

Appendix M

Commentary on the Science Office Review of the Pacific Institute Proposal

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Commentary on Proposal Evaluation
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The Pacific Institute greatly appreciates the effort and expertise of those involved in the review of the “Proposal to Preserve and Enhance Habitat at the Salton Sea.” This review very helpfully indicates areas where the proposal could be improved. We are encouraged that the Salton Sea Science Office expects future iterations of the review process to refine and produce a more workable proposal.

The evaluation’s Executive Summary notes that the review “did not attempt to separate out those effects due to a water transfer from those due to development of freshwater impoundments.” For example, the evaluation notes that under the proposal, some 89 square miles of lakebed would be exposed. Yet the IID water conservation and transfer program draft EIR/EIS (p. 3.1-120) projects that the combination of the water transfer and other future actions would expose approximately 103 square miles of lakebed. Relative to current conditions, the exposure of 89 square miles of lakebed would argue strongly against adoption of the proposal. Yet relative to the potential baseline exposure of 103 square miles of lakebed, the proposal looks far more reasonable.

One of the key objectives of the Pacific Institute proposal was to preserve as much avian habitat as feasible, in the face of likely reductions in the volume of water flowing to the Salton Sea. The objective was not an improvement relative to current conditions, but rather an improvement relative to what would likely exist at the Sea without any habitat preservation plan. Unfortunately, no adequate description of future baseline conditions exists.

The Pacific Institute urges the Salton Sea Science Office to coordinate the development of such a baseline, drawing from the expertise of those who contributed to this review and others familiar with the Salton Sea. Such a baseline might include the three inflow scenarios used in the Salton Sea Restoration Project draft EIR/EIS (of 0.8, 1.0, and 1.3 MAF/year) and various explicit assumptions (such as the adoption of the Regional Water Quality Control Board’s TMDLs and Upper Basin selenium control programs), with the depth of analysis performed by this evaluation. This baseline appraisal would provide an objective basis for comparing future iterations of the Pacific Institute proposal and other proposals that may be considered, and would inform the preparation of the Salton Sea Authority’s restoration plan. Such a baseline would also be an informative document in its own right.

One of the underlying themes that emerges from the evaluation is that a larger impoundment could minimize many of the potential problems arising from the relatively low salinity of the proposed impoundment. Presumably, a higher impoundment salinity could limit the viability of emergent wetland vegetation and many disease vectors. The challenge of creating a larger impoundment lies in the construction and design of the impoundment structures themselves: locating the structures in deeper water could increase costs almost geometrically (to address the hydraulic head on the impoundment side), particularly across the broad southern base of the Sea. Potentially, a structure could be build across the middle of the Sea where it narrows, at Bombay Beach or northwest of there, but the feasibility of constructing such a structure within the water has been questioned.

Toward developing a common, transparent set of assumptions for the assessment of revised versions of the proposal, we offer the following comments on Science Office’s evaluation. We regret that the proposal itself did not state its assumptions more explicitly.

Dikes vs. Dams

The evaluation notes that the California Division of Safety of Dams would likely classify the proposed impoundment structures as dams rather than dikes, tripling the estimated cost of these structures. Given that the potential failure of these structures would be unlikely to threaten human life or property, the hope is that an exemption from standard dam construction requirements could be secured for such structures.

As noted by the evaluation, a benefit of the impoundments is that they would offer a ready source of water for dust abatement programs, such as sheet flooding and revegetation efforts. Given that fugitive dust emissions have been identified as a potentially significant impact of the proposed water transfer, this could prove to be a valuable benefit.

Treatment wetlands

The evaluation assumes that “Approximately 9000 acres of [artificial] wetlands would be needed to meet the objective of removing >90 percent of the silt load” of the New and Alamo rivers. The proposal itself does not list this as an objective; sediment removal is simply listed as a corollary function of the wetlands. Nor does the proposal suggest that enough wetlands be constructed to improve water quality to the standard achieved by the existing pilot wetlands; it says that “The resulting impounded areas behind the dikes would be coupled with treatment wetlands, to reduce nutrient and selenium loading, and with the implementation of management practices to reduce nutrient loads from agricultural, municipal, and industrial sources.”

