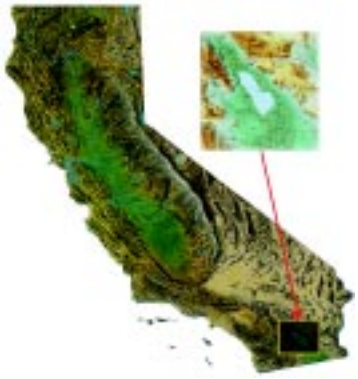


Program Overview

Perspective: Background of the Program

The Salton Sea is an excessively salty, nutrient-rich lake in a closed basin. The Sea exists primarily due to continued agricultural drainage from the Imperial, Coachella, and Mexicali valleys and smaller contributions from municipal effluent and stormwater runoff. The Sea has a productive sport fishery and provides important migratory and resident bird habitat within the Pacific Flyway. Seasonal bird use includes millions of birds, and approximately 400 bird species have been recorded within the Salton Sea ecosystem. Several endangered species, including the desert pupfish, brown pelican, and the Yuma clapper rail, inhabit the Salton Sea or adjacent habitats.

The Salton Sea is under stress and habitats associated with the Sea continue to deteriorate from increasing salinity, nutrient loading, oxygen depletion, and temperature fluctuations that may be threatening the reproductive ability of some species, particularly sport fish, and also causing additional ecosystem health problems. There are indications that the deteriorating environmental conditions may be contributing to the prominence of avian disease at the Sea. In addition to impacts on plants and animals, a long-term rise in the Sea level coupled with seasonal fluctuations have contributed to flooding of facilities for lake-dependent activities, including camping and boat launching.

Congress passed a law in 1992 that directs the Secretary of the Interior to "conduct a research project for the development of a method or combination of methods to reduce and control salinity, provide endangered species habitat, enhance fisheries, and protect human recreational values . . . in the area of the Salton Sea." The Salton Sea Reclamation Act of 1998 was passed to further the restoration process. This Act directs the Secretary of Interior to "complete all studies, including, but not limited to environmental and other reviews, of the feasibility and benefit-cost of various options that permit the continued use of the Salton Sea as a reservoir for irrigation drainage and: (i) reduce and stabilize the overall salinity of the Salton Sea; (ii) stabilize the surface elevation of the Salton Sea; (iii) reclaim, in the long term, healthy fish and wildlife resources and their habitats; and (iv) enhance the potential for recreational uses and economic developments of the Salton Sea."

> **"The Salton Sea is an important national and international resource for migrating and resident birds, and a significant fishery. It is, among other things, the site of a national wildlife refuge, and is of special concern because of the loss of wetlands we have experienced both in California and in Mexico. I am committed to assuring that the Sea's unique values do not slip away from us by inaction or inattention. In that respect, I am very pleased to report to you that we are moving forward on schedule with our Salton Sea strategy, which is also a collaborative effort with local and regional stakeholders, including the Salton Sea Authority. The Draft EIS looks out over the next three decades with a focus on assuring that the Sea and its primary values do not slip away from us as we work on long-term solutions."**
>
> ***Bruce Babbitt,***
> ***Secretary of the Interior***
> ***Comments during Colorado River Water Users Association Speech***
> ***Las Vegas, Nevada***
> ***December 17, 1999***

Salton Sea: An Important Resource

As our wetlands decline, the importance of the Sea as habitat for wetland species increases. Since around 1780, 91 percent of California's wetlands have disappeared—more than from any other state in the US. The Sea's habitats support 40 percent of the entire US population of the threatened Yuma clapper rail, 80 to 90 percent of the American white pelican, and 90 percent of the eared grebe.

The Salton Sea is the largest inland body of water in California providing extensive wetland habitat within the Pacific Flyway, the most important bird migration corridor in the west. It is in the southeastern corner of California and spans Riverside and Imperial counties. The closest cities include Palm Springs, Indio, Brawley and El Centro. The area is largely agricultural, although the Sea offers opportunities for recreation and a few residential communities dot the shoreline. Geothermal exploration was initiated in 1957, and several active plants operate in Imperial County near Niland. The Salton Sea State Recreational Area occupies the northeast shoreline, the state waterfowl area (Wister Unit) is in the southeast, and the Sonny Bono National Wildlife Refuge, operated by the US Fish and Wildlife Service (USFWS), spans the southern shoreline of the Sea.

The Sea is located primarily in the Colorado Desert ecosystem, an area with local average annual precipitation of less than 3 inches per year. Vegetation types include desert scrub, riparian cottonwood/willow, freshwater marsh, and agricultural lands as well as introduced exotics such as salt cedar. Mountains, including the Santa Rosa Range to the west, Orocopia Mountains to the north, and the Chocolate Mountains to the east, surround the closed basin on three sides.

SALTON SEA FACTS

- **Located south of Palm Springs in Imperial and Riverside counties**
- **Surface elevation is 227 feet below mean sea level (the Dead Sea, the lowest body of water on Earth is 1,312 ft. below sea level)**
- **Deepest area of the Sea's bed is only five feet higher than lowest point in Death Valley**
- **Surface area is 365 square miles**
- **Contains 7.5 million acre-feet (maf) of water**
- **Evaporates 1.36 maf each year**
- **Salinity is 44,000 milligrams per liter (mg/L), compared to 35,000 mg/L for sea water**

UNITS OF MEASURE

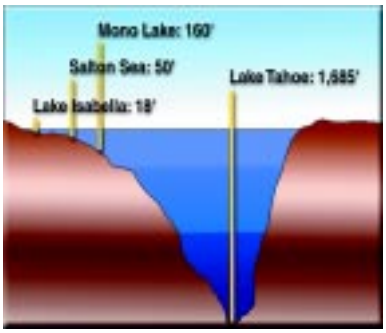
SALINITY is commonly measured in milligrams per liter (mg/L) or parts per million (ppm). One ppm approximately equals one mg/L. Measured at Imperial Dam near Yuma, AZ, the Colorado River contains about 2,000 pounds of salt per acre foot of water or about 725 mg/L of salts.

An **ACRE-FOOT** of water equals about 326,000 gallons or enough water to cover an acre of land (about one football field) one foot deep. A typical California household of 4 uses between 1/2 and 1 acre-foot per year for indoor and outdoor use.

The Salton Sea's surface area (376 square miles) as compared to other notable lakes: Mono Lake (60 square miles), Lake Tahoe (193 square miles), and the Great Salt Lake (1,700 square miles).

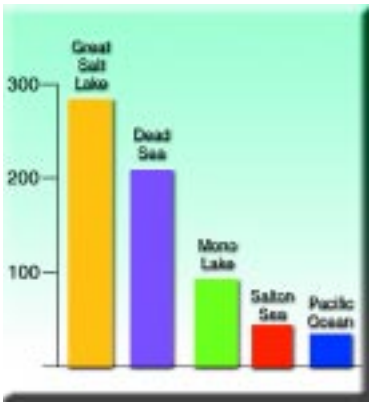
Historical Perspective: How was the Sea Formed?

The Salton Sea occupies a below sea level desert basin known as the Salton Sink, which has experienced multiple episodes of flooding and drying due to changes in the course of the Colorado River since prehistoric times. Intermittently, the Salton Sink has contained an ancient lake even more extensive than today's Salton Sea. The evidence for Lake Cahuilla, as it has been named, are its remnant shorelines, visible along the base of the Santa Rosa Mountains. The basin received floodwaters from the Colorado River on multiple occasions, including in 1849, 1862, 1891, and 1900. The frequency with which this basin has been flooded in recent history increases the likelihood of a long history of use by migratory birds. Cultural sites near the present and historic shorelines attest to the use of these temporary lakes by native people. Between episodic fillings evaporation reduced the lake level.



Photos courtesy of Imperial Irrigation District

When the Colorado river breached in 1905, the force of the water all but destroyed the railway trestle that ran across one of its banks (top left). Despite effort to stem it, the flow continued for 18 months creating the existing Salton Sea.



