

CHAPTER 8

Interest Groups Comments

CHAPTER 8 INTEREST GROUPS COMMENTS

This chapter contains copies of the comment letters received from interest groups, as listed in Table 8-1. Each letter and the responses are provided in a side-by-side format. Responses to comments are numbered individually in sequence, corresponding to the numbering assigned to the comments in each comment letter. The responses are prepared in answer to the full text of the original comment. The letters are arranged alphabetically by abbreviation.

**Table 8-1
Interest Groups Comments Received on the Salton Sea Ecosystem Restoration Program
Draft Environmental Impact Report**

Abbreviation	Agency	Name
AAS	Altacal Audubon Society	Dawn Garcia
ALAC, et al	American Lung Association-California, California League of Conservation Voters, California Native Plant Society, California Waterfowl Association, Center for Community Action and Environmental Justice, Coalition for Clean Air, Defenders of Wildlife, Desert Protective Council, Environment California, The Institute for Socio-Economic Justice, Los Angeles Audubon Society, National Audubon Society, Natural Resources Defense Council, Pacific Institute, Pasadena Audubon Society, Planning and Conservation League, Sierra Club, United Anglers, and Western Outdoor News	Bonnie Holmes, Susan Smartt, Amanda Jorgenson, Bill Gaines, Donna Charpied, Tina Andolina, Kim Delfino, Terry Weiner, Dan Jacobsen, Eric Reyes, Garry George, Julian Levin, John Flicker, Ann Notthoff, Michael Cohen, Don Rogers, Gary Patton, Jim Metropulos, Tom Raftican, Bill Karr
BVAS	Buena Vista Audubon Society	Andrew Mauro
CALENERGY	CalEnergy	Vincent J. Signorotti
CCA EJ	Center for Community Action and Environmental Justice	Donna Charpied
CELP	California Environmental Law Project	Laurens H. Silver
CFBF	California Farm Bureau Federation	William J. DuBois
CURE	Citizens United for Resources and the Environment, Inc. and Consejo de Desarrollo Economico de Mexicali	Rene X. Acuna, Mallisa Hathaway McKeith
ECCC	El Centro Chamber of Commerce	Laura Vasquez
ED	Environmental Defense	Thomas J. Graff
EHL	Endangered Habitats League	Dan Silver
EJCW-a	Environmental Justice Coalition for Water	Miriam Torres

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Interest Groups Comments Received on the Salton Sea Ecosystem Restoration Program
Draft Environmental Impact Report

Abbreviation	Agency	Name
EJCW-b	Environmental Justice Coalition for Water, Friends of the River, High Country Citizens Alliance, Living Rivers, National Wildlife Federation, Pacific Institute, Sonoran Institute, Southern California Watershed Alliance, and Western Resource Advocates	Miriam Torres, Peter Ferenbach, Steve Glazer, John Weisheit, Stephen C. Torbit, Michael Cohen, Francisco Zamora, Conner Everts, Bart Miller
FD-a	Friends of the Desert	Christopher W. Cockroft
FD-b	Friends of the Desert	Christopher W. Cockroft
FWN	Fund for Wild Nature	Marnie Gaede
ICFB	Imperial County Farm Bureau	Vincent L. Brooke
IEW	Inland Empire Waterkeeper	Mandy Revell
IG	Imperial Group	Patrick J. Maloney
SAS	Sequoia Audubon Society	Robin Winslow Smith
SC	Sierra Club	John Holtzclaw
SFVAS	San Fernando Valley Audubon Society	Seth Shteir
SGCSC	San Gorgonio Chapter of Sierra Club	Larry Charpiet
SMBAS	Santa Monica Bay Audubon Society	Margaret Huffman

JAN 22 2007

January 2, 2007

Email: SaltonSeaComments@water.ca.gov

Attn: Dale Hoffman-Floerke
Salton Sea PEIR comments
CA Department of Water Resources
Colorado River & Salton Sea Office
1416 9th Street, Room 1148-6
Sacramento, CA 95814

Re: Comments on Draft PEIR for Salton Sea

Dear Mr. Hoffman-Floerke,

I am writing for our chapter as the Conservation Chair for the Altacal Audubon Society, based in Chico California. We have been alerted to the problems surrounding the Salton Sea and restoration efforts described in the Programmatic Environmental Impact Report for the Salton Sea Ecosystem Restoration Program (PEIR). We recognize the 'Sea' as essential habitat to millions of resident and migratory birds whose populations, without the current size and habitat provided by the sea, would be in jeopardy. The Salton Sea is particularly vital to birds now, as the wetlands historically spread across the California landscape and used by birds along the Pacific Flyway, have dwindled to approximately 5 percent; a 95% loss of wetland habitat.

I recently drove south to the Salton Sea to see for myself why we should be concerned about this shrinking giant inland body of water. Also, I was set to find the first State record of the Ross' gull, the Arctic wanderer had confused his bearings but fortunately found refuge at the Sea. Hundreds of people drove down to see this bird and no doubt added revenue to the local economy while searching for the gull, another valuable reason to keep the Sea bird friendly. Further, as the Sea evaporates, the No Action scenarios described in the PEIR discuss the toxins that will be exposed, windblown, and airborne, degrading the health of residents of the Imperial and Coachella valleys.

Clearly these three reasons alone are enough to support the best protection of the Salton Sea, yet legal requirements to maximize wildlife habitat and provide air and water quality protection are not satisfied in any of the alternatives in the PEIR.

Therefore, we urge that DWR construct a final preferred alternative that includes actions and features from several of the alternatives in the PEIR. These activities would meet the legal requirements for restoration and address the Valley health, recreation and development opportunities. We have reviewed and support the following recommendations given by California Audubon.

- Between 25,000 – 50,000 acres of Shallow Saline Habitat Complex, as described in Alternatives 1 and 2, at the southern and northern ends of the Sea to provide habitat for shoreline species;

Altacal Audubon Society (AAS)

AAS-1

As described in Chapter 3 of this Final PEIR, the Preferred Alternative recommended by the Secretary for Resources includes a variety of components that are intended to meet the legislative mandates of providing the maximum feasible attainment of the following objectives:

- Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea;
- Elimination of air quality impacts from the restoration project; and
- Protection of water quality.

Specifically, the Preferred Alternative includes 62,000 acres of Saline Habitat Complex, a 45,000-acre Marine Sea, incorporates the air quality "tool box" measures to eliminate, to the extent feasible, air quality impacts from the restoration project, and includes other measures and design considerations that would work to protect water quality. Under the Preferred Alternative, Air Quality Management and the Saline Habitat Complex would have the highest priority for inflows, followed by inflows into the Marine Sea.

The 62,000-acre Saline Habitat Complex included in the Preferred Alternative would be located in the southern and northern portion of the Salton Sea and would provide habitat for a variety of avian species such as shorebirds, waterfowl, and potentially for fish-eating birds, including sensitive species currently found at the Salton Sea. It is expected that the Saline Habitat Complex would also provide limited habitat for some fish species, such as tilapia, and thus, provide foraging habitat for fish-eating birds. The Saline Habitat Complex is expected to provide the microclimate benefits that currently exist at the Salton Sea, and could be constructed using a variety of construction methods including Geotubes®.

The 45,000-acre Marine Sea included in the Preferred Alternative would be located primarily in the northern portion of the Sea, but would extend down the majority of the eastern and western shorelines. It is intended to support a marine fishery and fish-eating birds (such as pelicans, double-crested cormorants, and black skimmers). The Marine Sea would stabilize at a water surface elevation of -230 feet msl with a salinity between 30,000 mg/L and 40,000 mg/L. The water depth would be less than 10 to 12 meters (39 feet) to reduce hydrogen sulfide generation and potential fish kills due to long-term temperature stratification (temperature variations from top to bottom of the sea).

AAS-1

AAS (cont.)

The Preferred Alternative incorporates the air quality “tool box” measures to eliminate, to the extent feasible, air quality impacts from the restoration project. These measures include the allocation of 0.5 acre-foot per acre of water to manage emissive areas of the Exposed Playa. The Preferred Alternative also includes actions and mitigation measures to reduce air quality impacts that could result from construction and operations and maintenance activities.

Although not a legislatively mandated objective, the Saline Habitat Complex is expected to allow for passive recreational opportunities, such as bird watching. Additionally, the Marine Sea would provide for water-based recreational opportunities that have historically occurred at the Salton Sea. This would include boating and fishing opportunities and allow for the ongoing operation of the majority of the existing harbors at the Salton Sea.

The Preferred Alternative also includes a variety of actions that could be implemented within the 5-year timeframe after the Legislature provides direction on implementation of a restoration program and identifies a future implementing agency. These actions include activities such as Early Start Habitat and measures targeted to address air quality uncertainties.

The Preferred Alternative includes many of the components suggested by the commenter. See Chapter 3 of this Final PEIR for a more detailed description of the Preferred Alternative.

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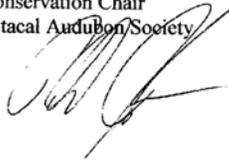
AAS (cont.)

- Create concentric rings using geotubes or other dirt-filled barriers, as described in Alternative 4, to provide additional shallow habitat, deeper marine habitat, shoreline and view protection, air-quality protections, and recreation;
- Similar to the lakes found in Alternatives 5-7, provide a large (approximately 10,000 acre) North Lake, which would be the largest recreational lake in Southern California, fed by the Whitewater River to provide recreation and development opportunities without the costs and risks associated with a major mid-Sea barrier or the costs of pumping water from the southern end of the Sea;
- Provide at least one-half acre-foot of water per acre of exposed Seabed, as stipulated by the Salton Sea Advisory Committee, to prevent dust pollution caused by exposed playa, as described in Alternatives 1-3, 5-6 and 8;
- Construct shallow saline habitat (known as “early start habitat”) immediately to provide resources for birds during the long permitting and construction process, as described in all of the proposed alternatives; and
- Develop a plan that provides water for habitat and air quality mitigation first, in case of possible shortages or system malfunctions, as described in Alternatives 1-3.

AAS-1
cont.

Not only do we agree that this hybrid plan is the best alternative for people AND wildlife, we also understand by advocating this plan, the State will not have to redo the PIER process again. We believe that this is an essential and viable alternative. Thank you for your consideration.

Dawn Garcia
Conservation Chair
Altacal Audubon Society





January 16, 2007

Attn: Dale Hoffman-Floerke
Salton Sea PEIR comments
CA Department of Water Resources
Colorado River & Salton Sea Office
1416 9th Street, Room 1148-6
Sacramento, CA 95814

Re: Comments on Draft PEIR for Salton Sea

Dear Ms. Hoffman-Floerke:

We submit these comments on the Salton Sea Ecosystem Restoration Program Draft Programmatic Environmental Impact Report (PEIR) on behalf of American Lung Association-California, Audubon California, California League of Conservation Voters, California Native Plant Society, California Waterfowl Association, Center for Community Action and Environmental Justice, Coalition for Clean Air, Defenders of Wildlife, Desert Protective Council, Environment California, The Institute for Socio-Economic Justice, Los Angeles Audubon Society, National Audubon Society, Natural Resources Defense Council, Pacific Institute, Pasadena Audubon Society, Planning and Conservation League, Sierra Club, United Anglers, and Western Outdoor News. Together, our organizations have and represent more than one million members nationwide, many of whom hunt, fish, birdwatch, camp or otherwise enjoy the Salton Sea and species that depend on the Salton Sea. In addition, tens of thousands of our members live in the Coachella and Imperial valleys and many times that many live in the service area of the three water agencies that are party to the 2003 Quantification Settlement Agreement. We submit these comments on our organizations' and members' behalf.

I. INTRODUCTION

The Salton Sea is an internationally significant resource. Its restoration is essential to wildlife, the protection of public health and the quality of life in the surrounding communities. It is considered a globally important bird area because of its astounding diversity of bird species – more than 400, the second-highest count in the nation – and the very large populations of some species that rely on it for habitat. Its restoration is also essential to protect public health and agriculture from dangerous levels of dust pollution that would otherwise result from exposed seabed. It offers important opportunities for recreation, hunting, fishing and economic development. Finally, restoration is an essential element of the Quantification Settlement Agreement and the associated water transfer from the Imperial Irrigation District to urban Southern California.

Restoration of the Salton Sea is as complex as it is important and could not succeed without a meaningful public process. We commend the Resources Agency and the Department of Water Resources for leading an extensive public process to develop and analyze the alternatives presented in the Draft PEIR. Input from the Salton Sea Advisory Committee, other technical groups, and the public have been invaluable for identifying the range of alternatives and educating stakeholders about the many issues involved in

American Lung Association-California, Audubon California, California League of Conservation Voters, California Native Plant Society, California Waterfowl Association, Center for Community Action and Environmental Justice, Coalition for Clean Air, Defenders of Wildlife, Desert Protective Council, Environment California, The Institute for Socio-Economic Justice, Los Angeles Audubon Society, National Audubon Society, Natural Resources Defense Council, Pacific Institute, Pasadena Audubon Society, Planning and Conservation League, Sierra Club, United Anglers, and Western Outdoor News (ALAC, et al)

restoration planning. We urge the State to continue this open, public process to develop and implement the Preferred Alternative for restoration. We also urge the State to provide more advanced notice about future public meetings (some meetings had less than one week's advance notice, despite specific requests for more notice), and to make greater efforts to reach out to Spanish-speaking communities in the study area.

Although the process has succeeded in producing a broad range of alternatives and components, none of the alternatives as presented in the Draft PEIR meets the legal objectives for restoration. In addition, several critical issues, such as water quality treatment and the source of construction materials, should have been more fully analyzed in the Draft PEIR as they may determine which alternatives are truly feasible and which ones best meet the legal requirements for restoration with the least amount of risk or uncertainty. In the absence of these critical analyses, the preferred alternative should avoid components or elements that are based on untested or high-risk assumptions that may be refuted during the project level EIR or later.

To meet the legal requirements for restoration, the Preferred Alternative should combine the best features of several different alternatives, including those with the fewest risks and uncertainties, as well as a clearly defined means to protect water quality. We urge the Secretary to select a Preferred Alternative that contains the most feasible components to meet the legal requirements for restoration. Our detailed comments on the draft alternatives and suggestions for the Preferred Alternative are below.

II. LEGAL REQUIREMENTS FOR RESTORATION

In September 2003, the Governor signed into law a package of three bills approving the Imperial Irrigation District ("IID")/San Diego County Water Authority/Coachella Valley Water District water transfer (hereinafter "IID water transfer"). The three bills were Senate Bill ("SB") 277 (Senator Denise Ducheny – San Diego), SB 317 (Senator Sheila Kuehl – Santa Monica) and SB 654 (Senator Mike Machado – Linden). The Legislature intended that these bills protect the Salton Sea for the next 15 years by requiring that IID provide mitigation water to the Sea so that there was no material increase in salinity at the Sea for the next 15 years.¹ As part of this deal, the state also agreed to assume full liability for impacts at the Sea beyond the \$133 million cap placed on the mitigation responsibilities of the four participating southern California water districts.²

¹ The 15 year requirement for mitigation water is consistent with the State Water Resource Control Board's ("SWRCB") final order approving the IID water transfer. This order and Notice of Determination was issued by the SWRCB on December 24, 2002. [See SWRCB Water Rights Order \(WRO\) 2002-0013.](#)

² In addition, to the State assuming liability for the conditions at the Salton Sea, the SWRCB, as part of its 2002 order approving the IID water transfer, has continued to reserve jurisdiction over habitat and air quality at the Salton Sea in the event of new information, new legislation and/or new circumstances. [See Condition 6 of WRO 2002-0013, p. 87](#) ("The SWRCB reserves continuing authority to consider whether it would be appropriate to add, delete, or modify the mitigation measures required by Conditions 5 and 6, above, in light of the results of the study on the feasibility of restoration to be prepared by the Secretary of the Interior, in cooperation with the Resources Agency, the Salton Sea Authority, and the Governor of California, in accordance with the Salton Sea Reclamation Act of 1998 [] and Senate Bill 482 []. In the event that the incidental take authorization contained in section 2 of SB 482 is not effective, the SWRCB reserves continuing authority to consider whether it would be appropriate to add, delete, or modify Conditions 5 and 6 in light of any subsequent legislation that addresses the measures necessary to allow the incidental take of fully protected, threatened, or endangered species that rely on the Salton Sea."). [See also Condition 8 of WRO 2002-0013, p. 88](#) ("In each [annual] report, if the air quality impacts of the project are not being mitigated to less than significant levels, permittee shall identify any air quality mitigation measures that it determined was infeasible. Notwithstanding such a determination by permittee, if the Chief of the Division of Water Rights, after consultation with the ICAPCD, the SCAQMD and the California Air Resources Board, that the mitigation measure is feasible and necessary to mitigate the air quality impacts of the project, then permittee shall implement the mitigation measure.")

ALAC et, al (cont.)

ALAC-1

The Salton Sea Restoration Act (Fish and Game Code 2931(c)(1-3)) states that "the preferred alternative shall provide the maximum feasible attainment of the following objectives: (1) Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea. (2) Elimination of air quality impacts from the restoration projects. (3) Protection of water quality." All of the alternatives meet the legislative objectives to varying degrees. In addition, the Resources Agency believes that all of the alternatives are feasible; however, some of the alternatives have greater uncertainty than others.

As described in Chapter 3 of this Final PEIR, the Preferred Alternative recommended by the Secretary for Resources includes a variety of components that are intended to meet the legislative mandates of providing the maximum feasible attainment of the following objectives:

- Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea;
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Specifically, the Preferred Alternative includes 62,000 acres of Saline Habitat Complex, a 45,000-acre Marine Sea, incorporates the air quality "tool box" measures to eliminate, to the extent feasible, air quality impacts from the restoration project, and includes other measures and design considerations that would work to protect water quality. Under the Preferred Alternative, Air Quality Management and the Saline Habitat Complex would have the highest priority for inflows, followed by inflows into the Marine Sea.

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ALAC et, al (cont.)

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The Preferred Alternative incorporates the air quality “tool box” measures to eliminate, to the extent feasible, air quality impacts from the restoration project. These measures include the allocation of 0.5 acre-foot per acre of water to manage emissive areas of the Exposed Playa. The Preferred Alternative also includes actions and mitigation measures to reduce air quality impacts that could result from construction and operations and maintenance activities.

Although not a legislatively mandated objective, the Saline Habitat Complex is expected to allow for passive recreational opportunities, such as bird watching. Additionally, the Marine Sea would provide for water-based recreational opportunities that have historically occurred at the Salton Sea. This would include boating and fishing opportunities and allow for the ongoing operation of the majority of the existing harbors at the Salton Sea.

The Preferred Alternative also includes a variety of actions that could be implemented within the 5-year timeframe after the Legislature provides direction on implementation of a restoration program and identifies a future implementing agency. These actions include activities such as Early Start Habitat and measures targeted to address air quality uncertainties.

As suggested by the commenter, the Preferred Alternative attempts to avoid components or elements that are based on untested or high-risk assumptions. However, the Resources Agency also recognizes that the Salton Sea is a unique ecosystem and many technologies proven in other areas and at smaller scales are unproven in the Salton Sea environment and at the scale that they may be implemented at the Salton Sea. Thus, inherently, the Preferred Alternative includes some components or elements that are based on technologies untested at in the Salton Sea environment or at the scale that they may be implemented at the Salton Sea. To address this and other uncertainties, the Preferred Alternative includes a variety of actions that could be implementing within the five year timeframe after the Legislature provides direction on implementation of a restoration program and identifies a future implementing agency.

ALAC et, al (cont.)

These actions include a variety of studies, pilot projects, and related measures to address various uncertainties. See Chapter 3 of this Final PEIR for a more detailed description of the Preferred Alternative.

ALAC-2

Senate Bill 277, 317, 654, and 1214 speak for themselves. To clarify, as described in the QSA Joint Powers Authority (JPA) Agreement, under the Transfer Project and QSA, the State would be responsible for the costs for environmental mitigation requirements in excess of \$133 million. Section 9.2 of the QSA JPA Agreement, however, provides that the amount of such costs shall be determined by the affirmative vote of three of the QSA JPA commissioners, including the commissioner representing the state, which determination shall be reasonably made.

Finally, this legislative deal also required the state to create a restoration planning process with the goal of identifying and implementing a restoration plan for the Salton Sea within the 15-year grace period accorded to the Sea. SB 317 (Kuehl) set forth the restoration study process. The Secretary of Resources, in consultation with the Department of Fish and Game ("DFG"), Department of Water Resources ("DWR"), Salton Sea Authority ("SSA"), appropriate air quality districts, and the Salton Sea Advisory Committee ("SSAC"), shall undertake a restoration plan to determine a preferred alternative for the restoration of the Salton Sea ecosystem and the protection of wildlife dependent on that ecosystem.³

This bill also set forth that the Secretary shall conduct the restoration study pursuant to a process with deadlines for release of the report and programmatic environmental documents. According to the legislation, the Secretary should have submitted the study identifying a preferred alternative to the Legislature on or before December 31, 2006.⁴

SB 277 (Ducheny) created the Salton Sea Restoration Act that states that the Secretary must choose a preferred alternative developed through a restoration study as the final restoration plan to be presented to the Legislature.⁵ The preferred alternative shall provide the *maximum feasible attainment* of the following objectives:

- Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea.
- Elimination of air quality impacts from the restoration projects.
- Protection of water quality.⁶

In addition to the legislatively defined restoration goals and process, this restoration planning effort also must comport with the requirements of the California Environmental Quality Act ("CEQA"). According to CEQA Guidelines, the "project description" for an EIR must include a "statement of objectives sought by the proposed project."⁷ In addition, "[a] clearly written statement of the objectives will help the lead agency to develop a reasonable range of alternatives to evaluate the EIR. [] The statement of objectives should include the underlying purpose of the project."⁸

In this instance, the draft PEIR has not identified a specific project. Instead, the goal of this particular CEQA document and the restoration planning process is to identify at the end of the process a "project"

³ Fish and Game Code § 2081.7(e).

⁴ Fish and Game Code § 2081.7(e).

⁵ Fish and Game Code § 2931(b).

⁶ Fish and Game Code § 2931(c). In addition to the specific objectives for the selection of the preferred alternative, the restoration study shall establish all of the following:

- An evaluation of and suggested criteria for the selection of alternatives that will allow for the consideration of a range of alternatives including, *but not limited to*:
 - An alternative designed to sustain avian biodiversity at the Salton Sea, but not maintain elevation for the whole sea;
 - an alternative to maintain salinity at or below current conditions and elevation near 230 feet below mean sea level under a variety of inflow conditions; and
 - A most cost effective technical alternative.
- An evaluation of the magnitude and practicality of costs of construction, operation, and maintenance of each alternative evaluated.
- A recommended plan for the use or transfer of water to be sold to generate revenue for the restoration project. This water shall not be transferred unless it is found to be consistent with the preferred alternative for Salton Sea restoration.
- The preferred alternative must be consistent with Section 2931 (the restoration plan objectives discussed above) and must include a funding plan to implement the preferred alternative. (Fish and Game Code § 2081.7(e)(2)).

⁷ CEQA Guidelines § 15124 (b).

⁸ CEQA Guidelines § 15124 (b).

ALAC-3

ALAC, et al (cont.)

ALAC-3

Fish and Game Code Section 2081.7 requires the Secretary for Resources to prepare a restoration study for the Salton Sea. The code does not identify a 15-year "grace period" nor does it identify that the state is responsible for developing and implementing a restoration study.

which is a preferred alternative that meets all of the three legal objectives. The CEQA process here is not a project specific analysis, but is rather a programmatic EIR. According to the CEQA Guidelines, when the programmatic document only serves the function of a first-tier document – with the formulation of a later site-specific EIR – the programmatic EIR may focus on “broad policy alternatives and programwide mitigation measures,” as well as “regional influences, secondary effects, cumulative impacts . . . and other factors that apply to the program as a whole.”⁹ However, even when an agency prepares a programmatic EIR with later EIRs in mind, the agency should adopt performance standards or objectives.¹⁰

Thus, since the “preferred alternative” is essentially what the Legislature envisioned would likely be the final restoration “project” and since it would be prudent to develop a programmatic EIR with specific performance objectives, the above-discussed three objectives must be used to define the performance objectives of the programmatic EIR as well as to develop the range of alternatives to be evaluated. Here, it is unclear whether or not DWR has used the three legal objectives as the programmatic EIR performance standards/objectives. (See, e.g., Draft PEIR at 1-12 (“1-12”).) The Final PEIR must clearly state that the three legal objectives provide the performance standards for the programmatic document and define the range of alternatives in addition to providing the framework for choosing the preferred alternative.

The stated purpose of the document – “to develop a preferred alternative by exploring alternative ways to restore important ecological functions” (1-2) – sets a very low standard for information, much lower than that specified by CEQA guidelines themselves: “(1) Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities. (2) Identify the ways that environmental damage can be avoided or significantly reduced.”¹¹ A PEIR should provide clear and accurate information to enable informed decision-making: simply “exploring alternative ways” is not sufficiently rigorous a standard.

The PEIR notes that “The restoration study also must include at least one most cost-effective, technically feasible alternative.” (1-9) Unfortunately, this PEIR neglects to provide any information about this alternative, such as the criteria to be used to determine cost-effectiveness, technical feasibility, or why no additional information about this alternative is included in the PEIR. Given the high costs of the alternatives and limited state and federal budgets, the “most cost-effective, technically feasible alternative” may well be the only one deemed acceptable by the legislature.

Recommendation: include a thorough discussion of the most cost-effective alternative and the criteria used to select it.

III. THE DRAFT ALTERNATIVES, AS CONFIGURED IN THE DRAFT PEIR, FAIL TO MEET THE LEGAL REQUIREMENTS FOR RESTORATION.

A. The “Environmentally Superior Alternative,” as defined by CEQA, Fails to Meet the Legal Requirements for Restoration.

CEQA Guidelines require the identification of an environmentally superior alternative.¹² Normally, to determine the environmentally superior alternative, the lead agency will compare the alternatives with the project proposed and state whether they avoid or substantially reduce any potentially significant impacts

⁹ CEQA Guidelines § 15168 (b)(4).

¹⁰ While a programmatic EIR may be more generalized than subsequent project level EIRs, it still must identify those probably environmental effects that can be identified. The program level EIR must concentrate on a project’s long term “cumulative” impacts as well as contain enough details to anticipate “many subsequent activities if it deals with the effects of the program as specifically and comprehensively as possible.” CEQA Guidelines § 15168(c)(5).

¹¹ §15002(a).

¹² CEQA Guidelines § 15126.6(e)(2).

ALAC, et al (cont.)

ALAC-4

The most cost-effective, technically feasible alternative and the criteria for selecting it are described in Chapter 3 of this Final PEIR.

ALAC-4

associated with the proposed project. Here, in the absence of an identified project, DWR has identified the "environmentally superior alternative" by analyzing which alternative will have the least amount of adverse environmental impacts. (3-82). DWR concluded that Alternative 3 was the "environmentally superior alternative." (3-82)

Before turning to the issue of whether or not Alternative 3 meets the legal objectives for the preferred alternative, we disagree with DWR's analysis and conclusion regarding the environmental impacts of Alternative 3. First, it appears that DWR chose Alternative 3 over Alternatives 1 and 2 largely due to concerns about pupfish connectivity. However, as stated within the Draft PEIR at 8-29, Alternatives 1 and 2 pose similar risks to the No Action Alternative to Desert Pupfish. The U.S. Fish and Wildlife Service and DFG both signed off on endangered species compliance for the "no action" alternative when they issued take permits for the IID water transfer. Thus, presumably, all alternatives will meet the minimum standards set by the wildlife agencies for the pupfish requirement. As such, pupfish needs cannot be considered to be a factor any greater than the needs of other birds and fish historically found at the Sea. Nor should the pupfish issue outweigh other environmental concerns such as air quality.

Second, Alternative 3 provides significantly less habitat for the bird populations at the Sea than Alternatives 1 and 2. (See Habitat Requirements Analysis in Appendices H 1-8 and C 10-11). Moreover, the extensive air quality impacts from Alternative 3 due to the need to move and place more than 85 million cubic yards of rock (3-52) would create greater air quality impacts than any other alternative except Alternative 6.

Thus, of the eight action alternatives analyzed by the Draft PEIR, we believe that Alternative 2 should be considered the environmentally superior alternative because it provides the greatest amount of habitat for birds and fish and has the lesser impact on air quality than Alternative 3.

The Salton Sea Ecosystem Restoration Program draft PEIR selects an "environmentally superior alternative" based on the criterion of "the least amount of adverse impacts" (3-82). This counter-intuitive criterion highlights a deficiency within CEQA itself, one that warrants attention and revision by the legislature. CEQA Guidelines require an EIR to "identify an environmentally superior alternative among the other alternatives."¹³ This is likely because CEQA defines "significant effect on the environment" as a "substantial, or potentially substantial, adverse change in the environment."¹⁴ This is in contrast to NEPA, which defines effects as possibly being "both beneficial and detrimental,"¹⁵ and requiring a range of reasonable alternatives and the no action alternative.¹⁶

Because of the assumption that any significant effect is adverse and that alternatives are chosen based on their ability to reduce significant, and therefore adverse, effects, the environmentally superior alternative is not necessarily what is best for the environment, but what is least bad for it. (In the case of a construction or development project, the "no project alternative" is also environmentally superior, which makes sense, and which is why the guidelines require identification of an alternative that is not also the 'no project'.) In the current case of a project that is a restoration project, selection of an environmentally superior alternative under CEQA could be the opposite of the preferred alternative. The two are not necessarily the

¹³ Sec. 15126(e)(2). Several cases involve EIRs that identify the 'environmentally superior alternative' using the criterion of 'least adverse impacts', and assume that this criterion is valid, with no discussion. *Protect Our Water v. County of Merced*, 110 Cal. App. 4th 362, 367 (2003); *Ass'n of Irrigated Residents v. County of Madera*, 107 Cal. App. 4th 1383, 1399 (2003); *Marin Mun. Water Dist. v. KG Land California Corp.*, 235 Cal.App.3d 1652, 1665-66 (1991) (also stating that although the plaintiffs disagreed with the agency's selection of the environmental superior alternative, its task was only to assess the sufficiency of the EIR as an informational document, not to assess the correctness of the decision).

¹⁴ Cal. Pub. Res. Code sec. 21068; see also id. sec. 21100, and alternatives as alternatives which would attain the basic objectives of the project "but would avoid or substantially lessen any of the significant effects of the projects." Guidelines sec. 15126.6(a).

¹⁵ 40 C.F.R. sec. 1508.8

¹⁶ Id. sec. 1502.14.

ALAC, et al (cont.)

ALAC-5

ALAC-5

The Salton Sea Restoration Act (Fish and Game Code 2931(c)(1-3)) states that "the preferred alternative shall provide the maximum feasible attainment of the following objectives: (1) Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea. (2) Elimination of air quality impacts from the restoration projects. (3) Protection of water quality." All of the alternatives meet the legislative objectives to varying degrees.

The Transfer Project and the Salton Sea Ecosystem Restoration Program are two separate projects. The permitting requirements for the Transfer Project are different than the permitting requirements for the Restoration Program. The permitting requirements for the Transfer Project have been incorporated into the Draft PEIR's No Action Alternative.

All alternatives would meet the minimum standards set by the wildlife agencies for pupfish requirements. Of all of the fish considered, pupfish were specifically recognized because of their special status as state and federally listed. However, during the development of the Preferred Alternative the Habitat Working Group determined that impacts to pupfish would be adequately mitigated in all alternatives, and therefore were not given special consideration in the selection of a preferred alternative.

As the comment accurately indicates, the Environmentally Superior Alternative was developed based on the alternative with the fewest adverse impacts. Desert pupfish connectivity was evaluated for each of the alternatives and, because of its state and federal status, impacts were considered significant if the pupfish population would become more fragmented than under Existing Conditions. Based on the narrow criteria for development of the Environmentally Superior Alternative outlined under CEQA, the alternative with the fewest adverse impacts was determined to be Alternative 3.

same, because the environmentally superior alternative might not meet project objectives as well as other alternatives.¹⁷

Although this is beyond the scope of the PEIR, this inconsistency highlights the need for the legislature to broaden CEQA's definition of "significant effect on the environment"¹⁸ to encompass the possibility that such effects could be either detrimental or beneficial. Such a revision of CEQA would avoid the PEIR's semantic contortion, equating 'the least amount of adverse impacts' to the 'environmentally superior alternative.' The criterion used to identify the greatest amount of beneficial impacts should, for a reasonable person, be the 'environmentally superior alternative' for any ecosystem restoration program.

B. No Action Alternatives

The description of the 'No Action' alternatives should be expanded to offer a single, complete description of future conditions at the Salton Sea. Rather than forcing the reader to piece together descriptions dispersed through 24 different chapters, the PEIR should provide a comprehensive description of no action conditions that can serve as a basis for comparison with the action alternatives. The 'no action' description should also include a timeline of impacts and expected changes, to provide the reader with a basis for comparison for the timing of benefits under the action alternatives.

The Pacific Institute's December 30, 2004 comments on the November 2004 draft "No Action Draft Alternatives" report emphasized the importance of addressing more water quality parameters than just salinity. Unfortunately, the Draft PEIR ignored those suggestions.¹⁹ "The Future of the Salton Sea" (1-7 -) focuses on salinity as the factor determining species persistence in the Sea, ignoring the importance of dissolved oxygen ("DO") and persistent anoxia at greater depths. Low DO directly impacts the abundance of aquatic organisms throughout their lifecycle, compounding the impacts of rising salinity. Low DO is likely responsible for the declining populations of key foodweb organisms such as pileworms. DO merits greater discussion in this section.

C. Maximum Feasible Habitat

State law requires the Preferred Alternative to restore the maximum feasible habitat because of the globally important wildlife, including many protected species, that inhabits the Salton Sea ecosystem.²⁰ To protect fish and wildlife, the Preferred Alternative must provide the **maximum feasible**:

restoration of long-term, stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea.²¹

Although state law does not define "maximum feasible," the CEQA guidelines and numerous court decisions have provided definitions for this and similar terms. The term "maximum" is not ambiguous. The common definition of maximum is the "greatest possible quantity, degree or number."²² Similarly, Black's Law Dictionary defines it as "the highest or greatest amount, quality, value or degree."²³ Federal courts have found that a similar term, "maximum extent practicable," as used in the federal Endangered Species

¹⁷ This is in contrast to the usual case, because the no project alternative is not superior. *Laurel Hills Homeowners Ass'n v. City Council*, 83 Cal. App.3d 515, 521 (1978) ("CEQA does not mandate the choice of the environmentally best feasible project if through the imposition of feasible mitigation measures alone the appropriate public agency has reduced environmental damage from a project to an acceptable level.") See also Cal.Pub.Res.Code sec. 21081, Sec. 15126(e)(2).

¹⁹ Despite repeated requests and verbal assurances that a "No Action Draft" would be recirculated to the Advisory Committee members, the only version circulated was the November 2004 draft.

²⁰ Fish and Game Code sec. 2930, *et seq.*

²¹ Fish and Game Code sec. 2931.

²² American Heritage Dictionary of the English Language, New College Edition (1981).

²³ Black's Law Dictionary (6th ed. 1991) at 979, cited in *Fund for Animals v. Babbitt*, F. Supp. 96, 107 (D.D.C. 1995) and *Biodiversity Legal Foundation v. Babbitt*, (10th Cir. 1998) 146 F.3rd 1249.

ALAC, et al (cont.)

ALAC-6

A description of the No Action Alternative is provided in Chapter 3 of the Draft PEIR. This description includes a similar level of detail to the description of the eight action alternatives. The resource chapters (Chapters 5 through 22) provide a more detailed discussion of the No Action Alternative specific to the resource area being discussed. These more detailed descriptions provide context for the reader in understanding the impacts of the various alternatives as compared to the No Action Alternative. Therefore these detailed, resource area descriptions are more appropriately located in the resource chapters.

ALAC-6

ALAC-7

ALAC-8

ALAC-7

The Draft PEIR includes a timeline for the No Action Alternative with respect to inflows. However, developing a timeline for expected changes in most other resource areas would be difficult as the timing of future changes can be based on a variety of factors. To the extent that information was available on timing of changes, this information was included in the resource chapters.

ALAC-8

Water quality parameters under the No Action Alternative, including salinity, phosphorus, and dissolved oxygen, were discussed in Chapter 6 and Appendix D of the Draft PEIR.

Act, "imposes a clear duty on the agency to fulfill the statutory command to the extent that it is feasible or possible."²⁴ The CEQA guidelines define "feasible" as meaning "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors."²⁵

Applying these definitions to the alternatives presented in the Draft PEIR means assessing which alternatives would provide the greatest quantity of habitat within a reasonable period of time, at a reasonable cost, and with reasonable technological confidence. In other words, providing the maximum feasible habitat to maintain the diversity and abundance of wildlife requires:

- Restoration of a variety of habitat types and features in sufficient amounts to support historic diversity and abundance of wildlife;
- Sufficient habitat during the permitting and construction phases;
- Minimum habitat destruction in the ecosystem;
- Flexibility in design, structure and operation;
- Reliable quality and quantity of water supply; and
- Long-term monitoring and adaptive management mechanisms.

Ensuring long-term stability of fish and wildlife depends on reliability, adaptability, fundability and other factors.

The alternatives in the Draft PEIR provide a wide range of habitat types, amounts, quality, reliability and feasibility, each of which is addressed below. As the Draft PEIR makes clear, though, only a few of the alternatives can be said to maximize particular types of habitat, and no single alternative provides the maximum feasible restoration of habitat. Different components are better for maximizing different kinds of habitat, and a combination of components from the different alternatives would best protect the historic diversity and levels of fish and wildlife that depend on the Sea.

1. AVAILABILITY OF HABITAT DURING TRANSITION / CONSTRUCTION

The length of construction time and availability of habitat during the transition and construction phases are critical issues in determining "maximum feasible" habitat. We strongly support the use of Early Start Habitat as an essential component to any final preferred alternative. The Draft PEIR does provide for this Early Start Habitat in each of the alternatives. We urge any final preferred alternative to continue to include Early Start Habitat. Indeed, we urge that DWR provide maximum analysis for such habitat in the final PEIR in order to reduce the need for an extensive project level EIR. We urge that DWR start on construction of Early Start Habitat as soon as possible.

However, even with the construction of Early Start Habitat, there are considerable risks that certain alternatives do not provide a sufficient amount of fish and wildlife habitat during the construction and transition phase. If particular habitat types are not available or insufficient for the species that rely on it during the transition period, some species may become imperiled or permanently cease to use the Salton Sea ecosystem, thereby reducing the historic diversity and abundance of Salton Sea wildlife. The Habitat Working Group, made up of wildlife experts and representatives of virtually all the interested stakeholders, has ranked availability of habitat during the transition period as one of the most important attributes in the final restoration plan.²⁶ According to analysis by PRBO, the most habitat available during the project period is found in Alternatives 2, 4 and 5. (Table 8-25 and Table H7-2). Very little habitat will be available during the project period in Alternatives 7 and 8 and depending on the length of time required for

²⁴ *Fund for Animals*, supra, cited in *Biodiversity Legal Foundation*, supra.

²⁵ CEQA Guidelines § 15364.

²⁶ Meeting of the Habitat Working Group in Ontario, California, December 19, 2006.

ALAC, et al (cont.)

ALAC-9

The comment acknowledges the legislatively required objectives used in designing the alternatives. It also recognizes the complexity and difficulty in maximizing feasible attainment of habitat, air quality, and water quality benefits for any given single alternative. Chapter 2 of the Draft PEIR discusses the 5-step process that was used to develop a range of alternative configurations for meeting the objectives. This 5-step process, which also relied on input from Salton Sea Advisory Committee members, stakeholders, and the public was appropriate for developing the final eight alternatives and eliminated the need to evaluate hundreds of possible variations for meeting the legislative objectives.

ALAC-10

As described in response to comment ALAC-1 and in Chapter 3 of this Final PEIR, the Preferred Alternative includes a combination of components intended to provide habitat for the historic diversity and levels of fish and wildlife that depend on the Salton Sea.

ALAC-11

As described in response to comment ALAC-1 and in Chapter 3 of this Final PEIR, the Preferred Alternative includes Early Start Habitat.

ALAC-12

Early Start Habitat is identified for all alternatives. A suggested schedule for Early Start Habitat is provided in Chapter 3 of this Final PEIR. Implementation of Early Start Habitat would require additional authorizing legislation and identification of a future implementing agency. Implementation would also require preparation of environmental documentation, permits, and land access along with detailed design plans and specifications. There is not sufficient information on the Early Start Habitat to include a project-level analysis for CEQA purposes of this component in this Final PEIR.

ALAC-13

As described in the Draft PEIR, the only alternative that may not reach the salinity objectives by the year 2078 is Alternative 7. All of the alternatives have Early Start Habitat as a component which would provide up to 2,000 acres of habitat. Both Alternatives 7 and 8 would provide sufficient habitat for invertebrate eating bird species, and could potentially continue to provide habitat for hypersaline tolerant fish species at the river deltas prior to completion of the barriers. Adaptation of the alternative's design during Phase I to provide interim habitat prior to completion could also be analyzed during the project-level analysis.

permitting and construction, the deep marine Sea contained in those alternatives may never provide habitat because of its high, and potentially irreversible, salinity level.²⁷

In addition to ensuring adequate habitat during construction and transition, the Preferred Alternative should include phasing of different components to prioritize construction of habitat during the transition phase.

2. THE DRAFT PEIR HAS FAILED TO ADEQUATELY ADDRESS THE HABITAT IMPACTS FROM EXCAVATION AND TRANSPORT OF ROCK AND GRAVEL DURING CONSTRUCTION.

The Draft PEIR assumes that for all alternatives presented in the document, there is (1) sufficient rock and/or gravel within 10 miles of the Salton Sea and (2) that this rock and/or gravel can be transported within 10 miles of the Salton Sea by existing rail facilities (3-5). Further, despite the availability of an analysis of potential rock source sites, found in Appendix H5, the Draft PEIR fails to provide any analysis of impacts to biological resources from the excavation and transport of rock and/or gravel. Instead, all analysis is deferred to the project level (8-21).

We strongly object to the complete omission of any level of analysis or effort to incorporate the information regarding rock source, found in Appendix H5, in the alternatives and impacts analyses portions of the Draft EIR. A programmatic EIR should identify those probable environmental effects that can be identified. The program level EIR must concentrate on a project's long term "cumulative" impacts as well as contain enough details to anticipate "many subsequent activities if it deals with the effects of the program as specifically and comprehensively as possible."²⁸

In this case, it is highly foreseeable that there would be serious environmental impacts from excavation at a rock source within 10 miles of the Salton Sea. Indeed, the rock source report, found in Appendix H5, clearly sets forth that there are only two possible rock source sites that contain the type of rock material necessary to build a massive barrier – the Eagle Mountain Mine and Coolidge Mountain. Both sites have significant environmental issues. For instance, Coolidge Mountain is entirely critical habitat for the endangered Peninsular Bighorn Sheep. (See Appendix H5-25 through H5-28). It is highly unlikely, given the importance of Coolidge Mountain to the endangered Peninsular Bighorn Sheep and the restrictions under the Endangered Species Act, that the U.S. Fish and Wildlife Service would issue a Section 7 ESA permit for a project large enough to provide rock to create a massive barrier.

The Eagle Mountain Mine site – which has been the subject of ongoing litigation by conservation groups opposed to reopening operations at this site – raises even more significant concerns. First, we strongly disagree that the railroad right of way at Eagle Mountain Mine may be used. The current court decision has resulted in the reversion of the right of ways at this site back to the federal government. Second, the movement of rock from this site to the Sea will create enormous environmental impacts. Dust and emissions from diesel trucks and/or trains will create massive air quality problems all along the travel route from the mine to the Sea. Third, the mine and the 50-plus miles of rail-line abut wilderness areas, areas of critical environmental concern, and key habitat areas for desert tortoise, bighorn sheep and other sensitive species. Finally, utilizing the mine again would create growth-inducing impacts that have not been analyzed at all in the draft PEIR.

Recommendation: At a minimum, the Draft PEIR should include increased analysis of the environmental and public health impacts of utilizing the two rock source sites discussed in Appendix H5. Moreover, the draft PEIR should include a discussion of the potential impacts to the environment from the alternatives that require a significant amount of rock and gravel (i.e., Alternatives 5-7). To ignore this issue would raise

²⁷ Presentation of Mike Walker, Bureau of Reclamation, to Salton Sea Advisory Committee at December 2006 meeting in Thermal, California.

²⁸ CEQA Guidelines § 15168(c)(5).

ALAC, et al (cont.)

**ALAC-13
cont.**

ALAC-14

ALAC-15

ALAC-16

ALAC-17

ALAC-18

ALAC-19

ALAC-14

As described in Chapter 3 of this Final PEIR, the Preferred Alternative includes phasing of different components during construction. However, it would be appropriate to reconsider and possibly expand upon the phasing for the Preferred Alternative to provide habitat during construction in future project-level analysis.

ALAC-15

For the programmatic level of planning, the availability of quarry materials for construction was evaluated by looking at potential sites including permitted and non-permitted quarries. A cursory evaluation of potential rockfill sources was performed in the Draft PEIR. The evaluation considered issues such as land ownership and access, environmental impacts and potential mitigation actions, as well as rock suitability. Information to determine site specific impacts at all potential sites was not available. Project-level analysis of the Preferred Alternative and rockfill sources would be required to evaluate the extent and magnitude of direct and indirect impacts and identify appropriate mitigation.

ALAC-16

See response to comment ALAC-15.

ALAC-17

See response to comment ALAC-15.

ALAC-18

See response to comment ALAC-15. Eagle Mountain Mine is only one of several potential rockfill sources. Innovative methods such as conveyor belts have low emission potential and could be considered during project-level analysis.

ALAC-19

See response to comments ALAC-15 through ALAC-18.

serious questions regarding compliance with CEQA and with the adequacy of the Draft PEIR and Restoration Study's analysis of feasibility of each alternative.

The Draft PEIR's failure to include an assessment of habitat risks and public health impacts from rock excavation and transport poses significant, and potentially fatal, uncertainty and risk with Alternatives 5 through 8 because of the amount of rock and gravel required for the mid-Sea barrier.

3. PUPFISH CONNECTIVITY

As discussed above, while pupfish requirements are arguably addressed in each of the alternatives due to the pre-existing requirements for connectivity under the IID water transfer, the preferred alternative should maximize connectivity for the pupfish. This is consistent with the 1993 Desert Pupfish Recovery Plan issued by the U.S. Fish and Wildlife Service.²⁹ To that end, Alternatives 3 and 4 provide the greatest amount of pupfish connectivity due to the establishment of concentric bodies of water that link the key drains and creeks. Thus, the preferred alternative should include a "first ring" that provides connectivity for pupfish.

All of the Alternatives in the Draft PEIR can be designed to include a first ring or other means of connecting pupfish habitat,³⁰ so this attribute – while critical to include in the Preferred Alternative – should not be a significant factor in choosing among the different draft alternatives.

4. SHALLOW SALINE HABITAT

As the Draft PEIR recognizes, shallow saline habitat is critical to maintain the diversity and level of wildlife that depend on the Sea. (p. 1-4 and pp. 8-8 to 8-9) Numerous sources recognize it as internationally significant for shorebirds and other studies point to the high percentages of shorebird species that depend on the Sea for some or all of their habitat needs.³¹

Currently, the 120-mile long shoreline provides foraging, resting, roosting and nesting habitat for scores of shorebird and other bird species at the Sea. To replace the function and value of that shoreline habitat, restoration must maximize shallow saline habitat, including Shallow Saline Habitat Complex, shoreline equivalent habitat and actual shoreline.

a. Shallow Saline Habitat Complex

The Draft PEIR recognizes that Shallow Saline Habitat Complex ("SSHC") provides a wide range of depths, salinity and other habitat features, such as snags and islands. (2-11) SSHC also offers more flexibility than any other habitat component since salinity, depth and other features within the SSHC can be adjusted and adapted to changing circumstances and experience. (3-62) Although SSHC cannot be located in all parts of the Sea because of steep slopes and selenium deposits in some areas, it should be maximized in appropriate areas because it provides the greatest value of habitat with the most flexibility of any of the proposed habitat components in the Draft PEIR.

Alternative 2 is the only alternative in the Draft PEIR that maximizes SSHC. Alternative 1 provides substantial SSHC, but without other shallow saline habitat, it cannot be said to provide the "maximum feasible" shallow saline habitat. None of the other alternatives in the Draft PEIR provides sufficient SSHC.

b. Shoreline and Shoreline-Equivalent Habitat

²⁹ See, Recovery Plan Executive Summary ("Actions Needed: 1. Protect natural populations and their habitats. . . . 3. Develop protocol for exchange of genetic material." See also Appendix H1-11).

³⁰ Notes of Habitat Working Group meeting in Ontario, December 19, 2006.

³¹ Id. at pp 1-4, 8-8 to 8-12, App. H1-1 to H1-2.

ALAC, et al (cont.)

ALAC-20

See response to comment ALAC-15.

ALAC-21

As described in response to comment ALAC-1 and in Chapter 3 of this Final PEIR, the Preferred Alternative includes pupfish connectivity.

ALAC-22

See response to comment ALAC-21.

ALAC-23

As described in response to comment ALAC-1 and in Chapter 3 of this Final PEIR, the Preferred Alternative includes 62,000 acres of Saline Habitat Complex. In addition, the 45,000 acre Marine Sea would also provide shoreline habitat.

ALAC-24

As described in response to comment ALAC-1 and in Chapter 3 of this Final PEIR, the Preferred Alternative includes 62,000 acres of Saline Habitat Complex.

**ALAC-19
cont.**

ALAC-20

ALAC-21

ALAC-22

ALAC-23

ALAC-24

Protected shoreline and shoreline-equivalent habitat also provide shallow saline habitat. Alternatives 3 and 4 provide the most shoreline, but only Alternative 4 provides substantial shoreline habitat because it uses dirt-filled, gently sloping berms which provide similar function and value to existing shoreline. As the Draft PEIR recognizes, the concentric lakes in Alternative 4 would provide similar habitat value to the SSHC because they would provide substantial shoreline-equivalent habitat. (3-69)

The concentric lakes described in Alternative 4 also provide some flexibility to adjust salinity levels and depths within and among the different lakes, and could provide islands, snags and other habitat features important for birds. They do not provide the same amount of flexibility as the SSHC, however, because there would be only four rings, instead of 38 to 78 separate SSHC cells. Making adjustments to the salinity, for example, of the rings or lakes, though possible, would not be as easy as adjusting individual or even multiple SSHC cells.

Alternative 3 provides substantially less shoreline and shoreline-equivalent habitat because it includes only two concentric rings, rather than the four concentric lakes in Alternative 4. Alternative 3 also provides less shoreline habitat because it uses rock to construct the berms and the berms' steeper slopes provide less habitat value from the inner rings.

Alternatives 5 through 8 provide less shoreline habitat or habitat value than existing conditions or Alternatives 1 through 4 because they include much less shoreline than the present Sea and very little SSHC. In addition, the shoreline that would remain with Alternatives 5 through 8 would have far lower habitat value because it would likely be exposed to development, recreation, lights, noise and other factors likely to result in disturbance to wildlife. Alternatives 5 through 7, in particular, are likely to provide little shoreline-equivalent habitat because Riverside County's General Plan, the Torres Martinez Land Use, Zoning and Development Plan and the Western Coachella Valley Area Plan all project significant development in the southern Coachella Valley. (11-25 to 11-31)

Alternatives 2 and 4 provide more shallow saline habitat than the other alternatives, but Alternative 2 relies exclusively on SSHC and Alternative 4 relies exclusively on the concentric lakes. Neither alternative, therefore, provides a variety of habitat components and structures that would create the maximum diversity of habitat, flexibility and opportunity for adaptive management.

5. PRIORITIZATION OF WATER

Ensuring sufficient water for habitat is critical to the reliability and value of that habitat. All of the necessary habitat types depend on year-round, reliable inflows to keep habitat wet and manage salinity. As the Draft PEIR itself recognizes, there are significant uncertainties associated with habitat restoration or recreation at the Sea. (H1-8) Given those uncertainties, most – but not all – alternatives “maximize the use of available water for the creation and maintenance of habitat.” (H1-8) This is not only appropriate but legally required to maximize wildlife habitat. Alternatives that assume unrealistic flows, or flows that will not occur reliably, cannot be said to maximize habitat. Similarly, alternatives designed to provide water for recreation, scenic and other values before providing water to maximize habitat cannot be said to comply with state law.

The Draft PEIR's analysis of project inflows, uncertainties, Monte Carlo analysis and description of climate change impacts all point to the need to estimate inflows conservatively, to ensure that water is used first for habitat and air quality needs and to provide flexibility for adaptive management in the future.

Because Alternative 7 relies on a higher inflow level and is designed so that the SSHC receives water last, it provides the least reliable wildlife habitat and cannot be said to maximize wildlife habitat. Numerous foreseeable events could prevent the SSHC from receiving water at all, including lower than projected inflows and malfunctions in the many pumps, sedimentation basins and water treatment facilities. Because Alternative 7 relies so heavily on a complex, highly engineered system, it entails much higher risk

of failure. Even if all the parts function as hoped, inflows will not be sufficient to provide adequate quality water in three out of every five years.

In order to provide the maximum feasible habitat, inflows and structures should provide water for habitat before other, non-legally mandated uses. Alternatives such as Alternative 7 that do not ensure water for habitat before non-legally mandated uses cannot be said to provide the maximum feasible habitat.

6. FLEXIBILITY AND ADAPTIVE MANAGEMENT

Conservation of highly complex ecosystems, especially when those ecosystems are undergoing significant changes, requires ongoing monitoring and adaptive management to adjust to changing circumstances, monitoring results that differ from initial assumptions, and new data about habitat needs, constraints and opportunities. Adaptive management, in turn, can occur only when the habitat and structures in place are flexible enough to allow changes in management and operations. Flexibility – the ability to adapt management, operations and even structures - is essential to ensure the long-term success of any Salton Sea restoration plan. In fact, the Habitat Working Group ranked flexibility as one of the four Highest Priority attributes of the final restoration plan.³² The Draft PEIR also, correctly, recognizes the importance of adaptive management. (H1-13)

The Salton Sea ecosystem will undergo enormous changes under all of the Alternatives, including the No Action alternatives, over the 75-year project period. In addition, significant data gaps exist in virtually all areas related to wildlife and its habitat, which make predictions about how different components will function difficult at best. (H1-8, 13) Alternatives that allow for greater flexibility are much more likely to meet the legal requirements for restoration than those alternatives that, once built, cannot feasibly or reasonably be changed.

Alternatives with a mid-Sea barrier and a deep, marine sea, such as Alternatives 5 through 8, are the least adaptable to changing circumstances and new data. Once a mid-Sea barrier is constructed, it can not be moved, leaving little flexibility or adaptability in the system as a whole. Rock barriers, such as in Alternative 3, are somewhat more flexible, especially since changes can be made to one or another ring without having to change the entire system. The most flexible alternatives, however, are those constructed in multiple phases, such as Alternative 4, and those that rely on SSHC, such as Alternatives 1 and 2.

Alternatives that provide a variety of habitat types also provide greater flexibility and adaptability, particularly if one or another habitat type does not perform as predicted or requires adaptation. The Preferred Alternative should not rely solely or even primarily on just one habitat to ensure that the system as a whole is sufficiently flexible.

7. OTHER BIOLOGICAL ISSUES

Given the dependence of piscivorous birds on the availability of tilapia in the Sea, reasonable and consistent projections of the persistence and abundance of tilapia will be important in determining a baseline for comparison of the benefits offered by the various alternatives, and any additional actions that will need to be taken to ensure that pelicans and other birds continue to have food available at the Sea.

The loss of roosting and breeding habitat is appropriately recognized as a significant impact of a shrinking Sea (1-7), though it is unclear how the PEIR identifies the year 2020 as the time when this would occur. DWR staff noted that the PEIR does not analyze the impacts associated with the loss of the New and Alamo river deltas under most of the action alternatives.³³ These deltas currently provide extensive

³² Decision of Habitat Working Group at its December 19, 2006 meeting in Ontario.

³³ Habitat workgroup meeting, December 19, 2006, in Ontario.

ALAC, et al (cont.)

ALAC-25

ALAC-25

As described in response to comment ALAC-1 and in Chapter 3 of this Final PEIR, under the Preferred Alternative, Air Quality Management and the Saline Habitat Complex would have the highest priority for inflows, followed by inflows into the Marine Sea.

ALAC-26

As described in response to comment ALAC-1 and in Chapter 3 of this Final PEIR, the Preferred Alternative includes a variety of habitat types in a variety of locations (such as the location of Saline Habitat Complex on both the northern and southern portions of the Sea).

ALAC-27

Snags and structures protruding from the water surface along the margins of the Salton Sea provide important nesting and roosting for several bird species. The suitability and value of these features are expected to diminish as the Salton Sea recedes and the features are no longer surrounded by water. Based on water surface elevation projections, this is expected to occur by about 2020.

ALAC-26

ALAC-27

roosting and breeding habitat for thousands of colonial waterbirds (such as egrets and herons).³⁴ The loss of this key habitat type should be analyzed.

Ch. 8 notes that the receding Sea “would likely expose the rocky shoreline habitats that are important for invertebrates such as barnacles and copepods” (8-39), but, on the very next page, in its discussion of impacts to birds, it fails to acknowledge that these impacts to invertebrates would affect the birds that consume them. The PEIR should more thoroughly address indirect impacts throughout the Salton Sea’s aquatic foodweb, due to changes in water quality (including concentrations of nutrients, dissolved oxygen, and selenium) and habitat availability (such as rocky substrates).

D. Mitigation of Air Quality Impacts

State law requires the Preferred Alternative to mitigate, to the maximum extent feasible, impacts on air quality. To do so, the Salton Sea Advisory Committee agreed unanimously to endorse the recommendation of the Air Quality Working Group to allocate one-half acre-foot of water per year for each acre of exposed seabed.³⁵ The Preferred Alternative must allocate sufficient water for air quality management to fully mitigate harmful air quality impacts. In addition, the Preferred Alternative should provide the maximum feasible mitigation of offsite air quality impacts from excavation and transport of source materials. Uncertainty about the amount of those impacts or the feasibility of mitigating them is a significant risk factor in those alternatives that require significant offsite quarrying and transport.

The PEIR notes that “Finalized results for the September and January tests were not available at the time of preparation of the PEIR, nor were the March 2006 results available.” (E3-2) Given the importance of these results to the air quality analysis and the selection of a preferred alternative, the finalized results from the September, 2005, and from the January and March, 2006, tests should be incorporated into the final PEIR. The PEIR also states, “Anecdotal observations of crust conditions in late March indicated that crusts appeared “harder” and more stable than in January 2006.” (E3-4; emphasis added) Again, given the importance of air quality management to human health and to the project as a whole, the Draft PEIR should contain analysis more rigorous than casual observation.

The PEIR frequently claims that it takes a “conservative approach” to air quality management (cf. Table 3-1, etc.) Yet the PEIR actually takes the following approach:

These data show that no emissions were measured until the wind speed attained 17 mph. Even at 17 mph, emissions were not observed in all samples, and emissions that were measured were low. Higher and more consistent emissions were observed as the wind speeds reached and exceeded 25 mph, therefore this value was selected as the threshold for stable playa. (E3-5)

That is, 17 mph winds are known to generate emissions, but the PEIR instead selected, as *the threshold*, the much higher value of 25 mph. “Higher and more consistent emissions” can not be used to determine a threshold. Instead, they represent a known threat. A ‘conservative approach’ would dictate, at minimum, using 17 mph as the threshold, and, more reasonably, 15 mph, given anecdotal observation of 15 mph winds generating dust off of exposed playa near the New River delta.³⁶ The use of an unjustified and liberal threshold for emissions causes the PEIR to underestimate, to an unknown but presumably large degree, the amount of dust that could be emitted from exposed Salton Sea playa.

In reference to dust, the PEIR notes:

³⁴ Molina and Sturm, 2004.

³⁵ Salton Sea Advisory Committee meeting on March 16, 2006 in Los Angeles, California.

³⁶ See Pacific Institute, *Hazard*, (2006), p.34. The use of anecdotal information is appropriate here to determine a ‘conservative approach’ of a threshold value lower than measured values.

ALAC-28

ALAC-29

ALAC-30

ALAC-31

ALAC-32

ALAC-33

ALAC, et al (cont.)

ALAC-28

As stated in Chapter 8 page 8-8 of the Draft PEIR:

In addition to colonial breeding species described above, the shoreline, islands, and river deltas at the Salton Sea support breeding colonies of great blue herons, great egrets, snowy egrets, cattle egrets, black-crowned night herons, and Caspian terns. These species use a variety of substrates for nesting including islands, riparian vegetation, snags and utility poles submerged at their base, and rock outcrops. These sites are generally located near the mouths of the New, Alamo, and Whitewater rivers and at various locations around the Salton Sea where suitable nesting structure occurs (see Figure 8-1).

The Draft PEIR goes on to state that the permanent loss of colonial nesting areas would be a significant impact. This impact would occur in Phase I under all alternatives, including the No Action Alternative. Nesting sites constructed as part of Saline Habitat Complex and possibly sites that naturally develop along the margins of the inflow to the Brine Sink would reduce the significance of this impact in subsequent phases. (See page 8-20 of the Draft PEIR).

Also, one of the assumptions for all alternatives considered in the impact analysis for biological resources was that constructed islands and nesting structures would be effective in replacing lost habitat values (see page 8-18 of the Draft PEIR). Additionally, in describing the overall methodology for applying the significance criteria to the alternatives, for the “Substantial Reduction in the Value of the Salton Sea for Fish and Wildlife” significance criterion, it was stated that the alternatives are intended, among other objectives, to retain the value of the Salton Sea for fish and wildlife (see page 8-17 of the Draft PEIR). For those alternatives that have less than 3 sedimentation basins (all but Alternatives 1 and 2), the non-basined rivers would continue to flow freely into a water body continuing to provide the delta type habitat. A more detailed analysis of impacts that may occur due to the loss of delta habitats would be appropriate to conduct during project-level analysis once more information on the specific areas that may be impacts is known.

ALAC, et al (cont.)

ALAC-29

The quote in the comment is taken from the discussion of the No Action Alternative in Chapter 8 of the Draft PEIR. That section of the Chapter goes on to say, "The salinity level under the No Action Alternative-Variability Conditions in Phase IV would be at the upper tolerance limit for invertebrates and, therefore, would not provide forage for some bird species, especially wading birds and shorebirds" (see page 8-39 of the Draft PEIR). It is further stated on page 8-40 of the Draft PEIR that "The relative abundance of bird species that forage on invertebrates likely would change over time with increases in salinity and resultant changes in the invertebrate community." The exposure of the rocky substrate would lead to a decline in certain invertebrates that are a source of forage for several species of birds. However, this impact is subsumed by the overall impact of the increased salinity in the No Action Alternative and the loss of most if not all of the invertebrates by 2078.

ALAC-30

For all of the alternatives other than the No Action Alternative and Alternative 3, the modular design of the Saline Habitat Complex would create opportunities for multiple aquatic communities. Design objectives include constructing cells that mimic, to the extent possible, the historic conditions and communities associated with the shoreline of the Salton Sea. Many of the species currently found in the Salton Sea and the rivers and drains flowing to the Salton Sea likely would inhabit the Saline Habitat Complex. The Saline Habitat Complex cells likely would provide biotic and abiotic conditions necessary to support several of the invertebrate species (e.g., pileworms and barnacles) that previously contributed to the productivity of the Salton Sea and its importance to birds. See Appendix H-1, page 53 of the Draft PEIR.

Though Alternative 4 is not broken up into individual cells, the First, Second, Third, and Fourth Concentric Lake are expected to provide habitats similar to those found in the Saline Habitat Complex. Alternative 3 also provides habitats similar to Saline Habitat Complex other than the constructed islands, snags, and deep holes. All of the alternatives other than the No Action Alternative are expected to provide invertebrate populations similar to historic conditions.

ALAC-31

As described in response to comment ALAC-1 and in Chapter 3 of this Final PEIR, under the Preferred Alternative, Air Quality Management and the Saline Habitat Complex would have the highest priority for inflows, followed by inflows into the Marine Sea. Additionally, the Preferred Alternative also includes actions and mitigation measures to reduce air quality impacts that could result from construction and operations and maintenance activities. See also response to comment ALAC-15; project-level analysis of the Preferred Alternative and rockfill source would be required to evaluate the extent and magnitude of direct and indirect impacts and identify appropriate mitigation.

ALAC, et al (cont.)

ALAC-32

The data and assumptions used for the air quality impact assessment were developed to provide a comparison among the alternatives (one of the overall objectives of the Draft PEIR), and do not provide a precise estimate of emissions. The analysis in the Draft PEIR was based on Desert Research Institute's field data available at the time of preparation of the Draft PEIR. The finalized results from the Desert Research Institute study can be incorporated into future project-level analysis. The anecdotal observation information was included to further support the field testing results.

ALAC-33

The data and assumptions used for the air quality impact assessment were developed to provide a comparison of the alternatives (one of the overall objectives of the Draft PEIR), and do not provide a precise estimate of emissions. The threshold wind speed was determined in a manner consistent with other applications of the Douglas Method, and provides a sound basis for comparison of alternatives. The applicability of using different wind threshold speeds to determine emissions can be evaluated during future project-level analysis.

In each case, emissions were estimated in tons per year. These emissions rates were averaged over 365 days per year, and the reported values in pounds per day (lbs/day) represent annual average daily emissions. *Peak daily emissions would be expected to be much higher when unstable conditions and wind events occur.* (E3-19; emphasis added)

Recommendation: provide estimates of peak, not just average, daily emissions. Such estimates would offer far more valuable information on future conditions.

DWR staff stated that "the feasibility of implementing air quality mitigation to reduce construction-phase emission impacts is speculative at present." Given the magnitude of construction-related emissions – as much 4,220 tons of PM₁₀ per year – it begs credulity that such construction would be permitted if mitigation is not feasible. This assumption directly affects construction schedules and time required to achieve benefits. Ignoring these impacts ignores key information that could distinguish between alternatives.

DWR recently staff asserted that:

No costs associated with potential mitigation measures to reduce emissions are identified in the PEIR.... Since the cost to implement air quality mitigation, particularly for construction-related impacts from PM₁₀ or NO_x, is alternative specific (the costs may be different for each alternative), it was decided to perform this analysis only once – for the preferred alternative – rather than for all alternatives.³⁷

Deferring key analysis to subsequent documents withholds key information that could enable the reader to better determine the feasibility and reliability of individual alternatives.

Recommendation: include sufficient information to enable the reader to eliminate alternatives from consideration due to their lack of feasibility or other major flaws (such as extensive construction delays due to air quality permitting requirements).

The statement in "Lessons About Irrigation And Drainage From Owens Lake" that,

This combination of subsurface drainage, subsurface drip, and adaptive management of irrigation rates and drainage facilities has been extremely successful in making virtually the whole planted area hospitable to plant establishment and growth (H3 Att.2 p.10)

is incorrect. The Owens Lake saltgrass area has had dramatic failures. Some of the subsurface and drip irrigation currently in place there will likely be replaced with more conventional, lower cost methods, in order to work with some of the more challenging areas that the higher cost methods to date have not been able to make productive. If the planted area is in compliance for air quality, as much of it is, it is because of the water on the surface, not because of the vegetation.

Air quality management at Owens Lake offers many important lessons for future management efforts at the Salton Sea, including massive cost-overruns, the value of low-tech, low maintenance systems, and the importance of aggressive monitoring and oversight. These lessons must be correctly understood and applied to the Salton Sea.

Recommendation: Air quality management at the Salton Sea should rely on low-tech solutions such as furrow irrigation, rather than on more expensive methods that will require much greater maintenance and capital investment.

³⁷ Email from Charles Keene to John L. Scott, et al., dated December 4, 2006.

ALAC, et al (cont.)

ALAC-34

Although only average daily construction emissions were analyzed, the impact assessments summarized in Table 10-15 of the Draft PEIR would not change if peak daily construction emissions were evaluated, because of the assumptions used in the calculations. An evaluation of peak daily construction emissions would be more appropriately conducted during project-level analysis.

ALAC-34

ALAC-35

ALAC-35

Construction emissions were estimated to be high, as much as 4,220 tons of PM₁₀ per year, because construction emissions were calculated assuming conventional construction methods. The approach used in the Draft PEIR to evaluate the air quality impacts associated with the alternatives was to rely on common assumptions (see Chapter 3 of the Draft PEIR), in order to provide a basis for comparison. Beyond this comparison, more detailed evaluation of how these assumptions affect costs, construction schedule, and the time required to achieve benefits is beyond the scope of this Draft PEIR. The assumptions used to calculate construction emissions would be expected to be refined during project-level analysis. The feasibility of mitigation measures for construction emissions would also be evaluated during project-level analysis.

ALAC-36

ALAC-37

ALAC-38

ALAC-36

Costs for implementation of air quality management methods to reduce playa-related emissions were included in the Draft PEIR (see Appendix H7, Table H7-11). Costs for reduction of construction-related emissions were not specifically reported in the document for the control measures defined in the construction emissions assumptions, because these measures were assumed to represent the baseline of requirements for emissions controls. With this common baseline level of control, the relative emissions for non-attainment pollutants PM₁₀ and NO_x were compared for each of the alternatives (see Figures 10-5 to 10-7, and Appendix E, Attachments E1 and E2), thereby providing information on the level of effort that would be needed for each alternative to reduce emissions to more acceptable levels. More detailed analyses of air quality impacts and the costs and feasibility of possible mitigation measures is beyond the scope of the state's programmatic document and would be more appropriate to conduct during project-level analysis.

ALAC-39

ALAC, et al (cont.)

ALAC-37

See the response to comments for ALAC-35 and ALAC-36. The approach used in the Draft PEIR to evaluate the air quality impacts associated with the alternatives was to rely on common assumptions (see Chapter 3 of the Draft PEIR), in order to provide a uniform basis for comparison. Mitigation measures tailored to address specific emission sources or practices would be more appropriately identified and assessed during project-level analysis. This future analysis could include evaluation of the schedule implications of implementing recommended mitigation measures. In addition, other measures required to demonstrate consistency and conformity with the applicable SIPs would be identified and assessed during project-level analysis. The costs and schedules for all required mitigation measures would be included as part of this future project-level analysis.

ALAC-38

Playa stabilization approaches were discussed at the Salton Sea Air Quality Working Group meeting on March 14, 2006 and at the Salton Sea Advisory Committee meeting on March 16, 2006. The group consensus regarding these technologies was as follows:

The dust control “toolbox” should remain open, with active research and development and an adaptive management approach taken to stabilizing playa as needed. The group also indicated the need to allocate 1 acre-foot of water per acre over 50 percent of the exposed area for playa stabilization, and to retain vegetation as one of the water-using dust control measures in the toolbox, without specification of irrigation technology. Water efficient vegetation, as described in the PEIR, was selected as a reasonable “placeholder” approach for planning purposes, due to its proven effectiveness for stabilizing large playa areas, while making efficient use of water.

Minutes from work group meetings are available on the program website.

The vegetated site at Owens Lake is compliant with air quality regulations. Wetting of the surface has been shown to kill the vegetation at Owens Lake and this practice has been avoided where vegetation is being established. Subsurface drip irrigation, while costly, has been effective in establishing plants in areas where surface irrigation has produced less consistent results in experimental sites. Vegetation has been shown to be an effective dust control measure at Owens Lake and at other sites. See Appendix H-3 of the Draft PEIR for additional information.

ALAC, et al (cont.)

ALAC-39

As described in response to comment ALAC-1 and in Chapter 3 of this Final PEIR, the Preferred Alternative includes implementation of the air quality toolbox. The toolbox includes both low-tech and high-tech measures because the Resources Agency recognizes that the Salton Sea is a unique ecosystem and many technologies proven in other areas and at smaller scales are unproven in the Salton Sea environment and at the scale that they may be implemented at the Salton Sea. To address this and other uncertainties, the Preferred Alternative includes a variety of actions that could be implemented within the five-year timeframe after the Legislature provides direction on implementation of a restoration program and identifies a future implementing agency. These actions include a variety of studies, pilot projects, and related measures that would address air quality uncertainties and attempt to identify Air Quality Management actions that would work at the Salton Sea.

E. Protection of Water Quality

State legislation requires the protection of water quality as part of the restoration program. P. 2-6 of the PEIR (but not Ch. 6) lists specific water quality objectives to support beneficial uses, such as reducing “the effects of nutrients that could cause eutrophication” and reducing “the effects of selenium that can cause health risks to fish, wildlife, and humans.” The PEIR develops a variety of alternatives to manage and stabilize salinity, but, beyond the large-scale water treatment plants in Alt. 7, it fails to identify potential methods or components to reduce or mitigate for the significant water quality problems currently linked to high internal and external nutrient loadings. And while the PEIR analyzes the potential hazards associated with exposure to selenium, it fails to identify potential methods for mitigating or decreasing these risks. It is not clear why the PEIR fails to include ways to satisfy the objectives it lists on p. 2-6. These omissions are significant shortcomings in the PEIR and must be addressed.

The complex biological and chemical processes that determine the Salton Sea’s water quality do not lend themselves to simple analysis. But they directly and indirectly affect the value of habitat for birds and fish. As noted in the PEIR itself, the Sea’s water quality problems will not be solved just by managing salinity. Fed by the fertilizers running off of agricultural fields and the organic detritus accumulated over a century’s prolific biological activity, the Sea is too productive. This excessive productivity leads to high turbidity, noxious odors, very low concentrations of dissolved oxygen, periodic population explosions of algae that further depress oxygen concentrations at night and when the algae die, and the production of toxic gases, such as hydrogen sulfide and ammonia, by anaerobic organisms. All of these factors stress fish and invertebrates, decreasing their survival and reproductive rates and increasing the prevalence of disease, in turn reducing the value of the Sea for birds and people.

1. SIGNIFICANT IMPACTS

Significant errors mar the PEIR’s section on surface water quality (Ch. 6). The PEIR offers a measurable criterion for phosphorus concentrations: do not violate “the CRBRWQCB draft nutrient TMDL for the Salton Sea [which] identifies an average annual phosphorus target of 35 µg/L.” (6-27) Existing Salton Sea phosphorus concentrations measure about 69 µg/L, which already violate the standard. Table 6-5 states that, under each alternative, phosphorus concentrations in the various water bodies “would be higher than under Existing Conditions and No Action Alternative.” According to the PEIR’s own criteria, the projected higher phosphorus concentrations, under each alternative, rise to the level of a ‘significant impact.’ Yet Table 6-5 describes this as a “less than significant” impact for each of the alternatives.

Recommendation: describe the rise of phosphorus concentrations as a “significant impact” for each alternative.

The PEIR states the following criterion, to determine significance criteria for water quality:

Substantially degrade water quality - Degradation of Salton Sea water quality is related to the reduction in the ability to support aquatic species and recreation. For the Salton Sea, this category is used to describe general water quality conditions related to lake eutrophication. The water quality analysis includes determinations of dissolved oxygen and hydrogen sulfide concentrations. (6-27)

This criterion is not quantified. That is, no numerical values appear to be associated with determining what constitutes “substantial,” “degradation of water quality,” or “the reduction in the ability to support aquatic species.” The absence of a clear metric, and the fact that the PEIR projects long term adverse impacts that it then deems to be “less than significant,” suggests that this criterion must be better defined.

For Alts. 5, 7 & 8,³⁸ Table 6-5 includes the following description:

³⁸ Presumably, this description also should apply to the Marine Sea in Alt. 6, which is not otherwise described.

ALAC, et al (cont.)

ALAC-40

The CRBRWQCB indicates in their comments that the Mexicali II Wastewater Treatment Plant is expected to reduce total phosphorus loads into the Salton Sea by about 10 percent. The CRBRWQCB also indicates that successful implementation of the draft Nutrient TMDL would reduce phosphorus loads from agricultural activities into the Salton Sea by an additional 30 percent. Comments from the Imperial County Farm Bureau indicate that voluntary compliance with the Sedimentation/Siltation TMDLs has reduced the amount of phosphorus entering the Salton Sea by 20 to 30 percent. The Draft PEIR evaluated the effects of reduced nutrient loads to water quality in the various alternatives. Appendix D of the Draft PEIR presents model results for three scenarios of phosphorus concentrations for the alternatives: no phosphorus reduction, 50 percent reduction, and, for Alternative 7, a 90 percent reduction. The scenario with no phosphorus reduction assumes current concentrations of phosphorus input, and can thus be considered a worst case scenario. Under this scenario, the Basin Plan objectives for phosphorus would not be met in any component of the alternatives. The scenario for 50 percent phosphorus concentration reduction indicates that the Marine Sea of Alternatives 5 through 7 would achieve the Numeric Target of 35 ug/L for total phosphorus, while the Marine Sea in Alternative 8 would be close. However, the shallow water habitats would still be phosphorus rich and highly productive. With a 90 percent reduction in phosphorus concentrations (to simulate proposed treatment by the SSA), Appendix D indicates that it appears possible to achieve the eutrophication goals in Alternative 7.

ALAC-40

ALAC-41

ALAC-42

ALAC-43

ALAC-44

ALAC-41

The Draft PEIR identifies hazards associated with selenium as being less than significant. The hazard associated with selenium levels modeled for the various alternatives is slight decreased hatching of eggs in susceptible birds breeding at the Salton Sea. Selenium levels in fish in most alternatives would allow unrestricted consumption by humans. The Draft PEIR also identifies certain components of alternatives that have the higher (moderate) risks. Also, the CRBRWQCB has identified selenium as a “pollutant of impairment” and has scheduled completion of a selenium TMDL for 2019. It would be appropriate to obtain additional data, refine model output, determine optimum placement of components to reduce hazards, monitor selenium in various ecosystem components, and evaluate measures to reduce selenium loads, if needed, during project-level analysis.

ALAC, et al (cont.)

ALAC-42

As explained in the responses to comments ALAC-40 and ALAC-41, the analysis in the Draft PEIR determined that the effects from nutrients and selenium were less than significant.

ALAC-43

Table 6-5 presents an impact analysis based on the objectives of TMDLs being achieved by the end of Phase IV. The scenario modeled for a 50 percent phosphorus concentration reduction in inflows not only results in significantly less phosphorus in the Marine Sea than either Existing Conditions or the No Action Alternative, but also meet the TMDL nutrient target for the Marine Sea in Alternatives 5, 6, and 7, and nearly meets the target in Alternative 8. Therefore, phosphorus levels in the components of the various alternatives were not considered a significant impact.

ALAC-44

Appendix G of the CEQA Guidelines provides an Environmental Checklist to determine whether the effects from a project are significant. These criteria were used to determine relative impacts of the alternatives. Due to the programmatic nature of the Draft PEIR and the limitations of the modeling, qualitative thresholds were used to determine the significance of the impacts. Quantitative thresholds could be used in the preparation of project-level analysis, once additional water quality data are available to increase the reliability of the water quality modeling analysis.

Thermal stratification of the Marine Sea would occur more frequently than in the Salton Sea under Existing Conditions and No Action Alternative. This could cause higher potential for anoxic conditions throughout the water column.

Yet this is described as a "less than significant" impact. Again, this is not consistent with the PEIR's own significance criteria, since a higher potential for anoxic conditions constitutes both a degradation of water quality and a reduction in the ability to support aquatic species and recreation.

Recommendation: describe the increased potential for anoxic conditions as a "significant impact."

Information provided in Appendix D describes projected future water quality conditions, refuting the designation of a "less than significant impact," especially for the deep marine lakes. Under Scenario A, (D-84)

Ammonia concentrations in the hypolimnion start to increase at the onset of stratification once the dissolved oxygen is depleted. Since this occurs earlier in the Marine Sea under Alternatives 5 and 6 than the Salton Sea under Recent Conditions, *ammonia accumulates to higher levels than in the Recent Conditions simulation....* Peak concentrations at the bottom of the water column approach 30 mg/L in the Marine Sea under Alternatives 5 and 6, *about four times the 7 mg/L predicted in Salton Sea under the Recent Conditions simulation.* The delayed timing of the entire water column mixing event (Julian Day 325) coupled with the level to which ammonia has accumulated in the hypolimnetic waters, contribute to the *inability of the Marine Sea to recover from the depressed dissolved oxygen condition.* As shown in Figure D2-59, there is not enough oxygen in the Marine Sea under Alternatives 5 and 6 to completely convert the ammonia to nitrate after the mixing event. (*emphases added*).

That is, the PEIR's own projections suggest that not only would accumulations of ammonia – toxic to aquatic organisms – increase by about a factor of four under some of the alternatives, but that the Marine Sea would not fully recover from these toxic events. Clearly, this is a significant impact, one that should be emphasized in Ch. 6 itself.

App. D also projects that "hydrogen sulfide concentrations in the surface waters spike to 0.67 mg/L [in Alts. 5 & 6], or about *five times the highest concentration* predicted in the Salton Sea under the Recent Conditions Simulation" (D-87; *emphasis added*) and to 0.53 mg/L in Alt 7 (D-91). The PEIR (6-17) notes that mixing hydrogen sulfide- and ammonia-rich waters from the hypolimnion into the rest of the water column has been correlated to massive fish kills, *at current peak concentrations.* The impacts of mixing much higher concentrations of hydrogen sulfide and ammonia in the smaller future seas would be even more devastating. Again, these projections clearly warrant a designation of "significant impacts," and should be highlighted in Ch. 6.

