

described in sufficient detail to allow for an appropriate action to be selected after the final version of the EIS/EIR is published. In addition to the EIS/EIR, other studies will be completed and made available during refinement of Phase 2 actions. A strategy known as adaptive management will be used to adjust future actions and operations as new data become available. In the future, the lead agencies will identify which Phase 2 actions will be retained for further analysis, design, and environmental analysis.

RESTORATION ALTERNATIVES EVALUATED IN THE EIS/EIR

Alternatives have been developed with the recognition that inflows to the Sea may decrease in the future. Thus, each alternative includes actions that would be implemented under the reduced inflows considered. The table on the preceding page displays how five complete alternatives have been formulated from individual actions for three inflow scenarios described in the previous section for the No Action Alternative. Schematic representations of all five alternatives can be found near the end of this document. The alternatives are designed to address the wildlife, fishery, and recreation goals and objectives. In part, these objectives would be addressed by halting the present trend of increasing salinity and by ultimately reducing salinity to a target concentration of about +/-40,000 mg/L. All alternatives include salinity control measures during Phase 1. For Alternatives 1 and 5, an additional export action would be required to provide long-term salinity and elevation control. This action could be required as early as 2015 for Alternative 1 and is considered an accelerated Phase 2 action.

Common Actions

Common actions have been developed to further address the goals of wildlife maintenance and enhancement, restoration of recreational uses, maintenance of the sport fishery, and identification of economic development opportunities. The common actions would be included with each alternative except No Action and could be implemented as early as 2003. Pilot projects are planned for each common action to finalize the specifications of each action and test effectiveness. The proposed common actions are:

Fish Harvesting—Harvesting tilapia is being considered as a method to reduce the internal nutrient load and fish population densities within the Salton Sea. In addition to reducing nutrient loads, reducing tilapia densities is expected to provide a healthier environment for the fishery and could improve the health of the tilapia population. Boat dock fa-

All alternatives include either one or both of the following measures to control salinity and provide other benefits:

Evaporation Ponds—Evaporation ponds would be constructed within the Sea by using dikes. The ponds would concentrate the salts from the Sea and assist in stabilizing the Sea's surface elevation. Two locations along the southwest shore of the Sea are being considered. Evaporation ponds are included in Alternatives 1, 4, and 5.

Enhanced Evaporation System (EES)—The EES is a method to remove salts from the Sea by increasing evaporation rates through spraying. Two EES technologies are being considered. Alternatives 2 and 3 use an on-shore technology that involves constructing tower modules. Each module would consist of a line of towers connected with hoses fitted with nozzles to spray water over precipitation ponds. Alternative 5 uses a ground-based system where nozzles would be placed on top of the dikes that enclose the pond. The nozzles would be similar to snow making equipment, and would spray water into the ponds to increase the evaporation rate in the pond.

KEY MILESTONES

2000

Public Review of Draft EIS/EIR

Prepare Final EIS/EIR and Record of Decision/Notice of Completion

Begin pilot projects for common actions

2001-2003

Implement common actions

Complete designs for major construction projects

Initiate long-term science and management plans

2004-2007

Construction phase for larger actions

Additional studies of Phase 2 actions

2015

Additional actions as required

2030

Implement Phase 2 actions

cilities and a processing plant would be located at one of several sites along the shore, including the Salton Sea Test Base or on Torres Martinez Indian Reservation lands.

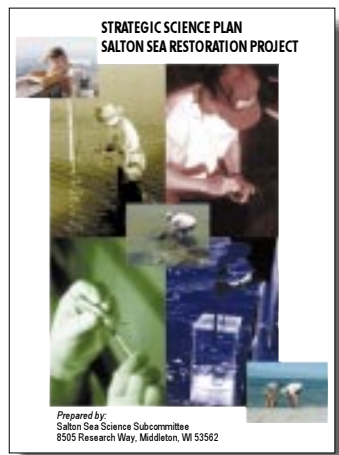
Improved Recreational Facilities—The public boat ramps and access roads around the Salton Sea would be repaired to enhance their usefulness. Some channelization may be required to provide deeper water for improved boat access.