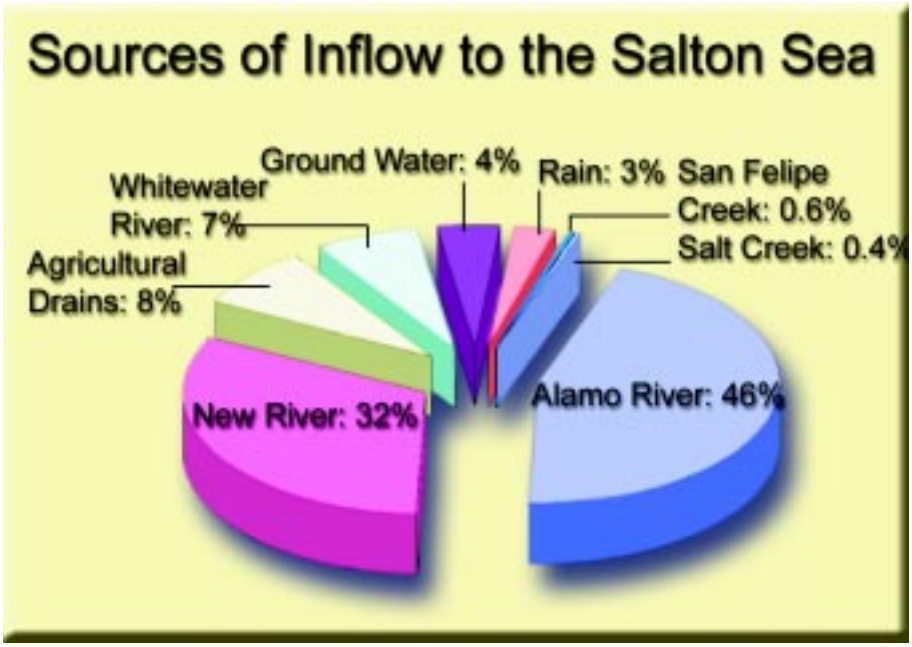
The salinity level of the Salton Sea is currently 44 parts per thousand (ppt), compared to 280 ppt for Utah's Great Salt Lake (at Gunnison Bay), about 210 ppt for Israel's Dead Sea, 87 ppt for Mono Lake, and 35 ppt for the Pacific Ocean.

During the early 1900s, water for irrigation was first brought into the area through a series of ditches from the Colorado River. In 1905, flood flows in the Colorado River breached an irrigation control structure allowing the river to flow into the Salton Sea basin. The flow was not contained for the next 18 months, and the current Salton Sea was formed. After the flooding, the level of the sea receded to about -250 ft msl by 1925. As agriculture and agricultural drainage increased, the water level has increased to its current elevation of about 227 feet below sea level. In addition to this long-term rise in the water surface, the level varies seasonally.

The Salton Sea Today

The Salton Sea's water level is maintained by agricultural runoff, and to a lesser extent by municipal effluent and stormwater that flows into the Sea through rivers and creeks in the Imperial, Coachella, and Mexicali valleys. The Whitewater River and its tributaries drain the northern portion of the basin. Salt Creek drains the northeast area of the basin, entering the Sea within the Salton Sea State Recreation Area boundary. San Felipe Creek, with headwaters about 50 miles west of the Salton Sea, drains into the southwestern shore while the New and Alamo rivers drain the Imperial and Mexicali valleys to the south. Annual Sea inflow is approximately 1.36 million-acre-feet per year (maf/yr).

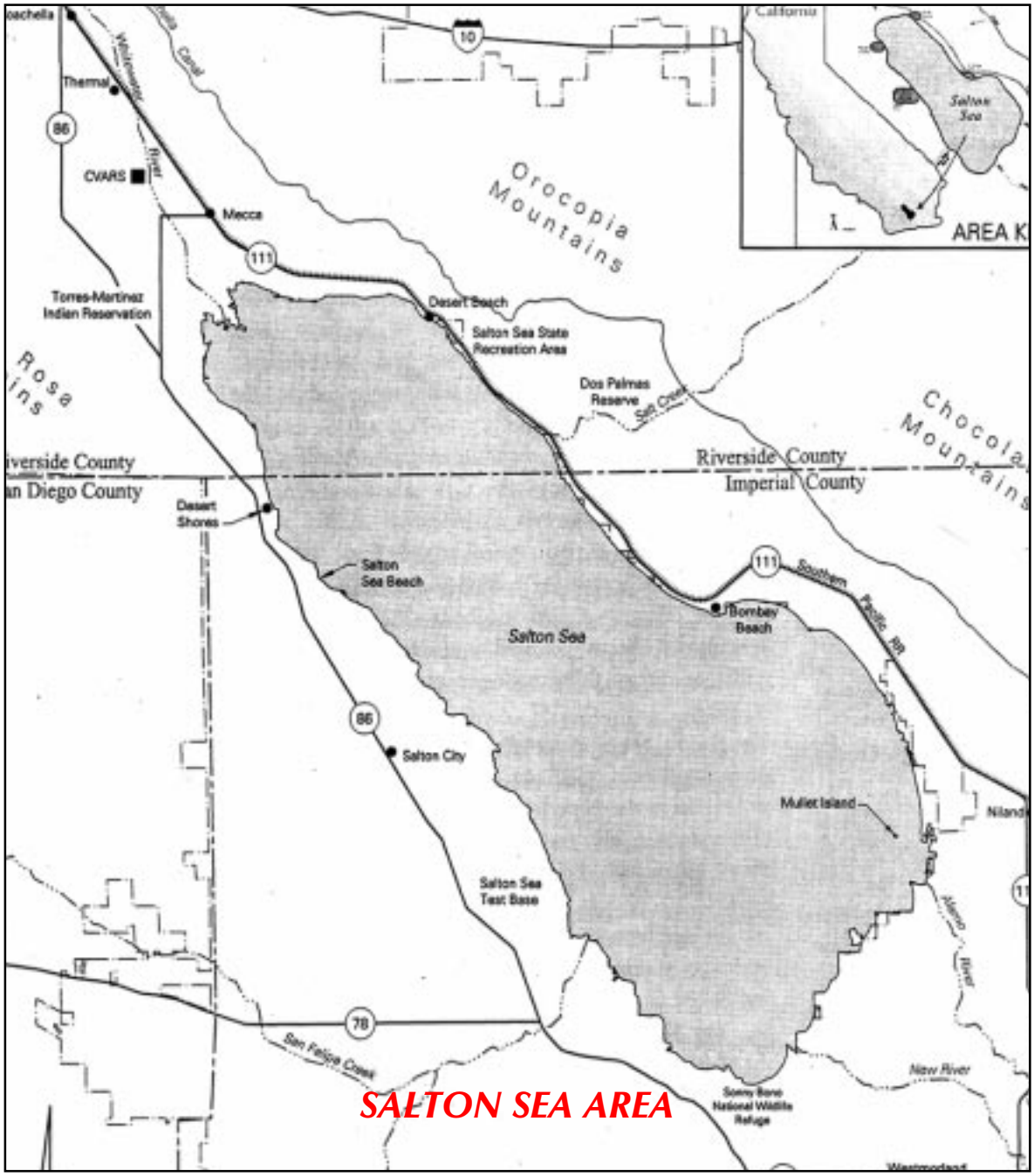
Because the Sea has no outlet except for evaporation, constituents in the inflow become concentrated in the Sea over time. High concentrations of salts, nutrients, and other constituents can be detrimental to the ecosystem and recreational use at the Sea.



Almost the entire inflow to the Sea (98 percent) is from agricultural runoff, which is transported to the Sea via rivers, creeks, and agricultural drains and by ground water infiltration.

Understanding the Science of the Sea

The prospect of an environmental crisis has focused national attention on the Salton Sea and supported the need for actions to improve the environmental quality of the Sea. The Secretary of Interior, with other agency stakeholders, established the Salton Sea Science Subcommittee. The role of the Science Subcommittee is to increase the scientific information available for the Salton Sea Restoration Environmental Impact Statement/Environmental Impact Report (EIS/EIR). The Science Subcommittee was established because of the importance of the natural resources at the Sea and the many uncertainties about the existing and future conditions.