The PEIR fails to reconcile two inconsistent statements: "Thermal stratification in the Recreational Saltwater Lake would be more persistent than in the No Action Alternative and could result in events that produce fish kills that are more severe than occur under Existing Conditions." (8-60) Yet, "Overall, Alternative [5, 6, & 7] would result in less than significant impacts on aquatic and avian resources relative to Existing Conditions in Phases II through IV and benefits relative to the No Action Alternative in all phases." (8-67) If venting of hydrogen sulfide and ammonia produces large-scale mortality events, the invertebrate and fish food bases could be decimated, dramatically degrading the habitat value of the north lakes. This is not a 'less than significant' impact.

Recommendation: in Table 6-5 and on p. 8-67, change 'less than significant impacts' to 'significant impact', to reflect the information provided elsewhere in chapters 6 & 8.

ALAC, et al (cont.)

ALAC-45

Thermal stratification, in itself, is not an environmental impact. Historically, thermal stratification has been associated with long term periods of anoxic conditions. As described in Chapter 6 of the Draft PEIR impacts were determined to be less than significant because reductions in phosphorus loading in the future as TMDLs are implemented would reduce anoxic conditions even though thermal stratification would continue. It is assumed that phosphorus would be reduced in the future upon implementation of TMDLs. Thus, even though there may be periods of thermal stratification, reduced phosphorus loading in the future would reduce the adverse impacts of thermal stratification.

ALAC-46

The analysis described is the worst case scenario of no phosphorus load reduction. Mixing late in the year would result in stripping of oxygen from the water column by hydrogen sulfide, but the Salton Sea would subsequently re-aerate. This has been clarified in the Final PEIR. However, the impact analysis is based on meeting the TMDL objectives. Under this scenario (50 percent phosphorus concentration reduction in inflows), mean ammonia levels in the Marine Sea in the summer would be slightly higher than under Existing Conditions and the No Action Alternative, but oxygen levels in the water column would be greater, which would significantly lessen the number of days with depressed dissolved oxygen levels in surface waters. Therefore, impacts are considered less than significant.

ALAC-47

See response to comment ALAC-45.

ALAC-48

See response to comment ALAC-45.

ALAC-49

See response to comment ALAC-45.

ALAC-45

ALAC-46

ALAC-47

ALAC-48

ALAC-49

2. NUTRIENT LOADINGS

External and internal nutrient loadings directly impact many water quality parameters at the Salton Sea. The alternatives vary dramatically in their impacts on the Sea's water quality, above and beyond the readily-modeled impacts to salinity. These non-salinity impacts will affect the performance of any plan and should factor highly in the selection of a preferred alternative.

The PEIR notes that external phosphorus loadings will decrease in future years, due to the implementation of TMDL's, decreased flows from Mexico and the diversion of urban sewage to Mexicali's new wastewater treatment plant, and the projected reduction in tailwater flows to the Sea. Urbanization at both ends of the Sea will likely increase phosphorus loadings, but it is plausible to project that such external loadings could decrease by 50% in future years.

Internal loadings, however, are problematic.³⁹ Appendix D notes:

there have been many cases of lake restoration where external loads were reduced but the lakes did not improve because of high levels of internal phosphorus loading.... The lack of lake response may extend to 20 or 30 years ... It is expected that the time for lake response to a less-productive equilibrium state would be longer than 10 years. (D-61)

This delay directly affects the ability of the alternatives to attain the water quality protections required by law. However, the PEIR does not appear to analyze or describe the interim period, in which phosphorus concentrations could increase markedly due to shrinking lake volume and increased resuspension. Such increases could markedly degrade water quality and adversely impact aquatic organisms.

Recommendation: include a detailed discussion of changes in phosphorus concentrations over time, especially in Phases 2 & 3.

Appendix D also states that "the lake water quality must eventually change as the water body moves from one that was storing excessively supplied nutrients to a water body in which the internal sources are being depleted." (D-61) This statement suggests that the PEIR assumes that Scenario B (6-25), with its 50% reduction in both internal and external loadings, is the more appropriate description of future conditions. This assumption appears to ignore the fact that future water volumes will be dramatically smaller than existing conditions, under all of the action alternatives. According to Table D-5,⁴⁰ the marine seas in Alts. 5 & 6 would have about 21% of the volume of the current Salton Sea. The much larger marine sea in Alt. 7, if it filled, would only have about 42% of the volume of the current Salton Sea. Including the other water bodies, Alt. 7 presumably would include somewhat more than 50% of the volume of the current Sea.⁴¹ Given the sharp reductions in future water volumes, a 50% reduction in total external loadings relative to current conditions could represent a net *increase* in per unit volume loadings in the future Sea.

The water quality model results show a general increase in phosphorus concentrations in each of the alternatives (Table 6-5), suggesting that the model itself is correct, even if the descriptions of the scenarios are not.

³⁹ Eg, "Schladow (2004) has argued that sediment resuspension may have a much larger impact on Salton Sea phosphorus concentrations and would limit the effectiveness of external load reductions - effectively, that lakes with large internal load mechanisms will respond slower than those primarily dominated by external loads. The principal scientific disagreement is how rapidly and to what extent the internal nutrient sources would respond to reductions in external loads." (D-61)

⁴⁰ Many of the values listed in Table D-5 appear to be incorrect (see **Appendix A**), so they are used here for comparison purposes only.

⁴¹ Table D-5 claims that the volume of the 35 g/L marine sea and the SHC in Alt. 7 (excluding the brine sink, the south mixing Sea, and other portions) would be 98% that of the current Sea, despite a >40% decrease in inflows.

ALAC, et al (cont.)

ALAC-50

Differences of opinion exist concerning the period required for the Marine Sea to reach an equilibrium following reduction in external nutrient loading. Some researchers suggest that the equilibrium could be achieved in as little as three years, while others suggest that up to ten years may be required. While some lake restoration efforts have not shown rapid results, the restoration of the Salton Sea is unlike the nutrient reduction efforts at other lakes. The Marine Sea would be smaller than the current Salton Sea, which would cause reduced wind fetch and prolonged thermal stratification, both of which would reduce the ability to resuspend sediments containing nutrients. While resuspension of shallow sediments above the thermocline commonly occurs in shallow lakes, the shallow sediments of the Salton Sea have been found to have lower concentrations of phosphorus than the deeper sediments. No matter the period required to reach equilibrium, water quality conditions would incrementally improve each year until the equilibrium condition was achieved. However, sufficient data are not available to determine the incremental changes that would occur. It would be more appropriate to consider this further during project-level analysis.

ALAC-50

ALAC-51

Scenario B assumes objectives of the TMDLs would be achieved by the end of Phase IV. Comments from the CRBRWQCB indicate that the Mexicali II Wastewater Treatment Plant is expected to reduce total phosphorus loads into the Salton Sea by about 10 percent and that successful implementation of the draft Nutrient TMDL would reduce phosphorus loads from agricultural activities into the Salton Sea by an additional 30 percent. The Imperial County Farm Bureau indicates that voluntary compliance with the Sedimentation/Siltation TMDLs has reduced the amount of phosphorus entering the Salton Sea by 20 to 30 percent. If the TMDLs are not successful in achieving the load reductions that would result in a 50 percent reduction in phosphorus concentrations in inflows to the Salton Sea, then additional measures to reduce phosphorus concentrations in inflows may be necessary. Project-level analysis could obtain additional nutrient data, refine model efforts, determine phosphorus reductions in the inflows, and evaluate additional potential mechanisms for reducing phosphorus loads to the Salton Sea.

ALAC-51

ALAC-52

ALAC-52

Concentrations of constituents and inflow volumes would be decreased due to implementation of TMDLs, reductions in inflows from Mexico, and reductions in tile drain water. It is anticipated that the overall concentrations of constituents of concern would decline over the program life.

Scenario B offers an optimistic bookend. Given the importance of phosphorus loadings to many of the Sea's chemical and biological processes, the PEIR should create a new scenario that offers a conservative bookend and better information for the reader.

Recommendation: add a new scenario that posits a net *increase* in phosphorus loadings per unit volume, due to rising rates of resuspension and decreasing lake volume.⁴²

Chapter 6 notes potential problems with low DO in shallow water bodies:

The large algal community would likely reduce dissolved oxygen levels. The most critical time would be in the early morning hours due to nighttime algal respiration. Model results indicate that early morning dissolved oxygen would be less than 2 mg/L (a value where many fish and wildlife would be stressed). However, the dissolved oxygen concentrations are anticipated to not cause long term anoxic effects in the shallow Salton Sea. (6-32)

Yet the analysis fails to describe the extent of these impacts, or how the large-scale, ongoing O&M required for these shallow water bodies will affect DO and biological response. If O&M and algal respiration repeatedly reduce DO to levels that stress aerobic organisms, what cumulative stress will result and how will this affect population health, size, and reproduction? If aquatic populations are depressed by low DO, how will this affect avian abundance and diversity? More information is needed here.

Recommendation: the ecorisk assessment (App. F) should be expanded to assess the potential adverse ecological effects arising from low DO, ammonia, and hydrogen sulfide.

We strongly agree that long term water quality monitoring programs should be implemented (6-37).

3. SELENIUM

The PEIR buries the unsubstantiated assumption that

Selenium loss from the water column and associated transfer to the sediments (as historically and recently observed in the current Salton Sea) were assumed to continue as primary processes that would determine water column concentrations

deep in Chapter 6 (6-26). This key assumption should have been noted in Table 3-1.

It is reasonable to assume that anoxic conditions in the deeper waters of the marine seas will continue to sequester selenium. It is not reasonable to assume that existing processes will continue in shallower water bodies. Nor is it reasonable to make such a generalized assumption across all alternatives, given their dramatic differences in water quality and depth. The PEIR's assumption that the Sea will continue to sequester selenium in its sediments is a major error that dramatically distorts information about the alternatives' ability to protect water quality.

Recommendation: assume that current selenium sequestration processes will only occur under anoxic conditions.

⁴² Appendix D (D-103) notes "Model calibration suggests that resuspension of phosphorus [eg. internal loading] may be the most significant load to the Salton Sea." The PEIR also notes that, "There is considerably more orthophosphate throughout the water column in the No Action Alternative at 2040 and 2078 simulations than in the No Action Alternative at 2020 simulation. This result is influenced by the model assumption that for the shallower Sea there is increased resuspension of orthophosphate from the bottom sediments and release of orthophosphate in the pore water." (6-32)

ALAC, et al (cont.)

ALAC-53

Scenario A offers the conservative bookend, in which no reduction in phosphorus concentrations in inflows is assumed, and is a worst case scenario. Scenario B assumes that the objectives of TMDLs are achieved by the end of Phase IV. The CRBRWQCB indicates that the Mexicali II Wastewater Treatment Plant is expected to reduce total phosphorus loads into the Salton Sea by about 10 percent and that successful implementation of the draft Nutrient TMDL would reduce phosphorus loads from agricultural activities into the Salton Sea by an additional 30 percent. The Imperial County Farm Bureau indicates that voluntary compliance with the Sedimentation/Siltation TMDLs have reduced the amount of phosphorus entering the Salton Sea by 20 to 30 percent. The concentration of phosphorus in inflows to the Salton Sea from these load reductions has not been determined for the restoration project. Project-level analysis could obtain additional nutrient data, refine model efforts, determine phosphorus concentration in inflows, and evaluate additional potential mechanisms for reducing phosphorus loads to the Salton Sea.

Differing scientific opinion exists concerning the importance of internal nutrient loading, whether from diffusive flux or sediment resuspension. In addition, considerable limitations exist, both in terms of useful data and in understanding the biological and chemical processes at the Salton Sea. In spite of these conflicting opinions and data limitations, water quality modeling was conducted to simulate, within the limits of the data, tools, and current understanding of the mechanisms, the relative effects of the alternatives on water quality. Results from the model should not be interpreted as providing absolute predictions of future conditions, but rather to provide information on the relative comparison of various alternatives. Calibration of the water quality model included consideration of the individual processes of sediment release, resuspension, and sedimentation. However, as pointed out in Appendix D of the Draft PEIR, a significant limitation exists with the model in that these two sediment pools, one which releases nutrients to the water column and the other that serves as a sink for nutrients, are not coupled in the model. Therefore, the model assumes an unlimited supply of nutrients in the sediments available for release into the water column, and likely could be overprojecting phosphorus concentrations due to resuspension. Also, the Marine Sea would be smaller than the current Salton Sea, which would cause reduced wind fetch and prolonged thermal stratification, both of which would reduce the ability to resuspend sediments containing nutrients. While resuspension of shallow sediments above the thermocline commonly occurs in shallow lakes, the shallow sediments of the Salton Sea have been found to have lower concentrations of phosphorus than the deeper areas. Project specific analysis could further evaluate the importance and cycling of internal and external nutrient loads.

ALAC-53

ALAC-54

ALAC-55

ALAC-56

ALAC, et al (cont.)

ALAC-54

Results from the model should not be interpreted as providing absolute predictions of future conditions, but rather to provide information on the relative comparison of various alternatives. Chapter 8 of the Draft PEIR indicates that low dissolved oxygen conditions due to high algal productivity could limit the fish species that could be supported, and, though tilapia are very tolerant of low oxygen conditions, these periodic conditions could result in occasional fish kills. Sufficient data were not available at the time of preparation of the Draft PEIR to determine the accuracy of the model predictions. As described in Chapter 3 of this Final PEIR, the Preferred Alternative includes a variety of actions that could be implemented within the five year timeframe after the Legislature provides direction on implementation of a restoration program and identifies a future implementing agency. These actions include additional water quality data collection and analysis to address water quality uncertainties.

ALAC-55

Potential ecological effects from dissolved oxygen, ammonia, and hydrogen sulfide concentrations are discussed in Chapter 8 of the Draft PEIR. The ecological risk assessment (Appendix F of the Draft PEIR) discusses risks due to selenium. Both of these analyses are intended to provide an understanding of the relative impacts of each alternative to allow for comparison among the alternatives. The Draft PEIR recognizes that these analyses are conducted at a programmatic level and that additional future project-level analysis would be necessary. An expanded ecological risk assessment would be more appropriately conducted during project-level analysis once the Legislature has provided direction on implementation of a preferred alternative and identifies a future implementing agency.

ALAC-56

As noted in the comment, the anoxic nature of the sediments is important in trapping the selenium in insoluble, non-bioavailable fractions of selenite, elemental selenium, and selenide in the deepest parts of the Salton Sea. Anoxic conditions are expected to continue to occur in the Marine Sea of Alternatives 5 through 8, even with reductions in phosphorus loading. Thus the Marine Sea in Alternatives 5 through 8 would continue to sequester selenium.

In the shallow water habitats, selenium also is expected to continue to be incorporated into the biomass of algae and settle to the bottom sediments. Specifically as related to the potential for selenium to be mobilized from sediment in future shallow-water habitats, the laboratory test with intact sediment cores from the Salton Sea showed less flux of selenium from oxygenated water to sediment than from anoxic water to sediment, but with both 20,000 mg/L and 35,000 mg/L salinity the net flux was from water to sediment (see report entitled "Experimental Measurements of Flux of Selenium from Salton Sea Sediments", dated December 2005).

ALAC, et al (cont.)

Therefore, the results of the test supported the assumption that selenium would continue to be deposited to the sediment (not mobilized from it) under less anoxic conditions.

Because there is recognized uncertainty about selenium sequestering under different water quality conditions, it would be appropriate for future project-level analyses to focus on those factors that could affect selenium sequestration, loss, or remobilization in greater detail than is possible for the programmatic-level assessment. However, it is expected that waterborne concentrations of selenium in the shallow water habitats, as well as the Marine Seas, would continue to meet the Basin Plan objective of 5 ug/L, and the assumption was that selenium removed from the water column would result in deposition to the sediment where it would be available for uptake to the same degree now observed in shallow water and shoreline habitats.

Modeling of selenium concentrations in biota of all habitats, including shallow-water areas, was based on observed bioaccumulation relationships between biota (e.g., for tilapia and corixids) and sediment (not water) in those shallow water habitats. Thus, the relationships observed in shallow waters under current conditions could reasonably be considered to represent what might occur in shallow waters in the future (i.e., bioaccumulation rates from sediment were fairly high, as indicated in Appendix F of the Draft PEIR). Conditions observed in shallow portions of Salton Sea were determined to provide a reasonable basis for modeling future conditions, and to be better than attempting to extrapolate from other ecosystems. It should also be noted, however, that the selenium concentrations for sediment that were used in the ecological risk assessment (1 and 4 mg Se/kg) to assess risks associated with exposure of aquatic biota and birds to sediment are generic, so they assume that selenium in sediments of the Salton Sea would be as bioavailable as that found in other saline wetlands. Given those various caveats, the overall conclusion is that the modeling is sufficiently appropriate for a programmatic level of assessment of risks among alternatives.

The Draft PEIR does not intentionally bury the assumption as suggested the commenter.

Table 8-4 includes the recommendation "Evaluate the need and methods for incorporating areas of freshwater within Saline Habitat Complex to accommodate the requirements of breeding birds and their young" as a 'Next Step', but it is not clear that this is intended as a potential mitigation measure to reduce the potential risk of selenium toxicity. There do not appear to be any other measures specifically identified as mitigation for selenium. The Salton Sea Science Office has suggested that the provision of low selenium, freshwater ponds would attract breeding and other birds, enabling them to flush accumulated selenium from their systems. Such water could come directly from the Colorado River⁴³ via IID's existing distribution system, to sustain mitigation ponds on existing or exposed Refuge land. Alternatively, a portion of drain or river water could be treated to decrease selenium. Either source would be far less costly than treating all inflows to decrease selenium concentrations.

Recommendation: evaluate the potential benefits of selenium mitigation ponds or other potential mitigation efforts.

The PEIR does not appear to include any of the information on Upper Basin selenium control efforts that was presented at the March 16, 2005 Salton Sea Advisory Committee meeting. Although such efforts will yield limited benefits in the short term, source control clearly is the best long-term strategy to reduce selenium loadings to the Salton Sea and the Colorado River basin as a whole. Since source control efforts also decrease salt loads, they would also yield benefits to a broad range of agricultural and municipal users of Colorado River water.

Recommendation: include Upper Basin selenium control efforts as part of a long-term strategy to reduce selenium loadings to the Salton Sea.

The extensive ecorisk assessment described in Appendix F employs a dated approach to projecting the potential threat of selenium toxicity. The recent literature suggests that selenium concentrations in food sources, rather than in water, should be the main driver for determining bioaccumulation of selenium.⁴⁴ As a result of the PEIR's dated approach, the uncertainty is so great that we do not know how an updated analysis would come out in terms of comparative risk. The basis of the PEIR analysis is too simplistic to give a realistic assessment based on current methodology. Appendix F suggests that there was no verification of any of the steps in the analysis. Furthermore, the ecorisk assessment does not quantify the uncertainty inherent in the assessment.

Recommendation: the ecorisk assessment should employ the best available science to project potential risks associated with selenium toxicity. Scenarios should be run for each alternative to project how variability in selenium would affect the outcomes.

4. CONSTRUCTION-RELATED IMPACTS

⁴³ The objections of other California entitlement holders to such use of Colorado River water might be dispelled if the much larger quantities of (c)(1) and (c)(2) water were made available to them.

⁴⁴ See Stewart, A. R., Luoma, S.N., Schlegel, C. E., Doblin, M.A. and Hieb, K.A. 2004. Food web pathway determines how selenium affects aquatic ecosystems: A San Francisco Bay Case Study *Environmental Science and Technology* 38 (17): 4519-4526; Luoma, S.N and Rainbow, P.S. 2005. Why is bioaccumulation so variable? Biodynamics as a unifying concept. *Environmental Science and Technology* 39 (7): 1921-1929; and Presser, T.S., and Luoma, S.N. 2006. *Forecasting Selenium Discharges to the San Francisco Bay-Delta Estuary: Ecological Effects of a Proposed San Luis Drain Extension*. USGS Professional Paper 1646 (available at <http://pubs.usgs.gov/pp/p1646/>).

ALAC, et al (cont.)

ALAC-57

ALAC-58

ALAC-59

ALAC-60

ALAC-61

ALAC-57

Wildlife require fresh (i.e., non-saline) water for drinking. Inclusion of areas with freshwater within the Saline Habitat Complex is proposed to provide drinking water for young birds that unable to fly to other sources of fresh water, and not as a mitigation for selenium. Mitigation measures specifically for selenium were not discussed in the Draft PEIR, but could be developed through future project-level analysis.

ALAC-58

The ecological risk assessment determined that risks due to selenium were, at most, moderate, with the most significant effect being some possible reduced level of egg viability in susceptible birds breeding at the Salton Sea. Project-level analysis could determine whether this effect should be mitigated, and evaluate potential mitigation, which may include provision of freshwater ponds if they were considered effective in reducing selenium levels in wildlife or other mitigation measures as determined at that time.

ALAC-59

As indicated in the response to comment ALAC-58, the need for and potential benefits of selenium mitigation could be evaluated during project-level analysis.

ALAC-60

Upper Basin selenium source control efforts were described in the Upper Basin Selenium Source Control Report (DWR, 2005). That report provided an overview of the extent of selenium loading from the Upper Basin to the mainstem of the Colorado River and control measures that could be implemented in the Upper Basin to reduce selenium loading to the mainstem Colorado River. Although source control effects appear to be a long-term strategy to reduce selenium loading to the Lower Colorado River (and thus to the Salton Sea), there is uncertainty regarding the transport of selenium through the Colorado River system and the magnitude of reductions necessary in the Upper Basin to realize selenium concentration reductions in the Lower Basin. Various efforts are ongoing to reduce salinity and, in turn, selenium concentrations in the Lower Colorado River. Any future implementing agency could further explore the possibility of selenium source control, including working with the ongoing source control efforts, during future project-level analysis.

ALAC, et al (cont.)

ALAC-61

More sophisticated modeling and risk assessment are possible if the available data are more extensive, such as those for San Francisco Bay-Delta Estuary model of Theresa Presser and Sam Luoma. However, information on assimilation efficiency and other parameters used for such a model are not available for the Salton Sea. Consequently, a conventional approach using site-specific transfer factors and bioaccumulation factors based on historic data of acceptable quality along with data that could be collected for this study was employed; this approach is considered to be appropriate and adequate for comparison among habitats and alternatives at a programmatic level. The ecological risk analysis was based on the best available data and the analysis methodology was selected based on the availability of these data.

The evaluation of ecological risks was based on multiple lines of evidence, including selenium concentrations in water, sediment, and biota; relationships among those media; and comparisons of exposures of aquatic biota (including aquatic birds) to high and low toxicity reference values. Waterborne selenium is the pathway by which selenium enters the Salton Sea system, but the deposition to sediment and then bioaccumulation to invertebrates, fish, and birds were evaluated in detail in the ecological risk assessment. Due to the recognition that data gaps exist and that there are uncertainties in the assessment (see Appendix F of the Draft PEIR), further monitoring and evaluation would be appropriate during project-level analysis.

The protection of water quality required by the legislature, and CEQA more generally, demand a thorough analysis of the potential impacts caused by construction of the alternatives themselves. Yet the PEIR glosses over these potentially significant impacts.

On p. 6-33, the PEIR states,

Construction of the Saline Habitat Complex cells would temporarily increase suspended sediment and nutrient cycling in waters near active construction. Resuspended bottom sediments would release previously deposited nutrients, particularly phosphorus, and temporarily stimulate local algae production and reduce water quality conditions. This would be a short term effect during construction. However, construction during Phase I would affect tilapia and pupfish.

DWR staff have clarified that the SHC cells would be built in the dry, so the above description is in error.⁴⁵ However, this description certainly applies to Alts. 5-8, which would be built in the wet (per Appendix H-7), and likely to Alts. 3 & 4 as well.

The construction of the deep-sea barriers would require excavating or dredging from 33.5 to 86.7 million cubic yards of Sea bed soils. Impacts of such disturbance would certainly persist for at least the five-plus years assumed for construction of these major barriers. Disturbing this much material would resuspend large volumes of both nutrients and selenium, as well as other contaminants that have been sequestered in deep sediments. This resuspension could degrade water quality well beyond the term of construction. Just how large an impact and for how long is difficult to project, although it could take a year or more for primary producers to metabolize the increased nutrient load. Excavation of the shallower (coarser, lower nutrient) sediments would have less of an effect than deepwater work. Selenium might be an issue for a comparable period of time (although that would depend a lot upon biogeochemical processes that would be difficult to assess, although as with the nutrients, the shallower, coarser sediments would present less impacts than deeper sediments). Figures F-37 through F-40 depict relative concentrations of selenium across the sea bed. Selenium is often co-located with organic materials, suggesting that these variations could serve as proxies for relative concentrations of nutrient-rich organic material.

Recommendation: use a GIS-based analysis to project the construction-related impacts of disturbing sediments – especially through areas of high concentrations of organic materials and selenium – of each alternative.

Recommendation: use the water quality model to project the short- and medium-term effects of disturbing these sediments, to refine the analysis beyond the generalization that "Water quality conditions during construction would be similar to those described under Alternative 1," and to determine whether these rise to the level of significant impacts.

F. Hydrologic Model

Given the considerable uncertainty inherent in projecting 75 years of future inflows and climate and hydrologic conditions and actions, we endorse the PEIR's use of a probabilistic hydrologic model (described in Appendix H-2). The Salton Sea Advisory Committee's Inflows and Modeling subcommittees reviewed and rejected a deterministic approach to projecting future inflows, given the uncertainty regarding future conditions. IID's Executive Manager of its Water Transfer-QSA Program participated actively in these subcommittee meetings and supported the decision to employ a probabilistic, rather than a deterministic, analysis. The probabilistic analysis – yielding long-term average annual inflows to the Sea of about 717,000 acre-feet – is a more reasonable and defensible approach than a deterministic, line-item approach.

⁴⁵ Email communication from Marti Kie to Michael Cohen et al., December 12, 2006.

ALAC-62

ALAC-63

ALAC-64

ALAC-65

ALAC, et al (cont.)

ALAC-62

General impacts associated with construction of alternatives are discussed in Chapter 8. As noted in that chapter, specific details and localized impacts associated with the construction and operations and maintenance of actions would be evaluated in subsequent project-level analysis.

ALAC-63

The Saline Habitat Complex would be constructed in the dry. However, it is possible that sediment may enter the water column of waters down gradient of the construction site. This potential impact could be considered further during project-level analysis and in preparation of a Stormwater Pollution Prevention Plan for construction areas.

Construction in inundated areas would disturb bottom sediments, with the likely result of resuspension of sediments and nutrients into the water column. The resuspension of nutrients may create relatively short-term stimulation of algal growth, but the normal settling and precipitation processes prevalent in the Salton Sea would continue to occur. Any adverse effects associated with resuspension of sediments may be an unavoidable impact, but could be evaluated in more detail in project-level analysis.

ALAC-64

Thank you for your suggestion. A GIS-based analysis could be used to project the construction-related impacts during future project-level analysis.

ALAC-65

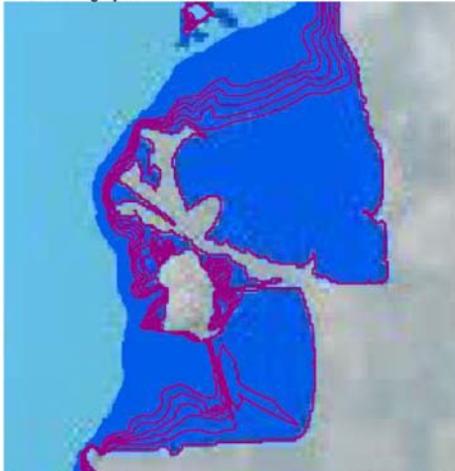
As previously mentioned, considerable limitations exist in the ability to model chemical, biological, and physical processes in the Salton Sea due to lack of adequate data and incomplete understanding of how these various processes operate and inter-relate. Project specific analysis could evaluate potential effects from disturbance of the Sea Bed and could include the use of models, as appropriate, in such an evaluation.

We support the hydrologic model's inclusion of the projected impacts of climate change on lake surface evaporation rates (App. H2, pp. 72, 83). However, this discussion of future evaporation should also reference the model's effort to address the dampening effect rising salinity has on the rate of evaporation (noted in H2 Att. 1, pp. 8-); without referring to Attachment H2-1, the reader would assume that the model ignored this salient factor. As noted in the attachment, this dampening effect exceeds the projected impacts of climate change, especially at salinities greater than 200 g/L (as shown in Fig. H2-1-4).

G. Bathymetry

Empirical evidence (see below) demonstrates that Reclamation's bathymetric data is unreliable at higher elevations, especially in the vicinity of the river deltas. Fig. H1-12 clearly shows this unreliability at the Alamo and New river deltas. Although this error is common to all of the alternatives, and might not appreciably distort comparisons between them, it minimizes the amount of land exposed above the -235' contour. This in turn minimizes the amount of land available for construction of early start habitat, as well as the extent of playa exposed in the early years. So that accurate information is available prior to initiation of project-level documentation, DWR or some other entity (such as USGS) should commission a land survey of playa currently exposed, and contract for a bathymetric study of the Sea's shallow areas, especially near the river deltas. Such information will be essential at the project level and should be acquired as quickly as possible.

Curiously, the PEIR does not appear to contain a figure showing the Salton Sea's bathymetry. However, a GIS projection from the same Reclamation database used by the PEIR shows significant errors at higher elevations. The Alamo River delta depicted below shows one-foot contour intervals, the highest at -223'. Empirically, this appears to be roughly the -228' contour. The photograph below, taken in late April, 2004, when USGS data indicate that the Sea's surface elevation was at about -228.1', shows the Alamo River delta at roughly Reclamation's -223' contour.



Alamo River bathymetry, one-foot contours starting at -223'.

ALAC-66

ALAC-67

ALAC, et al (cont.)

ALAC-66

The Draft PEIR has been modified.

ALAC-67

As discuss in the Draft PEIR in Appendix H-2, Attachment 1, under the section Bathymetry Methods, bathymetric data collected by Reclamation was considered appropriate for planning level of analysis of restoration alternatives. However, it is recognized that these data limit the precision of elevation, area, and capacity relationships, particularly at higher Salton Sea elevations (such as the river deltas). As described in Chapter 3 of this Final PEIR, the Preferred Alternative includes a variety of actions that could be implemented within the five year timeframe after the Legislature provides direction on implementation of a restoration program and identifies a future implementing agency. These actions could include conducting a bathymetric study.



Alamo River delta, April, 2004, with Sea's surface elevation at about -228.1'.

H. Environmental Justice Requirements

California law defines environmental justice as "the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws and policies."⁴⁶ To enact this policy, the California Environmental Protection Agency adopted an "Environmental Justice Action Plan" (the "EJ Action Plan") in 2004 that provides guidance on the precautionary principal, cumulative impacts assessment, public participation, community capacity-building and other environmental justice issues.⁴⁷

The precautionary principal requires avoidance of undue risk and use of reasonable, cost-effective approaches to minimize or prevent adverse environmental impacts.⁴⁸ Unfortunately, there is insufficient analysis of environmental justice issues in the Draft PEIR since much of it is delayed until the project level EIR. Environmental justice issues should have been explored more fully in the Draft PEIR. The EJ Action Plan requires integration of environmental justice issues into environmental decision-making and the most critical decision in this process is the choice of Preferred Alternative, which will be made at the programmatic level. The precautionary principal, in particular, should have been developed more in the Draft PEIR and should be an important basis in selecting the Preferred Alternative.

The lack of environmental justice analysis is most striking for the alternatives that require a mid-Sea barrier, which will cause significant air quality impacts, and those alternatives that fail to allocate water for air quality mitigation as this is an obvious environmental justice issue for surrounding communities, farm workers and others. The Draft PEIR also omits any assessment of the likely impacts of dust pollution on farmland and farming jobs, which is another important environmental justice issue.

Environmental justice also requires that minorities and low income populations be provided opportunities to participate in the development of the program. Too frequently, public notice was provided just days

⁴⁶ Cal. Government Code section 65040.12.

⁴⁷ Id.

⁴⁸ Id. at p. 4.

ALAC, et al (cont.)

ALAC-68

California legislation enacted in 1999 through 2001 directed the California Environmental Protection Agency (Cal/EPA) to develop environmental justice policies and procedures for implementation within the Cal/EPA program areas of California's Executive Branch. While that process has reached certain milestones, including development of an Environmental Justice Action Plan cited in the comment, it is still ongoing within Cal/EPA. The Resources Agency is a separate area of government from Cal/EPA and has developed its own set of Environmental Justice Guidelines. The Resources Agency's Environmental Justice Guidelines were used in the PEIR process.

ALAC-69

State legislation specifically requires the Preferred Alternative to mitigate, to the extent feasible, the impacts from the restoration project. As discussed in the Draft PEIR, many of the alternatives have estimated emissions levels that would exceed local significance thresholds. The exceedance of air quality significance thresholds is an indication of the potential serious effects to human health and welfare that might be associated with the projected air emissions. Although possible damage to crops caused by dust emissions was not specifically analyzed in the Draft PEIR, it was assumed that measures used to control dust and meet public health criteria should also be protective of crops. Project-level analysis could further analyze potential air quality impacts and include appropriate mitigation measures that would further work towards the legislative objective.

ALAC-68

ALAC-69

ahead of public outreach meetings and no meetings were held at Latino community centers or other meeting places likely to increase participation by minority and disadvantaged communities. As a result, there has been little participation or input by Spanish-speaking residents of Imperial or Coachella Valley, farmworkers and others who will be impacted by the choice of Preferred Alternative.

Environmental justice also ensures the right to ethical, balanced and responsible use of the land and renewable resources to produce a sustainable ecosystem. Very little of the discussion of the eight alternatives has been based on the sustainability of the design and which alternative is the least damaging to the ecosystem. Environmental justice requires consideration of ongoing O&M costs, electricity and other resource demands, impacts on local jobs and environmental sustainability. Alternatives 1, 2 and 4 or a hybrid of these seem likely to cause the fewest adverse environmental impacts and most likely to be environmentally and economically sustainable.

Environmental justice demands the right of all workers to participate in safe, healthy environments. The Draft PEIR does not provide information on these issues or differences among the alternatives. Environmental justice also calls for protection from production of toxins and although the cancer risk has been superficially evaluated there has been no evaluation of risks associated with respiratory or cardiovascular disease associated with dust, charged particles and various metals. As there are major differences between the alternatives the effects of people around the sea may be far larger than the long-term risks of cancer and therefore risks should be evaluated in greater detail before a preferred alternative is chosen.

IV. THE DRAFT ALTERNATIVES DO NOT MEET NON-LEGAL OBJECTIVES.

While the preferred alternative must meet the three legally required objectives for habitat, air quality and water quality, it is also important that the preferred alternative achieve critical non-legal objectives – to the extent that these non-legal objectives do not undermine or impair the components in the preferred alternative that are directly linked to the three legal objectives. The important non-legal objectives include maximizing recreational and economic opportunities, minimizing impacts on agriculture, providing flexibility and dependability, and adequately addressing transition issues such as project completion time.

A. Opportunities For Recreation

As California's population continues to increase, its open spaces, natural resources and opportunities for recreation become more important. The Salton Sea is a globally important bird area and people travel from all over the world to view its amazingly diverse birdlife. The rich ecosystem also provides opportunities for hunting, camping, hiking, photography and other forms of outdoor recreation, which would be lost without restoration.

Thus, it is important that the preferred alternative provide for recreational opportunities, consistent with the legally required objectives. To that end, we urge that the final preferred alternative provide for an active sportfishery, new hunting opportunities as well as protecting existing hunting opportunities, birdwatching, hiking, camping, boating and other forms of recreation. We believe that a combination of a smaller lake in the north, which is no deeper than 36 feet in order to reduce hydrogen sulfide production (a smaller version of Alternative 5), concentric rings/lakes with a depth of 6 feet (Alternative 4), and shallow saline wetlands in the southern part of the Sea (Alternatives 1 and 2) will provide the essential components to maximize recreation while still meeting the three legal objectives.

B. Potential Impacts on Agriculture

The choice of restoration alternative will have significant impacts on the multi-billion dollar agricultural industry in Imperial and Coachella Valleys. Not only is the Sea an agricultural sump for irrigation runoff, but it creates a more moderate micro-climate in the surrounding region and allows production of many

ALAC-70

ALAC-71

ALAC-72

ALAC-73

ALAC-74

ALAC-75

ALAC, et al (cont.)

ALAC-70

Very early on in the State's process, a number of documents, including the Notice of Preparation were translated in Spanish. The Resources Agency provided these documents at public outreach meetings in the Salton Sea watershed, and made these documents available on the State's Salton Sea website. After public release of the document, Spanish language versions of both a Frequently Asked Questions Sheet and Fact Sheet were made available and a contact phone number of a State Team member that would be able to answer questions in Spanish was provided for those interested.

Contrary to the assertions made by the commenter, public outreach meetings were noticed well in advance, with mailed invitations frequently being distributed two weeks prior to the meetings. These public outreach meetings were held in various locations throughout the Salton Sea watershed in an effort to increase participation by all members of the Salton Sea community. As described in Chapter 26 of the Draft PEIR, the 26 public outreach meetings held during the preparation of the Draft PEIR were attended by over 600 people. While some of the meeting attendees were from outside of the Salton Sea watershed, the State believes that the majority of the attendees were residents from the local communities.

The commenter provides no evidence or information to support its assertion that there has been little participation or input by Spanish-speaking residents or farmworkers.

ALAC-71

Although not required under CEQA, the Draft EIR addresses environmental justice in Chapter 22 "Economic and Social Effects". As described in Chapter 22 of the Draft PEIR it is the Resources Agency policy that the public, including minority and low income populations are not discriminated against, treated unfairly, or caused to experience disproportionately high and adverse **human health or environmental effects** from environmental decisions. . . ." (emphasis added). The Resources Agency's Guidelines do not require consideration of operations and maintenance costs, electricity demands, and other issues. The guidelines direct the decision makers to evaluate human health and environmental effects only from environmental decisions. Consistent with the Resources Agency Guidelines an extensive public outreach program was conducted throughout the program (see Chapter 26 of the Draft PEIR).

ALAC, et al (cont.)

In accordance with the CEQA Guidelines, the Draft PEIR identifies the environmentally superior alternative (see Chapter 3 of the Draft PEIR). While the State recognizes that sustainable design is important, it is not a requirement of CEQA or the Salton Sea Ecosystem Restoration Program legislation.

ALAC-72

The environmental impacts of all of the alternatives were described in the Draft PEIR. However, the Draft PEIR did not seek to identify the environmental or economic sustainability of the various alternatives.

ALAC-73

The Draft PEIR does recognize that there is potential public health risk to workers during construction and operations and maintenance (see Chapter 14). As identified in the Draft PEIR, best management practices would be employed during construction activities to prevent accidents, spills of potentially hazardous materials, or other avoidable risks to the public (see page 14-21). The Draft PEIR also identified Next Steps including working training programs, providing breathing apparatuses, implementing monitoring programs, and related measures to reduce potential health risks to workers (see page 14-27). As described in the Draft PEIR, it would be appropriate to conduct additional air quality and associated human health risk analyses during project-level analysis.

State legislation specifically requires the Preferred Alternative to mitigate, to the extent feasible, the impacts from the restoration project. As discussed in the Draft PEIR, many of the alternatives have estimated emissions levels that would exceed local significance thresholds. The exceedance of air quality significance thresholds is an indication of the potential serious effects to human health and welfare that might be associated with the projected air emissions. Project-level analysis should further analyze potential air quality impacts and include appropriate mitigation measures that would further work towards the legislative objective.

ALAC-74

See response to comment ALAC-73.

ALAC, et al (cont.)

ALAC-75

As described in response to comment ALAC-1 and in Chapter 3 of this Final PEIR, although not a legislatively mandated objective, the Preferred Alternative is expected to allow for active and passive recreational opportunities. The Saline Habitat Complex is expected to allow for passive recreational opportunities, such as bird watching. Additionally, the Marine Sea would provide for water-based recreational opportunities that have historically occurred at the Salton Sea. This would include boating and fishing opportunities and allow for the ongoing operation of the majority of the existing harbors at the Salton Sea. Specific recreational opportunities could be considered during project-level analysis. Additionally, during project-level analysis, it would be appropriate for any future implementing agency to determine the compatibility of potential recreational opportunities with the legislative objectives, and identify whether or not the opportunities should be developed as part of the Salton Sea Ecosystem Restoration Program or as separate projects.

early-winter vegetable crops. The Sea also controls dust pollution which would otherwise severely impact agricultural productivity, particularly in Imperial Valley.

Although restoration is required to mitigate air quality impacts, it should also, to the extent consistent with legal requirements, attempt to preserve the micro-climate and other benefits provided to agriculture by the existing Sea.

Alternatives that include a marine sea or multiple rings of water on the Imperial Valley side would help to preserve the moderate micro-climate important to winter vegetables. Alternatives 3, 4 and 8 would all help to maintain the climate moderating benefits of the current Sea. The alternatives that control for dust include 1-3, 5-6 and 8.

C. Transition And Completion Time

Table 3-1 notes that the PEIR assumes "that easements and/or deeds would be acquired in a timely manner that would not cause delays," and if they could not, "some or all of the alternatives would be delayed or become infeasible." This is a critical point.

We appreciate the listing of key assumptions throughout the document. Such assumptions greatly influence the PEIR's analysis and conclusions. Several of these assumptions are especially troubling and should be revisited in the preparation of the final EIR. The assumption listed on p. 3-2 that "Final design completed by 2012; Permits, approvals, and easements or deeds obtained by 2013" for the restoration project as a whole is absurd. Nor is it plausible that the permitting, approval, and easement process could begin concurrent with the initiation of the project-level EIR in 2007 or 2008: most agencies will not begin this process until the project itself has been described and sited. A conservative approach suggests that the permitting process will not begin until final design is completed.

Table 25-1 lists 11 different permitting or approval agencies, with a total of 22 different required permits or approvals. Obtaining permits for the Salton Sea Science Office's 100 acre pilot saline habitat complex took more than one year; obtaining permits for a project of the magnitude of the Salton Sea Ecosystem Restoration Project will undoubtedly take considerably more time, even if California works diligently to coordinate and expedite the permitting process. Obtaining easements and deeds from the various landowners with property under and around the current Sea will take yet more time, especially since title in many instances is not clear (given that many of these lands have been submerged for 100 years).

This grossly optimistic construction schedule is important because the time required to complete major components should be a key determinant of the viability of any alternative. 'Time to completion' directly impacts the ability of any component to "provide the maximum feasible attainment" of fish and wildlife abundance and diversity. If conditions at the Salton Sea were static, the time required to create habitat would be less critical. But conditions at the Sea will get worse in the coming decade, and will deteriorate rapidly starting in 2018 due to the cessation of mitigation water deliveries to the Sea. It is not clear (and the PEIR fails to inform us) how the temporary loss of key foodstocks and of shoreline, breeding, and roosting habitat at the Sea will affect the short- and long-term survival of the many migratory and resident birds that depend upon the Sea. Will the loss of such habitats for five years or ten years jeopardize the survival of one or more of the species that currently depend on it? Will the temporary loss of this habitat, coupled with impacts along their migratory routes, generate a cumulative impact that threatens the survival of one or more species? The PEIR should answer these fundamental questions.

Realistic permitting, land acquisition, and construction timelines would provide critically important information for evaluating differences between the alternatives and components. Such timelines would reflect the additional value of scalable components that could provide benefits before the component as a whole is completed (such as saline habitat complexes) relative to those that can not function until completed (such as mid-Sea barriers).

ALAC, et al (cont.)

ALAC-76

The Draft PEIR did not perform a thorough assessment of each alternative's ability to preserve the microclimate influences of the existing Salton Sea. Generally, the PEIR acknowledged that large water bodies do provide localized temperature moderating benefits that can be beneficial for agricultural crop production. Some alternatives may preserve these microclimate benefits to a greater degree than others. A more detailed assessment of the microclimate benefits of the Preferred Alternative could be conducted during project-level analysis, to the extent that this assessment is feasible based on available information.

ALAC-77

While the commenter is correct that permitting activities may not be completed (permit approval) until the engineering design is well underway, coordination with permitting agencies, especially in a large-scale project with multiple permits often within the same agency, could begin early in the process. Often, once project footprints and acreages that would be affected are known, using conservative estimates, one could begin to work with the agencies regarding impacts to the resources. This early coordination allows for incorporation of anticipated permit conditions or changes to the project to address permitting concerns earlier in the planning stages (including redesign or relocation of some facilities to address concerns raised by the permitting agencies). Thus, although permitting activities cannot be completed until later in the design stages, any future implementing agency could work with the various permitting agencies throughout the project in order to obtain all appropriate permits in the timeline estimated in the Draft PEIR.

ALAC-78

See response to comment ALAC-77.

ALAC-79

The State agrees that the potential for habitat deterioration prior to implementation of a restoration program is an important issue. However, evaluation of the extent to which this could occur and its subsequent effect on fish and wildlife would be speculative because of the uncertainty associated with the timing of the restoration, the level of habitat deterioration, and the response of fish and wildlife. Instead, Early Start Habitat was identified as a component of each alternative to bridge the gap between current conditions and the development of usable habitat by the fish and wildlife that depend on the Salton Sea ecosystem and to provide greater certainty that the objectives of the restoration program would be met.

ALAC-76

ALAC-77

ALAC-78

ALAC-79

ALAC-80

ALAC-81

ALAC, et al (cont.)

ALAC-80

See response to comment ALAC-79. It is beyond the scope of the programmatic analysis in the Draft PEIR to evaluate avian population viability, or to predict how future conditions in the Pacific Flyway coupled with the loss of habitats at the Salton Sea may affect avian species survival. However the Draft PEIR does state that based on the results of the modeling of potential bird use as described in Appendix C, construction of Saline Habitat Complex cells would offset the loss of habitat anticipated as the water recedes. As shown in Figure 3-1 of the Draft PEIR, Early Start Habitat is scheduled to be implemented in 2011 prior to the loss of mitigation water (i.e., (c)(2) water), which ends in 2017. The Brine Sink would continue to provide invertebrate populations through Phase I for all alternatives, with most if not all of the Saline Habitat Complex (for all but Alternative 3) constructed by 2030.

ALAC-81

Figure 3-1 in the Draft PEIR identifies the anticipated construction timeframe for each of the alternatives, along with the time needed for water bodies to achieve their salinity goals. Additional information on the permitting, construction, and operation schedules is provided in Appendix H6. While the commenter disagrees with the timelines presented in the Draft PEIR, the Resources Agency believes that the timelines are reasonable. Any future implementing agency could further define these timelines and schedules.

As noted above, the designation of Phase 1 (3-2) relies on the unrealistic permitting, land acquisition, and construction schedules assumed by the PEIR. This is not a useful distinction, or accurate information. Rather, the PEIR should designate Phase 1 as the period before the initiation of major construction (eg, until about ~2018); Phase 2 would be the period of major construction and transition to benefits (eg, ~2018-2030). Phase 1 would not distinguish between the alternatives, but would more accurately represent likely future conditions. Phase 2 would more accurately represent likely construction schedules, providing the reader with better information on conditions at the Sea.

The PEIR makes the false and misleading statement that the “results also indicated that all of the alternatives would provide similar or increased habitat benefits relative to Existing Conditions.” (3-81) This statement is exceptionally inaccurate and must be corrected in the final PEIR. Until the infrastructure is completed, most of the alternatives will provide far fewer habitat benefits than existing conditions. Additionally, the variable amount of time required for construction of the various alternatives means that they will provide vastly different benefits during and after construction relative to one another, and in absolute terms. For example, the outer lake of Alternative 4 could be constructed much more quickly than the dam in Alt. 6; Alt. 4 would provide many years of habitat benefits before Alt. 6 is completed, and additional years of benefits before conditions in Alt 6 stabilized to the point where it functioned as designed. Such differences in the amount of time required before benefits are generated must be clearly described and evaluated; such differences distinguish between alternatives and offer important information about relative benefits. This time lapse could have very serious ramifications for special status species (and others), as the short term loss of habitat at the Salton Sea potentially could jeopardize their existence. The PEIR should focus greater attention on transition periods.

Recommendation: The PEIR must provide clear analysis for each alternative of the delays in providing or completing habitat, the amount of habitat available during permitting and construction, and risks to wildlife from those delays or gaps in available habitat of different types.

V. THE PREFERRED ALTERNATIVE SHOULD INCLUDE COMPONENTS FROM DIFFERENT DRAFT ALTERNATIVES TO MEET THE LEGAL REQUIREMENTS AND OTHER OBJECTIVES OF RESTORATION.

As described above, none of the alternatives in the Draft PEIR meets the legal requirements for restoration, and several fail to meet feasibility, flexibility or reliability standards. The Draft PEIR does, however, analyze all of the individual components needed to meet the legal requirements for the Preferred Alternative. To meet those legal requirements, the Preferred Alternative should include features from several different draft alternatives, as described below.

- Between 25,000 – 50,000 acres of Shallow Saline Habitat Complex, as described in Alternatives 1 and 2, depending on amount of other shallow saline habitat provided;
- Concentric rings using geotubes or other dirt-filled barriers, as described in Alternative 4, to provide additional shallow habitat, deeper marine habitat, pupfish connectivity, shoreline and view protection, air-quality protections, and recreation;
- A large North Lake, fed solely by the Whitewater River, to provide recreation and development opportunities, similar to the lakes found in Alternatives 5-7;
- Allocation of at least one-half acre-foot of water per acre of exposed Seabed, as stipulated by the Salton Sea Advisory Committee, to prevent dust pollution caused by exposed playa, as described in Alternatives 1-3, 5-6 and 8;
- Construction of shallow saline habitat (known as “early start habitat”) immediately to provide resources for birds during the long permitting and construction process, as described in all of the proposed alternatives; and
- System design that provides water for habitat and air quality mitigation first, in case of possible shortages or system malfunctions, as described in Alternatives 1-3.

ALAC, et al (cont.)

ALAC-82

ALAC-82

See response to comment ALAC-81.

ALAC-83

ALAC-83

The comment is correct in stating that habitat benefits will take time to develop and that habitat conditions might deteriorate before they improve as a result of restoration. The conclusion in the Draft PEIR that all of the alternatives would provide similar or increased habitat benefits relative to Existing Conditions was based on a comparison of the habitat value (from the bird habitat modeling) projected at full build-for each alternative. Early Start Habitat was included as a component of all alternatives as a measure to help minimize potential impacts that could occur prior to the implementation of a restoration program.

ALAC-84

ALAC-84

See ALAC-79

ALAC-85

ALAC-85

See ALAC-79

ALAC-86

ALAC-86

The Salton Sea Restoration Act (Fish and Game Code 2931(c)(1-3)) states that “the preferred alternative shall provide the maximum feasible attainment of the following objectives: (1) restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea. (2) Elimination of air quality impacts from the restoration projects. (3) Protection of water quality.” All of the alternatives meet the legislative requirements to varying degrees.

It is unclear what “feasibility, flexibility, or reliability standards” the commenter is referring to. However, there are no “feasibility, flexibility, or reliability standards” in the Salton Sea legislation.

ALAC-87

ALAC-87

See response to comment ALAC-1. The Preferred Alternative recommended by the Secretary includes many of the components identified by the commenter.

A Final Preferred Alternative that contains all of these components, each of which is present and analyzed in one or more of the draft alternatives, would best meet the legal requirements to maximize habitat, air quality and water quality, while also providing substantial recreation and development opportunities.

VI. CONCLUSION

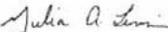
State law requires the Preferred Alternative to provide the maximum feasible wildlife habitat, air quality mitigation and water quality protection. Although none of the alternatives analyzed in the Draft PEIR meets these requirements, the Draft contains the appropriate range of components to include in the final Preferred Alternative. The Draft PEIR does not, however, contain data and analyses that are necessary to assess the feasibility of some alternatives and components. In the absence of that data and analyses, the Preferred Alternative should, to the extent possible, be based on components with minimum uncertainty and maximum flexibility for adaptation. The Preferred Alternative should also be designed to be constructed in phases, with habitat replacement and air quality mitigation to begin immediately, to provide flexibility and ensure maximum feasible attainment of habitat and protection of air and water quality.

Restoration of the Salton Sea is critical for the wildlife that depends on it and to protect public health, agriculture and surrounding communities. Selecting a Preferred Alternative that meets the legal requirements for restoration, minimizes uncertainties and risks, and provides flexibility for adaptive management is essential to begin restoration work as soon as possible. The Preferred Alternative should not be based on high-risk components that may prove to be infeasible during the project level EIR or construction phase, when changes may no longer be possible or cause unacceptable delays, and restoration may be too late for many species.

We thank the State for its strong leadership during the restoration planning process and urge it now to select a Preferred Alternative that best meets the legal requirements for restoration, as described above, with minimum uncertainties and maximum flexibility.

Sincerely,

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**ALAC-87
cont.**

ALAC-88

ALAC-89

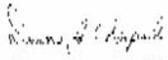
ALAC, et al (cont.)

ALAC-88

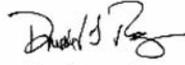
See response to comment ALAC-86. The commenter inaccurately summarized the Salton Sea legislation. The Salton Sea Restoration Act (Fish and Game Code 2931(c)(1-3)) specifically provides that "the preferred alternative shall provide the maximum feasible attainment of the following objectives: (1) restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea. (2) Elimination of air quality impacts from the restoration projects. (3) Protection of water quality."

ALAC-89

See response to comment ALAC-1 and ALAC-86. See also Chapter 3 of this Final PEIR for a more detailed description of the Preferred Alternative.



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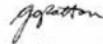
ALAC, et al (cont.)

/s/

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APPENDIX A. Minor Corrections and Suggestions

We also note the following corrections, contradictions and suggestions:

- use g/L instead of mg/L, especially for salinities (eg, reference salinities as 48 g/L instead of 48,000 mg/L)
- Table E3-5 – math error for Alt 1 total acres exposed in Phase 1
- P. 1-7 notes that salinity at the Sea could reach 60 g/L by 2018; two paragraphs later, the PEIR claims that “Tilapia may be present until salinity exceeds 60 [g/L] (*which could occur as early as 2021*)” [emphasis added].
- The description of the study area as “the entire Salton Sea watershed” (1-13) is inconsistent with the study area designated in white on Fig. 1-1. The study area defined in Chapter 6 is that “within which the large majority of potential impacts are expected” (6-1), though it is unclear how this definition was derived, or how many potential impacts it excludes.
- How does a maximum water depth of 10 feet constitute a “moderately deep Marine Sea” (in Alt. 3)? Even in relative terms, this is misleading. The difference between 6 feet and 10, especially relative to the Sea’s current maximum depth of about 50 feet, does not warrant a new category. Unless the PEIR can provide a credible distinction between 6 foot and 10 foot depths, the category of “moderately deep Marine Sea” should be eliminated.
- P. 3-81 states that construction of SHC would not begin until 2016 (not 2014, as stated on p. 3-2).
- The salinity of the 3rd lake in Alternative 4 could be increased to ~60 g/L, and the 4th lake to >80 g/L, to increase species diversity. In particular, brine shrimp populations would benefit from a higher salinity that excludes most of their aquatic invertebrate predators; at 60 g/L, their numbers would be limited.
- Note that the estimated [no source given in PEIR] salt precipitation of 1,500,000 tons/year (6-8) is the highest end of the range reported by Amrhein et al. (2001), and should not be reported as the sole or definitive estimate. It’s a bookend, not a credible mid-range estimate, especially at lower salinities.
- ‘Temperature’ (6-17) should include a paragraph describing its importance, similar to “Dissolved Oxygen” and other water quality parameters.
- The statement “Construction of the Saline Habitat Complex cells would temporarily increase suspended sediment and nutrient cycling in waters near active construction...” (6-33) suggests that these cells would be built in the wet; DWR staff have indicated that they would be built in the dry. Please clarify.
- In Table 10-15, please define “N” in the legend (perhaps it’s meant to be “O”?).
- Please quantify (or at least describe) the risk posed to public health by the statement “some species, including larvae of the *Culex tarsalis* mosquito, which can be a vector for West Nile virus, are euryhaline and can survive in higher salinity habitats” (14-24). Each of the action alternatives could face such a risk. More information is needed to assess the possible level of risk (and the related management activities that will be necessary to limit this risk).
- Some of the volumes of water listed for the various alternatives in Table D-5, and the maximum depth of the No Action-Variability alternative, must be incorrect. For example, the depth of the Sea under No Action conditions in 2078 will be closer to 5 meters (Table 3-3), not the 12.5 m shown in the table. The volume of water impounded by Alt. 3 can not possibly be as much as 7.774 km³. (In fact, many of the values in Table D-5 differ from those in Table 3-3.) Hopefully, these are simply errors in the table and not in the model itself.
- The statement “the Salton Sea, with up to 3 times the sulfate relative to other anions” (E9-6) is incorrect. On a molar basis, there is about 5-6 times more chloride than sulfate in the Salton Sea. Perhaps the PEIR meant that the Sea has three times more sulfate, relative to other ions, than seawater?

ALAC, et al (cont.)

ALAC-90

ALAC-91

ALAC-92

ALAC-93

ALAC-94

ALAC-95

ALAC-96

ALAC-97

ALAC-98

ALAC-99

ALAC-100

ALAC-101

ALAC-102

ALAC-103

ALAC-90

The grams per liter amount indicates a less precise number than milligrams per liter. To be consistent with the Draft PEIR and related program materials and reports, this change has not been made.

ALAC-91

The Draft PEIR has been modified.

ALAC-92

The Draft PEIR has been modified.

ALAC-93

The Draft PEIR study area as stated on page 1-13 of the Draft PEIR includes the entire Salton Sea watershed. However, this area encompasses an area much larger than the area expected to be impacted by a restoration program. Thus, Chapter 6 narrowed the overall study area to include only those areas that would generally be affected by the restoration program (such as the irrigated areas in the Imperial and Coachella valleys and the Salton Sea).

ALAC-94

This terminology was used to distinguish between areas that would provide deep water and potentially support marine sport fish (Marine Sea), and areas that would provide habitat for some forage fish species, but would consist of shallower water (moderately deep Marine Sea). This distinction also was related to the facilities that would be used to impound water. Berms were assumed to support water depths of 6 feet or less; Perimeter Dikes would support water depths of 10 feet or less.

ALAC-95

The Draft PEIR has been modified.

ALAC-96

Increasing the salinity of areas to better suite the needs of brine shrimp could be considered during project-level analysis.

ALAC-97

The Draft PEIR has been modified.

ALAC-98

The Draft PEIR has been modified.

ALAC, et al (cont.)

ALAC-99

The Saline Habitat Complex would be constructed in the dry. However, it is possible that sediment may enter the water column of waters down gradient of the construction site. This potential impact could be considered further during project-level analysis and in preparation of a Stormwater Pollution Prevention Plan for construction areas.

ALAC-100

The Draft PEIR has been modified.

ALAC-101

The ability of *Culex tarsalis* to tolerate higher salinity than other mosquito species suggests that various components of the restoration could support vector populations. The overall risk this could present is uncertain, in part because it is unclear whether conditions in these restoration components would actually support mosquito populations and whether effective control measures could be incorporated into the habitat design. These could be evaluated in greater detail once the Legislature has given direction on the implementation of a preferred alternative and identified a future implementing agency. As stated on page 14-27, last paragraph of the Draft PEIR, research regarding application of various management techniques is ongoing. In addition, questions regarding the potential for vector populations to be supported in restoration components (and possible control) could be explored and evaluated as part of Early Start Habitat. Specific approaches to control of *Culex tarsalis* could be addressed during project-level analysis.

As described in Chapter 14 of the Draft PEIR, the Next Steps for the project include continued coordination with the mosquito abatement agencies (Coachella Valley Mosquito and Vector Control District and the Imperial County Department of Health Services) along with monitoring programs and worker training to reduce exposure to vectors. This continued coordination would occur throughout the preparation of the project-level analysis and likely throughout implementation and operation of the project.

ALAC-102

The water surface and volume for the Saline Habitat Complex, Concentric Rings, and Concentric Lakes are not correct in Table D-5 and D-6 of the Draft PEIR. They were modeled as a surrogate 1 square mile fixed depth and as such true bathymetry is not indicated.

ALAC, et al (cont.)

ALAC-103

The statement contained in Appendix E-9 is correct. Mole percentages are those of all anions (all species) that are sulfate, as opposed to some other anion. Owens Lake shallow groundwater contains mostly carbonate, bicarbonate, and chloride, along with some sulfate. Salton Sea contains plenty of chloride and very little carbonate and bicarbonate, about 2.3 to 3 times Owens' percentage of sulfate (as a percentage of total anions).

- The statement "These components were developed in consideration of the realities of water supply" (H1-1) should be corrected to read, "These components were developed in consideration of *projected water availability*." The results generated by the Monte Carlo probability analysis used in the hydrologic model project a range of future inflows, not a 'reality.'
- In Table H6-5, the average transmission line capacity demand listed for Alt. 4 is 4.5 times the maximum value listed for that alternative.
- "Sizing of the Marine Seas and Saline Habitat Complex areas in the alternatives were based upon an average inflow of 650,000 acre-feet/year. This was defined as the 80 percentile in the stochastic analysis of inflows ..." (H7-1) should be rewritten as "... were based upon an inflow of 650,000 acre-feet/year. This was defined as the 20th percentile inflow in the stochastic analysis of inflows ..." The 650 KAF is not an average, it's a volume of inflows exceeded in 80% of years.
- "Surface water elevations, volumes, and salinity were defined for the alternatives using the average inflow of 717,000 acre-feet/year. This was defined as the median..." (H7-1) 717 KAF/yr is the average (or mean) inflow, not the median, which is roughly 738 KAF/yr.⁴⁹

ALAC-104

ALAC-105

ALAC-106

ALAC-107

ALAC, et al (cont.)

ALAC-104

The Draft PEIR has been modified.

ALAC-105

The Draft PEIR has been modified.

ALAC-106

Appendix H7 of the Draft PEIR explains the inflow used to size the major structures in the alternatives, or 650,000 acre-feet per year which was different than the inflow used to evaluate the performance or impacts of the different alternatives over a long-term median (year 2018-2077) or 717,000 acre-feet per year. The average inflow of 650,000 acre-feet per year was defined as the 80th percentile in the stochastic analysis of inflows for the period from 2018 through 2078, using the SALSA model and Monte Carlo statistical analyses. It is not a 20th percentile of annual flows; it represents a 80 percent probability that the long-term average flow would be 650,000 acre-feet or more.

ALAC-107

There is no error. The value is the median, not the mean. In the stochastic analysis, it represents the value where half the number of traces in the model run were above and below this value.

⁴⁹ Curiously, this median value is not explicitly identified anywhere in Appendix H2, though a line depicting the median value appears in most graphs.

Buena Vista Audubon Society (BVAS)

From: [akamauro](#)
To: [SaltonSeaComments:](#)
CC:
Subject: Comment Letter of Draft EIR
Date: Monday, December 11, 2006 12:33:44 PM
Attachments: [Ruddy Duck Letterhead.doc](#)
[clip_image002.jpg](#)

See attached comment letter from Buena Vista Audubon Society.

Thank you.

--Andrew Mauro, Conservation Chair
Buena Vista Audubon Society



Buena Vista Audubon Society
PO Box 480
Oceanside, CA 92049-0480

December 11, 2006

[via email: SaltonSeaComments@water.ca.gov]

ATTN: Dale Hoffman-Floerke
Salton Sea PEIR Comments
CA Department of Water Resources
Colorado River & Salton Sea Office
1416 9th Street, Room 1148-6
Sacramento, CA 95814

RE: Comments on Draft PEIR for Salton Sea

Dear Ms. Hoffman-Floerke:

I am writing of the 1,200 members of the Buena Vista Audubon Society to offer our comments on the Resources Agency's Draft Programmatic Environmental

Impact Report for the Salton Sea Ecosystem Restoration Program (PEIR).

There is no question that the State of California must take action at the Salton Sea. The 'no action' scenarios described in the PEIR and in the Pacific Institute's *Hazard* (posted at <http://www.pacinst.org/reports/saltonsea/index.htm>) clearly demonstrate that the health of children and adults in the Imperial and Coachella valleys would be harmed by the hundreds of additional tons of dust that would blow, each year, off the land exposed by the shrinking Salton Sea. Imperial County – one of the poorest in the State – already claims the dubious distinction of having the highest childhood asthma hospitalization rate in California.

A smaller, saltier Sea would also be of little or no value to the fishermen who continue to fish at the Sea and consume their catch. A Sea with a saline content too high to support fish life will mean fewer fish to catch, as would a Sea beset with even more frequent fish kills. But fish kills will not only impact those people directly dependent on the subsistence which Salton Sea fish currently provide—they will also degrade the overall quality of life of people who must endure the putrid odor resulting from the kills. Clearly, we must act to protect the Salton Sea.

The question is how. Unfortunately, that question has not been fully answered by the PEIR. None of the alternatives presented in the PEIR satisfies the legal requirements to maximize wildlife habitat, air and water quality protection in a reasonable timeframe.^[1]

Most proposed alternatives suffer from massive construction and permitting requirements that would slow implementation, degrade air quality, and impose additional, unacceptable impacts over a wide area. In light of California's commitment to reduce its greenhouse gas emissions, it makes no sense to implement a project that requires massive amounts of energy to pump (and in some instances, treat) water, nor does it make sense to build massive dams or dikes that require thousands of truck trips each day, to move the tens of millions of cubic yards of rock needed for construction.

Fortunately, the PEIR contains the information and components necessary to piece together a successful plan from the proposed alternatives. Alternatives 1 and 2 provide important habitat to support many of the birds that currently use the Salton Sea. Alternative 4 offers a relatively low-cost, low-impact method to distribute water around much of the present shoreline and would provide additional habitat, shoreline protection and opportunities for recreation. The concentric lakes plan would provide direct air quality benefits, and would also

BVAS (cont.)

BVAS-1

While it is recognized that anglers who continue to fish in the Salton Sea today likely consume their catch, there is no evidence that the Salton Sea supports a subsistence fishery, especially since most species of fish have not been reported in recent surveys. A number of factors contribute to fish die offs (including cold weather events) and fish die offs are not expected to be eliminated under any alternative.

BVAS-2

The Salton Sea Restoration Act (Fish and Game Code 2931(c)(1-3)) states that "the preferred alternative shall provide the maximum feasible attainment of the following objectives: (1) Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea. (2) Elimination of air quality impacts from the restoration projects. (3) Protection of water quality." All of the alternatives meet the legislative objectives to varying degrees.

BVAS-1

BVAS-2

offer a ready source of water for managing air quality problem areas that might arise in the future. And components of the larger north lake alternatives (Alternatives 5-7) provide recreation and economic development opportunities, enjoying the broad local support necessary for funding and implementation.

Therefore, we urge that DWR combine the following features from the proposed alternatives into a final, preferred alternative that would meet the legal requirements for restoration and provide opportunities for recreation and development in Imperial and Coachella Valleys:

- Between 25,000 – 50,000 acres of Shallow Saline Habitat Complex, as described in Alternatives 1 and 2, at the southern and northern ends of the Sea to provide habitat for shoreline species;
- Create concentric rings using geotubes or other dirt-filled barriers, as described in Alternative 4, to provide additional shallow habitat, deeper marine habitat, shoreline and view protection, air-quality protections, and recreation;
- Similar to the lakes found in Alternatives 5-7, provide a large (approximately 10,000 acre) North Lake, which would be the largest recreational lake in Southern California, fed by the Whitewater River to provide recreation and development opportunities without the costs and risks associated with a major mid-Sea barrier or the costs of pumping water from the southern end of the Sea;
- Provide at least one-half acre-foot of water per acre of exposed Seabed, as stipulated by the Salton Sea Advisory Committee, to prevent dust pollution caused by exposed playa, as described in Alternatives 1-3, 5-6 and 8;
- Construct shallow saline habitat (known as “early start habitat”) immediately to provide resources for birds during the long permitting and construction process, as described in all of the proposed alternatives; and
- Develop a plan that provides water for habitat and air quality mitigation first, in case of possible shortages or system malfunctions, as described in Alternatives 1-3.

A Final Preferred Alternative that contains all of these components, each of which is present and analyzed in one or more of the draft alternatives, would best meet the legal requirements to maximize habitat, air quality and water quality, while also providing substantial recreation and development

BVAS (cont.)

BVAS-3

BVAS-3

As described in Chapter 3 of this Final PEIR, the Preferred Alternative recommended by the Secretary for Resources includes a variety of components that are intended to meet the legislative mandates of providing the maximum feasible attainment of the following objectives:

- Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea;
- Elimination of air quality impacts from the restoration project; and
- Protection of water quality.

Specifically, the Preferred Alternative includes 62,000 acres of Saline Habitat Complex, a 45,000-acre Marine Sea, incorporates the air quality “tool box” measures to eliminate, to the extent feasible, air quality impacts from the restoration project, and includes other measures and design considerations that would work to protect water quality. Under the Preferred Alternative, Air Quality Management and the Saline Habitat Complex would have the highest priority for inflows, followed by inflows into the Marine Sea.

The 62,000-acre Saline Habitat Complex included in the Preferred Alternative would be located in the southern and northern portion of the Salton Sea and would provide habitat for a variety of avian species such as shorebirds, waterfowl, and potentially for fish-eating birds, including sensitive species currently found at the Salton Sea. It is expected that the Saline Habitat Complex would also provide limited habitat for some fish species, such as tilapia, and thus, provide foraging habitat for fish-eating birds. The Saline Habitat Complex is expected to provide the microclimate benefits that currently exist at the Salton Sea, and could be constructed using a variety of construction methods including Geotubes®.

The 45,000-acre Marine Sea included in the Preferred Alternative would be located primarily in the northern portion of the Sea, but would extend down the majority of the eastern and western shorelines. It is intended to support a marine fishery and fish-eating birds (such as pelicans, double-crested cormorants, and black skimmers). The Marine Sea would stabilize at a water surface elevation of -230 feet msl with a salinity between 30,000 mg/L and 40,000 mg/L.

BVAS (cont.)

The water depth would be less than 10 to 12 meters (39 feet) to reduce hydrogen sulfide generation and potential fish kills due to long-term temperature stratification (temperature variations from top to bottom of the sea).

The Preferred Alternative incorporates the air quality “tool box” measures to eliminate, to the extent feasible, air quality impacts from the restoration project. These measures include the allocation of 0.5 acre-foot per acre of water to manage emissive areas of the Exposed Playa. The Preferred Alternative also includes actions and mitigation measures to reduce air quality impacts that could result from construction and operations and maintenance activities.

Although not a legislatively mandated objective, the Saline Habitat Complex is expected to allow for passive recreational opportunities, such as bird watching. Additionally, the Marine Sea would provide for water-based recreational opportunities that have historically occurred at the Salton Sea. This would include boating and fishing opportunities and allow for the ongoing operation of the majority of the existing harbors at the Salton Sea.

The Preferred Alternative also includes a variety of actions that could be implemented within the 5-year timeframe after the Legislature provides direction on implementation of a restoration program and identifies a future implementing agency. These actions include activities such as Early Start Habitat and measures targeted to address air quality uncertainties.

The Preferred Alternative includes many of the components suggested by the commenter. See Chapter 3 of this Final PEIR for a more detailed description of the Preferred Alternative.

opportunities. We urge, therefore, the State to select the Preferred Alternative with the components and features outlined above. Such an “Evolved Alternative” would best meet the needs of local communities, fish and wildlife, and the people of California.

Thank you for your consideration of these comments.

Sincerely,

Andrew Mauro, Conservation Chair
Buena Vista Audubon Society

**BVAS-3
cont.**

BVAS (cont.)

[1]. Pursuant to the Quantification Settlement Agreement (“QSA”), state and federal law require restoration of the Salton Sea because of its importance for fish and wildlife, air quality, recreation and local economic development. See California Fish and Game Code Sections 2930, et seq.



January 15, 2007

Ms. Dale Hoffman-Floerke, Chief
Department of Water Resources
Colorado River and Salton Sea Office
1416 Ninth Street, Room 1148-6
Sacramento, California 95814

VIA FED EX 2-DAY DELIVERY

Subject: Salton Sea Ecosystem Restoration Program
Draft Programmatic Environmental Impact Report

Dear Ms. Hoffman-Floerke:

On behalf of my employer CalEnergy Operating Corporation and me personally, I would like to express my sincere appreciation for the opportunity to serve on the Salton Sea Advisory Committee. I commend you, Secretary Christman, your staff, the dedicated efforts of CH2MHill and each of the committee members for their hard work and commitment to this vitally important matter that has resulted in a Draft Programmatic Environmental Impact Report ("DPEIR").

Since 1988 I have been deeply involved in the development of geothermal energy along the southeastern shore of the Salton Sea. It is from this unique vantage point coupled with the knowledge gained by virtue of having served on the Committee and from observing and participating in some of the countless prior investigations of the Salton Sea conundrum that I offer my comments on the DPEIR.

Air Quality

It is widely accepted that as a result of the Quantification Settlement Agreement water flowing to the sea will eventually diminish and the reduced inflows will result in exposed playa, in particular near the shallowest parts of the sea, which happens to be in the vicinity of CalEnergy's geothermal operations. The DPEIR acknowledges this likelihood and recognizes that any restoration plan must include dust mitigation. Because of our proximity to the anticipated areas of exposed playa it is vitally important that fugitive dust be controlled to protect the health and safety of not only CalEnergy's employees, but everyone who lives and works in the greater region. The Imperial Valley is already classified as "Serious Non-attainment" by the Environmental Protection Agency and any further deterioration to the air quality must be avoided at all costs. As such, we believe that mitigation of potentially harmful fugitive dust from the exposed playa must be the highest priority for the Committee and a foundational component of whatever alternative is selected. Anything less is unacceptable.

CALENERGY OPERATING CORPORATION
A MIDAMERICAN ENERGY HOLDINGS COMPANY AFFILIATE

551 WEST MAIN STREET • BRAWLEY, CALIFORNIA 92227 • 760-351-3050 • FAX: 760-351-3058



CALENERGY Operating Corporation (CALENERGY)

CALENERGY-1

As described in Chapter 3 of this Final PEIR, the Preferred Alternative recommended by the Secretary for Resources includes a variety of components that are intended to meet the legislative mandates of providing the maximum feasible attainment of the following objectives:

- Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea;
- Elimination of air quality impacts from the restoration project; and
- Protection of water quality.

Specifically, the Preferred Alternative includes 62,000 acres of Saline Habitat Complex, a 45,000-acre Marine Sea, incorporates the air quality "tool box" measures to eliminate, to the extent feasible, air quality impacts from the restoration project, and includes other measures and design considerations that would work to protect water quality. Under the Preferred Alternative, Air Quality Management and the Saline Habitat Complex would have the highest priority for inflows, followed by inflows into the Marine Sea.

The Preferred Alternative incorporates the air quality "tool box" measures to eliminate, to the extent feasible, air quality impacts from the restoration project. These measures include the allocation of 0.5 acre-foot per acre of water to manage emissive areas of the Exposed Playa. The Preferred Alternative also includes actions and mitigation measures to reduce air quality impacts that could result from construction and operations and maintenance activities.

CALENERGY-1

See Chapter 3 of this Final PEIR for a more detailed description of the Preferred Alternative.

Ms. Dale Hoffman-Floerke
January 15, 2007
Page 2

Geothermal Expansion

The word "geothermal" appears over seventy times in the DPEIR, suggesting that the Committee clearly recognizes the presence of the existing plants and infrastructure.

However, the mere mention of the word does not necessarily translate to a complete recognition of the significance of either the existing development or, more importantly, the potential for expanding the field. We believe that whatever alternative is selected, expansion of this indigenous, environmentally responsible form of energy must not only be recognized, but facilitated in every manner possible.

Today CalEnergy operates ten power plants along the southeastern shoreline of the Salton Sea. These facilities produce approximately 340 megawatts of clean geothermal energy that supplies customers throughout Southern California and parts of Arizona. The first plant was built in 1982 and over the succeeding 25 years CalEnergy has demonstrated a commitment to coexist not only with agriculture, but also with one of the most important wildlife refuges in the southwestern United States. That ability to coexist was most recently demonstrated when the California Energy Commission approved an application by CalEnergy to build an eleventh plant at the Salton Sea. The exhaustive permitting process included substantial input and review by the California Department of Fish and Game, the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, the Bureau of Reclamation and the County of Imperial, to name just a few of the agencies that weighed in on the application. The permit that was ultimately approved by the CEC included mitigation measures acceptable to both CalEnergy and the various agencies and organizations that manage the nearby wildlife refuge and associated ecosystem. It should also be mentioned that two of the well pads for the proposed project are actually located on lands managed by the Sonny Bono Salton Sea National Wildlife Refuge. Despite what might appear to be incompatible uses or objectives, the parties were able to craft a document that protects the environment while allowing for expansion of this important form of alternative energy.

Throughout the Committee discussions and as evidenced by the alternatives currently being considered, the development of shoreline habitat is one of three primary objectives. We are concerned that the creation of new shoreline habitat does not adequately consider the impacts it could have on the expansion of the Salton Sea geothermal field. We are particularly concerned that the creation of new shoreline habitat may impede CalEnergy or other developers from expanding the field because of the proposed location of new shoreline habitat between the New and Alamo Rivers. In addition, several of the alternatives being considered contain waterways around the existing geothermal development that could also interfere with or prevent future expansion.

CALENERGY (cont.)

CALENERGY-2

See response to comment CALENERGY-1. As described in Chapter 3 of this Final PEIR, the Preferred Alternative includes an area between the New and Alamo rivers without Saline Habitat Complex to reduce potential conflicts between geothermal development and habitat criteria. The geothermal development area would avoid the Sonny Bono Salton Sea National Wildlife Refuge lands and areas with pupfish connectivity in the drains. The Preferred Alternative includes Air Quality Management actions for the geothermal development area; however, specific Air Quality Management methods may be different for the industrial land uses. The Preferred Alternative also includes additional coordination with the geothermal interests.

CALENERGY-2

CALENERGY-3

See response to comments CALENERGY-1 and CALENERGY-2. In addition, it would be appropriate for the future implementing agency to work closely with geothermal interests to identify and mitigate potential conflicts between geothermal development and future Salton Sea Ecosystem Restoration Program actions.

CALENERGY-3

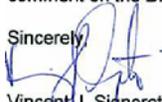
Ms. Dale Hoffman-Floerke
January 15, 2007
Page 3

California is one of several states that have adopted a renewable portfolio standard. In California investor owned utilities are required to generate 20 percent of their energy from renewable resources by 2010. The Salton Sea geothermal field is considered by many to be the single most important resource location for achieving this goal. Experts believe that when fully developed, the Salton Sea geothermal field could produce over 2,300 megawatts of electricity. As I have already mentioned, today CalEnergy produces 340 megawatts of electricity, or approximately 15 percent of what could be developed. The restoration alternatives being considered must take into account the importance of the eventual expansion of the Salton Sea geothermal field and must not create additional challenges or costs that would make such expansion economically unfeasible. It is important to remember that new shoreline habitat can be placed over a wide area, but the geothermal energy resource is not portable and must be developed where it's located, which in the case of the Salton Sea is near the New and Alamo Rivers.

Another element of the importance of geothermal energy development is the economic impact on the local community. Today CalEnergy has over 200 full-time employees supporting its Salton Sea project. It is accurate to say that the skills required by these men and women are considerable and that the salaries that are paid reflect the demands of the jobs being performed. The Salton Sea projects require the support of numerous local service providers that translate to even more jobs. CalEnergy is also the single largest property taxpayer in Imperial County. In other words, the development of geothermal energy from the Salton Sea is an enormous economic engine for Imperial County and the region. As such, expansion of the Salton Sea field will result in not only more clean energy, but more jobs and more prosperity for the county with the highest unemployment rate in the state.

In conclusion we commend your efforts, those of the Committee members and everyone involved for the hard work that has occurred over the many months we have studied the restoration options for the Salton Sea. Thank you for the opportunity to comment on the DPEIR. We hope that our remarks are given serious consideration.

Sincerely,



Vincent J. Signorotti
Vice President, Real Estate Assets

VJS:sg
cc: File/H/Hoffman-Floerke

CALENERGY (cont.)

CALENERGY-4

CALENERGY-4

See response to comments CAENERGY-1 and CAENERGY-2. The Resources Agency understands the importance of development of geothermal energy resources in helping California meet its alternative energy goals and appreciates the active participation of CAENERGY Operating Corporation in the Salton Sea Ecosystem Restoration Program efforts.



Center for Community Action and Environmental Justice

Centro para Acción de la Comunidad y la Justicia del Ambiental

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PO Box 397
Desert Center, CA 92239
(760) 574-1887

Dale Hoffman-Floerke
Department of Water Resources
Colorado River and Salton Sea Office
P.O. Box 942836
Sacramento, CA 94236-0001

January 16, 2007

RE: Comments to Draft PEIR Salton Sea Restoration Plan

Dear Ms. Hoffman-Floerke,

Please find attached comments to the Draft PEIR for the Salton Sea Restoration Plan for the Center for Community Action and Environmental Justice (CCA EJ), the Citizens for the Chuckwalla Valley (CCV), and the Desert Protection Society (DPS).

