop optimal rule curves for reservoir operations.
- Developed ground water recharge model to determine recharge amounts and timing to aquifer and river using Glover Methodology.
- Developed Upper South Platte operations model to allow data input and sharing by large water users in order to maximize cooperative allocation and use of the water supply (Spread Sheet Model)
- Provided leadership for the development and implementation of the water rights simulation model STATEMOD.
- Developed small hydropower models for evaluation of potential sites on the Colorado-Big Thompson Water Project.
- Developed decision support system (Imperial Irrigation Decision Support System – IIDSS) concept and implementation for delivery, drainage and on-farm water quantity and quality analysis.

Laura R Harnish

Education

M.L.A., Environmental Planning, University of California at Berkeley
B.A., Environmental Studies, University of California at Santa Cruz

Distinguishing Qualifications

- More than 15 years experience preparing California Environmental Quality Act (CEQA) documents
- Knowledge of National Environmental Policy Act (NEPA) requirements and joint CEQA/NEPA documents
- Prepared several mitigated negative declarations for water resources projects
- Comprehensive background in water resources issues including water quality, water treatment, water supply alternatives analysis, recreation and socio-economic issues.

Experience

EIR/EIS – Imperial Irrigation District Water Conservation and Transfer Project and HCP. Currently managing extremely complex and controversial EIR/EIS for water transfer project that is required to assist California in reducing their use of Colorado River water. Major EIR/EIS issues addressed in the document include impacts to the Salton Sea which could result from the transfer including biological, water quality, air quality, aesthetics and recreation impacts. Socioeconomic impacts to the agricultural and surrounding communities are also addressed.

Revised EIR– Main Intake Canal Lining Project, Tulare Irrigation District. Original EIR had been subject of lawsuit and deemed "inadequate" in court. Managed preparation of revised EIR, which required project revisions, and conducted the NEPA level alternatives analysis to satisfy judge that all alternatives had been considered in depth before rejected. Revised FEIR deemed adequate in court.

CalFed Bay-Delta Ecosystem Restoration and Management Plan, California. Contributed to the environmental impact statement/environmental impact report (EIR/EIS) under way by preparing technical reports on the potential impacts to recreation and social well being. CalFed is a multi-agency effort to repair the Bay-Delta system, which provides about two-thirds of the water consumed in the state of California. Seventeen alternatives including ecosystem restoration, water quality, water use efficiency, levee repair, and various water supply and conveyance components were evaluated in the EIR/EIS.

Project Manager, Saltwater Firefighting System EIR, Berkeley, California . Managed the preparation of an EIR for the City of Berkeley's proposed Saltwater Fire Fighting System (SFFS). The SFFS includes about 6 miles of pipeline, a 20,000-gpm pump station, and a saltwater intake in the Berkeley Marina. The major issues in the EIR included traffic during construction and the resulting impact to merchants along the pipeline corridor, and impacts associated with the delivery of saltwater to terrestrial and freshwater aquatic habitats.

Project Manager, Klamath River Project Operation Plan EIS. Managed the preparation of an EIS for the Klamath River Project Operation Plan for the Bureau of Reclamation (project cancelled). The project was to include reoperation of Upper Klamath Lake to provide higher instream flows downstream of the lake to fulfill the federal government's tribal trust obligations to four native American tribes depending on the Klamath River. The major impact resulting from this project would be decreased flows to agricultural lands depending on water from Upper Klamath Lake.

Project Manager, Mitigated Negative Declaration for Stream Restoration Project, Santa Rosa California. Managed and completed a mitigated negative declaration for a stream restoration project on Santa Rosa Creek. The restoration project was developed in part to respond to major erosion that had occurred during high flow periods. The mitigated negative declaration included an expanded initial study, which included detailed analysis of hydrologic, wetland, revegetation, and fisheries information. The project also included working with the USACE to obtain a nationwide permit for impacts to wetlands.

Project Planner, Stony Creek Water Resources Management Plan, California. Prepared planning documentation for the Water Use Management Plan for a tributary to the Sacramento River. The plan was developed with input from a technical team and task force composed of 33 individuals representing 22 agencies (federal, state, and county), irrigation districts, and businesses. Major issues involved salmon restoration, gravel mining, bank erosion, flooding, irrigation diversions, riparian habitat enhancement, and public trust doctrine.