Photos courtesy of Doyle Stevens/US Geological Survey and San Diego State University/Center for Inland Waters

What Is Being Done To Better Understand the Sea?

Scientific investigations are providing new information to support the project. These investigations have included the following tasks:

Gathering, synthesizing, and evaluating existing scientific information relative to the Salton Sea ecosystem;

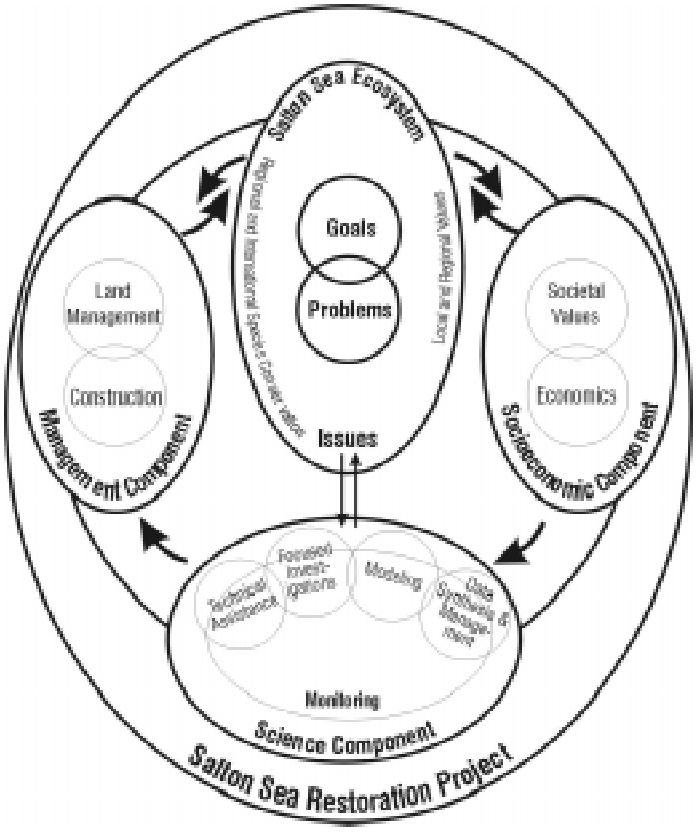
Identifying priority data gaps and facilitating investigations for obtaining that data;

Awarding contracts for focused scientific evaluations of potential environmental impacts from proposed project alternatives and management actions; and

Developing a strategic science plan to guide the long-term integration of science within the project.

The restoration of the Salton Sea is a long-term effort, and the immediate science needs differ somewhat from the long-term needs. Therefore, the science effort has been designed as a long-term approach. A Strategic Science Plan has been prepared to guide the long-term studies. The Plan builds on the efforts of the Science Subcommittee and provides a blueprint for the science process, functions, and administrative structure.

The Role of Science in the Salton Sea Restoration Project. *The Science Subcommittee serves as a focal point for the coordination of scientific efforts by developing and maintaining an inventory of current studies that are being undertaken within the Salton Sea ecosystem. The primary charge for the Subcommittee is to provide scientific evaluations and recommendations that are necessary to guide evaluations associated with the NEPA/CEQA process. The Subcommittee's recommendations serve as the scientific basis for decisions associated with choices among alternative actions for mitigating current degradation of the Salton Sea ecosystem and restoring recreational, wildlife, and economic values.*



Salton Sea Restoration Project Goals and Objectives

The Salton Sea Authority and the Bureau of Reclamation have worked with other agencies and members of the public to develop five project goals. The goals address the underlying purpose and need for the project, and provide guidance for developing project alternatives. The five goals of the Salton Sea Restoration Project are:

FIVE GOALS OF THE RESTORATION PROJECT

Maintain the Sea as a repository of agricultural drainage;

Provide a safe, productive environment at the Sea for resident and migratory birds and endangered species;

Restore recreational uses at the Sea;

Maintain a viable sport fishery at the Sea; and

Enhance the Sea to provide economic development opportunities.

In order to measure how well any actions may meet the five project goals, specific objectives were developed to further define each goal. The objectives often overlap and result in mutual benefits. The goals and objectives have been used to guide the development of restoration alternatives. These same objectives would be used to guide monitoring programs that will evaluate the effectiveness of restoration actions.

The Environmental Review Process

The environmental review process provides information about the environmental consequences of programs such the Salton Sea Restoration Project. The process is designed to ensure that decision-makers have the information they need to make informed decisions and to inform and involve the public.

What is an EIS/EIR?

Developing the Salton Sea Restoration Project requires compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). Two primary documents provide information in compliance with these Acts: (1) an environmental impact statement (EIS) complies with the Federal requirements of NEPA, and (2) an environmental impact report (EIR) complies with California State requirements of CEQA. Because the Salton Sea Restoration Project has Federal, State, and local agency involvement, a com-

bined EIS/EIR has been prepared. The EIS/EIR for the Salton Sea Restoration Project describes the existing environmental and socioeconomic conditions at and near the Salton Sea, and the environmental consequences of the project alternatives, including no action.

The US Department of the Interior Bureau of Reclamation and the Salton Sea Authority along with a number of other cooperating agencies have prepared the joint draft EIS/EIR. The Lower Colorado Region of the Bureau of Reclamation is serving as the NEPA lead agency. The Salton Sea Authority, a joint powers authority formed by the Coachella Valley Water District, Imperial County, the Imperial Irrigation District, and Riverside County, is serving as the CEQA lead agency. These lead agencies are responsible for the content of the EIS/EIR.

The Importance of Public Involvement

The public has played an important role in shaping the alternatives and the issues addressed in the EIS/EIR. Public meetings and workshops were held throughout the alternative development process to inform the public about progress and receive comments and suggestions. Separate meetings with members of the Torres Martinez band of the Desert Cahuilla Indian Tribe were designed to receive comments from the tribe on their interests. Meetings have been conducted in the Palm Springs area as well as in communities such as Desert Shores, El Centro, and San Diego.

Salton Sea Authority and Bureau of Reclamation Project Managers addressed issues raised at a Salton Sea area public meeting.

Principal investigators presented their findings at a public meeting held at the US Fish & Wildlife Service Sonny Bono National Wildlife Refuge.

Photos by Patti Kroen

How can I Become Involved?

There are many ways to become involved in the Salton Sea Restoration Project:

1. **Get on the mailing list**. You may get on the Salton Sea Restoration Project mailing list by contacting the Authority at (760) 564-4888 (voice) or (760) 564-5288 (fax), or sending a note to The Salton Sea Authority, 78-401 Highway 111, Suite T, La Quinta, CA 92253. Once on the mailing list you will receive the quarterly newsletter, SeaNotes, as well as notices of meetings and other important events.

2. **Visit the web-site**. The official project web page can be accessed from the Reclamation web-site located at http://www.lc.usbr.gov. This web page contains useful information plus email links to the project leads.

3. **Attend Board and TAC meetings**. The Technical Advisory Committee (TAC) and Board of Directors of the Salton Sea Authority hold monthly meetings that are open to the public. TAC meetings are typically held on the first Wednesday of each month and Board meetings are typically held on the third Thursday of each month. Meetings are held at locations around the Sea. Meeting times and locations are provided in flyers that are sent to members of the mailing list and can be obtained by contacting the Authority.

4. **Attend hearings and workshops**. Workshops are held frequently on various topics related to restoration of the Sea. In addition, public hearings will be held on the draft EIS/EIR. Information about the project will be provided and public comments will be solicited.

Input from the public is an important part of the process. The lead agencies welcome public participation and encourage everyone's involvement.

SeaNotes, a quarterly newsletter for the project that includes general interest articles and details on scientific research underway at the Sea, is mailed to interested stakeholders, federal, state, and local entities, and members of the general public.

PHOTOS BY PATTI KROEN

Science Subcommittee Director Dr. Milt Friend, addresses the kickoff meeting for principal investigators.

Sono Bono Wildlife Refuge Manager Clark Broom leads a tour and briefing for project team members.