CCA EJ is a non-profit corporation formed in 1993 as a resource and support center for communities working to better their social and natural environment. The mission of CCA EJ is to work with community groups in developing and sustaining democratically based participatory organizations that promote involvement of a diverse segment of the community in ways that empower people and create safer, healthier, toxic free places to live.

DPS is a non-profit California corporation that was incorporated in 1993 for the purpose of protecting and preserving the scenic, scientific, historical and recreational value of the California desert. The Society has its offices in Indio, California. DPS and its members use and enjoy federal lands throughout the California desert for a variety of outdoor pursuits.

Citizens for the Chuckwalla Valley is a grass-roots organization made up of residents of Riverside & San Bernardino Counties, dedicated to maintaining healthy desert communities and the integrity of Joshua Tree National Park.

We thank you for this opportunity to comment on the Draft PEIR.

Sincerely,

Donna Charpied, Director Desert Communities Protection Campaign

"bringing people together to improve our social and natural environment"

Board of Directors:

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Deenaz Coachbuilder
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Josie Gaytan - Riverside
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Pathways to a Safe Environment

Campaign (PASE)

Campaign Director - Perchlorate

Davin Diaz

Policy Director

Jan Misquez

Desert Communities Protection

Campaign

Campaign Director - Give It Back!

Donna Charpied

Westside Residents CAN

Teresa Lopez

Center for Community Action and Environmental
Justice (CCA EJ)

Dale Hoffman-Floerke
Department of Water Resources
Colorado River and Salton Sea Office
P.O. Box 942836
Sacramento, CA 94236-0001

Via E-Mail: SaltonSeaComments@water.ca.gov

January 16, 2007

RE: Comments to Draft PEIR Salton Sea Restoration Plan

Dear Ms. Hoffman-Floerke,

I am submitting these comments on behalf of the Center for Community Action and Environmental Justice (CCA EJ, a Salton Sea Coalition member), Citizens for the Chuckwalla Valley (CCV), and the Desert Protection Society (DPS). We do not support any one alternative under review, but believe a combination of the best ideas should be considered. We incorporate the comments submitted by the Salton Sea Coalition as though fully contained herein.

CCA EJ, DPS, and CCV along with literally tens of thousands environmentalists have been involved in a proposed dump that would have been built at Eagle Mountain (Eagle Mountain dump), located in eastern Riverside County, proposed by Kaiser Ventures and Mine Reclamation Corp (Kaiser/MRC). After two decades of public hearings, administrative appeals, and lawsuits, the Federal District Court in Riverside California ruled in favor of environmentalists on September 21, 2005. We write opposing the utilization of the defunct Eagle Mountain mine for a source of rock for barriers in various plans under consideration. We will outline our reasons below.

We believe the use of the proposed concentric rings as an alternative to rocks to form barriers would create less impacts to communities and the environment than mining rocks and transporting them through communities and sensitive lands.

Appendices H - 4, 6 & 7 discusses rock barrier construction, and utilizing the defunct mine at Eagle Mountain. As mentioned above, there is a court ruling in favor of environmentalists. The Court stated in part:

"...The subject land exchange and grant of rights of way and reversionary interests are set aside and **Defendants are enjoined from engaging in any action that would change the**

CCA EJ (cont.)

CCA EJ-1

As described in Chapter 3 of this Final PEIR, the Preferred Alternative recommended by the Secretary for Resources includes a variety of components that are intended to meet the legislative mandates of providing the maximum feasible attainment of the following objectives:

- Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea;
- Elimination of air quality impacts from the restoration project; and
- Protection of water quality.

CCA EJ-1

Specifically, the Preferred Alternative includes 62,000 acres of Saline Habitat Complex, a 45,000-acre Marine Sea, incorporates the air quality "tool box" measures to eliminate, to the extent feasible, air quality impacts from the restoration project, and includes other measures and design considerations that would work to protect water quality. Under the Preferred Alternative, Air Quality Management and the Saline Habitat Complex would have the highest priority for inflows, followed by inflows into the Marine Sea.

CCA EJ-2

The 62,000-acre Saline Habitat Complex included in the Preferred Alternative would be located in the southern and northern portion of the Salton Sea and would provide habitat for a variety of avian species such as shorebirds, waterfowl, and potentially for fish-eating birds, including sensitive species currently found at the Salton Sea. It is expected that the Saline Habitat Complex would also provide limited habitat for some fish species, such as tilapia, and thus, provide foraging habitat for fish-eating birds. The Saline Habitat Complex is expected to provide the microclimate benefits that currently exist at the Salton Sea, and could be constructed using a variety of construction methods including Geotubes®.

CCA EJ-3

CCA EJ-4

The 45,000-acre Marine Sea included in the Preferred Alternative would be located primarily in the northern portion of the Sea, but would extend down the majority of the eastern and western shorelines. It is intended to support a marine fishery and fish-eating birds (such as pelicans, double-crested cormorants, and black skimmers). The Marine Sea would stabilize at a water surface elevation of -230 feet msl with a salinity between 30,000 mg/L and 40,000 mg/L.

CCA EJ (cont.)

The water depth would be less than 10 to 12 meters (39 feet) to reduce hydrogen sulfide generation and potential fish kills due to long-term temperature stratification (temperature variations from top to bottom of the sea).

The Preferred Alternative incorporates the air quality “tool box” measures to eliminate, to the extent feasible, air quality impacts from the restoration project. These measures include the allocation of 0.5 acre-foot per acre of water to manage emissive areas of the Exposed Playa. The Preferred Alternative also includes actions and mitigation measures to reduce air quality impacts that could result from construction and operations and maintenance activities.

Although not a legislatively mandated objective, the Saline Habitat Complex is expected to allow for passive recreational opportunities, such as bird watching. Additionally, the Marine Sea would provide for water-based recreational opportunities that have historically occurred at the Salton Sea. This would include boating and fishing opportunities and allow for the ongoing operation of the majority of the existing harbors at the Salton Sea.

The Preferred Alternative also includes a variety of actions that could be implemented within the 5-year timeframe after the Legislature provides direction on implementation of a restoration program and identifies a future implementing agency. These actions include activities such as Early Start Habitat and measures targeted to address air quality uncertainties.

See Chapter 3 of this Final PEIR for a more detailed description of the Preferred Alternative.

CCA EJ-2

For the programmatic level of planning, the availability of quarry materials for construction was evaluated by looking at potential sites including permitted and non-permitted quarries. A cursory evaluation of potential rockfill sources was performed in the Draft PEIR. The evaluation considered issues such as land ownership and access, environmental impacts and potential mitigation actions, as well as rock suitability. The amount of information available to determine site specific impacts at all potential sites was not available. A rock source has not been selected at this time and would need to be identified during project-level analysis. Project-level analysis of the Preferred Alternative and rockfill sources would be required to evaluate the extent and magnitude of direct and indirect impacts and identify appropriate mitigation.

CCA EJ (cont.)

CCA EJ-3

See response to comment CCA EJ-1 and Chapter 3 of this Final PEIR for information on the Preferred Alternative. Alternative 3, Concentric Rings, would be constructed of rockfilled Perimeter Dikes. It is Alternative 4, Concentric Lakes, that would be constructed of Geotube® Berms. However, the use of Geotube® Berms does not eliminate the need for a rock source as rock would be needed to cover and protect the berms and gravel would be needed for roadways and other areas.

CCA EJ-4

Refer to response to comment CCA EJ-2. Project-level analysis of the Preferred Alternative and rockfill sources would be required to evaluate the extent and magnitude of direct and indirect impacts, and to identify appropriate mitigation. Additionally, appropriate permits and approvals would be obtained prior to the development of a new quarry site or the use of an existing quarry site.

character and use of the exchanged properties pending BLM's preparation of an ROD consistent with the Court's rulings in this Order and an EIS which addresses the deficiencies in the subject Final EIS...". (Emphasis added).

Kaiser claims in the appendices that even if the court's orders are not overturned in the 9th Circuit Court of Appeals, they can still use the railroad right-of-way. This is not true. When the Bureau of Land Management approved the land

exchange and r-o-w's, the r-o-w's became Federal Land Policy Management Act (FLPMA) r-o-w's. The FLPMA land exchange and rights of way have been reversed by the Court, leaving the Congressionally approved r-o-w and land exchange, which in turn reverts the land & r-o-w back to the Federal government.

To clarify our position, we'll provide background on the Congressionally approved land and r-o-w grant. Congress authorized a patent to Kaiser Steel Corporation to operate a "camp site or mill site in connection with its mining operations" on a parcel of land owned by the United States by approving Private Law 790 (PL790), dated July 8, 1952. Kaiser's right to use the land was subject to the following reversionary provision:

"that said property shall revert in fee to the United States in the event

that said property is not used for a continuous period of seven years

as a camp site or mill site or for other incidental purposes in connection with the mining operations of said Kaiser Steel Corporation or its successors in interest. By the same Act of Congress, Kaiser obtained a right-of-way through public land for mining purposes, which was also subject to reversion if not used for seven years." *Id.* (Emphasis added).

Congress intended that the subject land would revert to public ownership if not used to further "the development of the Steel industry on the West Coast." (House Report No. 398 and Senate Report 1745 accompanying Private Law 790). Mining activities at the Kaiser Steel Co. mine at Eagle Mountain ceased in 1983, and subsequently neither the camp site lands nor the right-of way has been used for a "continuous period of seven years" in connection with mining operations. Kaiser seems to be purposefully misleading the State with false claims of ownership, win or loose in the 9th Circuit Court of Appeals. Additionally, Kaiser claims the mine is

CCA EJ (cont.)

CCA EJ-5

The Kaiser letter (2006) was included only for informational purposes.

CCA EJ-6

The Kaiser letter (2006) was included only for informational purposes. A rock source has not been selected at this time and would need to be identified during project-level analysis. If the Eagle Mountain site were to be selected as a rock source by a future implementing agency, the appropriate permits and approvals would be obtained prior to initiating activities at site. See response to comment CCA EJ-2.

CCA EJ-5

CCA EJ-6

active where actually Kaiser hasn't had mining permits since 1983.

Moreover, environmental and conservation groups seek the return of 29,775 acres of land in the Eagle Mountain Range to Joshua Tree National Park and the designation of the Kaiser Mine and Townsite as a National Historic Landmark. Utilizing Eagle Mountain as a source for rock will inhibit the reversion of the Eagle Mountain properties to their rightful owner, the federal government, and restrict re-unification of *all* of the lands originally contemplated to be part of Joshua Tree National Monument at its inception in 1936. As such, the rock from Eagle Mountain should be rejected. For more info on the Give It Back! Campaign, please see http://www.ccaej.org/projects/desert_protection/action_alerts2.html.

From a community standpoint, the broken down railroad travels within 500 feet of the Eagle Mountain Elementary School. Smoke spewing diesel trains are an

unacceptable risk to children, as recent studies have shown.

Increased numbers of diesel trucks into our communities will bring deadly pollution. Based on the most recent scientific studies it is clear that exhaust from diesel trains, trucks, mine, and dump equipment are dangerous to our families, communities, and the desert environment.

Diesel Emissions and Health

- Diesel exhaust is a mixture of over 450 different toxic chemicals, 40 of which are known to cause cancer.
- Diesel exhaust is classified as a toxic substance and listed as a known cancer-causing agent under Prop. 65 since 1990.
- Diesel exhaust contains benzene, arsenic, dioxins, and formaldehyde also known to cause cancer, with toluene and dioxins causing birth defects.
 - A recent study linked diesel to reduced sperm counts.
- Diesel exhaust is linked to increased hospital admissions for asthma, pneumonia, respiratory diseases, chronic lung disease, heart disease and death.

Residents are extremely concerned with the diesel emissions that will be generated from mining and transporting rock next to

CCA EJ (cont.)

CCA EJ-7

A rock source has not been selected at this time and would need to be identified during project-level analysis. If the Eagle Mountain site were to be selected as a rock source by a future implementing agency, the appropriate permits and approvals would be obtained prior to initiating activities at site. This permitting and approval process is likely to include air quality permits, which would consider air quality impacts to sensitive receptors, such as schools and residents. Project-level analysis of the Preferred Alternative and rockfill sources would be required to evaluate the extent and magnitude of direct and indirect impacts and identify appropriate mitigation.

CCA EJ-8

See response to comment CCA EJ-7.

CCA EJ-7

CCA EJ-8

the school. Studies conducted by Dr. John Froines, UCLA professor of Toxicology and Occupational Hygiene, have determined that there is a strong risk of cancer from diesel emissions, showing a 40% risk of cancer along with 100 or more non-cancer effects. Particulate Matter ("PM") of less than 1 micron, or ultra fine particles from diesel, is an enormous exposure risk from 0 to 900 feet from the source. Diesel begins with d - i - e !

Utilizing the defunct Eagle Mountain mine for rock will have significant impacts on the environment. The 52 mile long railroad travels from Eagle Mountain hugging Joshua Tree National Park Wilderness, crosses under I-10 into the Chuckwalla Bench Area of Critical Environmental Concern, abuts the Orocopia Wilderness, travels through the Salt Creek/Dos Palmas Area of Critical Environmental Concern; on to Ferrum Junction. In the Eagle Mountain dump case, the Court writes with regards to the Big Horn Sheep, in part:

"...Defendants discuss the creation of a 'buffer zone' mitigation measure. However the EIS does not specify exactly what such 'buffer zone' entails, or even where it is to be located...Further, the Ninth Circuit has held that an EIS must address a project's impacts on wildlife and migration corridors. Because the use of tortoise-proof fencing may disrupt the Sheep's migration

pattern, Defendants are obligated under NEPA to address such disruption...".

One could easily extrapolate if Kaiser/MRC change mitigation to compensate lack of mitigation for the Big Horn Sheep, then the mitigation in place for the desert tortoise would need to be reevaluated.

Also, approximately 25 miles of the railroad lie inside the active Chocolate Mountains Aerial gunnery range. What happens to construction of the Sea's barriers when a bomb falls on the tracks? How long would the down time be? Kaiser does not have the workforce to repair the RR working on it 24 hours a day as they had in the 1970's. Along with errant bombs, flooding has wiped out the rail line on a number of occasions. As it is now. The reactivation of the RR will impact a number of



CCA EJ (cont.)

CCA EJ-9

See response to comment CCA EJ-2.

CCA EJ-10

See response to comment CCA EJ-2. Specific impacts associated with the transport of rock, including the reliability of a rock transportation system, would be more appropriately analyzed as part of a project-level analysis.

CCA EJ-9

CCA EJ-10

endangered and threatened species. For instance, the pupfish will undoubtedly become annihilated rebuilding the trestle at Salt Creek. The Yuma Clapper will be impacted as well as the Desert Tortoise and Big Horn Sheep as described earlier. Impacts to species at the Eagle Mountain would include, but not be limited to the leaf-nosed bat, Big Horn Sheep, Desert Tortoise, Peregrine falcon to name a few.

Further, Joshua Tree National Park surrounds the defunct Eagle Mountain mine on three sides like an amphitheater. The broken down railroad runs within virtual throwing distance to Joshua Tree National Park Wilderness. Significant impacts to Joshua Tree's resources will be created with the proposal to haul rock from Eagle Mountain to the Salton Sea.

First, the area in an around the site is made up of extremely valuable, and fragile, natural habitat and contains unique environmental resources. In 1976 Joshua Tree received federal Wilderness designation, in 1977 it received Class I Wilderness Airshed status, and in 1984 it was designated a World Biosphere Reserve. In 1994 Congress reaffirmed that Joshua Tree is "a public wildland resource of extraordinary and inestimable value for this and future generations," added 234,000 acres to the monument, designated an additional 163,000 acres as Wilderness and, specifically citing the need to protect the Park from "incompatible development and inconsistent management of ...contiguous Federal lands of essential and superlative natural, ecological, archeological, paleontological, cultural, historical, and wilderness values," affirmed Joshua Tree's status as a nationally significant area by designating it a National Park. 16 U.S.C.

Second, the creation of mining operations will cause multiple growth inducing impacts, including expansion of Eagle Mountain's population, traffic to and from the rural community, and potentially a revival of Eagle Mountain as a fully functioning, full service town. These growth-inducing impacts to the townsites and surrounding areas must be analyzed in an EIR. *Stanislaus Audubon Society, Inc. v. County of Stanislaus* (1995) 33 Cal.App.4th 144, 159

Lastly, we believe that there is an egregious conflict of interest with the Salton Sea Authority pursuing rock from Eagle Mountain because the SSA's Executive Director, Rick Daniels was the President of MRC during and after the Eagle Mountain dump process. Kaiser/MRC have sold the Eagle Mountain dump to the Los Angeles

**CCA EJ-10
cont.**

CCA EJ (cont.)

CCA EJ-11

See response to comments CCA EJ-2 and CCA EJ-10.

CCA EJ-12

The current Salton Sea Ecosystem Restoration Program study effort is being undertaken by the State of California, not the Salton Sea Authority.

CCA EJ-11

CCA EJ-12

County Sanitation Districts for \$41 million dollars. The money has been placed in an escrow account, pending the outcome of litigation, then it would be divided between Kaiser and MRC if the legal issues are resolved. The broken down railroad's estimated costs to repair was \$1 million dollars per mile, and that was in 1992 dollars. We are extremely concerned that the SSA will finesse Salton Sea Restorations funds to repair the railroad for rock hauling, thereby paving the way for the garbage dump, and fulfilling due diligence with the railroad. If that happens, taxpayers will effectively be the bank for Kaiser/MRC's dreams of wealth at the public's expense.

In closing, we strongly encourage the use of concentric rings for the Sea barriers, and discontinue examining Eagle Mountain & Coolidge for a source of rock. Thank you for the opportunity to comment on this Draft PEIR.

Respectfully Submitted,

/s/

Donna Charpied, Director
Desert Communities Protection Campaign
CCA EJ

Cc:

Desert Protection Society
Citizens for the Chuckwalla Valley
Interested Parties

CCA EJ (cont.)

CCA EJ-13

See response to comments CCA EJ-1 and CCA EJ-3.

CCA EJ-13

CALIFORNIA ENVIRONMENTAL LAW PROJECT
A Non-Profit Legal Corporation



Of Counsel

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January 16, 2007

Via Email: SaltonSeaComments@water.ca.gov

ATTN: Dale Hoffman-Floerke
Salton Sea PEIR Comments
CA Department of Water Resources
Colorado River & Salton Sea Office
1416 9th Street, Room 1148-6
Sacramento, CA 95814

RE: Comments on Draft PEIR for Salton Sea

Dear Ms. Hoffman-Floerke:

I am writing ~~on behalf of the Marin Audubon Society~~ ~~behalf of XX organization~~ to offer comments on the Resources Agency's Draft Programmatic Environmental Impact Report for the Salton Sea Ecosystem Restoration Program (PEIR). Marin Audubon Society members have visited the Salton Sea to birdwatch and enjoy its resource values, and are deeply concerned about its fate.

There is no question that the State of California must take action at the Salton Sea. The 'no action' scenarios described in the PEIR clearly demonstrate that the health of children and adults in the Imperial and Coachella valleys would be harmed by the hundreds of additional tons of dust that would blow, each year, off the land exposed by the shrinking Salton Sea. A smaller, saltier Sea would also be of little or no value to many of the 400 species of birds – sometimes numbering in the millions of individual birds – that currently use the Sea. With the loss of nearly 95% of California's wetlands, many of these birds will have no other place to go, leading to catastrophic losses that will be felt up and down the Pacific Flyway.

Marin Audubon Society is particularly concerned that the habitat vales of the Salton Sea be restored and enhanced and not be permitted to continue to decline. According to the Pacific Institute's Hazard: The Future of the Salton Sea With No Restoration Project:

“The Salton Sea provides critically important habitat to a tremendous diversity and abundance of birds: 402 native and five non-native species have been recorded in and around the Salton Sea, including

California Environmental Law Project (CELP)

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more than half a million waterbirds in 1999 (Shuford *et al.* 2002, Patten *et al.*, 2003). Some 140 waterbird species have been recorded there; many of these birds use both the Sea and nearby agricultural fields, as well as adjacent freshwater and managed wetlands, including lands periodically inundated by duck clubs. The rich mosaic of habitat types and their proximity to one another offer exceptional value for birds, and helps to explain their diversity and abundance. Other factors increasing bird use of the region are the loss of other wetland habitats along their migratory routes, the abundant supply of food, and the relatively low levels of human disturbance (Friend, 2002).

The presence of a large body of water rich with food resources amidst the harsh Colorado desert proves very attractive to birds migrating along the Pacific Flyway, as well as to birds inhabiting the upper Gulf of California. Shuford *et al.* (2002, p. 255) state:

Various studies indicate the Salton Sea is of regional or national importance to various species groups – pelicans and cormorants, wading birds, waterfowl, shorebirds, gulls and terns – and to particular species – the Eared Grebe, American White Pelican, Double-crested Cormorant, Cattle Egret, White-faced Ibis, Yuma Clapper Rail, Snowy Plover, Mountain Plover, Gull-billed Tern, Caspian Tern, Black Tern, and Black Skimmer. (p. 27)

The Hazard study concludes that “breeding habitat in particular, and roosting and loafing habitat more generally, will decrease at the Sea in future years...What is clear is that future changes in the Sea will affect bird populations throughout their range.” (p. 31). It goes on to state:

“Without a restoration project, the future Salton Sea will change dramatically. Although the Sea will continue to be filled with life, even 70 years into the future, it will be more akin to a primordial soup than the fish-filled lake that attracted hundreds of thousands of tourists just a few decades ago. The impacts of the loss of this key stopover to migrating birds could be severe, especially given the increasing number of other impacts felt along their routes. Combined with the increased mortality due to disease and selenium toxicity, these changes could jeopardize the survival of entire species.” (p. 31)

None of the alternatives presented in the PEIR satisfies the legal requirements to maximize wildlife habitat, air and water quality protection, in a reasonable timeframe.¹ Most proposed alternatives suffer from massive construction and permitting requirements that would slow implementation, degrade air quality, and impose additional, unacceptable impacts over a wide area.

¹ . Pursuant to the Quantification Settlement Agreement (“QSA”), state and federal law require restoration of the Salton Sea because of its importance for fish and wildlife, air quality, recreation and local economic development. See California Fish and Game Code Sections 2930, et seq.

CELP (cont.)

CELP-1

The Salton Sea Restoration Act (Fish and Game Code 2931(c)(1-3)) states that “the preferred alternative shall provide the maximum feasible attainment of the following objectives: (1) Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea. (2) Elimination of air quality impacts from the restoration projects. (3) Protection of water quality.” All of the alternatives meet the legislative objectives to varying degrees.

CELP-1

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In order to arrest the decline of the habitat values of the Salton Sea and to protect and enhance its resource values, Marin Audubon urges that DWR combine the following features from the proposed alternatives into a final, preferred alternative that would meet the legal requirements for restoration and provide opportunities for recreation and development in Imperial and Coachella Valleys:

- Between 25,000 – 50,000 acres of Shallow Saline Habitat Complex, as described in Alternatives 1 and 2, at the southern and northern ends of the Sea to provide habitat for shoreline species;
- Create concentric rings using geotubes or other dirt-filled barriers, as described in Alternative 4, to provide additional shallow habitat, deeper marine habitat, shoreline and view protection, air-quality protections, and recreation;
- Similar to the lakes found in Alternatives 5-7, provide a large (approximately 10,000 acre) North Lake, which would be the largest recreational lake in Southern California, fed by the Whitewater River to provide recreation and development opportunities without the costs and risks associated with a major mid-Sea barrier or the costs of pumping water from the southern end of the Sea;
- Provide at least one-half acre-foot of water per acre of exposed Seabed, as stipulated by the Salton Sea Advisory Committee, to prevent dust pollution caused by exposed playa, as described in Alternatives 1-3, 5-6 and 8;
- Construct shallow saline habitat (known as “early start habitat”) immediately to provide resources for birds during the long permitting and construction process, as described in all of the proposed alternatives; and
- Develop a plan that provides water for habitat and air quality mitigation first, in case of possible shortages or system malfunctions, as described in Alternatives 1-3.

Marin Audubon believes that a Final Preferred Alternative that contains all of these components, each of which is present and analyzed in one or more of the draft alternatives, would best meet the legal requirements to maximize habitat, air quality and water quality, while also providing substantial recreation and development opportunities. Marin Audubon urges, therefore, the State to select the Preferred Alternative with the components and features outlined above. Such a composite alternative would best meet the needs of local communities, fish and wildlife, and the people of California.

Thank you for your consideration of these comments.

Sincerely,

Laurens H. Silver, Esq.
On behalf of the Marin Audubon Society

cc: Barbara Salzman
Julia Levin, State Audubon

CELP (cont.)

CELP-2

As described in Chapter 3 of this Final PEIR, the Preferred Alternative recommended by the Secretary for Resources includes a variety of components that are intended to meet the legislative mandates of providing the maximum feasible attainment of the following objectives:

- Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea;
- Elimination of air quality impacts from the restoration project; and
- Protection of water quality.

Specifically, the Preferred Alternative includes 62,000 acres of Saline Habitat Complex, a 45,000-acre Marine Sea, incorporates the air quality “tool box” measures to eliminate, to the extent feasible, air quality impacts from the restoration project, and includes other measures and design considerations that would work to protect water quality. Under the Preferred Alternative, Air Quality Management and the Saline Habitat Complex would have the highest priority for inflows, followed by inflows into the Marine Sea.

The 62,000-acre Saline Habitat Complex included in the Preferred Alternative would be located in the southern and northern portion of the Salton Sea and would provide habitat for a variety of avian species such as shorebirds, waterfowl, and potentially for fish-eating birds, including sensitive species currently found at the Salton Sea. It is expected that the Saline Habitat Complex would also provide limited habitat for some fish species, such as tilapia, and thus, provide foraging habitat for fish-eating birds. The Saline Habitat Complex is expected to provide the microclimate benefits that currently exist at the Salton Sea, and could be constructed using a variety of construction methods including Geotubes®.

The 45,000-acre Marine Sea included in the Preferred Alternative would be located primarily in the northern portion of the Sea, but would extend down the majority of the eastern and western shorelines. It is intended to support a marine fishery and fish-eating birds (such as pelicans, double-crested cormorants, and black skimmers). The Marine Sea would stabilize at a water surface elevation of -230 feet msl with a salinity between 30,000 mg/L and 40,000 mg/L. The water depth would be less than 10 to 12 meters (39 feet) to reduce hydrogen sulfide generation and potential fish kills due to long-term temperature stratification (temperature variations from top to bottom of the sea).

CELP-2

CELP (cont.)

The Preferred Alternative incorporates the air quality “tool box” measures to eliminate, to the extent feasible, air quality impacts from the restoration project. These measures include the allocation of 0.5 acre-foot per acre of water to manage emissive areas of the Exposed Playa. The Preferred Alternative also includes actions and mitigation measures to reduce air quality impacts that could result from construction and operations and maintenance activities.

Although not a legislatively mandated objective, the Saline Habitat Complex is expected to allow for passive recreational opportunities, such as bird watching. Additionally, the Marine Sea would provide for water-based recreational opportunities that have historically occurred at the Salton Sea. This would include boating and fishing opportunities and allow for the ongoing operation of the majority of the existing harbors at the Salton Sea.

The Preferred Alternative also includes a variety of actions that could be implemented within the 5-year timeframe after the Legislature provides direction on implementation of a restoration program and identifies a future implementing agency. These actions include activities such as Early Start Habitat and measures targeted to address air quality uncertainties.

The Preferred Alternative includes many of the components suggested by the commenter. See Chapter 3 of this Final PEIR for a more detailed description of the Preferred Alternative.

JAN 12 2007



CALIFORNIA FARM BUREAU FEDERATION

GOVERNMENTAL AFFAIRS DIVISION

1127-11TH STREET, SUITE 626, SACRAMENTO, CA 95814 · PHONE (916) 446-4647

January 11, 2007

California Farm Bureau Federation (CFBF)

Secretary Mike Chrisman
California Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

Dale Hoffman-Floerke
Chief, Colorado River and Salton Sea Office
California Department of Water Resources
1416 9th Street, Room 1148-6
Sacramento CA 95814

Re: Comments on Draft Programmatic Environmental Impact Report for Salton Sea Restoration

Dear Secretary Chrisman:

As your appointee to the Salton Sea Advisory Committee, representing the California Farm Bureau Federation (CFBF), I wish to submit these comments on behalf of CFBF.

Three of California's counties are the most directly involved in matters concerning the Salton Sea. Imperial County is most directly involved, as the principal tributaries, the New and Alamo River, contribute by far most of the water supply that maintains the water body. Riverside County contributes most of the balance, from the Whitewater River, and drains from Coachella Valley farmland. San Diego County has a distinct interest in the Salton Sea, inasmuch as the County Water Authority purchased a long-term interest in a present and future water supply, which traditionally had constituted a substantial part of the agricultural run off, which has, until now, maintained the Salton Sea.

All other counties within the service areas of members of the Metropolitan Water District of Southern California (MWD) have an interest in Salton Sea matters because: (1) they depend directly on part of the water supply from the Colorado River; (2) MWD has filed petitions with the State Water Resources Control Boards for water rights on the New and Alamo Rivers; (3) MWD has long-term contracts for water, for which MWD has paid Imperial Irrigation District (IID) to make available through conservation practices and facilities in IID's irrigated area.

Notice should be taken that the state legislature has a very direct interest in what happens to the Salton Sea, partly because it has enacted legislation which obligates the state to bear any cost (beyond a certain limited amount which will be charged against San Diego, Coachella and IID) required to maintain certain benefits to society, by accommodation of

Secretary Mike Chrisman
January 11, 2007
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fish and wildlife. Fish and wildlife has heretofore been somewhat ephemeral to the area, previously known as Lake Coahuilla, now known as Salton Sea.

In spite of the financial protection to the local entities in Southern California, it is the conviction of CFBF that the State of California is not in a financial position to make it a prudent obligation on the state to enter into any but the most frugal plan to return the Salton Sea to a wildlife productive condition.

Therefore, on behalf of CFBF, it is recommended that the state pursue a plan quite similar to Alternative Four, other wise known as Concentric Lakes, depicted in the Draft Programmatic Environmental impact Report Executive Summary of October 2006.

CFBF's support of this choice among the eight plans and the two "no action" alternatives offered in the DPEIR, is based upon the following rationale.

#1. This is a plan presented to solve a problem for a period up to 75 years. Although no one actually believes any plan adopted up to now could go unmodified for very long, Alternative Four appears to be a plan which would offer fish and wildlife benefits earlier (during the construction phase) than any of the others. It does not depend on completion of an expensive fifteen-mile-long rock filled barrier across the sea to become operable. Even if some of the concentric lakes were not completed, the isolation of the highest quality water for the part of the time could begin to produce benefits and continue to do so until construction resumed. Partial construction will allow and promote partial benefits.

#2. From a cost standpoint alone, Alternative Four stands out beyond all others with its prediction that it could operate on a long-term basis with only 25 employees. The other plans require from 4 to 14 times as many employees.

#3. This plan, with its principal earth moving operation constructed primarily by floating dredges with native material reduces to a minimum dependence on highway movement of imported materials.

#4. It appears that the local people whose resources are most involved in and by the project support Alternative Four.

About thirty years ago, CFBF developed its first statewide policy on Salton Sea, which has periodically been updated. Attached is our present statewide policy, which has been reconsidered each year by our House of Delegates.

Competition for water has not reached its apogee at this time. As the competition becomes more crucial, Salton Sea inflows are likely to be reduced to a minimum of essential tile water soil drainage flows. It is essential not to construct an expensive system that is dependent on minimum flow to the sea that exceed 400,000 acre-feet

CFBF (cont.)

CFBF-1

As described in Chapter 3 of this Final PEIR, the Preferred Alternative recommended by the Secretary for Resources includes a variety of components that are intended to meet the legislative mandates of providing the maximum feasible attainment of the following objectives:

- Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea;
- Elimination of air quality impacts from the restoration project; and
- Protection of water quality.

Specifically, the Preferred Alternative includes 62,000 acres of Saline Habitat Complex, a 45,000-acre Marine Sea, incorporates the air quality "tool box" measures to eliminate, to the extent feasible, air quality impacts from the restoration project, and includes other measures and design considerations that would work to protect water quality. Under the Preferred Alternative, Air Quality Management and the Saline Habitat Complex would have the highest priority for inflows, followed by inflows into the Marine Sea.

The 62,000-acre Saline Habitat Complex included in the Preferred Alternative would be located in the southern and northern portion of the Salton Sea and would provide habitat for a variety of avian species such as shorebirds, waterfowl, and potentially for fish-eating birds, including sensitive species currently found at the Salton Sea. It is expected that the Saline Habitat Complex would also provide limited habitat for some fish species, such as tilapia, and thus, provide foraging habitat for fish-eating birds. The Saline Habitat Complex is expected to provide the microclimate benefits that currently exist at the Salton Sea, and could be constructed using a variety of construction methods including Geotubes®.

The 45,000-acre Marine Sea included in the Preferred Alternative would be located primarily in the northern portion of the Sea, but would extend down the majority of the eastern and western shorelines. It is intended to support a marine fishery and fish-eating birds (such as pelicans, double-crested cormorants, and black skimmers). The Marine Sea would stabilize at a water surface elevation of -230 feet msl with a salinity between 30,000 mg/L and 40,000 mg/L.

CFBF-1

CFBF-2

CFBF (cont.)

The water depth would be less than 10 to 12 meters (39 feet) to reduce hydrogen sulfide generation and potential fish kills due to long-term temperature stratification (temperature variations from top to bottom of the sea).

The Preferred Alternative incorporates the air quality “tool box” measures to eliminate, to the extent feasible, air quality impacts from the restoration project. These measures include the allocation of 0.5 acre-foot per acre of water to manage emissive areas of the Exposed Playa. The Preferred Alternative also includes actions and mitigation measures to reduce air quality impacts that could result from construction and operations and maintenance activities.

Although not a legislatively mandated objective, the Saline Habitat Complex is expected to allow for passive recreational opportunities, such as bird watching. Additionally, the Marine Sea would provide for water-based recreational opportunities that have historically occurred at the Salton Sea. This would include boating and fishing opportunities and allow for the ongoing operation of the majority of the existing harbors at the Salton Sea.

The Preferred Alternative also includes a variety of actions that could be implemented within the 5-year timeframe after the Legislature provides direction on implementation of a restoration program and identifies a future implementing agency. These actions include activities such as Early Start Habitat and measures targeted to address air quality uncertainties.

The Preferred Alternative incorporates many of the components of Alternative 4. See Chapter 3 of this Final PEIR for a more detailed description of the Preferred Alternative.

CFBF-2

The Draft PEIR acknowledges that while existing inflows to the Salton Sea that originate from agricultural uses are a combination of tilewater and tailwater from farms, there is variation (i.e., uncertainties) in the amount of tailwater as a percent of total on-farm delivery in the IID service area (15 percent to 27 percent). This tailwater represents between 39 percent and 68 percent of Imperial Valley’s contribution to Salton Sea inflows. The analysis in the Draft PEIR uses tailwater reduction as a surrogate to predict changes in inflows and incorporates statistical methods to assign probabilities to (1) the percentages in the tailwater and tilewater ratio and (2) the percentage of tailwater that contributes to the inflow. While it may be physically possible to reduce flows that occur only from tilewater, the Draft PEIR analysis assigns a lower probability to tailwater conservation because of potentially higher costs. These assumptions are based on the best available information and were developed in coordination with the Inflows Working Group. However, these assumptions could be refined during future project-level analysis as additional information becomes available.

Secretary Mike Chrisman
January 11, 2007
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CFBF (cont.)

annually, as this is approximately the maximum tile drainage water which the long-term future could rely upon at this time.

CFBF-2
cont.

The San Diego County Farm Bureau and the Imperial County Farm Bureau are in support of this California Farm Bureau Federation Position. The Riverside County Farm Bureau has advised us that it will submit its own position later, as it has not arrived at a conclusion at this time.

Sincerely,


William I. DuBois

JAN 1 2 2007

CFBF (cont.)

CALIFORNIA FARM BUREAU FEDERATION
2007 Official Policies

TITLE: SALTON SEA
(CFBF 88)

- 1 The Salton Sea, an economic and environmental 48
2 resource of national importance, is critical as a reservoir
3 for drainage of irrigation, municipal and storm water as
4 declared in 1924 by the Department of Interior.
5
6 Any project undertaken to reclaim the Salton Sea must:
7
8 1. Not increase demand on the available water supply,
9 such as diverting usable water directly into the Sea;
10
11 2. Ensure the continued use of the Salton Sea as a
12 reservoir for irrigation, municipal, and stormwater
13 drainage;
14
15 3. Reduce or stabilize the overall salinity of the Salton
16 Sea;
17
18 4. Stabilize the surface elevation of the Salton Sea;
19
20 5. Enhance the potential for recreational uses and
21 economic development of the Salton Sea;
22
23 6. Include full protection of neighboring areas and
24 residents from damages resulting from the project;
25
26 7. Employ the most cost-effective measures available;
27
28 8. Tie any cleanup of the New and Alamo Rivers,
29 including sewage from international sources, to long-
30 term reclamation of the Sea; and,
31
32 9. Provide full compensation or provide for agriculture
33 to recover its expense under any plan which restricts,
34 regulates or otherwise alters agricultural inflows to the
35 Sea for any and all costs or impacts, including but not
36 limited to the cost of facilities to alter Sea inflows, lost
37 property values, and loss of crop production.
38
39 Any reclamation of the Sea is a benefit to society as a
40 whole, and society should bear the cost of any
41 reclamation project or any liability arising from
42 reclamation. (1999)
43
44
45
46
47



Citizens United for Resources and the Environment, Inc.
and Consejo de Desarrollo Economico de Mexicali
(CURE/CDEM)

January 15, 2007

VIA FED-EX AND E-MAIL

Attn: Dale Hoffman-Floerke
Salton Sea PEIR comments
CA Department of Water Resources
Colorado River & Salton Sea Office
1416 9th Street, Room 1148-6
Sacramento, CA 95814

Re: Comments on Draft PEIR for Salton Sea

Dear Ms. Hoffman-Floerke:

Citizens United for Resources and the Environment, Inc., ("CURE") a California non-profit dedicated to sensible resource management, and Consejo de Desarrollo Economico de Mexicali ("CDEM") submit this letter into the Administrative Record relating to the Programmatic Environmental Impact Study ("PEIS") for Salton Sea restoration circulated by the California Department of Water Resources ("DWR").

CURE has devoted significant time and effort for nearly a decade regarding proposed agricultural to urban water transfers. CURE publicly opposed the Quantification Settlement Agreement ("QSA"), because of the failure of the Imperial Irrigation District and other state agencies to fully assess the socio-economic and environmental affects of cumulative water transfers from the Mexicali and Imperial Valleys to San Diego. Further, CURE objected to adoption of any project accelerating the decline of the Salton Sea before mitigation had been identified and full funding committed.

CURE's board members have extensive experience with international environmental issues and a dedicated commitment to a healthy and productive environment and economy of the United States and Mexico at the border. In 2000, CURE participated in a study funded by the Packard and Ford Foundations concerning restoration of the Colorado Delta, and it is a named plaintiff in pending litigation to halt the destructive encasing of the All American Canal in concrete unless and until full environmental review is completed.

CDEM is a leading civic and business organization in the Mexicali Valley. In that capacity, it participates in a wide number of projects to enhance environmental sustainability, tourism, and healthy urban living (such as reduced air pollution through natural gas busses and urban parks). It regularly collaborates with the leading universities and government entities in Baja, California, concerning

DWR Submission 11507.doc

matters of environmental importance. CDEM also is a member of the Tri-Valley Economic Alliance, promoting trade, educational opportunities and job creation amongst the Mexicali, Imperial and Coachella Valleys, the futures of which all depends upon a healthy and viable Salton Sea..

CURE and CDEM's comments focus on the complete failure of DWR to consult with Mexican environmental groups, government agencies or academics in connection with developing possible alternatives to Salton Sea restoration that would encompass a complete watershed solution in both countries including the Salton Sea, the New River, the All American Canal, and the Colorado Delta. We thus are concerned that the same precipitous engineering error that lead to creation of the Salton Sea in the first instance will be aggravated by DWR's failure to look at a long-term, bi-national solution that maximizes resources in both countries. Though commendable that the State of California now recognizes the importance of the Salton Sea as an imperiled water body and the need for its restoration, the process underway appears driven solely by the goal of creating the "illusion" of a "fix" to facilitate the QSA rather than a true commitment to long-term restoration and development in the area. Given the huge costs associated with restoration, CURE/CDEM recommend that DWR and the State conduct a far more careful analysis before launching remedies that could cost taxpayers billions of dollars with minimal hope of success.

The QSA (and accompanying legislation) ultimately turned the CEQA process on its head by approving a project – the water transfer from Imperial to San Diego – before feasible alternatives were adopted. This timing, in itself, is subject to litigation which has yet to be resolved. (See *Consolidated In re Quantification Settlement Agreement Cases*). Until these cases are resolved, the fate of the entire Salton Sea process and the underlying funding mechanisms for financing remedies remains completely in doubt. As a practical matter, the DWR could select a remedy and begin implementing it only to find that the QSA is then not validated by the courts.¹

Second, the DWR (both in writing and in public hearings) has been openly dismissive of questions and comments by the public about the viability of a canal/pipeline to the Sea of Cortes in Mexico as a bi-national solution. This idea was first proposed by Congressman George Brown and has been advocated by numerous interests.² This failure to fully evaluate holistic watershed solutions again is likely driven by the Legislature's unrealistic schedule for remedy

¹ Similarly, the DWR alternatives have failed to consider what potential the All American Canal litigation will have on the Salton Sea as part of its inflow assessments. Further, DWR did not assess the cumulative air quality problems associated with additional fallowing of farm land in Mexicali resulting from the proposed lining. (See *Declarations in Support of Complaint for Injunctive Relief, CDEM et al. v. United States* (Exhibit 1).

² See Petition to Form the Salton Sea Harbor Improvement District of Riverside County (Exhibit 2). See also, "A Canal to Save the Salton Sea", www.fdugan.com. (Exhibit 3) and "The Salton Sea: A Valuable Natural Resource in Crisis", Quinlan, P.E., ASME Congressional Science and Engineering Fellow Office of Congressman George E. Brown, Jr. (Exhibit 4).

CURE/CDEM (cont.)

CURE/CDEM-1

The comment raises bi-national legal and political issues which are outside of the scope of the statutory mandate to develop a program for the restoration of the Salton Sea ecosystem. The State has a statutory mandate to prepare a restoration study for the Salton Sea ecosystem. Section 2931(d) of the California Fish and Game code states that "for the purpose of the restoration plan, the Salton Sea ecosystem shall include, but is not limited to, the Salton Sea, the agricultural lands surrounding the Salton Sea, and the tributaries and drains within the Imperial and Coachella Valleys that deliver water to the Salton Sea."

CURE/CDEM-1

CURE/CDEM-2

As described on page 26-3 of the Draft PEIR, State staff met with officials from the government of the Republic of Mexico (Mexico) to discuss current and future actions that could affect projected conditions assumed in the Draft PEIR.

Environmental restoration actions in the Colorado River Delta in Mexico (not including the Salton Sea) are being addressed through the International Boundary and Water Commission through the Minute Order process under the Treaty between the United States and Mexico.

CURE/CDEM-2

CURE/CDEM-3

The Resources Agency has a statutory mandate to prepare a programmatic environmental document (see Fish and Game Code Section 2081.7). Moreover, a programmatic approach under CEQA is used as a first tier environmental document to evaluate a series of inter-related actions that can be assessed as an integrated whole for the purpose of CEQA analysis. As stated in the Draft PEIR one or more project-level analyses would need to be completed prior to implementation of a preferred alternative. However, implementation of a preferred alternative would require action by the Legislature, and the identification of a future implementing agency.

CURE/CDEM-3

The Resources Agency has a statutory mandate to prepare a programmatic environmental document, regardless of the ongoing litigation.

See Response to CURE/CDEM-3

CURE/CDEM-4

Alternatives that maintain the whole Salton Sea, including the importation of water from the Gulf of California were described in Chapter 2 of the Draft PEIR. As discussed in Chapter 2, these alternatives were considered but were not carried forward as alternatives in the Draft PEIR. The importation of water from the Gulf of California was not carried forward because the alternative does not meet the CEQA requirement for feasibility, as the State would not legally be able to control or have access to the portion of the project that would be located in the Republic of Mexico.

selection. Nevertheless, because of DWR's negative attitude about "dealing with Mexico", an objective evaluation of the economic or environmental feasibility of this long-recognized alternative was not performed as part of the current process. CDEM/CURE urge that DWR reconsider the limited scope of its analysis, and that it consult with the State of Baja about collaborative undertakings that would build upon the prior studies conducted.

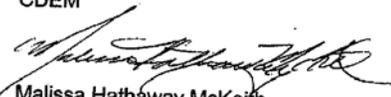
The "perceived" difficulties of "dealing" with Mexico stem, in part, from the traditional structure of channeling all issues through the International Boundary and Water Commission – located thousands of miles away from the regional at hand. As Governor Schwarzenegger and Governor Elorduy have demonstrated in other instances, the future economic relationship between the Baja, California and California Norte necessitates increased dialogue at the State and local levels. Developing a joint project to assess the economic viability of a canal and shipping port to solve some of the Salton Sea environmental issues is an excellent opportunity to implement this vision. Nowhere would such collaboration be more beneficial than with joint economic/environmental development on both sides of the borders. If a canal and pipeline are feasible, they could significantly increase property values; promote greater trade and distribution of goods; and potentially restore the Salton Sea to serve as an economic engine for the Coachella, Imperial, Riverside and Mexicali Valleys.

Finally, CURE/CDEM join in the following sections of correspondence from *Defenders of Wildlife* dated 2/16/07: specifically, Section C.4 (Shallow Saline Habitat); Section D (Air Quality Impacts); Section 5 (hydrologic Model); Section F (Environmental Justice Requirements); Section G (Hydro Model); Section IV (A and B)

Thank you very much for the opportunity to submit comments into the Administrative Record. We look forward to working with the State of California and DWR in advancing the restoration of the Salton Sea.

Very truly yours,


Rene X. Acuna
Economic Director
CDEM


Malissa Hathaway McKeith
President
CURE

Exhibits 1-4
Enclosures/ for Administrative Record

CURE/CDEM (cont.)	
CURE/CDEM-5	CURE/CDEM-5 See response to comment CURE/CDEM-4.
CURE/CDEM-6	CURE/CDEM-6 Staff has not experienced any perceived difficulties in dealing with Mexico, as evidenced by a coordination meeting held with officials from the government of Mexico to discuss current and future actions that could affect projected conditions assumed in the PEIR (See Chapter 26-3). Also, see response to comment CURE/CDEM -4.
CURE/CDEM-7	CURE/CDEM-7 It is unclear what correspondence is referred to in this comment. The Defenders of Wildlife did not submit a comment letter on the Draft PEIR, but were a signatory to the American Lung Association of California et al letter. However, this letter is dated January 16, 2007, not February 16, 2007 as identified in the comment.
CURE/CDEM-7	Exhibits are presented in Appendix A

From: [Laura J. Vazquez - El Centro Chamber](#)
To: [SaltonSeaComments: "Cathy Kennerson"](#);
CC:
Subject: Draft Programmatic Environmental Impact Report
Date: Tuesday, November 07, 2006 4:24:56 PM
Attachments: [SSA Resolution.pdf](#)
[image001.jpg](#)
[image002.gif](#)

Dale Hoffman-Floerke
Department of Water Resources
Colorado River and Salton Sea Office
PO Box 942836, Sacramento, CA 94236-0001

Dear Sir,

Attached are our comments for the Draft Programmatic Environmental Impact Report.

Laura Vazquez

Administrative Assistant

El Centro Chamber of Commerce & Visitors Bureau

1095 South 4th Street, El Centro, CA 92243

(760) 352-3681 Fax (760) 352-3246

www.elcentrochamber.com

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This footer also confirms that this email message has been scanned for the presence of computer viruses.



El Centro Chamber of Commerce (ECCC)

This comment letter does not raise any concerns or questions specific to the State's Salton Sea Ecosystem Restoration Program Draft PEIR.

**RESOLUTION OF THE
IMPERIAL VALLEY JOINT CHAMBERS OF COMMERCE**

ECCC (cont.)

APPROVING THE SALTON SEA AUTHORITY
CONCPETUAL PLAN FOR MULTI-PURPOSE PROJECT

WHEREAS, the Salton Sea is California's largest inland water body with beneficial uses including fisheries and wildlife habitat, recreation, and preservation of endangered species; and

WHEREAS, the Salton Seas ecosystem is a critical link on the international Pacific flyway and has supported over 400 species of birds and a productive fishery; and

WHEREAS, the Sea is threatened by increasing salinity and water loss; and

WHEREAS, the Salton Sea Authority is a joint powers agency formed under the laws of the State of California by a Joint Powers Agreement dated 1993, is the lead agency for identifying and implementing corrective measures to preserve the beneficial uses of the Sea; and

WHEREAS, the Salton Sea Authority has conducted extensive research and scientific investigation of the Salton Sea and has studied numerous alternative measures to restore and revitalize the Sea; and

WHEREAS, on June 29, 2006, the Board of Directors of the Salton Sea Authority voted unanimously to adopt the Executive Summary of the Salton Sea Authority Conceptual Plan; and

WHEREAS, the Imperial Valley Joint Chambers of Commerce finds that the Salton Sea Authority Conceptual Plan best meets the needs to provide wildlife habitats, improve water quality, and protect air quality in our region; and

WHEREAS, the Salton Sea Conceptual Plan also creates major recreational and economic development opportunities in the County of Imperial service territory; and

NOW, THEREFORE, BE IT RESOLVED AS FOLLOWS:

The Chamber hereby supports the "Salton Sea Authority Conceptual Plan for Multi-Purpose Project" as the Chamber's preferred plan for restoration and revitalization of the Salton Sea; and

The Chamber encourages the State of California and the Department of the Interior to select the Salton Sea Authority Conceptual Plan as their preferred alternative for Salton Sea restoration and revitalization.

PASSED AND APPROVED by the Board of the Imperial Valley Joint Chambers of Commerce during this regularly scheduled meeting on this 5th day of October, 2006



Greg Smith, Chair
Imperial Valley Joint Chambers of Commerce



JAN 18 2007

Environmental Defense (ED)

ED-1

The responses to comments submitted on the Draft PEIR are provided in Chapters 5 through 10 of this Final PEIR.

ED-2

This comment does not raise any concerns or questions specific to the State's Salton Sea Ecosystem Restoration Program Draft PEIR.

January 16, 2007

Dale Hoffman-Floerke
CA Department of Water Resources
Colorado River & Salton Sea Office
1416 9th Street, Room 1148-6
Sacramento, CA 95814

Dear Ms. Hoffman-Floerke:

We write simply to inform you of Environmental Defense's continuing interest in the Salton Sea Ecosystem Restoration Program and in the development by the State of California of a Preferred Alternative that broadly serves the environmental and water supply interests impacted by California's reliance on water supplied by the Colorado River.

Our sister environmental organizations in the Salton Sea Coalition have made extensive comments on the draft PEIR and we will not repeat those here.

We would add to them only the observation that not only are the health of the Sea and of surrounding communities in large measure dependent on the alternative that is selected and implemented by the State and others, but so also could be the health of other environments and communities far from the Sea itself.

Sincerely,

Thomas J. Graff
Regional Director

ED-1

ED-2

ENDANGERED HABITATS LEAGUE
DEDICATED TO ECOSYSTEM PROTECTION AND SUSTAINABLE LAND USE

December 6, 2006

Dale Hoffman-Floerke
Salton Sea PEIR Comments
California Department of Water Resources
1416 9th Street, Room 1148-6
Sacramento, CA 95814

RE: Comments on Draft PEIR for Salton Sea

Dear Ms. Hoffman-Floerke:

The Endangered Habitats League appreciates the opportunity to comment on the draft Programmatic Environmental Impact Report for the Salton Sea Ecosystem Restoration Program.

There is no question that California must take action at the Salton Sea. Fortunately, a successful plan can be pieced together from the proposed alternatives in the draft report. We therefore urge your department to combine the following features from the proposed alternatives into a final preferred alternative to restore the Salton Sea:

- as described in Alternatives 1 and 2, include 38,000 to 50,000 acres of shallow habitat for shoreline species at the southern and northern ends of the sea;
- as described in Alternative 4, create concentric rings using dirt-filled barriers to provide additional shallow habitat, deeper marine habitat, shoreline and view protection, air quality protections and recreation opportunities;
- similar to the lakes found in Alternatives 5 through 7, provide a large (approximately 10,000-acre) North Lake, fed by the Whitewater River to provide recreation and development opportunities without the costs and risks associated with a major mid-sea barrier or the costs of pumping water from the southern end of the sea;
- as described in Alternatives 1, 2, 3, 5, 6 and 8, provide at least one-half acre-foot of water per acre of exposed seabed to prevent dust pollution; and
- as described in all of the proposed alternatives, construct shallow saline habitat ("early start habitat") immediately to provide resources for birds during the long permitting and construction process.

A final preferred alternative that includes all of these components, each of which is present and analyzed in one or more of the draft alternatives, would best meet the legal requirements to maximize habitat, air quality and water quality, while also providing substantial recreation and development opportunities.

DEC 12 2006



Endangered Habitats League (EHL)

EHL-1

As described in Chapter 3 of this Final PEIR, the Preferred Alternative recommended by the Secretary for Resources includes a variety of components that are intended to meet the legislative mandates of providing the maximum feasible attainment of the following objectives:

- Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea;
- Elimination of air quality impacts from the restoration project; and
- Protection of water quality.

Specifically, the Preferred Alternative includes 62,000 acres of Saline Habitat Complex, a 45,000-acre Marine Sea, incorporates the air quality "tool box" measures to eliminate, to the extent feasible, air quality impacts from the restoration project, and includes other measures and design considerations that would work to protect water quality. Under the Preferred Alternative, Air Quality Management and the Saline Habitat Complex would have the highest priority for inflows, followed by inflows into the Marine Sea.

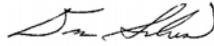
The 62,000-acre Saline Habitat Complex included in the Preferred Alternative would be located in the southern and northern portion of the Salton Sea and would provide habitat for a variety of avian species such as shorebirds, waterfowl, and potentially for fish-eating birds, including sensitive species currently found at the Salton Sea. It is expected that the Saline Habitat Complex would also provide limited habitat for some fish species, such as tilapia, and thus, provide foraging habitat for fish-eating birds. The Saline Habitat Complex is expected to provide the microclimate benefits that currently exist at the Salton Sea, and could be constructed using a variety of construction methods including Geotubes®.

The 45,000-acre Marine Sea included in the Preferred Alternative would be located primarily in the northern portion of the Sea, but would extend down the majority of the eastern and western shorelines. It is intended to support a marine fishery and fish-eating birds (such as pelicans, double-crested cormorants, and black skimmers). The Marine Sea would stabilize at a water surface elevation of -230 feet msl with a salinity between 30,000 mg/L and 40,000 mg/L. The water depth would be less than 10 to 12 meters (39 feet) to reduce hydrogen sulfide generation and potential fish kills due to long-term temperature stratification (temperature variations from top to bottom of the sea).

EHL-1

DEC 12 2009

Sincerely,



Dan Silver
Executive Director

EHL (cont.)

The Preferred Alternative incorporates the air quality “tool box” measures to eliminate, to the extent feasible, air quality impacts from the restoration project. These measures include the allocation of 0.5 acre-foot per acre of water to manage emissive areas of the Exposed Playa. The Preferred Alternative also includes actions and mitigation measures to reduce air quality impacts that could result from construction and operations and maintenance activities.

Although not a legislatively mandated objective, the Saline Habitat Complex is expected to allow for passive recreational opportunities, such as bird watching. Additionally, the Marine Sea would provide for water-based recreational opportunities that have historically occurred at the Salton Sea. This would include boating and fishing opportunities and allow for the ongoing operation of the majority of the existing harbors at the Salton Sea.

The Preferred Alternative also includes a variety of actions that could be implemented within the 5-year timeframe after the Legislature provides direction on implementation of a restoration program and identifies a future implementing agency. These actions include activities such as Early Start Habitat and measures targeted to address air quality uncertainties.

The Preferred Alternative includes many of the components suggested by the commenter. See Chapter 3 of this Final PEIR for a more detailed description of the Preferred Alternative.

January 16, 2006

Dale K. Hoffman-Floerke
Salton Sea PEIR Comments
Colorado River and Salton Sea Office
California Department of Water Resources
1416 Ninth Street, Room 1148-6
Sacramento, CA 95814
SaltonSeaComments@water.ca.gov

Re: Comments on Draft PEIR for Salton Sea Restoration

Dear Ms. Hoffman-Floerke:

The Environmental Justice Coalition for Water submits these comments on the Salton Sea Restoration Program Draft Programmatic Environmental Impact Report (PEIR) on behalf of the disadvantaged communities and minority groups of the Imperial Valley, hereby referred to as environmental justice communities. The EJCW is utterly disappointed that the Draft PEIR fails to assess the potential disproportionate environmental, economic, and social impacts for each alternative under consideration.

The Environmental Justice Coalition for Water (EJCW) is a statewide coalition of more than 60 community based and non-profit organizations. EJCW, along with our members, works to ensure that all environmental justice communities have access to water resources including safe, affordable drinking water, watersheds, and water necessary to support cultural practices such as ceremonial uses and subsistence fishing. The Salton Sea offers a multitude of ecological, cultural and economic benefits and it is of critical importance to the Environmental Justice (EJ) communities of the Imperial Valley. A sustainable restoration project must be devised to ensure that the EJ communities surrounding the Salton Sea are not adversely affected during the construction process and after project completion.

As a signatory to the comment letter submitted by Audubon California, Defenders of Wildlife, Pacific Institute, and the Sierra Club, the EJCW endorses the critical points raised by these organizations, and in the interest of time, will hereby focus on environmental justice concerns.

Environmental Justice is defined by California statute as "The fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of all environmental laws, regulations, and policies."¹ The State agencies responsible for determining a preferred alternative for the restoration of the Salton Sea are therefore responsible to the people of California for implementing the legal requirements² in an unbiased, equitable and inclusive manner. The Draft PEIR, however, fails to fulfill this responsibility by not adequately assessing environmental justice concerns.

I. THE PUBLIC PARTICIPATION PROCESS FAILS TO INCLUDE ENVIRONMENTAL JUSTICE COMMUNITIES

The Draft PEIR states that broad public outreach was conducted, however, the meetings rarely included environmental justice communities in the area. This demonstrates the lack of commitment to a truly inclusive process; by failing to provide culturally sensitive, and easily understandable information, those communities with limited resources were excluded from the decision-making table. Disadvantaged communities, particularly in rural areas, require more effort than merely posting a newspaper ad for a meeting. To include the participation of disadvantaged communities, a grassroots approach must be undertaken, the "Environmental Justice Action Plan" developed by the The California Environmental Projection Agency is a starting point.

II. ENVIRONMENTAL JUSTICE SHOULD HAVE BEEN A CRITICAL COMPONENT OF THE DRAFT PEIR

Environmental Justice Coalition for Water (EJCW-a)

EJCW-a-1

As described in Chapter 3 of this Final PEIR, the Preferred Alternative recommended by the Secretary for Resources includes a variety of components that are intended to meet the legislative mandates of providing the maximum feasible attainment of the following objectives:

- Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea;
- Elimination of air quality impacts from the restoration project; and
- Protection of water quality.

Specifically, the Preferred Alternative includes 62,000 acres of Saline Habitat Complex, a 45,000-acre Marine Sea, incorporates the air quality "tool box" measures to eliminate, to the extent feasible, air quality impacts from the restoration project, and includes other measures and design considerations that would work to protect water quality. Under the Preferred Alternative, Air Quality Management and the Saline Habitat Complex would have the highest priority for inflows, followed by inflows into the Marine Sea.

The 62,000-acre Saline Habitat Complex included in the Preferred Alternative would be located in the southern and northern portion of the Salton Sea and would provide habitat for a variety of avian species such as shorebirds, waterfowl, and potentially for fish-eating birds, including sensitive species currently found at the Salton Sea. It is expected that the Saline Habitat Complex would also provide limited habitat for some fish species, such as tilapia, and thus, provide foraging habitat for fish-eating birds. The Saline Habitat Complex is expected to provide the microclimate benefits that currently exist at the Salton Sea, and could be constructed using a variety of construction methods including Geotubes®.

The 45,000-acre Marine Sea included in the Preferred Alternative would be located primarily in the northern portion of the Sea, but would extend down the majority of the eastern and western shorelines. It is intended to support a marine fishery and fish-eating birds (such as pelicans, double-crested cormorants, and black skimmers). The Marine Sea would stabilize at a water surface elevation of -230 feet msl with a salinity between 30,000 mg/L and 40,000 mg/L. The water depth would be less than 10 to 12 meters (39 feet) to reduce hydrogen sulfide generation and potential fish kills due to long-term temperature stratification (temperature variations from top to bottom of the sea).

EJCW-a-1

EJCW-a-2

EJCW-a-3

EJCW-a-4

EJCW-a-5

EJCW-a (cont.)

The Preferred Alternative incorporates the air quality “tool box” measures to eliminate, to the extent feasible, air quality impacts from the restoration project. These measures include the allocation of 0.5 acre-foot per acre of water to manage emissive areas of the Exposed Playa. The Preferred Alternative also includes actions and mitigation measures to reduce air quality impacts that could result from construction and operations and maintenance activities.

Although not a legislatively mandated objective, the Saline Habitat Complex is expected to allow for passive recreational opportunities, such as bird watching. Additionally, the Marine Sea would provide for water-based recreational opportunities that have historically occurred at the Salton Sea. This would include boating and fishing opportunities and allow for the ongoing operation of the majority of the existing harbors at the Salton Sea.

The Preferred Alternative also includes a variety of actions that could be implemented within the 5-year timeframe after the Legislature provides direction on implementation of a restoration program and identifies a future implementing agency. These actions include activities such as Early Start Habitat and measures targeted to address air quality uncertainties.

The Preferred Alternative includes many of the components suggested by the commenter. See Chapter 3 of this Final PEIR for a more detailed description of the Preferred Alternative.

EJCW-a-2

As described in response to comment EJCW-a-1 and in Chapter 3 of this Final PEIR, the Preferred Alternative includes Early Start Habitat. A suggested schedule for Early Start Habitat is also provided in Chapter 3 of this Final PEIR. Implementation of Early Start Habitat would require direction from the Legislature on implementation of a preferred alternative and identification of a future implementing agency. Implementation would also require preparation of environmental documentation, permits, and land access along with detailed design plans and specifications.

As described in Chapter 3 of this Final PEIR, the Preferred Alternative includes pupfish connectivity.

EJCW-a-3

See the respective letters for responses to the comments raised.

EJCW-a-4

See response to comment EJCW-a-1.

EJCW-a (cont.)

EJCW-a-5

Although not required under CEQA, the Draft EIR addresses Environmental Justice in Chapter 22 “Economic and Social Effects.” As stated in this chapter, the Resources Agency has established a policy that fair treatment of people of all races, cultures and incomes shall be fully considered during the planning, decision-making, development and implementation of all Resources Agency programs, policies, and activities.

As described in Chapter 26 of the Draft PEIR, the Resources Agency has implemented an extensive outreach program including outreach to many communities located around the Salton Sea. Outreach activities included over 68 public meetings, including 20 Salton Sea Advisory Committee meetings, 27 Working Group meetings, and 26 public outreach meetings were held to solicit the public’s input on the development and refinement of the alternatives, and the approach to impact analysis in the PEIR. Many of these meetings were held in communities around the Salton Sea. After the Draft PEIR was publicly released, the State team held eight additional public meetings in the Salton Sea watershed as well as three public meetings in other state locations. For the public outreach meetings, notice was provided in a variety of formats including direct mailers to the over 1,500 individuals on the project mailing list, newspaper advertisements, radio advertisements, television public service announcements, and posting flyers in community buildings throughout the Salton Sea watershed. Through the extensive public outreach efforts as described in Chapter 26, the State believes it has met the environmental justice intent pursuant to the Resources Agency guidelines. These efforts will continue throughout the Salton Sea program.

California legislation enacted in 1999 through 2001 directed the California Environmental Protection Agency (Cal/EPA) to develop environmental justice policies and procedures for implementation within the Cal/EPA program areas of California’s Executive Branch. While that process has reached certain milestones, including development of an Environmental Justice Action Plan cited in the comment, it is still ongoing within Cal/EPA. The Resources Agency is a separate area of government from Cal/EPA and has developed its own set of Environmental Justice Guidelines. The Resources Agency’s Environmental Justice Guidelines were used in the PEIR process.

The Draft PEIR has further excluded environmental justice communities from the decision-making process by not including Environmental Justice as a component of the assessment criteria. The selection of the Preferred Alternative is the most critical aspect of this process, and by neglecting to provide the necessary EJ analysis, the Draft PEIR has undermined disadvantaged communities. Although Environmental Justice is not a legally required objective, it is a key consideration necessary to assess the viability and sustainability of the various alternatives. Furthermore, it is inconsistent with the precautionary principal to postpone the Environmental Justice analysis to the project level, at this point it might be impossible to avoid disproportionate impacts on disadvantaged communities.

III. THE DRAFT PEIR SHOULD HAVE INCLUDED AN ANALYSIS OF AIR QUALITY IMPACTS ON DISADVANTAGED COMMUNITIES

The failure to include Environmental Justice as a component of the Draft PEIR assessment criteria has resulted in the gross undermining of air quality impacts. The Imperial Valley is already plagued with air quality problems and the children of the Valley, particularly in the disadvantaged communities, are the primary victims. It is of critical importance to thoroughly assess the health, social and economic implications of air pollution, it creates a disproportionate burden on their health and finances. These communities often lack resources to afford even the most basic treatment and treating asthma and other respiratory ailments is prohibitively expensive, especially for those families without health insurance. Air quality impacts should have been assessed from an Environmental Justice perspective, as these communities will most likely continue to bear the highest burden of deteriorated air quality. Moreover, every alternative in the Draft PEIR should have included worker safety concerns and an analysis of the public health risks from the various air pollution constituents. The failure to thoroughly assess the air quality impacts of the preferred alternative has the potential to result in a public health crisis.

IV. ECONOMIC IMPACTS HAVE NOT BEEN THOROUGHLY ASSESSED

Another Environmental Justice concern that has been omitted from the Draft PEIR, is the economic impacts to rural communities surrounding the Salton Sea, particularly in the southern cities of Niland, Westmorland, Calipatria and Brawley. These economically depressed cities may be adversely impacted by changes to the amenities provided by the Salton Sea, such as ecotourism and agriculture. The damage caused to crops by "dust pollution" will likely result in the loss of farm-worker jobs but the Draft PEIR fails to analyze these impacts. A number of the alternatives will also result in reduced recreational opportunities and therefore the ecotourism economy that relies on these habitat benefits will be adversely affected. The Draft PEIR should have expanded the assessment of each alternative to include the impacts to the local economy and the job market. The Preferred Alternative must maximize the recreational and economic opportunities during the transition period and after the project is completed.

A sustainable restoration project is not attainable unless Environmental Justice impacts and public health concerns are clearly assessed and included as a critical component of each alternative. The lack of EJ analysis greatly limits the public's ability to accurately evaluate all of the alternatives, and the EJCW can only estimate that a combination of Alternatives 1, 2, and 4 would be least damaging to Environmental Justice communities. Alternatives 1, 2, and 4 combined offer a wider variety of habitat options, which would provide greater benefits to the environment and the EJ communities dependent on this ecological diversity. Additionally, EJ concerns might be more easily addressed under these options as they are the most flexible alternatives, and have a higher probability of success over the life of the project. The selection of Preferred Alternative will be flawed until the CA DWR makes a concerted effort to outreach to disadvantaged communities and begins to fill the EJ gap analysis.

Sincerely,

Miriam Torres
Environmental Justice Coalition for Water

EJCW-a (cont.)

EJCW-a-6

EJCW-a-6

See response to comments EJCW-a-1 and EJCW-a-5.

EJCW-a-7

State legislation specifically requires the Preferred Alternative to fully mitigate all air quality impacts to the maximum extent feasible. As discussed in the Draft PEIR, many of the alternatives have estimated emissions levels that would exceed local significance thresholds. The exceedance of air quality significance thresholds is an indication of the potential serious effects to human health and welfare that might be associated with the predicted air emissions. Project-level analysis could further analyze potential air quality impacts and include appropriate mitigation measures that would further work towards the project's legislative objective.

EJCW-a-7

EJCW-a-8

EJCW-a-8

EJCW-a-9

The Draft PEIR does recognize that there is potential public health risk to workers during construction and operations and maintenance (see Chapter 14). As identified in the Draft PEIR, best management practices would be employed during construction activities to prevent accidents, spills of potentially hazardous materials, or other avoidable risks to the public (see page 14-21). The Draft PEIR also identified Next Steps including working training programs, providing breathing apparatuses, implementing monitoring programs, and related measures to reduce potential health risks to workers (see page 14-27). As described in the Draft PEIR, it would be appropriate to conduct additional air quality and associated human health risk analyses during project-level analysis.

EJCW-a-10

EJCW-a-11

EJCW-a-12

EJCW-a-13

EJCW-a-9

EJCW-a-14

See response to comment EJCW-a-7. The air quality impacts of the Preferred Alternative should be fully assessed during project-level analysis.

EJCW-a-10

See response to comment EJCW-a-1. The Resources Agency has established a policy that the public, including minority and low income populations are not discriminated against, treated unfairly, or caused to experience disproportionately high and adverse **human health or environmental effects** from environmental decisions" (emphasis added). Resource Agency guidelines do not require the State to maintain or provide economic viability for individuals or businesses. The guidelines direct the decision makers to evaluate human health and environmental effects only from environmental decisions.

EJCW-a (cont.)

As stated in Chapter 22 of the Draft PEIR, all of the alternatives could potentially result in increased fishing opportunities which would benefit local populations, especially in later phases, compared to the No Action Alternative and Existing Conditions. The actual presence and extent of these effects would need to be evaluated further in project-level analysis. All of the alternatives have the potential for other recreational opportunities, such as ecotourism, which could provide additional economic opportunities for communities surrounding the Salton Sea. Because these areas include minority and low-income populations, there is a potential for economic or social benefits to these populations.

EJCW-a-11

Although possible damage to crops caused by dust emissions was not specifically analyzed in the Draft PEIR, it was assumed that measures used to control dust and meet public health criteria would also be protective of crops. Dust emissions estimates and dispersion modeling could be appropriate to conduct during project-level analysis, to the extent that this analysis is feasible, based on available information.

EJCW-a-12

As stated in Chapter 22 of the Draft PEIR, all of the alternatives could potentially result in increased fishing opportunities which would benefit local populations, especially in later phases, compared to the No Action Alternative and Existing Conditions. The actual presence and extent of these effects would need to be evaluated further in project-level analysis. All of the alternatives have the potential for other recreational opportunities, such as ecotourism, which could provide additional economic opportunities for communities surrounding the Salton Sea.

As described in Chapter 3 of this Final PEIR and although not a legislatively mandated objective, the Preferred Alternative would also provide recreational opportunities. The Saline Habitat Complex is expected to allow for passive recreational opportunities, such as bird watching. The Marine Sea would provide for water-based recreational opportunities that have historically occurred at the Salton Sea. This would include boating and fishing opportunities and allow for the ongoing operation of the majority of the existing harbors at the Salton Sea.

EJCW-a (cont.)

EJCW-a-13

The Salton Sea Restoration Act (Fish and Game Code 2931(c)(1-3)) states that “the preferred alternative shall provide the maximum feasible attainment of the following objectives: (1) Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea. (2) Elimination of air quality impacts from the restoration projects. (3) Protection of water quality.” There is no requirement for the preferred alternative to maximize recreational and economic opportunities. Further, the Salton Sea restoration legislation, Fish and Game Code Section 2081.8, provides: “[t]he Resources Agency shall undertake the necessary activities to assess the protection of recreational opportunities, including, but not limited to, hunting, fishing, boating, and birdwatching, and the creation of opportunities for improved local economic conditions, surrounding the Salton Sea. The Resources Agency shall not undertake any of those activities if the agency determines they would constitute a project purpose for environmental documentation that is prepared pursuant to Section 2081.7” (emphasis added).

The Preferred Alternative recommended by the Secretary is described in Chapter 3 of this Final PEIR.

EJCW-a-14

See response to comments EJCW-a-1 and EJCW-a-5.

January 16, 2007

Attn: Dale Hoffman-Floerke
Salton Sea PEIR comments
Department of Water Resources
Colorado River & Salton Sea Office
1416 9th Street, Room 1148-6
Sacramento, CA 95814

via email: SaltonSeaComments@water.ca.gov

Re: Comments on Draft PEIR for Salton Sea

Dear Ms. Hoffman-Floerke:

We submit these comments on the Salton Sea Ecosystem Restoration Program Draft Programmatic Environmental Impact Report (PEIR) on behalf of the Environmental Justice Coalition for Water, Friends of the River, High Country Citizens Alliance, Living Rivers, National Wildlife Federation, Pacific Institute, Sonoran Institute, Southern California Watershed Alliance, and Western Resource Advocates. Together, our organizations have and represent more than four million members nationwide, many of whom hunt, fish, bird-watch, camp or otherwise enjoy the Salton Sea and species that depend on the Salton Sea. We submit these comments to assist the Secretary of the Resources Agency in his efforts to determine a preferred alternative.

Background

The Salton Sea is an internationally significant resource. Extending between the Coachella and Imperial valleys in southeastern California, the Sea is the state's largest lake, covering some 350 square miles and providing an invaluable source of food and habitat for millions of birds migrating through the harsh desert. This restoration program offers the best – and perhaps the last – hope for this imperiled ecosystem. Faced with ever-worsening water quality and the certainty that inflows will diminish by more than 30% in the next 20 years, the Sea will shrink dramatically in coming years, threatening public health with larger and more destructive dust storms and quickly degrading the value of this critical stopover on the Pacific Flyway.

Restoration of the Salton Sea is essential to wildlife, the protection of public health and the quality of life in the surrounding communities. The Sea is considered a globally important bird area because of its astounding diversity of bird species – more than 400, the second-highest count in the nation – and the very large populations of some species that rely on it for habitat. Its restoration is also essential to protect public health and agriculture from dangerous levels of dust pollution that would otherwise result from exposed seabed. It offers important opportunities for recreation, hunting, fishing and economic development. Finally, restoration is an essential

Environmental Justice Coalition for Water, Friends of the River, High Country Citizens Alliance, Living Rivers, National Wildlife Federation, Pacific Institute, Sonoran Institute, Southern California Watershed Alliance, and Western Resource Advocates (EJCW-b)

element of the Quantification Settlement Agreement and the associated water transfer from the Imperial Irrigation District (IID) to urban Southern California.

There is no question that we must act to protect and rehabilitate the Salton Sea ecosystem. The question is simply, how best to act.

The PEIR (posted at www.saltonsea.water.ca.gov/PEIR) describes eight ways we might act, but it does not identify a preferred alternative. Citing Fish and Game Code §2930, the PEIR notes that, "The preferred alternative, when determined, is to provide the maximum feasible attainment of the following objectives:

- Restoration of long term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea;
- Elimination of air quality impacts from the restoration project; and
- Protection of water quality."

Legal Requirements

The legal requirements listed above identify habitat, air quality, and water quality as the key criteria for the selection of a preferred alternative. The alternatives vary in their ability to achieve these requirements; none of the eight action alternatives analyzed in the PEIR satisfies all of the requirements. We believe that the preferred alternative should combine the best elements of the alternatives into a refined plan, as described in the following.

Habitat

Shallow and shoreline habitats are critical to maintain the diversity and level of wildlife that depend on the Sea. The PEIR projects that the habitats in Alternatives 2, 4, & 5 would support, in decreasing order, the greatest abundance of birds (see Ch. 8 p.74), primarily due to the abundance of shallow and shoreline habitats.

If we were to ignore water quality problems such as anoxia, then the deeper marine lakes of Alts. 5-8 would provide the greatest diversity and abundance of fish habitat. However, as is stated in Table 6-5 and on p. 8-60, water quality would be worse in the marine lakes than under existing conditions (when millions of fish die periodically due to wind-generated mixing events that degrade water quality) and than under no action conditions. The deep marine lakes will not provide reliable fish habitat. Shallower water bodies, such as those found in Alts. 1-4, will provide some fish habitat, though probably less than mandated diversity and abundance.

To provide resources for birds during the long permitting and construction process required for any preferred alternative, we strongly urge the immediate implementation of "early start habitat."

As for desert pupfish, while their requirements are arguable addressed in each of the alternatives due to the pre-existing requirements for connectivity under the IID transfer, the preferred alternative should maximize connectivity between pupfish populations. This is consistent with the 1993 Desert Pupfish Recovery Plan. Alts. 3 & 4 provide the greatest amount of pupfish connectivity due to the establishment of a concentric body of water that links key drains and creeks.

EJCW-b (cont.)

EJCW-b-1

As described in Chapter 3 of this Final PEIR, the Preferred Alternative recommended by the Secretary for Resources includes a variety of components that are intended to meet the legislative mandates of providing the maximum feasible attainment of the following objectives:

- Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea;
- Elimination of air quality impacts from the restoration project; and
- Protection of water quality.

Specifically, the Preferred Alternative includes 62,000 acres of Saline Habitat Complex, a 45,000-acre Marine Sea, incorporates the air quality "tool box" measures to eliminate, to the extent feasible, air quality impacts from the restoration project, and includes other measures and design considerations that would work to protect water quality. Under the Preferred Alternative, Air Quality Management and the Saline Habitat Complex would have the highest priority for inflows, followed by inflows into the Marine Sea.

The 62,000-acre Saline Habitat Complex included in the Preferred Alternative would be located in the southern and northern portion of the Salton Sea and would provide habitat for a variety of avian species such as shorebirds, waterfowl, and potentially for fish-eating birds, including sensitive species currently found at the Salton Sea. It is expected that the Saline Habitat Complex would also provide limited habitat for some fish species, such as tilapia, and thus, provide foraging habitat for fish-eating birds. The Saline Habitat Complex is expected to provide the microclimate benefits that currently exist at the Salton Sea, and could be constructed using a variety of construction methods including Geotubes®.

The 45,000-acre Marine Sea included in the Preferred Alternative would be located primarily in the northern portion of the Sea, but would extend down the majority of the eastern and western shorelines. It is intended to support a marine fishery and fish-eating birds (such as pelicans, double-crested cormorants, and black skimmers). The Marine Sea would stabilize at a water surface elevation of -230 feet msl with a salinity between 30,000 mg/L and 40,000 mg/L. The water depth would be less than 10 to 12 meters (39 feet) to reduce hydrogen sulfide generation and potential fish kills due to long-term temperature stratification (temperature variations from top to bottom of the sea).

EJCW-b-1

EJCW-b-2

EJCW-b (cont.)

The Preferred Alternative incorporates the air quality “tool box” measures to eliminate, to the extent feasible, air quality impacts from the restoration project. These measures include the allocation of 0.5 acre-foot per acre of water to manage emissive areas of the Exposed Playa. The Preferred Alternative also includes actions and mitigation measures to reduce air quality impacts that could result from construction and operations and maintenance activities.

Although not a legislatively mandated objective, the Saline Habitat Complex is expected to allow for passive recreational opportunities, such as bird watching. Additionally, the Marine Sea would provide for water-based recreational opportunities that have historically occurred at the Salton Sea. This would include boating and fishing opportunities and allow for the ongoing operation of the majority of the existing harbors at the Salton Sea.

The Preferred Alternative also includes a variety of actions that could be implemented within the 5-year timeframe after the Legislature provides direction on implementation of a restoration program and identifies a future implementing agency. These actions include activities such as Early Start Habitat and measures targeted to address air quality uncertainties.

The Preferred Alternative includes many of the components suggested by the commenter. See Chapter 3 of this Final PEIR for a more detailed description of the Preferred Alternative.

EJCW-b-2

As described in response to comment EJCW-b-1 and in Chapter 3 of this Final PEIR, the Preferred Alternative includes Early Start Habitat. A suggested schedule for Early Start Habitat is also provided in Chapter 3 of this Final PEIR. Implementation of Early Start Habitat would require additional authorizing legislation and identification of an implementing agency. Implementation would also require preparation of environmental documentation, permits, and land access along with detailed design plans and specifications.

As described in Chapter 3 of this Final PEIR, the Preferred Alternative includes pupfish connectivity.

Air Quality

Given the extremely poor air quality, that already characterizes the Coachella and Imperial valleys, the protection of air quality – and public health – must be a top priority. In the versions analyzed by the PEIR, Alts. 4 & 7 would not eliminate air quality impacts. These alternatives’ failure to protect public health precludes them from selection as the preferred alternative. Each of the other alternatives includes methods to attain the air quality requirement.