Project Manager, Mitigated negative declaration for wastewater treatment plant improvements at the Santa Rosa Subregional Water Reclamation Laguna Facility. The improvements included converting the disinfection process from the use of chlorine to ultra violet disinfection. An expanded initial study was prepared and included detailed analysis of the water quality improvements anticipated and of the construction impacts.

Project Planner, Salinas River Basin Management Plan and EIS/EIR, Monterey County Water Resources Agency (MCWRA). MCWRA developed a Basin Management Plan to solve serious groundwater overdraft and saltwater intrusion problems in the Salinas River Basin.

Project Manager, Santa Cruz County Integrated Waste Management Facility EIR, Santa Cruz County. This project included evaluation of a multi-phased, multi-site program including a composting facility and a materials recovery facility. Several alternative sites were evaluated. The major issues included impacts to wetlands, odor generation, and traffic.

Project Manager, Sanitary Survey - Hetch Hetchy Watershed, City of San Francisco. The Hetch Hetchy water supply system includes six reservoirs and the watershed is approximately 750 square miles, comprised of lands owned by several federal and local agencies and private landowners. Also completed sanitary surveys of water supply reservoirs for the cities of Napa and St. Helena.

Project Planner, East Bay Municipal Utility District (EBMUD) Mokelumne Aquifer Recharge and Storage (MARS). Worked with the East Bay Municipal Utility District (EBMUD) to evaluate socioeconomic and environmental impacts of several groundwater conjunctive use alternatives under consideration to meet projected water demand for the EBMUD service area. The purpose of the conjunctive use project is to bank water from the Mokelumne River during high winter flows in the overdrafted San Joaquin basin. Water would be withdrawn during dry years for use in the EBMUD service area.

Project Planner for the EBMUD Geographical Information System (GIS) Implementation Study. The purpose of the study was to design an appropriate GIS for use in the development of the Mokelumne Aquifer Recharge and Storage Project. As part of the implementation study, criteria for facility siting are being developed so that data required for the project can be identified and collected. The study also involves interviewing staff, identifying sources of data, and recommending an appropriate GIS system configuration and internal organizational and training strategy.

Project Manager, Permitting for Class II Keller Canyon landfill in Contra Costa County, Browning Ferris Industries. This effort began in 1988 with the preparation of the comprehensive project description as the initial application to the County. Subsequent work required extensive coordination between the engineering/design team for the landfill and the consultant preparing the draft EIR and the response to comments. Permits required included Land Use Permit, Authority to Construct (BAAQMD), Streambed Alteration Agreement (CDFG), and 404 for impacts to wetlands (COE).