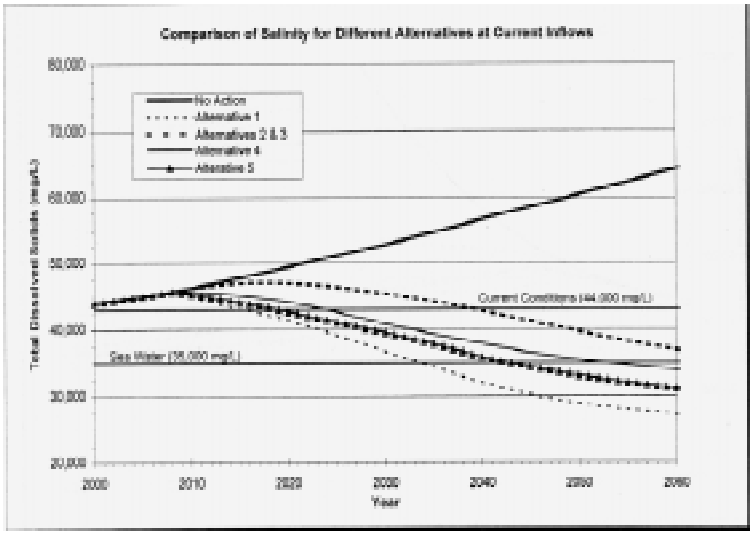
The Importance of Timely Restoration

Timely restoration of the Salton Sea would preserve the ecological and economic values of the area, however it should be noted that solutions are not immediate and salinity continues to increase. If restoration activities started today, it would take several years for major benefits to be realized. And the longer we wait to get started, the more deteriorated the environment becomes.

Need for the Salton Sea Restoration Project

Salinity of the Sea is predicted to continue to increase beyond the tolerance of bird and animal species that depend on it if no restoration action is taken.

The Salton Sea Restoration Project is needed to maintain and restore ecological and socioeconomic values of the Salton Sea to the local and regional human community and to the biological resources dependent upon the Sea. Increasing salinity in the Sea, which is currently about 44,000 mg/L, already may be threatening the reproductive ability of some parts of the biota. If the current trend of increasing salinity continues, sport fish in the Salton Sea will be eliminated over the next few decades. Therefore, controlling salinity is critical if the Salton Sea is to support biodiversity similar to what currently exists. In addition, the Sea is located along the Pacific Flyway, the most western of the major migration corridors for waterfowl and other species. Fish in the Sea are an important food source to fish-eating birds that use the Pacific Flyway, especially since other wetland areas in the Flyway have been lost in recent years. Other issues include unacceptable levels of bird and fish die-offs, high nutrient loading to irrigation drains leading to the Sea, and perceptions and concerns about pollution from selenium, other chemicals, and microbes. All of these issues must be addressed to benefit the fish and wildlife resources and habitats of the Salton Sea and to meet the directives of Congress.



Additional benefits that may result from the restoration project include enhanced recreational opportunities and economic development. Historically the rising water levels have flooded such facilities as campgrounds, boat launching ramps, and resorts. Control of water surface elevation within an acceptable range could stimulate future investments in shoreline development, in addition to stimulating biological values from sustaining wildlife habitat. The long-term monitoring and management strategies that would be part of the restoration program would seek to balance the possible conflicts between shoreline development and maintenance of wildlife habitat.

What Will Happen Without Restoration: The No Action Alternative

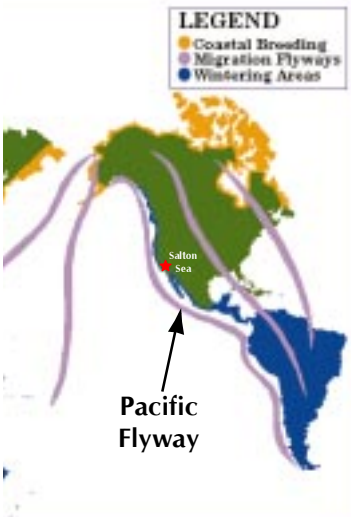
Project alternatives must be evaluated against a scenario that could reasonably be expected to occur in the foreseeable future if the project is not approved. This evaluation allows decision-makers to compare the effects of approving a project against the effects of not approving a project. The No Action Alternative describes probable future conditions based on the potential for current conditions to continue plus other assumptions about physical, biological, and socioeconomic changes that might occur without the project.

Projecting hydrologic conditions for this project is complicated by uncertainties of future water flows into the Sea. The flow of water will depend on external factors not associated with the Salton Sea Project, and the timing of the flow is unknown. Thus, possible No Action conditions can be defined with both current and reduced flows. For purposes of analysis, project effects have been evaluated against three No Action/No Project inflow scenarios:

Current (present-day) inflow conditions continue throughout both Phases 1 and 2, with average annual inflows of 1.36 maf/yr;

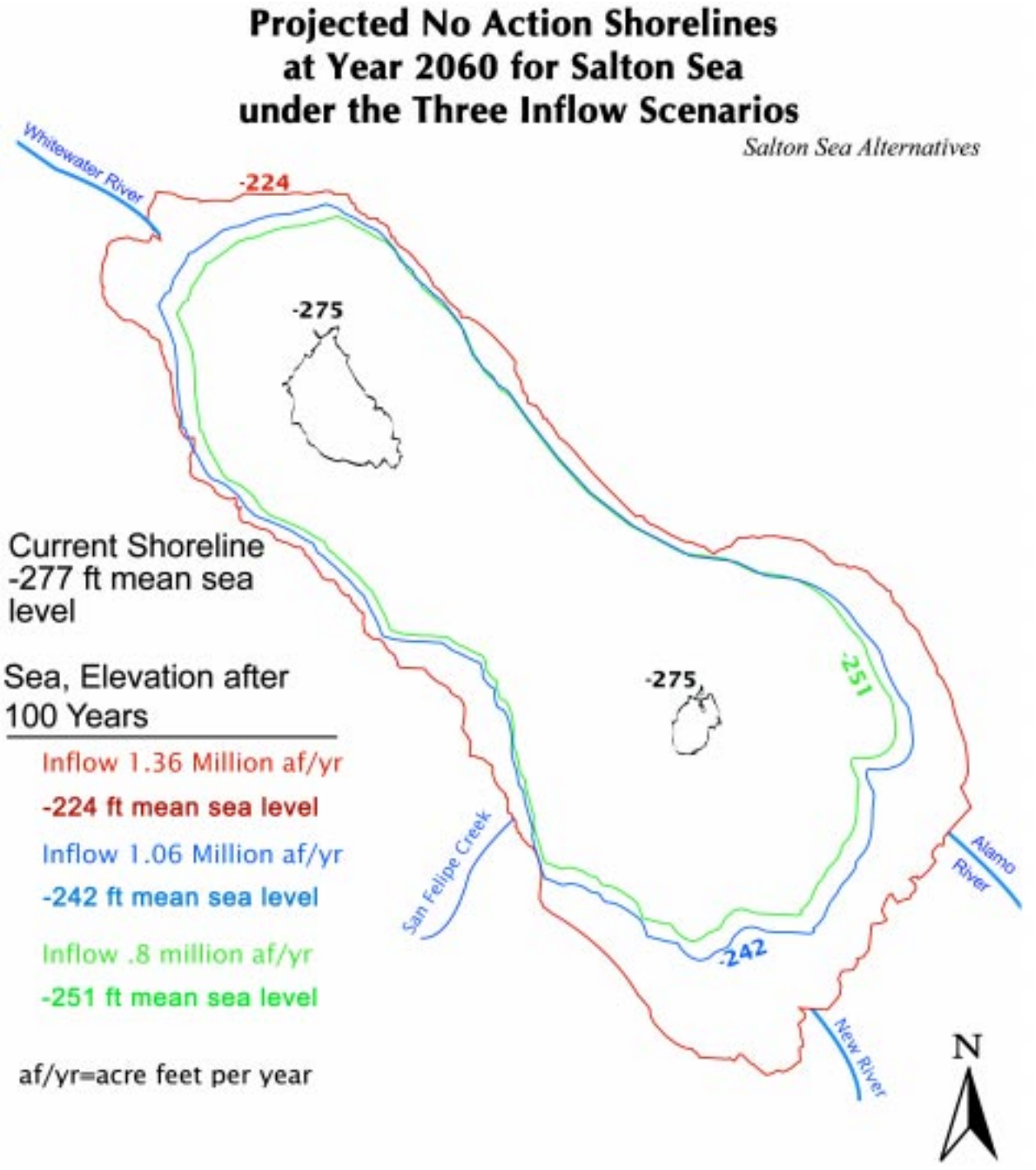
Annual inflows are incrementally reduced throughout Phase 1 to 1.06 maf/yr at the beginning of Phase 2; inflows remain at 1.06 maf/yr throughout Phase 2; and

Annual inflows are incrementally reduced throughout Phase 1 and continue to decline into Phase 2 until they reach 0.8 maf/yr.