Water Quality

The complex biological and chemical processes that determine the Salton Sea’s water quality do not lend themselves to simple analysis. However, they directly and indirectly affect the value of habitat for birds and fish. Unfortunately, the PEIR simply assesses water quality impacts other than salinity, rather than developing a strategy to manage them. Yet, as shown by the PEIR, the Sea’s water quality problems will not be solved just by managing salinity. Fed by the fertilizers running off agricultural fields and the organic detritus accumulated over a century’s prolific biological activity, the Sea is too productive. This excessive productivity leads to high turbidity, noxious odors, very low concentrations of dissolved oxygen, periodic population explosions of algae that further depress oxygen concentrations at night and when the algae die, and the production of toxic gases, such as hydrogen sulfide and ammonia, by anaerobic organisms. All of these factors stress fish and invertebrates, decreasing their survival and reproductive rates and increasing the prevalence of disease, in turn reducing the value of the Sea for birds and people.

These water quality problems will get worse under each of the alternatives. (See pp. 6-32, 8-60, D-69, H1-53.) Alt. 7 is the only alternative that attempts to address these water quality problems; though the scale and cost of its two proposed water treatment plants (in excess of a billion dollars) make it wholly unrealistic. Instead, the PEIR must develop and analyze small-scale, low-tech methods to improve and protect water quality. Such methods may prove effective, at least in the smaller water bodies. The scale of the large marine lakes suggests that no realistic method exists to improve their water quality to the extent that they could provide reliable fish habitat.

Other Considerations

Several other factors must be considered in the selection of the preferred alternative. These include:

- flexibility and adaptability;
- reliability;
- time until initial benefits are realized;
- direct & indirect impacts of construction;
- environmental justice;
- recreation and economic development; and
- cost.

Flexibility and Adaptability

Under any alternative, the Salton Sea ecosystem will undergo enormous changes over the 75-year project period. Adaptable, flexible alternatives are much more likely to achieve the project objectives than those alternatives that, once built, cannot feasibly or reasonably be altered.

EJCW-b (cont.)

EJCW-b-3

See response to comment EJCW-b-1. The Preferred Alternative incorporates the air quality “tool box” measures to eliminate, to the extent feasible, air quality impacts from the restoration project. These measures include the allocation of 0.5 acre-foot per acre of water to manage emissive areas of the Exposed Playa. The Preferred Alternative also includes actions and mitigation measures to reduce air quality impacts that could result from construction and operations and maintenance activities.

EJCW-b-4

See response to comment EJCW-b-1. The 45,000-acre Marine Sea included in the Preferred Alternative would be located primarily in the northern portion of the Sea, but would extend down the majority of the eastern and western shorelines. It is intended to support a marine fishery and fish-eating birds (such as pelicans, double-crested cormorants, and black skimmers). The Marine Sea would stabilize at a water surface elevation of -230 feet msl with a salinity between 30,000 mg/L and 40,000 mg/L. The water depth would be less than 10 to 12 meters (39 feet) to reduce hydrogen sulfide generation and potential fish kills due to long-term temperature stratification (temperature variations from top to bottom of the sea).

The Preferred Alternative also includes a variety of actions that could be implemented within the 5-year timeframe after the Legislature provides direction on implementation of a restoration program and identifies a future implementing agency. These actions include activities such as Early Start Habitat and measures targeted to address air quality uncertainties.

While the commenter suggests the use of “small-scale, low-tech methods to improve and protect water quality,” these methods are not identified nor is information regarding the applicability of these to the harsh conditions at the Salton Sea and at the scale necessary to improve water quality.

EJCW-b-5

See response to comment EJCW-b-1 and Chapter 3 of this Final PEIR for a description of the Preferred Alternative and the process for its selection, respectively.

EJCW-b-3

EJCW-b-4

EJCW-b-5

The alternatives with a mid-Sea barrier (5-8) will require quarrying, transporting, and placing scores of millions of cubic yards of large-diameter rock. These massive structures will not be adaptable to changing circumstances. Construction of Alts. 1-4, on the other hand, can be built in phases, allowing for changes in design and management in response to changing conditions. Alts. 1 & 2 best lend themselves to adaptive management, since the individual cells could be managed somewhat independently, and, if needed, could be temporarily shut down (in response to a disease outbreak, for example) without jeopardizing the performance of the project as a whole.

Reliability

Construction at the Salton Sea will face a host of challenges, including frequent earthquakes, unstable sediments, high groundwater levels, very high temperatures (often exceeding 115°), biological and chemical fouling, corrosion, and persistent strong winds. These hostile conditions imply that low-tech, low-maintenance designs that incorporate redundancy and resilience, and that can be readily repaired, will enjoy the greatest chance of success over the long term. Alts. 1 & 4 rely on gravity-fed systems, with the least amount of infrastructure and lowest pumping requirements, and enjoy the greatest degree of reliability of the action alternatives.

The proposed air quality management common to most of the alternatives should rely on low-tech methods of irrigation, rather than drip and subsurface systems, which will need pre-treatment, filtration, pumping, and regular maintenance.

Time Until Initial Benefits Are Realized

The Sea is in decline; the longer it takes to select, permit, and construct a restoration project, the greater the potential that some species may become imperiled due to the lack of suitable habitat. Realistically, due to extensive design, site assessment, permitting, and land and easement acquisition requirements, the construction of any preferred alternative will not begin for at least a decade. Construction of some of the alternatives could take another decade or more. It would then take months or years (especially for Alts. 5-8) after construction for conditions to stabilize. For the larger, more complex alternatives, it could take a quarter of a century or more before the project functions as designed. Scalable components that do not require construction of the project as a whole, such as those in Alts. 1 & 4, would provide initial habitat and air quality benefits much more quickly. The construction of early start habitat would also provide interim benefits during this long transition period.

Direct & Indirect Impacts of Construction

The massive scale of each of the alternatives affects their feasibility and the impacts – especially on air quality and the demand for materials and energy – associated with their construction. The mid-Sea barriers would require as much as 100 million cubic yards of material. The Draft PEIR contains the assumption that a source for the rock and/or gravel would be located within 10 miles of the Salton Sea. This assumption – indeed, the entire Draft PEIR – fails to recognize that the two potential locations for rock source, identified in Appendix H5, have significant biological resource issues. Both sites have endangered species issues, particularly Coolidge Mountain, which is entirely within critical habitat for the endangered Peninsular bighorn sheep. Not only will extracting this much rock significantly degrade designated critical habitats of listed species, but transporting and placing this material will generate massive diesel and dust emissions.

EJCW-b-5
cont.

EJCW-b (cont.)

EJCW-b-6

For the programmatic level of planning, the availability of quarry materials for construction was evaluated by looking at potential sites including permitted and non-permitted quarries. A cursory evaluation of potential rockfill sources was performed in the Draft PEIR. The evaluation considered issues such as land ownership and access, environmental impacts and potential mitigation actions, as well as rock suitability. Information to determine site specific impacts at all potential sites was not available. Project-level analysis of the Preferred Alternative and rockfill sources would be required to evaluate the extent and magnitude of direct and indirect impacts and identify appropriate mitigation.

EJCW-b-6

The PEIR assumes that construction will occur on an aggressive 24-hour per day, 365 day per year schedule (p. H6-70), and that construction-related impacts can be mitigated. However, DWR staff have noted, "the feasibility of implementing air quality mitigation to reduce construction-phase emission impacts is speculative at present." The magnitude of construction-related emissions (as much 4,220 tons of PM₁₀ per year) suggests that such construction might not be permitted if mitigation is not feasible. The PEIR's assumptions here directly affects cost, construction schedules and the time required to achieve benefits, underscoring the relative benefits of simpler, less resource-intensive alternatives such as 1 & 4.

Environmental Justice

Environmental Justice mandates the right to ethical, balanced and responsible use of the land and renewable resources to produce a sustainable ecosystem. The Resources Agency Environmental Justice Policy requires that minorities and low-income populations be provided opportunities to participate in the development of the program. Yet the Restoration Program's Spanish-language outreach efforts to date have been extremely limited, despite the significant impacts the project will have on public health and employment in the region. The public, including Spanish-speaking communities, must be meaningfully engaged in any decisions regarding the Salton Sea and the surrounding areas.

Recreation and Economic Development

Local communities have highlighted the importance of recreation and economic development associated with a larger marine lake (in Alts. 5-8). Congress, in P.L. 105-372, names restoration of recreational uses, maintenance of a viable sport fishery, and identification of opportunities for economic development around the Sea as several of the goals of Salton Sea Reclamation. If water quality problems could be solved, marine lakes – especially in conjunction with the abundant bird-watching opportunities offered by the saline habitat complexes – would provide the greatest recreational and economic development opportunities. A lake smaller and shallower than those identified by Alts. 5-8, fed exclusively by better-quality Whitewater River, could flush out accumulated nutrients and selenium, improving water quality to the extent that a viable sport fishery could be maintained. This in turn would attract economic development.

Cost

The initial capital costs of all of the alternatives are extremely high. Operations and maintenance costs would add another \$20 million (Alt. 4) to more than \$130 million (Alts. 3, 5, 6, and 8) to this cost, each year. The alternatives that can be built in phases (Alts. 1-4) will require much lower initial investments than the alternatives requiring a mid-Sea structure (5-8), increasing the likelihood that they will enjoy legislative support. Federal support could be attracted by a plan that preserves the value of the Sea for the Pacific Flyway. Including recreational amenities could attract local support, potentially sufficient to fund construction of a smaller, functional recreational lake. Spreading out the costs by phasing construction and by attracting a broader funding base will increase the prospects for a successful project.

Summary

None of the eight alternatives analyzed in the PEIR meets all three legal requirements. A combination of elements from several of these alternatives, however, would offer the best means

EJCW-b-7

EJCW-b-8

EJCW-b-9

EJCW-b-10

EJCW-b-11

EJCW-b-12

EJCW-b (cont.)

EJCW-b-7

Construction emissions were estimated to be high, as much as 4,220 tons of PM₁₀ per year, because construction emissions were calculated assuming conventional construction methods. The approach used in the Draft PEIR to evaluate the air quality impacts associated with the alternatives was to use common assumptions (see Chapter 3), in order to provide a uniform basis for comparison. Beyond this comparison, more detailed evaluation of how these assumptions affect costs, construction schedule, and the time required to achieve benefits is beyond the scope of this Draft PEIR. The assumptions used to calculate construction emissions could be refined, and the feasibility of mitigation measures for construction emissions could be evaluated as part of project-level analysis.

EJCW-b-8

Very early on in the State's process, a number of documents, including the Notice of Preparation were translated in Spanish. The Resources Agency provided these documents at public outreach meetings in the Salton Sea watershed, and made these documents available on the State's Salton Sea website. After public release of the document, Spanish language versions of both a Frequently Asked Questions Sheet and Fact Sheet were made available and a contact phone number of a State Team member that would be able to answer questions in Spanish was provided for those interested.

EJCW-b-9

While we recognize the federal government has a mandate under Public Law 105-372, the State of California has a different mandate under California Fish and Game Code 2930, the Salton Sea Restoration Act. The state is not required to provide recreation and economic opportunities. Further, Salton Sea restoration legislation, Fish and Game Code Section 2081.8, provides: "[t]he Resources Agency shall undertake the necessary activities to assess the protection of recreational opportunities, including, but not limited to, hunting, fishing, boating, and birdwatching, and the creation of opportunities for improved local economic conditions, surrounding the Salton Sea. The Resources Agency shall not undertake any of those activities if the agency determines they would constitute a project purpose for environmental documentation that is prepared pursuant to Section 2081.7" (emphasis added).

EJCW-b (cont.)

EJCW-b-10

See response to comments EJCW-b-1 and EJCW-b-9.

EJCW-b-11

Identification of potential funding sources is outside of the scope of the Draft PEIR. A Funding Plan has been prepared for the Preferred Alternative subsequent to the issuance of the Draft PEIR and is being distributed separately from this Final PEIR. The Funding Plan identifies a variety of mechanisms that could be used to fund the implementation of the Preferred Alternative. As stated in the Draft PEIR, under the CEQA Guidelines, economic or social information may be included in an Environmental Impact Report, or may be presented in whatever form the agency desires. Economic or social effects of a project shall not be treated as significant effects on the environment (CEQA Guidelines, section 15131).

EJCW-b-12

The Salton Sea Restoration Act (Fish and Game Code 2931(c)(1-3)) states that "the preferred alternative shall provide the maximum feasible attainment of the following objectives: (1) Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea. (2) Elimination of air quality impacts from the restoration projects. (3) Protection of water quality." All of the alternatives meet the legislative requirements to varying degrees.

See response to comment EJCW-b-1 and Chapter 3 of this Final PEIR for a description of the Preferred Alternative and the selection process. The Preferred Alternative incorporates many of the components recommended by the commenter.

of meeting the legal requirements, as well as the other considerations described above. Alts. 2, 4, & 5 would support the greatest abundance of birds. Alts. 1-4 would offer the most reliable fish habitat. A smaller lake fed exclusively by the higher-quality Whitewater River would diminish the water quality problems associated with the larger marine lakes, providing more reliable fish habitat, as well as recreational and development opportunities.

Alts. 1-4, and especially 1 & 2, offer the greatest flexibility and adaptability, invaluable in a 75-year project facing great uncertainty in future conditions. Alts. 1 & 4 offer the most reliable designs and are also the least resource- and maintenance-intensive. Alts. 1 & 4 also offer clear benefits in terms of phasing and the amount of time required to provide initial benefits. Alt. 4 has the lowest annual costs.

Recommendations

We urge DWR and the Secretary of the Resources to combine the following features from Alternatives 1, 4 and 5 into a final, preferred alternative that would meet the legal requirements for restoration and provide opportunities for recreation and development in Imperial and Coachella Valleys:

- 25,000-50,000 acres of Shallow Saline Habitat Complex (depending on the amount of other shallow saline habitat provided), as described in Alts. 1 & 2, to provide habitat for shoreline species;
- Concentric rings using Geotubes or other dirt-filled barriers, as described in Alt. 4, to provide additional shallow habitat, pupfish connectivity, deeper marine habitat, shoreline and view protection, air-quality protections, and recreation;
- A large lake (roughly 8-10,000 acres – which would be the largest recreational lake in Southern California) fed solely by the Whitewater River, to provide recreation and development opportunities and water quality improvements;
- Monitoring and management of all exposed playa, to eliminate air quality impacts; and
- Immediate implementation of the ‘early start habitat’, to provide resources for birds during the long permitting and construction process.

Additionally, DWR should develop and analyze the potential for multiple small-scale, low-tech methods to improve water quality.

An alternative that contains all of these components, each of which is present and analyzed in one or more of the draft alternatives, would best meet the legal requirements to maximize habitat and protect air and water quality, while also providing recreation and development opportunities. We urge the Secretary to identify a Preferred Alternative with the components and features outlined above. This alternative would best meet the needs of local communities, fish and wildlife, the people of California, and the people of the United States.

EJCW-b-12
cont.

EJCW-b (cont.)

Thank you for your consideration of these comments.

Sincerely,

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November 15, 2006

NOV 20 2006

Friends of the Desert (FD-a)

FD-a-1

Colorado River and Salton Sea Office
Department of Water Resources
1416 9th Street, Room 1148-6
Sacramento, California

Dear Sirs,

Landscape and memory combine to tell us certain places are special, sanctified by their extraordinary natural merits. The Salton Sea is such a place.

It is a rare and irreplaceable ecosystem--the biggest lake; the last great southern wetland; the heart of the Pacific Flyway; visually stunning; brimming with vast economic and recreational potential.

We have an ecological catastrophe on our hands. If the Sea dies, an entire region dies too, for all time.

We inherited it. We are its custodians in the present. What we do now matters immensely to future generations.

We must act quickly. If we do, the Sea may well be recognized by our descendants as the greatest environmental success of the 21st Century. If we don't, an irreplaceable jewel will be lost forever.

Now, to the issues: first, the State of California has accepted responsibility for all but one hundred thirty three million dollars of the environmental consequence of the water transfer. Like any legally responsible party, its obligation to the Sea's preservation and restoration are guided by the *National Environmental Policy Act* and the *California Environmental Policy Act*:

Under NEPA: "1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations..."

And CEQUA: "(a) The maintenance of a quality environment for the people of this state now and in the future is a matter of statewide concern... (d) The capacity of the environment is limited, and it is the intent of the Legislature that the government of the state take immediate steps to identify any critical thresholds for the health and safety of the people of the state and take all coordinated actions necessary to prevent such thresholds being reached."

FD-a-1

Section 9.2 of the QSA Joint Powers Authority (JPA) Agreement provides that responsibility for mitigation above \$133 million shall be determined by the affirmative vote of three of the QSA JPA commissioners, including the commissioner representing the State, which determination shall be reasonably made.

The State is required to comply with CEQA. At this time, NEPA has no application to the State's Salton Sea Ecosystem Restoration Program.

NOV 20 2006

(FD-a) (cont.)

Given the intent of NEPA and CEQUA, it is truly sad to note that all of the alternatives in the PEIR ignore discussion of visual elements in the landscape. By so doing, they disregard the amazing majesty and fabulous scenery of California's Colorado Desert.

We strongly believe that the PEIR disregards the guiding intent of NEPA and CEQUA by not making a serious effort to take these important scenic values into account. We believe that all future EIR documents must, by law, rectify this oversight, or face legal action.

Second, every alternative in the PEIR provides but half measures. Each cuts the Salton Sea up, reduces its size greatly, and dries large portions of it out. In effect, each creates an Owens Valley air pollution debacle on a much larger scale—and the Owens Valley is currently the largest stationary source of pollution in America. This immediately makes any of the Alternatives subject to judicial intervention, if selected.

A new alternative which looks to maintain the sea's size and shape needs to be included—a **blended alternative**. The blended alternative includes: a) short term triage to save the lake now, and, 2) thoughtful alternatives over the longer term to insure its survivability for the next several hundred years.

The blended alternative includes the following:

SHORT TERM:

1. Infuse the situation with a sense of urgency. Shorten implementation timelines wherever possible. Treat the situation as a major ecological emergency—after all, it is. This is the last great American wetland on the Pacific Flyway. One of California's major ecosystems is at risk. Use the Governor's power of emergency, if necessary.

The current implementation timeline in the PEIR is convenient for bureaucrats, but it is disastrous for the Salton Sea ecosystem.

2. Immediately "turn on the tap" fully at the Colorado River, to take advantage of as much fresh water for as long as possible during the 10 years we have left. Drain it into the Sea as fast as possible. We need to take it while we can get it, for it will postpone the death of the sea in the short term, until more permanent solutions can be implemented.

3. USE the IID/San Diego agreement to follow the maximum land in the Imperial Valley, starting right away. Divert all of this water to the Sea while it's still available, to help in desalinization.

2. Capture as much extra water as is practicable during whatever flood years occur between now and 2017 and divert as much as possible of it to the Sea for the same reasons.

FD-a-2

FD-a-2
Chapter 18, Aesthetic and Visual Resources, describes the impacts to the aesthetic/visual environment of the Salton Sea area.

FD-a-3

FD-a-3
Substantial reduction in future inflows to the Salton Sea would make it impossible to maintain a functional water body at or near the Salton Sea's present size. Partial sea restoration alternatives are therefore viable options, but they will consequently expose considerable amounts of the seabed or playa. Most of the alternatives include an aggressive playa surface monitoring and stabilization program that would effectively manage dust emissions, so situations like Owens Lake would not occur. In addition, most alternatives include an adaptive approach to air quality management and an ongoing research and development program to prove and refine the effectiveness and efficiency of various dust control measures. These measures are included in the Preferred Alternative recommended by the Secretary (see Chapter 3 of this Final PEIR).

FD-a-4

FD-a-4
As described in Chapter 3 of this Final PEIR, the Preferred Alternative recommended by the Secretary for Resources includes a variety of components that are intended to meet the legislative mandates of providing the maximum feasible attainment of the following objectives:

- Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea;
- Elimination of air quality impacts from the restoration project; and
- Protection of water quality.

FD-a-6

Specifically, the Preferred Alternative includes 62,000 acres of Saline Habitat Complex, a 45,000-acre Marine Sea, incorporates the air quality "tool box" measures to eliminate, to the extent feasible, air quality impacts from the restoration project, and includes other measures and design considerations that would work to protect water quality. Under the Preferred Alternative, Air Quality Management and the Saline Habitat Complex would have the highest priority for inflows, followed by inflows into the Marine Sea.

FD-a-7

FD-a-8

(FD-a) (cont.)

The 62,000-acre Saline Habitat Complex included in the Preferred Alternative would be located in the southern and northern portion of the Salton Sea and would provide habitat for a variety of avian species such as shorebirds, waterfowl, and potentially for fish-eating birds, including sensitive species currently found at the Salton Sea. It is expected that the Saline Habitat Complex would also provide limited habitat for some fish species, such as tilapia, and thus, provide foraging habitat for fish-eating birds. The Saline Habitat Complex is expected to provide the microclimate benefits that currently exist at the Salton Sea, and could be constructed using a variety of construction methods including Geotubes®.

The 45,000-acre Marine Sea included in the Preferred Alternative would be located primarily in the northern portion of the Sea, but would extend down the majority of the eastern and western shorelines. It is intended to support a marine fishery and fish-eating birds (such as pelicans, double-crested cormorants, and black skimmers). The Marine Sea would stabilize at a water surface elevation of -230 feet msl with a salinity between 30,000 mg/L and 40,000 mg/L. The water depth would be less than 10 to 12 meters (39 feet) to reduce hydrogen sulfide generation and potential fish kills due to long-term temperature stratification (temperature variations from top to bottom of the sea).

The Preferred Alternative incorporates the air quality “tool box” measures to eliminate, to the extent feasible, air quality impacts from the restoration project. These measures include the allocation of 0.5 acre-foot per acre of water to manage emissive areas of the Exposed Playa. The Preferred Alternative also includes actions and mitigation measures to reduce air quality impacts that could result from construction and operations and maintenance activities.

Although not a legislatively mandated objective, the Saline Habitat Complex is expected to allow for passive recreational opportunities, such as bird watching. Additionally, the Marine Sea would provide for water-based recreational opportunities that have historically occurred at the Salton Sea. This would include boating and fishing opportunities and allow for the ongoing operation of the majority of the existing harbors at the Salton Sea.

The Preferred Alternative also includes a variety of actions that could be implemented within the 5-year timeframe after the Legislature provides direction on implementation of a restoration program and identifies a future implementing agency. These actions include activities such as Early Start Habitat and measures targeted to address air quality uncertainties.

The Preferred Alternative includes many of the components suggested by the commenter. See Chapter 3 of this Final PEIR for a more detailed description of the Preferred Alternative.

(FD-a) (cont.)

FD-a-5

The State recognizes the importance of restoration of the Salton Sea ecosystem and has developed the Draft PEIR to select a preferred alternative which would restore important ecological functions of the Salton Sea. The selected Preferred Alternative is described in Chapter 3 of this Final PEIR. A schedule for implementation of the Preferred Alternative is also provided in Chapter 3 of this Final PEIR. While the Resources Agency recognizes the urgency of restoration, future implementation of the Preferred Alternative would require additional authorizing legislation and identification of a future implementing agency. Additionally, project-level environmental analysis, final engineering and design, and all applicable permits and approvals would be needed. These actions are expected to take many years to complete. However, the Preferred Alternative includes implementation of Early Start Habitat to provide resources for birds during the interim period.

FD-a-6

Currently Colorado River water is being delivered to the Salton Sea under the IID/SDCWA Water Conservation and Transfer Project. This water is referred to as (c)(2) water in the Draft PEIR and would be delivered to the Salton Sea in a previously agreed upon schedule until 2017.

The delivery of additional Colorado River to the Salton Sea was addressed in Chapter 2 of the Draft PEIR (see page 2-8). However, because of the exiting legal framework that governs water use on the Colorado River and the amount of water needed to achieve salinity targets, this alternative was not carried forward for detailed analysis in the Draft PEIR.

FD-a-7

See response to comment FD-a-6.

FD-a-8

Current hydrological studies indicate flood flows in the Salton Sea watershed that are not captured and diverted elsewhere under existing law, already flow to the Sea and were incorporated into the water budget.

NOV 20 2008

(FD-a) (cont.)

4) Start diking along the margins to create evaporation ponds to evaporate as much salt as is possible as soon as possible.

FD-a-9

FD-a-9

The use of evaporation ponds for the disposal of saltwater is described in Chapter 2 of the Draft PEIR.

5) Build semi-permanent transit pipelines to Palen and/or Clark Lakes or Pinto Basin, or other suitable locations. Start pump-out as soon as possible, again to maximize salt removal from the Sea.

FD-a-10

FD-a-10

The use of evaporation ponds for the disposal of saltwater at dry lake beds was discussed in Chapter 2 of the Draft PEIR and investigated in previous studies for Palen, Clark, and Ford lakes (Salton Sea Authority, et. al., 1997). All sites would require extensive conveyance and pumping because the lake beds are located at elevations above mean sea level. Use of these dry lake beds would probably be limited due to habitat protection requirements at the site or along the conveyance route.

6) Amend State Law to require San Diego and Metropolitan Water Districts to incorporate mandatory water saving landscape vegetation around all homes and businesses served by the 200,000 acre fact taken from IID. Water wastage triggered the intervention by the Federal Government in the first place. Why not pass the restrictions on to urban areas receiving the new water?

FD-a-11

FD-a-11

The purpose of the Draft PEIR is to develop a preferred alternative by exploring alternative ways to restore important ecological functions of the Salton Sea. The commenter recommends an amendment to State law that is beyond the scope of the Salton Sea Ecosystem Restoration Program.

LONG TERM:

We favor an augmented Alternative 7 for long term restoration of the Sea. We say this because we think the key to the Sea's long term revival and survival is a continuous source of new, life giving water.

FD-a-12

FD-a-12

See response to comment FD-a-4 and Chapter 3 of this Final PEIR for a description of the Preferred Alternative.

Since fresh water cannot be spared, a pipeline/canal to bring salt water from the Pacific Ocean to the Sea must be built. The most likely route would be along the Interstate 8 corridor.

FD-a-13

FD-a-13

Alternatives that maintain the whole Salton Sea, including the importation of water from the Gulf of California and the Pacific Ocean, and the use of desalination, were described in Chapter 2 of the Draft PEIR. As discussed in Chapter 2, these alternatives were considered, but were not carried forward as alternatives in the Draft PEIR. The importation of water from the Gulf of California was not carried forward because the alternative did not meet the CEQA requirement for feasibility, as the State would not legally be able to control or have access to the portion of the project that would be located in the Republic of Mexico. The importation of water from the Pacific Ocean was not carried forward because the alternative has the potential to have substantial biological and water quality impacts in the Pacific Ocean and thus, obtaining the necessary permits and approvals did not appear to be feasible.

New inflows from the Pacific are the best way to keep the entire Sea's playa flooded, to protect air and water quality, to maintain stable water levels, and to nurture the overall ecosystem in a manner that most closely resembles the way it now exists. Such a choice satisfies the Federal Clean Air and Water Acts and will withstand judicial review in a manner that other alternatives presented in the PEIR will not.

FD-a-14

This canal from the Pacific was inexplicably and prematurely dismissed in the current draft PEIR alternatives. It should be put back in to the document.

Alternative 7 includes two marine seas. Both use large dikes to seal off the brine sink. We strongly feel that the dikes, as currently envisioned and pictured in the PEIR, are ugly. We strongly suggest that any final design avoid inflicting straight dikes, so beloved by civil engineers, on this most beautiful of desert lakes.

FD-a-15

We feel dikes on both the North and South Lakes should be camouflaged into naturalistic estuarine forms consistent with other portions of the Colorado River drainage. This could be done easily by means of stationary dredges. Bays and lakes have been terraformed in this manner for decades (Mission, Alamitos and Newport Bays, for example).

Since the Federal Government forced this water transfer on California, it should play a grater political and financial role in the Sea's restoration. We recommend that the State ask the Federal Government to begin political negotiations with Mexico for rights to a

(FD-a) (cont.)

FD-a-14

Thank you for your comment. Measures to blend the dikes into the surrounding environment could be identified and considered during project-level analysis.

FD-a-15

This comment identifies legal and policy issues that are outside of the scope of the State's Salton Sea Ecosystem Restoration Program.

NOV 20 2008

(FD-a) (cont.)

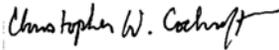
drainage canal to the Gulf of California or Laguna Salada. The State should also begin lobbying to obtain major Federal Financing to pay for the new canal from the Pacific.

Lastly, we feel that the Pacific Ocean canal should be designed on a scale sufficient to provide much more water than the 200,000 acre feet that is now being taken. We know the thirst of San Diego will not be satisfied with this first drink. We need to be honest about what is coming in the future, and provide sufficient spare capacity while in the planning and building stages. It will be cheaper in the long run.

In conclusion, the Salton Sea is a priceless resource, essential to the Coachella Valley and Southern California. It deserves foresighted preservation of its desert and waters, lands and minerals, for the greatest good of the greatest number for the longest time. By initiating short term triage immediately and building a pipeline/canal from the Pacific Ocean to provide a source of water full of vital, life sustaining energy, Alternative 7 will provide a viable way of saving and restoring the Salton Sea.

Thank you for this chance to comment.

Sincerely,



Christopher W. Cockroft
Secretary
Friends of the Desert
1020 Palm Ave.
South Pasadena
California 91030

Email: cockroft@graffiti.net

FD-a-15
cont.

FD-a-16

FD-a-16

As indicated in Chapter 2 of the Draft PEIR, this concept consists of maintaining a Whole Sea by importing water from the Pacific Ocean. To provide a Whole Sea with a stable salinity and stable water surface elevation of -230 feet msl, about 3,400,000 acre-feet/year would need to be imported and 2,730,000 acre-feet per year would need to be removed. The salinity would stabilize at about 40,000 mg/L.

At this time, it does not appear to be feasible to develop a 9,200 acre-feet/day (3 billion gallon/day) intake and 7,700 acre-feet/day (2.5 billion gallon/day) outfall that would be permitted along the Southern California coastline without extensive monitoring programs during project-level analyses. This alternative also would require extensive agreements from federal, State, and local governments for the conveyance corridor between the Whole Sea and Camp Pendleton. This alternative was eliminated from further analysis from the Draft PEIR. The importation of water from the Pacific Ocean was not carried forward for detailed analysis in the Draft PEIR because the alternative has the potential to have substantial biological and water quality impacts in the Pacific Ocean and thus, obtaining the necessary permits and approvals did not appear to be feasible.

DEC 05 2006

Friends of the Desert (FD-b)

November 28, 2006

Colorado River and Salton Sea Office
Department of Water Resources
1416 9th Street, Room 1148-6
Sacramento, California

Dear Sirs,

Although we have already written one letter commenting on preferred alternatives in the PEIR, we missed a major issue we would like to address here.

We feel that the seismic assumptions used in the PEIR are significantly understated.

In the PEIR, dikes are designed to withstand a 7.8 earthquake with a six foot displacement. We think that earthquakes of this magnitude are far too common on the San Andreas and San Jacinto faults to be used as the design ceiling for the various alternatives.

From historic records we know Fort Tejon experienced an 8.2 earthquake in 1857; Lone Pine a 7.6 to 8.0 (with a 15-20' vertical and 35-40' horizontal displacement) in 1872; Imperial Valley had a 7.8 in 1892; Kern County had a 7.3 in 1952; and Landers a 7.2 in 1992. The scale and frequency of these "garden variety" great quakes suggests that PEIR planning needs to be scaled up to account for even larger quakes, especially since recent geological studies show this area of the San Andreas locked up and due for a huge temblor in the near future.

Additionally, not only are the sizes earthquakes badly underestimated, but dike foundations will sit on multiple layers of silt and sand. In the event of a significant quake they can be expected to experience dangerous liquefaction—another reason to up the design ceiling.

We would remind the Committee that such an increase is essential. Imagine the damage if a fully filled dike breaks in the sea--it would mean the end to the entire marine ecosystem, the destruction of the economic engine of the great lake, and the inundation of major bird habitats.

We feel the PEIR must acknowledge the inadequacy of 7.8 as the design standard and increase the anticipated scale to 8.5 for planning purposes. Concomitant to this, staff must rewrite the alternatives and studies it used to support design decisions so they accurately reflect this change.

FD-b-1

The Coachella Segment of the San Andreas Fault forms the northeastern boundary of the Salton Trough. A magnitude of 7.8 for this segment was assigned based on current information and practice consistent with the U.S. Geological Survey procedures. This value of magnitude is judged to be conservative.

In the Draft PEIR, the Barriers and Perimeter Dikes were designed to limit cumulative displacements to 3 feet. A rockfill structure is best able to accommodate this magnitude of displacements as well as displacements due to fault offsets in the foundation.

FD-b-2

Preliminary geotechnical data analyzed by URS (2006) indicates that there is a potential for liquefaction in the silt and sandy layers within the Sea subsurface. However, a liquefaction potential analysis is beyond the programmatic scope of this Draft PEIR. Further site-specific geotechnical exploration and evaluation could be conducted if a barrier alternative is to be constructed. This exploration and evaluation could be conducted during future project-level analysis.

FD-b-1

FD-b-2

DEC 05 2008

FD-b (cont.)

The choice of magnitude of quakes is too important to understate. The choice of 8.5 on the Richter as the upper design ceiling provides more survivability for a much longer period of time.

**FD-b-2
cont.**

We owe it to future generations to plan conservatively, using the larger figure.

Thank you for this chance to comment.

Sincerely,



Christopher W. Cockroft
Secretary
Friends of the Desert
1020 Palm Ave.
South Pasadena, California 91030

DEC 07 2006

Fund for Wild Nature (FWN)

Marnie Gaede, President, Fund for Wild Nature
5218 Donna Maria Lane
La Canada, CA 91011

December 4, 2006

ATTN: Dale Hoffman-Floerke
Salton Sea PEIR Comments
CA Department of Water Resources
Colorado River & Salton Sea Office
1416 9th Street, Room 1148-6
Sacramento, CA 95814

RE: Comments on Draft PEIR for Salton Sea

Dear Ms. Hoffman-Floerke:

I am writing to offer my comments on the Resources Agency's Draft Programmatic Environmental Impact Report for the Salton Sea Ecosystem Restoration Program (PEIR).

There is no question that the State of California must take action at the Salton Sea. The 'no action' scenarios described in the PEIR and in the Pacific Institute's *Hazard* (posted at <http://www.pacinst.org/reports/saltonsea/index.htm>) clearly demonstrate that the health of children and adults in the Imperial and Coachella valleys would be harmed by the hundreds of additional tons of dust that would blow, each year, off the land exposed by the shrinking Salton Sea. Imperial County – one of the poorest in the State – already claims the dubious distinction of having the highest childhood asthma hospitalization rate in California.

A smaller, saltier Sea would also be of little or no value to the fishermen who continue to fish at the Sea and consume their catch. A Sea with a saline content too high to support fish life will mean fewer fish to catch, as would a Sea beset with even more frequent fish kills. But fish kills will not only impact those people directly dependent on the subsistence which Salton Sea fish currently provide—they will also degrade the overall quality of life of people who must endure the putrid odor resulting from the kills. Clearly, we must act to protect the Salton Sea.

The question is how. Unfortunately, that question has not been fully answered by the PEIR. None of the alternatives presented in the PEIR satisfies the legal requirements to maximize wildlife habitat, air and water quality protection in a reasonable timeframe.¹

¹. Pursuant to the Quantification Settlement Agreement ("QSA"), state and federal law require restoration of the Salton Sea because of its importance for fish and wildlife, air quality, recreation and local economic development. See California Fish and Game Code Sections 2930, et seq.

FWN-1

While it is recognized that anglers who continue to fish in the Salton Sea today likely consume their catch, there is no evidence that the Salton Sea supports a subsistence fishery, especially since most species of fish have not been reported in recent surveys. A number of factors contribute to fish die offs (including cold weather events) and fish die offs are not expected to be eliminated under any alternative.

FWN-2

The Salton Sea Restoration Act (Fish and Game Code 2931(c)(1-3)) states that "the preferred alternative shall provide the maximum feasible attainment of the following objectives: (1) Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea. (2) Elimination of air quality impacts from the restoration projects. (3) Protection of water quality." All of the alternatives meet the legislative objectives to varying degrees.

FWN-1

FWN-2

DEC 07 2008

Most proposed alternatives suffer from massive construction and permitting requirements that would slow implementation, degrade air quality, and impose additional, unacceptable impacts over a wide area. In light of California's commitment to reduce its greenhouse gas emissions, it makes no sense to implement a project that requires massive amounts of energy to pump (and in some instances, treat) water, nor does it make sense to build massive dams or dikes that require thousands of truck trips each day, to move the tens of millions of cubic yards of rock needed for construction.

Fortunately, the PEIR contains the information and components necessary to piece together a successful plan from the proposed alternatives. Alternatives 1 and 2 provide important habitat to support many of the birds that currently use the Salton Sea. Alternative 4 offers a relatively low-cost, low-impact method to distribute water around much of the present shoreline and would provide additional habitat, shoreline protection and opportunities for recreation. The concentric lakes plan would provide direct air quality benefits, and would also offer a ready source of water for managing air quality problem areas that might arise in the future. And components of the larger north lake alternatives (Alternatives 5-7) provide recreation and economic development opportunities, enjoying the broad local support necessary for funding and implementation.

Therefore, I urge that DWR combine the following features from the proposed alternatives into a final, preferred alternative that would meet the legal requirements for restoration and provide opportunities for recreation and development in Imperial and Coachella Valleys:

- Between 25,000 – 50,000 acres of Shallow Saline Habitat Complex, as described in Alternatives 1 and 2, at the southern and northern ends of the Sea to provide habitat for shoreline species;
- Create concentric rings using geotubes or other dirt-filled barriers, as described in Alternative 4, to provide additional shallow habitat, deeper marine habitat, shoreline and view protection, air-quality protections, and recreation;
- Similar to the lakes found in Alternatives 5-7, provide a large (approximately 10,000 acre) North Lake, which would be the largest recreational lake in Southern California, fed by the Whitewater River to provide recreation and development opportunities without the costs and risks associated with a major mid-Sea barrier or the costs of pumping water from the southern end of the Sea;
- Provide at least one-half acre-foot of water per acre of exposed Seabed, as stipulated by the Salton Sea Advisory Committee, to prevent dust pollution caused by exposed playa, as described in Alternatives 1-3, 5-6 and 8;
- Construct shallow saline habitat (known as "early start habitat") immediately to provide resources for birds during the long permitting

FWN (cont.)

FWN-3

As described in Chapter 3 of this Final PEIR, the Preferred Alternative recommended by the Secretary for Resources includes a variety of components that are intended to meet the legislative mandates of providing the maximum feasible attainment of the following objectives:

- Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea;
- Elimination of air quality impacts from the restoration project; and
- Protection of water quality.

Specifically, the Preferred Alternative includes 62,000 acres of Saline Habitat Complex, a 45,000-acre Marine Sea, incorporates the air quality "tool box" measures to eliminate, to the extent feasible, air quality impacts from the restoration project, and includes other measures and design considerations that would work to protect water quality. Under the Preferred Alternative, Air Quality Management and the Saline Habitat Complex would have the highest priority for inflows, followed by inflows into the Marine Sea.

The 62,000-acre Saline Habitat Complex included in the Preferred Alternative would be located in the southern and northern portion of the Salton Sea and would provide habitat for a variety of avian species such as shorebirds, waterfowl, and potentially for fish-eating birds, including sensitive species currently found at the Salton Sea. It is expected that the Saline Habitat Complex would also provide limited habitat for some fish species, such as tilapia, and thus, provide foraging habitat for fish-eating birds. The Saline Habitat Complex is expected to provide the microclimate benefits that currently exist at the Salton Sea, and could be constructed using a variety of construction methods including Geotubes®.

The 45,000-acre Marine Sea included in the Preferred Alternative would be located primarily in the northern portion of the Sea, but would extend down the majority of the eastern and western shorelines. It is intended to support a marine fishery and fish-eating birds (such as pelicans, double-crested cormorants, and black skimmers). The Marine Sea would stabilize at a water surface elevation of -230 feet msl with a salinity between 30,000 mg/L and 40,000 mg/L.

FWN-3

FWN (cont.)

The water depth would be less than 10 to 12 meters (39 feet) to reduce hydrogen sulfide generation and potential fish kills due to long-term temperature stratification (temperature variations from top to bottom of the sea).

The Preferred Alternative incorporates the air quality “tool box” measures to eliminate, to the extent feasible, air quality impacts from the restoration project. These measures include the allocation of 0.5 acre-foot per acre of water to manage emissive areas of the Exposed Playa. The Preferred Alternative also includes actions and mitigation measures to reduce air quality impacts that could result from construction and operations and maintenance activities.

Although not a legislatively mandated objective, the Saline Habitat Complex is expected to allow for passive recreational opportunities, such as bird watching. Additionally, the Marine Sea would provide for water-based recreational opportunities that have historically occurred at the Salton Sea. This would include boating and fishing opportunities and allow for the ongoing operation of the majority of the existing harbors at the Salton Sea.

The Preferred Alternative also includes a variety of actions that could be implemented within the 5-year timeframe after the Legislature provides direction on implementation of a restoration program and identifies a future implementing agency. These actions include activities such as Early Start Habitat and measures targeted to address air quality uncertainties.

The Preferred Alternative includes many of the components suggested by the commenter. See Chapter 3 of this Final PEIR for a more detailed description of the Preferred Alternative.

DEC 07 2006

FWN (cont.)

and construction process, as described in all of the proposed alternatives; and

- Develop a plan that provides water for habitat and air quality mitigation first, in case of possible shortages or system malfunctions, as described in Alternatives 1-3.

A Final Preferred Alternative that contains all of these components, each of which is present and analyzed in one or more of the draft alternatives, would best meet the legal requirements to maximize habitat, air quality and water quality, while also providing substantial recreation and development opportunities. I urge, therefore, the State to select the Preferred Alternative with the components and features outlined above. Such an "Evolved Alternative" would best meet the needs of local communities, fish and wildlife, and the people of California.

Thank you for your consideration of these comments.

Sincerely,

Marnie Gaede
President
Fund for Wild Nature



FWN-3
cont.



January 16, 2007

Attn: Dale Hoffman-Floerke
Salton Sea PEIR comments
CA Department of Water Resources
Colorado River & Salton Sea Office
1416 9th Street, Room 1148-6
Sacramento, CA 95814

Comments on Draft PEIR for Salton Sea

Dear Ms. Hoffman-Floerke:

The Imperial County Farm Bureau, (ICFB), represents over 400 farmers in the Imperial Valley plus another 400 members who do not actively farm but are closely involved with agriculture. This response to the Draft PEIR for the Salton Sea by ICFB represents the thoughts and concerns for all of our members.

The Salton Sea is first and foremost, a repository for agricultural drain water for the farmers of the Salton Sea and has been that way since the 1920's when Presidents Coolidge and Harding proclaimed it to be an agricultural sump. This contribution of drain water is what has kept the Salton Sea alive for over 100 years while providing habitat for over 400 species of birds that are native to the area or travel through this region every year. These 400 species represent millions of birds that use the Salton Sea and the surrounding area during their yearly migration.

The surrounding agriculture, at both ends of the Salton Sea, is just as important to these birds as the Salton Sea itself. Hundreds of thousands of farm acres provide a vast array of food, water and habitat for the birds.

The Salton Sea also covers an ancient lake bed that has the potential to create dangerous dust storms. As the preferred restoration plan is chosen and the Sea begins to recede, it is important that the plan is capable of not only protecting the public health but the farm land from also from dangerous levels of dust that could

- 1 -

Imperial County Farm Bureau (ICFB)

ICFB-1

As described in the Salton Sea Restoration Act (Fish and Game Code 2931(c)(1-3)), "the preferred alternative shall provide the maximum feasible attainment of the following objectives: ... (2) Elimination of air quality impacts from the restoration projects"... The State understands that air quality is an important issue in the Imperial and Coachella valleys. As described in Chapter 3 of this Final PEIR, the Preferred Alternative includes air quality measures to mitigate impacts resulting from the restoration project.

Potential for emissions from untreated, Exposed Playa is recognized extensively in Appendix E of the Draft PEIR and Appendix H-3 addresses control of these potential emissions in great detail. Although public health standards for human exposure to PM10 exist, no similar thresholds exist for crops. In Appendix E, Attachment E10 of the Draft PEIR, the limited existing literature regarding dust impacts on crops was reviewed. National ambient air quality standards are developed on the basis of impacts to health and welfare, and these standards were used to develop the air quality management approach for the Draft PEIR. Compliance with these standards should provide for the substantial protection to crops, as well as human health.

ICFB-1

occur, including dangerous salt dust from the salt playas which is already beginning to form around the shore of the Salton Sea as it recedes. White salt clouds are rearing their ugly heads at the south end of the Salton Sea every time the wind exceeds 15 miles per hour and some crop damage has already occurred. The local population, living close to the Salton Sea, has been negatively affected by this toxic dust.

The ICFB believes some sort of early start air mitigation program, at no cost to the farm community, is essential and the State should exhaust all avenues available to them to help solve any air mitigation problems before they start.

On January 25, 2006 Al Kalin from the ICFB sent Secretary Chrisman a plan the ICFB believes will help reduce this terrible salt playa as the Salton Sea recedes. It can be found in the PEIR in Appendix H-3 Attachment 1, (Pages H-3-1-1 to H-3-1-3).

Hundreds of acres of exposed playa have already been reclaimed along the southeast side of the Salton Sea using this method. In these locations though, the dikes were made naturally. During the time the Salton Sea was at its highest elevation it created drifts of large barnacle shoals along the beach line near Davis Road on the southeast side of the Salton Sea. When the Sea receded the barnacles were left. The fresh water from IID drains, which drain directly into the Sea, was able to flow through the very porous barnacle shoal and into the sea without washing out the shoal. This flushed the salts from the barnacle shoal itself and allowed salt cedars to take root which further strengthened the shoals. Over the years silt and detritus reduced the porosity of the shoals and they became sturdy dikes. The water from the drains began to pond up behind these dikes forming shallow lagoons and the salt was slowly flushed from the soil and plants began to grow.

Today some of these areas are completely covered by cat-tails, bulrush, and phragmites with no open water left. These plants require fairly salt-free soil and water to grow. This proves the theory that building a dike out in the sea and backing fresh water up behind it will wash the soil of enough salt that plants will grow. Obviously it will not be salt-free enough to grow lettuce but the salt playas will be reclaimed enough that it will be possible to grow a much broader range of plants, much easier, to stop dust from moving than just salt grass, pickleweed or inkweed.

We need this idea in our air quality "toolbox". We can't depend on just using expensive sprinklers and emitters to grow salt grass on the exposed playa like they are doing in Owens Lake where per acre costs have been very expensive.

The Salton Sea is a massive heat sink which warms the wind blowing across it in the winter and cools the winds that blow across it in the summer. This phenomenon is vitally important to the agricultural economy of the Imperial

ICFB (cont.)

ICFB-1
CONT.

ICFB-2

As described in Chapter 3 of this Final PEIR, a variety of actions have been identified that could be implemented within the five year timeframe after the Legislature approves a preferred alternative and identifies an implementing agency. These actions include measures specifically targeted to address air quality uncertainties.

ICFB-2

ICFB-3

The proposal to reclaim shallow shoreline areas by diking and leaching of salts from behind the dike is included in the toolbox as one of the measures that could be used to control emissions from the Exposed Playa. As noted in the Draft PEIR (Appendix H-3), the toolbox is vital to achieving efficient and effective dust control at Salton Sea. While irrigation systems have been assumed at the programmatic level, other systems or different approaches could be developed and employed during project-level analysis.

ICFB-3

Valley. In the winter the air which is warmed as it blows across the Salton Sea keeps the crops from freezing. As a result this is the area where the first winter lettuce, the first broccoli, the first cauliflower, the first sweet corn, and the first melons come from that feed the nation. It is important that enough water remains in the south end of the sea to maintain this heat sink. The State should understand this important attribute and adopt a plan that allows for the continued existence of a southern body of water that would create this valuable heat sink.

The ICFB believes that Alternative Four, Concentric Lakes Plan, with modifications made recently by the farm group to include a saline habitat complex, is the plan which is preferred by the ICFB and meets all of the objectives needed for a preferred alternative. We urge the State to understand the attributes this plan provides and consider adapting these alternatives as important as they choose a preferred alternative.

Chapter 4 Comments

The ICFB believes Chapter Four does not take into account the reduced flows to the Salton Sea due to the Quantification Settlement Agreement, (QSA), cap and the implementation of various TMDLs. Both of these items will affect the amount of water that will ultimately flow into the Salton Sea.

The irrigation water used by Imperial Valley farmers was capped for the first time in history with the signing of the QSA meaning new challenges for farmers as they try to live under this cap. The ICFB believes this learning curve coupled with attempts to conserve water through conservation methods after year 2017 will lead to less water flowing to the Salton Sea.

Best Management Practices, (BMPs), for the silt TMDL have already been implemented by Imperial Valley farmers. It was discovered that while trying to clean up the drainage water leaving the farmer's fields so that it is clear, with no silt, the amount of drainwater is also reduced by 20% to 30%. The silt load is a direct result of the velocity of water in the farmer's drain. The act of reducing the velocity to reduce the amount of silt agitated and put into suspension by the drain water requires better management by the irrigator which in turn causes a reduction in the amount of total acre feet of drain water leaving the fields.

In determining future inflows into the Salton Sea modeling was used that determines the amount of inflow water by comparing past use history. The ICFB believes this is a fatal flaw and much less water will ultimately flow to the Sea. The preferred alternative must include attributes that will accept a broad range of flows over the 75 year project.

ICFB (cont.)

ICFB-4

ICFB-4

As described in Chapter 3 of this Final PEIR, the State agrees that important microclimate characteristics may be provided by the Salton Sea. The Preferred Alternative includes a large area of Saline Habitat Complex at the southern end of the Salton Sea that could provide similar microclimate benefits. Chapter 3 of this Final PEIR also identifies actions that could be implemented within the five year timeframe after the Legislature provides direction on the implementation of a preferred alternative and identifies a future implementing agency. These actions could include additional studies and analysis on the microclimate characteristics of the Salton Sea.

ICFB-5

ICFB-5

As described in Chapter 3 of this Final PEIR, the Preferred Alternative recommended by the Secretary for Resources includes a variety of components that are intended to meet the legislative mandates of providing the maximum feasible attainment of the following objectives:

- Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea;
- Elimination of air quality impacts from the restoration project; and
- Protection of water quality.

Specifically, the Preferred Alternative includes 62,000 acres of Saline Habitat Complex, a 45,000-acre Marine Sea, incorporates the air quality "tool box" measures to eliminate, to the extent feasible, air quality impacts from the restoration project, and includes other measures and design considerations that would work to protect water quality. Under the Preferred Alternative, Air Quality Management and the Saline Habitat Complex would have the highest priority for inflows, followed by inflows into the Marine Sea.

ICFB-6

ICFB-7

The 62,000-acre Saline Habitat Complex included in the Preferred Alternative would be located in the southern and northern portion of the Salton Sea and would provide habitat for a variety of avian species such as shorebirds, waterfowl, and potentially for fish-eating birds, including sensitive species currently found at the Salton Sea. It is expected that the Saline Habitat Complex would also provide limited habitat for some fish species, such as tilapia, and thus, provide foraging habitat for fish-eating birds. The Saline Habitat Complex is expected to provide the microclimate benefits that currently exist at the Salton Sea, and could be constructed using a variety of construction methods including Geotubes®.

ICFB (cont.)

The 45,000-acre Marine Sea included in the Preferred Alternative would be located primarily in the northern portion of the Sea, but would extend down the majority of the eastern and western shorelines. It is intended to support a marine fishery and fish-eating birds (such as pelicans, double-crested cormorants, and black skimmers). The Marine Sea would stabilize at a water surface elevation of -230 feet msl with a salinity between 30,000 mg/L and 40,000 mg/L. The water depth would be less than 10 to 12 meters (39 feet) to reduce hydrogen sulfide generation and potential fish kills due to long-term temperature stratification (temperature variations from top to bottom of the sea).

The Preferred Alternative incorporates the air quality “tool box” measures to eliminate, to the extent feasible, air quality impacts from the restoration project. These measures include the allocation of 0.5 acre-foot per acre of water to manage emissive areas of the Exposed Playa. The Preferred Alternative also includes actions and mitigation measures to reduce air quality impacts that could result from construction and operations and maintenance activities.

Although not a legislatively mandated objective, the Saline Habitat Complex is expected to allow for passive recreational opportunities, such as bird watching. Additionally, the Marine Sea would provide for water-based recreational opportunities that have historically occurred at the Salton Sea. This would include boating and fishing opportunities and allow for the ongoing operation of the majority of the existing harbors at the Salton Sea.

The Preferred Alternative also includes a variety of actions that could be implemented within the 5-year timeframe after the Legislature provides direction on implementation of a restoration program and identifies a future implementing agency. These actions include activities such as Early Start Habitat and measures targeted to address air quality uncertainties.

The Preferred Alternative includes many of the components suggested by the commenter. See Chapter 3 of this Final PEIR for a more detailed description of the Preferred Alternative.

ICFB (cont.)

ICFB-6

As described in Appendix H-2 of the Draft PEIR, the SALSA model uses historical inflows mainly to capture annual variability and to calibrate the model's water budget. As identified by the commenter, the historical inflows reflect historical water management practices that are likely to change in the future. To account for these potential future changes, the Draft PEIR analysis utilized the SALSA model statistical methods to account for the uncertainties in the amount of inflow reductions to the Sea that are likely to occur as a result of a variety of future actions that could occur in the Salton Sea watershed. This analysis allows for a range of possible future inflows to be considered with the likelihood of their occurrence.

ICFB-7

As described in Chapter 3 of this Final PEIR, the Preferred Alternative includes attributes that would allow for a broad range of inflows over the 75-year project.

Chapter 5 Comments

The State has dropped inflows to the Salton Sea by 109,000 feet due to the CEQA concerns but the ICFB feels the State did not reduce this amount enough.

Comments on Inflow and Climate Assumptions for the No-Action Alternative

Inflows from Imperial Valley are estimated to be 724,000 AFY for the period 2018-2078 based primarily on the QSA reducing those flows from the approximately 1,029,000 AFY historical flow rates. The QSA EIR projects the greater portion of the 303,000 AFY reduction would result from a reduction in tailwater and delivery system losses. This result would still leave approximately 200,000 to 250,000 AFY of tailwater and delivery system losses.

Comments on Inflow and Climate Assumptions for the No-Action Alternative - Variability Conditions

The PEIR recognizes that additional reductions in agricultural returns flows can be expected due to implementation of TMDL regulations by CRWQCB. Potential changes in IID water needs estimates, reductions in applied irrigation rates if Colorado River salinity declines, improved water efficiency, changes in cropping patterns, conversion of agricultural lands to urban uses, and reduced availability of Colorado River water supplies.

Due to these factors, inflows from Imperial Valley under this section are estimated to decrease by an additional 109,000 AFY or 15% to 615,000 AFY. ICFB believes this would still leave between 100,000 and 200,000 AFY of tailwater and delivery system losses, depending on the sources from which the reductions are projected to come.

The PEIR appears to fail to recognize that other factors, such as changes in farming practices, availability of improved equipment and technology, efforts by farms to prevent criticism of and challenges to their farm water use practices, the need to meet standards imposed on farms to accomplish goals not directly related to tailwater quantity, re-use of seepage water for crop irrigation, and the availability of more economic methods of preventing and/or recovering delivery system losses, will likely contribute to further reduction, even elimination of remaining tailwater and delivery system losses.

It should be recognized that long before 2078 inflows from Imperial Valley could, and likely will, decrease an additional 100,000 to 200,000 AFY below the estimated 615,000 AFY.

In addition a challenge in our beneficial use of irrigation water from the Interior Department in the form of a 417 proceeding could also have a devastating effect on the amount of water entering the Salton Sea.

ICFB (cont.)

ICFB-8

ICFB-8

ICFB-9

In the analysis of future Salton Sea inflows from the Imperial Valley, the Draft PEIR considered a range of tailwater reductions beyond the No Action Alternative-CEQA Conditions. Figure H2-18 in the Draft PEIR shows tailwater reductions as low as 5 percent and as high as 95 percent, recognizing that higher levels of tailwater reduction are harder to achieve and less probable than lower levels. As shown in Figure H2-20 of the Draft PEIR the lower end of possible inflows from Imperial Valley, is close to 400,000 acre-feet per year.

ICFB-10

ICFB-9

See response to comment ICFB-8.

ICFB-10

See response to comment ICFB-8.

ICFB-11

While the State recognizes the Law of the River and the 43 Code of Federal Regulations Part 417, it would be speculative to assume that a Part 417 proceeding would occur in the future (see CEQA Guidelines Section 15145).

ICFB-11

In January, 2003 political pressure from urban interests forced the Department of Interior to file a 417 action against IID claiming IID was not using its water beneficially and cut their entitlement by 350,000 acre feet per year. IID quickly brought suit to challenge the Department of Interior's action. This process was moving to the stage of appellate review by the Secretary when the QSA documents were executed in October of 2003, and the IID litigation and the government's 417 proceeding were thereafter dismissed as a part of the package of QSA settlements however there was nothing in QSA, or legislature which accompanied the QSA, that would prevent the Department of Interior of bringing action against IID again if enough pressure was brought to bear from urban interests.

For these reasons the ICFB believes the amount of water calculated by both the State DWR and IID, to flow into the Salton Sea for the next 75 years, is greatly exaggerated. The preferred alternative picked should be able to handle a broad range of inflows.

Chapter 6 Comments

The ICFB believes major information is missing from Chapter 6. There is no mention of the New River, Alamo River, or Imperial Valley Drains Silt TMDL currently being implemented. These three TMDLs are vitally important since they are key elements to the removal of silt from farm run-off. The reason silt is so important is because phosphorus is not water soluble and cannot move in the water without being attached to a clay particle. Phosphorus is the controlling nutrient that determines the amount of algae blooms in the Salton Sea. The CRBRWQCB set a goal of 50 percent reduction of silt for all three TMDLs over a 13 year period.

Farmers are participating in a voluntary compliance program of these three TMDLs to reduce the amount of silt leaving their fields. By reducing silt, phosphorus is also reduced which in turn causes a reduction in algae blooms in the Salton Sea.

The program has been so successful that after only three years of a 13 year program the farmers have reached their goal in the New River by reducing the silt by over 50%. In the Alamo River the silt was reduced by 38% and continues to decline. This tremendous achievement has reduced the amount of phosphate entering the Salton Sea by 20-30 percent.

The three silt TMDLs have been so successful the Imperial County ICFB's Voluntary Compliance Program was awarded the 2004 Governor's Environmental and Economic Leadership Award as well as the United States Federal Environmental Protection Agency's 2006 Environmental Award for Outstanding Achievement for the whole Western United States and Pacific Rim.

ICFB (cont.)	
ICFB-12	ICFB-12
	See response to comment ICFB-11.
	ICFB-13
	See response to comment ICFB-7.
	ICFB-14
ICFB-13	Table 6-1 on page 6-2 of the Draft PEIR shows that the Sedimentation/Siltation TMDL has been adopted for the Alamo and New rivers, while a draft TMDL has been published for the Imperial Valley Drains. This table has been updated in this Final PEIR to indicate that the Sedimentation/Siltation TMDL for the Imperial Valley Drains was approved by the USEPA (see Chapter 4 of this Final PEIR for errata to the Draft PEIR).
ICFB-14	

It has been mentioned by others that these three silt TMDLs may be the most successful TMDLs in California and possibly in the whole United States.

While others have been studying what to do to solve the problems at the Salton Sea, the farmers of the Imperial Valley have stepped to the plate and reduced phosphate entering the Salton Sea by a very significant amount.

Since there has been a significant reduction of phosphate entering the Salton Sea due to the implemented Silt TMDL's it is important to understand that any alternative like Alternative #3 and #4, that accept water directly from the New and Alamo Rivers without first dumping into the current high salt content / high phosphorus loads of the Salton Sea, will have a much lower amount of phosphate in the water column and therefore should show a significant reduction in algae blooms. Table 6-5 is therefore incorrect as it shows the benefits equally as less than significant.

Page 6-27 talks about the CRBRWQCB Draft Nutrient TMDL for the Salton Sea which identifies an annual phosphorous target of 35 $\mu\text{g}/\text{L}$ as measured in the Salton Sea. Since the development of this TMDL was halted with the signing of the QSA and there has been no action to adopt the target number of 35 $\mu\text{g}/\text{L}$. The ICFB feels it is inappropriate to list any target number until adopted by the local and state water boards.

The PEIR makes no mention of the significance of natural CO_2 vents along the south east side of the Salton Sea. It is important to note that CO_2 is used to accelerate the production of algae where it is commercially grown. The ICFB therefore believes shallow saline habitat complexes should not be situated in the southeast corner of the Salton Sea as it may lead to an acceleration of algae blooms.

Chapter 8 Comments

For all practical purposes the marine sport fishery in the Salton Sea has collapsed and no sports fish have been found in over two years. The PEIR has identified various habitats and compared various plans and their impact to wildlife and have shown how different changes would affect the wildlife should the species of sports fish be restocked.

The PEIR places great emphasis on the need for Desert Pupfish connectivity between different streams that flow into the Salton Sea. The ICFB questions if this is a good thing. If the entire Pupfish population were interconnected it might be possible for all of the fish to perish if a disease were to infect the population.

The weather in the Salton Sea Basin has seen a warming trend for the past 40 years. It no longer gets as cold during the winter as it once did and nowadays the water temperature of the Salton Sea seldom drops below 50° F. The scientists

ICFB (cont.)

ICFB-15

Table 6-3 of the Draft PEIR shows that both orthophosphate and total phosphorus are at significantly lower concentrations in the Salton Sea than in the tributaries. Therefore, those components of alternatives that derive water directly from the New and Alamo rivers, without the benefit of dilution of phosphorus levels by the Salton Sea, would be more biologically productive than those components that receive water from the Salton Sea. The data used in modeling expected phosphorus levels in the alternatives was from 1999, which represents the most complete set of data available for both the Salton Sea and the tributaries. If more recent data show a reduction in phosphorus concentrations in inflows to the Salton Sea, primary productivity (algae) would also be reduced. However, this reduced productivity would apply to all alternatives.

ICFB-15

ICFB-16

The CRBRWQCB indicates that the Salton Sea Nutrient TMDL is in draft stage, with a planned completion date of 2009.

ICFB-16

ICFB-17

There are a variety of factors including natural CO_2 vents that would need to be taken into consideration when siting project facilities. These factors could be more appropriately considered during project-level analysis.

ICFB-17

ICFB-18

Populations of desert pupfish that occupy discrete inputs (drains and creeks) to the Salton Sea are currently presumed connected as a single metapopulation which allows some level of gene flow among the populations. Desert pupfish connectivity, as described in the Draft PEIR, would not connect previously disconnected populations, but maintain to varying degrees, these existing connections. Thus, there would not be an increase of disease exposure beyond what exists today.

ICFB-18

associated with the PEIR have consistently said the species of tilapia in the Salton Sea have shown to be capable of surviving much lower temperatures in laboratory conditions. However in looking at past history, tilapia die-offs with the largest number of fish have consistently occurred in the winter when the water temperature was the lowest.

Therefore the ICFB believes that as the volume of the sea recedes the need for a forage fish other than tilapia should exist as an alternate forage fish if the tilapia population collapsed as a result of cold water.

Chapter 9 Comments

The estimated cubic yards of gravel needed for the Alternative #4 is far less than Alternative #7 and therefore would create less problems with air quality and pollutants associated with construction.

Alternatives such as #7 require literally, mountains of rock. This is a long term project which would create massive amounts of air pollution in the form of dust and emissions from the heavy equipment.

As a main dike is constructed in Alternative #7 it would take five years or more for the deposited rock to sink through the sediment, become stable, and create a firm base. This means Alternative #7 would take much longer to build before it could begin improving the quality of the Salton Sea. During this time the Sea would continue to recede and create even large air quality problems. Waiting for such a large dike to stabilize could create additional costs to maintain the portion of the dike already built.

One of the building structures for Alternative #4 is the use of Geo-tubes filled with localized material. There is no information in the PEIR as to the integrity of the structure or any data on long term viability of these geo-tubes. The ICFB sees this as a very viable alternative and would request that information on the use of the tubes be included in any final reports. Geo-tubes are used worldwide and we see no reason to assume that they would not work as a core for the dikes in Alternative #4 in the Salton Sea. Numerous offers have been made to state and federal engineers to travel to Holland where the Geo-tubes were invented but they have shunned the invitation. This action only creates more ignorance on the part of our state and federal engineers. Not only could the Geo-tubes be viewed in-place but our state and federal engineers could talk with the Dutch engineers that have used them on a daily basis for the past 25 years and get a better understanding of how Geo-tubes could be used successfully in the Salton Sea

Chapter 10 Comments

The ICFB believes the first priority of water should be used for dust control to keep air quality problems to a minimum. Alternative #4 has ample air quality

ICFB (cont.)

ICFB-19

The establishment and maintenance of a robust, diverse community of fish would be the goal of forage fisheries management for any selected alternative. As described in Appendix H-1 of the Draft PEIR, several species besides tilapia could be considered during project-level analysis.

ICFB-20

Geotubes® would be used in Alternative 4 for constructing the Geotube® berms and could be used in any of the alternatives, including the Preferred Alternative, to construct berms for the Saline Habitat Complex. While the State recognizes that use of Geotubes® has potential application, the long-term use and viability of Geotube® in an environment similar to the Salton Sea is uncertain. However, this could be tested in future pilot studies.

While the request to travel to Holland was respectively received, State employees are not able to travel outside of the State without sufficient justification. Because of the programmatic nature of the Draft PEIR, it would not be appropriate to request travel for the purposes of investigating Geotube® use in Holland.

ICFB-21

The modeling analysis for Alternative 4 allocated water to air quality management. However, the information from the Imperial Group included in Appendix I of the Draft PEIR did not include facilities to utilize this water for air quality management on the Exposed Playa.

ICFB-19

ICFB-20

ICFB-21

plans and the information was furnished to DWR but for some reason this information was not included in the published PEIR.

Because the dikes for Alternative #4 will be constructed with dredges there will only be dust generated when the finished dike is capped with gravel and rip-rap. In addition the dredges which will be used for Alternative #4 will be electrically powered, further decreasing the amount of air pollution. On the other hand Alternative #7 will create a tremendous amount of dust during construction. Not only will dust be generated but the hundreds of engines in the construction equipment will also add to the air pollution load.

The ICFB believes there is not enough information proved for micro-climate changes to adjacent agriculture land with the different alternatives. This is a very important issue and there is no reason to not address it properly because the DWR cannot figure out how to add it to the various models they use. This appears to be one of those common sense items that is easy for Imperial Valley farmers to grasp and understand but very difficult for scientists to make light off.

The ICFB believes the PEIR does an extremely poor job of who is liable for air quality mitigation. There is much confusion between DWR and the Imperial Irrigation District regarding:

- Who is liable for air quality mitigation
- Who pays for the mitigation in different situations
- From what source the funds come, that will pay for the mitigation

So far attempts to clarify this issue have only confounded the problem. IID and the DWR must quickly come to a consensus over this critical issue before the process can move forward.

The Salton Sea covers an ancient dry lake bed that has the potential to creating dangerous dust storms. As the preferred restoration plan is chosen and the Sea begins to recede, it is important that the plan is capable of not only protecting the public health but the farm land also from dangerous levels of dust that could occur, including dangerous salt dust from the salt playas which is already beginning to form around the shore of the Salton Sea as it recedes. The local population, living close to the Salton Sea, has already been negatively affected by this toxic dust. These white salt clouds which are rearing their ugly heads at the south end of the Salton Sea every time the wind exceeds 15 miles per hour have already caused crop damage near the Salton Sea. The PEIR does not even consider damage to crops from the salt dust blowing off the playas. This is a major oversight that needs to be addressed.

The ICFB believes there is a great need for some sort of early program to attack current problems on exposed playa around the Sea and not wait until the

**ICFB-21
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ICFB-22

ICFB-23

ICFB-24

ICFB-25

ICFB-26

ICFB (cont.)

ICFB-22

Although Alternative 4, like other alternatives, may propose to use electrically powered dredges and/or other innovative clean fuels equipment, the emissions calculations in the Draft PEIR were estimated assuming the use of conventional construction methods, including commercially available equipment. As shown in Table 10-14 of the Draft PEIR, emissions from construction equipment were calculated assuming Tier 4 emission standards and emissions from marine vessels were calculated assuming Tier 2 emission standards. The assumptions used to estimate emissions from dredges and other construction equipment could be refined as part of project-level analysis.

Based on the common set of assumptions used in the Draft PEIR (see Table 10-14), the peak construction year emissions of PM10 and NOx from Alternative 7 would be higher than the peak construction year emissions of PM10 and NOx from Alternative 4.

ICFB-23

It is believed that the Salton Sea affects the microclimate adjacent to the Salton Sea that this microclimate may have an influence on agricultural areas adjacent to the Salton Sea. Regardless of the alternative configuration, the areas near the Salton Sea would have more of an influence from the Sea than those areas further away. The existence of this microclimate and its influence on the agricultural areas adjacent to the Salton Sea are acknowledged in the Draft PEIR in Chapter 10 and Appendix E, Attachment E11, and potential microclimatic impacts have been discussed for each of the alternatives. To define in more detail the effects of this body of water on the surrounding microclimate under each alternative would require additional research that is the beyond the programmatic scope of the Draft PEIR. However, such an analysis could be conducted during project-level analysis.

ICFB-24

According to rules and regulations of the applicable air quality agencies, any requirements for air quality management of emissive land areas would be the responsibility of the landowner. In this case, the air agency rules and regulations for landowner responsibility would apply only to areas not affected by the Transfer Project, QSA, or the Salton Sea Ecosystem Restoration Program. As described in the QSA Joint Powers Authority (JPA) Agreement, under the Transfer Project and QSA, the State would be responsible for the costs for environmental mitigation requirements in excess of \$133 million. Section 9.2 of the QSA JPA Agreement, however, provides that the amount of such costs shall be determined by the affirmative vote of three of the QSA JPA commissioners, including the commissioner representing the State, which determination shall be reasonably made.

ICFB (cont.)

ICFB-25

See response to comment ICFB-1.

ICFB-26

See response to comment ICFB-2.

permitting process has been completed. By working with IID and area farmers it is felt a plan could be developed to address this major problem.

On page 10-29 it is stated that crust is unstable only during the months of December through March on the playas around the Sea. The ICFB feels it could be a much longer period of time. There have not been enough studies done to gain an adequate understanding of the problem.

The PEIR reports that there are no emissions predicted at the north end of the Salton Sea therefore there is no need for dust control at the north end of the Sea however on the south end of the sea salt dust emissions have been noted and documented and there is a need for dust control in that area. In all probability there are equal emissions from salt dust at both ends of the Salton Sea but so far they are not as noticeable on the north end since the exposed playa is not as large as the north end. Once the Sea drops a few feet the ICFB believes there will be problems with salt dust blowing in the winter time.

The DWR staff is suggesting that under a chosen alternative the State is not liable for air quality mitigation issues until all permitting has been completed and the plan is actually under construction. The ICFB believes the State must assume liability for air quality mitigation and begin actively working to implement measures as soon as an alternative plan is chosen and before the permitting and construction process is completed.

Chapter 11 Comments

The PEIR ranked each alternative separately, and then ranked each plan compared to a No-Action plan. The ICFB believes this rating system is very confusing.

Chapter 12 Comments

It is foreseen under certain alternatives such as Alternative #7 that there will be an increase in population and housing. The ICFB is very concerned that the PEIR does not address where the water will come from to maintain the increase in population from alternatives like Alternative #7.

The greater majority of population found around the Salton Sea is in the unincorporated areas. The ICFB notes that the PEIR only addresses population and housing issues in incorporated areas and does not look at unincorporated areas. The ICFB is also concerned that the PEIR does not address fresh water needs for additional and on-going development in the unincorporated areas. On Page 12-1 of the PEIR it refers to Coachella Valley as being located in southeastern Riverside County. This is obviously an error. Blythe is located in southeastern Riverside County.

ICFB-26
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ICFB-27

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ICFB-30

ICFB-31

ICFB-32

ICFB-33

ICFB (cont.)

ICFB-27

Data and assumptions used for the air quality assessment were based on the data available at the time of the preparation of the Draft PEIR. The data and assumptions used for the air quality impact assessment were developed to provide a relative comparison among alternatives (one of the overall objectives of the Draft PEIR). Values for emissions are not intended to be precise, but rather were developed for comparative purposes. Additional data may be available at the time of the preparation of project-level analysis, and this could allow a more thorough evaluation of the duration of potentially unstable crust periods.

ICFB-28

Though soils at both ends of the Salton Sea may be equally emissive, the meteorological data indicate wind speeds are lower in the north than the south. Therefore, emissions would not necessarily be equal in these areas. One overall Salton Sea restoration program goal is to eliminate, to the maximum extent feasible, the air quality impacts from restoration projects. An air quality research and development program, as referenced in Appendix H-3 of the Draft PEIR, could be an integral component of the air quality management approach. Additional meteorological data collection and analysis could be part of the air quality research and development program; and to the extent it is available, could be used to estimate dust emissions around the Salton Sea in project-level analysis.

ICFB-29

See response to comment ICFB-24.

ICFB-30

It is unclear to which ranking in Chapter 11 of the Draft PEIR the commenter refers. Chapter 11 of the Draft PEIR does not seek to rank or prioritize alternatives. Rather the chapter identifies the existing land use conditions and discusses the impacts of the alternatives on land use.

ICFB-31

All of the alternatives assume buildout of the current general and land use plans. Alternative 7, as proposed in the Draft PEIR, does not include population and housing growth beyond what is already identified in these current plans. Land use and growth beyond what is currently planned is under the jurisdiction of the local planning agencies and is outside of the scope of the Draft PEIR. Additionally, water supplies to support this development are under the jurisdiction of the applicable water purveyor.

ICFB (cont.)

ICFB-32

See response to comment ICFB-31.

ICFB-33

The Draft PEIR has been modified.

Chapter 13 Comments

On page 13-3 recreational areas are listed for Imperial County. Sunbeam Lake County Park has been omitted from this report. The ICFB feels it is important to note that private duck clubs in Imperial Valley number 10,040 acres as reported in the IID Monthly Crop Acreage Report dated January 11, 2007. Not only do these ponds provide private hunting they also provide a tremendous amount of food, water, and habitat for migrating waterfowl and shore birds during the fall and winter months.

The ICFB feels this large acreage could be leased from private owners and pressed into service as early start habitat. The infrastructure is already in place to provide year-round shallow water habitat from one inch deep to two feet deep. Table 13-1 reports an increase of 50,660 visitors at the Salton Sea State Recreational area between the 2003-2004 year and the 2004-2005 year. Since all sports fish had disappeared from the Salton Sea during this time the ICFB feels the increase reported may be in error.

Table 13-5, Item 5 states: "IID is required to mitigate the impacts to boat launching facilities, campgrounds, and trails that would become stranded as the Salton Sea water elevation recedes due to the IID Water Conservation and Transfer Project. The relocation may occur incrementally until the Salton Sea reaches its minimum and stable elevation which was projected to be -246 feet mean sea level (IID and Reclamation, 2002)"As it recedes, the IID is responsible to maintain boat launching facilities, trails & campsites mitigation."

The ICFB is opposed to anything that cost the farmers money. Since income from IID's delivery of water to farmers pays for IID projects the ICFB believes the farmers of Imperial Valley should not have to pay for these projects as a result of the farmers using water more efficiently which in turn would cause the Salton Sea to recede. In addition the water transfers will cause the Salton Sea to recede and therefore those responsible for the water transfer and those receiving the water in the transfer should pay for any mitigation for the loss of boat launching facilities, campgrounds, and trails. Sales to the farmers would cost the farmers money. In short, the ICFB questions why farmers should be responsible if they are conserving the water by being more efficient?

The ICFB believes that the only way optimized recreation can be achieved is through either Alternative #3 or #4.

Two members from the ICFB's executive board were appointed to the Salton Sea Authority's Outdoor Recreation Advisory Task Force which evaluated the recreational potential of a restored Salton Sea. These meetings were poorly attended and the ICFB believes less than 30 people from both ends of the Salton Sea took part in the final survey from which the information on pages 13-7 through 13-9 is derived. In addition the task force members were asked to

ICFB (cont.)

ICFB-34

ICFB-34

ICFB-35

The Draft PEIR has been modified.

ICFB-35

The Draft PEIR has been modified.

ICFB-36

ICFB-36

ICFB-37

Use of duck club areas for Early Start Habitat could be considered in the project-level analysis assuming that these areas could support saline habitat. Early Start Habitat was envisioned to provide saline habitat similar to the shallow saline habitat that currently exists at the Salton Sea (see page 3-6 of the Draft PEIR). Thus, this Early Start Habitat would consist of Saline Habitat Complex as described in the Draft PEIR Chapter 3 (see page 3-61 of the Draft PEIR).

ICFB-37

The data in Table 13-1 of the Draft PEIR was obtained from the Visitor Services Division of the California State Parks and is from the California State Parks Attendance Analysis Database. On an annual basis the recorded visitor use at the Salton Sea State Recreation Area shown in Table 13-1 has fluctuated both up and down from fiscal 1995-1996 to present. Without additional data to correlate the visitor use with types of recreation activity, the recorded data shown those years do not appear unreasonable.

ICFB-38

ICFB-38

ICFB-39

The commenter has identified a larger policy issue related to the QSA and Transfer Project that is outside of the scope of the Salton Sea Ecosystem Restoration Program and the State's Draft PEIR.

ICFB-39

ICFB-40

See response to comment ICFB-4. Although not a legislatively mandated objective, the Saline Habitat Complex in the Preferred Alternative is expected to allow for passive recreational opportunities, such as bird watching. Additionally, the Marine Sea in the Preferred Alternative would provide for water-based recreational opportunities that have historically occurred at the Salton Sea. This would include boating and fishing opportunities and allow for the ongoing operation of the majority of the existing harbors at the Salton Sea. There is no legislative-mandate to optimize recreation.

ICFB (cont.)

ICFB-40

The information from the SSA's Recreation and Economic Opportunities Survey was presented on page 13-8 of the Draft PEIR. The study included wants and desires of survey respondents and provided a list of possible recreational opportunities, but was of limited value for the recreation analysis in the Draft PEIR. The study was not used to determine impact for the purposes of the Draft PEIR.

We recognize that including a discussion of the study in the Analysis Methodology section implies that it was used in the impact analysis. To avoid confusion, the discussion of the study has been moved from the Existing Conditions section (refer to the errata provided in Chapter 4 of this Final PEIR).

evaluate different types of recreation without knowing for which plan the activity would be used. The Salton Sea Authority conducted the survey and included information showing conceptual drawings for possible types of recreation for only Alternative #7. Because of that, coupled with the fact that a very small population was sampled, the ICFB feels the information in this whole section is flawed and should be deleted from the PEIR and a more accurate evaluation made of possible recreational opportunities.

Chapter 18 Comments

The overall impact is studied from an area encompassing the shoreline of the Salton Sea out to five miles. There is no mention of the view of the Salton Sea from Highway 86.

The PEIR does not address the impact on the bird watchers or others at the Sonny Bono facility or Red Hill ("Red Island").

The photograph in Figure 18-10 is described as "View to the north from the observation tower at Sonny Bono Salton Sea National Wildlife Refuge". This is incorrect. The Sonny Bono Salton Sea National Wildlife Refuge has two major areas for guests to visit. One is the headquarters of Sonny Bono Salton Sea National Wildlife Refuge located at the intersection of Sinclair and Gentry Road which has an observation tower. The other major location is 8.57 miles southwest in an area designated as Unit One of the Sonny Bono Salton Sea National Wildlife Refuge. It also has an observation tower. The photograph shown in Figure 18-10 was taken from the Unit one tower.

The ICFB believes the PEIR should address the visual impacts outside the studied areas. If they knock down a mountain to build dikes in the Salton Sea the view would be drastically changed and it is possible the quarry would disturb historical sites.

Chapter 19 Comments

On page 19-4 – Paragraph 4: There is an inaccuracy in this paragraph. Seeley receives its water from the West Side Main Canal, not the East Highline Canal.

Chapter 20 Comments

Page 5 fails to mention Calexico International Airport as one that provides passenger service and handles international flights.

On page 21 the ICFB notes that Alternative #4 has the least impacts on traffic while Alternative #8 requires the most trucks – 2,700 per day hauling rock and gravel.

ICFB-40
cont.

ICFB-41

ICFB-42

ICFB-43

ICFB-44

ICFB-45

ICFB-46

ICFB-47

ICFB (cont.)

ICFB-41

See response comment ICFB-40. The information has been moved to a different section of Chapter 13 of the Draft PEIR. However, as this information is merely Existing Conditions information and was not used to determine impacts, it has not been deleted from the chapter.

ICFB-42

The approach taken in the Draft PEIR was to consider aesthetic and visual resources from selected existing communities around the Salton Sea. While the Resources Agency recognizes that the view of the Salton Sea from Highway 86 is an important visual resource, it was determined that the view from existing communities would provide information and understanding of the impacts of the alternatives for the purposes of the programmatic analysis in the Draft PEIR. The view from Highway 86 and other highways in the project area could be considered during future project-level analysis.