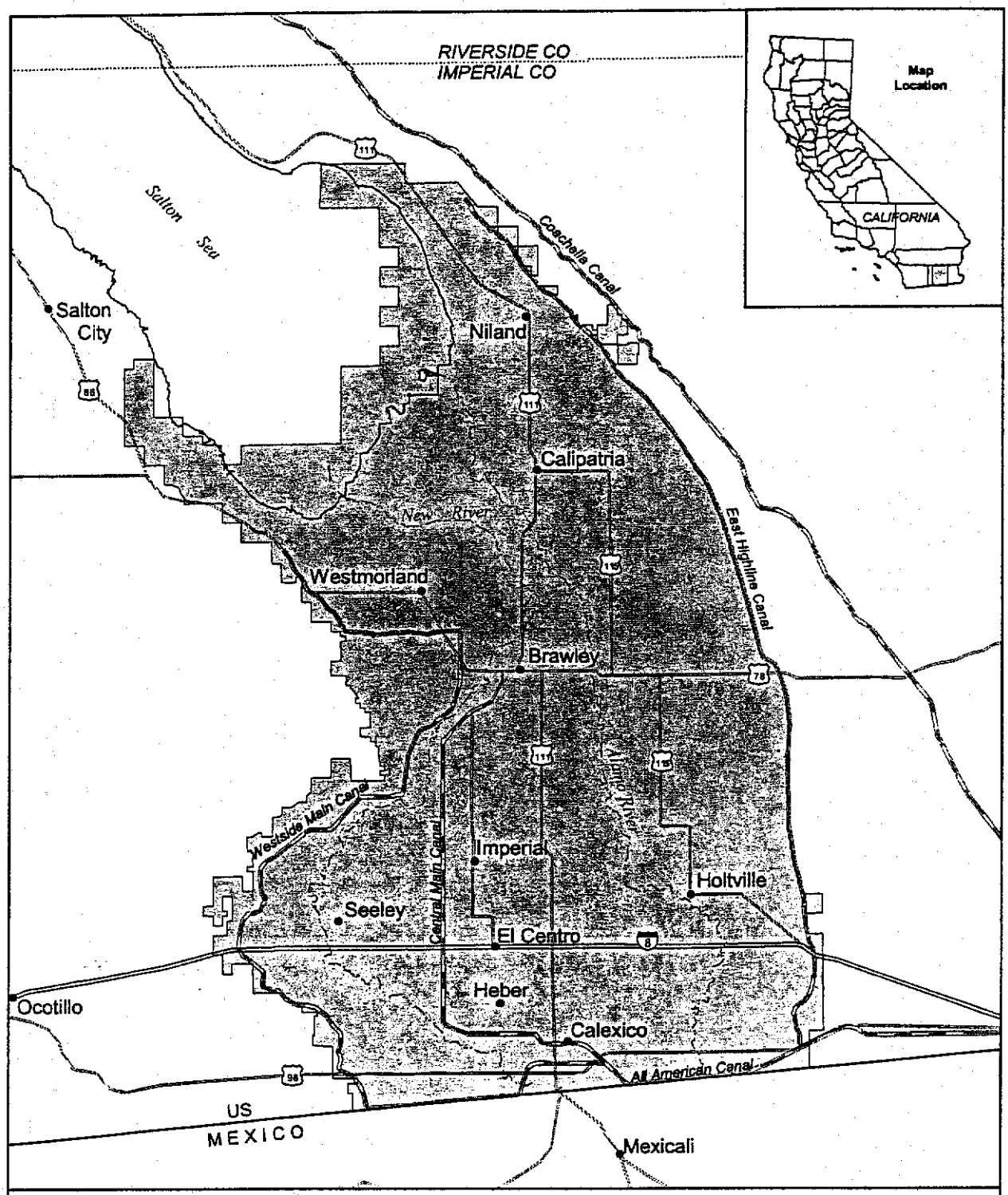
Ms. Harnish has worked in the Ecuadoran Amazon with the Quichua indigenous population to develop watershed management policies and conduct training sessions in environmental planning and natural resources surveys. Projects with the Quichua also included developing negotiating strategies with oil companies wishing to develop oil reserves within the Quichua territory.

Ms. Harnish designed and implemented several community relations and public involvement programs for state and federal superfund sites. These projects involve working closely with agency staff and the affected community to design and implement an effective community relations program. The goal of these programs is to encourage public participation in decisionmaking by providing technical information in a format accessible to the general public.

TABLE 3-3
Salton Sea Baseline

	Elevation (feet MSL)		Surface Area (square miles)		Salinity (mg/l)	
	Value	Change	Value	Change	Value	Change
2002	-228	N/A	364	N/A	46	N/A
2023	-232	-4	350	-14	60	+14
2077 (Baseline)	-235	-7	339	-25	86	+40

Notes: For Elevation and Surface Area parameters, the Baseline is the year 2077. However, for Salinity, the Baseline is the year, which is year when 60 g/L is reached. This is the salinity level at which the ability for fish to reproduce is compromised.



Source:
University of Redlands 1999; DOI 1999; and Reclamation 1999

Figure 1-3
IID Water Service Area
IID Water Conservation and Transfer Project Draft EIR/EIS

