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

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]

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[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, permitee shall identify any air quality mitigation measures that it determined was infeasible. Notwithstanding such a determination by permitee, 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.")

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"

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[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).

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).

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 Irritated 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.

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

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[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.

[18] 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..

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.

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).

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.

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.

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:

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[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.

> 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 PM_{10} 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 PM_{10} 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.

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.

> 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.

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.

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[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.

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)

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 River[43] 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., Schlekat, 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/).

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.

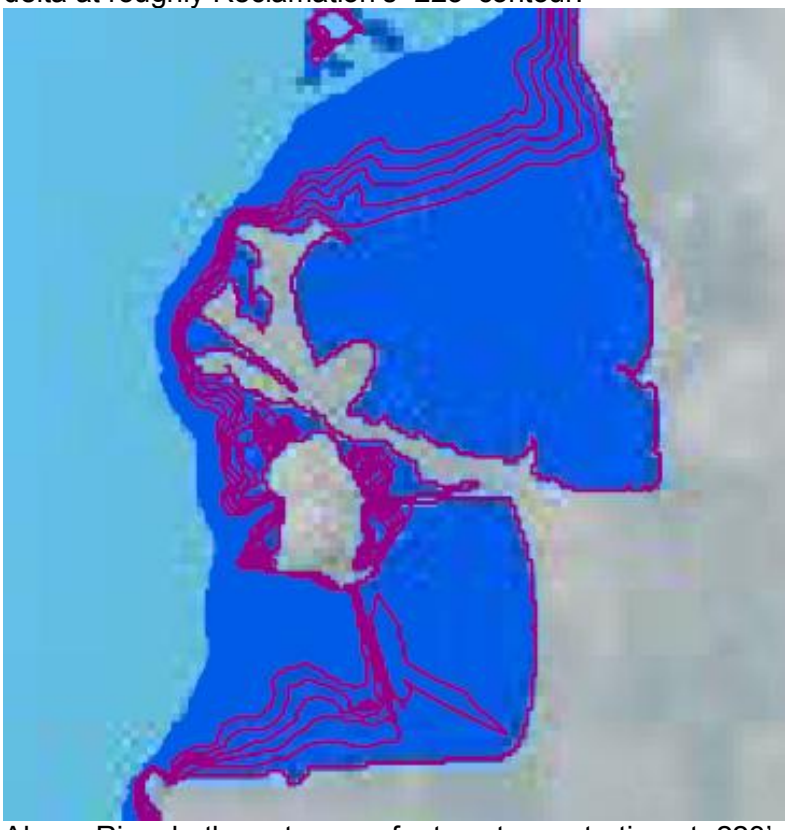
[45] Email communication from Marti Kie to Michael Cohen et al., December 12, 2006.

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'.


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.

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 sportsfishery, 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

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).

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.

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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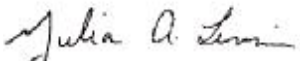

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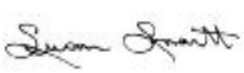

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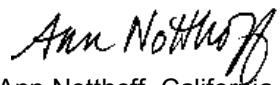

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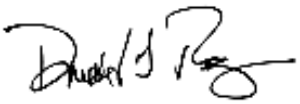

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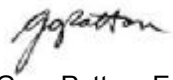

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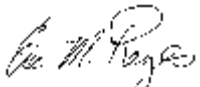

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APPENDIX A. Minor Corrections and Suggestions

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 km^3. (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?

- 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]

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