ICFB-43

As described in response to comment ICFB-42, the aesthetic and visual resource analysis was based on the view from selected existing communities around the Salton Sea. The view from the Sonny Bono Salton Sea National Wildlife Refuge and the Red Hill area could be considered during future project-level analysis.

ICFB-44

The Draft PEIR has been modified.

ICFB-45

The Draft PEIR assumes that rock will come from a permitted quarry site. Thus, the environmental documentation and associated impacts and mitigation measures, including visual and cultural resources impacts and mitigation measures, for development and use of the quarry site would be addressed in a separate process.

ICFB-46

Based on the information provided in the Community of Seeley Colonia Master Plan, the Seeley County Water District takes its water from the Elder Canal, via the Central Main Canal (County of Imperial Community & Economic Development 2003). This modification has been made in Chapter 19 of the Draft PEIR.

ICFB-47

The Draft PEIR identifies Calexico International Airport in Table 20-3 on page 20-7. Additional information on the Calexico International Airport has been added to page 20-5 of the Draft PEIR.

Chapter 21 Comments

Page 21-5: The 2,000 acre solar farm near Calexico does not exist.

This concludes the Imperial County Farm Bureau's comments regarding the Draft Programmatic Environmental Impact Report for the Salton Sea. We appreciate your work in developing this document and the opportunity to respond to it as well. If you have any questions regarding this response, please feel free to contact our office at (760) 352-3831. Thank you in advance for your consideration of our comments.

Respectfully Submitted,



Vincent L. Brooke
President
Imperial County Farm Bureau

| **ICFB-48**

ICFB (cont.)

ICFB-48

The commenter is correct. As described in the Draft PEIR (page 21-5), San Diego Gas and Electric is participating in the development of this facility and the facility has not been constructed.



Inland Empire Waterkeeper
Advocacy • Education • Restoration • Enforcement

January 15, 2007

Dale Hoffman-Floerke
Salton Sea PEIR Comments
CA Department of Water Resources
1416 9th Street, Room 1148-6
Sacramento, CA 95814
Fax: 916-654-4925
Email: SaltonSeaComments@water.ca.gov

RE: Comments on Draft PEIR for Salton Sea

Dear Ms. Hoffman-Floerke:

On behalf of Inland Empire Waterkeeper, a grassroots water quality organization, I am writing to offer my comments on the draft Programmatic Environmental Impact Report for the Salton Sea Ecosystem Restoration Program.

California must take action at the Salton Sea. We are all aware of the wildlife disease outbreaks and large die-offs of waterbirds and fish that have resulted from increasing salinity and selenium, and contamination that comes from agricultural and urban sources. It is our opinion that a successful plan can be constructed from the proposed alternatives in the draft report. I therefore urge your department to combine the following features from the proposed alternatives into a final preferred alternative to restore the Salton Sea:

- as described in Alternatives 1 and 2, include 38,000 to 50,000 acres of shallow habitat for shoreline species at the southern and northern ends of the sea;
- as described in Alternative 4, create concentric rings using dirt-filled barriers to provide additional shallow habitat, deeper marine habitat, shoreline and view protection, air quality protections and recreation opportunities;
- similar to the lakes found in Alternatives 5 through 7, provide a large (approximately 10,000-acre) North Lake, fed by the Whitewater River to provide recreation and development opportunities without the costs and risks associated with a major mid-sea barrier or the costs of pumping water from the southern end of the sea;
- as described in Alternatives 1, 2, 3, 5, 6 and 8, provide at least one-half acre-foot of water per acre of exposed seabed to prevent dust pollution;
- and as described in all of the proposed alternatives, construct shallow saline habitat ("early start habitat") immediately to provide resources for birds during the long permitting and construction process.

A final preferred alternative that includes all of these components, each of which is present and analyzed in one or more of the draft alternatives, would best meet the legal requirements to maximize habitat, air quality and water quality, while also providing substantial recreation and development opportunities.

3741 Merced Drive, Unit F2 • Riverside, CA 92503
951.689.6842 • 951.689.6273f

Inland Empire Waterkeeper (IEW)

IEW-1

As described in Chapter 3 of this Final PEIR, the Preferred Alternative recommended by the Secretary for Resources includes a variety of components that are intended to meet the legislative mandates of providing the maximum feasible attainment of the following objectives:

- Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea;
- Elimination of air quality impacts from the restoration project; and
- Protection of water quality.

Specifically, the Preferred Alternative includes 62,000 acres of Saline Habitat Complex, a 45,000-acre Marine Sea, incorporates the air quality "tool box" measures to eliminate, to the extent feasible, air quality impacts from the restoration project, and includes other measures and design considerations that would work to protect water quality. Under the Preferred Alternative, Air Quality Management and the Saline Habitat Complex would have the highest priority for inflows, followed by inflows into the Marine Sea.

The 62,000-acre Saline Habitat Complex included in the Preferred Alternative would be located in the southern and northern portion of the Salton Sea and would provide habitat for a variety of avian species such as shorebirds, waterfowl, and potentially for fish-eating birds, including sensitive species currently found at the Salton Sea. It is expected that the Saline Habitat Complex would also provide limited habitat for some fish species, such as tilapia, and thus, provide foraging habitat for fish-eating birds. The Saline Habitat Complex is expected to provide the microclimate benefits that currently exist at the Salton Sea, and could be constructed using a variety of construction methods including Geotubes®.

The 45,000-acre Marine Sea included in the Preferred Alternative would be located primarily in the northern portion of the Sea, but would extend down the majority of the eastern and western shorelines. It is intended to support a marine fishery and fish-eating birds (such as pelicans, double-crested cormorants, and black skimmers). The Marine Sea would stabilize at a water surface elevation of -230 feet msl with a salinity between 30,000 mg/L and 40,000 mg/L.

IEW-

Sincerely,

Mandy Revell
Director and Waterkeeper
Inland Empire Waterkeeper
(951) 689-6842

IEW (cont.)

The water depth would be less than 10 to 12 meters (39 feet) to reduce hydrogen sulfide generation and potential fish kills due to long-term temperature stratification (temperature variations from top to bottom of the sea).

The Preferred Alternative incorporates the air quality “tool box” measures to eliminate, to the extent feasible, air quality impacts from the restoration project. These measures include the allocation of 0.5 acre-foot per acre of water to manage emissive areas of the Exposed Playa. The Preferred Alternative also includes actions and mitigation measures to reduce air quality impacts that could result from construction and operations and maintenance activities.

Although not a legislatively mandated objective, the Saline Habitat Complex is expected to allow for passive recreational opportunities, such as bird watching. Additionally, the Marine Sea would provide for water-based recreational opportunities that have historically occurred at the Salton Sea. This would include boating and fishing opportunities and allow for the ongoing operation of the majority of the existing harbors at the Salton Sea.

The Preferred Alternative also includes a variety of actions that could be implemented within the 5-year timeframe after the Legislature provides direction on implementation of a restoration program and identifies a future implementing agency. These actions include activities such as Early Start Habitat and measures targeted to address air quality uncertainties.

The Preferred Alternative includes many of the components suggested by the commenter. See Chapter 3 of this Final PEIR for a more detailed description of the Preferred Alternative.

Erratum 2

LAW OFFICES OF
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ALAMEDA ISLAND, CALIFORNIA 94501-2922

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THOMAS S. VIRSIK

January 16, 2007

VIA EMAIL (SaltonSeaComments@water.ca.gov)

Dale K. Hoffman-Floerke, Chief
Colorado River and Salton Sea Office
California Department of Water Resources
1416 Ninth Street
Sacramento, CA 95814

RE: COMMENTS ON THE PENDING
SALTON SEA CEQA PROCESS

Dear Ms. Hoffman-Floerke:

This statement is submitted in response to the Draft Programmatic Environmental Impact Report (DPEIR) for the Salton Sea Ecosystem Restoration Program. The statement is submitted on behalf of farmers, ranchers and other landowners who own approximately 25% of the irrigated agricultural land in the Imperial Valley, referred to in this comment letter as the Imperial Group.

The Imperial Group has created a Consortium of academic experts, international engineering and construction firms committed to a cost-effective and technically feasible Salton Sea Ecosystem Restoration Project which would optimize the water resources of the Colorado River for all of California, protect the natural resources of the Imperial and Mexicali Valleys, and meet the criteria of the California Environmental Quality Act (CEQA) and the Fish and Game Code for a Salton Sea Restoration Project that is the most protective of the environment. For the reasons acknowledged in the DPEIR and those presented in this letter, proposed Alternative 4, known as the Concentric Lakes Plan, meets these criteria.

The Consortium includes, but is not limited to, the following technical experts: Professors Jim Kelley, Dave Hornbeck, and Peter Reinelt, who have reviewed projects of this nature around the world and consulted with other international experts in evaluating the merits of the Concentric Lakes Plan. The Dutra Group, which has decades of experience with project in the Sacramento/San Joaquin Delta (including the current emergency levee repair and upgrade project), and Bean Stuyvesant and Boskalis International, which have similar expertise in New

Dale K. Hoffman-Floerke, Chief
January 16, 2007
Page 2

Orleans, the Netherlands and elsewhere, have worked with The Imperial Group, Stetson Engineers and Moffat & Nichols in developing the conceptual design for the Concentric Lakes Plan. These firms are expert in water management, levee/water barrier construction, and environmental restoration projects, and would provide the engineering and construction services required to implement the Concentric Lakes Plan.

As noted above, the Imperial Group's proposed Alternative 4 meets CEQA criteria as the most protective of the environment, and also meets Fish and Game Code Sections 2931(c) and 2081.7(e)(2)(A) criteria specific to Salton Sea Restoration Project. It should be chosen as the Preferred Alternative as providing:

1. The most cost-effective and technically feasible alternative.
2. A long-term stable aquatic and shoreline habitat for diversity of fish and wildlife that would depend on the Salton Sea.
3. Protection for water quality and avoiding air impacts¹.

The Consortium commenced participation in CEQA review of Salton Sea restoration with its comments on the initial NOP and has continued to actively participate throughout the CEQA process. A partial Summary of the Consortium's comments and activities in the process are referenced in **Exhibit B** and are incorporated herein by this reference. The written and oral comments provided by the Consortium at various public meetings throughout the EIR process continue to be applicable to the issues and should be considered in the PEIR. These comments, as contained in the record and summarized herein, support selection of Alternative 4, the Concentric Lakes Plan, as the Preferred Alternative in the PEIR.

The Fish and Game Code requires that the evaluation of alternatives for the restoration of the Salton Sea include "at least one most cost-effective, technically feasible, alternative." Fish and Game Code Section 2081.7(e)(2)(A). The legislature also required that the "magnitude and practicability of costs of construction, operation and maintenance of each alternative be evaluated." Section 2081.7(e)(2)(B). While the ultimate selection of the preferred alternative must also take into account the factors identified in Fish and Game Code Section 2931(c), the above mentioned sections clearly recognize the importance that the legislature put on the

¹ The DPEIR fails to acknowledge the Imperial Group's May 26, 2006 response to the Department of Water Resource's (DWR's) questions concerning the Concentric Lake Plan and its Air Quality Management component, which is attached as **Exhibit A** to this comment letter and incorporated herein by reference. **Exhibit A** summarizes long-term Air Quality Management measures proposed in conjunction with the Concentric Lakes Plan and demonstrates that there is indeed a technically feasible and environmentally beneficial long-range plan for the reduction of air quality impacts, and contemplates the possibility of additional measures following studies during project-specific review.

IG (cont.)

IG-1

As described in Chapter 3 of this Final PEIR, the Preferred Alternative recommended by the Secretary for Resources includes a variety of components that are intended to meet the legislative mandates of providing the maximum feasible attainment of the following objectives:

- Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea;
- Elimination of air quality impacts from the restoration project; and
- Protection of water quality.

Specifically, the Preferred Alternative includes 62,000 acres of Saline Habitat Complex, a 45,000-acre Marine Sea, incorporates the air quality "tool box" measures to eliminate, to the extent feasible, air quality impacts from the restoration project, and includes other measures and design considerations that would work to protect water quality. Under the Preferred Alternative, Air Quality Management and the Saline Habitat Complex would have the highest priority for inflows, followed by inflows into the Marine Sea.

The 62,000-acre Saline Habitat Complex included in the Preferred Alternative would be located in the southern and northern portion of the Salton Sea and would provide habitat for a variety of avian species such as shorebirds, waterfowl, and potentially for fish-eating birds, including sensitive species currently found at the Salton Sea. It is expected that the Saline Habitat Complex would also provide limited habitat for some fish species, such as tilapia, and thus, provide foraging habitat for fish-eating birds. The Saline Habitat Complex is expected to provide the microclimate benefits that currently exist at the Salton Sea, and could be constructed using a variety of construction methods including Geotubes®.

The 45,000-acre Marine Sea included in the Preferred Alternative would be located primarily in the northern portion of the Sea, but would extend down the majority of the eastern and western shorelines. It is intended to support a marine fishery and fish-eating birds (such as pelicans, double-crested cormorants, and black skimmers). The Marine Sea would stabilize at a water surface elevation of -230 feet msl with a salinity between 30,000 mg/L and 40,000 mg/L. The water depth would be less than 10 to 12 meters (39 feet) to reduce hydrogen sulfide generation and potential fish kills due to long-term temperature stratification (temperature variations from top to bottom of the sea).

IG-1

IG-2

IG-3

IG (cont.)

The Preferred Alternative incorporates the air quality “tool box” measures to eliminate, to the extent feasible, air quality impacts from the restoration project. These measures include the allocation of 0.5 acre-foot per acre of water to manage emissive areas of the Exposed Playa. The Preferred Alternative also includes actions and mitigation measures to reduce air quality impacts that could result from construction and operations and maintenance activities.

Although not a legislatively mandated objective, the Saline Habitat Complex is expected to allow for passive recreational opportunities, such as bird watching. Additionally, the Marine Sea would provide for water-based recreational opportunities that have historically occurred at the Salton Sea. This would include boating and fishing opportunities and allow for the ongoing operation of the majority of the existing harbors at the Salton Sea.

The Preferred Alternative also includes a variety of actions that could be implemented within the 5-year timeframe after the Legislature approves the Preferred Alternative and identifies an implementing agency. These actions include activities such as Early Start Habitat and measures targeted to address air quality uncertainties.

The Preferred Alternative incorporates many of the components from Alternative 4. See Chapter 3 of this Final PEIR for a more detailed description of the Preferred Alternative.

The criteria for selection of the most cost-effective, technically feasible alternative are described in Chapter 3 of this Final PEIR. As described in that chapter, Alternative 2, Saline Habitat Complex II, and Alternative 5, North Sea, were selected as the most cost-effective, technically feasible alternatives.

IG-2

See response to comment IG-1.

IG-3

The Imperial Group acknowledged in their May 26 letter that the information they had previously provided on February 20 and March 28, 2006 for the description, operation, and assumptions for Alternative 4 were accurately incorporated into the Draft PEIR. Information received from the Imperial Group on February 20 and March 28, 2006 was used to model potential emissions from Exposed Playa for Alternative 4. On May 26, 2006, the Imperial Group provided additional information concerning long term air quality management that was different than the information previously provided.

The additional information for air quality management provided by the Imperial Group on May 26, 2006 was incorporated into the project description of Alternative 4 and used in the inflows modeling conducted for the Draft PEIR.

IG (cont.)

As described on page 3-70 of the Draft PEIR, "Based upon information provided by the Imperial Group and presented in Appendix I, this alternative includes an irrigation water supply. However, no long term irrigation facilities were described. Therefore, no long term air quality management facilities are included in this alternative. A salt crust could develop as the Brine Sink recedes. However, no long term measures were identified by the Imperial Group to maintain the salt crust."

For the purpose of evaluating air quality impacts, emissions from Alternative 4 were assumed to be similar to those from Alternative 3, which has a similar configuration and amount of Exposed Playa.

Dale K. Hoffman-Floerke, Chief
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Page 3

selection of an alternative that would be feasible from both a cost as well as a technical perspective. Alternative 4 is best suited to meet these goals as it provides the most technically achievable design at a cost that is markedly less than all the other action alternatives.

Stetson Engineers and Dr. Peter Reinelt have provided detailed analyses of the engineering and economic problems with the DPEIR. This office provided a detailed water rights analysis of the landowners in the Imperial Valley that the DPEIR failed to discuss. Stetson Engineers' analysis is set forth in **Exhibit C**. Dr. Reinelt's Analysis is set forth in **Exhibit D**. The Imperial Group's analysis is set forth in **Exhibit E**.

There are five principal problems with the DPEIR. The problems can be cured because all of the necessary and appropriate information required to address them is available in the existing record established during the DEIR process:

1. The DPEIR fails to discuss the impact of the pre-existing permits and actions by Imperial Irrigation District (IID) and its landowners and the local, State and federal Governments on the permitting process. The current Salton Sea configuration was created after certain permits were obtained by the IID and its landowners and actions taken by the landowners, IID, and federal and State Government over the last 125 years. Under the holding in *Nacimiento Regional Water Management Advisory Committee v. Monterey County Water Resources Agency* (1993) 15 Cal.App.4th 200, these past actions may materially reduce the need for permits to engage in restoration activities at the Salton Sea. The DPEIR should thoroughly discuss this possibility because it may impact the start up and completion date for a Restoration Project.

2. The DPEIR fails to thoroughly discuss the water rights issues and the ramifications of litigation over the QSA. This discussion is important because of its impact on financing issues and the potential for developing evidence on the public trust doctrine. The problem has in part been exacerbated by the artificial choice of 1950 as the baseline for the restoration of the Salton Sea. If the water rights are thoroughly understood and discussed in the DPEIR, it may be possible to establish a guaranteed flow into the sea. This information is all available in the record developed in the CEQA process. See communications set forth in **Exhibit B**.

3. The recent decrease in water remaining in the Salton Sea and the potential for further reductions have major ramifications for natural resources, habitats and environmental concerns, and require immediate action on the Restoration Plan for the Salton Sea. Diminution of water in the Salton Sea's has escalated over the last 18 months, beyond that which is acknowledged in the current DPEIR. There are multiple contributing causes for this reduction, including the 3.1 cap under the QSA, drought on the Colorado River, increased optimization of the water resource by landowners in the Imperial Valley and IID, or some combination of these factors. This reduction was well documented in the CEQA process. It is important that the DPEIR not rely on static and potentially out of date figures for the size of the Salton Sea when, in fact, the evidence

IG (cont.)

IG-4

See response to comment IG-1.

IG-5

This comment provides an overview of the comments that follow. Responses to the specific comment that follow are provided below by comment number.

IG-6

The Draft PEIR takes a conservative approach to the schedule (see Chapter 3 of the Draft PEIR and Chapter 3 of the Final PEIR). The specific permitting requirements would be identified and a more detailed schedule would be developed during project-level analysis.

IG-7

Chapter 5 of the Draft PEIR contains a general overview of the regulatory requirements and water rights related to the Salton Sea Ecosystem Restoration Program. This is intended as background information to frame the environmental analysis, rather than a detailed recitation of the Law of the River and ongoing litigation. The statutory mandate for the Salton Sea Ecosystem Restoration Program assumes that the QSA is going to be implemented, and the Draft PEIR incorporates this assumption. The Resources Agency agrees that a reference to the QSA litigation is appropriate, and text has been added to Chapter 4 of the Draft PEIR. A more detailed discussion of the QSA litigation is not warranted because it is beyond the scope of the Draft PEIR and the implications of the litigation for the Salton Sea Ecosystem Restoration Program are speculative.

IG-8

The year 1950 was not used as the restoration baseline. It represents the beginning of the selected period for the historical hydrology from 1950 to 2002 (see Appendix H-2, Period of Historical Analysis, of the Draft PEIR.) The 1999 bird survey was used in the modeling of habitat capacity for avian resources at the Salton Sea under the alternatives (See Chapter 8, Data Limitations, of the Draft PEIR).

IG-9

At this time the Resources Agency is not seeking a guaranteed inflow for the Salton Sea. Additionally, a guaranteed inflow for the Salton Sea involves policy and legal issues that is beyond the scope of the Draft PEIR.

IG-4

IG-5

IG-6

IG-7

IG-8

IG-9

IG-10

IG-11

IG (cont.)

IG-10

Recent data were used in the Draft PEIR to the extent possible. The Resources Agency believes that the data used in the Draft PEIR provide an accurate representation of current and historical trends.

IG-11

See response to comment IG-11.

Dale K. Hoffman-Floerke, Chief
January 16, 2007
Page 4

shows that it has materially and recently diminished in size. See the comments filed by Imperial Valley Farm Bureau and our **Exhibit D** (Reinelt's analysis).

4. Throughout the CEQA process, the Consortium has emphasized the need for more testing, modeling and analysis, and the importance of the examination of other similar restoration projects around the world to aid in the development of the Restoration Plan. The Consortium has submitted information that argues for such analysis before selection and implementation of a Preferred Alternative. One of the areas where this has manifested itself has been in connection with the Air Quality Management component of the various alternatives. The Consortium has repeatedly argued that it is inappropriate to develop a project-specific Air Quality Management component until more testing has been done.

However, the Consortium has presented a viable long-range alternative using the currently available air quality data and believes that the necessary further testing can be conducted as a part of the next stage of environmental review. Program EIRs are intended to take a big picture look at alternatives and mitigation measures and thus there is sufficient information available at this time to make an informed selection of the preferred alternative, with the understanding that more project specific air quality data review will be conducted at a later date. See California Code of Regulations (CCR) Section 15168(b)(4); *Friends of Mammoth v. Town of Mammoth Lakes Redevelopment Agency*, 82 Cal.App.4th 511, 534 (2000) (emphasizing that Program EIRs are designed to address broad issues as "opposed to specific projects within the program").

5. The DPEIR erroneously states that the Concentric Lakes Plan includes no "long term irrigation facilities" and therefore assumes that there is no long term program for air quality mitigation in the Plan. See DPEIR at 10-73. As mentioned above in footnote 1, this assumption is incorrect. Rather, the Consortium has taken seriously the potential for air quality impacts and has developed a long-term plan to mitigate any impacts that might arise. The record reflects this as can be seen in the various exchanges with the Salton Sea Authority which are included in Appendix I, including the "March 28, 2006 Response from the Imperial Group." In addition, as noted above, May 26, 2006 response to Dale Hoffman-Floerke from Ali Shahroody at Stetson Engineers (**Exhibit A**) states that:

[I]rrigation, such as sprinklers and drip, would be used to establish native vegetation for the purpose of air quality management. Once the native vegetations are established, irrigation may be discontinued based on data from on-site experimental works. If it becomes a necessity to provide permanent irrigation for air quality protection, about 60,000 acre-feet is allocated in the water balance under the Concentric Lakes for the irrigation of the playa at an average rate of one acre-foot per acre.

The May 26 response also provides details on the exact source of the irrigation water, the manner in which it would be distributed, as well as the overall water balance which includes

IG (cont.)

IG-12

See response to comment IG-11. Responses to comments provided by the Imperial County Farm Bureau are provided in Chapter 8 of this Final PEIR.

IG-13

See response to comment IG-3.

IG-12

IG-13

Chapter 8
Interest Groups Comments

Dale K. Hoffman-Floerke, Chief
January 16, 2007
Page 5

irrigation water. The information in Appendix I also indicates that a perimeter canal for irrigation to control air quality would be constructed if necessary in a manner similar to those suggested in other alternatives. See "March 28, 2006 Response from the Imperial Group" 1.d; e-mail from Ali Shahroody on December 11, 2006 to Charles F. Keene.

This information should be incorporated into the DPEIR to correct the omission and make clear that the Concentric Lakes Plan provides for long-term air quality management measures that meets or exceeds the requirements of CEQA and the Fish and Game Code for programmatic review. This should also be reflected in the attribute matrix that evaluates all the alternatives.

The Imperial Group appreciates the State's willingness to listen independently to the agricultural interests of Imperial Valley. However, the Consortium continues to be concerned that, in connection with the preparation of the DPEIR, the State did not make a greater effort to hire consultants reflective of the diversity of the Imperial Valley community, which will be most impact by Salton Sea Restoration. The Consortium has made a significant effort in its hiring of its Advisors and developing its proposal and the Consortium believes it is in conformity with the spirit of the State of California on this issue as set forth in Public Utilities Code section 8283. The Consortium in its ultimate construction of this project plans to follow the spirit of Public Utilities Code section 8283. The State's behavior to date, however, does not.

In sum, and as recognized by environmental groups and as reflected in the many of the statements in the DPEIR itself, the Concentric Lakes Plan is by far the leading alternative in meeting the goals set out in CEQA, Fish and Game Code Sections 2931(c) and 2081.7(e)(2)(A). In addition to being the most cost effective alternative, it provides the most beneficial shoreline and aquatic habitat of any option considered, offers significant water quality improvements, and contemplates appropriate mitigation measures to significantly reduce long-term air quality impacts. Based upon its advantages in the statutorily mandated selection criteria the Concentric Lakes Plan should be chosen as the Preferred Alternative.

For the Consortium,

Patrick J. Maloney

Enclosures

- Exhibit A – May 26, 2006 Response to DWR
- Exhibit B - Partial Summary of Consortium Comments & Activities
- Exhibit C– Stetson Engineering Analysis
- Exhibit D – Dr. Reinelt Analysis
- Exhibit E – Water Rights/Supply & QSA Litigation Analysis

IG (cont.)

IG-14

See response to comment IG-3.

IG-15

See response to comment IG-3.

IG-16

The Resources Agency complied with the State contracting requirements. The referenced section of the Public Utilities Code does not appear to apply to this study.

IG-17

See response to comment IG-1.

IG-14

IG-15

IG-16

IG-17

EXHIBIT A

IG (cont.)



MEMORANDUM

2171 E. FRANCISCO BLVD., SUITE K • SAN RAFAEL, CALIFORNIA • 94901
TEL: (415) 457-0701 FAX: (415) 457-1638 E-MAIL: alis@stetsonengineers.com

TO: Dale Hoffman-Floerke **DATE:** May 26, 2006
FROM: Ali Shahroody **JOB NO.:** 2091-2
RE: Concentric Lakes – Alternative 4

The Imperial Group appreciates the opportunity to review the project description for Alternative 4 (Concentric Lakes). We concur with the description of Alternative 4 and its operation as forth in your email of May 22, 2006. The description and assumptions for Alternative 4 are consistent with the February 20, 2006 and March 28, 2006 submittals from the Imperial Group.

However, we would like to clarify and expand the section under Exposed Playa for Alternative 4 (see page 2 of attachment to your email of 5/22/06). The data on management of the exposed playa is not conclusive. As stated in the Imperial Group submittal of 3/28/06 (Items 1.d, 3.a and 4.a), irrigation, such as sprinklers and drip, would be used to establish native vegetation for the purpose of air quality management. Once the native vegetations are established, irrigation may be discontinued based on data from on-site experimental works. If it becomes a necessity to provide permanent irrigation for air quality protection, about 60,000 acre-feet is allocated in the water balance under the Concentric Lakes for the irrigation of playa at an average rate of one acre-foot per acre. Water balance would be roughly as follows:

Evaporation (66.1 inches/year)	500,000 acre-feet
Irrigated Playa (1 af/ac)	60,000 acre- feet
Flow to Sink and Other Uses	<u>90,000 acre-feet</u>
	650,000 acre-feet

The irrigation water would be provided from the River Bypass Pipeline to bare lands between the lakes. Water from the creeks and Whitewater River could also contribute to the supply of irrigation water. Irrigation water would be distributed through pipelines and ditches.

W A T E R R E S O U R C E E N G I N E E R S

Based on the above discussion, the section under the Exposed Playa is revised subject to your review. The revised section is presented below.

Exposed Playa

Alternative 4 includes pipelines and ditches constructed on the down-gradient side of the Geotube[®] Berms to provide water supply for irrigation of native vegetation. These facilities would be used for a limited period (two years), and if necessary permanently, after the Brine Sink recedes from the areas adjacent to the Geotube[®] Berms. It is anticipated that there may be minor areas with small plants that would grow between the Geotube[®] Berms where seepage may occur.

Below the Fourth Lake, it is assumed that a salt crust would develop as the Brine Sink recedes. High saline water from the Fourth Lake may be used (as spray water) to maintain the salt crust.

- Deleted: temporary
- Deleted: short-term
- Deleted: only
- Deleted: one or

- Deleted: However, there are no provisions
- Deleted: Therefore, there are no long-term air quality management facilities in this alternative.
- Deleted: *These assumptions are consistent with the February 20, 2006 and March 28, 2006 submittals from the Imperial Group. It should be noted that the submittals discussed the possible use of water-efficient vegetation, but it appeared that no water was provided on a long-term basis in the water balance for water-efficient vegetation, therefore, this type of air quality management was not included in Alternative 4.*

cc: Mike Morgan
Mike Maloney

EXHIBIT B

IG (cont.)

**Partial Summary of Consortium Comments and Activities
in Connection with the Salton Sea Restoration Project
ALTERNATIVE 4 - CONCENTRIC PLAN (formerly Cascade)**

January 16, 2007 IMPERIAL GROUP RESPONSE

DATE	DOCUMENT	FROM	TO	SUBJECT
04/15/04	Letter	PJM	Keene, DWR	NOP Salt Sea Ecosystem Restoration
11/30/04	Web Page			Cascade Concept Overview documents presented to the Salton Sea Advisory Committee
02/09/05	Letter	PJM	Chrisman	SSAC
08/29/05	Letter	Virsik	Debbie Irvin	IID/SDCWA 8-30-05 Workshop
01/30/06	Letter	PJM	Chrisman	Comments on Pending CEQA Process
02/10/06	Email	Hoffman-Floerke	PJM	w/ 2/9/06 document requesting Project Information
02/17/06	Letter	Hoffman-Floerke	PJM	Information Request for Concentric Lakes
03/03/06	Memo	Shahroody	Hoffman-Floerke, et al	Cascade Plan
03/09/06	Letter	PJM	Chrisman	Comments on Pending CEQA Process
03/10/06	Letter	PJM	Ackley - DWR	Non-admissibility Agreement
03/17/06	Email	Hoffman-Floerke	PJM	Request for Additional Information
03/23/06	Letter	PJM	Chrisman	Comments on Pending CEQA Process
03/28/06	Document	IID	SWRCB	IID Information in Response to Hoffman-Floerke 3-17-06 Request
05/19/06	Letter	PJM	Chrisman	Comments on Pending CEQA Process
05/22/06	Email	Hoffman-Floerke	PJM, et al	Concentric Lakes - project description
05/26/06	Email-Memo	Shahroody	Hoffman-Floerke	Concentric Lakes - project description
05/31/06	Letter	PJM	Chrisman	Filed Statements of Water Diversion
06/20/06	Letter	PJM	Chrisman	Comments on Pending CEQA Process - Hanneman PowerPoint
06/21/06	Email	Shahroody	Hoffman-Floerke, et al	Concentric Lakes - Selenium Impacts
07/26/06	Letter	Chrisman	PJM	Comments on Pending CEQA Process - Proposition 218
08/30/06	Letter	Chrisman	PJM	Comments on Pending CEQA Process
09/12/06	Email	PJM	Hoffman-Floerke, et al	IID-Water Management
10/18/06	Letter	PJM	Chrisman	Comments on Pending CEQA Process: Reinelt Report re Lack of Core Data

EXHIBIT C



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IG (cont.)

IG-18

See response to comment IG-3.

2091

January 16, 2007

reply to: San Rafael

Via email and fax

Dale Hoffman-Floerke
Department of Water Resources
Colorado River and Salton Sea Office
P.O. Box 942836
Sacramento, CA 94236

Re: Comments on DPEIR - Salton Sea Ecosystem Restoration Program

Dear Ms. Hoffman-Floerke,

We have reviewed the Draft Programmatic Environmental Impact Report (DPEIR) on Salton Sea Ecosystem Restoration Program (State of California Resources Agency, October 2006). The following comments are provided on behalf of the Imperial Group and they supplement comments provided by Mr. Patrick Maloney on the above document.

It is important to note that the information provided by the Imperial Group on the Air Quality Management (emissions from the playa) was not included in the DPEIR. The Imperial Group provided information as early as March 28, 2006 (see Appendix I) followed by the Memorandum of May 26, 2006 (see attachment). Memorandum of May 26, 2006 was prepared in response to the DWR request for information and clarification (see DWR email of May 22, 2006, attached).

IG-18

The clarification provided by the Imperial Group on Alternative 4 (Concentric Lakes) in the Memorandum of May 26, 2006 states the following:

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January 16, 2007
Page 2

IG (cont.)

IG-19

See response to comment IG-3.

We would like to clarify and expand the section under Exposed Playa for Alternative 4 (see page 2 of attachment to your email of 5/22/06). The data on management of the exposed playa is not conclusive. As stated in the Imperial Group submittal of 3/28/06 (Items 1.d, 3.a and 4.a), irrigation, such as sprinklers and drip, would be used to establish native vegetation for the purpose of air quality management. Once the native vegetations are established, irrigation may be discontinued based on data from on-site experimental works. If it becomes a necessity to provide permanent irrigation for air quality protection, about 60,000 acre-feet is allocated in the water balance under the Concentric Lakes for the irrigation of playa at an average rate of one acre-foot per acre. Water balance would be roughly as follows:

Evaporation (66.1 inches/year)	500,000 acre-feet
Irrigated Playa (1 af/ac)	60,000 acre- feet
Flow to Sink and Other Uses	<u>90,000 acre-feet</u>
	650,000 acre-feet

(underline added for emphasis)

IG-19

Somehow, no long-term air quality management facilities are included in the DPEIR for Alternative 4. Therefore, the resulting analysis in the DPEIR indicates that PM10 emissions under Alternative 4 would be higher than other alternatives during the Operations and Maintenance. This conclusion is erroneous because the DPEIR analysis does not include the information provided by the Imperial Group in March and May 2006. The air quality management analysis for Alternative 4 should be redone in the PEIR using a permanent watering facility. Based on the measures proposed by the Imperial Group, emissions from the exposed playa during the Operations and Maintenance under Alternative 4 should not be any different than the other alternatives (except Alternative 7).

The remainder the of comments on the DPEIR are divided into three sections: Section A contains comments on the Concentric Lakes Alternative (Alternative 4); Section B contains comments on the water quality analysis; and Section C contains other general as well as specific technical comments.

A. Concentric Lakes Alternative (Alternative 4)

1. Concentric Lakes is a Flexible and Cost-Effective Alternative

Concentric Lakes Alternative 4 (Alternative 4) is intrinsically flexible and adaptive. The degree of flexibility of proposed alternatives analyzed for the Restoration Program needs to be stressed more in the DPEIR, particularly in light of how much is still currently unknown. While the Executive Summary states that the document is programmatic in nature, but it does not itemize information which is unknown at this time and could be revised at a project level. However, it is stated in Chapter 2:

During project-level analyses, salinity, elevation, or reliability factors would be developed based upon more specific information related to inflows and other assumptions. (DPEIR, pg. 2-22)

The Executive Summary does not mention the uncertainty of salinity and elevation as well as its relationship to key aspects in the "Results of Impact Assessment" section. For example, which components of each alternative that caused a significant impact could be modified regarding the design salinity or elevation to mitigate or eliminate any impact and still maintain the key characteristics inherent of that alternative. These adaptive attributes of an alternative should be addressed at the Executive Summary level in the document.

The DPEIR is lacking in that the interchangeable, flexible, and intrinsic characteristics of each alternative needs to be further identified and discussed in the programmatic document. For example, the Concentric Lakes Alternative (Alternative 4) is very flexible in terms of the elevations of surface water levels. Because all of the concentric lakes would not be built at the same time, the construction plan of the second, third, fourth, and brine sink can be modified as actual information regarding inflow data and trends are obtained through time. This building-block flexibility is also inherent to the primary components of other alternatives as well, including the Saline Habitat Complex (Alternatives 1 and 2) as well. This lagged piece-meal approach under Alternative 4 would also allow adaptations to the design due to uncertainties regarding other factors such as water quality, habitat sediment quality and geology. Alternative

IG (cont.)

IG-20

The Salton Sea Restoration Act (Fish and Game Code 2931(c)(1-3)) states that "the preferred alternative shall provide the maximum feasible attainment of the following objectives: (1) Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea. (2) Elimination of air quality impacts from the restoration projects. (3) Protection of water quality." There are no "flexible or adaptive" requirements in the Salton Sea legislation.

The alternatives were developed as bookends to bracket a range of alternative scenarios. Some of the alternatives have more flexibility than others to accommodate changes in future conditions, and some components of alternatives could be combined with other alternatives. As described in Chapter 3 of this Final PEIR, the Preferred Alternative was developed by considering components from the various alternatives. The State recognizes the importance of a flexible and adaptable alternative in light of the current level of uncertainty. As described in Appendix H-1 of the Draft PEIR, "Adaptive management and possibly the ultimate success of a restoration program also would be influenced by the flexibility of the restoration design and ability to easily alter future management. Habitat components that have the flexibility to be changed easily (e.g., Saline Habitat Complex) would be better suited to adaptive management than components that allow less future manipulation because they are dependent on massive infrastructure (e.g., Marine Sea)."

IG-21

Information that is "unknown and could be revised at a project level" was identified in the various sections of the Draft PEIR and its appendices. Specifically, the "Next Steps" sections of each of the resource categories evaluated indicate areas of uncertainty and the information that could be needed for a project-level analysis.

IG-22

Areas of uncertainty were described in Chapter 3 of the Draft PEIR starting on page 3-1 and were summarized in Table 3-1. The inflow assumptions were described as an uncertainty in Table 3-1. As identified in this table, the uncertainties in inflow assumptions result in uncertainties in future surface water elevations and salinities.

IG-23

See response to comment IG-20.

IG-20

IG-21

IG-22

IG-23

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Page 4

4, as well as Alternatives 1 and 2, also allows greater flexibility for future salinity and water quality management by partitioning separate bodies of water consistent with the main component of their conceptual designs. Other proposed alternatives, such as Alternatives 5-8, are inherently inflexible in regards to uncertainty to hydrology, geology, and water quality management due to large commitments to specified bodies of surface water and barrier designs. Specific features of the Concentric Lakes that are designed for biologic benefits including the habitat islands and deep water reaches of the Concentric Lakes can also be modified at the project-level design and lend itself well to adaptive management.

The DPEIR evaluation of the flexibility inherent in each alternative is shortsighted, particularly regarding the uncertainty of future inflows, elevations, and effectiveness of the proposed air quality management for all alternatives. The DPEIR makes the argument that the air quality management strategy is linked to the surface area of open water (both non-hyper and hyper saline water) in each alternative due to the mass balance and accounting of the water. If the air quality management measures proposed under Alternative 4 did not work, then the design for Alternative 4 would be altered. Specifically the Imperial Group stated that "If it becomes a necessity to have a perimeter canal to supply less than 7 ppt salinity water for air quality protection, this requirement would apply to most alternatives including the Concentric Lakes" (Appendix I, "Information from Imperial Group, March 28, 2006"). The Fourth Lake and Brine Sink, which are both hyper saline bodies of water, can easily be adapted in size (with minimal loss in biological value) once more information on air quality management (among other factors) is available. A more detailed discussion of the misrepresentation of air quality impacts of Alternative 4 is included later in this letter.

Another reason to consider the flexibility of alternatives more in the Executive Summary pertains to the fairness of the DPEIR evaluation of the alternatives. Alternatives 1 and 2 are favored as proposed in the DPEIR because many of its design details are explicitly excluded as discussed throughout the DPEIR:

IG (cont.)

IG-24

See response to comment IG-20.

IG-25

The Draft PEIR assumed that each acre of Exposed Playa requiring air quality mitigation would require a certain amount of water. This quantity of water for air quality mitigation was part of the overall inflow water accounting.

IG-26

See response to comments IG-3 and IG-19.

IG-27

See response to comment IG-20.

IG-28

The Resources Agency conducted an objective analysis of all of the alternatives. This analysis included extensive input from the legislatively mandated Salton Sea Advisory Committee, the various Working Groups formed by the Committee, and interested organizations, agencies, and individuals. Great care was taken during the preparation of the Draft PEIR to analyze all of the alternatives with common assumptions and an equal level of detail to allow for an equal comparison among the alternatives and to not single out any of the alternatives.

IG-24

IG-25

IG-26

IG-27

IG-28

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The Shallow Saline Habitats could be constructed to contain a wide range of water bodies with different depths, salinity, or habitat features such as islands or snags. The focus of these concepts would be to minimize the infrastructure to provide habitat functions and values. These areas are referred to as Saline Habitat Complex areas. The size of the Saline Habitat Complex area would vary depending upon inflows, inflow reliability, and availability of land that could provide shallow water. (DPEIR, pg. 2-11, underline added for emphasis)

The shallow cells associated with the Saline Habitat Complex and any other type wetland were simulated as HAB components. Water volume, elevation, and salinity are not explicitly tracked for this component. (DPEIR, Appendix H, H2-1-6, underline added for emphasis)

Even though Alternatives 1 and 2 were given many “programmatic” conditions when discussing implications of design details, the details of Alternative 4 was held to its original design based on lower inflows. Alternative 4 was originally developed by the Imperial Group at the time that the Technical Subcommittee was using 600,000 to 650,000 af/yr for variable-condition inflows. This average projected inflow changed and all alternatives were eventually modeled using about 795,000 af/yr for the period 2003-2078. This again emphasizes the need for the DPEIR to more fairly and comprehensively identify and discuss the interchangeable, flexible, and intrinsic characteristics of each alternative in the programmatic document.

The Concentric Lakes Alternative is the most cost-effective alternative proposed in the DPEIR. An important point to make in the DPEIR is the cost-effective attributes of the main components (concentric lakes) of Alternative 4. Due to the size of the concentric lake berms not being very high structurally and innovative construction techniques (Geotube®), the capital costs are much lower than alternatives involving much higher berms or partial barriers in Alternatives 3, 5, 6, 7, and 8 (DPEIR, Figure ES-2, pg. ES-24). Also, the operation and maintenance costs of pumping water around in the management of the Saline Habitat Complex cells (primarily Alternatives 1 and 2) would be potentially much higher than the operation and maintenance of the Concentric Lakes Alternative. In particular, Alternative 2, as represented in the DPEIR involves significant pumping costs due to pumping from the brine effluent at the lowest elevations back up to the Saline Habitat Complex cells.

IG (cont.)

IG-29

See response to comments IG-3 and IG-19. Details of Alternatives 1-3, 5-6, and 8 were developed over a two year period to provide a range of alternatives in the programmatic document, with the expectation that details could be evaluated during project-level analysis. Alternatives 4 and 7 were added in the last phase of the Draft PEIR preparation based upon the recommendation of the Salton Sea Advisory Committee. At that time, both the Imperial Group and SSA presented what they considered the current configurations for their proposed alternatives (see Appendix I of the Draft PEIR). Subsequent changes in any of the alternatives could not be incorporated due to the need to complete the modeling and technical analysis for the Draft PEIR in a timely manner. The flexibility, intrinsic characteristics, and interchangeability of components of all alternatives were considered in development of the Preferred Alternative (see Chapter 3 of this Final PEIR).

IG-30

See response to comment IG-1. The criteria for selection of the most cost-effective, technically feasible alternative are described in Chapter 3 of this Final PEIR. As described in that chapter, Alternative 2, Saline Habitat Complex II, and Alternative 5, North Sea, were selected as the most cost-effective, technically feasible alternatives.

IG-31

See response to comments IG-1 and IG-30, and Chapter 3 of this Final PEIR. The Saline Habitat Complex could be constructed using a variety of construction methods including the use of Geotubes®.

IG-29

IG-30

IG-31

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The importance of being cost-effective is more particular in this EIR than most EIRs in that it is also a legislative goal:

The restoration study also must include at least one most cost-effective, technically feasible alternative and present an evaluation of the magnitude and practicability of costs of construction, operation, and maintenance for each alternative. The study is required to be submitted to the Legislature (Fish and Game Code Section 2081.7). (DPEIR, pg. 1-9, underline added for emphasis)

Given the importance of including a cost-effective alternative, the Executive Summary should more clearly recognize the Concentric Lakes Alternative (Alternative 4) as being the most cost-effective alternative. The Executive Summary of the DPEIR currently has a figure displaying capital and O&M costs (Figure ES-2, pg. ES-24) but no text in the Executive Summary refers to Figure ES-2, let alone identifies Alternative 4 as currently the most cost-effective alternative.

IG-32

2. Air Quality Management

The Imperial Group would like to clarify the Air Quality Management for Alternative 4. The DPEIR currently states that:

...the information provided by the Imperial Group, as included in Appendix I, did not define long term irrigation facilities, such as the use of water efficient vegetation. Therefore, this alternative does not include a long term program for air quality management. (DPEIR, pg. 10-73)

Alternative 4 can easily accommodate Air Quality Management strategies such as planting and watering native vegetation or applying brine to exposed playa, however, any long term solution to control dust emissions would have to be adaptively managed due to the large uncertainty associated with the success of the air quality measures suggested. The two years of irrigation to establish native vegetations on the exposed playa suggested by the Imperial Group is merely the immediate action that would be taken to control dust emission, and during that time a long term emission plan could be developed based on the relative success of pilot or project level strategies.

IG (cont.)

IG-32

See response to comments IG-1 and IG-30 and Chapter 3 of this Final PEIR. The Draft PEIR Executive Summary has been revised to include reference to Figure ES-2.

Chapter 8
Interest Groups Comments

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The Imperial Group would like to reiterate the dust management strategy of Alternative 4 submitted to the Salton Sea Work Group (DWR Salton Sea Office) in May 2006 to correct erroneous information regarding Alternative 4. The DPEIR currently reads as follows:

Air Quality Management for Alternative 4 would include irrigation ditches constructed on the down gradient side of the Geotube® Berms to provide water supply for short term irrigation of vegetation. These facilities would be used only for one or two years after the Brine Sink recedes from the areas adjacent to the Geotube® Berms. It is anticipated that there may be minor areas with vegetation that would grow between the Geotube® Berms where seepage could occur. Based upon information provided by the Imperial Group and presented in Appendix I, this alternative includes an irrigation water supply. However, no long term irrigation facilities were described. Therefore, no long term air quality management facilities are included in this alternative. A salt crust could develop as the Brine Sink recedes. However, no long term measures were identified by the Imperial Group to maintain the salt crust. (DPEIR, pg. 3-70)

This erroneous description of the Alternative 4 Air Quality Management has lead to the categorization of Alternative 4 as having the highest emissions of all the alternatives during the Operations Maintenance.

Impacts associated with fugitive dust from Exposed Playa in Alternative 4 would be greater than impacts under the No Action Alternative and Existing Conditions. (DPEIR, pg. 10-73)

The Imperial Group would like to restate the corrections submitted to the Work Group so that the Air Quality Management section reads: "Alternative 4 includes pipelines and ditches constructed on the down-gradient side of the Geotube® Berms to provide water supply for irrigation of native vegetation. These facilities would be used for a limited period (two years) and if necessary permanently, after the Brine Sink recedes from the areas adjacent to the Geotube® Berms. It is anticipated that there may be minor areas with small plants that would grow between the Geotube® Berms where seepage may occur. Below the Fourth Lake, it is assumed that a salt crust would be developed at the Brine Sink. High saline water from the Fourth Lake may be used (as spray water) to maintain the salt crust." (see attachment to Memorandum of May 26, 2006).

IG (cont.)

IG-33

See response to comments IG-3 and IG-19.

IG-34

See response to comments IG-3 and IG-19.

IG-35

See response to comments IG-3 and IG-19.

IG-33

IG-34

IG-35

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As noted previously, Alternative 4 includes water supply (as part of the water balance) for the irrigation of vegetation. About 60,000 acre-ft per year of water is allocated for irrigation of the playa for the long-term irrigation based on an annual water balance of 650,000 acre-ft (see Memorandum of May 26, 2006, attached). Preliminary Capital cost estimate for Alternative 4 includes about \$78M for irrigation canals (Table H7-16). Additional facilities may be built for the purpose of air quality protection. The allocated water supply and the facilities would be used for the long term air quality management as needed.

There are several other inconsistencies in the Air Quality Management discussion throughout the DPEIR, particularly regarding the establishment of vegetation. Chapter 2 indicates that the brackish water with less than 8,000 mg/L would be used for irrigation (pg.2-1, 2-22). However, in Chapter 3 (pg. 3-37) it states that the brine water would be pumped to the irrigation facility to increase the salinity of the water to 10,000 mg/L. These are two contradictory approaches to controlling the salinity in the irrigation water. The report suggests installation of drip system for irrigation (pg. 3-57) without discussing the method for reclamation of these lands. The drip system cannot provide for the reclamation and leaching of the salt saturated soils.

The information on air quality management under Alternative 4 was provided as early as March 28, 2006 followed by the Memorandum of May 26, 2006 (see attached). DWR has indicated that it was too late to incorporate the information provided by the Imperial Group in the DPEIR. The PM10 emissions analysis should be redone with the corrected Air Quality Management information. The DPEIR should include the corrected Air Quality Management information and the revised PM10 emissions analysis for Alternative 4. We would like to emphasize that Alternative 4 will have long term dust control similar to other alternatives and that any long term management for any of the alternatives is highly uncertain and will require flexibility to ensure success.

IG (cont.)

IG-36

See response to comments IG-3 and IG-19. The information from the Imperial Group presented in Appendix I of the Draft PEIR, includes facilities to use water for Air Quality Management on the Exposed Playa for a limited number of years during the start of a future restoration program. However, long-term use of these facilities for Air Quality Management actions was not proposed by the Imperial Group and not included in Alternative 4.

IG-37

Irrigation water conveyed in canals to Air Quality Management facilities would have a salinity of about 8,000 mg/L, as described in Chapter 2, page 2-22, of the Draft PEIR. That water would potentially be blended with recycled, more saline subsurface drainage, after conveyance to the Air Quality Management facilities, resulting in water with a salinity of approximately 10,000 mg/L to support salt-tolerant vegetation (See Chapter 3, page 3-57, of the Draft PEIR). Reclamation of land is assumed to occur by irrigating (potentially through a drip irrigation system), with either natural drainage or drainage collection in an artificial subsurface drainage system. Extremely saline playa has been sufficiently reclaimed in this manner to allow planting of salt tolerant vegetation at Owens Lake, with reclamation of such playa requiring about 40 days.

IG-38

See response to comment IG-37.

Reclamation of saline soils with drip irrigation is discussed in Appendix H-3 (p. H3-33 and H3-2-10) of the Draft PEIR. Also, drip irrigation is commercially used to grow agricultural crops under a wide variety of soil, drainage, and water supply conditions. All of these applications involve maintenance of root zone salinity in a favorable range for plant growth, and some of them involve leaching of salts from a higher initial concentration. The basics of leaching with drip irrigation are similar to leaching by other irrigation methods, whereby salt is moved outside of the root zone with a leaching fraction and water that is applied over and above crop needs expressly for this purpose. The shape of the root zone can differ with drip, being oriented radially around emitters, and leaching can be more efficient due to the controlled and spatially focused manner of application and reclamation.

IG-39

See response to comments IG-3 and IG-19.

IG-36

IG-37

IG-38

IG-39

3. Early Start Habitat

More details on the Early Start Habitat are needed in the PEIR. The flexible and intrinsic components of Early Start Habitat in relation to each of the alternatives need to also be further identified in the DPEIR. Currently in Chapter 3, Description of Program Alternatives, no figure identifies where the Early Start Habitat would or could be for each of the alternatives, except it is assumed to be located at elevations between -228 and -232 ft. In the important figures displaying the timeline and plan view of each alternative, identification of Early Start Habitat is missing. Construction timeline of the Early Start Habitat is also missing from Figure 3-1, "Estimated Construction Schedule for Alternatives 1 Through 8".

The Early Start Habitat, as currently described in the PEIR on page 3-6, seems to favor alternatives which include Saline Habitat Complex in the southern extremity of the Salton Sea (Alternatives 1, 2, and 5) even though it is described as being a part of all alternatives. The Early Start Habitat would appear to be in the initial construction phases of the Saline Habitat Complex for Alternatives 1, 2, and 5. Other alternatives were originally designed to have the shoreline elevation at -230 feet (pg. 3-3, Table 3-1), and it may appear the early construction phases at this level could interfere with the Early Start Habitat which is tentatively planned for elevations -228 to -232 feet.

The Concentric Lakes Alternative (Alternative 4) could potentially have a different type of early start. The first lake in Alternative 4 is a half moon shape (partial lake) extending along the southern shore with a water surface elevation at -230 feet. This first lake could be planned conjunctively with the Early Start Habitat which would start at -228 feet or alternatively have the First Lake start at -228 feet which would provide greater pupfish connectivity for Alamo River, New River, and San Felipe Creek. Similarly, the Early Start Habitat can be constructed at elevation -230 ft consistent with the First Lake. Alternative 4's integrated approach of having the First Lake be part of the interim solution would lessen both the costs and environmental impacts from construction and de-construction of the Early Start Habitat as currently proposed in the DPEIR. It should be noted that the first partial lake under Alternative 4 would include a significant portion of the area for the Early Start Habitat. This would result in cost savings of

IG (cont.)

IG-40

Early Start Habitat is identified for all alternatives. A suggested schedule for Early Start Habitat is provided in Chapter 3 of this Final PEIR. However, future implementation would require additional authorizing legislation and identification of an implementing agency. Implementation of Early Start Habitat would also require preparation of environmental documentation, permits, and land access along with detailed design plans and specifications. These actions would require involvement of various agencies and responsible parties and would take several years to complete.

IG-40

IG-41

See response to comment IG-40.

IG-41

IG-42

Early Start Habitat is intended to preserve some functional fish and wildlife habitat during the interim between its construction and the development of functional habitat resulting from a restoration program. At the programmatic level of analysis for the Draft PEIR, the Early Start Habitat was assumed to be similar in size and construction under each alternative and it was assumed that it ultimately would be incorporated into the restoration design of a preferred alternative. Early Start Habitat would not favor any one alternative, although the manner in which it would be incorporated could differ depending on the configuration of the Preferred Alternative.

IG-42

IG-43

The specific location and design of Early Start Habitat would be developed at a project level once the Legislature provides direction on the implementation of a preferred alternative and identifies a future implementing agency. The cost effectiveness of alternative sites and construction techniques for Early Start Habitat could be evaluated as part of the project-level analysis.

IG-43

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about \$75M and the early construction of all or portions of the First Lake would avoid a duplicate effort. Construction of the First Lake can be initiated early because the berms would be constructed in water before the Sea recedes.

4. Water Quality: Salinity and Temperature

The construction schedule in the executive summary suggests that the Fourth Lake in Alternative 4 will not be able to achieve the salinity goals for decades after its construction; however this timeline is not supported by the SALSA modeling. In Appendix H2 the water levels and salinities of each of the lakes were as follows:

In Alternative 4, the first Berm was assumed to be completed as early as 2016, but the water surface elevation was required to decline to -235 feet msl before full operations. The First Lake could stabilize at the an elevation of -230 feet msl by 2016, the Second Lake could stabilize at -240 feet msl by 2019, the Third Lake could stabilize at -255 feet msl by 2026, and the Fourth Lake could stabilize at -260 feet msl by 2040, as shown in Figure H2-1-17. Under many hydrologic scenarios, however, the Fourth Lake would not be constructed due to the high elevation of the Brine Sink and the possibility of inundation. The salinity targets could be achieved within one year of achieving the elevation targets, as shown in Figure H2-1-18. (DPEIR, pg. H2-1-42)

Based on these findings, it is clear that the construction of the Fourth Lake could be delayed but the salinity target will be achieved relatively quickly. Figure ES-1 should accurately reflect the timeline established in Appendix H2.

It is concerning and unclear why the Brine Sink in Alternative 4 appears to be so large (see phase 2 and 3). We request additional clarification as to why the Brine Sink appears to be relatively large compared to other alternatives. We would especially like clarification if the perceived lack of a long term air quality solution for Alternative 4 distorted the SALSA modeling results. Because a long term air quality solution was not specified in the original design of Alternative 4, the first priority of the SALSA model is overlooked.

IG-43
cont.

IG-44

IG-45

IG-46

IG (cont.)

IG-44

The water surface elevation of the Fourth Lake is -265 feet msl as shown in Figure H2-1-17 and discussed in Appendix H-7 (p. H7-61) of the Draft PEIR, rather than -260 feet msl as described on page H2-1-42 in the Draft PEIR (this has been corrected in this Final PEIR). The long delay in achieving the salinity goal for Alternative 4 is due to the use of barges to place Geotubes® and associated earthwork before the water recedes below the elevation of the Salton Sea. Figure H2-1-17 of the Draft PEIR shows that the Sea recedes to the -265 feet msl elevation by 2034; therefore, construction must commence some years before this, and be completed by 2034. Following completion of construction by 2034, about seven or eight years would be required before the salinity of the Fourth Lake would reduce the target salinity of 30,000 to 40,000 mg/L.

IG-45

The Brine Sink in Alternative 4 is larger in Phase II and III than in other alternatives due to less water being stored in the First, Second, and Third Lakes than in the Concentric Rings or Marine Seas (including Marine Sea Mixing Zone or Recreational Estuary Lake) of the other alternatives. Since less inflow is stored in the lakes, more water flows to the Brine Sink, making it larger in Alternative 4. Not until the Fourth Lake is completed does the amount of water captured allow the Brine Sink to reduce in size.

It is unclear from the comment where the commenter is referring to "Brine Sink appears relatively large compared to other alternatives". As shown in Table H2-2-3 and Figures H2-2-9, the Brine water surface elevation by 2077 is comparable to, or lower than, most other alternatives.

IG-46

The modeling analysis for Alternative 4 consisted of a phased implementation of the Concentric Lakes as described in Appendix H-2 of the Draft PEIR. For each inflow trace, the Lake was assumed to be functional only after the water surface elevation of the Brine Sink receded to below the top of berm elevation. In some cases, the inflows were such that the Fourth Lake could not become operable or would not be constructed. In each case, however, water was assumed to be delivered to all Exposed Playa areas below the lowest berm consistent with the air quality assumptions included in Table H2-1-2 of the Draft PEIR.

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The SALSA model allocates water and achieves salinity targets based on priority weights assigned to the satisfaction of each goal. If there is sufficient water available in the current time step, all positive weighted goals will be satisfied subject to system constraints. However, if water is insufficient to satisfy all goals, water is then allocated according to priorities and will not achieve the lower priority goals. While the relative weights can be modified by the user, the general priorities were assigned in the following order in this application:

- Satisfy water demands for air quality needs;
- Satisfy water demands for habitat and treatment wetlands;
- Satisfy elevation targets in marine seas, lakes, or rings; and
- Achieve salinity targets in marine seas, lakes, or rings. (DPEIR, pg. H2-1-15 QC)

This priority list of water allocation may mean that inherently more water flows into the Brine Sink in Alternative 4 compared to other alternatives. If this is the reason the model projects a construction lag and a delay in terms of reaching salinity design goals (as shown in Figures ES-1 and 3-1), it should be explicitly stated in the text. Figures ES-1 and 3-1 should be corrected in the DEIR. Additionally we request that the Air Quality Management strategies as outlined above be taken into consideration.

It is also important to note that the Concentric Lakes in Alternative 4 were inconsistently modeled with different but uniform depths in the report. The hydraulic depth listed in the executive summary for Alternative 4 is 3.3 ft and for the water quality modeling was modeled as 6.6 ft deep. This has implications for the temperature modeling of the habitats in Alternative 4.

The Concentric Rings (Alternative 3), Concentric Lakes (Alternative 4), and Saline Habitat Complex cells were simulated as individual cells assumed to be 1 square mile (640 acres) in area. Constant depths were specified at 2 meters (6.6 feet) for the Salinity Habitat Complex cells and Concentric Lakes, and 3 meters (9.8 feet) for the Concentric Rings." (DPEIR, pg. D-68)

We would like to clarify that the Concentric Lakes provides both shallow and deep water habitats. Shallow water habitat is intended to support foraging bird populations while the deep water habitat may be critical to provide cool water refuge for fish and other aquatic organisms.

IG (cont.)

IG-47

See response to comment IG-46.

IG-48

The Executive Summary does not list the "hydraulic depth" of any alternative. The water quality model, as discussed in Appendix D of the Draft PEIR, used a depth of two meters, which is about 6.6 feet. Information provided by the Imperial Group on March 3, 2006 states that Saline Habitat Complex is included and the depth of water could be up to 15 to 20 feet in conjunction with excavated deep water areas. Information provided by the Imperial Group on March 28, 2006 states that the maximum depth of the perimeter lakes would be 6 feet and would provide Saline Habitat Complex. Therefore, the alternative description (see page 3-69 of the Draft PEIR) indicates that "the Concentric Lakes would function in a similar manner as Saline Habitat Complex with islands, peninsulas, and deep holes. The Concentric Lakes would not include any cross Berms, but the waterways would meander on the Sea Bed and water flow would be interrupted by the islands and peninsulas. The Geotube® Berm would be designed to limit the maximum water depth adjacent to the Berm to 6 feet." Based on this description, the Concentric Lakes were modeled for water quality purposes as being similar to Saline Habitat Complex, which also contains deep holes and islands.

Cool water refuge in the Saline Habitat Complex during the summer is not a concern with any of the alternatives. Minimum temperatures during the winter, however, could affect survival of some fish species. Shallow water habitats, including the Saline Habitat Complex and Concentric Lakes, do not provide sufficient water mass to buffer the effects of cold air temperatures on water temperature, even with deeper holes. The entire water column in these shallow water habitats would be the same temperature during the winter, and hence no refugia would be available for susceptible fish to avoid cold water stress.

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5. Selenium

The Imperial Group provided DWR with a technical memorandum on June 21, 2006 commenting on the selenium risk analysis conducted in the DPEIR (see attached). In general, we feel that there must be a more site specific assessment of the spatial extent of contamination and more bioassays developed to assess the risk selenium poses to wildlife at the Salton Sea. Environmental selenium risk is a function of exposure and biological availability. Toxicity and bioaccumulation tests have not been conducted at the Salton Sea, seriously limiting the risk assessment analysis. The limited samples collected in the Salton Sea do not provide the depth of elevated levels of selenium. It is important to collect sufficient core samples (using a grid system covering the Salton Sea) to determine the depth of the mass of sediment that may have a potential for environmental risk. As such, a full set of biogeochemical assessments is necessary to characterize the spatial distribution and biological availability of selenium across the Salton Sea (See attached).

Because sediment samples in the Salton Sea are limited and disproportionately sampled at the surface of the sediments near the shoreline, the area-weighted average hazard quotient (HQ) presented in Table 8-7 is misleading because the contours are skewed. The selenium risk assessment or hazard quotient for communities, populations and individuals by each habitat type also appears skewed between alternatives, especially the assessment of the risk posed by the Brine Sink. The hazard quotient for the Brine Sink under Alternative 4 was ranked as having the highest selenium risk and Alternatives 1 and 2 pose the least risk (Appendix F-1, Table F-45). Alternative 2 and Lakes 1-4 under Alternative 4 have the same potential (not the same toxicity reference values (TRVs)) for the community, population and individual organism risk assessment. The only difference in the potential between these two alternatives is in the Brine Sink. The Brine Sink risk as described in Table F-45 for Alternative 2 received a moderate community risk to benthic invertebrates, moderate risk to bird-sediment population, low Black-necked populations risk, and high risk to Snowy Plovers (individuals). In contrast, the Brine Sink in Alternative 4 poses a high risk to the benthic invertebrate community, a high risk to the bird-sediment population, and the other potentials are the same.

IG (cont.)

IG-49

As described in Chapter 3 of this Final PEIR, a variety of actions have been identified that could be implemented within the five-year timeframe after the Legislature provides direction on the implementation of a preferred alternative and identifies a future implementing agency. These actions include measures specifically targeted to address ecological risk uncertainties.

IG-50

The risk modeling for each habitat in each alternative was based on the same measured and estimated selenium concentrations for the sea bottom sediment for areas within the polygon for that particular habitat. As a consequence, uncertainties associated with the initial sediment dataset should contribute equally to the evaluation of each alternative. The primary difference would be that specific data (and the estimated spatial distribution of selenium concentrations) integrated into the evaluation of a given alternative are a function of how the footprint of habitats as outlined by the design for the alternative overlays on the measured and estimated sediment selenium concentrations. Appendix F of the Draft PEIR describes the methods used to estimate sediment selenium concentrations from the available data, which are considered adequate for the programmatic-level assessment but do not describe localized conditions in detail. Project-level analysis could incorporate monitoring of selenium and other contaminants into the implementation of the Preferred Alternative.

IG-51

Risks are estimated based on selenium loadings to sediment, which are a function of selenium concentrations in inflowing water, volume of water delivered, and area of the habitat. Concentrations of selenium estimated for the Brine Sink in Alternative 4 were greater than in Alternatives 1 and 2, resulting in overall greater risk under this alternative.

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The difference in the Brine Sink risk potential among alternatives risks is not clearly explained in Chapter 8 or Appendix F. It is not clear what makes the Brine Sink TRVs different in Alternatives 3 and 4 compared with Alternatives 1 and 2. The lack of description or justification for these differences in Brine Sink risks puts Alternative 4 at an unfair disadvantage in comparison with the rest of the alternatives. It should be noted that Alternative 4 has the potential to partially mitigate impacts due to selenium using the Geotube® Berms to isolate unacceptably contaminated material.

6. Biological Value

There are mistakes in assessing the impacts of Alternative 4 on the riparian vegetation and movement of wildlife species. The DPEIR currently states that the impact of Alternative 4 would be the same as Alternative 3 for both the riparian vegetation and movement of wildlife:

Substantial adverse effect on any riparian habitat,

Same as Alternative 3; however, impacts on riparian vegetation would remain significant relative to Existing Conditions in subsequent phases because water routed to the Brine Sink would be piped rather than contained in open channels where riparian vegetation and wetland values could become established. (pg. 8-35, Table 8-4)

Interfere substantially with the movement of any resident or migratory fish or wildlife species.

The effects would be similar, but not identical, to those described for Alternative 3 (pg. 8-36, Table 8-4).

However, we believe the impact to riparian habitat under Alternative 4 would be no different than existing conditions. There is no open channel under the existing condition where the siphon/pipeline would be routed to the Brine Sink under Alternative 4 in the future.

Additionally the method of construction under Alternative 4 would not be similar to Alternative 3 which requires rock construction for the Perimeter Dike. Berms under Alternative 4 would be constructed primarily from the dredged material with significantly less reliance on rock materials. Table 8-4 should be corrected to show at least no impact for Alternative 4 as indicated for Alternative 3.

IG (cont.)

IG-52

The overall ranking of risks for each alternative is based on the aggregated risks over all receptors and all habitats. In addition, because all alternatives were based on the same underlying data, integrated with alternative-specific assumptions, they represent a uniform comparison across alternatives. In addition, the same toxicity reference values were used for all alternatives.

IG-53

The risk assessment was based on the available information and habitat polygons for each alternative. Mitigation measures such as the one described by the commenter are an example of the kinds of measures that could be appropriate for any future implementing agency to consider during project-level analyses.

IG-54

See response to comments IG-55 and IG-56, below.

IG-55

Under the Existing Conditions there are no constructed channels for water conveyance to the Salton Sea. There are several natural waterways, the New, Alamo, and Whitewater rivers and San Felipe and Salt creeks, plus numerous agricultural drains that flow directly into the Salton Sea. These waterways support various levels of riparian habitat. Appendix H-7 of the Draft PEIR states under Alternative 4 that, "the New and Alamo rivers each would flow directly into a 200-acre Sedimentation/ Distribution Basin. These basins would manage the distribution of water into the First Lake or into a river bypass pipelines that would be constructed under the lakes. The river bypass pipeline would convey water to the Second, Third, and Fourth lakes and Brine Sink." As the bypass pipeline prohibits the flow of water on the surface, and therefore the ability of re-vegetation, it has a greater impact on riparian habitat than Existing Conditions.

IG-56

If the comment is referring to the analysis of the alternative's impacts on the movement of fish or birds, the construction methodology and materials used were not part of the analysis. Alternative 3 was determined to result in no impacts for Phases II-IV as compared to Existing Conditions because all pupfish populations would be connected in the First Ring. Alternative 4 has two levels of connectivity for pupfish with the southern populations connected in the First Lake and the northern populations connected in the Second Lake. Therefore, compared to Existing Conditions where all pupfish populations are connected, Alternative 4 had a greater impact on pupfish movement than Alternative 3.

IG-52

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IG-56

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We would also like to emphasize that the wide range of habitats and salinities available for wildlife in Alternative 4 should sustain a rich ecosystem.

The Concentric Lakes would provide habitat for fish and invertebrates throughout the water column. The First, Second, and Third lakes would provide habitat for fish and invertebrates by the end of Phase III, while the Fourth Lake would provide habitat for invertebrates and possibly fish with high salinity tolerance. These organisms would provide forage for a variety of bird species. The increase in shoreline associated with the Berms and other habitat features would provide shorebird habitat where slopes are gradual and composed of fine grained material. Islands constructed within the lakes would provide roosting, loafing, and nesting habitat protected from mammalian predators (DPEIR, p. 8-56).

It should also be emphasized that the construction of Alternative 4 would not disturb desert pupfish habitat or connectivity. Although Alternative 2 performed slightly better in terms of the bird population analysis, the higher salinity of the Fourth Lake is a unique habitat among the alternatives and would increase diversity of both habitat and bird species as stated below.

Alternative 4 performs better for most species because of the added area available in the Fourth Lake and because the salinity in the Fourth Lake would be higher. Higher salinity in the Fourth Lake favors some species such as eared grebe and western sandpiper (DPEIR, p. 8-77).

The Executive Summary should discuss which alternatives have high biologic value. The First, Second, and Third Lakes would have the salinity variation and the capacity to support marine sport fish under Alternative 4. The Concentric Lakes with deep water islands would include deep holes of ¼ mile in diameter of 18-20 feet deep.

B. Surface Water Quality Modeling: Chapter 6 and Appendix D

The surface water quality sections are completely inadequate. Throughout these sections references are missing or the references given are not appropriate, the water quality models are not adequately described and there is a general lack of scientific robustness. In Chapter 6 the text suggests that UC Davis has developed a water quality model that was used in this report, however, the reference is for the EIR/EIS draft completed by Tetra Tech:

IG (cont.)

IG-57

The excerpt from the Draft PEIR was taken out of context. The sentence starts out with "While Alternative 3 and 4 have similar configurations Alternative 4 performs better..." The salinity of the Fourth Lake does provide for greater habitat diversity, compared to Alternative 3. However, the Fourth Lake is not a unique habitat when compared to the alternatives with Saline Habitat Complex which provide for greater habitat diversity.

IG-58

As directed by the CEQA Guidelines Section 15123, the Executive Summary contains a brief summary of the proposed alternatives and their consequences. Chapter 8 of the Draft PEIR compares the alternatives based biological benefits and impacts.

IG-59

As modeled in Appendix D, temperature and water quality parameters for the First, Second, and Third Lakes of Alternative 4 would likely allow a marine fish community to be introduced. However, the salinities of the First and Third Lakes would be 43 percent lower, and 29 percent higher, respectively, than that of sea water. The physiological challenge these salinities would create for most marine fish species creates uncertainty whether these two components would support marine fish species.

The average depth of 3 feet in the lakes of Alternative 4 represents an extreme reduction of the range of depths normally frequented by the introduced marine fish that recently thrived in the Salton Sea. The inclusion of deeper holes in the design of the Saline Habitat Complex does increase the likelihood of establishing marine species.

IG-57

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Modeling work by the Water Resources and Environmental Modeling Group of the Department of Civil Engineering at the University of California, Davis (Salton Sea Authority and Reclamation, 2000) found that wind velocity is the dominant factor affecting water currents in the Salton Sea. (DPEIR, pg. 6-8)

It is important to cite original references, rather than the subsequent texts that have referenced materials. In looking at Chapter 4.1 on Surface Water Resources from the 2000 EIR/EIS, there is still no mention of the model used, the equations used, or parameter values for the model. Therefore this reference is not accurate and there needs to be a full description of the model used.

If the model has been created exclusively for this project that also needs to be made clear and there needs to be more discussion on calibration and verification (or lack of verification). The text states that wind is the dominant mixing force, creating two gyres within the Salton Sea:

The wind pattern results in two large gyres, rotating in opposite directions. In the northern subbasin, currents rotate clockwise, and in the southern subbasin, the currents rotate counterclockwise. (DPEIR, pg. 6-8)

This much seems plausible, however, based on the total lack of model description and references it is not possible to say:

...in the Salton Sea, freshwater inflows from tributaries generally mix rapidly with the ambient saltwater near the confluence of the tributaries due to the prevailing wind action. This action forms an abrupt transition from freshwater to saltwater. This rapid mixing suggests that inflows attain the physiochemical characteristics of the Salton Sea water within a short distance from the confluence of the tributary, although a delta area of less saline water exists near the tributary inflows. (DPEIR, pg. 6-8)

There is no reference given to back up these statements. Given the seasonal water temperature variability within the Salton Sea (Holdren and Montano 2002), and the relatively stable inflows throughout the year, there should be seasonal variations in stratification and mixing. Although there is a reference to wind data, it merely shows frequency, magnitude and direction of winds. Figures 6-3 through 6-5 do not give the reader any sense of temporal variability, especially on a seasonal timescale. If circulation is largely dependent on wind, then it is important to more

IG (cont.)

IG-60

CEQA Guidelines Section 15148 states that an "EIR shall cite all documents used in its preparation." The Draft PEIR relied on information in the 2000 EIR/EIR prepared by Reclamation and the Salton Sea Authority and correctly cited that document. Since the model was not directly relied upon for the preparation of the Draft PEIR, it was not cited in the document.

IG-61

The State acknowledges the uncertainty associated with characterizing the transition from freshwater to salt water as tributary inflow reaches the Sea and that uncertainty is reflected in the language describing the mixing zone in the quoted statement from the Draft PEIR. Assuming the Legislature provides direction on the implementation of a preferred alternative and identifies a future implementing agency, additional clarification on the characteristics of the mixing zones could be developed at the project level. **IG-62**

Holdren and Montano (2002) identified normal seasonal patterns in temperature stratification and mixing at the Salton Sea, with temperature profiles indicating that the Salton Sea was well mixed during the spring and fall months, with some thermal stratification occurring from June through September.

IG-63

The wind climate at the Salton Sea has a seasonal component, with the strongest winds generally occurring during the months of April through June and the weakest winds generally occurring during the months of November and December. There are also spatial differences in the wind climate, with stronger winds generally occurring in the southern portion of the basin.

A distinction must be made between lake-wide mixing (both vertically and horizontally) and near-field mixing of river inflows in the Salton Sea. Mixing of river flows as they enter the Sea is dominated by momentum, and influenced to a lesser extent by density. The lake-wide, lateral mixing is governed by wind climate. Vertical mixing on a lake-wide scale is influenced by wind energy and density effects which are in turn influenced by solar radiation. The model adequately reproduced the lake-wide, seasonal stratification, and mixing events, as presented in Figures D-6 and D-17 of the Draft PEIR.

IG-60

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IG-62

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accurately describe temporal variation in winds and how that variation affects mixing. If mixing is always rapid near the tributary inflows, how does it vary spatially? Based on the temperature and D.O. profiles (Holdren and Montano 2002) there is seasonal stratification, meaning, there is not sufficient wind energy to fully mix the Salton Sea. This is potentially at odds with the description of waters rapidly mixing near the tributary inflows. Seasonal mixing and stratification need to be more thoroughly investigated or referenced if the water quality chapter is to be of any use.

Appendix D was written by someone who is very familiar with all the models mentioned and does not provide appropriate references or even adequate model descriptions. Since the only reference to the model is an early version that has been extensively modified:

It is based on earlier versions of the widely used DYRESM reservoir model developed by the Centre for Water Research at the University of Western Australia. UC Davis adapted the model to couple the temperature and mixing process with a set of biological and chemical processes that describe phytoplankton growth, the cycling of nutrients, dissolved oxygen, and the fate of particulate material. (DPEIR, pg. D-31)

It is absolutely necessary for the authors to describe in a robust mathematical way, how each of these modifications is incorporated into the model. Currently, there are no equations describing any part of the model, including the water quality modules, or tables listing parameter values used in the model. The one-dimensional Dynamic Lake Model-Water Quality (DLM-WQ) is referenced to a nutrient TMDL report written by Schladow in 2004 and it is not currently available online. Additionally, the source provided as characterizing mixing and nutrient dynamics, Setmire et al. 2001:

Previous investigations have characterized the water quality at the Salton Sea and have studied the mixing and nutrient dynamics which govern the high productivity (Setmire et al., 2001). (DPEIR, pg. D-2)

states on the fourth page that “this paper ... is not a complete analysis of nutrient cycling in the Salton Sea After reading Setmire et al. 2001, there is a qualitative description of wind mixing but

IG (cont.)

IG-64

See response to comment IG-65, below.

IG-65

The University of California at Davis provided a revised reference manual for DLM-WQ subsequent to the issuance of the Draft PEIR. This document “Reference Manual for the DLM-WQ Lake and Reservoir Model” (Fleenor et al, September 2006) contains descriptions of the individual water quality modules contained in DLM-WQ, including the phytoplankton model, the nitrogen and phosphorus models, the oxygen model, and the hydrogen sulfide model. These descriptions include schematics detailing processes included in the individual modules as well as equations governing the water quality parameters.

Parameters and kinetic rates used in the calibration simulations are summarized in tabular form in Table D-3 of the Draft PEIR.

IG-66

As stated in the Notice of Availability for the Draft PEIR, all documents referenced in the Draft PEIR are available from the State upon request.

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not a robust quantitative description of mixing models. In all of the references publicly available, there is no description of the hydrodynamic model DLM-WQ, therefore, subsequent use of the model cannot be properly assessed and the water quality results are not supported.

The water quality components are not 1-D models but appear to be box models, or 0-D, and it is not clear how the vertical dimension is incorporated into these components. What are the temporal and spatial resolutions of the models? What types of algorithms are used? What are the boundary conditions? Was there any attempt to estimate spatial variability?

The comparison between the 1-D and 3-D hydrodynamic models does not prove that the 1-D model adequately captures mixing dynamics.

To determine whether the one-dimensional assumption of the DLM-WQ model was a significant limitation for addressing future conditions at the Salton Sea, a three-dimensional hydrodynamic model, SI3D, was applied for identical conditions. (DPEIR, pg. 6-25)

Preliminary comparisons of the one- and three-dimensional models indicate that the DLM-WQ and SI3D model simulations produce similar trends in thermal stratification, as shown in Figure D-14. The similar trends include both development of the thermocline and mixing, with the water in the SI3D model accumulating slightly more heat than the water in the DLM-WQ model. The similarity of the model results under the same forcings (meteorological conditions) indicates that the one-dimensional assumption of DLM-WQ is not a significant limitation. (DPEIR, pg. D-31)

There are many important points to dispute in the preceding paragraph. First, there is no model verification data set for either model so it is impossible to say that one model performs as well as the other one. If modeling studies were planned, why have there been no verification data sets collected? Regardless of the similarity of the temperature profiles for the 1 and 3-D models, the 1-D model is not capable of capturing the gyres described in Chapter 6 as the dominant circulation pattern, therefore, there needs to be more justification as to why the dominant mixing mechanisms is ignored in the water quality model used to evaluate all of the alternatives.

IG (cont.)

IG-67

See response to comment IG-66.

IG-68

The water quality components are indeed modeled as one dimensional and not box models, as clearly seen in constituent profile results presented throughout the document (see Attachment D-1 of the Draft PEIR).

Mixing processes for water quality components are described in the "Reference Manual for the DLM-WQ Lake and Reservoir Model" (Fleener et al, September 2006). See response to comment IG-65.

IG-69

The DLM-WQ model represents the Salton Sea as a series of layers with an initial resolution of 1 meter. This spatial resolution is not fixed but variable based on vertical gradients calculated in the model. The model adjusts the number of layers as dictated by in-lake conditions in order to optimize the model run time. A minimum layer volume controls the maximum number of layers in the model at any one time. The model performs calculations on a three-hour time step for a period of one year. Model boundary conditions are adjusted on a daily basis.

IG-70

Water quality algorithms are described in the "Reference Manual for the DLM-WQ Lake and Reservoir Model" (Fleener et al, September 2006).

IG-71

Boundary conditions for the inflows to the Salton Sea (both volumetric flows and water quality parameters and constituents) are applied on a daily average basis. Meteorological data are also provided once a day. Physical boundary conditions for the 1999 calibration are discussed on page D-2 of the Draft PEIR. Inflow boundary conditions for the calibration simulation are discussed starting on page D-20 of the Draft PEIR. The DLM-WQ model is a layer-averaged model, thus assuming uniform conditions within a particular horizontal layer of the Sea. Field data indicate limited spatial variability across the Salton Sea, hence the appropriateness of the use of the layer-averaged model for programmatic comparison purposes. Model and data limitations and uncertainty are discussed in Appendix D of the Draft PEIR.

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IG (cont.)

IG-72

The lack of a verification dataset against which to demonstrate model performance is an unfortunate reality of the available field dataset. However, the lack of a verification dataset is not considered a fatal flaw in the modeling analysis for programmatic comparison purposes. Comparison model results from the one-dimensional model and three-dimensional model were not provided due the state of development of the three-dimensional at the time of publication of the Draft PEIR.