1.5 Species Covered by the HCP

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

TABLE 1.5-1
Species Covered by the IID HCP

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

TABLE 1.5-1
Species Covered by the IID HCP

Common Name	Scientific Name	Federal Status	State Status
Fulvous whistling-duck	*Dendrocygna bicolor*	S	CSC
Yellow warbler	*Dendroica petechia*	-	CSC
Reddish egret	*Egretta rufescens*	S	-
White-tailed kite	*Elanus leucurus*	-	FP
Southwestern willow flycatcher	*Empidonax traillii extimus*	E	E
Merlin	*Falco columbarius*	-	CSC
Prairie falcon	*Falco mexicanus*	-	CSC
Peregrine falcon	*Falco peregrinus*	DM	E/FP
Greater sandhill crane	*Grus canadensis tadiba*	-	T/FP
Bald eagle	*Haliaeetus leucocephalus*	T	E/FP
Yellow-breasted chat	*Icteria virens*	-	CSC
Least bittern	*Ixobrychus exilis*	S	CSC
Loggerhead shrike	*Lanius ludovicianus*	S	-
Laughing gull	*Larus atricilla*	-	CSC
California black rail	*Laterallus jamaicensis cotumiculus*	S	T/FP
Long-billed curlew	*Numenius americanus*	-	CSC
Osprey	*Pandion haliaetus*	-	CSC
Black skimmer	*Rhynchops niger*	-	CSC
Bank swallow	*Riparia riparia*	-	T
Gila woodpecker	*Melanerpes uropygialis*	-	E
Elf owl	*Micrathene whitneyi*	-	E
Wood stork	*Mycteria americana*	-	CSC
Brown-crested flycatcher	*Myiarchus tyrannulus*	-	CSC
Harris' hawk	*Parabuteo unicinctus*	-	CSC
Large-billed savannah sparrow	*Passerculus sandwichensis rostratus*	S	-
American white pelican	*Pelecanus erythrorhynchos*	-	CSC
Brown pelican	*Pelecanus occidentalis*	E	E/FP
Double-crested cormorant	*Phalacrocorax auritus*	-	CSC
Summer tanager	*Piranga rubra*	-	CSC
White-faced ibis	*Plegadis chihi*	S	CSC
Purple martin	*Progne subis*	-	CSC
Vermilion flycatcher	*Pyrocephalus rubinus*	-	CSC
Yuma clapper rail	*Rallus longirostris yumanesis*	E	T/FP
California least tern	*Sterna antillarum browni*	E	E/FP
Elegant tern	*Sterna elegans*	S	-
Van Rossem's gull-billed tern	*Sterna nilotica vanrossemi*	S	CSC
Crissal thrasher	*Toxostoma crissale*	-	CSC
LeConte's thrasher	*Toxostoma lecontei*	-	CSC
Arizona Bell's vireo	*Vireo bellii arizonae*	-	E
Least Bell's vireo	*Vireo bellii pusillus*	E	E
Mammals			
Pallid bat	*Antrozous pallidus*	-	CSC

TABLE 1.5-1
Species Covered by the IID HCP

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

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

TABLE 3.9-1
Covered Species Addressed Separately from the Habitat – Based and Species-Specific Conservation Strategies

Cheeseweed moth lacewing	Western small-footed myotis	Yuma hispid cotton rat
Andrew's dune scarab beetle	Occult little brown bat	Flat-seeded spurge
Colorado River toad	Southwestern cave myotis	Banded gila monster
Lowland leopard frog	Yuma myotis	Jacumba little pocket mouse
Mexican long-tongued bat	Western mastiff bat	Orcutt's aster
California leaf-nosed bat	Pocketed free-tailed bat	Foxtail cactus
Pallid bat	Big free-tailed bat	Munz's cactus
Pale western big-eared bat	Colorado River hispid cotton rat	Orocopia sage
Spotted bat		

TABLE 1-2
Documents Related To This Draft EIR/EIS

Project Component	Federal and/or State Action	Associated Environmental Documentation
Priority 3a Colorado River water capped at to 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 IOP.	Secretary shall deliver Colorado River water to Imperial Dam in an amount up to, but not more than, IID's Priority 3a cap.	1. The IA EIS provides NEPA compliance for the Secretary's delivery of Colorado River water in conformance with IID's Priority 3a cap. 2. The QSA PEIR provides program-level CEQA compliance for IID's Priority 3a cap. 3. This EIR/EIS provides project-level CEQA compliance for IID's Priority 3a cap.
Transfer of conserved water (up to 200 KAFY) to SDCWA. An amount of water equivalent to the amount of water conserved in the IID water service area would be transferred to SDCWA. At SDCWA's election, the water would be delivered to Lake Havasu.	Secretary shall deliver Colorado River water to Lake Havasu in an amount equal to that amount of water conserved by IID for the benefit of SDCWA in accordance with the provisions, including the point of delivery, of the IID/SDCWA Transfer Agreement and IA.	1. The IA EIS provides NEPA compliance for the change in point of diversion of up to 200 KAFY from Imperial Dam to Lake Havasu. 2. The IA EIS provides program-level NEPA compliance for the IID/SDCWA Transfer Agreement, as modified by the QSA.