Shoreline Cleanup—A shoreline cleanup program would consist of removing dead fish and other debris from the water surface and the shoreline. Removing the fish would reduce odors and nutrients from the Sea. The Sea cleanup operation would use skimmer barges to retrieve fish floating on the water surface. In addition, beach cleaning equipment, involving a conveyor system that rakes the beach, would be used to maintain the shoreline.

Integrated Wildlife Disease Program—This program includes an integrated, multi-agency effort involving the National Wildlife Health Center of the US Geological Survey (USGS), the US Fish and Wildlife Service (USFWS), the Salton Sea Authority, and the California Department of Fish and Game (CDFG). The program includes field technician-level support for on-site methodical monitoring of the Sea for wildlife die-offs, response assistance, biological sample collection, and scientific information compilation relative to wildlife mortality.

Long-term Management Strategy—The long-term management strategy would define activity coordination, project operational responsibilities, scientific research and monitoring responsibilities, and resource protection and management. The plan would be based on the concept that management is adaptable, given the recognized unknowns that exist in the Salton Sea ecosystem and the need for operational flexibility to respond to future monitoring and research findings and varying resource conditions. Physical and economical conditions would be considered in any proposed modification to project operation or implementation of any additional restoration measures. The plan would be designed to strengthen the restoration effort and to better meet the purpose and need of the project.

Strategic Science Plan—The strategic science plan provides a framework for a continuing science effort, identifies areas



for focus and assures that scientific evaluation is an integral part of adaptive management. The plan maintains integration of science and management through a Science Office dedicated to the restoration effort. The plan would include conceptual modeling, monitoring to evaluate the success of restoration actions, quantitative modeling, focused investigations to fill in key information gaps, technical assistance to involve time-responsive short-term needs, and data management.

Other Actions

Several other actions shown in the summary table are being considered to enhance the performance of the alternatives over the range of possible future inflows. These other actions are:

North Wetland Habitat—Reduced annual inflows to the Sea would threaten the important island and snag habitat currently used by wildlife in the northern portion of the Sea. This area provides the largest expanse of snag habitat at the Sea along with significant low-island habitat. The north wetland habitat area would be constructed to preserve these existing values in the area as well as allow adaptive management of a fresh water/Salton Sea water interface to enhance habitat values.

Pupfish Pond—This pond would be included in Alternatives 1 and 4 to maintain connectivity of drains for pupfish movement. To maintain this habitat and connectivity between the drains in this area, additional dikes would be constructed from the north and south ends of the south evaporation pond extending to the shoreline, effectively creating a nearshore pupfish habitat pond between the shore and the evaporation pond. Significant snag habitat on the west side of the New River and the habitat around the mouth of San Felipe Creek would also be protected within this pond.

Displacement Dike—This dike would be constructed in the southern portion of the Sea under the reduced inflow scenarios. It is designed to reduce the total area of the Sea, effectively displacing enough water to maintain elevations if annual inflows are reduced. The dike would reduce the surface area of the Sea by 13,500 acres. The water in the area behind the dike would initially evaporate and thereafter could alternately be dry or wet depending on the season.

Flood Flows—This action would involve augmenting inflow to the Sea by using a portion of the total flood flows available from the Colorado River. Colorado River flood flows are available approximately



Desert Pupfish

every three to seven years. The maximum amount of flood flows considered for diversion to the Sea over the planning horizon represents about 10 percent of the expected flood flow releases. Flood flows are beyond any entitled or surplus water dedicated to water users in the Basin states. When available, the floodwater flows would be conveyed through existing facilities to either the Alamo River or the Coachella Canal and into the Salton Sea.

Two of these possible actions, the displacement dike and import of flood flows, would not be implemented unless inflows to the Sea are reduced in the future.

Phase 2 Export and Import Actions

Phase 2 actions would export water from or import water to the Salton Sea if conditions of the Sea in the future warranted such action. These actions have been developed on a programmatic level; thus, descriptions provided represent typical alignments and pipeline details that could be used. Phase 2 actions may or may not be needed based on the efficiency of Phase 1 actions and reductions in inflow from water conservation and other diversions. Because none of these Phase 2 actions would be constructed for at least 15 to 30 years, detailed analyses of potential environmental consequences are not currently feasible. The joint lead agencies plan to continue to develop and refine these actions. Once specifics are determined, additional environmental analysis will be performed.