The approach used by the one-dimensional, layer- averaged DLM-WQ model is to capture the results of the dominant forcing mechanisms through a parameterization of the mixing energy provided to the system by these mechanisms without an explicit representation of the spatial variation of the forcing functions. Thus, the influence of wind on vertical mixing is captured through relationships relating wind energy to vertical mixing. The model does not need to reproduce dominant circulation pattern in order to account for the effect of this circulation on vertical mixing. This is evident in the comparison between the multidimensional model, which does capture the circulation patterns in the lake, and the one-dimensional model, which does not reproduce these patterns. Both models are capable of reproducing observed thermal conditions, including spring stratification and fall turnover, during a year-long simulation.

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Second, the goal of comparing models is to find one that will adequately describe current conditions in the Salton Sea and is capable of estimating future conditions, not capable of estimating another model output. Any models used in assessing the Salton Sea restoration must be verified by measurements from the Salton Sea, not simply another lake model used in Clear Lake. This is especially true when attempting to model water quality parameters in the Salton Sea. Temperature, salinity and nutrients are much higher for the Salton Sea than in other lakes in California so more attention must be given to density driven dynamics.

Based on Figures D11-D13, mixing is not included, and wind is not included at the surface of the water column. It is therefore impossible for the reader to evaluate how the mixing model interacts with the water quality components. There needs to be greater clarification in Chapter 6 as to which model is used to evaluate the alternatives, what the model is capable of resolving given the data limitations and the limitations of the model. There must also be an explicit description in both words and equations of the hydrodynamics, the model parameters, and calibrated values of the parameters.

C. Other Comments

1. Hydrologic Model Input Data

(a) A key component to model input data regarding inflows into the Salton Sea is based on the output from the model called the Imperial Irrigation District Decision Support System (IIDSS). This model is currently a "black box" and not publicly available. The fact that the sources, methodologies, and assumptions involved with a critical part of the input data set used for this DPEIR are unknown and not reviewable casts doubts upon much of the content in Appendix H-2. The Imperial Irrigation District return flows into the Salton Sea are very important because these flows represent both the largest inflows into the Salton Sea and are subject to significant changes in the future. If the input into the SALSAs modeling is questionable, then the results from the SALSAs modeling are tenuous at best.

IG (cont.)

IG-73

The extensive calibration effort undertaken as part of the Draft PEIR water quality modeling investigation demonstrates the ability of DLM-WQ model to represent current conditions in the Salton Sea (See Appendix D, Attachment D1). To the extent that future conditions at the Salton Sea are governed by similar processes (wind mixing, nutrient loads, sediment interaction, etc), the model should be able to represent future conditions as well. The calibration of the model to simultaneously reproduce historic temperature, dissolved oxygen, and nutrient conditions in the Salton Sea indicate that the model is adequate for the comparative mode in which it was used.

IG-74

Figures D11 through D13 of the Draft PEIR summarize the kinetic processes governing the phosphorus, nitrogen, and hydrogen sulfide modules in DLM-WQ. These figures do not represent the physical processes, such as advection, wind-induced mixing, and dispersion. The absence of the physical processes from these conceptual schematics does not indicate they were not included in the model. The calibration of temperature and dissolved oxygen would not be possible if mixing processes predicted by the model were not representative of actual conditions.

Physical processes and water quality algorithms included in the DLM-WQ model are described in the "Reference Manual for the DLM-WQ Lake and Reservoir Model" (Fleener et al., September 2006). The hydrodynamic component of DLM-WQ is based on the DYRESM (Dynamic Reservoir Simulation Model). A user's manual and a scientific manual describing the hydrodynamics in DYRESM are both available on the University of Western Australia's Centre for Water Resources' website.

Parameters and kinetic rates used in the calibration simulations are summarized in Table D-3 of the Draft PEIR.

IG-75

CEQA Guidelines Section 15148 states that an "EIR shall cite all documents used in its preparation." The Draft PEIR relied on information in the 2002 Final EIR/EIS for the IID Water Conservation and Transfer Project and correctly cited that document. Since the model was not directly relied upon for the preparation of the Draft PEIR, it was not cited in the document.

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IG (cont.)

IG-76

An Inflows Working Group was assembled to evaluate and estimate future inflows to the Salton Sea for the specific purpose of using the estimates to design and compare alternative configurations at the programmatic level. The members of the Inflows Working Group, which included experts from federal, State, and local agencies, were fully aware of the difficulty in “predicting” future actions that have a direct effect on drainage patterns or return flows to the Salton Sea. The difficulty is compounded not only by the 75-year study period but by the fact that water management decisions affecting drain flows are affected by economic, regulatory, and hydrologic factors. As such, the group determined that it was appropriate to build upon the previously accepted work that was used to support the QSA and to apply probabilistic statistical methods to address the uncertainties.

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The Imperial Group has, on several occasions, requested DWR and CH2MHill provide model documentations for the Imperial Irrigation District's model (IIDDs). The Imperial Group has also asked for the opportunity to review model itself. Apparently, the IID's model is not even available to DWR and CH2MHill. As indicated above, the output from the IID's model representing the major portion of future inflows (2003-2078) to the Salton Sea directly affects the analyses of proposed alternatives in the DPEIR. For example, the inflows from IID to the Salton Sea for the period 2003-1078 are based on the cropping pattern in the District for the period 1987-1999. Recent information indicates that the cropping pattern is already changing in the District. The model and model documentation should be made available as part of the PEIR process as soon as possible.

(b) There is a significant difference (~200 kaf/yr) between the 50% cumulative frequency flows under the variations scenarios and the deterministic annual means reported. It is unclear which mode of operation, variation or CEQA, is preferred. If they will both be considered, then it would be more useful to compare the mean or the median of the variation method with the deterministic method. Also, it would be meaningful to track actual or measured reductions in inflow into the Salton Sea from 2003 - 2006 (three years) to compare to both the CEQA and Variable-Condition predicted reductions in inflow.

(c) There is no justification given for the choice of the probability distributions sampled in the Monte Carlo simulations. Does changing the input probability distribution shapes significantly change the cumulative frequency curves generated by the Monte Carlo simulation? Does the cumulative frequency distribution change significantly if more or less numbers of Monte Carlo simulations are done? Is there any sense of the minimum number of simulations that should be done?

For all of the terms that appear in Table H2-5, it is absolutely necessary to give a reference for each term rather than give a list of models within the text. There should be a table listing all of the inflow and outflow terms, if data are available for developing these terms, the period over which data exists, if no measurements exist, is there model output that can be used, and if so which models can be used to estimate hydrological input terms.

IG (cont.)

IG-77

The estimates of future inflows to the Salton Sea are based in part on several models that are described in Appendix H-2 of the Draft PEIR. The projections of future inflows to the Salton Sea from IID for the No Action CEQA conditions were based on those described in the QSA and the Transfer Project Final EIR/EIS. Attempts were made to obtain the model files for both IID and Coachella Valley inflow estimates, but these were not released. However, the results of these model simulations and documentation were obtained and are presented in Appendix H-2 of the Draft PEIR. The Inflows Working Group determined that it was appropriate to build upon the previously accepted work that was used to support the QSA and to apply probabilistic statistical methods to address the uncertainties.

IG-78

Two different future inflow scenarios were provided, No Action Alternative-CEQA Conditions and No Action Alternative-Variability Conditions. These scenarios were meant to provide a range of possible future inflows that include varying degrees of uncertainty regarding changes in water management and climate. Long-term period average annual means are presented in Appendix H-2 of the Draft PEIR for both the No Action Alternative-CEQA Conditions and No Action Alternative-Variability Conditions. The future uncertainty included in the No Action Alternative-Variability Conditions implies that there is a significant range in the estimates themselves depending on the extent of water management changes.

Only the historic climate sequence was modified in the No Action Alternative-CEQA Conditions, describing the range of individual annual flows but limiting the range of long-term average annual flows. For this reason, statistics other than period means and annual variability of the No Action Alternative-CEQA Conditions inflows are not particularly useful.

IG-79

At the time of publication of the Draft PEIR, a complete inflow data set could not be compiled for the 2003 to 2006 period. Future project-level analysis could update the historic inflow data sets, as well as the water surface elevation and salinity conditions, and refine the calibration of the models.

IG-77

IG-78

IG-79

IG-80

IG-81

IG-82

IG-83

IG (cont.)

IG-80

The choice of future inflow probability distributions for each major component is described in Appendix H-2 of the Draft PEIR (see page. H2-63 for example) and was developed with the review of the Inflows Working Group. The final cumulative frequency of total inflows is not an input distribution, but rather a result of the inflows and distributions associated with individual major inflow components.

IG-81

It would be anticipated that the resulting inflow cumulative frequencies would be more sensitive to changes in the upper and lower bounds of the input probability distributions than to the selected distribution shape. The input probability distributions were carefully selected to best represent the range of future uncertainty for each major inflow component. These were also vetted and discussed at the Inflows Working Group. No formal sensitivity analysis was performed on the relative impact of input probability distributions to total inflows cumulative frequency. However, preliminary tests indicated that a wide choice in input distributions for the future Imperial Valley uncertainty could affect the 2018-77 mean annual inflow to the Salton Sea by less than +/- 50,000 acre-feet/year.

IG-82

The Monte Carlo method can be used to provide a theoretical estimate of the number of random samplings of a distribution to produce an error within a confidence interval. However, this method requires an iterative approach of model solution followed by recalculation of the number of trials. Sensitivity analyses with varying number of trials indicated that mean errors in water surface elevation were reduced to less than 0.05% with 750 trials and were even less at 1000 trials. For modeling purposes, 1000 trials were used for all model simulations.

IG-83

As described in Appendix H-2 of the Draft PEIR, this information was developed based upon modeling for the Quantification Settlement Agreement Programmatic EIR as referenced in the text.

Dale Hoffman-Floerke
January 16, 2007
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In the local watershed category in Table H2-5, it is not clear why values for some of the terms increase during certain years when others remain the same. For example, in the year 2041, the projected flows from Salt Creek and the ungaged watershed are larger than the baseline values; however, San Felipe Creek projected flow for 2041 remains at the level of the baseline. Similar discrepancies occur in years, 2043, 2045, 2055, 2065, 2075. If all of these sources are dependent on precipitation, they should exhibit similar behavior for the given precipitation.

2. *Hydrologic Model Algorithms*

There should be a more detailed explanation of the model algorithms, range of parameter values used in the model, and how the CALSIM model is modified to run under stochastic conditions.

The water quality algorithm of the SALSA model should be consistent with the water quality models used in Chapter 6. It is unclear if the SALSA model precipitates salt out of only the Brine Sink or if salt precipitation is incorporated into the other habitat components.

A constant value of 1,500,000 tons of salt/year has been assumed to continue to precipitate out of the water column of the Brine Sink. (DPEIR, pg. H2-1-36)

It would be necessary to incorporate salt precipitation into the model for the Third and Fourth Lakes in Alternative 4 based on the proposed salinities. A relationship should also be developed relating evaporation, salinity, and the temperature of the water. The temperature would be particularly important for the Shallow Habitat Complex, because this habitat is expected to be warmer than other habitat types. The effect of the increased temperature on future evaporation rates due to the creation of smaller and shallower volumes of water compared to existing conditions needs to be addressed.

The geochemical components of the model must be improved as the restoration progresses and more information becomes available.

The initial conditions of the SALSA model should be specified. It would also be helpful to have an analysis explaining under what conditions does the model not have enough water to

IG-84

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IG-93

IG (cont.)

IG-84

San Felipe Creek inflows were correlated to the precipitation from the Brawley station, while those for Salt Creek inflows were correlated to precipitation from the Mecca station. Under rare circumstances, precipitation totals at these stations may vary significantly. For example, in the historic year (1963) representing year 2041 conditions, annual precipitation at Mecca was nearly twice that at Brawley.

IG-85

See response to comment IG-84.

IG-86

The SALSA model documentation is described in detail in the Appendix H-2, Attachment 1, of the Draft PEIR. The model algorithms are simple translations of water and salt balance equations with a priority-based water allocation solution scheme for each time step. The stochastic mode developed for this project simply runs the SALSA model once for each sampling of the input distributions. The range of water surface elevation and salinity results are then summarized through statistics generated from the 1,000 simulations.

IG-87

The purpose of the SALSA model is to track water and salt balances in the various alternative configurations. Other than accounting for salt balance, water quality analysis is not the function of the SALSA model. Dynamic water quality processes represented in the DLM-WQ model cannot be replicated in the SALSA model.

IG-88

Salt precipitation has been identified in the literature, and confirmed through SALSA model calibration of historic salinity, to be a significant salt balance term in the Salton Sea. The SALSA model has the capability to precipitate salt out of any marine water body, but the modeling performed for the Draft PEIR alternatives assumed that salt precipitation only occurred in the Brine Sink. During historic salinity calibration, significant salt precipitation was not detected until the salinity had exceeded 40,000 mg/L. No salt precipitation was assumed in the saline habitat or air quality areas as salt was not tracked within these components.

IG-89

The commenter is correct that salt precipitation would be expected in the Third and Fourth Lakes given the desired salinity levels. However, a quantitative estimate of the amount of salt that would precipitate out of these smaller water bodies was not attempted.

IG (cont.)

The geochemical processes that govern salt precipitation in the current Salton Sea are complex and may not be directly translated to such small water bodies. It would be anticipated, however, that salt precipitation in the smaller water bodies of the Third and Fourth Lakes would be less than 5% of that occurring in the current Salton Sea. The salinity targets in these Lakes would be achieved even more rapidly than that presented in the Draft PEIR, but would not change the overall results of the alternative.

IG-90

The purpose of the SALSA model is to track water and salt balances in the various alternative configurations. The model does not contain algorithms for water temperature or other water quality parameter projections. For the detailed project level evaluations, the water temperature effect on evaporation in shallow water bodies could be addressed.

IG-91

The SALSA model does not currently include geochemical processes, but provides a surrogate loss term for salt precipitation. The geochemical processes of the Salton Sea are complex and not fully understood at this time. Improved understanding of these processes and enhanced modeling could be considered during project level analysis.

IG-92

The initial conditions for the SALSA model are described in Appendix H-2, Attachment 1 of the Draft PEIR under the heading "Initial Conditions."

IG-93

The SALSA model allocates water to various uses based on the priority scheme described in Appendix H-2, Attachment 1, of the Draft PEIR. The priority scheme was developed to allocate water to highest priority uses first and to short those of lower priority. In general, one can see the effect of the priorities during the phased implementation of lakes or marine seas in various alternatives. When the barriers or berms are first constructed, there is insufficient water to meet air quality management, habitat, water surface elevation, and salinity targets. At these times, "shortages" are taken which result in not achieving the water surface elevation and salinity targets. This process continues with subsequent time steps until the deviations between the actual water surface elevation and the target elevation is eliminated. At this point the Sea or lake is functioning at target elevation and any water greater than that required for elevation, habitat, and air quality goals is allocated for salinity control in the Sea or lake. Thus, during times when the priority scheme must "short" a particular use, the elevation and/or salinity of the water body will deviate from the target. This can be seen in the stochastic model trace results for all alternatives in Appendix H2, Attachment 1, of the Draft PEIR.

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Page 21

satisfy all of the demands. If there are times when the priorities of water allocation must be invoked:

- Satisfy water demands for air quality needs;
- Satisfy water demands for habitat and treatment wetlands;
- Satisfy elevation targets in marine seas, lakes, or rings; and
- Achieve salinity targets in marine seas, lakes, or rings. (p.H2-1-15)

it should be explained how the other priorities were affected, for how long and what it would mean for the success of the restoration.

In general, the different types of habitat within each alternative needs better explanation as to how they were modeled in SALSA. For example, if salinity was not tracked for the individual HAB units (pg. H2-1-6) then how was the relationship between evaporation and salinity applied to these units (pg. H2-1-8)? Were different depths associated to the various habitat types within the Concentric Lakes Alternative (Alternative 4)?

Although the SALSA model has a monthly time step, there are no examples showing how water levels and salinities would vary over the course of a year. It is important to consider the seasonal variability at the Salton Sea rather than just the conditions at the end of the year. Historical records indicate that there is less variation in the inflows to the Salton Sea on a monthly basis in comparison to evaporation, which increases dramatically during the summer. During the summer months (May-August) over 50% of the annual evaporation occurs, however only 34% of the annual inflow comes in during those months (Hely 1966). This suggests that during the summer evaporation exceeds inflows, which is very important when considering the design of alternatives and the salt balance. Displaying an annual time step will not properly reflect the management decisions and infrastructures required to maintain all of the water level elevation and water quality objectives.

IG (cont.)

IG-94

The SALSA model's primary purpose was to account for salt and water budgets in the main water bodies of the alternatives. Salt is tracked in the Brine Sink, Marine Sea, Concentric Lakes, and Concentric Rings. In these units, evaporation is dynamically computed based on the current salinity in the water body. However, salt was not tracked in the Habitat or Air Quality components. Evaporation changes associated with the salinity regime of the open water habitat areas was not considered in the modeling. The Brine Sink with its potentially extreme salinity conditions is most affected by evaporation suppression. There is considerable flexibility in the managed salinity regime of the habitat areas such that modeling would have had to specify areas and fixed salinity levels to accommodate evaporation suppression calculations. Since evaporation suppression due to high salinity does not become significant until salinity is greater than 50 ppt, it was determined that the assumption of no evaporation reduction was not significant. In addition, the assumption of no evaporation reduction in the open water habitat areas could be considered a conservative assumption related to the water budget.

IG-93
cont.

IG-94

IG-95

IG-95

See response to comment IG-94.

IG-96

IG-96

The Concentric Lakes of Alternative 4 were simulated based on the berm locations and Salton Sea bathymetry. Each lake was simulated with varying bathymetry. The Concentric Lakes of Alternative 4 were considered to be relatively shallow lakes.

IG-97

IG-97

The SALSA model is simulated on a monthly time step to better account for seasonal variations in hydrology, climate, and fluctuations in the Salton Sea and alternatives. However, the most important results from a programmatic assessment of various restoration alternatives are the long-term functionality of the system. For this reason, and also to make the results more understandable, only end of year values are shown in the tables and charts of Appendix H-2 of the Draft PEIR. The model results are voluminous because monthly values for 75 years and for 1,000 traces are computed for each simulation. These results are available and would be most valuable during project-level analysis.

IG-98

IG-98

The commenter is correct. There are seasonal effects in which there is an imbalance (either positive or negative) that causes the Marine Sea, lake, ring, or Brine Sink to fluctuate during the year. The SALSA model accounts for this function and could provide information for improved operations or management of particular infrastructure. However, this level of operational management could be more appropriately conducted during project-level analysis.

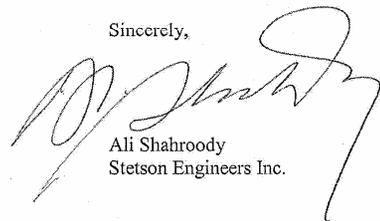
Chapter 8
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Page 22

3. *Miscellaneous*

Page Number	Text from DPEIR	Comments
1-3	<i>The current salinity averages about 48,000 milligrams/liter (mg/L).</i>	Current elevation should be given also, along with corresponding dates which the elevation and salinity represent.
1-7	<i>Between now and 2018, surface water elevations....</i>	Should state which set of inflow assumptions are used for this discussion.
7-6	<i>"Groundwater generally moves southwest beneath Salton Creek</i>	Should read Salt Creek rather than Salton Creek
8-5		Reidel 2000 Reference Missing
9-10		CalEnergy 2003 Reference Missing
9-17		Salton Sea Authority 2004 Reference Missing
D-31		UC Davis Reference Missing
F-12	<i>"The Lake habitat type would have varying salinity (ranging from 20,000 to 80,000 mg/L) and depth depending on the location of the lake"</i>	The maximum target for salinity in Alternative 4 is 60,000 mg/L not 80,000 mg/L
H2-1-8		Reclamation 2004 Reference Missing

Thank you for the opportunity to provide comments on the DPEIR for Restoration of the Salton Sea. Please call or send email if additional information is needed.

Sincerely,

Ali Shahroody
Stetson Engineers Inc.

AS:mc

Attachments
Cc: w/attachments
Mike Morgan
Mike Maloney
Chuck Keane
Doug Osugi
Gwen Buchholz

IG (cont.)

IG-99

As indicated on page 2-4 in Chapter 2 of the Draft PEIR, Existing Conditions represent conditions at the Salton Sea as of February 27, 2004, which is the date of filing for the Notice of Preparation. At that time, the surface water elevation of the Salton Sea was -228 feet mean seal level and the salinity was 48,000 mg/L.

IG-100

There is very little difference between the No Action-CEQA Condition and 2018, as indicated in Appendix H-2 of the Draft PEIR.

IG-101

The Draft PEIR has been modified as requested.

IG-102

Page 8-5 of the Draft PEIR does not cite "Riedel 2000." Costa-Pierce and Riedel 2000 is cited on that page and referenced in Chapter 28 of the Draft PEIR.

IG-103

The Draft PEIR has been modified as requested.

IG-104

The citation should be "URS, 2004" as referenced in Chapter 28 of the Draft PEIR. The Draft PEIR has been modified to reflect this correction.

IG-105

Physical processes and water quality algorithms included in the DLM-WQ model are described in the "Reference Manual for the DLM-WQ Lake and Reservoir Model" (Fleener et al, September 2006). This was not completed until after the release of the Draft PEIR.

IG-106

The Draft PEIR has been modified as requested.

IG-107

The reference is listed in the references section on page H2-1-55 as U.S. Bureau of Reclamation. 2004. Salinity Control Research Project.

IG-99

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IG-104

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IG-106

IG-107

Based on the above discussion, the section under the Exposed Playa is revised subject to your review. The revised section is presented below.

Exposed Playa

Alternative 4 includes temporary pipelines and ditches constructed on the down-gradient side of the Geotube[®] Berms to provide water supply for short-term irrigation of native vegetation. These facilities would be used only for a limited period (one or two years), and if necessary permanently, after the Brine Sink recedes from the areas adjacent to the Geotube[®] Berms. It is anticipated that there may be minor areas with small plants that would grow between the Geotube[®] Berms where seepage may occur.

Below the Fourth Lake, it is assumed that a salt crust would develop as the Brine Sink recedes. However, there are no provisions. High saline water from the Fourth Lake may be used (as spray water) to maintain the salt crust. Therefore, there are no long term air quality management facilities in this alternative.

These assumptions are consistent with the February 20, 2006 and March 28, 2006 submittals from the Imperial Group. It should be noted that the submittals discussed the possible use of water-efficient vegetation, but it appeared that no water was provided on a long-term basis in the water balance for water-efficient vegetation, therefore, this type of air quality management was not included in Alternative 4.

cc: Mike Morgan
Mike Maloney

Chapter 8
Interest Groups Comments

From: Ali Shahroody
Sent: Tuesday, March 28, 2006 5:31 PM
To: Dale Hoffman-Floerke; Douglas Osugi
Cc: Gwendolyn.Buchholz@ch2m.com; Mike Morgan (pirate@kelomar.com); Mike Maloney; Richard Rhoads (rrhoads@moffattnichol.com); Darryl Hayes (Darryl.Hayes@CH2M.com); sbundy@ch2m.com; Dean Curtis
Subject: Concentric Lakes

IG (cont.)

Dale and Doug:

Attached is the drawing for the Concentric Lakes Alternative dated 3/28/06. As requested, the surface water elevation at the perimeter lake has been changed from -235 feet to -230 feet. The attached table provides information on surface area and capacity for the lakes. Dean Curtis from Stetson Engineers has forwarded the GIS shape file of the Concentric Lakes dated 3/28/06 to Summer Bundy of CH2MHILL. I have also attached information from the Imperial Group in response to the March 17 data request. Please let me know if additional information is needed. Thanks, ALI

**Information from Imperial Group
March 28, 2006**

IG (cont.)

The following information is provided in response to the data request dated March 17, 2006

1. Facilities Layout

- a. The drawing, including facilities, for the Concentric Lakes is attached and the GIS shape file is separately provided to CH2MHILL.
- b. The Channel is an open canal with gravity flow based on a head difference.
- c. See attached plan. Sludge can be removed from the site mechanically or sluiced to the brine pond. Sluicing to the brine pond is preferred.
- d. Surface water elevation would be close to -228' (-230) in the southern half of the Sea. The shorelines are relatively steep on the northern half of the Sea. That means the exposed area would be limited. Establishment of natural vegetation would be the means to provide air quality management. If it becomes a necessity to have a perimeter canal to supply less than 7 ppt salinity water for air quality protection, this requirement would apply to most alternatives including the Concentric Lakes.
- e. Pumping facilities are not considered for this alternative.
- f. Navigation Locks are not used.

2. Water Balance

- a. There would be flow splitting structures to manage the major supply of water. High flows would be passed to the brine pond. Flow splitting should be based on surface areas of the lakes (evaporation) and salinity targets. The salinity target would vary from 20 ppt in the perimeter lakes to 60 ppt to the inner lakes.
- b. Flows for the siphons are primarily supplied from Alamo and New Rivers. Spillways would convey water from one lake to the next, as cascading water.
- c. High Flows from Alamo and New Rivers are bypassed to the Brine Sink. Flows from White Water River, San Felipe and Salt Creeks would be assimilated into lakes.
- d. Water would be conveyed to the Brine Sink via outlet works (see drawing).

- e. N/A
- f. The first priority is to maintain the perimeter lakes (to full capacity), then the second and third Concentric Lakes (in order of priority from outer to inner lakes).

3. Air Quality Management

- a. Salt crust treatment for 50% of the area and establishment of native vegetation for the remaining area. See item 1(d) above for delivery and quality of supply.

4. Vegetation

- a. Sprinklers and drip irrigation could be used to establish the native vegetation. Once the native vegetations are established, irrigation should be discontinued.

Areas between lakes would not be cultivated for commercial farming. There would be utility bridges with access roads to service the area.

- b. N/A

5. Water Quality Management

- a. Shoreline lakes 20-30 ppt. Salinity of 20 ppt to 60 ppt for the inner lakes, with increasing concentration from outer to inner lakes.
- b. Water circulation would occur through inflow and outflow process. There would be more circulation in summer due to increased evaporation. Flow rates residence time and water quality would vary in different lakes and they can be estimated by modeling.
- c. See item 5(a) above. We do not have specific goals for DO.

6. Habitat

- a. Under the Concentric Lakes Alternative, drains, San Felipe Creek and Salt Creek would be flowing directly into perimeter lakes. Flow rates are based on discharges from these sources. The data is available. The maximum depth of the perimeter lakes would be 6 feet.

Pubfish are prevented to move from one lake to another, because lake flows over the spillways would be as sheet flows. Spillways within the vicinity of pubfish areas could be screened to prevent the movement of pubfish from one lake to another.

- b. Concentric Lakes as set forth above would provide saline habitat complex and pubfish connectivity. Concentric Lakes would provide habitat during the interim period and they are adaptive to a wide range of changes in future inflows to the Sea.
- c. Vegetation would be controlled by means of salinity.

From: Ali Shahroody
Sent: Wednesday, June 21, 2006 6:08 PM
To: Hoffman-Floerke, Dale; Gwendolyn.Buchholz@ch2m.com; Douglas Osugi
Cc: Mike Morgan (pirate@kelomar.com); Mike Maloney; Rhoads, Rick
Subject: Concentric Lakes - Selenium Impacts

Hi Dale:

As expressed to you, we were surprised to see the results of selenium impact assessment for Concentric Lakes (Alternative 4) as presented by CH2MHILL at the last Advisory Committee meeting. We were viewing it for the first time without having an opportunity to provide inputs prior to the analysis. I also had a chance to discuss the nature of the risk analysis with Harry Ohlendorf Ph.D. of CH2MHILL at the meeting. The risk analysis is primarily driven by concentrations of selenium in sediments on the Sea bed based on the sediment selenium map (contours). To the extent portions of Concentric Lakes overlie the areas with high concentrations of selenium, the analysis assumes a higher environmental impact or ecologic risk would be associated with Alternative 4.

As we discussed, the Imperial Group is providing the attached memorandum to provide text in the draft PEIR on selenium in Salton Sea and specifically on the mitigation measures for potential selenium impacts under Alternative 4. The attached memorandum was prepared by Dr. Robert Engler of Moffatt & Nichol. Please call or email if additional information is needed.

Regards,
Ali Shahroody, PE
Stetson Engineers Inc.

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Environmental Issues with Elevated Selenium Concentrations
in the Restoration of the Salton Sea

IG (cont.)

Background:

Selenium is an element required for life, and naturally occurs in soils, sediments and rocks over a range of concentrations. Typical natural soil concentrations range from 0.2 to 4.0 mg/kg (ppm) but can be higher in highly mineralized areas. Concentrations typical of the Salton Sea project area encompass this natural background range and also have concentrations elevated above natural levels. This is typical of irrigation water contamination from arid agricultural soil operations. Elevated surface concentrations above 4.0 mg/kg may present a risk to aquatic and terrestrial biota if there is an exposure and the Selenium is biologically available. Environmental risk is a function of exposure (presence) and hazard (biological availability). Unfortunately toxicity and bioaccumulation tests do not appear to have been conducted at the site, seriously limiting an assessment of risk. Moreover, the site appears to have been sampled only for surficial contamination and was not sampled to assess the depth of elevated levels of Selenium. As this constructed restoration will move large masses of soil and sediment, it is important to identify the depth of elevated concentrations to estimate the total mass of soil and sediment that may have a potential for environmental risk.

Environmental Assessments:

A screening assessment using ERL's (Effects Range Low) and ERM's (Effects Range Median) as a guide to sediment Selenium contamination has also been shown, but only for surficial sediments. Unfortunately, this technique purports to identify sediments that are toxic above ERM's and potentially exhibit toxicity at concentrations between ERL's and ERM's. This technique is not based on scientific "cause and effect," but is a statistical (empirical) approach based on data developed elsewhere. That is to say, a specific concentration of Selenium always will be toxic. Moreover, both the Selenium ERL and ERM fall within the range of natural background variability and may never identify a hazardous concentration without the conduct of bioassays of the specific

sediment as validation. The ERL/ERM approach may be used as a screen that directs the assessment to more objective and technically relevant testing such as direct toxicity and bioaccumulation assessments with biota appropriate to the project area. Those assessments can include both aquatic and terrestrial biota. The “take home message” is that the ERL and ERM approach alone should never be used for decision making. An approach using “multiple lines of evidence (LOE)” and evaluating the “weight of evidence (WOE)” as an outcome of appropriate biological and geochemical testing and assessments are the basis of technically sound decision making. Geochemical assessments such as leaching tests with mixing zones and predictive modeling are necessary for assessing water quality impact. There are USACE/USEPA testing manuals readily available for assessing sediments and soils as to contaminant mobility, toxicity, and biological availability to build the LOE’s leading to a WOE risk based decision.

Needs:

As there will be significant construction and soil/sediment movement and relocation within the site, it is mandatory to identify the soil(s)/sediment(s) that will pose a documented risk to the environment. Those posing an unacceptable risk will have constrained use at the site and the low/non risk soil/sediment will have unconstrained use at the site. As such, a full set of biogeochemical assessments is necessary to characterize the vertical and horizontal distribution and biological availability of Selenium across the site. The engineering characteristics of the soil/sediment must also be assessed to ensure proper construction use of the material. A complete characterization is necessary.

Characterization:

The soil/sediment characterization should be done according to an acceptable field design with coring devices to produce representative samples for surface and project depth distributions. The cores should be sectioned at appropriate depth intervals to identify changes at appropriate depths for their sediment physical and biogeochemical characteristics. The physical testing should include the full suite of engineering

characteristics for construction purposes both in the wet and dry soil/sediment location and uses. Biogeochemical testing should include the full suite of general supportive tests (e.g., pH, Redox, salinity, nutrients, CEC), contaminant distribution, leaching properties, and toxicity and bioaccumulation tests on appropriate aquatic and terrestrial animals.

The purpose of these assessments is to evaluate the sediments/soils so that they can all be used productively and beneficially within the site during restoration construction.

Appropriate characterization will minimize the need for additional soil and construction material from external locations or disposal of high-risk soils/sediments at an off-site location. This will result in the most efficient use of the soils/sediments and lower costs.

The outcome of the characterization will identify those materials that can be used in dike construction, terrestrial restoration sites and aquatic restoration sites.

Furthermore, the unacceptably contaminated material can be used beneficially as construction material isolated within the geotubes, in the dike interior, and as base aquatic fill followed by capping for isolation with clean material to reach a proper elevation. The goal is to use all material beneficially and to isolate unsuitable within the construction process.

Coordination:

All aspects of the testing, assessment and evaluation must be an integral part of all components of the complex construction, planning and execution of the project. This will allow project managers to meet environmental constraints, permitting requirements, construction/engineering needs and stakeholder oversight. Environmental and engineering monitoring during and post construction is also an integral requirement. This monitoring will ensure that the restoration end state is met and maintained, water quality is attained, sufficient productivity of aquatic and terrestrial plants and animals are maintained and proper elevations and flow patterns are met. Project success cannot be achieved without thorough coordination of engineering and environmental components.

From: Hoffman-Floerke, Dale [mailto:dalehf@water.ca.gov]
Sent: Monday, May 22, 2006 3:12 PM
To: Patrick Maloney; pirate@kelomar.com
Cc: Ali Shahroody
Subject: Concentric Lakes, Alternative Number 4

IG (cont.)

Mike and Patrick,

I apologize for not getting this to you much sooner, as promised. I have been working with our consultants and staff to ensure that we've taken the information that was provided to us on February 20 and March 28, 2006 is accurately portrayed in the attached project description. In a few instances, some assumptions by our Team were made in order to be able to analyze the Alternative. In other instances we simply did not make an assumption; there may be a gap or missing information.

Nevertheless, it is imperative that you review the attached Project Description and provide to me either your concurrence that we did in fact accurately capture your information or that we did not.

At this time, I respectfully request that there be no changes to your project, unless it is simply a clarification of something you sent to us in one of the 2 previous transmittals. Our impact assessments are being written and it is too late to make any modifications to the project descriptions that would affect the modeling analyses. However, we can add text to the descriptions to facilitate the understanding of the alternative, such as a description of future considerations.

I would appreciate a response from you as soon as possible, but not later than May 30. Additionally, I will provide you with a written letter and hardcopy of the attachment.

Thanks for your patience.

IG (cont.)

Dale H-F

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ALTERNATIVE 4 - CONCENTRIC LAKES

IG (cont.)

Alternative 4 would include a partial ring water body and three whole ring water bodies located around the perimeter of the shoreline. All of the rings would be constructed using a dredge filled Geotube[®] covered with earthen materials to form an impervious barrier. Each of the Concentric Lakes would be operated to maintain a constant range of elevation and salinity within the water body. Salinity concentrations in each successive lake would be managed for a range of 20,000 to approximately 85,000 mg/l. The lakes would be constructed over time as the Brine Sink recedes.

Description of Components

The components of Alternative 4 would include the Concentric Lakes formed by Geotube[®] Berms, exposed playa, Brine Sink, Brine Interconnecting Canal, and Sedimentation/Distribution Basins.

Concentric Lakes

The Concentric Lakes include a partial lake parallel to the southern shoreline and three full concentric lakes. This alternative does not include navigation locks.

Geotube[®] Berm

Each of the lakes would be constructed using a dredge filled Geotube[®] covered with earthen materials to form an impervious barrier. The construction method would use dredges and Sea Bed materials for most of the construction rather than large imported rockfill. The Geotube[®] Berm would be designed to limit the maximum water depth adjacent to the barrier to approximately 6 feet. By maintaining water depths of less than 6 feet, the structures would have a lower risk of structural failure and would not be under the jurisdiction of the California, Division of Safety of Dams.

The 60-foot concentric Geotube[®] would be placed on geotextile fabric over the existing Sea Bed to provide additional foundation support for the Berm. The Geotube[®] would be filled with dredged soil from the Sea Bed for protection and stability. The final slope would be constructed at 5:1 on the lake side of the Berm and 5:1 on the exposed playa side of the Berm. Rock-slope protection would be placed on the lake side of the Berm.

These assumptions are consistent with the February 20, 2006 and March 28, 2006 submittals from the Imperial Group.

Elevation and Salinity of the Concentric Lakes

Each of the Concentric Lakes would be operated to maintain a constant range of elevation and salinity within the water body. The First Lake would operate at an elevation of -230 feet msl with a range of salinity between 20,000 to 30,000 mg/L. The water elevations of the Second and Third lakes would be -240 and -255 feet msl. The salinity of the Second and Third lakes would range from 30,000 to 40,000 mg/L. The Fourth Lake water elevation would be at -265 feet msl and the salinity would range from 40,000 to 85,000 mg/L. All four lakes would be designed to function similar to Saline Habitat Complex areas. Additional deep areas of up to 15 to 20 feet would be created during the dredging operations that formed the Berms. Sea Bed material would also be dredged to form islands within the lakes.

These assumptions are consistent with the February 20, 2006 and March 28, 2006 submittals from the Imperial Group.

Conveyance of Water

Conveyance facilities would be designed to divert water from the New and Alamo rivers into all four lakes or to the Brine Sink as necessary to maintain salinity concentrations in each lake. Whitewater River would flow directly into the Second Lake. Conveyance facilities would be designed for water to flow from each of the upper lakes to each of the lower lakes (i.e., a cascading flow) and the Brine Sink using outlet/inlet structures along the Geotube[®] Berm. No pumps would be used in this alternative.

These assumptions are consistent with the February 20, 2006 and March 28, 2006 submittals from the Imperial Group.

Pupfish Connectivity

Pupfish connectivity would be provided along the southern and eastern shorelines in the First Lake because the drains and San Felipe Creek would flow directly into this lake. Salt Creek would flow directly into the Second Lake. The drains along the northern shoreline would extend into the Second Lake.

These assumptions are consistent with the February 20, 2006 and March 28, 2006 submittals from the Imperial Group.

Exposed Playa

Alternative 4 includes temporary ditches constructed on the down-gradient side of the Geotube[®] Berms to provide water supply for short-term irrigation of native vegetation. These facilities would be used only for one or two years after the Brine Sink recedes from the areas adjacent to the Geotube[®] Berms. It is anticipated that there may be minor areas with small plants that would grow between the Geotube[®] Berms where seepage may occur.

Below the Fourth Lake, it is assumed that a salt crust would develop as the Brine Sink recedes. However, there are no provisions to maintain the salt crust. Therefore, there are no long-term air quality management facilities in this alternative.

These assumptions are consistent with the February 20, 2006 and March 28, 2006 submittals from the Imperial Group. It should be noted that the submittals discussed the possible use of water-efficient vegetation, but it appeared that no water was provided on a long-term basis in the water balance for water-efficient vegetation, therefore, this type of air quality management was not included in Alternative 4.

Conveyance of Flows into the Brine Sink

Flows not used to support the Lakes could be bypassed from the New and Alamo rivers directly into the Brine Sink. Flows from Fourth Lake also would be conveyed by overland flow into the Brine Sink. The Brine Sink would fluctuate seasonally and annually depending upon inflow patterns.

These assumptions are consistent with the February 20, 2006 and March 28, 2006 submittals from the Imperial Group.

Sedimentation/Distribution Basins

Sedimentation/Distribution Basins would be located along the shoreline near the confluences of New and Alamo rivers. Sediment collected in the basins would be periodically dredged and conveyed through the River Bypass Pipeline into the Brine Sink.

These assumptions are consistent with the February 20, 2006 and March 28, 2006 submittals from the Imperial Group.

IG (cont.)

Construction and Operations under Phases I through IV

Alternative 4 would include construction throughout Phases I through III. Initially, about 2,000 acres of Saline Habitat Complex would be constructed along the southern shoreline within the area designated for the First Lake in accordance with the Early Start Program. By the end of Phase I, the Sedimentation/Distribution Basins, the First Lake would be constructed, and the Early Start Saline Habitat Complex Berms would be demolished. Construction of the Second Lake would be started during Phase I and completed in the early years of Phase II.

During Phase II, the Third Lake would be constructed as the Brine Sink recedes. Roadways across the exposed playa to provide access to the area also would be constructed during Phase II. Maintenance would be initiated in the First and Second lakes and in the Sedimentation/Distribution Basins during this phase. The Fourth Lake and the Brine Interconnecting Canal between two portions of the Brine Sink would be constructed in Phase III. During this phase, maintenance would occur in the First, Second, and Third lakes and the in Sedimentation/Distribution Basins.

Maintenance would continue for all facilities during Phase IV.

Maintenance actions were not included the February 20, 2006 and March 28, 2006 submittals from the Imperial Group. Therefore, these actions were assumed.

Assumptions about Other Information

The February 20, 2006 submittal described several methods to improve water quality including the use of wetlands in the watershed or aeration. However, the facilities were not fully described. Therefore, these facilities were not included in Alternative 4.

Exhibit D-K

EXHIBIT D

January 16, 2007

Review of Salton Sea Ecosystem Restoration Program Draft PEIR

Dr. Peter Reinelt
Interim Chair, Department of Economics
State University of New York at Fredonia

The landowners and farmers near the Salton Sea in Imperial County have a large stake in the success of any Salton Sea restoration plan. In many cases, they have farmed in the area for generations. Whatever occurs with the Salton Sea, the agricultural community near the Sea will be directly affected. For this reason, landowners and farmers asked that I assist in their consideration of restoration alternatives and undertake a critical review of Salton Sea Ecosystem Restoration Draft PEIR¹ with the goal of improving the analysis in the final draft so that landowners, farmers, the general public, and decision makers can more effectively compare the restoration options under consideration.

Stated succinctly, my three major concerns with the Draft PEIR are as follows:

- 1) For the magnitude of public investment considered, the actual implementation of any Salton Sea restoration program crucially depends on the cost effectiveness of the proposed plan. While the Draft PEIR does a laudable job of evaluating the environmental effectiveness of the alternatives, the Draft PEIR should enhance comparison of cost by calculating the total present value cost of each alternative. Present value cost is the most widely supported and consistently used metric to compare project costs when cash flows for construction expenditures and operation and management costs vary over time between alternative projects. Additionally, this calculation would be fairly simple with the supporting information developed by the authors but not included in the Draft PEIR.
- 2) The assessment of future inflows from the Imperial Valley (and Coachella Valley) is fundamentally flawed. The Draft PEIR uses incomplete or partial economic logic to derive probability distributions for future conservation in which the most likely future conservation is, in reality, the least likely amount of conservation. Furthermore, the assessment ignores whole categories of conservation that are reasonably foreseeable and likely to occur.
- 3) The choice of an 80% exceedance probability to evaluate alternatives under the variability conditions is an arbitrary physical assumption divorced from any meaning for the cost effectiveness of the project and of limited use for evaluating environmental goal effectiveness. As an extreme example, this criterion would not penalize a multi-billion dollar project that failed to accomplish anything with a 20% probability. In fact, based on the hydrological model results, the partial sea designs have a 10 to 20% probability of turning into the most expensive brine sinks ever built, providing no value above the No Action Alternative. A more comprehensive measure, that considers cost effectiveness over the whole range of possible outcomes to assess the importance of design adaptability to changes in future inflows, is needed. Furthermore, the fundamentally flawed assessment of future inflows indicated above in (2), along with no estimation of modeling uncertainties of the

IG-108

IG-109

IG-110

¹ California Department of Water Resources and California Department of Fish and Game with CH2MHill, "Salton Sea Ecosystem Restoration Program Draft Programmatic Environmental Impact Report", prepared for the State of California Resource Agency, October 2006.

IG (cont.)

IG-108

Construction and operations and maintenance costs were provided in the Draft PEIR for informational purposes. However, determining the present value of the alternatives and an analysis of the cost effectiveness of each alternative is not required by CEQA and outside of the scope of the Draft PEIR.

IG-109

See response to comment IG-108.

IG-110

See response to comment IG-76, IG-77, IG-78, IG-80, IG-81, IG-82, IG-83, and IG-84.

numerous model components used for alternative evaluation, means that the calculated “reliability” in the Draft PEIR is vastly overstated and the probability of failure of the partial sea designs is much greater than 10 to 20%.

The following comments demonstrate the validity of these major concerns in detail. In addition, these comments identify a number of other issues whose clarification would improve the PEIR.

Background and Restoration Delay

By an unusual combination of factors, the water of Salton Sea has approximated ocean water in composition for the last 45 years, thus maintaining an environment in which certain marine fishes now thrive. This condition is, however, accidental and ephemeral. *Pomeroy and Cruse, 1965, p. S-1.*

Salton Sea will not accidentally continue to be the great resource that it is. The very forces that created it will destroy most of its values...the salt concentration will be high enough in a few years to kill most of the fish. *Pomeroy and Cruse, 1965, p. 1-17.*

The beneficial uses of Salton Sea can be preserved by suitable engineering measures...Of the various plans considered for salinity control, the one appearing best from the economic standpoint is to dike off a section of the Sea to serve as a final sink for collecting salt. *Pomeroy and Cruse, 1965, p. S-1.*

Since the report by Pomeroy and Cruse on a “Water Quality Control Plan for Salton Sea” in 1965², detailed description of the physical processes that lead to increasing salinity and loss of fishery habitat have been known. Furthermore, Pomeroy and Cruse investigated alternative engineering designs and proposed the general design of the least-cost solution. Yet, more than 40 years have passed with little action.

The source of this delay has been the magnitude of the restoration undertaking in terms of cost and construction, as well as, a lack of urgency even as fish populations have collapsed. Finally, it appears that recent projections for future inflow decreases with the implementation of the Quantification Settlement Agreement have created a sense of “now or never” urgency to save the bird habitat and the remaining fish habitat on which it depends. But cost could still be a substantial barrier to progress.

To garner both regional and statewide acceptance that will lead to actual implementation after more than 40 years of study, the restoration design must be cost effective in achieving its environmental goals—fish and wildlife habitat diversity (including water quality) and air quality—as well as recreational and community economic development goals.

Cost-effective Pursuit of Goals

While the Draft PEIR does a laudable job of evaluating the physical environmental effectiveness of the alternatives, the Draft PEIR falls short in evaluating recreational opportunities and improved economic conditions. Furthermore, evaluating the cost effectiveness of the alternatives requires comparing the cost of each alternative to its physical effectiveness. The Final PEIR should enhance comparison of cost across alternative by calculating the total present value cost of each alternative.

² Pomeroy, Richard D. and Henry Cruse, “A Reconnaissance Study and Preliminary Report on a Water Quality Control Plan for Salton Sea,” prepared for California State Water Quality Control Board, December 1965.

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IG (cont.)

IG-111

See response to comment IG-108. The state is not required to provide recreation and economic opportunities. Further, the Salton Sea restoration legislation, Fish and Game Code Section 2081.8, provides: “[t]he Resources Agency shall undertake the necessary activities to assess the protection of recreational opportunities, including, but not limited to, hunting, fishing, boating, and birdwatching, and the creation of opportunities for improved local economic conditions, surrounding the Salton Sea. The Resources Agency **shall not undertake any of those activities** if the agency determines they would constitute a project purpose for environmental documentation that is prepared pursuant to Section 2081.7” (emphasis added).

IG-111

Clarify that the "Most cost-effective, technically feasible alternative is the Preferred Alternative"

The Draft PEIR seems to take the misleading position that the California Legislature's "preferred alternative" is different from the "most cost-effective, technically feasible alternative." In the following excerpt from the Draft PEIR, the word "also" seems to indicate that the Legislature's intent is to differentiate between the two.

"Fish and Game Code Section 2931 requires the restoration study to identify a preferred alternative that will provide the maximum feasible attainment of the following objectives:

- Restoration of long term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea;
- Elimination of air quality impacts from the restoration projects; and
- Protection of water quality.

The restoration study also must include at least one most cost-effective, technically feasible alternative and present an evaluation of the magnitude and practicability of costs of construction, operation, and maintenance for each alternative. The study is required to be submitted to the Legislature (Fish and Game Code Section 2081.7)." (Draft PEIR, p. 1-9)

The Final PEIR should clarify that the "preferred alternative" is not some maximum technically feasible (pie in the sky) alternative; it is the "most cost-effective, technically feasible alternative."

Section 2081.7.e.1 of the Fish and Game code states, "The Secretary of the Resources Agency...shall undertake a restoration study to determine a preferred alternative for the restoration of the Salton Sea ecosystem and the protection of wildlife dependent on that ecosystem.

The next sections of the Fish and Game Code include:

2081.7.e.2.A: "An evaluation of alternatives for the restoration of the Salton Sea that includes consideration of strategies for salinity control, habitation creation and restoration, and different shoreline elevations and surface area configurations. The alternatives shall consider the range of possible inflow conditions. The evaluation established pursuant to this subparagraph shall also include suggested criteria for selecting and evaluating alternatives consistent with Chapter 13 (commencing with Section 2930), including, but not limited to, at least one most cost-effective, technically feasible, alternative."

2081.7.e.2.B: "An evaluation of the magnitude and practicability of costs of construction, operation, and maintenance of each alternative evaluated."

2081.7.e.2.D: "The selection of a preferred alternative consistent with Section 2931..."

2081.7.e.4.F.iv: [develop] "The criteria for determining economic and technical feasibility of the alternatives."

IG (cont.)

IG-112

Fish and Game Code section 2081.7(e)(2)(A) states that "An evaluation of alternatives for the restoration of the Salton Sea that includes consideration of strategies for salinity control, habitation creation and restoration, and different shoreline elevations and surface area configurations. The alternatives shall consider the range of possible inflow conditions. The evaluation established pursuant to this subparagraph shall also include suggested criteria for selecting and evaluating alternatives consistent with Chapter 13 (commencing with Section 2930), including, but not limited to, at least one most cost-effective, technically feasible, alternative." The Fish and Game Code Section 2030 is the Salton Sea Restoration Act, which, as noted by the commenter does identify that the "preferred alternative shall provide the maximum feasible attainment of the following objectives: (1) Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea. (2) Elimination of air quality impacts from the restoration projects. (3) Protection of water quality." However, there is no requirement that the preferred alternative be the most cost-effective, technically feasible, alternative.

IG-112

Section 2931 of the Fish and Game Code begins: “(a) 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 on that ecosystem. (b) This restoration shall be based on the preferred alternative developed as a result of the restoration study and alternative selection process described in Section 2081.7 ... (c) The preferred alternative shall provide the maximum feasible attainment of the following objectives...”

Section 2081.7 defines “feasible” as “economic and technical”.

To reiterate, California Legislature’s “preferred alternative” is not some maximum technically feasible (pie in the sky) alternative; it is the alternative with maximum economic and technical feasibility (i.e. the “most cost-effective, technically feasible alternative.”)

Clearly State Project Recreational and Community Economic Development Goals

Furthermore, the PEIR should be up front about the local community economic development and recreational goals of the restoration program and include these goals in the numerous discussions of goals beginning in Chapter 1 and also found in other Chapters.

One of the goals of the Federal Salton Sea Reclamation Act of 1998 is “...to protect the wide array of economic and social values that exist in the immediate vicinity of the Salton Sea.”

This is also a goal of the California State Legislature: “This bill would additionally declare the intent of the Legislature that the restoration plan include, to the extent consistent with fish and wildlife restoration objectives, the protection of recreational opportunities and the creation of opportunities for improved local economic conditions” (California Senate Bill 1214).

Present Value Cost

Present value cost is the most widely supported and consistently used metric to compare project costs when cash flows for construction expenditures and operation and management costs vary over time between alternative projects. Additionally, this calculation would be fairly simple with the supporting information developed by the authors but not included in the Draft PEIR. The resulting present value cost of the different alternatives can then be directly compared along with a comparison of achieving environmental and economic development/recreational goals to assess the overall cost effectiveness of the various alternatives.

Table 1 presents an estimation of the present value cost for all the alternatives over the project planning horizon based on the level of detail and consistent information that could be ascertained from the Draft PEIR. A detailed explanation of the calculation method and the calculations themselves are included in the Appendix A of this document.

Table 1 – Summary of Present Value Calculations
(All dollar values in \$millions)

	Total PV Cost	discount rate 4%	
		Increment in Total PV Cost above No Action	Factor times more expensive than Alternative 4 increment
No Action	\$940		
Alternative 1	\$3,355	\$2,415	2.3
Alternative 2	\$3,702	\$2,762	2.6
Alternative 3	\$5,376	\$4,436	4.3
Alternative 4	\$1,984	\$1,043	1.0
Alternative 5	\$5,753	\$4,812	4.6
Alternative 6	\$7,172	\$6,231	6.0
Alternative 7	\$5,810	\$4,870	4.7
Alternative 8	\$7,286	\$6,346	6.1

The first column shows the present value cost of each alternative. Even the No Action course requires substantial outlays of money. In theory, this is the minimum amount of money that is committed to manage Salton Sea. Any environmental, recreational, and economic development improvements above the No Action scenario require additional expenditures. The second column of the table indicates the additional cost of these improvements over the No Action alternative. A cost-effectiveness measure would further compare these costs with some quantification of the environmental, recreational, and economic improvements.

Comparison of the cost only among alternatives indicates the benchmark for environmental, recreational, and economic effectiveness that must be achieved for equivalent overall cost effectiveness. For example, the third column of the table compares the increment in cost above No Action to the alternative with the lowest increment in cost, Alternative 4. Since Alternative 1 is 2.3 times as costly as Alternative 4, to achieve the same cost effectiveness as Alternative 4, it must be 2.3 times as effective as measured by environmental, recreational, and economic improvements. Similarly, since Alternative 5 is 4.6 times as costly as Alternative 4, to achieve the same cost effectiveness as Alternative 4, it must be 4.6 times as effective as measured by environmental, recreational, and economic improvements.

Alternative 4

It is not surprising that Alternative 4 has the lowest present value cost, as cost-effectiveness in achieving environmental, recreational, and economic development goals is the driving force behind the development of this alternative by the Imperial Group.

The environmental goal simply stated is diversity of habitat and healthy air quality. The economic development goal simply stated is 1) along the shoreline, a viable and attractive water body for all regions of the sea, and 2) for the broader region, a sea that has environmental viability and recreational opportunities.

The other classes of projects fall woefully short on at least one of the goals. Both High mid-sea barrier projects and Saline Habitat Complex projects leave large portions of the existing sea without a shoreline, effectively condemning sea-based development in those areas. The

IG (cont.)

IG-113

IG-113

CEQA does not require an economic analysis of alternatives. No costs were included in the Draft PEIR cost estimates for air quality mitigation for Alternative 4. Page 6 of the comment notes that inclusion of air quality mitigation in Alternative 4 may raise the cost to near that of the Saline Habitat Complex alternatives. However, since the amount of Exposed Playa in Alternative 4 is much more similar to Alternative 3 than either Alternative 1 or 2, costs for air quality mitigation would be more similar to Alternative 3. Based on this, an additional \$1 billion would be needed for additional Capital Costs, \$600 million for contingences and administration, and \$118 million in annual Operations and Maintenance costs for Alternative 4. These additional costs for air quality mitigation would result in present value costs for Alternative 4 to be similar to those for Alternative 3 and higher than Alternatives 1 and 2. In addition, the lowest cost alternative may not offer the same benefits to wildlife, air quality, or water quality required by Section 2931 of the Fish and Game Code. For instance, Alternative 4 has higher risk to wildlife from selenium than any of the other alternatives (Table 8-8), and must be considered in evaluating the benefits of this alternative.

IG-114

The Draft PEIR includes a discussion of Environmental Justice in Chapter 22. California law defines Environmental Justice as “the fair treatment of people of all races, cultures and income with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies” (Government Code Section 65040.12 and Public Resources Code Section 72000). In conforming with this law, it is the policy of the Resources Agency that the fair treatment of people of all races, cultures and income shall be fully considered during the planning, decision making, development and implementation of all Resources Agency programs, policies, and activities. The guidelines direct the decision makers to evaluate human health and environmental effects only from environmental decisions.

As stated in the Draft PEIR, under the CEQA Guidelines, economic or social information may be included in an Environmental Impact Report, or may be presented in whatever form the agency desires. Economic or social effects of a project shall not be treated as significant effects on the environment (CEQA Guidelines, section 15131). Additionally, as stated in Fish and Game Code Section 2081.8, the State shall not undertake the creation of opportunities for improved local economic conditions if they would constitute a project purpose.

IG-114

environmental justice implications of this regional imbalance have been ignored in Chapter 22 of the Draft PEIR.

IG-114
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Saline Habitat Complex projects limit recreational boating. The propensity for mid-sea barrier projects to develop anoxic conditions with attendant fish kill-offs could also be detrimental to better recreational and associated economic development potentials. (See discussion of marine sports fish re-introduction in "Issues Requiring Correction and/or Clarification" Section at the end of this review.)

Furthermore, these other classes of projects are more expensive. The recognition that low berm like structures are most cost effective and safest dates to Pomeroy and Cruse (1965). They analyzed two types of dikes "Type A—Relatively narrow dikes protected against erosion [with rock armor]; and Type B—Dikes made by depositing earth in larger amount but with no protection" (p. IV-8). "Being a very wide, massive structure, there is little possibility that Type B dikes could be ruptured by an earthquake, but this would be a danger for narrow dikes" (P. IV-10). They found that "Type B dikes are much lower cost in shallow water..." (p. IV-10).

Low broad dikes also possess lower regulatory costs with respect to dam safety. Dam safety criteria are based on an engineering estimate of the extremely infrequent probable maximum flood, without any reference to the relative benefits and cost of extra safety. In the United States, no other structures such as roads, bridges or buildings are designed to withstand such infrequent events.³ Recommendations for evaluating the benefits from additional safety against the cost of additional safety⁴ have yet to be implemented.

High barriers that divide the sea are inherently costly and prone to earthquake risk. These barriers are structurally inflexible to variations in future inflows and thus lead to either higher expected costs or failure to attain environmental goals as discussed below.

On the other hand, while Alternative 4 supports good air quality during construction, estimates of air quality during the operational phase suggest that cost-effective dust mitigation strategies should be added to the alternative (as they were included in the original submission). This may raise the cost of Alternative 4 near that of the Saline Habitat Complex projects but it would still enjoy better effectiveness with respect to economic development and recreational opportunities.

The longer time period of phased construction for Alternative 4 has two advantages; lower present value costs due to the time value of money and flexibility to adjust design of later rings to changing inflows as conditions change and more information becomes available.

In the detailed project level analysis, alterations in the placement of the shoreline water body should be considered with respect to maximizing economic development cost effectiveness.

³ Lave, Lester B., Daniel Resendiz-Carrillo, Francis C. McMichael, "Safety Goals of High-Hazard Dams: Are Dams Too Safe?", *Water Resources Research*, July 1990.

⁴ National Research Council, Committee on Safety Criteria for Dams, *Safety of Dams: Flood and Earthquake Criteria*, National Academy Press, Washington D. C., 1985.

Uncertain Future Salton Sea Inflows

Future irrigation drainage flows will be subject to the volume of water abstracted from the Colorado, to management decisions of the irrigation districts, and to farmers' irrigation practices. The volume abstracted may be influenced by high-level judicial and political decisions... *Pomeroy and Cruse, 1965, p. III-12.*

It will be expensive to hold the Sea either higher or lower than the equilibrium level sustainable by the inflow. Since future inflows cannot be known, it may be expected that it will eventually be necessary to spend money to control the level, but in the interests of minimizing those expenditures, the most careful estimates of future flows must be made. *Pomeroy and Cruse, 1965, p. IV-41.*

I applaud the effort in the Draft PEIR to include an uncertainty analysis of future Salton Sea inflows through the development of "Variability Conditions." All too often, this type of analysis is ignored despite numerous recommendations of its importance.⁵ Investments of the magnitude considered for Salton Sea restoration demand just such an analysis in order to develop a design that is cost-effective based on uncertainties in future inflows, evaporation, modeling, and input data. The following comments are submitted for the purpose of improving the uncertainty analysis approach undertaken in the Draft PEIR, to aid in the development of the most cost-effective design under uncertainty, and to reduce the costs associated with the risk of design failure.

The assessment of future Salton Sea inflows from the Imperial Valley, in the Draft PEIR, has fundamental flaws in both analysis and assumptions that need to be corrected in the Final PEIR.

The Draft PEIR assumes without any justification that: "Tailwater was selected as a reasonable surrogate of the future maximum change in Imperial Valley contributions to the Salton Sea inflows" (p. H2-63). This assumption ignores whole categories of conservation that are reasonably foreseeable and likely to occur based on a grounded understanding of local and regional economic, political, and legal forces, as well as, an understanding of the technological and economic aspects of all the neglected categories of water conservation.

The Draft PEIR then develops a probability distribution for the reduction in tailwater predicated on faulty economic reasoning. Finally, the choice of an 80% exceedance probability to evaluate alternatives under the variability conditions is an arbitrary physical assumption divorced from any meaning for the cost effectiveness of the project and of limited use for evaluating environmental goal effectiveness.

The following paragraphs discuss these issues in detail.

Uncertain Inflows and Faulty Application of Economic Logic

The Draft PEIR develops a probability distribution for the reduction in tailwater from IID predicated on faulty economic reasoning:

"...a triangular distribution was adopted to reflect the greater reductions in tailwater that would generally require more complex methods of water conservation and potentially at greater costs. As with many

⁵ See for example, *Uncertainty: A Guide to Dealing with Uncertainty in Quantitative Risk and Policy Analysis*, M. Granger Morgan and Max Henion, Cambridge University Press, 1990; and *Ground Water Models, Scientific and Regulatory Applications*, National Research Council, National Academy Press, Washington, D.C., 1990.

agricultural and urban water conservation measures, conservation of the first unit of water is significantly easier to achieve than subsequent water reductions (Draft PEIR, p. H2-63).

(Note: see “Issues Requiring Correction” section at the end of this document, for the triangular distribution adopted in the Draft PEIR replaces the uniform distribution in the January 2006 Draft Hydrology Report, yet all descriptions have not been updated in the Draft PEIR and it is referred to as both the “uniform” and “triangular” tailwater reduction distribution.)

It is certainly true that the cost of each additional unit of conservation (marginal cost) rises with the amount of water conserved. However, no economic decisions are based on cost alone. Rather economic decisions are based on additional benefits relative to additional costs (marginal benefits relative to marginal costs). If decisions were based on cost alone, all farmers would choose the cheapest crop to grow or grow nothing at all. But in reality, many costly crops are grown when they are accompanied with high benefits (prices).

Therefore, to arrive at a meaningful distribution for future reductions in tailwater, one must assess both the likely future cost of additional conservation as well as the benefits of additional conservation; either alone is meaningless for modeling decision making.

Currently the benefit of water conservation for much of the acreage in the Imperial Valley is \$17 per each acre-foot of water conserved. In other words, if a farmer conserves one acre-foot, they avoid the \$17/AF delivery cost from IID. For other crop acreage, the benefits are greater than \$17/AF. For example, installed drip irrigation yields additional benefits for some crops by increasing yield, improving crop quality, and reducing fertilizer usage.

Since the restoration project planning horizon extends to 2078, we must also consider reasonable changes in future benefits to conservation. The IID board recently passed an allocation plan that includes a provision for intra-district exchanges. During shortage years, farmers will receive their allocation at the delivery price, but supplemental water on the intra-district exchange will be more costly (otherwise there would not be a shortage). Suppose the price totals \$30/AF for acquisition and delivery. Now, since every farmer in the district has an additional opportunity to offer water to the exchange, the benefit of conservation for every farmer in the district is \$30/AF minimum; and many more conservation projects have become cost effective. Finally, nobody expects the very forces that have created the recent urgency for Salton Sea restoration, namely the regional reallocation of water, to abate. As long as the marginal value of water in use is much greater in urban areas than agricultural areas, the forces for regional reallocation of water will continue. These forces are discussed in detail below. Here we note that any further reallocation of water will raise the intra-district price, raise the quantity of conserved water and decrease inflows to the Salton Sea.

As for the cost of conserving water, farmers can conserve water by three general methods: 1) changes in irrigation methods and practices, 2) crop switching (replacing higher water using crops with lower water using crops), and 3) fallowing land. During the Bureau of Reclamation Part 417 process, consultants submitted many estimates of on-farm conservation opportunities in category (1) whose cost ranged from \$25/AF upward. The projects are not cost effective for the farmer when the benefits of conservation are less than \$25/AF, but as the benefits rise above \$25/AF, many projects become cost effective. The potential for crop-switching in the Imperial

Valley is largely unexplored, but farmers will find the profitable opportunities as the internal exchange price of water rises. Additionally, technological change in irrigation equipment and improvements in water management practices have historically always worked in the direction of greater irrigation efficiency. The pace of change depends on the magnitude of economic incentives either through the cost lowering aspect of technological change or as the price of water continues to increase.

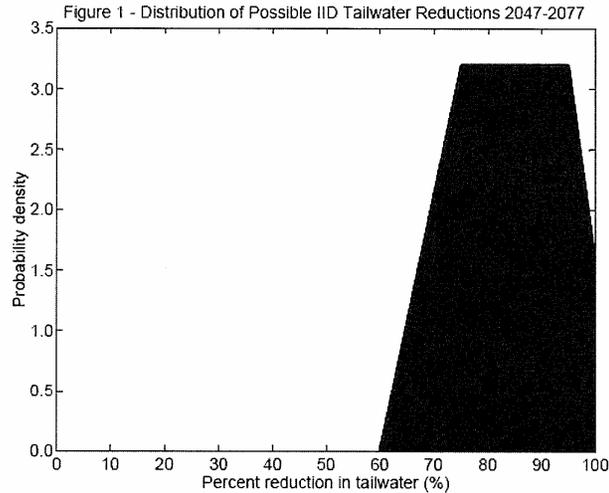
In summary, the interaction of the benefits and costs of conservation will determine the quantity of conservation in the Imperial Valley and the associated reduction of inflows. Economic, technological, farm management, political, and legal factors all point to greater water conservation and more efficient irrigation over time (as detailed below). While many of the identified water conservation methods proposed by USBR and MWD consultants during the Part 417 process are not cost effective under current institutional constraints and economic incentives, over the course of the restoration 75-year planning horizon, they are more likely than not to become cost effective under evolving water institutions and economic incentives based on the trends documented below.

The driving force behind these trends is the difference in the marginal value of water in alternative uses. Over the next 75 years as the population of California continues to grow, the difference between the marginal value of water in urban uses (greater than \$250/AF) and agricultural uses (\$17/AF in the Imperial Valley) will only continue to grow in the absence of more water transfers from California agriculture to California urban areas. This difference will continue to create political and economic pressure to transfer water to urban areas. Based on the direction of evolving water institutions as expressed in numerous policy statements (referenced below), farmers will be able to lease conserved water under Section 1011 of the California Water Code and use the proceeds to invest in the conservation of tailwater while maintaining and potentially improving productivity through greater control of water and fertilizer application. Once this occurs, on-farm conservation will proceed at a rapid pace. These are the forces that will shape the future amount of water conservation and inflows to the sea. (The same general economic forces and trends also apply to agriculture in the Coachella Valley.)

Finally, returning to the probability distribution developed for the Draft PEIR, which indicates the greatest probability for little conservation beyond the currently planned QSA, I conclude that over the course of the 75-year time horizon of the proposed restoration project, the least likely outcome is that little additional water will be conserved. In fact, near the end of this time horizon, I conclude little additional conservation has zero probability of occurrence. Nearly every conceivable factor and trend points to greater water conservation in the future.

While I do not expect complete consensus in quantifying these trends, if I am asked to quantify the relative probabilities for reductions in tailwater for the 2047-2077 period after implementation of QSA reductions, my considered professional judgment is presented in the following graph for the midrange estimate of tailwater as a percent of inflows. (Description: 0% probability that less than 60% of the additional tailwater will be conserved, linear increase until 75%, uniform between 75 and 95%, and linear decrease from 95% to one-half the uniform probability magnitude at 100% conservation of tailwater. Note that this linear decrease reflects

the rising marginal cost of conserving the last amount of tailwater *relative* to future the likelihood of even higher marginal benefits.)



This distribution is founded on the historical evidence and current trends that will now be reviewed.

Historical Trends in Water Law, Institutions, and Economics

Water law and institutions have always evolved to support economic development by moving water supply to higher value economic uses. Whenever the value of water in one use becomes much higher than in another, this difference unleashes economic and political forces that change the law and/or institutions. Appropriative water rights developed in California, initially through judicial decision and later through legislation because it was necessary to move water away from streams (and riparian land) to support the economic development of gold mining.⁶ Later, agriculture in the arid West required irrigation beyond riparian land so the law evolved to apply appropriative rights to agriculture to support this next stage of economic development (agricultural economic development necessitated the Arid-Region Doctrine of Prior Appropriation).⁷

Recent trends in Water Law, Institutions, and Economics

The era of construction of large dams to expand water supplies has ended. California has entered a new era characterized by two major trends: urban conservation to reduce demand and

⁶ Kanazawa, Mark T., "Efficiency in Western Water Law: The Development of the California Doctrine, 1850-1911", *Journal of Legal Studies*, January 1998.

⁷ Webb, Walter Prescott, *The Great Plains*, Grosset & Dunlop, New York, 1931.

reallocation of water from agriculture to increase urban supplies.⁸ “In its 1976 report, the Governor’s Commission on Water Rights recognized the importance of water transfers to the future of California’s water supply and made recommendations regarding the need for specific changes to the Water Code to facilitate the transfer of water.”⁹ One such example is the passage in 1979 of Section 1011, which allows the retention of rights and subsequent transfer of conserved water. A more recent example is Section 1013 which anticipates transfers from Imperial Valley beyond the QSA (see page 13 below for more details).

In general, there exists a long-standing policy trend toward allocative efficiency of water use through development of institutions that facilitate interregional or intra-regional transfers, such as water markets and water banks. This trend is supported by the stated policy of the U.S. Department of the Interior,¹⁰ by U.S. Federal Reserve Board economists,¹¹ by the U.S. Congress in the Central Valley Project Improvement Act, by the Congressional Budget Office for the reform of Bureau of Reclamation water supply policies,¹² by a National Research Council Committee formed under the auspices of the National Academy of Sciences,¹³ by the California Legislature,¹⁴ the California Business Roundtable with the California Chamber of Commerce, the California Farm Bureau Federation, and the California Manufacturers Association,¹⁵ and by environmental groups such as the Environmental Defense.

Future Urban Demand in Southern California and the Impact on Salton Sea Inflows

Population increases in Southern California are reasonable and foreseeable. At a minimum, the impact of the population growth rate on Salton Sea inflows should be included in the Variability Conditions. The California Department of Finance has produced county level population projections for California through 2050. While future population cannot be predicted with complete certainty, as stated in the Draft PEIR concerning projections for Imperial and Riverside Counties, these projections are used by governments “...to assist in planning for the projected growth, including the need for water supply...” (Draft PEIR, p. 24-2). The Draft PEIR further states, “This increase in population is anticipated to occur regardless of the implementation of restoration actions at the Salton Sea” (Draft PEIR, p. 24-2).

DOF projections estimate that the population of Imperial County and the six counties in which Metropolitan Water District operates will increase from 19.4 million in 2000 to 28.6 million in

⁸ An additional smaller, though important, trend is urban water reclamation.

⁹ “Water Transfer Issues in California”, Final Report to the California State Water Resources Control Board prepared by the Water Transfer Workgroup, June 2002.

¹⁰ U.S. Department of the Interior, May 5, 2003, *Water 2025: Preventing Crises and Conflict in the West*.

¹¹ Ronald H. Schmidt, Senior Economist, Federal Reserve Bank of San Francisco, “Diamonds and Water: A Paradox Revisited,” *FRBSF Weekly Letter*, December 4, 1992.

¹² Congressional Budget Office, *Water Use Conflicts in the West: Implications of Reforming Bureau of Reclamation’s Water Supply Policies*, August 1997, p. 16.

¹³ Committee on Western Water Management, National Research Council, *Water Transfers in the West: Efficiency, Equity, and the Environment*, National Academy Press, Washington, DC, 1992, p. 3 and p. 249.

¹⁴ California Legislature: “voluntary water transfers between water users can result in a more efficient use of water, benefiting both the buyer and seller.” (California Water Code Section 475), and “efficient use of water requires certainty in the definition of property rights to the use of water and transferability of such rights” (California Water Code Section 109).

¹⁵ California Business Roundtable, *A Model Water Transfer Act for California*, May 1996.

2050 as shown in Table 2. As a simple means of extending these growth projections to the end of the restoration planning horizon in 2078, the projected slower growth rate of the last decade (2040-2050) of the DOF projections is continued through 2080. The rough estimate for the total population in these seven counties by 2080 is 32.2 million or a 12.8 million increase over 2000. Over the 75-year planning horizon population is expected to increase somewhere in the neighborhood of 10 to 12 million people.¹⁶

Year	2000	2010	2040	2050	2060	2070	2080
Imperial	143,660	178,201	296,656	339,506	<i>382,356</i>	<i>425,206</i>	<i>468,056</i>
Los Angeles	9,559,635	10,461,007	11,380,841	11,423,198	<i>11,465,555</i>	<i>11,507,912</i>	<i>11,550,269</i>
Orange	2,854,026	3,260,162	3,704,802	3,702,641	<i>3,700,480</i>	<i>3,698,319</i>	<i>3,696,158</i>
Riverside	1,553,902	2,165,148	3,717,961	4,305,161	<i>4,892,361</i>	<i>5,479,561</i>	<i>6,066,761</i>
San Bernardino	1,719,615	2,133,377	3,029,750	3,289,254	<i>3,548,758</i>	<i>3,808,262</i>	<i>4,067,766</i>
San Diego	2,832,563	3,258,951	4,289,739	4,506,099	<i>4,722,459</i>	<i>4,938,819</i>	<i>5,155,179</i>
Ventura	757,172	860,664	1,025,709	1,071,905	<i>1,118,101</i>	<i>1,164,297</i>	<i>1,210,493</i>
7 County Total	19,420,573	22,317,510	27,445,458	28,637,764	<i>29,830,070</i>	<i>31,022,376</i>	<i>32,214,682</i>
California Total	34,043,198	39,246,767	51,538,596	54,777,700	<i>58,016,804</i>	<i>61,255,908</i>	<i>64,495,012</i>

Source: California Department of Finance Projections
Projections for 2060 through 2080 (in italics) added by continuing growth rate of last decade of DOF projections

Water will be made available for this economic development. What will be the source of water for the economic development associated with this population increase? The most straightforward assessment is that recent trends will continue: there will be increased urban conservation coupled with some reclamation and there will be increased transfers from agriculture taking into consideration third party impacts and public good uses of water such as the environment.

The understanding of these forces is nothing new as expressed in a 1960 book:

If MWD were to suffer loss of any of its [provisional surplus] Colorado River entitlement... or as a source of additional supplies [for population growth], the MWD might consider the purchase of rights held by other users of Colorado River water, especially by irrigation districts in the Imperial area... Suppose that, for a given farm or irrigation district, 25 percent of the attached water were purchased. The farmer would almost certainly remain in business. He could either reduce the application of water to his initial crop, shift to a crop demanding less moisture, or cut back on his acres irrigated. Alternatively, he could make investments designed to eliminate waste by seepage and evaporation and thus indirectly recoup some of the water lost by sale. In any case, the net return to *farming* operations will have been somewhat reduced, in exchange for an increment in revenue from water sales. If the sale is voluntary, the gain to the farmer from water sales will exceed the loss in farming.¹⁷

¹⁶ A recent demographic study indicates a more rapid pace of population growth and urban development in Imperial County (David Hornbeck, "Future Urban Growth of the Imperial Valley", presented at November 30, 2004 Advisory Committee Meeting). This study projects population of Imperial County to reach 1.7 million by 2075.

¹⁷ Hirschleifer, Jack, James C. DeHaven, and Jerome W. Milliman, *Water Supply: Economics, Technology, and Policy*, RAND Corporation and University of Chicago Press, 1960, p. 321-330. Also, the authors' suggestion that MWD participating municipalities might attempt to condemn Imperial Valley water through eminent domain, in an

The authors reached these conclusions over 45 years ago simply by looking at the facts: the differing marginal values of the use of water in various regions and the economic and engineering constraints of transferring water from various location to the Southern California coastal area. To ignore these facts and there potential impact on Salton Sea inflows is foolhardy at best and irresponsible at worst, considering the magnitude of public investment in the restoration program.

The California Legislature demonstrates that it recognizes the reality of these facts and their relationship to the restoration of the Salton Sea by incorporating provisions for additional transfers into Section 1013 of the Water Code. The Legislature explicitly establishes an "ecosystem restoration fee...to cover the proportional impacts to the Salton Sea of the additional water transfer [beyond those specified in the QSA]. The fee shall not exceed 10 percent of the amount of any compensation received for the transfer of the water" (Section 1013.f of the California State Water Code).

***An Example of Economic and Engineering Reasoning:
MWD's 50AF Transfer to CVWD Beginning in 2047***

An important example of the need to reasonably and logically analyze economic and engineering outcomes of water transfers is the planned reduction in IID's QSA transfer to CVWD in 2047. "After 2047, IID would conserve the first 50,000 acre-feet/year of the water and Metropolitan would provide the second 50,000 acre-feet/year until 2078" (Draft PEIR, p. 5-25). The Draft PEIR completely ignores this issue and assumes with 100% certainty that the conservation that achieved this 50 KAF will cease, diversion will increase by 50 KAF and the full 50 KAF will be added to sea inflows. Is this reasonable?

Two additional options are readily apparent and more likely, both with the amount of previous conservation remaining the same. First, the 50 KAF could be used to grow additional crops and only the portion necessary for leaching requirements will flow to the sea. Second, the Draft PEIR fails to consider any potential sources for this 50 KAF that MWD will send to CVWD. The Draft PEIR should at least consider what are reasonable possibilities and the likelihood of each based on technical and economic reasoning (i.e. costs and benefits of alternative sources). Is it reasonable to conclude under the variability conditions that MWD will purchase this water from IID to transfer to CVWD? I conclude that there is a greater than 95% probability that IID will continue to conserve this water and sell it to MWD for transfer to CVWD, based on the relative likely value in additional crop production of the first option to the value in transfer for the second. What would be more logical based on engineering and economic reasoning?

Summary of Trends Affecting Uncertain inflows

Historical evidence and current trends unequivocally point to greater water conservation in the future. Over the next 75 years, the value of water will only increase. This one indisputable fact creates economic incentives to conserve, which will reduce inflows to the Salton Sea. Design and construction of a managed Salton Sea ecosystem that ignores this reality will lead to either very costly structural modifications before the half-life of the 75-year project-planning horizon,

attempt to avoid purchase of the water, is reminiscent of the Bureau of Reclamation Part 417 process and MWD's support of Imperial Valley diversion reductions for its own benefit.

non-attainment of environmental/habitat goals, or the necessity for the State to acquire conserved water for inflows.

Ultimately with an efficiently managed distribution system and incentives for on-farm conservation, Salton Sea inflows originating in the Imperial Valley would be reduced to the tilewater leaching requirement, a small amount of system seepage through concrete lined canals, municipal return flows, surface runoff and subsurface inflow, net of evaporation and phreatophyte ET in the drainage system. With further incentives and improved management created by accurate measurement of all flows and diffusion of knowledge about the most practically successful conservation methods, average annual inflows from the Imperial Valley may be reduced to 200 to 250 KAF. As these trends continue to develop, the most reasonable conclusion is that eventually the State will have to acquire water for the Salton Sea in order to maintain a managed sea ecosystem requiring greater than this amount of inflows from the Imperial Valley. (As stated in the Draft PEIR "The Salton Sea has no entitlement to the water that has historically been discharged" (p. H2-44). As stated by the IID Board of Directors President, "The IID, and water users through the IID, are not obligated to order a certain amount of Colorado River water or obligated to use the water in a certain manner that will generate a certain supply of drainage [for the Salton Sea]. Neither are the IID or water users obligated to create or release drain water at all. In fact, the IID has the right to prevent, recapture or reuse any drain flow before it leaves the IID drainage system."¹⁸)

Sources of Imperial Valley Conservation

In modeling the implementation of the QSA in the No Action CEQA conditions, the Draft PEIR should specify the source of conservation for QSA deliveries as coming from either on-farm tailwater reductions or system loss reductions or a combination of both. The 300 KAF transfer anticipated in the QSA was analyzed in the January 2002 QSA Draft EIR based on an assumption of 200 KAF on-farm conservation and 100 KAF system conservation. Similarly, the QSA level of conservation would decline from 303 KAF to 250 KAF in 2047, thus this reduction in conservation (which is very unlikely to actually ever happen) would have to be reassigned to either tailwater or system conservation potential.

"By 2017, the method of generating water for transfers will be converted from land fallowing to conservation/efficiency improvements, and will result in reductions in inflows to the Salton Sea that would not be replaced through mitigation measure", (Draft PEIR, p. H2-39).

"Water delivered to CVWD from IID will be conserved from on-farm or other efficiency measures", (Draft PEIR, p. H2-42).

The assumed source of these transfers is important because of the arbitrary assumption in the Variability Conditions of the Draft PEIR that any additional conservation can only come from on-farm tailwater reductions. The following sections discuss the apparent limiting in the Draft PEIR of the source of conservation within IID (both for QSA implementation and future additional conservation) to tailwater alone, and the further limit on tailwater conservation to 95%. This section provides evidence that questions the accuracy of these assumptions.