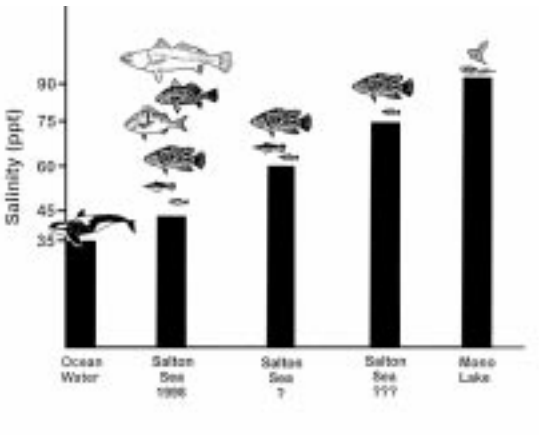


The Salton Sea, situated in the middle of the Pacific Flyway— one of several major avian migratory routes — is a vital link in many bird species wintering and feeding stopover refuges.

Rising water levels, unpleasant odors, and occasional fish die-offs along beaches are some of the factors that are affecting optimal use of the sea. The Restoration Project will address ways to improve the economy of the sea without sacrificing its ecology.


Projected No Action Shorelines
at Year 2060 for Salton Sea
under the Three Inflow Scenarios
Salton Sea Alternatives
Whitewater River
-224
-275
-275
-251
-242
San Felipe Creek
Alamo River
New River
N
Current Shoreline
-277 ft mean sea level
Sea, Elevation after 100 Years
Inflow 1.36 Million af/yr
-224 ft mean sea level
Inflow 1.06 Million af/yr
-242 ft mean sea level
Inflow .8 million af/yr
-251 ft mean sea level
af/yr=acre feet per year

These potential future inflows are considered reasonable future scenarios, in light of the varied other projects in the region currently under consideration that may ultimately gain approval and affect the inflow of water to the Sea. If present-day inflow conditions continue, the salinity in the Sea is expected to reach 53,000 mg/L by 2030. Under either reduced inflow scenario, the salinity is projected to reach 75,000 mg/L in the same year. At this salinity it is unlikely that any fish could survive.



Potential impacts of rising salinity on fish life of the Salton Sea.

Possible future shorelines without the project are shown on the map on the preceding page. The map shows projected shorelines for 2060 under the three inflow scenarios. Under the lowest inflow scenario, the area of the Sea is projected to be about 100 square miles smaller than it is currently.

In the future, in addition to changes in the quantities of inflows, the quality of inflowing water may also change. Requirements of the Clean Water Act will tend to improve the quality of water that flows into the Sea. However, under the reduced inflow scenarios there may also be a higher concentration of salts in the inflowing waters.

Regardless of the future inflow scenario, these effects can be expected without restoration:

The existing fishery will deteriorate and disappear;

Bird species would be threatened by loss of fisheries;

A significant drop in Sea elevation and decrease in surface area could occur if inflows to the Sea decrease in the future; and

Local economic conditions and recreational opportunities would continue to decline.

As illustrated in the chart above, without restoration, the sport fish species in the Sea are projected to die off over the next 20 to 30 years as salinity values reach 50,000 to 60,000 mg/L.

Phased Implementation Strategy

Some actions are needed sooner than others are, and some project components can be designed and constructed sooner than others. For example, water imports will be needed only if future average inflows to the Sea decline. Therefore, a phased alternative implementation strategy is proposed. Phase 1 actions would be implemented between the years 2003 and 2015. Phase 2 actions, if needed at all, are generally planned for the year 2030 and beyond. Phase 1 actions are

SUMMARY OF SALTON SEA RESTORATION PROJECT ALTERNATIVE ACTIONS

Future Inflow Scenario (maf/yr)	Phase 1 (before 2030)			Phase 2 (2030 and beyond)	
	2003	2008	2015	2030	2060
Alternative 1					
1.36	Fish Harvesting Improve Rec. Facilities Shoreline Cleanup Wildlife Disease Control North Wetland Habitat	2 Ponds at 38 kaf/yr Pupfish Pond	Accelerated Export – 150 kaf/yr		
1.06	Same as above	Same as above	Same as above, plus Displacement Dike	Import Central Arizona Salinity Interceptor (CASI) Water (up to 304.8 kaf/yr, as required)	
0.80	Same as above	Same as above	Same as above	Same as above, plus Import Flood Flows	
Alternatives 2 and 3					
1.36	Fish Harvesting Improve Rec. Facilities Shoreline Cleanup Wildlife Disease Control North Wetland Habitat	150 kaf/yr EES (showerline technology)			
1.06	Same as above	Same as above	Displacement Dike Import Flood Flows	Import CASI Water (up to 304.8 kaf/yr, as required)	
0.80	Same as above	Same as above	Same as above	Same as above	Additional Displacement or Inflow
Alternative 4					
1.36	Fish Harvesting Improve Rec. Facilities Shoreline Cleanup Wildlife Disease Control North Wetland Habitat	100 kaf/yr EES 1 Evaporation Pond (S) at 68 kaf/yr Pupfish Pond		Increase EES capacity to 150 kaf/yr	
1.06	Same as above	Same as above	Displacement Dike Import Flood Flows	Same as above, plus Import CASI Water (up to 304.8 kaf/yr, as required) Reduce EES at 100 kaf/yr	
0.80	Same as above	Same as above	Same as above	Same as above	
Alternative 5					
1.36	Fish Harvesting Improve Rec. Facilities Shoreline Cleanup Wildlife Disease Control North Wetland Habitat	150 kaf/yr EES in-Sea Evaporation Pond (N)		Export – 150 kaf/yr	
1.06	Same as above	Same as above	Displacement Dike Import Flood Flows	Import CASI Water (up to 304.8 kaf/yr, as required)	
0.80	Same as above	Same as above	Same as above	Same as above	Additional Displacement or Inflow

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.

Desert Pupfish

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

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:

