

Management of the Salton Sea Ecosystem

Physical Setting of the Salton Sea

The Salton Sea occupies the lowest part of the Salton Trough, a low-lying structural depression extending from the greater Palm Springs area southeastward through Mexico and into the Gulf of California. The sea is a saline terminal lake, with a salinity of about 44,000 mg/l. Agricultural runoff is the main source of inflow.

The Salton Sea is California's largest lake, formed in 1905 when the Colorado River breached an irrigation diversion structure and temporarily flowed into the then-dry Salton Sink. In the geologic past, the Colorado River periodically alternated its flow between the sink and the gulf. Prehistoric Lake Cahuilla filled the Salton Sink on several occasions; at other times the sink was a dry salt flat or wetlands area. The river is now prevented from returning to the sink by upstream Colorado River water development and control projects.

Most of the land underlying the sea is federally owned and is managed as an agricultural drainage repository for U.S. Bureau of Reclamation irrigation projects. The area around the sea, including the adjacent agricultural lands, supports more than 400 species of resident and migratory birds, including more than 50 species of special status birds (threatened, endangered, or species of concern). The juxtaposition of the sea with open mudflats, wetlands, and agricultural lands provides a mosaic of habitats that support the diversity of bird species.

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Negotiations on proposed water transfers that would reduce inflows to the Salton Sea began in the 1990s. The transfers' potential impacts – including increasing the sea's salinity and shrinking its shorelines – focused broader attention on the future of this already saline water body. Legislation was enacted to require that the future of the sea be explicitly considered.

Federal legislation enacted in 1998 required the Department of the Interior to evaluate alternatives for reclaiming the entire Salton Sea. Federal objectives included maintaining the sea as an agricultural drainage repository, stabilizing its shoreline elevation and salinity, reclaiming fish and wildlife resources, and enhancing local recreational and economic development. The U.S. Bureau of Reclamation (USBR) and the Salton Sea Authority (SSA) completed the mandated report and a draft environmental document in 2000; subsequently USBR prepared a 2003 update. There was no further follow-up work on whole-sea restoration alternatives due to their high costs and low likelihood of successful implementation. The SSA and others subsequently began considering conceptual approaches to restoring only a portion of the sea.

In 2003 the California Legislature enacted three bills implementing the Colorado River Quantification Settlement Agreement (QSA) and establishing a new requirement that the state restore the Salton Sea ecosystem. California state agencies are beginning implementation of the new mandate, taking into consideration how locally-desired objectives mesh with required ecosystem restoration actions. The state planning effort will not repeat earlier federal analysis of whole-sea restoration alternatives, but will focus on feasibility-level analyses of partial-sea and habitat enhancement approaches that would



permanently protect fish and wildlife resources under the hydrologic baseline established by the QSA.

New State Legislation

California had historically been able to use 800,000 acre-feet per year of Colorado River water in excess of its basic interstate apportionment. But in the 1990s, increasing use by other lower river basin states led California's local water agencies to begin negotiations on reducing their usage to California's basic apportionment. The discussions culminated in 2003 with execution of a package of more than 30

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agreements associated with the QSA. The agreements include provisions for the long-term transfer of agricultural water from Imperial Irrigation District (IID) to San Diego County Water Authority, which would reduce the amount of agricultural runoff reaching the Salton Sea.

To facilitate local agency execution of the QSA, the state assumed responsibility for a share of the environmental mitigation requirements for the QSA water transfers and for all of Salton Sea ecosystem restoration. State legislation enacted to implement the QSA specified that “it is the intent of the Legislature that the State of California undertake the restoration of the Salton Sea ecosystem and the permanent protection of the wildlife dependent upon that ecosystem.” It further stated that “no further funding obligations or in-kind contributions of any kind for restoration of the Salton Sea shall be required of the IID, the Coachella Valley Water District, the Metropolitan Water District of Southern California, and the San Diego County Water Authority, including federal cost-sharing or other federal requirements. Any further state actions to restore the Salton Sea will be the sole responsibility of the State of California.”



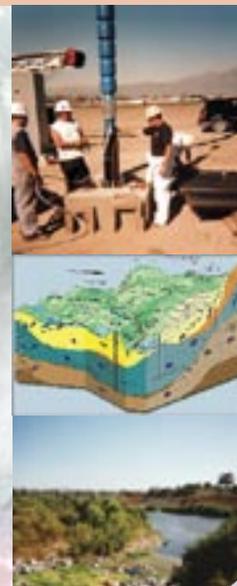
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Provisions of this legislation relating to Salton Sea environmental resources included the following requirements:

- The Secretary for Resources is to prepare a Salton Sea restoration study and accompanying programmatic environmental documentation in consultation with a legislatively mandated advisory committee, the SSA, and air quality districts. The Secretary is to recommend a preferred ecosystem restoration alternative to the Legislature by December 31, 2006.
- The Department of Water Resources is to purchase up to 1.6 million acre-feet of water from IID and to sell the water to the Metropolitan Water District, under conditions and limitations specified in the statute. Proceeds from sale of the water are to be deposited in a Salton Sea restoration fund administered by the California Department of Fish and Game.
- IID, Coachella Valley Water District, and San Diego County Water Authority are to provide \$133 million for environmental mitigation of QSA water transfers, with any mitigation in excess of that amount being a state responsibility. Those local agencies are to deposit an additional \$30 million into the restoration fund. Monies in the fund are to be used for conservation measures to protect fish and wildlife resources.

Ecosystem Restoration Challenges

Ecosystem restoration in the context of the Salton Sea raises interesting technical questions, in addition to the financial challenges of such a large-scale project. No stable historical baseline exists for the area that would define restoration, nor have long-term limnological or biological monitoring programs been undertaken that would help inform baseline selection. Conditions in the Salton Sink have been in a continued state of change since 1905. The limited historical and anecdotal data on the sea's biological resources show a clear pattern of change in the fishery and the avifauna that reflect not only impacts of increasing salinity but also the introduction of many non-native species.

In a strict ecological sense, “restore” normally means to return conditions to some historical level, and then to let nature take its course. In the case of the present Salton Sea effort, “rehabilitation” is probably the more accurate term – establishing a desired condition and then intensively managing the ecosystem to maintain that condition in the face of changing future circumstances. It is thus very likely that adaptive management will be a component of future activities to maintain the sea's biological resources.

This article reflects views of the author only; nothing herein is intended to express a policy or position of the California Department of Water Resources. Contact Jeanine Jones at jeanine@water.ca.gov.