TABLE 1-2
Documents Related To This Draft EIR/EIS

Project Component	Federal and/or State Action	Associated Environmental Documentation
	USFWS has issued incidental take authorization for federally listed species on the LCR that could be affected by Reclamation's implementation of the change in the point of delivery. CDFG will issue incidental take authorization for state-listed species on the LCR that could be affected by the change in the point of diversion. SWRCB will approve IID's petition to transfer water under the Water Code.	3. The QSA PEIR provides project-level CEQA compliance for the change in point of diversion of up to 200 KAFY from Imperial Dam to Lake Havasu. 4. The QSA PEIR provides program-level CEQA compliance for the IID/SDCWA Transfer Agreement. 5. This EIR/EIS provides project-level CEQA compliance for the IID/SDCWA Transfer Agreement. 6. This EIR/EIS provides project-level NEPA and CEQA compliance for the water conservation and transfers by IID, and for the HCP for impacts to the IID water service area and Salton Sea. 7. CEQA Notice of Exemption was prepared by SDCWA for the SDCWA/MWD Water Exchange Agreement. 8. USFWS' BO provides incidental take authorization for federally listed species potentially affected by Reclamation's implementation of the change in the point of delivery. 9. This EIR/EIS provides project-level CEQA compliance for the issuance of an incidental take permit for state-listed species on the LCR as a result of the change in the point of diversion. 10. This EIR/EIS provides CEQA compliance for SWRCB's approval of IID's petition to transfer water under the Water Code.
Transfer of conserved water (up to 100 KAFY) to CVWD and/or MWD. An amount of water equivalent to the amount of water conserved in the IID water 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.	Secretary shall deliver Colorado River water to Imperial Dam in an amount equal to that amount of water conserved by IID for the benefit of CVWD in accordance with the provisions of the IA. In the event CVWD may decline a portion of this water, the Secretary shall instead deliver such portion of water to IID or MWD in accordance with the provisions of the IA.	1. The IA EIS provides NEPA compliance for the potential change in point of diversion of up to 100 KAFY from Imperial Dam to Lake Havasu, and for the use of conserved water delivered to CVWD and/or MWD. 2. The QSA PEIR provides project-level CEQA compliance for the change in point of diversion of up to 100 KAFY from Imperial Dam to Lake Havasu.

TABLE 1-2
Documents Related To This Draft EIR/EIS

Project Component	Federal and/or State Action	Associated Environmental Documentation
	USFWS has issued incidental take authorization for federally-listed species on the LCR, which could potentially be affected by Reclamation's implementation of the change in the point of delivery. CDFG will issue incidental take authorization for state-listed species on the LCR which could be affected by the change in the point of diversion. SWRCB will approve IID's petition to transfer water under the Water Code.	3. The QSA PEIR provides project-level CEQA compliance for MWD use of any amount of conserved water not acquired by CVWD. 4. This EIR/EIS provides project-level NEPA and CEQA compliance for the water conservation and transfers by IID. 6. CEQA compliance for CVWD use of conserved water will be included in the Coachella Valley Water Management Plan PEIR. 7. USFWS' BO provides incidental take authorization for federally listed species potentially affected by Reclamation's implementation of the change in the point of delivery. 8. This EIR/EIS provides project-level CEQA compliance for the issuance of an incidental take permit for state-listed species on the LCR as a result of the change in the point of diversion. 9. This EIR/EIS provides CEQA compliance for SWRCB's approval of IID's petition to transfer water under the Water Code.
Habitat Conservation Plan. The HCP supports IID's Incidental Take Permit applications in conformance with § 10(a)(1)(B) of ESA and § 2081(b) of CESA.	USFWS will issue incidental take authorization for federally listed species potentially affected by water conservation by IID in IID's Water Service Area, the right-of-way of the AAC, and the Salton Sea, based upon the HCP. CDFG will issue incidental take authorization for state-listed species potentially affected by water conservation by IID in IID's Water Service Area, the right-of-way of the AAC, the Salton Sea, based upon the HCP.	1. This EIR/EIS provides project-level NEPA and CEQA compliance for issuance of incidental take permits in conformance with §10(a)(1)(B) of ESA and § 2081(b) of CESA and implementation of the HCP.