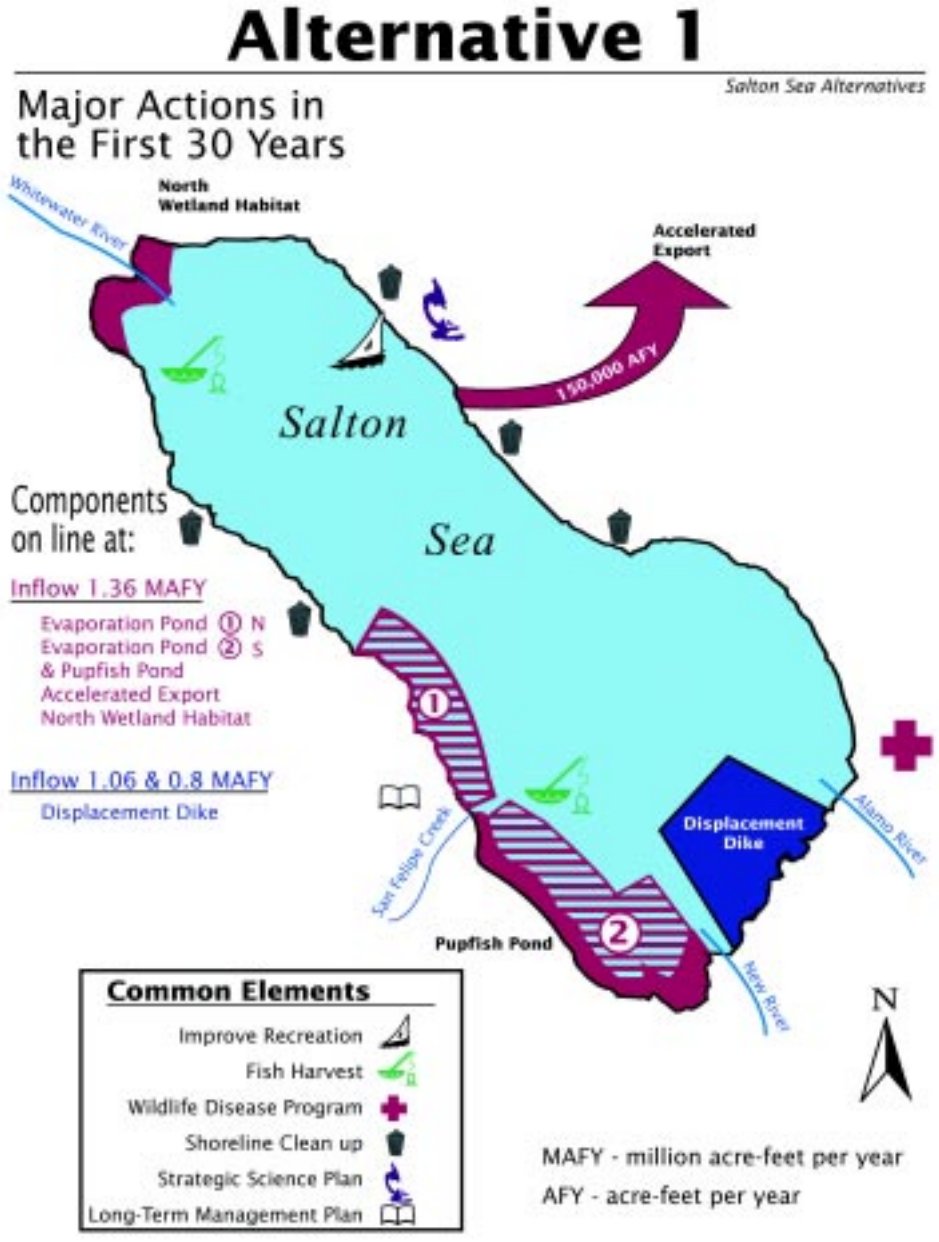
- Localized dust problems
- Temporary, localized disturbance of plants and animals near construction sites
- Potential traffic delays between the material borrow site and construction sites near the Sea

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.

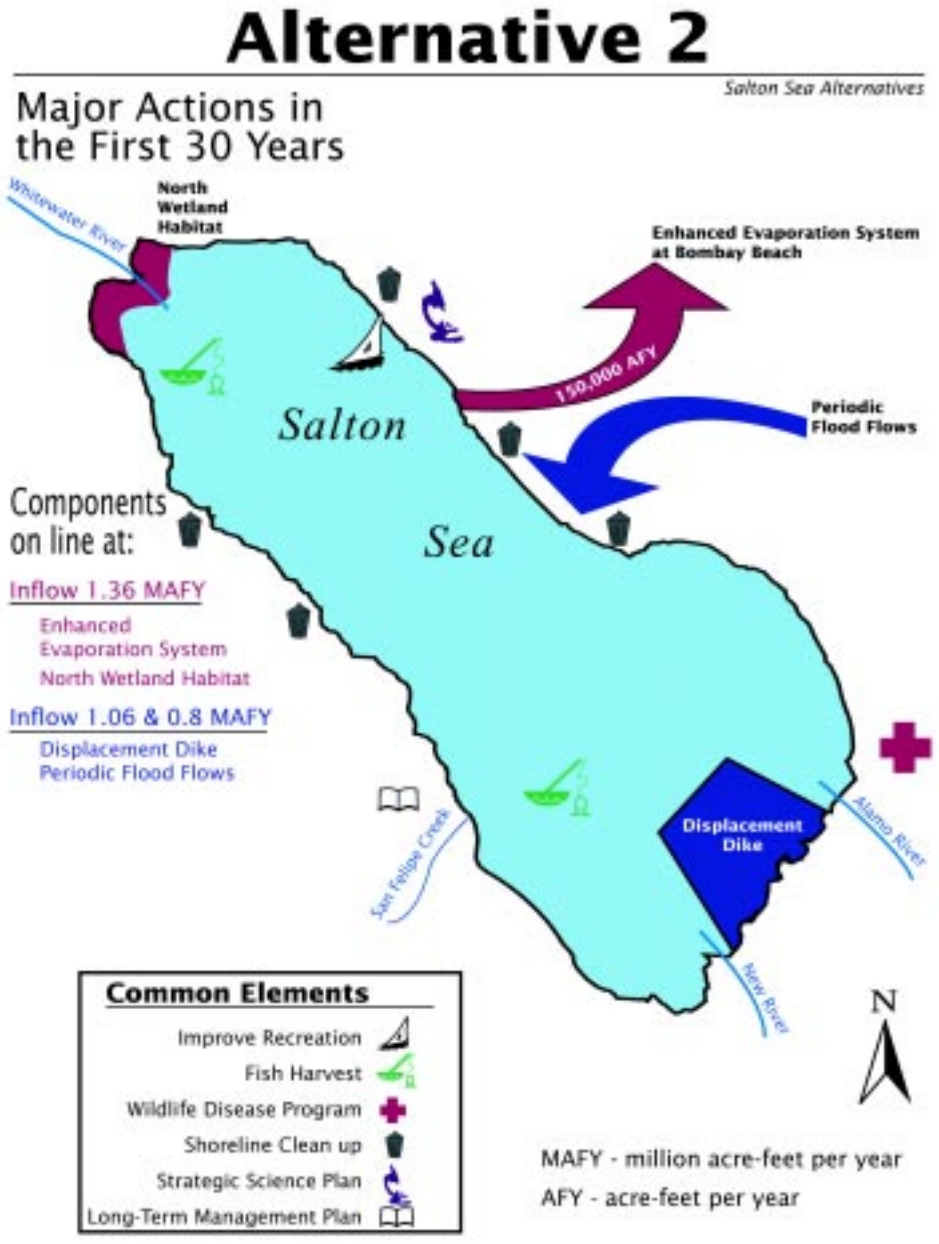
Alternative 1

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.