Export Actions—Phase 2 export options include:

- Expanded EES
- Export to the Gulf of California
- Export to the Pacific Ocean
- Export to Palen Dry Lakebed

Import through Yuma, AZ—This action would involve the import of water that originates as a brine stream from the proposed Central Arizona Salinity Interceptor (CASI), through Yuma to the Salton Sea. The CASI is designed to transport brackish water by gravity from the Tucson and Phoenix areas to Yuma. This water would be less saline, at approximately 4,400 mg/L, than the existing Salton Sea water and would help reduce salinity and stabilize elevation if annual inflows are significantly reduced. CASI water is expected to be available in approximately 25 years, with the current plans for its disposal including discharge to the Gulf of California. Approximately 300,000 af/yr are estimated to become available for diversion to the Salton Sea. This amount of CASI water could be conveyed continuously at approximately 420 cfs through a newly constructed canal to parallel the existing, All-American Canal.

CUMULATIVE EFFECTS OF OTHER PROJECTS

Twenty-six projects in the region have been identified that could potentially have cumulative effects when combined with the Salton Sea Restoration Project. The most likely cumulative effects would be a change to the future inflows to the Sea. With the competing demands for water in California, it is likely that almost any combination of these projects would result in a future reduction of inflows to the Sea. Rather than attempt to forecast the individual effects of each project, two reduced inflow scenarios have been evaluated for all alternatives including the No Action Alternative. Separate environmental documents prepared for the other projects are expected to include any specific impacts each project would have on the Salton Sea.

SUMMARY OF FINDINGS OF THE ENVIRONMENTAL STUDIES

All restoration alternatives would have a number of benefits to the environment at the Sea, including:

- The sport fish in the Sea would be sustained
- Improved conditions for sustaining the diversity of bird life at the Sea
- The fish in the Sea would continue to provide a food source for the fish-eating birds in the area
- Recreational opportunities would be improved
- There would be some benefits to the local economy from restoration activities

While all restoration alternatives would have many benefits to the Salton Sea and the region around it, there would be some adverse effects. Most of these effects are typical of larger construction or development projects, would be temporary and end when the construction period is complete:

- Localized dust problems
- Temporary, localized disturbance of plants and animals near construction sites
- Potential traffic delays between the material borrow site and construction sites near the Sea





In addition to the short-term effects listed above, there would be visual changes due to alterations in the landscape near new structures. There is also the possibility that some cultural and Native American resources would be disturbed. Such disturbances would be handled in accordance with laws that protect these types of resources. For alternatives that involve an EES (Alternatives 2, 3 and 4), there would be some loss of desert habitat, possible effects on special status species, and potential impacts to migrating birds due to tower configuration and height. For alternatives that involve evaporation ponds (Alternatives 1, 4 and 5), there is a concern related to the ultimate fate of salts that accumulate in the ponds. For Alternative 5, there is a potential for noise impacts from the ground-based EES. There could also be additional effects past the year 2030 associated with Phase 2 import and export options. These effects will be evaluated in more detail in later phases of analysis if Phase 2 actions are required.

Brief descriptions of each alternative are provided on the following pages along with maps showing the general locations of facilities that would be associated with each alternative.

Alternative 1

Alternative 1 would involve constructing two evaporation ponds within the Sea. The combined surface area of the ponds would be approximately 33 square miles but would depend on the elevation of the water surface in the ponds and seasonal fluctuations. The ponds would concentrate the salts from the Sea and assist in stabilizing the surface elevation. Approximately 98,000 af/yr of water would be pumped into these ponds from the Sea each year. Evaporation of this water would concentrate salts in the ponds and allow the salinity in the remainder of the Sea to be maintained at an acceptable level. The ponds also would create a displacement, which would assist in maintaining the target elevation level of the Sea (+/- 230 feet) should inflows to the Sea decrease in the future. The ponds would be located at the south end of the Sea, with one west of the mouth of the New River and the other by the Salton Sea Test Base.