¹⁸ Letter from IID Board of Directors President to Salton Sea Authority President dated October 7, 2004.

Potential for Tailwater Conservation

According to IID analysis of conservation potential: "Properly managed, drip irrigation systems conserve water by applying very close to the crop water requirement, which reduces tailwater and evaporation losses to nearly zero... drip irrigation often increases yield and crop quality" and "Linear tracking is a system of sprinkler irrigating a field using a linear move sprinkle...linear tracking system is assumed to have tailwater of one percent."¹⁹ The same report states the current system capacity could accommodate converting 50% of the land area to drip and linear tracking systems; conversion of greater than 50% would require system updates. Moreover, MWD notes that tailwater is not prevalent in other irrigation districts in the western U.S. where there are similar soils.²⁰ Therefore, the long-term tailwater reduction probability distribution should retain a maximum reduction at or very near 100%.

Potential for System Conservation

There is no explicit provision for system conservation within IID in the Draft PEIR analysis. Scott reviews seven studies and finds a range of system conservation potential between 99,300 AF and 167,300 AF with a mean conservation potential of 125,300 AF.²¹ In 1996, IID estimates system conservation potential as 122,600 AF²² and some alternatives evaluated in the January 2002 QSA Draft EIR include 100,000 AF of system conservation. At a minimum, system conservation potential of 125,000 AF should be included in the analysis (and perhaps as much as 167,300 AF).

An initial system conservation potential probability distribution needs to be added to the analysis with a range between 0 and 125 or 167 KAF.

Finally, conservation could possibly be even greater through reclamation of drain water or reclamation of municipal return flows. IID's 1996 report referenced above contains conservation estimates for reclamation of drain water. Reclamation of municipal return flows for golf courses is likely as this industry develops similar to the pattern of golf course irrigation in the Coachella Valley.

Other Sources of On-Farm Conservation

Crop-switching, in which farmers replace higher water using crops with lower water using crop in the Imperial Valley is largely unexplored, but farmers will find the profitable opportunities as the internal exchange price of water rises.

Modeling and Data Uncertainty Influence on Estimation of Uncertain Inflows and Salinity

Beyond ignoring the driving forces behind conservation trends and complete classes of possible conservation, the Draft PEIR makes no estimation of modeling uncertainties for the numerous model components used for alternative evaluation nor estimation of the underlying data

¹⁹ IID, January 1996, "Water Requirements and Availability Study, Draft," p. 46-48.

²⁰ MWD, May 2003, "Colorado River Part 417 Submittal," p. 28.

²¹ Scott, John, May 2003, "Previous Investigations of Imperial Irrigation Districts net diversion requirements," Table 1, p. 3. A supporting document for MWD, May 2003, "Colorado River Part 417 Submittal."

²² IID, January 1996, "Water Requirements and Availability Study, Draft," p. 75.

uncertainties (see attached Appendix B). These uncertainties further undermine the specificity of the design "reliability" estimates stated in the Draft PEIR.

IG (cont.)

How does the use of closure terms (for both water and salinity balance) needed when direct measurements are lacking (concept explained in more detail in attached Appendix B) affect model uncertainty?

Draft PEIR references:

The SALSA model was calibrated for the period of 1950 through 2002 as this period contained the most complete flow and salinity data for the Salton Sea. The model was calibrated to measured water surface elevation and average TDS. The calibration was first performed for water surface elevation through a Salton Sea water budget calculation for the *unknown evaporation term*. Independent verification of the calculated evaporation rates was performed based on adjusted Imperial Valley evaporation pan measurements. Once the historical water budget was estimated, and similar approach was taken to determine the historic salt budget. It was necessary to include a salt precipitation term beginning around 1990 in order to *balance* the historic salt budget...

The SALSA model was applied for the 1950 to 2002 period using the *estimated inflows, salt loads, evaporation rates, and salt precipitation rates determined from budget closure terms*. Observed water surface elevation was obtained from the USGS (2005) and measured salinity was averaged from four, near shore measurements reported by IID.

The SALSA model simulated, on a monthly time step, the Salton Sea water surface elevation and salinity as shown in Figures H2-1-5 and H2-1-6. The simulated water surface elevation is nearly identical to the measured values *as the evaporation rate was computed external to the model as a water budget closure term*. However, there were a few years, such as 1965, in which the *evaporation rate computed from the water budget closure was considered unreasonable*. This assessment was made based on a review of pan evaporation trends in the Imperial Valley and deviations from other studies and measurements. The simulated Salton Sea salinity is a direct result of the external salt loading from 1950 through 1989. However, from 1990 through 2002 it was necessary to remove salt in order to achieve a reasonable match with measured data."

Uncertainty in salinity measurements:

... both the measurement of salinity and the ability of point measurements to represent Salton Sea average conditions contain significant uncertainty" (Draft PEIR, p. H2-20).

Uncertainty in salt loads and tilewater:

The uncertainty in Imperial Valley salt loads due to future Colorado River salinity could be as much as 500,000 tons/year and could reduce the IID-projected tilewater flows by as much as 40,000 acre-feet/year. Due to the considerable degree of uncertainty regarding future Colorado River salinity, this factor is not considered in the No Action Alternative-CEQA Conditions estimates." (Draft PEIR, p. H2-39).

This reduction in tilewater seems to be ignored in the variability conditions as only reductions in tailwater are considered. Is this correct?

Uncertainty in salt precipitation:

Beginning in the mid-1980s or early 1990s, precipitation of significant quantities of salts (primarily gypsum and calcite) began and has been estimated between 360,000 to 1,650,000 tons/year with a range of 770,000 to 1,320,000 tons/year believed to be the most reasonable (Amrhein et al., 2001). The computed salinity in Figure H2-8 does not equal the measured salinity without incorporating a salt loss term (salt precipitation) from 1990 onward. The estimated salt precipitation developed from the computed analysis is about 1,500,000 tons/year beginning around 1990. This salt precipitation value is at the high end of the

range of previous independent estimates (Amrhein et al., 2001) and is similar to that of Tostrud (1997). (Draft PEIR, p. H2-24).

Uncertainty in salinity/evaporation relationship:

Discuss the uncertainty in the salinity/evaporation relationship (since it's quite different from recent studies). This conclusion seems to play a prominent roll in the differences in wetted surface acreage between the alternatives.

Exceedance Probability, Cost-effectiveness, and Design Flexibility

It is still necessary to face the problem of what to do if the inflow is higher or lower than expected. *Pomeroy and Cruse, 1965, p. IV-35*

The choice of an 80% exceedance probability to evaluate alternatives under the variability conditions is an arbitrary physical assumption divorced from any meaning for the cost effectiveness of the project and of limited use for evaluating environmental goal effectiveness. This criterion inherently accepts complete failure with 20% probability. In fact, based on the hydrological model results discussed below, most of the partial sea designs have a 10 to 20% probability of turning into the most expensive brine sinks ever built, providing no value above the No Action Alternative. A more comprehensive measure, that considers cost effectiveness over the whole range of possible outcomes to assess the importance of design adaptability to changes in future inflows, is needed. Furthermore, the fundamentally flawed assessment of future inflows, discussed in previous sections, means that the calculated "reliability" in the Draft PEIR is vastly overstated and the probability of failure of the partial sea designs is much greater than 10 to 20%.

A Measure of Cost Effectiveness under Uncertainty

A more comprehensive measure that considers cost effectiveness over the whole range of possible outcomes can be developed. The simplest cost effectiveness under uncertainty measure would be "expected cost-effectiveness." This measure can be calculated by integrating the present value cost divided by the measure of environmental, recreational, and economic development effectiveness across the probability of different outcomes. The distributions from the Monte Carlo analysis could be used to calculate this measure. This measure would incorporate low probability, high consequence events (failure) into an evaluation of cost effectiveness.

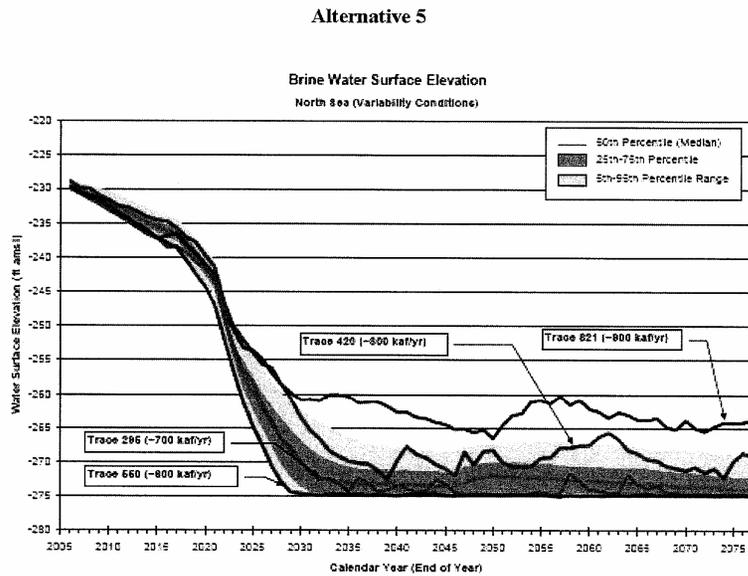
Alternatively, if this is found to difficult to compute, the logic behind it can be approximated by examining project effectiveness over the full range of uncertain inflows. More specifically, the severity of the consequences beyond the 80th percentile basis of structural design needs to be incorporated into decision-making. Effective risk management when investing potentially billions of dollars requires determining the severity of the consequences for 20% of the outcomes. At a minimum, examine the 90th and 95th percentile outcomes. As will be seen, this evaluation can aid incorporation of flexibility into the plans.

Mid-sea Barriers: The Cost of Inflexibility

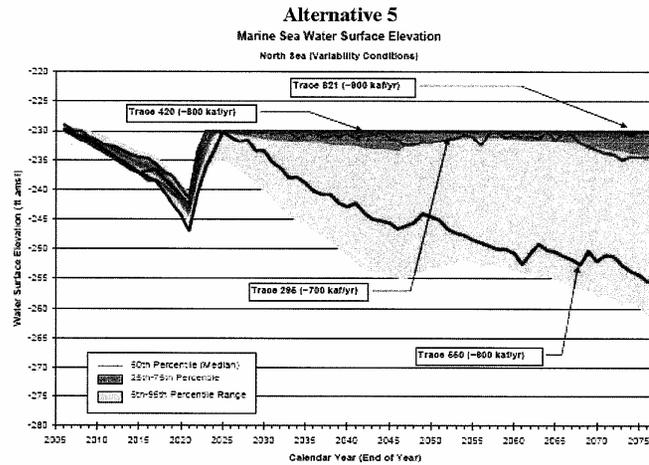
Mid-sea barriers are inherently inflexible and have higher expected costs under uncertain future average inflows. "The Barrier and Perimeter Dike locations in these configurations were developed to provide a high reliability that the water surface elevation and salinity objectives

would be achieved in at least 80 percent of the years in the 2018 to 2078 period with a conservative range of projected inflows under the No Action Alternative-Variability Conditions” (Draft PEIR, p. 2-23).

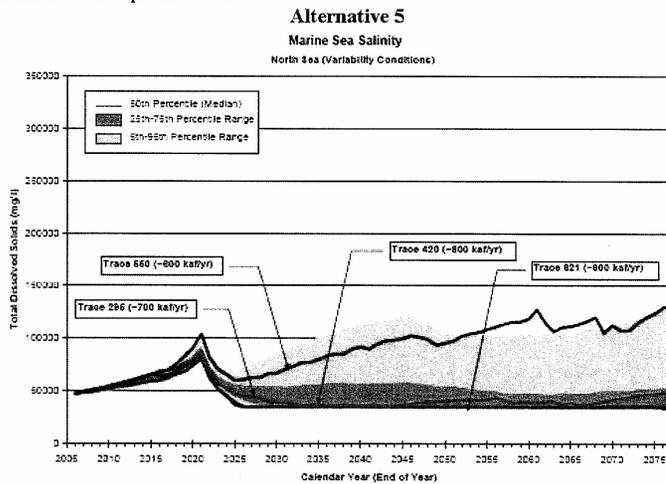
Consider the SALSA model results presented in Appendix H-2, Attachment 2 (i.e. last pages of Appendix H-2 document). Examine the “Brine Water Surface Elevation (Variability Conditions)” graphs for Alternatives 5, 6, and 8 (Alternative 7 is excluded here because of desalination water treatment). Notice that the trace for 600 kaf/yr “flatlines” at the bottom of each graph. With continued inter-annual variations of inflows to the project, this indicates that the brine sink has ceased to exist as a water body; there are little if any outflows from the marine sea to the brine sink. The graph for Alternative 5 is reproduced below.



Now, examine the “Marine Sea Water Surface Elevation (Variability Conditions) for Alternatives 5, 6, and 8. For the 600 kaf/yr trace the marine sea level is falling and shoreline benefits are being lost. The graph for Alternative 5 is reproduced below.



Next, examine the “Marine Sea Salinity (Variability Conditions) graph for Alternatives 5, 6, and 8. For the 600 kaf/yr trace the salinity is rising past 100,000 mg/l. The marine sea has become the brine sink, and most marine sea environmental habitat benefits are lost. The graph for Alternative 5 is reproduced below.



It is somewhat more difficult to see, but the same visual analysis can be performed with the percentile boundaries to roughly estimate the probability of failure. In the “Brine Water Surface Elevation” graph for Alternative 5 above, the 75th percentile boundary “flatlines.” Notice that it briefly recovers after 2047; this is the modeled *reduction* in conservation in the Imperial Valley, that is likely to never happen, as MWD takes over the responsibility for transferring 50 KAF to CVWD in 2047. If this reduction in conservation does not occur, note how it affects all the graphs. In the “Marine Sea Elevation” graph for Alternative 5 above, the 75th percentile line cannot maintain the target elevation. Again note the recovery of the 75th and 95th percentile lines after 2047 and project how they would continue without the 50 KAF *reduction* in conservation within the Imperial Valley. Finally, in the “Marine Sea Salinity” graph for Alternative 5 above, the 95th percentile increases above 100,000 mg/l and the 75th percentile line cannot maintain target salinity. By rough estimate, somewhere between the 85th or 90th percentile lines extend above 100,000 mg/l. In other words, there is a 10 to 15% probability that the marine sea becomes a highly saline brine sink. Again notice the temporary reprieve after 2047.

The variance or spread in outcomes in each of these graphs represents design risk. As modeled in these graphs, it represents loss in environmental, recreational, and economic development effectiveness. There are two other alternative responses not modeled, since mid-sea barriers would be prohibitively costly to move. To mitigate these effectiveness failures, the operators of the project would have to increase cost either by installing desalinization treatment or acquiring additional water. At current market rates, each additional 100 KAF of water would raise project costs by \$25 million to \$40 million per year. Whichever of these unpleasant options performed best with respect to the expected cost effectiveness measure could be used for this more comprehensive and meaningful comparison of alternatives under uncertainty.

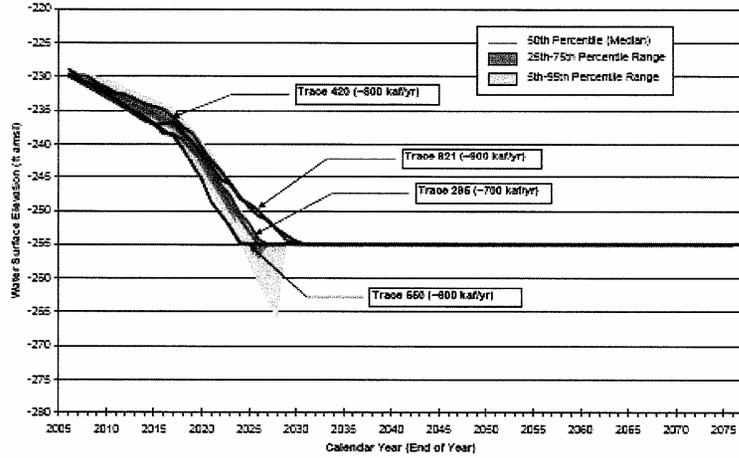
Finally, since it has been demonstrated that the development of the probability distributions is predicated on faulty economic logic, ignores many potential on-farm and system conservation methods, ignores all recent trends in regional reallocation, and does not consider the source of water for Southern California population growth or MWD’s transfer to CVWD after 2047, the supposed 80 percent reliability is vastly overstated, and the failure probability of these designs may approach or exceed 50%.

Concentric Lakes Are Much Less Risky and More Flexible

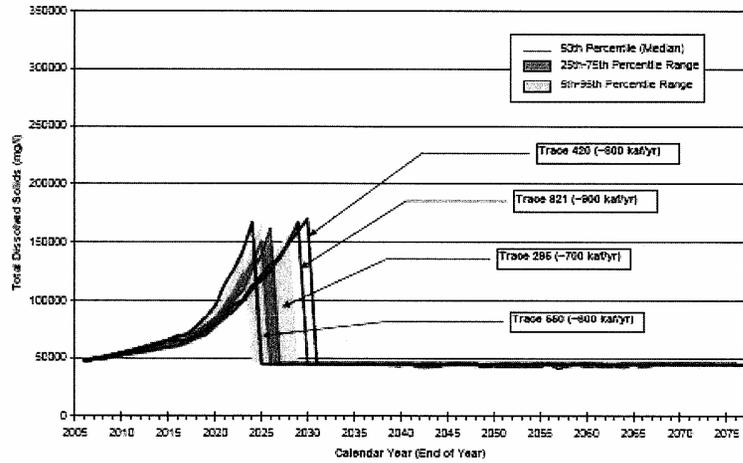
Now examine the same sets of graphs for Alternatives 3 and 4. For Alternative 4, notice how the probability distribution has collapsed to a single line (no variance) for both lake surface elevation and lake salinity for the first through third lakes. In other words, with the uncertain inflows distribution as specified, there is virtually no risk that the first through third lakes will fail to achieve their elevation and salinity targets and associated environmental, recreational, and economic development values. The two concentric water bodies of Alternative 3 have similar properties.

Alternative 4 – Lake 3

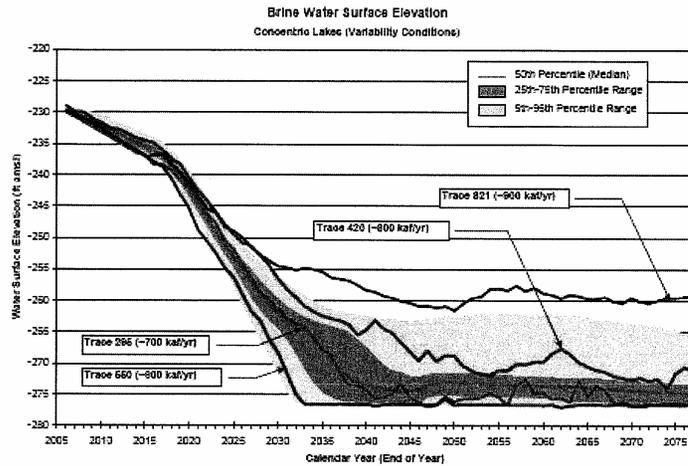
Third Lake Surface Elevation
Concentric Lakes (Variability Conditions)



Third Lake Salinity
Concentric Lakes (Variability Conditions)



Notice that in the Brine Water Surface Elevation graph for Alternative 4 that the 600 kaf/yr trace flatlines. This means that the Fourth Lake has taken on the role of the Brine Sink with unstable salinity and elevation.



Alternatively, since the concentric lakes design has very long-term phased construction as the brine sink diminishes over time, the size of the third and fourth lakes can be altered before construction based on updated inflows information available at that time. This design and construction adaptability can improve expected cost effectiveness. Furthermore, for even lower inflows, the lakes would have relatively low cost reconfigurability. Berms could be built to blocking off portions of the lakes to maintain salinity and elevation targets with lower flows.

Issues Requiring Correction and/or Clarification

- 1) The average annual inflows attributed to Imperial Valley based on Table H2-5 are incorrect throughout the Draft PEIR document because the effects of the 3.1 MAF cap and the Inadvertent Overrun and Payback Policy have not been included into the Imperial Valley averages (in Table H2-5 and throughout the document). As stated in the Draft PEIR: "The inflows from the Imperial Valley will be reduced in the future by 56,856 acre-feet/year based on the Entitlement Enforcement and Inadvertent Overrun and Payback Policy" (Draft PEIR, p. H2-39).
- 2) *Marine Sports Fish Re-introduction*
Contradictory statements in the Draft PEIR concerning the viability of marine sports fish re-introduction need to be eliminated or clarified.

For example, Figure ES-3 indicates that Alternative 5 "would" support marine sports fish, but the discussion of a marine sports fishery in the "Biological Resources" chapter arrives at a quite different conclusion.

Alternative 5 would result in a Marine Sea that is considerably smaller than the present Salton Sea. The thermal stratification in the Marine Sea would be sharper and more persistent than under the No Action Alternative. Wind mixing of deeper water would be less frequent, and, when it did occur, the potential for anoxic conditions and hydrogen sulfide in surface water would be greater than under Existing Conditions. These conditions could result in more pronounced fish kills than occur under Existing Conditions and could adversely affect the ability of the Marine Sea to support sustainable populations of fish. These conditions could also preclude the introduction of the marine sport fish that historically occupied the Salton Sea (Draft PEIR, p. 8-60).

Chapter 8 also indicates that sports fishery conditions for Alternative 6 would be similar to Alternative 5 and that Alternative 8 "might" support a sport fishery in contrast to the certainty expressed in Figure ES-3.

Furthermore, identification of the differences in characteristics (depth, water temperature, etc.) that account for the differing conclusions with regard to the potential viability of a sports fishery between Alternatives 3 and 4 could lead to improvements to future versions of Alternative 4 if they are cost effective.

- 3) Since inflows are scarce and are ultimately balanced by outflows in any eventual average steady state (with intra-annual and inter-annual variations about that state), average disposition of the inflows for each alternative would be very useful information for improving designs. Where are the inflows ultimately consumed as outflows?
 - a) As evaporation from wetted surfaces
 - b) Used for dust mitigation irrigation
 - c) Conveyance losses
 - d) Treatment losses
- 4) Discuss the uncertainty in the salinity/evaporation relationship (since it's quite different from recent studies). This conclusion seems to play a prominent roll in the differences in wetted surface acreage between the alternatives.
- 5) Discuss the implementation of the climate change distribution in the Monte Carlo analysis. While the Draft PEIR states that the projections changes in evaporation were not included in the inflows distribution, were these projections included in the Monte Carlo analysis through

the wetted surface evaporation component of the model? And, please verify that the Monte Carlo analysis was carried out correctly by selecting one enhanced evaporation value for *each* complete trace. Are climate change induced changes in evaporation included in estimates of Evapotranspiration for the Imperial Valley, Coachella Valley, or Mexico along with impacts on sea inflows?

- 6) On page H2-65, the probability distribution for the reduction in tailwater from the Imperial Valley is inconsistently described as a “triangular” and “uniform” distribution owing to the fact that the authors did not change all references to this distribution in the text as it has been changed from a uniform distribution in the January 2000 Draft Hydrology Report to a triangular distribution in the October 2006 Draft PEIR based on faulty economic reasoning as described above.
- 7) In Chapter 22, discuss the environmental justice or regional fairness implications of each alternative with respect to available shoreline for existing communities and for future economic development.

Appendix A – Present Value Cost Calculation

Calculation of the present value cost for each alternative based on the information in the Draft PEIR requires making additional assumptions as to timing, but not dollar amounts, because the specification(s) for the timing of construction expenditures given in the Draft PEIR are incomplete and contradictory.

In the Final PEIR these discrepancies should be corrected. Figure 3-1 presents the construction schedule for each of the alternatives. This figure is contradicted both by the “Construction Schedule Assumptions” stated on page 3-2 and by Tables 3-6 and 3-7. In Figure 3-1 for all alternatives except #4, construction begins in 2011. The meaning of statements on page 3-2 such as “Final design completed by 2012”; “Permits, approvals, and easements or deeds obtained by 2013”; and “Major construction initiated by 2014 following a one-year construction bid period” should be clarified with respect to the schedule in Figure 3-1. Table 3-6 for alternative 2 indicates habitat construction expenditures in Phase III (2020 – 2030) while Figure 3-1 does not. Table 3-7 for alternative 3 indicates barrier and perimeter dike construction in Phase III (2020 – 2030) while Figure 3-1 does not. Furthermore, Figure 3-1 does not include the construction schedule for “Air Quality Management” and “Water Conveyance.”

1. Construction begins in 2014 and all present value calculations are from the perspective of the commencement of construction at beginning of year 2014 in 2006 dollars.
2. Construction expenditures and O&M costs for all phases are obtained for each alternative from Figures 3-4 through Figures 3-12 from the Draft PEIR.
3. Phase I represents the time period from the beginning of 2014 to the end of 2020. All Phase I construction expenditures are spread evenly over these 7 years.
4. Phase II represents the time period from the beginning of 2021 to the end of 2030. All Phase II construction expenditures are spread evenly over these 10 years.
5. Phase III represents the time period from the beginning of 2031 to the end of 2040. All Phase III construction expenditures are spread evenly over these 10 years.
6. Phase IV represents the time period from the beginning of 2041 to the end of 2078. All Phase IV construction expenditures are spread evenly over the first 10 years of Phase IV.
7. Calculations are performed for both 4% and 6% discount rates.

Based on the incomplete information in Figure 3-1, a more accurate calculation would shift some of the construction expenditures for Alternative 4 backward in time, while shifting some construction expenditures for all other alternatives forward in time. From a present value perspective, this would further strengthen the cost advantage of Alternative 4.

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Summary Table of Present Value Calculations

IG (cont.)

	discount rate 4%			discount rate 6%		
	Total PV Cost	Increment in Total PV Cost above No Action	Factor times more expensive than Alternative 4 increment	Total PV Cost	Increment in Total PV Cost above No Action	Factor times more expensive than Alternative 4 increment
No Action	\$940.3			\$584.7		
Alternative 1	\$3,355.4	\$2,415.1	2.3	\$2,556.4	\$1,971.7	1.9
Alternative 2	\$3,702.3	\$2,762.0	2.6	\$2,748.8	\$2,164.1	2.1
Alternative 3	\$5,376.1	\$4,435.8	4.3	\$4,075.7	\$3,491.0	3.4
Alternative 4	\$1,983.6	\$1,043.3	1.0	\$1,625.8	\$1,041.1	1.0
Alternative 5	\$5,752.6	\$4,812.4	4.6	\$4,550.3	\$3,965.6	3.8
Alternative 6	\$7,171.7	\$6,231.4	6.0	\$5,881.3	\$5,296.6	5.1
Alternative 7	\$5,809.8	\$4,869.5	4.7	\$4,971.4	\$4,386.7	4.2
Alternative 8	\$7,286.0	\$6,345.7	6.1	\$5,955.4	\$5,370.8	5.2

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IG (cont.)

No action alternative -- Table 3-4 Draft PEIR (all values in \$ millions)								
Phase	Barrier and Perimeter Dikes	Constructed Habitat	Water Conveyance	Water Treatment	Air Quality Management	Construction Subtotal	Annual O&M	
2014-2020	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
II 2021-2030	\$0.0	\$0.0	\$191.0	\$0.0	\$50.8	\$241.8	\$9.0	\$0.0
III 2031-2040	\$0.0	\$0.0	\$0.0	\$0.0	\$406.7	\$406.7	\$38.0	\$0.0
IV 2041-2078	\$0.0	\$0.0	\$0.0	\$0.0	\$152.5	\$152.5	\$49.0	\$0.0
Total	\$0.0	\$0.0	\$191.0	\$0.0	\$610.0	\$610.0	\$901.0	\$0.0

Sum of annual Present Value costs		
Sum PV Construction	Sum PV O&M	Sum PV Total
\$375.7	\$564.6	\$940.3
Present Value Costs		

Annual construction costs											Sum of annual Present Value costs		
Year	discount factor	Barrier and Perimeter Dikes	Constructed Habitat	Water Conveyance	Water Treatment	Air Quality Management	Construction Subtotal	Annual O&M	Total	PV Construction	PV O&M	PV Total	
0	2014	1.0000	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	
1	2015	0.9815	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	
2	2016	0.9646	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	
3	2017	0.9490	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	
4	2018	0.9348	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	
5	2019	0.9219	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	
6	2020	0.9103	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	
7	2021	0.7599	\$0.0	\$0.0	\$19.1	\$0.0	\$5.1	\$24.2	\$9.0	\$33.2	\$18.4	\$6.8	
8	2022	0.7307	\$0.0	\$0.0	\$19.1	\$0.0	\$5.1	\$24.2	\$9.0	\$33.2	\$17.7	\$6.6	
9	2023	0.7025	\$0.0	\$0.0	\$19.1	\$0.0	\$5.1	\$24.2	\$9.0	\$33.2	\$17.0	\$6.4	
10	2024	0.6758	\$0.0	\$0.0	\$19.1	\$0.0	\$5.1	\$24.2	\$9.0	\$33.2	\$16.3	\$6.1	
11	2025	0.6496	\$0.0	\$0.0	\$19.1	\$0.0	\$5.1	\$24.2	\$9.0	\$33.2	\$15.7	\$5.8	
12	2026	0.6246	\$0.0	\$0.0	\$19.1	\$0.0	\$5.1	\$24.2	\$9.0	\$33.2	\$15.1	\$5.6	
13	2027	0.6008	\$0.0	\$0.0	\$19.1	\$0.0	\$5.1	\$24.2	\$9.0	\$33.2	\$14.5	\$5.4	
14	2028	0.5778	\$0.0	\$0.0	\$19.1	\$0.0	\$5.1	\$24.2	\$9.0	\$33.2	\$14.0	\$5.2	
15	2029	0.5553	\$0.0	\$0.0	\$19.1	\$0.0	\$5.1	\$24.2	\$9.0	\$33.2	\$13.4	\$5.0	
16	2030	0.5339	\$0.0	\$0.0	\$19.1	\$0.0	\$5.1	\$24.2	\$9.0	\$33.2	\$12.9	\$4.8	
17	2031	0.5134	\$0.0	\$0.0	\$0.0	\$0.0	\$40.7	\$40.7	\$38.0	\$78.7	\$20.9	\$19.5	
18	2032	0.4936	\$0.0	\$0.0	\$0.0	\$0.0	\$40.7	\$40.7	\$38.0	\$78.7	\$20.1	\$18.8	
19	2033	0.4746	\$0.0	\$0.0	\$0.0	\$0.0	\$40.7	\$40.7	\$38.0	\$78.7	\$19.3	\$18.0	
20	2034	0.4564	\$0.0	\$0.0	\$0.0	\$0.0	\$40.7	\$40.7	\$38.0	\$78.7	\$18.6	\$17.3	
21	2035	0.4388	\$0.0	\$0.0	\$0.0	\$0.0	\$40.7	\$40.7	\$38.0	\$78.7	\$17.8	\$16.7	
22	2036	0.4220	\$0.0	\$0.0	\$0.0	\$0.0	\$40.7	\$40.7	\$38.0	\$78.7	\$17.2	\$16.0	
23	2037	0.4057	\$0.0	\$0.0	\$0.0	\$0.0	\$40.7	\$40.7	\$38.0	\$78.7	\$16.5	\$15.4	
24	2038	0.3901	\$0.0	\$0.0	\$0.0	\$0.0	\$40.7	\$40.7	\$38.0	\$78.7	\$15.9	\$14.8	
25	2039	0.3751	\$0.0	\$0.0	\$0.0	\$0.0	\$40.7	\$40.7	\$38.0	\$78.7	\$15.3	\$14.3	
26	2040	0.3607	\$0.0	\$0.0	\$0.0	\$0.0	\$40.7	\$40.7	\$38.0	\$78.7	\$14.7	\$13.8	
27	2041	0.3468	\$0.0	\$0.0	\$0.0	\$15.3	\$15.3	\$49.0	\$64.3	\$5.3	\$17.0	\$22.3	
28	2042	0.3335	\$0.0	\$0.0	\$0.0	\$15.3	\$15.3	\$49.0	\$64.3	\$5.1	\$16.3	\$21.4	
29	2043	0.3207	\$0.0	\$0.0	\$0.0	\$15.3	\$15.3	\$49.0	\$64.3	\$4.9	\$15.7	\$20.6	
30	2044	0.3083	\$0.0	\$0.0	\$0.0	\$15.3	\$15.3	\$49.0	\$64.3	\$4.7	\$15.1	\$19.8	
31	2045	0.2965	\$0.0	\$0.0	\$0.0	\$15.3	\$15.3	\$49.0	\$64.3	\$4.5	\$14.5	\$19.0	
32	2046	0.2851	\$0.0	\$0.0	\$0.0	\$15.3	\$15.3	\$49.0	\$64.3	\$4.3	\$14.0	\$18.3	
33	2047	0.2741	\$0.0	\$0.0	\$0.0	\$15.3	\$15.3	\$49.0	\$64.3	\$4.2	\$13.4	\$17.6	
34	2048	0.2636	\$0.0	\$0.0	\$0.0	\$15.3	\$15.3	\$49.0	\$64.3	\$4.0	\$12.9	\$16.9	
35	2049	0.2534	\$0.0	\$0.0	\$0.0	\$15.3	\$15.3	\$49.0	\$64.3	\$3.9	\$12.4	\$16.3	
36	2050	0.2437	\$0.0	\$0.0	\$0.0	\$15.3	\$15.3	\$49.0	\$64.3	\$3.7	\$11.9	\$15.7	
37	2051	0.2344					\$49.0	\$49.0	\$0.0	\$11.5	\$11.5		
38	2052	0.2253					\$49.0	\$49.0	\$0.0	\$11.0	\$11.0		
39	2053	0.2166					\$49.0	\$49.0	\$0.0	\$10.6	\$10.6		
40	2054	0.2083					\$49.0	\$49.0	\$0.0	\$10.2	\$10.2		
41	2055	0.2003					\$49.0	\$49.0	\$0.0	\$9.8	\$9.8		
42	2056	0.1926					\$49.0	\$49.0	\$0.0	\$9.4	\$9.4		
43	2057	0.1852					\$49.0	\$49.0	\$0.0	\$9.1	\$9.1		
44	2058	0.1780					\$49.0	\$49.0	\$0.0	\$8.7	\$8.7		
45	2059	0.1712					\$49.0	\$49.0	\$0.0	\$8.4	\$8.4		
46	2060	0.1648					\$49.0	\$49.0	\$0.0	\$8.1	\$8.1		
47	2061	0.1583					\$49.0	\$49.0	\$0.0	\$7.8	\$7.8		
48	2062	0.1522					\$49.0	\$49.0	\$0.0	\$7.5	\$7.5		
49	2063	0.1463					\$49.0	\$49.0	\$0.0	\$7.2	\$7.2		
50	2064	0.1407					\$49.0	\$49.0	\$0.0	\$6.9	\$6.9		
51	2065	0.1353					\$49.0	\$49.0	\$0.0	\$6.6	\$6.6		
52	2066	0.1301					\$49.0	\$49.0	\$0.0	\$6.4	\$6.4		
53	2067	0.1251					\$49.0	\$49.0	\$0.0	\$6.1	\$6.1		
54	2068	0.1203					\$49.0	\$49.0	\$0.0	\$5.9	\$5.9		
55	2069	0.1157					\$49.0	\$49.0	\$0.0	\$5.7	\$5.7		
56	2070	0.1112					\$49.0	\$49.0	\$0.0	\$5.4	\$5.4		
57	2071	0.1068					\$49.0	\$49.0	\$0.0	\$5.2	\$5.2		
58	2072	0.1028					\$49.0	\$49.0	\$0.0	\$5.0	\$5.0		
59	2073	0.0989					\$49.0	\$49.0	\$0.0	\$4.8	\$4.8		
60	2074	0.0951					\$49.0	\$49.0	\$0.0	\$4.7	\$4.7		
61	2075	0.0914					\$49.0	\$49.0	\$0.0	\$4.5	\$4.5		
62	2076	0.0879					\$49.0	\$49.0	\$0.0	\$4.3	\$4.3		
63	2077	0.0845					\$49.0	\$49.0	\$0.0	\$4.1	\$4.1		
64	2078	0.0813					\$49.0	\$49.0	\$0.0	\$4.0	\$4.0		
TOTAL			\$0.0	\$0.0	\$191.0	\$0.0	\$610.0	\$601.0	\$2,332.0	\$3,133.0	\$375.7	\$564.6	\$940.3

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IG (cont.)

Alternative 1 -- Table 3-5 Draft PEIR (all values in millions)											Sum of annual Present Value costs		
Phase	Year	Barrier and Perimeter Dikes	Constructed Habitat	Water Conveyance	Water Treatment	Air Quality Management	Construction Subtotal	Annual O&M	Sum PV Construction	Sum PV O&M	Sum PV Total		
I	2014-2020		\$166.1	\$215.0	\$0.0	\$412.7	\$733.8	\$37.0					
II	2021-2030		\$896.1	\$0.0	\$0.0	\$371.4	\$1,257.5	\$72.0					
III	2031-2040		\$0.0	\$0.0	\$0.0	\$275.2	\$275.2	\$91.0					
IV	2041-2078		\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$91.0					
	Total	\$0.0	\$1,062.2	\$215.0	\$0.0	\$1,059.3	\$2,326.5	\$5,347.0	\$1,633.1	\$1,722.3	\$3,355.4		

Annual construction costs											Present Value Costs		
Year	discount factor	Barrier and Perimeter Dikes	Constructed Habitat	Water Conveyance	Water Treatment	Air Quality Management	Construction Subtotal	Annual O&M	Total	PV Construction	PV O&M	PV Total	
0	2014	1.0000	\$0.0	\$23.7	\$30.7	\$0.0	\$59.0	\$113.4	\$37.0	\$150.4	\$113.4	\$37.0	\$150.4
1	2015	0.9615	\$0.0	\$23.7	\$30.7	\$0.0	\$59.0	\$113.4	\$37.0	\$150.4	\$109.0	\$35.6	\$144.6
2	2016	0.9246	\$0.0	\$23.7	\$30.7	\$0.0	\$59.0	\$113.4	\$37.0	\$150.4	\$104.8	\$34.2	\$139.1
3	2017	0.8897	\$0.0	\$23.7	\$30.7	\$0.0	\$59.0	\$113.4	\$37.0	\$150.4	\$100.8	\$32.9	\$133.7
4	2018	0.8548	\$0.0	\$23.7	\$30.7	\$0.0	\$59.0	\$113.4	\$37.0	\$150.4	\$96.9	\$31.6	\$128.6
5	2019	0.8219	\$0.0	\$23.7	\$30.7	\$0.0	\$59.0	\$113.4	\$37.0	\$150.4	\$93.2	\$30.4	\$123.6
6	2020	0.7903	\$0.0	\$23.7	\$30.7	\$0.0	\$59.0	\$113.4	\$37.0	\$150.4	\$89.6	\$29.2	\$118.9
7	2021	0.7599	\$0.0	\$88.6	\$0.0	\$0.0	\$37.1	\$125.8	\$72.0	\$197.8	\$86.1	\$54.7	\$140.8
8	2022	0.7307	\$0.0	\$88.6	\$0.0	\$0.0	\$37.1	\$125.8	\$72.0	\$197.8	\$82.6	\$52.6	\$135.2
9	2023	0.7026	\$0.0	\$88.6	\$0.0	\$0.0	\$37.1	\$125.8	\$72.0	\$197.8	\$79.4	\$50.6	\$130.0
10	2024	0.6756	\$0.0	\$88.6	\$0.0	\$0.0	\$37.1	\$125.8	\$72.0	\$197.8	\$76.0	\$48.6	\$124.6
11	2025	0.6496	\$0.0	\$88.6	\$0.0	\$0.0	\$37.1	\$125.8	\$72.0	\$197.8	\$72.7	\$46.8	\$119.5
12	2026	0.6246	\$0.0	\$88.6	\$0.0	\$0.0	\$37.1	\$125.8	\$72.0	\$197.8	\$69.5	\$45.0	\$114.5
13	2027	0.6006	\$0.0	\$88.6	\$0.0	\$0.0	\$37.1	\$125.8	\$72.0	\$197.8	\$66.5	\$43.2	\$109.7
14	2028	0.5775	\$0.0	\$88.6	\$0.0	\$0.0	\$37.1	\$125.8	\$72.0	\$197.8	\$63.6	\$41.6	\$105.2
15	2029	0.5553	\$0.0	\$88.6	\$0.0	\$0.0	\$37.1	\$125.8	\$72.0	\$197.8	\$60.8	\$40.0	\$100.8
16	2030	0.5339	\$0.0	\$88.6	\$0.0	\$0.0	\$37.1	\$125.8	\$72.0	\$197.8	\$58.1	\$38.4	\$96.5
17	2031	0.5134	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$27.5	\$27.5	\$91.0	\$14.1	\$46.7	\$60.8
18	2032	0.4936	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$27.5	\$27.5	\$91.0	\$13.6	\$44.9	\$58.5
19	2033	0.4746	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$27.5	\$27.5	\$91.0	\$13.1	\$43.2	\$56.3
20	2034	0.4564	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$27.5	\$27.5	\$91.0	\$12.6	\$41.5	\$54.1
21	2035	0.4388	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$27.5	\$27.5	\$91.0	\$12.1	\$39.9	\$52.0
22	2036	0.4220	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$27.5	\$27.5	\$91.0	\$11.6	\$38.4	\$50.0
23	2037	0.4057	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$27.5	\$27.5	\$91.0	\$11.2	\$36.9	\$48.1
24	2038	0.3901	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$27.5	\$27.5	\$91.0	\$10.7	\$35.5	\$46.2
25	2039	0.3751	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$27.5	\$27.5	\$91.0	\$10.3	\$34.1	\$44.5
26	2040	0.3607	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$27.5	\$27.5	\$91.0	\$9.9	\$32.8	\$42.7
27	2041	0.3468	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$27.5	\$27.5	\$91.0	\$9.0	\$31.6	\$41.6
28	2042	0.3333	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$27.5	\$27.5	\$91.0	\$8.0	\$30.3	\$40.3
29	2043	0.3207	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$27.5	\$27.5	\$91.0	\$7.0	\$29.2	\$39.2
30	2044	0.3083	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$27.5	\$27.5	\$91.0	\$6.0	\$28.1	\$38.1
31	2045	0.2963	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$27.5	\$27.5	\$91.0	\$5.0	\$27.0	\$37.0
32	2046	0.2847	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$27.5	\$27.5	\$91.0	\$4.0	\$25.9	\$35.9
33	2047	0.2734	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$27.5	\$27.5	\$91.0	\$3.0	\$24.9	\$34.9
34	2048	0.2626	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$27.5	\$27.5	\$91.0	\$2.0	\$24.0	\$34.0
35	2049	0.2524	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$27.5	\$27.5	\$91.0	\$1.0	\$23.1	\$33.1
36	2050	0.2427	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$27.5	\$27.5	\$91.0	\$0.0	\$22.2	\$32.2
37	2051	0.2333								\$91.0	\$0.0	\$21.3	\$31.3
38	2052	0.2243								\$91.0	\$0.0	\$20.5	\$30.5
39	2053	0.2166								\$91.0	\$0.0	\$19.7	\$29.7
40	2054	0.2093								\$91.0	\$0.0	\$19.0	\$29.0
41	2055	0.2003								\$91.0	\$0.0	\$18.2	\$28.2
42	2056	0.1926								\$91.0	\$0.0	\$17.5	\$27.5
43	2057	0.1852								\$91.0	\$0.0	\$16.9	\$26.9
44	2058	0.1780								\$91.0	\$0.0	\$16.2	\$26.2
45	2059	0.1712								\$91.0	\$0.0	\$15.6	\$25.6
46	2060	0.1646								\$91.0	\$0.0	\$15.0	\$25.0
47	2061	0.1583								\$91.0	\$0.0	\$14.4	\$24.4
48	2062	0.1522								\$91.0	\$0.0	\$13.8	\$23.8
49	2063	0.1463								\$91.0	\$0.0	\$13.3	\$23.3
50	2064	0.1407								\$91.0	\$0.0	\$12.8	\$22.8
51	2065	0.1353								\$91.0	\$0.0	\$12.3	\$22.3
52	2066	0.1301								\$91.0	\$0.0	\$11.8	\$21.8
53	2067	0.1251								\$91.0	\$0.0	\$11.4	\$21.4
54	2068	0.1203								\$91.0	\$0.0	\$10.9	\$20.9
55	2069	0.1157								\$91.0	\$0.0	\$10.5	\$20.5
56	2070	0.1112								\$91.0	\$0.0	\$10.1	\$20.1
57	2071	0.1069								\$91.0	\$0.0	\$9.7	\$19.7
58	2072	0.1028								\$91.0	\$0.0	\$9.4	\$19.4
59	2073	0.0989								\$91.0	\$0.0	\$9.0	\$19.0
60	2074	0.0951								\$91.0	\$0.0	\$8.7	\$18.7
61	2075	0.0914								\$91.0	\$0.0	\$8.3	\$18.3
62	2076	0.0879								\$91.0	\$0.0	\$8.0	\$18.0
63	2077	0.0845								\$91.0	\$0.0	\$7.7	\$17.7
64	2078	0.0813								\$91.0	\$0.0	\$7.4	\$17.4
	TOTAL	\$0.0	\$1,062.2	\$215.0	\$0.0	\$1,059.3	\$2,326.5	\$5,347.0	\$1,633.1	\$1,722.3	\$3,355.4		

Chapter 8
Interest Groups Comments

IG (cont.)

Alternative 2 -- Table 3-6 Draft PEIR (all values in \$millions)									
Phase	Barrier and Perimeter Dikes	Constructed Habitat	Water Conveyance	Water Treatment	Air Quality Management	Construction Subtotal	Annual O&M		
2014-2020	\$0.0	\$257.8	\$150.0	\$0.0	\$388.1	\$795.9	\$35.0		
II 2021-2030	\$0.0	\$1,322.3	\$73.0	\$0.0	\$51.7	\$1,447.0	\$51.0		
III 2031-2040	\$0.0	\$353.1	\$0.0	\$0.0	\$375.2	\$728.3	\$61.0		
IV 2041-2078	\$0.0	\$0.0	\$0.0	\$0.0	\$362.2	\$362.2	\$107.0		
Total	\$0.0	\$1,933.2	\$223.0	\$0.0	\$1,177.2	\$3,333.4	\$3,333.4		

Sum of annual Present Value costs		
Sum PV Construction	Sum PV O&M	Sum PV Total
\$2,058.6	\$1,643.6	\$3,702.3

Discount rate 0.04													
Annual construction costs													
Year	discount factor	Barrier and Perimeter Dikes	Constructed Habitat	Water Conveyance	Water Treatment	Air Quality Management	Construction Subtotal	Annual O&M	Total	PV Construction	PV O&M	PV Total	
0	2014	1.0000	\$0.0	\$36.8	\$21.4	\$0.0	\$55.4	\$113.7	\$35.0	\$148.7	\$113.7	\$35.0	\$148.7
1	2015	0.9615	\$0.0	\$36.8	\$21.4	\$0.0	\$55.4	\$113.7	\$35.0	\$148.7	\$109.3	\$33.7	\$143.0
2	2016	0.9246	\$0.0	\$36.8	\$21.4	\$0.0	\$55.4	\$113.7	\$35.0	\$148.7	\$105.1	\$32.4	\$137.5
3	2017	0.8897	\$0.0	\$36.8	\$21.4	\$0.0	\$55.4	\$113.7	\$35.0	\$148.7	\$101.1	\$31.1	\$132.2
4	2018	0.8568	\$0.0	\$36.8	\$21.4	\$0.0	\$55.4	\$113.7	\$35.0	\$148.7	\$97.2	\$29.9	\$127.1
5	2019	0.8219	\$0.0	\$36.8	\$21.4	\$0.0	\$55.4	\$113.7	\$35.0	\$148.7	\$93.5	\$28.8	\$122.2
6	2020	0.7903	\$0.0	\$36.8	\$21.4	\$0.0	\$55.4	\$113.7	\$35.0	\$148.7	\$89.9	\$27.7	\$117.5
7	2021	0.7599	\$0.0	\$132.2	\$7.3	\$0.0	\$5.2	\$144.7	\$51.0	\$195.7	\$110.0	\$38.8	\$148.7
8	2022	0.7307	\$0.0	\$132.2	\$7.3	\$0.0	\$5.2	\$144.7	\$51.0	\$195.7	\$105.7	\$37.3	\$143.0
9	2023	0.7026	\$0.0	\$132.2	\$7.3	\$0.0	\$5.2	\$144.7	\$51.0	\$195.7	\$101.7	\$35.8	\$137.5
10	2024	0.6756	\$0.0	\$132.2	\$7.3	\$0.0	\$5.2	\$144.7	\$51.0	\$195.7	\$97.8	\$34.5	\$132.2
11	2025	0.6496	\$0.0	\$132.2	\$7.3	\$0.0	\$5.2	\$144.7	\$51.0	\$195.7	\$94.0	\$33.1	\$127.1
12	2026	0.6246	\$0.0	\$132.2	\$7.3	\$0.0	\$5.2	\$144.7	\$51.0	\$195.7	\$90.4	\$31.9	\$122.2
13	2027	0.6006	\$0.0	\$132.2	\$7.3	\$0.0	\$5.2	\$144.7	\$51.0	\$195.7	\$86.9	\$30.6	\$117.5
14	2028	0.5775	\$0.0	\$132.2	\$7.3	\$0.0	\$5.2	\$144.7	\$51.0	\$195.7	\$83.6	\$29.3	\$113.0
15	2029	0.5553	\$0.0	\$132.2	\$7.3	\$0.0	\$5.2	\$144.7	\$51.0	\$195.7	\$80.3	\$28.0	\$108.7
16	2030	0.5339	\$0.0	\$132.2	\$7.3	\$0.0	\$5.2	\$144.7	\$51.0	\$195.7	\$77.3	\$27.2	\$104.5
17	2031	0.5134	\$0.0	\$35.3	\$0.0	\$0.0	\$37.5	\$72.8	\$81.0	\$153.8	\$37.4	\$41.6	\$79.0
18	2032	0.4936	\$0.0	\$35.3	\$0.0	\$0.0	\$37.5	\$72.8	\$81.0	\$153.8	\$36.0	\$40.0	\$75.9
19	2033	0.4746	\$0.0	\$35.3	\$0.0	\$0.0	\$37.5	\$72.8	\$81.0	\$153.8	\$34.6	\$38.4	\$73.0
20	2034	0.4564	\$0.0	\$35.3	\$0.0	\$0.0	\$37.5	\$72.8	\$81.0	\$153.8	\$33.2	\$37.0	\$70.2
21	2035	0.4388	\$0.0	\$35.3	\$0.0	\$0.0	\$37.5	\$72.8	\$81.0	\$153.8	\$32.0	\$35.5	\$67.5
22	2036	0.4220	\$0.0	\$35.3	\$0.0	\$0.0	\$37.5	\$72.8	\$81.0	\$153.8	\$30.7	\$34.2	\$64.9
23	2037	0.4057	\$0.0	\$35.3	\$0.0	\$0.0	\$37.5	\$72.8	\$81.0	\$153.8	\$29.5	\$32.9	\$62.4
24	2038	0.3901	\$0.0	\$35.3	\$0.0	\$0.0	\$37.5	\$72.8	\$81.0	\$153.8	\$28.4	\$31.6	\$60.0
25	2039	0.3751	\$0.0	\$35.3	\$0.0	\$0.0	\$37.5	\$72.8	\$81.0	\$153.8	\$27.3	\$30.4	\$57.7
26	2040	0.3607	\$0.0	\$35.3	\$0.0	\$0.0	\$37.5	\$72.8	\$81.0	\$153.8	\$26.3	\$29.2	\$55.5
27	2041	0.3468	\$0.0	\$0.0	\$0.0	\$0.0	\$36.2	\$36.2	\$107.0	\$143.2	\$12.6	\$37.1	\$49.7
28	2042	0.3335	\$0.0	\$0.0	\$0.0	\$0.0	\$36.2	\$36.2	\$107.0	\$143.2	\$12.1	\$35.7	\$47.8
29	2043	0.3207	\$0.0	\$0.0	\$0.0	\$0.0	\$36.2	\$36.2	\$107.0	\$143.2	\$11.6	\$34.3	\$45.9
30	2044	0.3083	\$0.0	\$0.0	\$0.0	\$0.0	\$36.2	\$36.2	\$107.0	\$143.2	\$11.2	\$33.0	\$44.2
31	2045	0.2965	\$0.0	\$0.0	\$0.0	\$0.0	\$36.2	\$36.2	\$107.0	\$143.2	\$10.7	\$31.7	\$42.5
32	2046	0.2851	\$0.0	\$0.0	\$0.0	\$0.0	\$36.2	\$36.2	\$107.0	\$143.2	\$10.3	\$30.5	\$40.8
33	2047	0.2741	\$0.0	\$0.0	\$0.0	\$0.0	\$36.2	\$36.2	\$107.0	\$143.2	\$9.9	\$29.3	\$39.3
34	2048	0.2636	\$0.0	\$0.0	\$0.0	\$0.0	\$36.2	\$36.2	\$107.0	\$143.2	\$9.5	\$28.2	\$37.7
35	2049	0.2534	\$0.0	\$0.0	\$0.0	\$0.0	\$36.2	\$36.2	\$107.0	\$143.2	\$9.2	\$27.1	\$36.3
36	2050	0.2437	\$0.0	\$0.0	\$0.0	\$0.0	\$36.2	\$36.2	\$107.0	\$143.2	\$8.8	\$26.1	\$34.9
37	2051	0.2343							\$107.0	\$107.0	\$0.0	\$25.1	\$25.1
38	2052	0.2253							\$107.0	\$107.0	\$0.0	\$24.1	\$24.1
39	2053	0.2166							\$107.0	\$107.0	\$0.0	\$23.2	\$23.2
40	2054	0.2083							\$107.0	\$107.0	\$0.0	\$22.3	\$22.3
41	2055	0.2003							\$107.0	\$107.0	\$0.0	\$21.4	\$21.4
42	2056	0.1926							\$107.0	\$107.0	\$0.0	\$20.6	\$20.6
43	2057	0.1852							\$107.0	\$107.0	\$0.0	\$19.8	\$19.8
44	2058	0.1790							\$107.0	\$107.0	\$0.0	\$19.1	\$19.1
45	2059	0.1712							\$107.0	\$107.0	\$0.0	\$18.3	\$18.3
46	2060	0.1646							\$107.0	\$107.0	\$0.0	\$17.6	\$17.6
47	2061	0.1583							\$107.0	\$107.0	\$0.0	\$16.9	\$16.9
48	2062	0.1522							\$107.0	\$107.0	\$0.0	\$16.3	\$16.3
49	2063	0.1463							\$107.0	\$107.0	\$0.0	\$15.7	\$15.7
50	2064	0.1407							\$107.0	\$107.0	\$0.0	\$15.1	\$15.1
51	2065	0.1353							\$107.0	\$107.0	\$0.0	\$14.5	\$14.5
52	2066	0.1301							\$107.0	\$107.0	\$0.0	\$13.9	\$13.9
53	2067	0.1251							\$107.0	\$107.0	\$0.0	\$13.4	\$13.4
54	2068	0.1203							\$107.0	\$107.0	\$0.0	\$12.9	\$12.9
55	2069	0.1157							\$107.0	\$107.0	\$0.0	\$12.4	\$12.4
56	2070	0.1112							\$107.0	\$107.0	\$0.0	\$11.9	\$11.9
57	2071	0.1069							\$107.0	\$107.0	\$0.0	\$11.4	\$11.4
58	2072	0.1028							\$107.0	\$107.0	\$0.0	\$11.0	\$11.0
59	2073	0.0989							\$107.0	\$107.0	\$0.0	\$10.6	\$10.6
60	2074	0.0951							\$107.0	\$107.0	\$0.0	\$10.2	\$10.2
61	2075	0.0914							\$107.0	\$107.0	\$0.0	\$9.8	\$9.8
62	2076	0.0879							\$107.0	\$107.0	\$0.0	\$9.4	\$9.4
63	2077	0.0845							\$107.0	\$107.0	\$0.0	\$9.0	\$9.0
64	2078	0.0813							\$107.0	\$107.0	\$0.0	\$8.7	\$8.7
TOTAL		\$0.0	\$1,933.2	\$223.0	\$0.0	\$1,177.2	\$3,333.4	\$5,631.0	\$8,964.4	\$2,058.6	\$1,643.6	\$3,702.3	

Chapter 8
Interest Groups Comments

IG (cont.)

Alternative 3 -- Table 3-7 Draft PEIR (all values in \$millions)										Sum of annual Present Value costs			
Phase	Year	Barrier and Penmeter Dikes	Constructed Habitat	Water Conveyance	Water Treatment	Air Quality Management	Construction Subtotal	Annual O&M			Sum PV Construction	Sum PV O&M	Sum PV Total
I	2014-2020	\$1,493.0	\$76.4	\$0.0	\$0.0	\$0.0	\$0.0	\$1,569.4	\$0.0				
II	2021-2030	\$1,466.0	\$0.0	\$138.4	\$0.0	\$52.5	\$2,436.9	\$71.0					
III	2031-2040	\$0.0	\$0.0	\$124.3	\$0.0	\$79.4	\$918.4	\$138.0					
IV	2041-2078	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$138.0					
Total		\$2,959.0	\$76.4	\$262.7	\$0.0	\$1,626.6	\$4,924.7						
										\$3,359.3	\$2,016.8	\$5,376.1	
Discount rate										Present Value Costs			
0.04													
Annual construction costs													
Year	discount factor	Barrier and Penmeter Dikes	Constructed Habitat	Water Conveyance	Water Treatment	Air Quality Management	Construction Subtotal	Annual O&M	Total	PV Construction	PV O&M	PV Total	
0	2014	1.0000	\$213.3	\$10.9	\$0.0	\$0.0	\$224.2	\$0.0	\$224.2	\$224.2	\$0.0	\$224.2	
1	2015	0.9615	\$213.3	\$10.9	\$0.0	\$0.0	\$224.2	\$0.0	\$224.2	\$215.6	\$0.0	\$215.6	
2	2016	0.9246	\$213.3	\$10.9	\$0.0	\$0.0	\$224.2	\$0.0	\$224.2	\$207.3	\$0.0	\$207.3	
3	2017	0.8890	\$213.3	\$10.9	\$0.0	\$0.0	\$224.2	\$0.0	\$224.2	\$199.3	\$0.0	\$199.3	
4	2018	0.8548	\$213.3	\$10.9	\$0.0	\$0.0	\$224.2	\$0.0	\$224.2	\$191.6	\$0.0	\$191.6	
5	2019	0.8219	\$213.3	\$10.9	\$0.0	\$0.0	\$224.2	\$0.0	\$224.2	\$184.3	\$0.0	\$184.3	
6	2020	0.7903	\$213.3	\$10.9	\$0.0	\$0.0	\$224.2	\$0.0	\$224.2	\$177.2	\$0.0	\$177.2	
7	2021	0.7599	\$146.6	\$0.0	\$13.8	\$0.0	\$83.3	\$243.7	\$71.0	\$314.7	\$185.2	\$54.0	\$239.1
8	2022	0.7307	\$146.6	\$0.0	\$13.8	\$0.0	\$83.3	\$243.7	\$71.0	\$314.7	\$178.1	\$51.9	\$229.9
9	2023	0.7026	\$146.6	\$0.0	\$13.8	\$0.0	\$83.3	\$243.7	\$71.0	\$314.7	\$171.2	\$49.9	\$221.1
10	2024	0.6756	\$146.6	\$0.0	\$13.8	\$0.0	\$83.3	\$243.7	\$71.0	\$314.7	\$164.6	\$48.0	\$212.6
11	2025	0.6496	\$146.6	\$0.0	\$13.8	\$0.0	\$83.3	\$243.7	\$71.0	\$314.7	\$158.3	\$46.1	\$204.4
12	2026	0.6246	\$146.6	\$0.0	\$13.8	\$0.0	\$83.3	\$243.7	\$71.0	\$314.7	\$152.2	\$44.3	\$196.6
13	2027	0.6006	\$146.6	\$0.0	\$13.8	\$0.0	\$83.3	\$243.7	\$71.0	\$314.7	\$146.4	\$42.6	\$189.0
14	2028	0.5775	\$146.6	\$0.0	\$13.8	\$0.0	\$83.3	\$243.7	\$71.0	\$314.7	\$140.7	\$41.0	\$181.7
15	2029	0.5553	\$146.6	\$0.0	\$13.8	\$0.0	\$83.3	\$243.7	\$71.0	\$314.7	\$135.3	\$39.4	\$174.7
16	2030	0.5339	\$146.6	\$0.0	\$13.8	\$0.0	\$83.3	\$243.7	\$71.0	\$314.7	\$130.1	\$37.9	\$168.0
17	2031	0.5134	\$0.0	\$0.0	\$12.4	\$0.0	\$79.4	\$91.8	\$138.0	\$229.8	\$47.1	\$0.0	\$181.9
18	2032	0.4936	\$0.0	\$0.0	\$12.4	\$0.0	\$79.4	\$91.8	\$138.0	\$229.8	\$45.3	\$0.0	\$175.3
19	2033	0.4746	\$0.0	\$0.0	\$12.4	\$0.0	\$79.4	\$91.8	\$138.0	\$229.8	\$43.6	\$0.0	\$169.1
20	2034	0.4564	\$0.0	\$0.0	\$12.4	\$0.0	\$79.4	\$91.8	\$138.0	\$229.8	\$41.9	\$0.0	\$163.4
21	2035	0.4388	\$0.0	\$0.0	\$12.4	\$0.0	\$79.4	\$91.8	\$138.0	\$229.8	\$40.3	\$0.0	\$158.1
22	2036	0.4220	\$0.0	\$0.0	\$12.4	\$0.0	\$79.4	\$91.8	\$138.0	\$229.8	\$38.6	\$0.0	\$153.2
23	2037	0.4057	\$0.0	\$0.0	\$12.4	\$0.0	\$79.4	\$91.8	\$138.0	\$229.8	\$37.0	\$0.0	\$148.8
24	2038	0.3901	\$0.0	\$0.0	\$12.4	\$0.0	\$79.4	\$91.8	\$138.0	\$229.8	\$35.4	\$0.0	\$144.8
25	2039	0.3751	\$0.0	\$0.0	\$12.4	\$0.0	\$79.4	\$91.8	\$138.0	\$229.8	\$33.8	\$0.0	\$141.1
26	2040	0.3607	\$0.0	\$0.0	\$12.4	\$0.0	\$79.4	\$91.8	\$138.0	\$229.8	\$32.3	\$0.0	\$137.6
27	2041	0.3468	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$138.0	\$138.0	\$0.0	\$47.9	\$47.9	
28	2042	0.3335	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$138.0	\$138.0	\$0.0	\$46.0	\$46.0	
29	2043	0.3207	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$138.0	\$138.0	\$0.0	\$44.2	\$44.2	
30	2044	0.3083	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$138.0	\$138.0	\$0.0	\$42.5	\$42.5	
31	2045	0.2965	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$138.0	\$138.0	\$0.0	\$40.9	\$40.9	
32	2046	0.2851	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$138.0	\$138.0	\$0.0	\$39.3	\$39.3	
33	2047	0.2741	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$138.0	\$138.0	\$0.0	\$37.8	\$37.8	
34	2048	0.2636	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$138.0	\$138.0	\$0.0	\$36.4	\$36.4	
35	2049	0.2534	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$138.0	\$138.0	\$0.0	\$35.0	\$35.0	
36	2050	0.2437	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$138.0	\$138.0	\$0.0	\$33.6	\$33.6	
37	2051	0.2343						\$138.0	\$138.0	\$0.0	\$32.3	\$32.3	
38	2052	0.2253						\$138.0	\$138.0	\$0.0	\$31.1	\$31.1	
39	2053	0.2166						\$138.0	\$138.0	\$0.0	\$29.9	\$29.9	
40	2054	0.2083						\$138.0	\$138.0	\$0.0	\$28.7	\$28.7	
41	2055	0.2003						\$138.0	\$138.0	\$0.0	\$27.6	\$27.6	
42	2056	0.1926						\$138.0	\$138.0	\$0.0	\$26.6	\$26.6	
43	2057	0.1852						\$138.0	\$138.0	\$0.0	\$25.6	\$25.6	
44	2058	0.1780						\$138.0	\$138.0	\$0.0	\$24.6	\$24.6	
45	2059	0.1710						\$138.0	\$138.0	\$0.0	\$23.6	\$23.6	
46	2060	0.1644						\$138.0	\$138.0	\$0.0	\$22.7	\$22.7	
47	2061	0.1583						\$138.0	\$138.0	\$0.0	\$21.8	\$21.8	
48	2062	0.1522						\$138.0	\$138.0	\$0.0	\$21.0	\$21.0	
49	2063	0.1463						\$138.0	\$138.0	\$0.0	\$20.2	\$20.2	
50	2064	0.1407						\$138.0	\$138.0	\$0.0	\$19.4	\$19.4	
51	2065	0.1353						\$138.0	\$138.0	\$0.0	\$18.7	\$18.7	
52	2066	0.1301						\$138.0	\$138.0	\$0.0	\$18.0	\$18.0	
53	2067	0.1251						\$138.0	\$138.0	\$0.0	\$17.3	\$17.3	
54	2068	0.1203						\$138.0	\$138.0	\$0.0	\$16.6	\$16.6	
55	2069	0.1157						\$138.0	\$138.0	\$0.0	\$16.0	\$16.0	
56	2070	0.1112						\$138.0	\$138.0	\$0.0	\$15.3	\$15.3	
57	2071	0.1069						\$138.0	\$138.0	\$0.0	\$14.6	\$14.6	
58	2072	0.1028						\$138.0	\$138.0	\$0.0	\$14.2	\$14.2	
59	2073	0.0989						\$138.0	\$138.0	\$0.0	\$13.6	\$13.6	
60	2074	0.0951						\$138.0	\$138.0	\$0.0	\$13.1	\$13.1	
61	2075	0.0914						\$138.0	\$138.0	\$0.0	\$12.6	\$12.6	
62	2076	0.0879						\$138.0	\$138.0	\$0.0	\$12.1	\$12.1	
63	2077	0.0845						\$138.0	\$138.0	\$0.0	\$11.7	\$11.7	
64	2078	0.0813						\$138.0	\$138.0	\$0.0	\$11.2	\$11.2	
TOTAL		\$2,959.0	\$76.4	\$262.7	\$0.0	\$1,626.6	\$4,924.7	\$7,334.0	\$12,258.7	\$3,359.3	\$2,016.8	\$5,376.1	

Chapter 8
Interest Groups Comments

IG (cont.)

Alternative 4 -- Table 3-8 Draft PEIR (all values in \$millions)

Phase	Barrier and Perimeter Dikes	Constructed Habitat	Water Conveyance	Water Treatment	Air Quality Management	Construction Subtotal	Annual O&M
I 2014-2020	\$372.4	\$291.9	\$30.4	\$0.0	\$0.0	\$694.7	\$8.0
II 2021-2030	\$744.0	\$625.4	\$71.0	\$0.0	\$0.0	\$1,440.4	\$16.0
III 2031-2040	\$0.0	\$0.0	\$66.0	\$0.0	\$0.0	\$66.0	\$20.0
IV 2041-2078	\$0.0	\$0.0	\$114.2	\$0.0	\$0.0	\$114.2	\$20.0
Total	\$1,116.4	\$917.3	\$281.6	\$0.0	\$0.0	\$2,315.3	

Sum of annual Present Value costs		
Sum PV Construction	Sum PV O&M	Sum PV Total
\$1,604.8	\$378.8	\$1,983.6
Present Value Costs		

Year	Discount factor	Barrier and Perimeter Dikes	Constructed Habitat	Water Conveyance	Water Treatment	Air Quality Management	Construction Subtotal	Annual O&M	Total	PV Construction	PV O&M	PV Total
0	2014	1.0000	\$53.2	\$41.7	\$4.3	\$0.0	\$99.2	\$8.0	\$107.2	\$99.2	\$8.0	\$107.2
1	2015	0.9815	\$53.2	\$41.7	\$4.3	\$0.0	\$99.2	\$8.0	\$107.2	\$95.4	\$7.7	\$103.1
2	2016	0.9248	\$53.2	\$41.7	\$4.3	\$0.0	\$99.2	\$8.0	\$107.2	\$91.6	\$7.4	\$99.2
3	2017	0.8893	\$53.2	\$41.7	\$4.3	\$0.0	\$99.2	\$8.0	\$107.2	\$88.2	\$7.1	\$95.3
4	2018	0.8548	\$53.2	\$41.7	\$4.3	\$0.0	\$99.2	\$8.0	\$107.2	\$84.8	\$6.8	\$91.7
5	2019	0.8219	\$53.2	\$41.7	\$4.3	\$0.0	\$99.2	\$8.0	\$107.2	\$81.6	\$6.6	\$88.1
6	2020	0.7903	\$53.2	\$41.7	\$4.3	\$0.0	\$99.2	\$8.0	\$107.2	\$78.4	\$6.3	\$84.8
7	2021	0.7599	\$74.4	\$62.5	\$7.1	\$0.0	\$144.0	\$16.0	\$160.0	\$105.2	\$12.2	\$121.6
8	2022	0.7307	\$74.4	\$62.5	\$7.1	\$0.0	\$144.0	\$16.0	\$160.0	\$102.0	\$11.7	\$116.9
9	2023	0.7028	\$74.4	\$62.5	\$7.1	\$0.0	\$144.0	\$16.0	\$160.0	\$101.2	\$11.2	\$112.4
10	2024	0.6758	\$74.4	\$62.5	\$7.1	\$0.0	\$144.0	\$16.0	\$160.0	\$97.3	\$10.8	\$108.1
11	2025	0.6498	\$74.4	\$62.5	\$7.1	\$0.0	\$144.0	\$16.0	\$160.0	\$93.6	\$10.4	\$104.0
12	2026	0.6248	\$74.4	\$62.5	\$7.1	\$0.0	\$144.0	\$16.0	\$160.0	\$90.0	\$10.0	\$100.0
13	2027	0.6008	\$74.4	\$62.5	\$7.1	\$0.0	\$144.0	\$16.0	\$160.0	\$86.5	\$9.6	\$96.1
14	2028	0.5775	\$74.4	\$62.5	\$7.1	\$0.0	\$144.0	\$16.0	\$160.0	\$83.2	\$9.2	\$92.4
15	2029	0.5539	\$74.4	\$62.5	\$7.1	\$0.0	\$144.0	\$16.0	\$160.0	\$80.0	\$8.9	\$89.5
16	2030	0.5339	\$74.4	\$62.5	\$7.1	\$0.0	\$144.0	\$16.0	\$160.0	\$76.9	\$8.5	\$85.4
17	2031	0.5134	\$0.0	\$0.0	\$6.6	\$0.0	\$6.6	\$20.0	\$26.6	\$3.4	\$10.3	\$13.7
18	2032	0.4936	\$0.0	\$0.0	\$6.6	\$0.0	\$6.6	\$20.0	\$26.6	\$3.3	\$9.9	\$13.1
19	2033	0.4746	\$0.0	\$0.0	\$6.6	\$0.0	\$6.6	\$20.0	\$26.6	\$3.1	\$9.5	\$12.6
20	2034	0.4564	\$0.0	\$0.0	\$6.6	\$0.0	\$6.6	\$20.0	\$26.6	\$3.0	\$9.1	\$12.1
21	2035	0.4389	\$0.0	\$0.0	\$6.6	\$0.0	\$6.6	\$20.0	\$26.6	\$2.8	\$8.8	\$11.7
22	2036	0.4220	\$0.0	\$0.0	\$6.6	\$0.0	\$6.6	\$20.0	\$26.6	\$2.8	\$8.4	\$11.2
23	2037	0.4057	\$0.0	\$0.0	\$6.6	\$0.0	\$6.6	\$20.0	\$26.6	\$2.7	\$8.1	\$10.8
24	2038	0.3901	\$0.0	\$0.0	\$6.6	\$0.0	\$6.6	\$20.0	\$26.6	\$2.6	\$7.8	\$10.4
25	2039	0.3751	\$0.0	\$0.0	\$6.6	\$0.0	\$6.6	\$20.0	\$26.6	\$2.5	\$7.5	\$10.0
26	2040	0.3607	\$0.0	\$0.0	\$6.6	\$0.0	\$6.6	\$20.0	\$26.6	\$2.4	\$7.2	\$9.6
27	2041	0.3468	\$0.0	\$0.0	\$11.4	\$0.0	\$11.4	\$20.0	\$31.4	\$4.0	\$6.9	\$10.9
28	2042	0.3335	\$0.0	\$0.0	\$11.4	\$0.0	\$11.4	\$20.0	\$31.4	\$3.9	\$6.7	\$10.5
29	2043	0.3207	\$0.0	\$0.0	\$11.4	\$0.0	\$11.4	\$20.0	\$31.4	\$3.7	\$6.4	\$10.1
30	2044	0.3083	\$0.0	\$0.0	\$11.4	\$0.0	\$11.4	\$20.0	\$31.4	\$3.5	\$6.2	\$9.7
31	2045	0.2965	\$0.0	\$0.0	\$11.4	\$0.0	\$11.4	\$20.0	\$31.4	\$3.4	\$5.9	\$9.3
32	2046	0.2851	\$0.0	\$0.0	\$11.4	\$0.0	\$11.4	\$20.0	\$31.4	\$3.3	\$5.7	\$9.0
33	2047	0.2741	\$0.0	\$0.0	\$11.4	\$0.0	\$11.4	\$20.0	\$31.4	\$3.1	\$5.5	\$8.6
34	2048	0.2636	\$0.0	\$0.0	\$11.4	\$0.0	\$11.4	\$20.0	\$31.4	\$3.0	\$5.3	\$8.3
35	2049	0.2534	\$0.0	\$0.0	\$11.4	\$0.0	\$11.4	\$20.0	\$31.4	\$2.9	\$5.1	\$8.0
36	2050	0.2437	\$0.0	\$0.0	\$11.4	\$0.0	\$11.4	\$20.0	\$31.4	\$2.8	\$4.9	\$7.7
37	2051	0.2343					\$20.0	\$20.0	\$20.0	\$0.0	\$4.7	\$4.7
38	2052	0.2253					\$20.0	\$20.0	\$20.0	\$0.0	\$4.5	\$4.5
39	2053	0.2168					\$20.0	\$20.0	\$20.0	\$0.0	\$4.3	\$4.3
40	2054	0.2083					\$20.0	\$20.0	\$20.0	\$0.0	\$4.2	\$4.2
41	2055	0.2003					\$20.0	\$20.0	\$20.0	\$0.0	\$4.0	\$4.0
42	2056	0.1926					\$20.0	\$20.0	\$20.0	\$0.0	\$3.9	\$3.9
43	2057	0.1852					\$20.0	\$20.0	\$20.0	\$0.0	\$3.7	\$3.7
44	2058	0.1780					\$20.0	\$20.0	\$20.0	\$0.0	\$3.6	\$3.6
45	2059	0.1712					\$20.0	\$20.0	\$20.0	\$0.0	\$3.4	\$3.4
46	2060	0.1646					\$20.0	\$20.0	\$20.0	\$0.0	\$3.3	\$3.3
47	2061	0.1583					\$20.0	\$20.0	\$20.0	\$0.0	\$3.2	\$3.2
48	2062	0.1522					\$20.0	\$20.0	\$20.0	\$0.0	\$3.0	\$3.0
49	2063	0.1463					\$20.0	\$20.0	\$20.0	\$0.0	\$2.9	\$2.9
50	2064	0.1407					\$20.0	\$20.0	\$20.0	\$0.0	\$2.8	\$2.8
51	2065	0.1353					\$20.0	\$20.0	\$20.0	\$0.0	\$2.7	\$2.7
52	2066	0.1301					\$20.0	\$20.0	\$20.0	\$0.0	\$2.6	\$2.6
53	2067	0.1251					\$20.0	\$20.0	\$20.0	\$0.0	\$2.5	\$2.5
54	2068	0.1203					\$20.0	\$20.0	\$20.0	\$0.0	\$2.4	\$2.4
55	2069	0.1157					\$20.0	\$20.0	\$20.0	\$0.0	\$2.3	\$2.3
56	2070	0.1112					\$20.0	\$20.0	\$20.0	\$0.0	\$2.2	\$2.2
57	2071	0.1069					\$20.0	\$20.0	\$20.0	\$0.0	\$2.1	\$2.1
58	2072	0.1028					\$20.0	\$20.0	\$20.0	\$0.0	\$2.1	\$2.1
59	2073	0.0989					\$20.0	\$20.0	\$20.0	\$0.0	\$2.0	\$2.0
60	2074	0.0951					\$20.0	\$20.0	\$20.0	\$0.0	\$1.9	\$1.9
61	2075	0.0914					\$20.0	\$20.0	\$20.0	\$0.0	\$1.8	\$1.8
62	2076	0.0879					\$20.0	\$20.0	\$20.0	\$0.0	\$1.8	\$1.8
63	2077	0.0845					\$20.0	\$20.0	\$20.0	\$0.0	\$1.7	\$1.7
64	2078	0.0813					\$20.0	\$20.0	\$20.0	\$0.0	\$1.6	\$1.6
TOTAL		\$1,116.4	\$917.3	\$281.6	\$0.0	\$0.0	\$2,315.3	\$1,176.0	\$3,491.3	\$1,604.8	\$378.8	\$1,983.6

Chapter 8
Interest Groups Comments

IG (cont.)