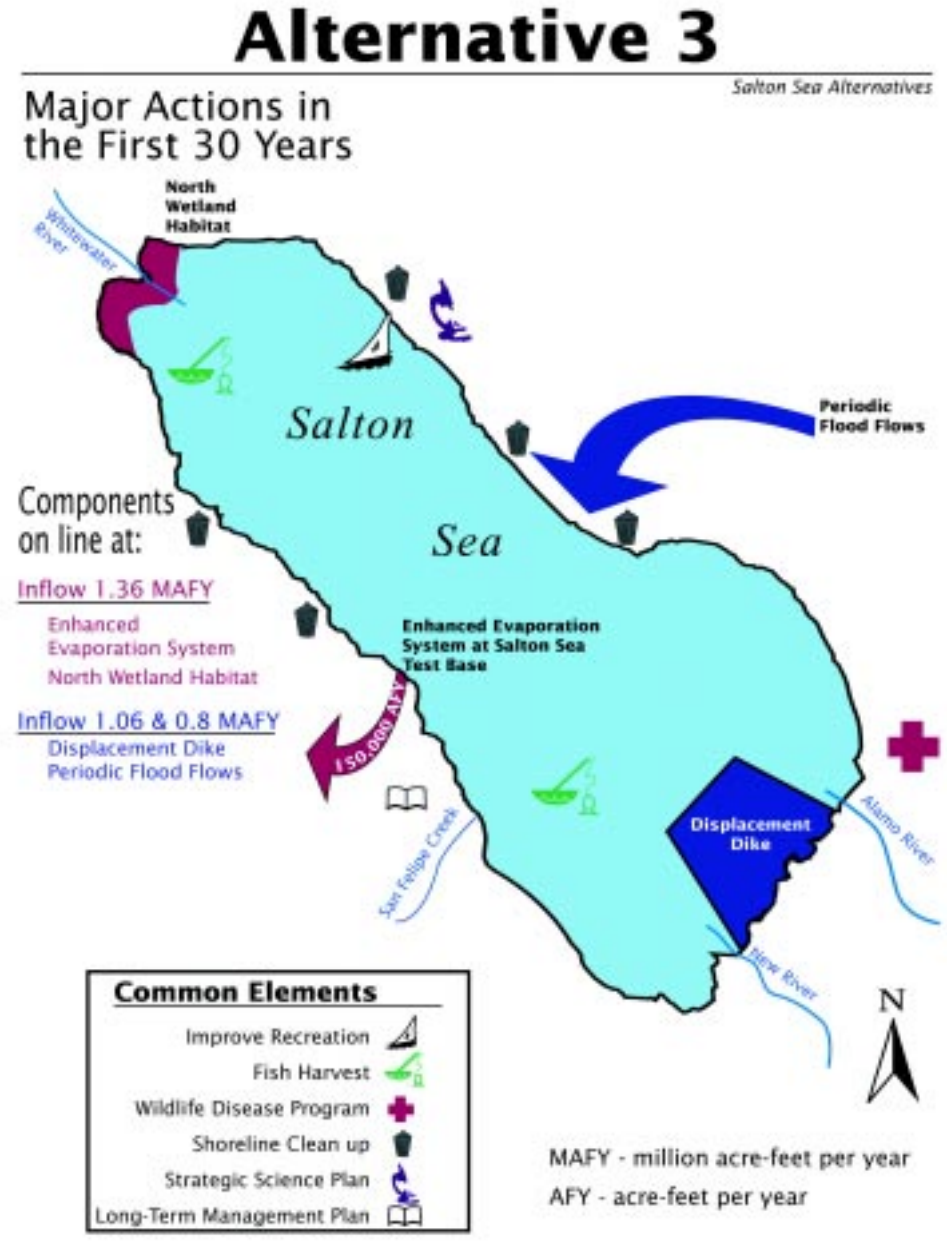
Alternative 2

Alternative 2 would involve constructing an Enhanced Evaporation System (EES) on a site north of Bombay Beach. The EES is a method to remove salts from the Sea by increasing evaporation rates through spraying. Alternative 2 involves constructing tower modules to process 150,000 af/yr of Salton Sea water. The system would operate on average 18 hours per day and automatically shut down when winds exceed 14 miles per hour (mph). Each module would consist of a line of towers connected by hoses with spray nozzles and precipitation ponds.



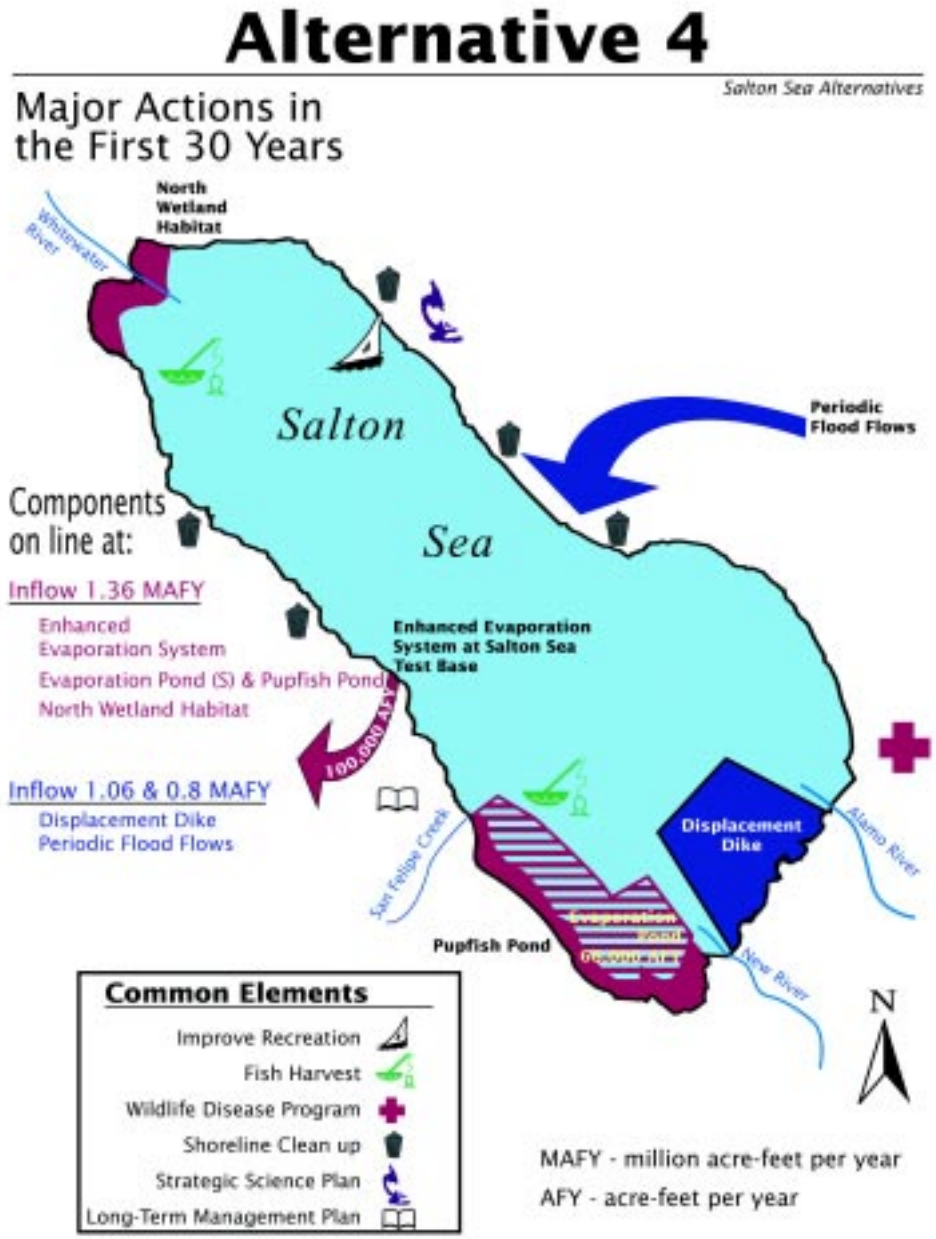
Alternative 3

Alternative 3 would be similar to Alternative 2 however, for Alternative 3 the EES would be located at the Salton Sea Test Base.



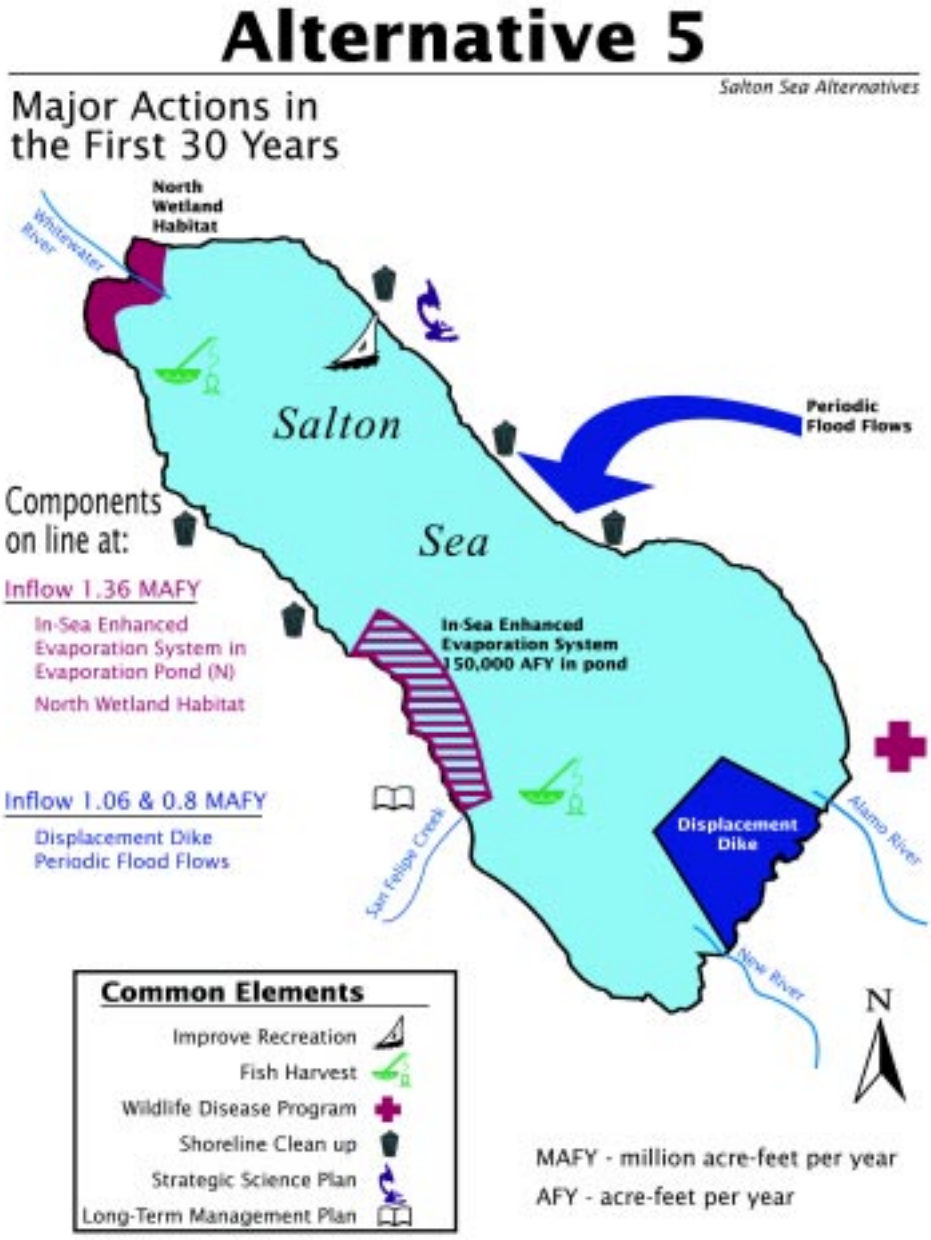
Alternative 4

This alternative combines the technology of Alternatives 1 and 3 to increase the effectiveness and speed at which salts are removed from the Sea. The EES would be constructed on the Salton Sea Test Base, but the size of the EES would be reduced to a capacity of 100,000 af/yr. The southwest evaporation pond would be constructed as described in Alternative 1.



Alternative 5

Alternative 5 combines an evaporation pond near the Salton Sea Test Base with a 150,000 af/yr EES incorporated within the pond itself. The EES used in this alternative would involve technology typically used in artificial snowmaking. Instead of the tower configuration described in Alternative 1, this method would utilize a series of portable, ground-based blowers that would use air to spray piped Salton Sea water up into the air and into the evaporation pond, rather than dropping it from towers.



How to Obtain Information

Information about the Salton Sea Restoration Project may be obtained by contacting one of the agency points-of-contact or web sites.

Points of Contact

Tom Kirk
Salton Sea Authority
78-401 Highway 111, Suite T
La Quinta, CA 92253
Phone: (760) 564-4888
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Email: tkirk@salton-sea.dst.ca.us

William Steele
US Department of Interior
Bureau of Reclamation
P.O. Box 61470
Boulder City, Nevada 89006-1470
Phone: (702) 293-8129 or Fax: (702) 293-8023
Email: wjsteele@lc.usbr.gov

Web Site Addresses

Project information is available on the following web sites:

Salton Sea Restoration Project Web-Site. The official project web page can be accessed from the US Bureau of Reclamation Lower Colorado Region website located at http://www.lc.usbr.gov. Starting from the Lower Colorado Region home page, click on the Salton Sea icon to access the Salton Sea Restoration Project web page. This web page contains useful information plus email links to the project leads.

UC Redlands Salton Sea Database Program Web-Site. This web page contains useful information on the UC Redlands database program. The web page can be accessed through Reclamation's webpage, http://www.lc.usbr.gov.

Where Can I Find the Draft EIS/EIR?

The Draft EIS/EIR is a large technical volume that contains the supporting details for the information summarized in this document. The EIS/EIR is over 600 pages in length and is generally understandable by individuals with a technical background. During the public comment period, the document along with the Strategic Science Plan, will be available for review at the locations listed on the following page. Local branch libraries will also have copies of the documents available for review—contact the Salton Sea Authority office for specific locations.

LOCATIONS WHERE THE DRAFT EIS/EIR WILL BE AVAILABLE

Calipatria, CA
Sonny Bono Salton Sea NWR
906 West Sinclair Road
Calipatria, CA 92233

Coachella, CA
Coachella Valley Water District
Highway 111 and Avenue 52
Coachella, CA 92236

El Centro, CA
Imperial County Administrative Center
940 West Main Street, Suite 208
El Centro, CA 92243-2875

Imperial, CA
Imperial Irrigation District
333 East Barioni Boulevard
Imperial, CA 9225

Indio, CA
Supervisor, District 4 (Supervisor Roy Wilson)
46-200 Oasis Street, Suite 318
Indio, CA 92201

La Quinta, CA
Salton Sea Authority
78-401 Highway 111, Suite T
La Quinta, CA 92253

Niland, CA
Bombay Beach Community Services District
9590 Avenue C
Niland, CA 92257

North Shore, CA
Salton Sea State Park
100-225 State Park Road
North Shore, CA 92254

Riverside, CA
Riverside County (Supervisor Roy Wilson's Office)
4080 Lemon Street
12th Floor
Riverside, CA 92502

Salton City
Community Services District
2098 Frontage Road
Salton City, CA 92275

GLOSSARY

California Environmental Quality Act (CEQA)	Establishes California policy designed to encourage consideration of the influence of human activities on the natural environment. Requires preparation of an Environmental Impact Report (EIR).
Clean Water Act of 1972, 1987 (CWA)	Federal legislation for improving the nation's water resources. Requirements include: (1) identification of waters that do not comply with water quality standards, (2) ranking of impaired water bodies, and (3) establishment of Total Maximum Daily Loads (TMDLs) for those pollutants causing impairments.
Cultural resources	Prehistoric and historic districts, sites, buildings, objects, or any other physical evidence of human activity considered important to a culture, subculture, or a community for scientific, traditional, religious, or any other reason. Native American resources are sites, areas, and materials important to Native Americans for religious or heritage reasons.
EIS/EIR	Environmental Impact Statement/Environmental Impact Report, a document prepared in compliance with NEPA and CEQA to assess effects of a project.
Evaporation pond	Diked areas where evaporation would concentrate salts to allow salinity in the remainder of the water body to be maintained at an acceptable level.
Special-status species	Species recognized by Federal or State law as protected because it is endangered or threatened with extinction throughout all or a significant portion of its range.
Enhanced Evaporation System (EES)	A method to reduce the salinity of the Salton Sea. Water is sprayed at a sufficient height for the water to evaporate and the salts to precipitate and collect in a catchment basin.
Mean	The average value of items in a sample.
National Environmental Policy Act (NEPA)	Public Law 91-190, passed by Congress in 1969, established a national policy designed to encourage consideration of the influence of human activities on the natural environment. Requires that an Environmental Impact Statement (EIS) be prepared and made available to the public before decisions are made on major Federal programs that have significant environmental impacts.
Native Americans	Used in the collective sense to refer to individuals, bands, or tribes who trace their ancestry to indigenous populations of North America prior to Euro-American contacts.
Salinity	The concentration of salts in a liquid commonly measured in milligrams per liter (mg/L) or parts per million (ppm).
US Environmental Protection Agency (EPA)	The independent Federal agency established in 1970 to regulate federal environmental matters and to oversee the implementation of federal environmental laws.