Alternative 5 - Table 3-9 Draft PEIR (all values in \$millions)												
Phase	Barrier and Perimeter Dikes	Constructed Habitat	Water Conveyance	Water Treatment	Air Quality Management	Construction Subtotal	Annual O&M	Sum of annual Construction	Present Value costs Sum PV O&M	Sum PV Total		
I	2014-2020	\$1,598.1	\$184.8	\$223.1	\$0.0	\$389.6	\$2,395.6	\$40.0				
II	2021-2030	\$0.0	\$936.2	\$55.8	\$0.0	\$558.5	\$1,550.5	\$95.0				
III	2031-2040	\$0.0	\$0.0	\$0.0	\$0.0	\$571.5	\$571.5	\$134.0				
IV	2041-2078	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$134.0				
Total		\$1,598.1	\$1,121.0	\$278.9	\$0.0	\$1,519.6	\$4,517.6					
	Discount rate 0.04							\$3,377.6	\$2,376.0	\$5,752.6		
Year	Discount factor	Barrier and Perimeter Dikes	Constructed Habitat	Water Conveyance	Water Treatment	Air Quality Management	Construction Subtotal	Annual O&M	Total	PV Construction	PV O&M	PV Total
0	2014	1.0000	\$228.3	\$26.4	\$31.9	\$0.0	\$55.7	\$342.2	\$40.0	\$342.2	\$40.0	\$382.2
1	2015	0.9615	\$228.3	\$26.4	\$31.9	\$0.0	\$55.7	\$342.2	\$40.0	\$329.1	\$38.5	\$367.5
2	2016	0.9246	\$228.3	\$26.4	\$31.9	\$0.0	\$55.7	\$342.2	\$40.0	\$316.4	\$37.0	\$353.4
3	2017	0.8890	\$228.3	\$26.4	\$31.9	\$0.0	\$55.7	\$342.2	\$40.0	\$304.2	\$35.6	\$339.8
4	2018	0.8548	\$228.3	\$26.4	\$31.9	\$0.0	\$55.7	\$342.2	\$40.0	\$292.3	\$34.2	\$326.7
5	2019	0.8219	\$228.3	\$26.4	\$31.9	\$0.0	\$55.7	\$342.2	\$40.0	\$281.3	\$32.9	\$314.2
6	2020	0.7903	\$228.3	\$26.4	\$31.9	\$0.0	\$55.7	\$342.2	\$40.0	\$270.8	\$31.6	\$302.1
7	2021	0.7599	\$0.0	\$93.6	\$5.6	\$0.0	\$55.5	\$155.1	\$95.0	\$117.8	\$72.2	\$190.0
8	2022	0.7307	\$0.0	\$93.6	\$5.6	\$0.0	\$55.5	\$155.1	\$95.0	\$113.3	\$69.4	\$182.7
9	2023	0.7026	\$0.0	\$93.6	\$5.6	\$0.0	\$55.5	\$155.1	\$95.0	\$108.9	\$66.7	\$175.7
10	2024	0.6756	\$0.0	\$93.6	\$5.6	\$0.0	\$55.5	\$155.1	\$95.0	\$104.7	\$64.2	\$168.9
11	2025	0.6496	\$0.0	\$93.6	\$5.6	\$0.0	\$55.5	\$155.1	\$95.0	\$100.7	\$61.7	\$162.4
12	2026	0.6246	\$0.0	\$93.6	\$5.6	\$0.0	\$55.5	\$155.1	\$95.0	\$96.8	\$59.3	\$156.2
13	2027	0.6006	\$0.0	\$93.6	\$5.6	\$0.0	\$55.5	\$155.1	\$95.0	\$93.1	\$57.1	\$150.2
14	2028	0.5775	\$0.0	\$93.6	\$5.6	\$0.0	\$55.5	\$155.1	\$95.0	\$89.5	\$54.9	\$144.4
15	2029	0.5553	\$0.0	\$93.6	\$5.6	\$0.0	\$55.5	\$155.1	\$95.0	\$86.1	\$52.8	\$138.9
16	2030	0.5339	\$0.0	\$93.6	\$5.6	\$0.0	\$55.5	\$155.1	\$95.0	\$82.8	\$50.7	\$133.5
17	2031	0.5134	\$0.0	\$0.0	\$0.0	\$0.0	\$57.2	\$134.0	\$191.2	\$79.3	\$68.8	\$148.1
18	2032	0.4938	\$0.0	\$0.0	\$0.0	\$0.0	\$57.2	\$134.0	\$191.2	\$76.2	\$66.1	\$142.3
19	2033	0.4748	\$0.0	\$0.0	\$0.0	\$0.0	\$57.2	\$134.0	\$191.2	\$73.1	\$63.6	\$136.7
20	2034	0.4564	\$0.0	\$0.0	\$0.0	\$0.0	\$57.2	\$134.0	\$191.2	\$70.1	\$61.2	\$131.3
21	2035	0.4388	\$0.0	\$0.0	\$0.0	\$0.0	\$57.2	\$134.0	\$191.2	\$67.1	\$58.8	\$126.0
22	2036	0.4220	\$0.0	\$0.0	\$0.0	\$0.0	\$57.2	\$134.0	\$191.2	\$64.1	\$56.5	\$120.7
23	2037	0.4057	\$0.0	\$0.0	\$0.0	\$0.0	\$57.2	\$134.0	\$191.2	\$61.2	\$54.4	\$115.5
24	2038	0.3901	\$0.0	\$0.0	\$0.0	\$0.0	\$57.2	\$134.0	\$191.2	\$58.3	\$52.3	\$110.6
25	2039	0.3751	\$0.0	\$0.0	\$0.0	\$0.0	\$57.2	\$134.0	\$191.2	\$55.4	\$50.3	\$105.7
26	2040	0.3607	\$0.0	\$0.0	\$0.0	\$0.0	\$57.2	\$134.0	\$191.2	\$52.5	\$48.3	\$100.9
27	2041	0.3468	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$134.0	\$134.0	\$0.0	\$46.5	\$46.5
28	2042	0.3335	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$134.0	\$134.0	\$0.0	\$44.7	\$44.7
29	2043	0.3207	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$134.0	\$134.0	\$0.0	\$43.0	\$43.0
30	2044	0.3083	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$134.0	\$134.0	\$0.0	\$41.3	\$41.3
31	2045	0.2965	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$134.0	\$134.0	\$0.0	\$39.7	\$39.7
32	2046	0.2851	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$134.0	\$134.0	\$0.0	\$38.2	\$38.2
33	2047	0.2741	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$134.0	\$134.0	\$0.0	\$36.7	\$36.7
34	2048	0.2636	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$134.0	\$134.0	\$0.0	\$35.3	\$35.3
35	2049	0.2534	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$134.0	\$134.0	\$0.0	\$34.0	\$34.0
36	2050	0.2437	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$134.0	\$134.0	\$0.0	\$32.7	\$32.7
37	2051	0.2344						\$134.0	\$134.0	\$0.0	\$31.4	\$31.4
38	2052	0.2253						\$134.0	\$134.0	\$0.0	\$30.2	\$30.2
39	2053	0.2166						\$134.0	\$134.0	\$0.0	\$29.0	\$29.0
40	2054	0.2083						\$134.0	\$134.0	\$0.0	\$27.9	\$27.9
41	2055	0.2003						\$134.0	\$134.0	\$0.0	\$26.8	\$26.8
42	2056	0.1928						\$134.0	\$134.0	\$0.0	\$25.8	\$25.8
43	2057	0.1852						\$134.0	\$134.0	\$0.0	\$24.8	\$24.8
44	2058	0.1780						\$134.0	\$134.0	\$0.0	\$23.9	\$23.9
45	2059	0.1712						\$134.0	\$134.0	\$0.0	\$22.9	\$22.9
46	2060	0.1646						\$134.0	\$134.0	\$0.0	\$22.1	\$22.1
47	2061	0.1583						\$134.0	\$134.0	\$0.0	\$21.2	\$21.2
48	2062	0.1522						\$134.0	\$134.0	\$0.0	\$20.4	\$20.4
49	2063	0.1463						\$134.0	\$134.0	\$0.0	\$19.6	\$19.6
50	2064	0.1407						\$134.0	\$134.0	\$0.0	\$18.9	\$18.9
51	2065	0.1353						\$134.0	\$134.0	\$0.0	\$18.1	\$18.1
52	2066	0.1301						\$134.0	\$134.0	\$0.0	\$17.4	\$17.4
53	2067	0.1251						\$134.0	\$134.0	\$0.0	\$16.8	\$16.8
54	2068	0.1203						\$134.0	\$134.0	\$0.0	\$16.1	\$16.1
55	2069	0.1157						\$134.0	\$134.0	\$0.0	\$15.5	\$15.5
56	2070	0.1112						\$134.0	\$134.0	\$0.0	\$14.9	\$14.9
57	2071	0.1069						\$134.0	\$134.0	\$0.0	\$14.3	\$14.3
58	2072	0.1028						\$134.0	\$134.0	\$0.0	\$13.8	\$13.8
59	2073	0.0989						\$134.0	\$134.0	\$0.0	\$13.2	\$13.2
60	2074	0.0951						\$134.0	\$134.0	\$0.0	\$12.7	\$12.7
61	2075	0.0914						\$134.0	\$134.0	\$0.0	\$12.2	\$12.2
62	2076	0.0879						\$134.0	\$134.0	\$0.0	\$11.8	\$11.8
63	2077	0.0845						\$134.0	\$134.0	\$0.0	\$11.3	\$11.3
64	2078	0.0812						\$134.0	\$134.0	\$0.0	\$10.9	\$10.9
TOTAL		\$1,598.1	\$1,121.0	\$278.9	\$0.0	\$1,519.6	\$4,517.6	\$7,662.0	\$12,179.6	\$3,377.6	\$2,376.0	\$5,752.6

Chapter 8
Interest Groups Comments

IG (cont.)

Phase	Barrier and Perimeter Dikes	Constructed Habitat	Water Conveyance	Water Treatment	Air Quality Management	Construction Subtotal	Annual O&M
I 2014-2020	\$3,137.7	\$645.8	\$31.7	\$0.0	\$387.2	\$4,202.4	\$47.0
II 2021-2030	\$0.0	\$161.4	\$126.8	\$0.0	\$722.8	\$1,011.0	\$52.0
III 2031-2040	\$0.0	\$0.0	\$71.3	\$0.0	\$580.8	\$652.1	\$148.0
IV 2041-2078	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0
Total	\$3,137.7	\$807.2	\$229.8	\$0.0	\$1,690.8	\$5,865.5	

Sum of annual Construction	Present Value Sum PV Construction	Sum of annual O&M	Present Value Sum PV O&M
\$4,677.9	\$2,493.8	\$7,171.7	\$3,121.0

Year	Discount factor	Barrier and Perimeter Dikes	Constructed Habitat	Water Conveyance	Water Treatment	Air Quality Management	Construction Subtotal	Annual O&M	Total	PV Construction	PV O&M	PV Total
0	1.0000	\$448.2	\$92.3	\$4.5	\$0.0	\$55.3	\$600.3	\$47.0	\$647.3	\$600.3	\$47.0	\$647.3
1	0.9615	\$448.2	\$92.3	\$4.5	\$0.0	\$55.3	\$600.3	\$47.0	\$647.3	\$577.3	\$45.2	\$622.4
2	0.9246	\$448.2	\$92.3	\$4.5	\$0.0	\$55.3	\$600.3	\$47.0	\$647.3	\$555.1	\$43.5	\$598.5
3	0.8890	\$448.2	\$92.3	\$4.5	\$0.0	\$55.3	\$600.3	\$47.0	\$647.3	\$533.7	\$41.8	\$575.5
4	0.8548	\$448.2	\$92.3	\$4.5	\$0.0	\$55.3	\$600.3	\$47.0	\$647.3	\$513.2	\$40.2	\$553.4
5	0.8219	\$448.2	\$92.3	\$4.5	\$0.0	\$55.3	\$600.3	\$47.0	\$647.3	\$493.4	\$38.6	\$532.1
6	0.7903	\$448.2	\$92.3	\$4.5	\$0.0	\$55.3	\$600.3	\$47.0	\$647.3	\$474.5	\$37.1	\$511.6
7	0.7599	\$0.0	\$16.1	\$12.7	\$0.0	\$72.3	\$101.1	\$82.0	\$183.1	\$76.8	\$62.3	\$139.1
8	0.7307	\$0.0	\$16.1	\$12.7	\$0.0	\$72.3	\$101.1	\$82.0	\$183.1	\$73.9	\$59.9	\$133.8
9	0.7026	\$0.0	\$16.1	\$12.7	\$0.0	\$72.3	\$101.1	\$82.0	\$183.1	\$71.0	\$57.6	\$129.6
10	0.6756	\$0.0	\$16.1	\$12.7	\$0.0	\$72.3	\$101.1	\$82.0	\$183.1	\$68.3	\$55.4	\$123.7
11	0.6496	\$0.0	\$16.1	\$12.7	\$0.0	\$72.3	\$101.1	\$82.0	\$183.1	\$65.7	\$53.3	\$118.9
12	0.6246	\$0.0	\$16.1	\$12.7	\$0.0	\$72.3	\$101.1	\$82.0	\$183.1	\$63.1	\$51.2	\$114.4
13	0.6006	\$0.0	\$16.1	\$12.7	\$0.0	\$72.3	\$101.1	\$82.0	\$183.1	\$60.7	\$49.2	\$110.0
14	0.5775	\$0.0	\$16.1	\$12.7	\$0.0	\$72.3	\$101.1	\$82.0	\$183.1	\$58.4	\$47.4	\$105.7
15	0.5553	\$0.0	\$16.1	\$12.7	\$0.0	\$72.3	\$101.1	\$82.0	\$183.1	\$56.1	\$45.5	\$101.7
16	0.5339	\$0.0	\$16.1	\$12.7	\$0.0	\$72.3	\$101.1	\$82.0	\$183.1	\$54.0	\$43.8	\$97.8
17	0.5134	\$0.0	\$0.0	\$7.1	\$0.0	\$58.1	\$65.2	\$148.0	\$213.2	\$33.5	\$76.0	\$109.5
18	0.4936	\$0.0	\$0.0	\$7.1	\$0.0	\$58.1	\$65.2	\$148.0	\$213.2	\$32.2	\$73.1	\$105.2
19	0.4746	\$0.0	\$0.0	\$7.1	\$0.0	\$58.1	\$65.2	\$148.0	\$213.2	\$31.0	\$70.2	\$101.2
20	0.4564	\$0.0	\$0.0	\$7.1	\$0.0	\$58.1	\$65.2	\$148.0	\$213.2	\$29.8	\$67.5	\$97.3
21	0.4388	\$0.0	\$0.0	\$7.1	\$0.0	\$58.1	\$65.2	\$148.0	\$213.2	\$28.6	\$64.9	\$93.6
22	0.4220	\$0.0	\$0.0	\$7.1	\$0.0	\$58.1	\$65.2	\$148.0	\$213.2	\$27.5	\$62.4	\$90.0
23	0.4057	\$0.0	\$0.0	\$7.1	\$0.0	\$58.1	\$65.2	\$148.0	\$213.2	\$26.5	\$60.0	\$86.5
24	0.3901	\$0.0	\$0.0	\$7.1	\$0.0	\$58.1	\$65.2	\$148.0	\$213.2	\$25.4	\$57.7	\$83.2
25	0.3751	\$0.0	\$0.0	\$7.1	\$0.0	\$58.1	\$65.2	\$148.0	\$213.2	\$24.5	\$55.5	\$80.0
26	0.3607	\$0.0	\$0.0	\$7.1	\$0.0	\$58.1	\$65.2	\$148.0	\$213.2	\$23.5	\$53.4	\$76.9
27	0.3468	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$51.3	\$51.3	
28	0.3335	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$49.4	\$49.4	
29	0.3207	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$47.5	\$47.5	
30	0.3083	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$45.8	\$45.8	
31	0.2965	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$44.3	\$44.3	
32	0.2851	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$42.2	\$42.2	
33	0.2741	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$40.6	\$40.6	
34	0.2636	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$39.0	\$39.0	
35	0.2534	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$37.5	\$37.5	
36	0.2437	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$36.1	\$36.1	
37	0.2343	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$34.7	\$34.7	
38	0.2253	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$33.3	\$33.3	
39	0.2166	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$32.1	\$32.1	
40	0.2083	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$30.8	\$30.8	
41	0.2003	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$29.8	\$29.8	
42	0.1926	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$29.5	\$29.5	
43	0.1852	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$27.4	\$27.4	
44	0.1780	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$26.4	\$26.4	
45	0.1712	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$25.3	\$25.3	
46	0.1646	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$24.4	\$24.4	
47	0.1583	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$23.4	\$23.4	
48	0.1522	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$22.5	\$22.5	
49	0.1463	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$21.7	\$21.7	
50	0.1407	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$20.8	\$20.8	
51	0.1353	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$20.0	\$20.0	
52	0.1301	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$19.3	\$19.3	
53	0.1251	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$18.6	\$18.6	
54	0.1203	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$17.8	\$17.8	
55	0.1157	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$17.1	\$17.1	
56	0.1112	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$16.5	\$16.5	
57	0.1069	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$15.8	\$15.8	
58	0.1028	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$15.2	\$15.2	
59	0.0989	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$14.6	\$14.6	
60	0.0951	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$14.1	\$14.1	
61	0.0914	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$13.5	\$13.5	
62	0.0879	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$13.0	\$13.0	
63	0.0845	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$12.5	\$12.5	
64	0.0813	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$148.0	\$148.0	\$0.0	\$12.0	\$12.0	
TOTAL		\$3,137.7	\$807.2	\$229.8	\$0.0	\$1,690.8	\$5,865.5	\$8,253.0	\$14,118.5	\$4,677.9	\$2,493.8	\$7,171.7

Chapter 8
Interest Groups Comments

IG (cont.)

Phase	Barrier and Perimeter Dikes	Constructed Habitat	Water Conveyance	Water Treatment	Air Quality Management	Construction Subtotal	Annual O&M
I 2014-2020	\$3,363.1	\$220.5	\$78.0	\$504.6	\$0.0	\$4,166.2	\$0.0
II 2021-2030	\$0.0	\$440.9	\$0.0	\$0.0	\$559.2	\$1,000.1	\$82.0
III 2031-2040	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$82.0
IV 2041-2078	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$82.0
Total	\$3,363.1	\$661.4	\$78.0	\$504.6	\$559.2	\$5,166.3	

Sum of annual Present Value costs		
Sum PV Construction	Sum PV O&M	Sum PV Total
\$4,366.2	\$1,453.6	\$5,809.8

Year	discount factor	Barrier and Perimeter Dikes	Constructed Habitat	Water Conveyance	Water Treatment	Air Quality Management	Construction Subtotal	Annual O&M	Total	Present Value Costs			
										PV Construction	PV O&M	PV Total	
0	2014	1.0000	\$480.4	\$31.5	\$11.1	\$72.1	\$0.0	\$595.2	\$0.0	\$595.2	\$0.0	\$595.2	
1	2015	0.9615	\$480.4	\$31.5	\$11.1	\$72.1	\$0.0	\$595.2	\$0.0	\$595.2	\$572.3	\$0.0	\$572.3
2	2016	0.9246	\$480.4	\$31.5	\$11.1	\$72.1	\$0.0	\$595.2	\$0.0	\$595.2	\$550.3	\$0.0	\$550.3
3	2017	0.8892	\$480.4	\$31.5	\$11.1	\$72.1	\$0.0	\$595.2	\$0.0	\$595.2	\$529.1	\$0.0	\$529.1
4	2018	0.8548	\$480.4	\$31.5	\$11.1	\$72.1	\$0.0	\$595.2	\$0.0	\$595.2	\$508.8	\$0.0	\$508.8
5	2019	0.8219	\$480.4	\$31.5	\$11.1	\$72.1	\$0.0	\$595.2	\$0.0	\$595.2	\$489.2	\$0.0	\$489.2
6	2020	0.7903	\$480.4	\$31.5	\$11.1	\$72.1	\$0.0	\$595.2	\$0.0	\$595.2	\$470.4	\$0.0	\$470.4
7	2021	0.7599	\$0.0	\$44.1	\$0.0	\$0.0	\$55.9	\$100.0	\$82.0	\$182.0	\$76.0	\$82.0	\$138.3
8	2022	0.7307	\$0.0	\$44.1	\$0.0	\$0.0	\$55.9	\$100.0	\$82.0	\$182.0	\$73.1	\$82.0	\$133.0
9	2023	0.7026	\$0.0	\$44.1	\$0.0	\$0.0	\$55.9	\$100.0	\$82.0	\$182.0	\$70.3	\$82.0	\$127.7
10	2024	0.6756	\$0.0	\$44.1	\$0.0	\$0.0	\$55.9	\$100.0	\$82.0	\$182.0	\$67.6	\$82.0	\$123.0
11	2025	0.6496	\$0.0	\$44.1	\$0.0	\$0.0	\$55.9	\$100.0	\$82.0	\$182.0	\$65.0	\$82.0	\$118.2
12	2026	0.6246	\$0.0	\$44.1	\$0.0	\$0.0	\$55.9	\$100.0	\$82.0	\$182.0	\$62.5	\$82.0	\$113.7
13	2027	0.6006	\$0.0	\$44.1	\$0.0	\$0.0	\$55.9	\$100.0	\$82.0	\$182.0	\$60.1	\$82.0	\$109.3
14	2028	0.5775	\$0.0	\$44.1	\$0.0	\$0.0	\$55.9	\$100.0	\$82.0	\$182.0	\$57.8	\$82.0	\$105.1
15	2029	0.5553	\$0.0	\$44.1	\$0.0	\$0.0	\$55.9	\$100.0	\$82.0	\$182.0	\$55.5	\$82.0	\$101.1
16	2030	0.5339	\$0.0	\$44.1	\$0.0	\$0.0	\$55.9	\$100.0	\$82.0	\$182.0	\$53.4	\$82.0	\$97.2
17	2031	0.5134	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$82.0	\$82.0	\$0.0	\$82.0	\$82.0
18	2032	0.4938	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$82.0	\$82.0	\$0.0	\$82.0	\$80.5
19	2033	0.4748	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$82.0	\$82.0	\$0.0	\$82.0	\$78.9
20	2034	0.4564	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$82.0	\$82.0	\$0.0	\$82.0	\$77.4
21	2035	0.4388	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$82.0	\$82.0	\$0.0	\$82.0	\$76.0
22	2036	0.4220	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$82.0	\$82.0	\$0.0	\$82.0	\$74.6
23	2037	0.4057	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$82.0	\$82.0	\$0.0	\$82.0	\$73.3
24	2038	0.3899	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$82.0	\$82.0	\$0.0	\$82.0	\$72.0
25	2039	0.3751	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$82.0	\$82.0	\$0.0	\$82.0	\$70.8
26	2040	0.3607	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$82.0	\$82.0	\$0.0	\$82.0	\$69.6
27	2041	0.3468	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$82.0	\$82.0	\$0.0	\$82.0	\$68.4
28	2042	0.3333	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$82.0	\$82.0	\$0.0	\$82.0	\$67.3
29	2043	0.3207	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$82.0	\$82.0	\$0.0	\$82.0	\$66.3
30	2044	0.3083	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$82.0	\$82.0	\$0.0	\$82.0	\$65.3
31	2045	0.2963	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$82.0	\$82.0	\$0.0	\$82.0	\$64.3
32	2046	0.2851	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$82.0	\$82.0	\$0.0	\$82.0	\$63.4
33	2047	0.2741	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$82.0	\$82.0	\$0.0	\$82.0	\$62.5
34	2048	0.2636	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$82.0	\$82.0	\$0.0	\$82.0	\$61.6
35	2049	0.2534	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$82.0	\$82.0	\$0.0	\$82.0	\$60.8
36	2050	0.2437	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$82.0	\$82.0	\$0.0	\$82.0	\$60.0
37	2051	0.2343							\$82.0	\$82.0	\$0.0	\$82.0	\$59.2
38	2052	0.2253							\$82.0	\$82.0	\$0.0	\$82.0	\$58.5
39	2053	0.2166							\$82.0	\$82.0	\$0.0	\$82.0	\$57.8
40	2054	0.2083							\$82.0	\$82.0	\$0.0	\$82.0	\$57.1
41	2055	0.2003							\$82.0	\$82.0	\$0.0	\$82.0	\$56.4
42	2056	0.1926							\$82.0	\$82.0	\$0.0	\$82.0	\$55.8
43	2057	0.1852							\$82.0	\$82.0	\$0.0	\$82.0	\$55.2
44	2058	0.1780							\$82.0	\$82.0	\$0.0	\$82.0	\$54.6
45	2059	0.1712							\$82.0	\$82.0	\$0.0	\$82.0	\$54.0
46	2060	0.1646							\$82.0	\$82.0	\$0.0	\$82.0	\$53.5
47	2061	0.1583							\$82.0	\$82.0	\$0.0	\$82.0	\$53.0
48	2062	0.1522							\$82.0	\$82.0	\$0.0	\$82.0	\$52.5
49	2063	0.1463							\$82.0	\$82.0	\$0.0	\$82.0	\$52.0
50	2064	0.1407							\$82.0	\$82.0	\$0.0	\$82.0	\$51.5
51	2065	0.1353							\$82.0	\$82.0	\$0.0	\$82.0	\$51.1
52	2066	0.1301							\$82.0	\$82.0	\$0.0	\$82.0	\$50.7
53	2067	0.1251							\$82.0	\$82.0	\$0.0	\$82.0	\$50.3
54	2068	0.1203							\$82.0	\$82.0	\$0.0	\$82.0	\$49.9
55	2069	0.1157							\$82.0	\$82.0	\$0.0	\$82.0	\$49.5
56	2070	0.1112							\$82.0	\$82.0	\$0.0	\$82.0	\$49.1
57	2071	0.1069							\$82.0	\$82.0	\$0.0	\$82.0	\$48.8
58	2072	0.1026							\$82.0	\$82.0	\$0.0	\$82.0	\$48.4
59	2073	0.0988							\$82.0	\$82.0	\$0.0	\$82.0	\$48.1
60	2074	0.0951							\$82.0	\$82.0	\$0.0	\$82.0	\$47.8
61	2075	0.0914							\$82.0	\$82.0	\$0.0	\$82.0	\$47.5
62	2076	0.0879							\$82.0	\$82.0	\$0.0	\$82.0	\$47.2
63	2077	0.0845							\$82.0	\$82.0	\$0.0	\$82.0	\$46.9
64	2078	0.0813							\$82.0	\$82.0	\$0.0	\$82.0	\$46.7
TOTAL		\$3,363.1	\$661.4	\$78.0	\$504.6	\$559.2	\$5,166.3	\$4,756.0	\$9,922.3	\$4,366.2	\$1,453.6	\$5,809.8	

Chapter 8
Interest Groups Comments

IG (cont.)

Phase	Barrier and Perimeter Dikes	Constructed Habitat	Water Conveyance	Water Treatment	Air Quality Management	Construction Subtotal	Annual O&M
I 2014-2020	\$3,415.5	\$50.0	\$25.1	\$0.0	\$386.2	\$3,876.6	\$45.0
II 2021-2030	\$0.0	\$460.8	\$226.3	\$0.0	\$849.8	\$1,536.9	\$116.0
III 2031-2040	\$0.0	\$0.0	\$0.0	\$0.0	\$412.0	\$412.0	\$145.0
IV 2041-2078	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$145.0
Total	\$3,415.5	\$510.8	\$251.4	\$0.0	\$1,648.0	\$5,825.7	\$0.0

Sum of annual Present Value costs		
Sum PV Construction	Sum PV O&M	Sum PV Total
\$4,620.7	\$2,665.3	\$7,286.0
Present Value Costs		

Year	Discount factor	Barrier and Perimeter Dikes	Constructed Habitat	Water Conveyance	Water Treatment	Air Quality Management	Construction Subtotal	Annual O&M	Total	PV Construction	PV O&M	PV Total								
													0.04	Annual construction costs	Present Value Costs					
0	2014	1.0000	\$487.9	\$7.1	\$3.6	\$0.0	\$55.2	\$553.8	\$45.0	\$598.8	\$553.8	\$45.0	\$598.8							
1	2015	0.9615	\$487.9	\$7.1	\$3.6	\$0.0	\$55.2	\$553.8	\$45.0	\$598.8	\$532.5	\$43.3	\$575.8							
2	2016	0.9248	\$487.9	\$7.1	\$3.6	\$0.0	\$55.2	\$553.8	\$45.0	\$598.8	\$512.0	\$41.6	\$553.7							
3	2017	0.8897	\$487.9	\$7.1	\$3.6	\$0.0	\$55.2	\$553.8	\$45.0	\$598.8	\$492.4	\$40.0	\$532.4							
4	2018	0.8548	\$487.9	\$7.1	\$3.6	\$0.0	\$55.2	\$553.8	\$45.0	\$598.8	\$473.4	\$38.5	\$511.9							
5	2019	0.8219	\$487.9	\$7.1	\$3.6	\$0.0	\$55.2	\$553.8	\$45.0	\$598.8	\$455.2	\$37.0	\$492.2							
6	2020	0.7903	\$487.9	\$7.1	\$3.6	\$0.0	\$55.2	\$553.8	\$45.0	\$598.8	\$437.7	\$35.6	\$473.3							
7	2021	0.7599	\$0.0	\$46.1	\$22.6	\$0.0	\$85.0	\$153.7	\$116.0	\$269.7	\$116.8	\$88.2	\$204.9							
8	2022	0.7307	\$0.0	\$46.1	\$22.6	\$0.0	\$85.0	\$153.7	\$116.0	\$269.7	\$112.3	\$84.8	\$197.1							
9	2023	0.7028	\$0.0	\$46.1	\$22.6	\$0.0	\$85.0	\$153.7	\$116.0	\$269.7	\$108.0	\$81.5	\$189.5							
10	2024	0.6758	\$0.0	\$46.1	\$22.6	\$0.0	\$85.0	\$153.7	\$116.0	\$269.7	\$103.8	\$78.4	\$182.2							
11	2025	0.6496	\$0.0	\$46.1	\$22.6	\$0.0	\$85.0	\$153.7	\$116.0	\$269.7	\$99.8	\$75.4	\$175.2							
12	2026	0.6246	\$0.0	\$46.1	\$22.6	\$0.0	\$85.0	\$153.7	\$116.0	\$269.7	\$96.0	\$72.5	\$168.4							
13	2027	0.6008	\$0.0	\$46.1	\$22.6	\$0.0	\$85.0	\$153.7	\$116.0	\$269.7	\$92.3	\$69.7	\$162.0							
14	2028	0.5778	\$0.0	\$46.1	\$22.6	\$0.0	\$85.0	\$153.7	\$116.0	\$269.7	\$88.8	\$67.0	\$155.7							
15	2029	0.5553	\$0.0	\$46.1	\$22.6	\$0.0	\$85.0	\$153.7	\$116.0	\$269.7	\$85.0	\$64.4	\$149.7							
16	2030	0.5333	\$0.0	\$46.1	\$22.6	\$0.0	\$85.0	\$153.7	\$116.0	\$269.7	\$82.1	\$61.9	\$144.0							
17	2031	0.5114	\$0.0	\$0.0	\$0.0	\$0.0	\$41.2	\$41.2	\$145.0	\$186.2	\$21.2	\$74.4	\$95.6							
18	2032	0.4936	\$0.0	\$0.0	\$0.0	\$0.0	\$41.2	\$41.2	\$145.0	\$186.2	\$20.3	\$71.6	\$91.9							
19	2033	0.4749	\$0.0	\$0.0	\$0.0	\$0.0	\$41.2	\$41.2	\$145.0	\$186.2	\$19.5	\$68.8	\$88.4							
20	2034	0.4564	\$0.0	\$0.0	\$0.0	\$0.0	\$41.2	\$41.2	\$145.0	\$186.2	\$18.8	\$66.2	\$85.0							
21	2035	0.4388	\$0.0	\$0.0	\$0.0	\$0.0	\$41.2	\$41.2	\$145.0	\$186.2	\$18.1	\$63.6	\$81.7							
22	2036	0.4220	\$0.0	\$0.0	\$0.0	\$0.0	\$41.2	\$41.2	\$145.0	\$186.2	\$17.4	\$61.2	\$78.6							
23	2037	0.4057	\$0.0	\$0.0	\$0.0	\$0.0	\$41.2	\$41.2	\$145.0	\$186.2	\$16.7	\$58.8	\$75.5							
24	2038	0.3901	\$0.0	\$0.0	\$0.0	\$0.0	\$41.2	\$41.2	\$145.0	\$186.2	\$16.1	\$56.6	\$72.6							
25	2039	0.3751	\$0.0	\$0.0	\$0.0	\$0.0	\$41.2	\$41.2	\$145.0	\$186.2	\$15.5	\$54.4	\$69.8							
26	2040	0.3607	\$0.0	\$0.0	\$0.0	\$0.0	\$41.2	\$41.2	\$145.0	\$186.2	\$14.9	\$52.3	\$67.2							
27	2041	0.3468	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$145.0	\$145.0	\$0.0	\$50.3	\$50.3							
28	2042	0.3335	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$145.0	\$145.0	\$0.0	\$48.4	\$48.4							
29	2043	0.3207	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$145.0	\$145.0	\$0.0	\$46.5	\$46.5							
30	2044	0.3083	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$145.0	\$145.0	\$0.0	\$44.7	\$44.7							
31	2045	0.2965	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$145.0	\$145.0	\$0.0	\$43.0	\$43.0							
32	2046	0.2851	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$145.0	\$145.0	\$0.0	\$41.3	\$41.3							
33	2047	0.2741	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$145.0	\$145.0	\$0.0	\$39.7	\$39.7							
34	2048	0.2636	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$145.0	\$145.0	\$0.0	\$38.2	\$38.2							
35	2049	0.2534	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$145.0	\$145.0	\$0.0	\$36.7	\$36.7							
36	2050	0.2437	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$145.0	\$145.0	\$0.0	\$35.3	\$35.3							
37	2051	0.2343							\$145.0	\$145.0	\$0.0	\$34.0	\$34.0							
38	2052	0.2253							\$145.0	\$145.0	\$0.0	\$32.7	\$32.7							
39	2053	0.2166							\$145.0	\$145.0	\$0.0	\$31.4	\$31.4							
40	2054	0.2083							\$145.0	\$145.0	\$0.0	\$30.2	\$30.2							
41	2055	0.2003							\$145.0	\$145.0	\$0.0	\$29.0	\$29.0							
42	2056	0.1928							\$145.0	\$145.0	\$0.0	\$27.8	\$27.8							
43	2057	0.1852							\$145.0	\$145.0	\$0.0	\$26.8	\$26.8							
44	2058	0.1780							\$145.0	\$145.0	\$0.0	\$25.8	\$25.8							
45	2059	0.1712							\$145.0	\$145.0	\$0.0	\$24.8	\$24.8							
46	2060	0.1646							\$145.0	\$145.0	\$0.0	\$23.9	\$23.9							
47	2061	0.1583							\$145.0	\$145.0	\$0.0	\$23.0	\$23.0							
48	2062	0.1522							\$145.0	\$145.0	\$0.0	\$22.1	\$22.1							
49	2063	0.1463							\$145.0	\$145.0	\$0.0	\$21.2	\$21.2							
50	2064	0.1407							\$145.0	\$145.0	\$0.0	\$20.4	\$20.4							
51	2065	0.1353							\$145.0	\$145.0	\$0.0	\$19.6	\$19.6							
52	2066	0.1301							\$145.0	\$145.0	\$0.0	\$18.9	\$18.9							
53	2067	0.1251							\$145.0	\$145.0	\$0.0	\$18.1	\$18.1							
54	2068	0.1203							\$145.0	\$145.0	\$0.0	\$17.4	\$17.4							
55	2069	0.1157							\$145.0	\$145.0	\$0.0	\$16.8	\$16.8							
56	2070	0.1112							\$145.0	\$145.0	\$0.0	\$16.1	\$16.1							
57	2071	0.1069							\$145.0	\$145.0	\$0.0	\$15.5	\$15.5							
58	2072	0.1028							\$145.0	\$145.0	\$0.0	\$14.9	\$14.9							
59	2073	0.0989							\$145.0	\$145.0	\$0.0	\$14.3	\$14.3							
60	2074	0.0951							\$145.0	\$145.0	\$0.0	\$13.8	\$13.8							
61	2075	0.0914							\$145.0	\$145.0	\$0.0	\$13.3	\$13.3							
62	2076	0.0879							\$145.0	\$145.0	\$0.0	\$12.7	\$12.7							
63	2077	0.0845							\$145.0	\$145.0	\$0.0	\$12.3	\$12.3							
64	2078	0.0813							\$145.0	\$145.0	\$0.0	\$11.8	\$11.8							
TOTAL										\$3,415.5	\$510.8	\$251.4	\$0.0	\$1,648.0	\$5,825.7	\$8,435.0	\$14,260.7	\$4,620.7	\$2,665.3	\$7,286.0

Appendix B – Reliability and Accuracy of Underlying Data

IG (cont.)

Salton Sea Restoration: Where is the Data?

Stated succinctly, the critical data is not publicly available for review and thus disputes arise between the consultants of various stakeholders. Pointedly, this renders the analysis of future flows of water to the Sea as tenuous at best, as evidenced by the uncertainty analysis in DWR's January 2006 Draft Hydrology Report. Recent studies discussing private analysis of the data sources upon which restoration efforts are likely to be based indicate that the data is inconsistent and incomplete. The manner in which assumptions replace reliable data in the estimation of flows to the Sea is hidden from public scrutiny. Upon such an opaque data foundation, neither the public nor the decision makers can reliably analyze the Salton Sea restoration options under consideration.

IID Flow Measurement and Database Recording: Accuracy and Reliability

For the public to make informed decisions about the restoration of the Salton Sea, a transparent analysis of the alternatives is needed. The success of any restoration design critically depends on the prediction of future water flows. Any analysis of future flows must begin with a well-founded understanding and modeling of current flows. The water balance method, which tracks all inflows and outflows through any region, is the logical basis to physically model water flows. Accurate measurement and recording of flows form the foundation of the water balance method; water balance model results cannot be reliable without reliable water flow input data.

Careful reading of recent reports by IID, DWR, U.S. Bureau of Reclamation, and consultants hired by each agency highlight the gaps in understanding of current flows and the need for improvement in measurement and database management. This draft report examines three interrelated issues: 1) the accuracy of regularly measured flows, 2) the uncertainty in estimation of unmeasured flows, and 3) the reliability of flow information recording into IID's database.

The opaque development and documentation of the data inputs used to calibrate the Imperial Irrigation Decision Support System (IIDSS), the model used to estimate changes in all flows through the Imperial Valley, do not satisfy the criteria for public transparency (Summary Report IIDSS, December 2001). Stating that "Data gaps were identified and assumptions were made to fill them (p. 2-7)" without further explanation is insufficient. Stating that "This partitioning of on-farm water into consumptive use and tailwater and tilewater return flow components is a complex process within the on-farm system (p. 2-3)" without further explanation is insufficient. Stating "Because only limited flow measurements in the drainage system were available, professional judgment was used to determine the fractions of water deliveries that returned to the drainage system (p. 2-8)" without further explanation is insufficient.

As water becomes more scarce during shortage situations necessitating an allocation program and as substantial investments are considered for both conservation programs and Salton Sea restoration programs, accurate measurement of flows through the water delivery and drainage system become crucial for effective design, implementation, and management of these programs. Moreover, the fairness, economic efficiency, accuracy of water accounting, and transparency of a water allocation program are all enhanced when all significant deliveries are reliably measured and recorded.

The Need for Accurate Measurement of Water Flows in the Imperial Irrigation District

IID historical documents are replete with comments about the inaccuracies of gate measurements, the method still in use²³. M. J. Dowd, a consulting engineer with the district for 43 years, in his testimony in *Arizona v. California* in 1957 states "...if we had the actual quantity we measure to farmers, it might be somewhat more than 10 percent [inaccurate]. The formula adopted to estimate flows "...was known at the time, has been known ever since, and is known now, that it is not accurate." The margin of error is "at least [10 percent]...and for many years the records of the district that were published carry the statement that it is known..."

The State Water Resources Control Board in its "Water Rights Decision 1600" from 1984 further describes the problem of inaccurate and missing measurements for effective water management within IID:

The four main sources of water loss within IID which were identified at the hearing are: tailwater, canal spills, canal seepage, and leachwater. The total quantity of loss attributable to all four sources can be determined fairly accurately by subtracting the flow in the New River and Alamo River as they enter IID from the flow in those rivers as they enter the Salton Sea...Although there is general agreement on the quantity of total water losses within IID, there is considerable variation in the estimates of losses attributable to each of the four main sources described. The difficulty in determining the quantity of loss from each source is due to lack of measurements of canal spill and tailwater and problems in accurately estimating losses due to canal seepage and leachwater. (SWRCB 1984, p. 29-30)

The State Water Resources Control Board concludes:

The lack of reliable information on the sources of water loss within IID, however, impedes the development of a comprehensive water conservation plan. In the view of the maximum beneficial use requirement of Article X, Section 2 of the California Constitution, the Board concludes that the right to make use of a large quantity of water carries with it the responsibility to account for its use accurately. Therefore, the IID should develop reliable procedures for determining the disposition of all water imported by the District with an emphasis on (1) an accurate accounting of farm deliveries, (2) measurements of canal spills, (3) measurement of tailwater, and (4) either measurement or computation of leachwater and canal seepage. (SWRCB 1984, p. 37)

IID's recalcitrance to adopt these recommendations is evidenced by the fact that, more than two decades later, these same measurement issues are hampering current planning efforts for the restoration of the Salton Sea, under the auspices of DWR, because again there is a lack of reliable data on water flows through the IID service area and onto the sea.

The December 2001 IIDSS Summary Report prepared by CH2MHill used in support of the January 2002 Water Conservation (QSA) Draft EIR states:

²³ For a description of the constant-head orifice turnout measurement system and a discussion of accuracy, including the importance of maintaining constant head throughout the delivery period, see *Water Measurement Manual: A guide to effective water measurement practices for better water measurement*, U. S. Department of the Interior, Bureau of Reclamation, 1997.

Available on-farm data consisted of time series of crop acreage, crop type, and irrigation method; soil type; and name of delivery turnout. To simulate on-farm processes, more data than were readily available were required. Reviewing literature and performing a series of analyses were used to develop crop evapotranspiration, tailwater, tilewater, and irrigation performance data (p. 2-7).

Because only limited flow measurements in the drainage system were available, professional judgment was used to determine the fractions of water deliveries that returned to the drainage system (p. 2-8).

Five years later, the same consulting firm CH2MHill produces the Draft Hydrology Report (January 2006) for DWR in which their prior best estimate for tailwater as a percentage of inflows originating in IID from their 2001 and later 2002 studies (referenced in the current DWR study) is now the lower bound in the new study. According to the January 2006, Draft Hydrology Report: "Tailwater from the total IID water service area has been estimated between 15 percent and 27 percent of total on-farm water delivery (IID 2002, Reclamation 2003) and represents between 39 percent and 68 percent of Imperial Valley's contribution to Salton Sea inflow (p. 43)." The report concludes that any value in this near doubling range is equally likely. Planning investments of the magnitude contemplated for Salton Sea restoration based on this level of uncertainty when it could be resolved through systematic measurement is nearly unconscionable.

Numerous attempts to quantify the flows through the water delivery and drainage system using water balance methods have been published over the years and reviewed during the recent Part 417 process and in connection with Salton Sea restoration. The disparate estimates of component flows arise due to a lack of *direct measurement*. Different researchers chose to estimate a different set of flow components and then estimate the final component as a "closure term" (i.e. the remaining quantity necessary to balance Salton Sea inflows with evaporation—the only significant outflow from the sea—and changes in sea storage derived from sea water levels). In essence this method folds any estimation errors for all the other flow components into the closure term.

The first recommendation by the U.S. Bureau of Reclamation included with its 2003 Part 417 Determination reaches a similar conclusion:

Recommendation 1. Water Measurement. Reliable water measurement records are essential to the decisions that result in water conservation. Reclamation recommends that IID develop, maintain and use a district-wide network of water measurement devices for the consistent monitoring, recording and reporting of system and on-farm water use data. Measurements within the IID should include: 1) canal and lateral spills, 2) actual deliveries to farmers' head gates, 3) tailwater runoff, 4) drain flows, including discharges from drains, and 5) leach water and other components of water diverted from the Colorado River for use in IID.

Finally, independent consultants recently hired by IID also recommend more accurate measurement of water deliveries to farmers (August 2006 Draft Final Report of the Equitable Distribution Study):

The District should improve its capacity for measuring deliveries at the gate and the field. If apportionment is introduced, it is likely that water users will require a higher degree of accuracy than the present measurement system provides. This may eventually entail an automated, remote measurement of delivery (p. 8).

Database Reliability

Recent analysis performed as part of IID's Equitable Distribution Study raises serious questions about the accuracy and reliability of recording data in IID's database that, without further clarification, calls into question the reliability and accuracy of employing a model calibrated with this data for Salton Sea restoration design analysis.

The January 2002 Water Conservation (QSA) Draft EIR states:

The establishment of the Baseline hydrology for IID was founded on 12 years of available irrigation delivery data, provided in monthly increments. This information, collected from 1987 through 1998, was available in sufficient detail to include delivery data at the farm gate level (p. 3.1-94).

Appendix E of the same document providing a summary report of the IIDSS states:

Historical flow data were retrieved from IID's database through a series of queries. These data represented the measured amounts of water that were delivered to each of the 5,287 turnouts during the 12-year span from 1987 to 1998. This 12-year period from 1987 through 1998 was selected for model development, calibration, validation, and verification since this was the only period of full monthly water deliveries and cropping information available in electronic form. **Data gaps were identified and assumptions were made to fill them** [emphasis added] (p. 2-7).

No further explanation as to the extent and how the data gaps were filled is provided.

The documentation stresses that there was a peer review of the model, however, since the peer review is not included and is not publicly available, it is unclear whether the reviewers were able to examine the primary data and examine the inconsistencies and gaps in the data.

The recent August 2006 Draft Final Report of the Equitable Distribution Study sheds some light on the reliability and consistency of recorded data. Independent consultants hired by IID to analyze allocation methods during shortage situations conclude:

Regarding an apportionment based on individual field history, after a careful analysis of the District's data, we came to the conclusion that the District does not have a sufficiently consistent and complete record of these individual field deliveries and, therefore, it would not be practical for the District to apportion water based on the average historical delivery to each individual field.

The reason for this conclusion is as follows. There are almost 7,000 fields which have received at least one delivery of water between 1987 and 2005, and therefore have some sort of claim to receive water. About 5,000 of these fields received one delivery of water in every year over the period. The other 2,000 fields do not have a consistent long-run history of deliveries. Of the 5,000 fields with a long-run history of deliveries, we estimate that about 20-30% may have histories that are incomplete or questionable.³ In total, there are as many as 3,000 or more fields with histories that are problematic for apportionment based on individual field history (p. 3-4).

They further explain the “apparent” source of these inconsistencies:

Having explored the data on field deliveries, we have come to the conclusion that a short-term apportionment based on the average historical use of each field is not a practical proposition because of gaps and incompleteness in the data. These arise in two ways: (1) There is not a complete history for every field in the District that received water. (2) There are sometimes errors in how the data were recorded which make the individual histories too unreliable for a statistical determination of history. As noted above, the basic unit for the delivery of water in IID is the gate. The lands served by a gate are divided into fields, and this division varies. Sometimes a single gate serves a single field; sometimes a single gate serves more than one field; and sometimes, this changes over time as the fields served by a gate are re-organized. Moreover, not all gates have had deliveries broken down among the individual fields. Thus, there is not presently a complete set of delivery histories for every individual field in the District. Additionally, the individual histories that do exist are sometimes incorrect. Errors appear to have arisen because deliveries to one gate have sometimes been recorded under another gate. This happens when the same account receives water from several adjacent gates. In these cases, for the mutual convenience of the zanjero and the water user (who pays the same amount of money regardless of the gates to which his water delivery is assigned), deliveries are not always recorded for each gate separately but, instead, on some occasions deliveries for several adjacent gates are recorded under a single gate. This would generate an implausibly high delivery per field at one gate combined with an implausibly low delivery per field at the other gates.

There is anecdotal evidence that this occurs and, in addition, there are anomalies in the computerized delivery data which seem consistent with this. For example, 192 fields in the IID delivery database are recorded as having an average annual delivery history of less than 1 AF per acre over the period 1987 – 2005, which seems implausibly low. In addition, 150 fields in the IID delivery database are recorded as having an average annual delivery history greater than 12 AF per acre – ranging as high as 4,775 AF per acre in one case.

While it may be possible that all the inconsistencies in IID’s recording of water delivery data “average out” to the correct answer above the gate level, there is no definitive way of knowing. In a footnote, the studies authors state:

The delivery data are used primarily for accounting and billing purposes. There appear to be errors whereby deliveries to one field in an account are recorded as deliveries to another field in the same account: while accurate at the account level, the data are not necessarily accurate at the field level.

Anecdotal evidence and appearances are the only evidence they offer for what must otherwise be labeled a conjecture. Beyond anecdotal evidence and apparent plausibility, the only method to verify the accuracy at the account level with all the inconsistencies at lower levels would be to match up each field in an account with its crop, irrigation technology, and soil type to judge whether reported water use in the account was reasonable for all the fields covered by the account. This approach is destined to fail for two reasons as expressed by the authors of the study. First,

In fact [with the data for field histories that is complete], we find that over 70% of the variation in field-level [water] use in the District cannot be explained by the soil, the crop grown, the method

of irrigation, or the weather; rather, it appears due to individual variation in farming practices (p. 22).

And second,

If it so chose, the District could invest resources in an effort to clarify and resolve the anomalies in the field delivery history data for these fields. However, we do not believe this would be a wise or successful investment. It would be immensely expensive, probably requiring many thousands of hours of staff time. And, in some fraction of cases, it would prove fruitless because, with the passage of time and the turnover in users working the field, it would simply be impossible to resolve all of the anomalies in the historical delivery data.

What the Equitable Distribution Study authors make abundantly clear is that water deliveries are not recorded as the system was designed at either the field or the gate level. Furthermore, the authors directly contradict the above reproduced claim of accuracy at the gate level in the January 2002 Water Conservation (QSA) Draft EIR.

The result of all of these factors is a data set of, unfortunately, questionable quality. The calibration of the IIDSS model critically depends on accuracy in measurement and recording of water deliveries.

IG (cont.)

EXHIBIT E

THE IMPERIAL GROUP

RE: SALTON SEA RESTORATION DEIR --
WATER RIGHTS/SUPPLY and QSA LITIGATION

DATE: January 16, 2007

In 2004, well before the DPEIR was commenced, the Imperial Group and the State, through counsel, agreed to cooperate in any discussion about Salton Sea restoration. That agreement was memorialized. See the Non-Admissibility Agreement. While the agreement did not and cannot change CEQA, it allowed for an exchange of information and discussions free of collateral litigation issues. While the Imperial Group took advantage of the negotiated agreement by proposing what is currently Alternative 4, that is by no means the only discussion or transmittal of information provided. The Imperial Group provided other substantial input and documents – some of which is detailed below – for use in the DEIR, yet none was included. See April 15, 2004 letter to Charles Keene and the February 9, 2005 January 30, 2006, March 9, 2006, March 23, 2006 and May 19, 2006, May 31, 2006, June 20, 2006, July 26, 2006 and August 30, 2006 letters to Secretary Chrisman. Most glaringly, as discussed below, any mention of the Statements of Water Diversion are absent from the DPEIR.

5-2 Water Rights

The DPEIR discussed the application filed by the Metropolitan Water District of Southern California (MWD) to appropriate water from the New and Alamo Rivers filed with the State Water Resources Control Board (SWRCB). The DEIR summarizes the contents of the administrative file at the SWRCB. The discussion concludes with the statement that the application “is being reviewed by the SWRCB.”

A number of landowners and water users in the Imperial Valley have availed themselves of Water Code section 1011 et seq and filed Statements of Water Diversion with the SWRCB, but those are not noted in any fashion in the DPEIR. There are at present over 360 such Statements, all of which recite the right to reduce water use and the areas in which such reduced use may then be applied, as allowed under the Water Code and SWRCB Order 2002-13. Copies of the Statements were provided to the DWR for inclusion in the DEIR and/or analysis on May 31, 2006. The statements have not been rejected, although IID suggested that they be. See David Osias’ letter of May 12, 2006 and our reply of May 16, 2006. Yet no mention is made of the Statements although they are procedurally in the same or a further posture as the MWD applications discussed at 5-2, since the filing of statements requires no public hearings, unlike the MWD applications.

If only one Statement had been filed then perhaps a cursory discussion finding that the exercise of rights under sections 1011 in such a limited fashion would have a de minimis affect on inflows might suffice. But the cumulative affect of sections 1011 et seq. by

IG (cont.)

IG-115

An immense amount of information was reviewed during preparation of the Draft PEIR. All of the material submitted was review and analyzed for relevance; however only the pertinent material was relied upon in preparation of the Draft PEIR. Those materials relied upon were cited in the Draft PEIR as directed by CEQA Guidelines Section 15148.

The Resources Agency recognizes that Metropolitan has filed water rights applications, pursuant to State law, to appropriate water from the Salton Sea tributaries and that, in response, a number of IID landowners have filed Statements of Diversion and Use with the State. We also note that the individual landowners are taking water from IID, which has a contract with the United States for delivery of Colorado River water. For purposes of this Draft PEIR, it is not necessary to discuss the merits of this dispute.

IG-115

approximately 44,447 acres representing hundreds of Statements filed is a gross omission. The public should not be caught unawares about the Statements, in the same way the public should be (and has been) informed of the MWD applications that may or may not affect New and Alamo River flows into the Sea.

QSA LAWSUIT V. AAC LAWSUIT

The DPEIR at Section 5 discusses the federal lawsuit that seeks additional environmental review of the All American Canal Lining project. (AAC) The federal AAC suit is only tangentially related to the Salton Sea in that if the canal is lined, some portion of the water that would have been lost to seepage into Mexico that returns as flow through the New and/or Alamo Rivers would cease. The DPEIR does not discuss, however, the Quantification Settlement Agreement (QSA) coordinated litigation currently pending in the Sacramento County Superior Court. Coordination Proceedings, QSA Cases, Superior Court of the State of California, County of Sacramento, JCCP No. 4353.

Unlike the AAC suit, the QSA Cases may have a direct impact on the restoration project. For example, some or all of the QSA agreements may be found invalid, which could prevent the transfer of the mitigation and/or restoration increments of water to the Sea (and the financial contributions attributable to those increments). The two extreme possible outcomes – full validation or full invalidation of the QSA agreements – could radically alter which project is feasible both from a water inflow and financing standpoint. The “full validation” outcome would result in the status quo upon which the DPEIR is based (subject to the modifications and corrections elsewhere detailed). A “full validation” outcome could possibly result in the abolition of all private water rights in the Imperial Valley for Colorado River water. If such an outcome were reached, then the State could by legislative fiat amend the laws applicable to IID and thereby dedicate the water to a public use outside of the Imperial Valley, thus resulting in no water being available or the Sea.

The “full invalidation” outcome would make the inflow of water and public monies shrink radically. Both extreme outcomes as well as more moderate ones should be factored into what Alternative would be best able to respond to change. Ignoring the QSA Cases assists neither the public nor the ultimate decision makers with weighing the relative merits of the Alternatives.

IG (cont.)

IG-116

The Resources Agency agrees that a reference to the QSA litigation is appropriate, and text has been added to Chapter 4 of the Draft PEIR. A more detailed discussion of the QSA litigation is not warranted, however, because it is beyond the scope of the Draft PEIR and the implications of the litigation for the Salton Sea Ecosystem Restoration Program are speculative. The Resources Agency has a statutory mandate to prepare a PEIR, regardless of the ongoing litigation.

**IG-115
cont.**

IG-116

DEC 15 2006



Attn: Dale Hoffman-Floerke
Salton Sea PEIR comments
CA Department of Water Resources
Colorado River & Salton Sea Office
1416 9th Street, Room 1148-6
Sacramento, CA 95814

December 12, 2006

Re: Comments on Draft PEIR for Salton Sea

Dear Ms. Hoffman-Floerke:

I am writing on behalf of Sequoia Audubon Society to offer our comments on the Resources Agency's Draft Programmatic Environmental Impact Report for the Salton Sea Ecosystem Restoration Program (PEIR).

There is no question that the State of California must take action at the Salton Sea. The 'no action' scenarios described in the PEIR and in the Pacific Institute's *Hazard* clearly demonstrate that the health of children and adults in the Imperial and Coachella valleys would be harmed by the hundreds of additional tons of dust that would blow, each year, off the land exposed by the shrinking Salton Sea. A smaller, saltier Sea would also be of little or no value to many of the 400 species of birds – sometimes numbering in the millions of individual birds – that currently use the Sea. With the loss of nearly 95% of California's wetlands, many of these birds will have no other place to go, leading to catastrophic losses that will be felt up and down the Pacific Flyway. Clearly, we must act to protect the Salton Sea.

The question is how. Unfortunately, that question has not been fully answered by the PEIR. None of the alternatives presented in the PEIR satisfies the legal requirements to maximize wildlife habitat, air and water quality protection in a reasonable timeframe.¹

Most proposed alternatives suffer from massive construction and permitting requirements that would slow implementation, degrade air quality, and impose additional, unacceptable impacts over a wide area. We do not believe these are the best choices.

Fortunately, the PEIR contains the information and components necessary to piece together a successful plan from the proposed alternatives. Alternatives 1 and 2 provide important habitat to support many of the birds that currently use the Salton Sea. Alternative 4 offers a relatively low-cost, low-impact method to distribute water around much of the present shoreline and would provide additional habitat, shoreline protection and opportunities for recreation. The concentric lakes plan would provide direct air quality benefits, and would also offer a ready source of water for managing air quality problem areas that might arise in the future. And components of the larger north lake alternatives (Alternatives 5-7) provide recreation and economic development opportunities, enjoying the broad local support necessary for funding and implementation.

¹ Pursuant to the Quantification Settlement Agreement ("QSA"), state and federal law require restoration of the Salton Sea because of its importance for fish and wildlife, air quality, recreation and local economic development. See California Fish and Game Code Sections 2930, et seq.

Sequoia Audubon Society
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(650) 529-1454



Sequoia Audubon Society (SAS)

SAS-1

The Salton Sea Restoration Act (Fish and Game Code 2931(c)(1-3)) states that "the preferred alternative shall provide the maximum feasible attainment of the following objectives: (1) Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea. (2) Elimination of air quality impacts from the restoration projects. (3) Protection of water quality." All of the alternatives meet the legislative objectives to varying degrees.

SAS-1

DEC 15 2008

SAS (cont.)

SAS-2

Therefore, we urge that DWR combine the following features from the proposed alternatives into a final, preferred alternative that would meet the legal requirements for restoration and provide opportunities for recreation and development in Imperial and Coachella Valleys:

- Between 25,000 – 50,000 acres of Shallow Saline Habitat Complex, as described in Alternatives 1 and 2, at the southern and northern ends of the Sea to provide habitat for shoreline species;
- Create concentric rings using geotubes or other dirt-filled barriers, as described in Alternative 4, to provide additional shallow habitat, deeper marine habitat, shoreline and view protection, air-quality protections, and recreation;
- Similar to the lakes found in Alternatives 5-7, provide a large (approximately 10,000 acre) North Lake, which would be the largest recreational lake in Southern California, fed by the Whitewater River to provide recreation and development opportunities without the costs and risks associated with a major mid-Sea barrier or the costs of pumping water from the southern end of the Sea;
- Provide at least one-half acre-foot of water per acre of exposed Seabed, as stipulated by the Salton Sea Advisory Committee, to prevent dust pollution caused by exposed playa, as described in Alternatives 1-3, 5-6 and 8;
- Construct shallow saline habitat (known as "early start habitat") immediately to provide resources for birds during the long permitting and construction process, as described in all of the proposed alternatives; and
- Develop a plan that provides water for habitat and air quality mitigation first, in case of possible shortages or system malfunctions, as described in Alternatives 1-3.

A Final Preferred Alternative that contains all of these components, each of which is present and analyzed in one or more of the draft alternatives, would best meet the legal requirements to maximize habitat, air quality and water quality, while also providing substantial recreation and development opportunities we urge, therefore, the State to select the Preferred Alternative with the components and features outlined above. Such an "Evolved Alternative" would best meet the needs of local communities, fish and wildlife, and the people of California.

Thank you for your consideration of these comments.

Sincerely,



Robin Winslow Smith
Conservation Chair
Sequoia Audubon Society

SAS-2

As described in Chapter 3 of this Final PEIR, the Preferred Alternative recommended by the Secretary for Resources includes a variety of components that are intended to meet the legislative mandates of providing the maximum feasible attainment of the following objectives: Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea; Elimination of air quality impacts from the restoration project; and Protection of water quality.

Specifically, the Preferred Alternative includes 62,000 acres of Saline Habitat Complex, a 45,000-acre Marine Sea, incorporates the air quality "tool box" measures to eliminate, to the extent feasible, air quality impacts from the restoration project, and includes other measures and design considerations that would work to protect water quality. Under the Preferred Alternative, Air Quality Management and the Saline Habitat Complex would have the highest priority for inflows, followed by inflows into the Marine Sea.

The 62,000-acre Saline Habitat Complex included in the Preferred Alternative would be located in the southern and northern portion of the Salton Sea and would provide habitat for a variety of avian species such as shorebirds, waterfowl, and potentially for fish-eating birds, including sensitive species currently found at the Salton Sea. It is expected that the Saline Habitat Complex would also provide limited habitat for some fish species, such as tilapia, and thus, provide foraging habitat for fish-eating birds. The Saline Habitat Complex is expected to provide the microclimate benefits that currently exist at the Salton Sea, and could be constructed using a variety of construction methods including Geotubes®.

SAS (cont.)

The 45,000-acre Marine Sea included in the Preferred Alternative would be located primarily in the northern portion of the Sea, but would extend down the majority of the eastern and western shorelines. It is intended to support a marine fishery and fish-eating birds (such as pelicans, double-crested cormorants, and black skimmers). The Marine Sea would stabilize at a water surface elevation of -230 feet msl with a salinity between 30,000 mg/L and 40,000 mg/L. The water depth would be less than 10 to 12 meters (39 feet) to reduce hydrogen sulfide generation and potential fish kills due to long-term temperature stratification (temperature variations from top to bottom of the sea).

The Preferred Alternative incorporates the air quality “tool box” measures to eliminate, to the extent feasible, air quality impacts from the restoration project. These measures include the allocation of 0.5 acre-foot per acre of water to manage emissive areas of the Exposed Playa. The Preferred Alternative also includes actions and mitigation measures to reduce air quality impacts that could result from construction and operations and maintenance activities.

Although not a legislatively mandated objective, the Saline Habitat Complex is expected to allow for passive recreational opportunities, such as bird watching. Additionally, the Marine Sea would provide for water-based recreational opportunities that have historically occurred at the Salton Sea. This would include boating and fishing opportunities and allow for the ongoing operation of the majority of the existing harbors at the Salton Sea.

The Preferred Alternative also includes a variety of actions that could be implemented within the 5-year timeframe after the Legislature provides direction on implementation of a restoration program and identifies a future implementing agency. These actions include activities such as Early Start Habitat and measures targeted to address air quality uncertainties.

The Preferred Alternative includes many of the components suggested by the commenter. See Chapter 3 of this Final PEIR for a more detailed description of the Preferred Alternative.

From: john.holtzclaw@sierraclub.org
To: [SaltonSeaComments:](#)
CC:
Subject: Re: Comments on Draft PEIR for Salton Sea
Date: Tuesday, January 09, 2007 4:30:02 PM
Attachments:

Sierra Club (SC)

Dear Ms. Hoffman-Floerke:

I am writing to offer my comments on the Resources Agency's Draft Programmatic Environmental Impact Report for the Salton Sea Ecosystem Restoration Program (PEIR).

There is no question that the State of California must take action at the Salton Sea. A shrinking Salton Sea will harm the health of children and adults in the Imperial and Coachella valleys by subjecting this population to hundreds of additional tons of dust that would blow, each year, off the exposed land. A smaller, saltier Sea would also be of little or no value to many of the 400 species of birds – sometimes numbering in the millions of individual birds – that currently use the Sea. With the loss of nearly 95% of California's wetlands, many of these birds will have no other place to go, leading to catastrophic losses that will be felt up and down the Pacific Flyway.

Most proposed alternatives suffer from massive construction and permitting requirements that would slow implementation, degrade air quality, and impose additional, unacceptable impacts over a wide area. In light of California's commitment to reduce its greenhouse gas emissions, it makes no sense to implement a project that requires massive amounts of energy to pump (and in some instances, treat) water, nor does it make sense to build massive dams or dikes that require thousands of truck trips each day, to move the tens of millions of cubic yards of rock needed for construction.

Fortunately, the PEIR contains the information and components necessary to piece together a successful plan from the proposed alternatives. Alternatives 1 and 2 provide important habitat to support many of the birds that currently use the Salton Sea. Alternative 4 offers a relatively low-cost, low-impact method to distribute water around much of

the present shoreline and would provide additional habitat, shoreline protection and opportunities for recreation. The concentric lakes plan would provide direct air quality benefits, and would also offer a ready source of water for managing air quality problem areas that might arise in the future. And components of the larger north lake alternatives (Alternatives 5-7) provide recreation and economic development opportunities, enjoying the broad local support necessary for funding and implementation.

I urge that DWR combine the following features from the proposed alternatives into a final, preferred alternative that would meet the legal requirements for restoration of the Sea:

- Between 38,000 – 50,000 acres of Shallow Saline Habitat Complex, as described in Alternatives 1 and 2, at the southern and northern ends of the Sea to provide habitat for shoreline species;
- Create concentric rings using geotubes or other dirt-filled barriers, as described in Alternative 4, to provide additional shallow habitat, deeper marine habitat, shoreline and view protection, air-quality protections, and recreation;
- Similar to the lakes found in Alternatives 5-7, provide a large (approximately 10,000 acre) North Lake, which would be the largest recreational lake in Southern California, fed by the Whitewater River to provide recreation and development opportunities without the costs and risks associated with a major mid-Sea barrier or the costs of pumping water from the southern end of the Sea;
- Provide at least one-half acre-foot of water per acre of exposed Seabed, as stipulated by the Salton Sea Advisory Committee, to prevent dust pollution caused by exposed playa, as described in Alternatives 1-3, 5-6 and 8;
- Construct shallow saline habitat (known as “early start habitat”) immediately to provide resources for birds during the long permitting and construction process, as described in all of the proposed alternatives; and
- Develop a plan that provides water for habitat and air quality mitigation first, in case of possible shortages or system malfunctions, as described in Alternatives 1-3.

A Final Preferred Alternative that contains all of these components, each of which is present and analyzed in one or more of the draft alternatives, would best meet the legal requirements to maximize habitat, air quality and water quality, while also providing substantial recreation and

SC (cont.)

SC-1

As described in Chapter 3 of this Final PEIR, the Preferred Alternative recommended by the Secretary for Resources includes a variety of components that are intended to meet the legislative mandates of providing the maximum feasible attainment of the following objectives: Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea; Elimination of air quality impacts from the restoration project; and Protection of water quality.

Specifically, the Preferred Alternative includes 62,000 acres of Saline Habitat Complex, a 45,000-acre Marine Sea, incorporates the air quality “tool box” measures to eliminate, to the extent feasible, air quality impacts from the restoration project, and includes other measures and design considerations that would work to protect water quality. Under the Preferred Alternative, Air Quality Management and the Saline Habitat Complex would have the highest priority for inflows, followed by inflows into the Marine Sea.

The 62,000-acre Saline Habitat Complex included in the Preferred Alternative would be located in the southern and northern portion of the Salton Sea and would provide habitat for a variety of avian species such as shorebirds, waterfowl, and potentially for fish-eating birds, including sensitive species currently found at the Salton Sea. It is expected that the Saline Habitat Complex would also provide limited habitat for some fish species, such as tilapia, and thus, provide foraging habitat for fish-eating birds. The Saline Habitat Complex is expected to provide the microclimate benefits that currently exist at the Salton Sea, and could be constructed using a variety of construction methods including Geotubes®.

The 45,000-acre Marine Sea included in the Preferred Alternative would be located primarily in the northern portion of the Sea, but would extend down the majority of the eastern and western shorelines. It is intended to support a marine fishery and fish-eating birds (such as pelicans, double-crested cormorants, and black skimmers). The Marine Sea would stabilize at a water surface elevation of -230 feet msl with a salinity between 30,000 mg/L and 40,000 mg/L. The water depth would be less than 10 to 12 meters (39 feet) to reduce hydrogen sulfide generation and potential fish kills due to long-term temperature stratification (temperature variations from top to bottom of the sea).

SC-1

SC (cont.)

The Preferred Alternative incorporates the air quality “tool box” measures to eliminate, to the extent feasible, air quality impacts from the restoration project. These measures include the allocation of 0.5 acre-foot per acre of water to manage emissive areas of the Exposed Playa. The Preferred Alternative also includes actions and mitigation measures to reduce air quality impacts that could result from construction and operations and maintenance activities.

Although not a legislatively mandated objective, the Saline Habitat Complex is expected to allow for passive recreational opportunities, such as bird watching. Additionally, the Marine Sea would provide for water-based recreational opportunities that have historically occurred at the Salton Sea. This would include boating and fishing opportunities and allow for the ongoing operation of the majority of the existing harbors at the Salton Sea.

The Preferred Alternative also includes a variety of actions that could be implemented within the 5-year timeframe after the Legislature provides direction on implementation of a restoration program and identifies a future implementing agency. These actions include activities such as Early Start Habitat and measures targeted to address air quality uncertainties.

Preferred Alternative includes many of the components suggested by the commenter. See Chapter 3 of this Final PEIR for a more detailed description of the Preferred Alternative.

development opportunities.

Thank you for your consideration of these comments.

John Holtzclaw
1508 Taylor
San Francisco, CA 94133

SC (cont.)

From: SShteir@aol.com
To: SaltonSeaComments@adelphia.net; jnhardesty@adelphia.net; kris.ohlenkamp@sbcglobal.net; akotin@earthlink.net;
CC:
Subject: Salton Sea Draft EIR Comments from San Fernando Valley Audubon Society
Date: Thursday, January 04, 2007 2:14:04 PM
Attachments:

January 4, 2007

Dale Hoffman-Floerke
Department of Water Resources
Colorado River and Salton Sea Office
P.O. Box 942836, Sacramento, California

Dear Mr. Hoffman-Floerke,

Please accept the following comments on behalf of the San Fernando Valley Audubon Society for the Salton Sea Restoration Plan Draft EIR.

My organization, the San Fernando Valley Audubon Society, is an 1800 member environmental organization. Our mission is to preserve wildlife habitat and educate the public about the natural resources of the San Fernando Valley and larger region of Southern California.

The Salton Sea is one of the most important, if not most important bird areas in the state of California. It is an essential migration, winter and breeding spot for over 400 species of birds. It is also critical habitat to many threatened and endangered species in California and the Pacific states. Aside from wildlife, the sea is an important recreational and economic area for the inland empire.

But the Salton Sea is at a crossroads. Increased salt concentrations, caused by naturally sandy soils, agricultural runoff and high rates of evaporation threatens the sea's aquatic ecosystem. In fact, by 2003 the increased concentrations of salt and decreasing water quality destroyed the marine sport fishery, leaving only tilapia in the sea's salty waters. Equally grave is the transfer of water from agricultural interests to urban areas along the coast, which will result in significantly less water flowing into the sea. Global warming will only accelerate the process of salination and evaporation.

According to the Pacific Institute, by 2021 the rising salinity will mean the loss of all fish life, while tens of thousands of birds will lose food sources and habitat. The same organization predicts that by 2036, the decrease in water volume will result in 130 square miles of dusty lake bed- a serious public health hazard in a region already plagued by high rates of asthma. If the Salton Sea is not restored, there will be grave consequences for the economy, wildlife and the health of citizens in the Inland Empire.

The draft EIR prepared by the California Resources Agency evaluates eight possible alternatives for restoration. The preferred alternative for the restoration effort, as stated in the draft EIR is to eliminate air quality impacts of restoration, restore aquatic and shoreline habitats for fish and wildlife and protect water quality.

However, my organization agrees with the Salton Sea Coalition, A diverse group of conservation, fishing and hunting groups, that none of the eight alternatives sufficiently addresses the needs of people and wildlife. Accordingly, we endorse the Salton Sea Coalition's call for a "mix and match" approach to the alternatives to ensure the best outcome for public health, recreational opportunities and habitat for fish and wildlife.

Some important tenets to be included in the final plan would be to maximize shoreline and shallow water habitat for birds and the endangered pupfish (Alternatives 2 and 4), protect clean water for fish and birds and minimize selenium of hydrogen sulfide contamination (Alternatives 1 and 2), provide sufficient water to alleviate the problem of dust (Alternatives 1, 2,3,5,6 and 8), and the create a 10,000 acre lake at the north end of the sea. Also important is the ability to provide environmental benefits before completion and that it is designed to accommodate unanticipated

SFVAS (cont.)

SFVAS-1

As described in Chapter 3 of this Final PEIR, the Preferred Alternative recommended by the Secretary for Resources includes a variety of components that are intended to meet the legislative mandates of providing the maximum feasible attainment of the following objectives: Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea; Elimination of air quality impacts from the restoration project; and Protection of water quality.

Specifically, the Preferred Alternative includes 62,000 acres of Saline Habitat Complex, a 45,000-acre Marine Sea, incorporates the air quality "tool box" measures to eliminate, to the extent feasible, air quality impacts from the restoration project, and includes other measures and design considerations that would work to protect water quality. Under the Preferred Alternative, Air Quality Management and the Saline Habitat Complex would have the highest priority for inflows, followed by inflows into the Marine Sea.

The 62,000-acre Saline Habitat Complex included in the Preferred Alternative would be located in the southern and northern portion of the Salton Sea and would provide habitat for a variety of avian species such as shorebirds, waterfowl, and potentially for fish-eating birds, including sensitive species currently found at the Salton Sea. It is expected that the Saline Habitat Complex would also provide limited habitat for some fish species, such as tilapia, and thus, provide foraging habitat for fish-eating birds. The Saline Habitat Complex is expected to provide the microclimate benefits that currently exist at the Salton Sea, and could be constructed using a variety of construction methods including Geotubes®.

The 45,000-acre Marine Sea included in the Preferred Alternative would be located primarily in the northern portion of the Sea, but would extend down the majority of the eastern and western shorelines. It is intended to support a marine fishery and fish-eating birds (such as pelicans, double-crested cormorants, and black skimmers). The Marine Sea would stabilize at a water surface elevation of -230 feet msl with a salinity between 30,000 mg/L and 40,000 mg/L. The water depth would be less than 10 to 12 meters (39 feet) to reduce hydrogen sulfide generation and potential fish kills due to long-term temperature stratification (temperature variations from top to bottom of the sea).

SFVAS-1

SFVAS (cont.)

The Preferred Alternative incorporates the air quality “tool box” measures to eliminate, to the extent feasible, air quality impacts from the restoration project. These measures include the allocation of 0.5 acre-foot per acre of water to manage emissive areas of the Exposed Playa. The Preferred Alternative also includes actions and mitigation measures to reduce air quality impacts that could result from construction and operations and maintenance activities.

Although not a legislatively mandated objective, the Saline Habitat Complex is expected to allow for passive recreational opportunities, such as bird watching. Additionally, the Marine Sea would provide for water-based recreational opportunities that have historically occurred at the Salton Sea. This would include boating and fishing opportunities and allow for the ongoing operation of the majority of the existing harbors at the Salton Sea.

The Preferred Alternative also includes a variety of actions that could be implemented within the 5-year timeframe after the Legislature provides direction on implementation of a restoration program and identifies a future implementing agency. These actions include activities such as Early Start Habitat and measures targeted to address air quality uncertainties.

The Preferred Alternative includes many of the components suggested by the commenter. See Chapter 3 of this Final PEIR for a more detailed description of the Preferred Alternative.

environmental changes.

Specifically, the ideal restoration plan for the Salton Sea would include the following:

- Between 25,000 – 50,000 acres of Shallow Saline Habitat Complex, as described in Alternatives 1 and 2, to provide habitat for shoreline species;
- Create concentric rings using geotubes or other dirt-filled barriers, as described in Alternative 4, to provide additional shallow habitat, deeper marine habitat, shoreline and view protection, air-quality protections, and recreation;
- Similar to the lakes found in Alternatives 5-7, provide a large (approximately 10,000 acre) North Lake, which would be the largest recreational lake in Southern California, fed by the Whitewater River to provide recreation and development opportunities without the costs and risks associated with a major mid-Sea barrier or the costs of pumping water from the southern end of the Sea;
- Provide at least one-half acre-foot of water per acre of exposed Seabed, as stipulated by the Salton Sea Advisory Committee, to prevent dust pollution caused by exposed playa, as described in Alternatives 1-3, 5-6 and 8;
- Construct shallow saline habitat (known as "early start habitat") immediately to provide resources for birds during the long permitting and construction process, as described in all of the proposed alternatives; and
- Develop a plan that provides water for habitat and air quality mitigation first, in case of possible shortages or system malfunctions, as described in Alternatives 1-3.

We urge you to implement these points in any final Salton Sea Restoration Plan for the successful restoration of the Salton Sea. A sound Salton Sea Restoration Plan will enhance the economy, wildlife and public health of Southern California

Thank you for your time and consideration.

**SFVAS-1
cont.**

SFVAS (cont.)

Sincerely,

Seth Shteir
Conservation Chair
14355 Huston St.,#225
Sherman Oaks, CA 91423
818-995-6429
sshteir@aol.com

SFVAS (cont.)



SAN GORGONIO CHAPTER

4079 Mission Inn Avenue, Riverside, CA 92501 (909) 684-6203
Membership/Outings (951) 686-6112 Fax (909) 684-6172

*Regional Groups Serving Riverside and San Bernardino Counties: Big Bear,
Los Serranos, Mojave, Moreno Valley, Mountains, Tahquitz.*

Dale Hoffman-Floerke
Department of Water Resources
Colorado River and Salton Sea Office
P.O. Box 942836
Sacramento, CA 94236-0001

Via E-Mail: SaltonSeaComments@water.ca.gov

January 16, 2007

Dear Ms. Dale Hoffman-Floerke,

Please find attached two resolutions opposing the use of the closed mine at Eagle Mountain as a source for rock to build barriers as discussed in the Draft PEIR.

The first resolution is from the Sierra Club's San Gorgonio Chapter, representing over 6,000 members in Riverside and San Bernardino Counties.

The second resolution is from the Sierra Club's California/Nevada Regional Conservation Desert Committee, representing members in California and Nevada.

If you have any questions, you may contact me at the number and address below.

Sincerely,

Larry Charpied
Member San Gorgonio Chapter Conservation Committee
Member San Gorgonio Chapter Executive Committee

(760) 392-4722
PO Box 321
Desert Center CA 92239

...To explore, enjoy and preserve the nation's forests, waters, wildlife, and wilderness.
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San Gorgonio Chapter of Sierra Club (SGCSC)

SGCSC-1

The assumption in the Draft PEIR is that all rock would come from permitted quarries.

SGCSC-1



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*Regional Groups Serving Riverside and San Bernardino Counties: Big Bear,
Los Serranos, Mojave, Moreno Valley, Mountains, Tahquitz.*

SGCSC (cont.)

Whereas San Gorgonio Chapter members and environmental organizations have successfully challenged the Environmental Impact Statement and Record of decision for the Eagle Mountain dump because of impacts to Bighorn Sheep among other issues of law, and;

Whereas the San Gorgonio Chapter supports restoration of the Salton Sea, and;

Whereas there are 9 different plans to be considered for restoring the Salton Sea, and;

Whereas one plan includes mining rock from Eagle Mountain to build a causeway that includes backhauling rock in trucks and trains after depositing garbage in the Eagle Mountains, and;

Whereas the railroad is 52 miles long that travels from Eagle Mountain hugging Joshua Tree National Park Wilderness, crosses under I-10 into the Chuckwalla Bench Area of Critical Environmental Concern, abuts the Orocopia Wilderness, travels through the Salt Creek/Dos Palmas Area of Critical Environmental Concern; on to Ferrum Junction, and;

Whereas; the rebuilding of this railroad would have a significant negative impact on endangered, threatened, and species of concern in its path, and;

Whereas rebuilding the railroad with taxpayer money will pave the way for the proposed Eagle Mountain dump;

Let it be Resolved, that the San Gorgonio Chapter of the Sierra Club hereby opposes reinitiating mining at Eagle Mountain for a source of rock.

Vote:

The Conservation Committee voted unanimously to support 9-12-06

The Executive Committee voted unanimously to support 9-19-06



Whereas San Geronio Chapter members and environmental organizations have successfully challenged the Environmental Impact Statement and Record of Decision for the Eagle Mountain dump because of impacts to Bighorn Sheep among other issues of law, and;

Whereas the CNRCC Desert Committee supports restoration of the Salton Sea, and;

Whereas there are 8 different plans to be considered for restoring the Salton Sea, and;

Whereas one plan includes mining rock from Eagle Mountain to build a causeway that includes backhauling rock in trucks and trains after depositing garbage in the Eagle Mountains, and;

Whereas the railroad is 52 miles long that travels from Eagle Mountain hugging Joshua Tree National Park Wilderness, crosses under I-10 into the Chuckwalla Bench Area of Critical Environmental Concern, abuts the Orocochia Wilderness, travels through the Salt Creek/Dos Palmas Area of Critical Environmental Concern; on to Ferrum Junction, and;

Whereas; the rebuilding of this railroad would have a significant negative impact on endangered, threatened, and species of concern in its path, and;

Whereas rebuilding the railroad with taxpayer money will pave the way for the proposed Eagle Mountain dump;

Let it be Resolved, that the CNRCC Desert Committee hereby opposes reinitiating mining at Eagle Mountain for a source of rock.

The California Nevada Regional Conservation Desert Committee voted unanimously to support on November 11, 2006.

The San Geronio Chapter Conservation Committee voted unanimously to support September 12, 2006

The San Geronio Chapter Executive Committee voted unanimously to support September 19, 2006



CALIFORNIA/NEVADA REGIONAL CONSERVATION DESERT COMMITTEE
Protecting the Desert

DEC 08 2006

Margaret Huffman, Chairman, Habitats
Santa Monica Bay Audubon Society
PO Box 35
Pacific Palisades, CA 90272

December 5, 2006

California Department of Water Resources
345 Middlefield Road, Mail Stop 532
Menlo Park, CA 94025

Dear Sir or Madam:

Thank you for creating a Draft Environmental Impact Report describing alternative plans for restoring the Salton Sea. The largest lake in California, the Salton Sea is essential for millions of migrating birds as well as for the threatened brown pelican, snowy plover and Yuma clapper rail.

Though none of the alternative plans you describe will, alone, solve the serious problems facing this key resource, four aspects of your proposed solutions, taken together, would produce a plan that maximizes wildlife habitat, protects people from unhealthy air and water, and maintains the outstanding agricultural and recreational opportunities of the region.

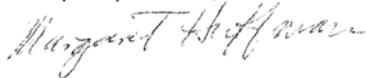
The preferred alternative should include:

- At least 30,000 acres of shallow, saline habitat to conserve wildlife
- Additional lakes around the Sea for habitat, recreation and protection of the existing shoreline
- One acre-foot of water for every two acres of exposed Sea bed to control dust
- A 10,000-acre lake at the north end of the Sea for recreation and development

This plan is smaller and less complex than any of the proposed alternatives and could be implemented sooner with less attendant cost and risk.

Because I could not attend one of the public workshops that you conducted on Monday, December 4, I'm faxing you this letter in lieu of my attendance.

Thank you for your attention,



Margaret Huffman
Telephone: 310-459-9409

Santa Monica Bay Audubon Society (SMBAS)

SMABS-1

As described in Chapter 3 of this Final PEIR, the Preferred Alternative recommended by the Secretary for Resources includes a variety of components that are intended to meet the legislative mandates of providing the maximum feasible attainment of the following objectives:

- Restoration of long-term stable aquatic and shoreline habitat for the historic levels and diversity of fish and wildlife that depend on the Salton Sea;
- Elimination of air quality impacts from the restoration project; and
- Protection of water quality.

SMABS-1

Specifically, the Preferred Alternative includes 62,000 acres of Saline Habitat Complex, a 45,000-acre Marine Sea, incorporates the air quality "tool box" measures to eliminate, to the extent feasible, air quality impacts from the restoration project, and includes other measures and design considerations that would work to protect water quality. Under the Preferred Alternative, Air Quality Management and the Saline Habitat Complex would have the highest priority for inflows, followed by inflows into the Marine Sea.

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SMBAS (cont.)

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See Chapter 3 of this Final PEIR for a more detailed description of the Preferred Alternative.