The evaluation also notes that only ~2000 acres of suitable river bottom lands are available for wetland construction. The evaluation unreasonably assumes that the proposal calls for the construction of 7000 acres of wetlands on unsuitable land. It might be reasonably assumed that some of the existing, suitable bottom land would not be available for wetland construction; let’s assume that half of the existing bottom land could be leased or otherwise made available. As extrapolated from Paul Weghorst’s hydrologic modeling, assuming 1000 acres of treatment wetlands, the rate of sediment accrual in the south impoundment would be roughly 220 acre-feet per year, into an impoundment with a total volume in excess of 180,000 acres. (The evaluation apparently uses the sediment loading rate of 20 af/y that assumes 9000 acres of wetlands.) Note that the Regional Water Quality Control Board’s (RWQCB) numeric target for sediment could reduce the Alamo River’s sediment load by more than 1/3 by 2011. On-farm conservation improvements associated with the proposed IID water conservation and transfer program would also be expected to reduce sediment loadings to the Salton Sea.

The evaluation estimates capital costs for the wetlands at \$50,000/acre, based on the per acre cost of the Brawley and New River pilot projects. Conversations with Desert Wildlife Unlimited suggest that economies of scale will reduce the costs of their proposed wetlands by at least a factor of three, suggesting that the actual cost of 1000 acres of constructed wetlands would be less than \$20,000,000.

Disease vectors

The evaluation notes the challenge of predicting the abundance of particular species, given the uncertainty inherent within projecting complex physical and biological interactions. The evaluation notes that wave action along the southern shoreline would likely be reduced from current levels, but “would still be sufficient for significant waves to be generated. Shoreline wave action and near shore turbulence action are significant factors influencing . . .

establishment of aquatic vegetation.” Yet several pages later the evaluation predicts that “vascular plants would become abundant in the impoundments and along their shorelines,” leading to the projection of a large increase in the abundance of invertebrates within these vegetated areas, including biting insects that could be disease vectors. From the evaluation, it is unclear to what extent the predicted wave action would limit the establishment of aquatic vegetation. Additionally, at the January 8 workshop on the proposal, the participants expressed uncertainty as to whether the impoundments would convert to algal or macrophyte systems, though more seemed to think that it would become a turbid algal system. This too would tend to limit submergent and emergent vegetation, further reducing habitat for biting insects. The uncertainty about the abundance of such habitat could be made more explicit in the evaluation.

As noted during the workshop, the Coachella Valley Water District has an on-going mosquito abatement program, to address mosquito problems on the Sea’s northern shore. A similar program could be adopted by IID, perhaps in conjunction with the National Wildlife Refuge, to control the populations of biting insects within the southern impoundment. Although the problem of disease vectors would be an unwelcome byproduct of the impoundments’ lower salinity, the problem could be managed with existing methods.

The evaluation also notes the increased potential for transmission of botulism and avian cholera, due to increased bird density. Ideally, the continuation of the Refuge’s disease monitoring program could limit the transmission of these diseases, by physically removing sick and dead individuals from the wild.

Phosphorus and Nitrogen

The evaluation notes that nutrient loadings to the Sea could be reduced by improved management of tailwater drainage and improved municipal wastewater treatment. Such improvements are likely to result from the proposed water transfer and improved wastewater treatment capacity within the City of Mexicali, as well as from the adoption of TMDLs within the Imperial Valley. The development of an independent baseline appraisal would inform such analysis, and might show that future nutrient inputs to the Sea (and impoundments) will be greatly reduced from current levels.

Selenium

The increase in selenium concentrations within the impoundments may be the single greatest negative impact of the proposal. Potentially, a combination of the efforts listed by the evaluation (Upper Colorado River basin source reduction programs, fallowing of Imperial Valley farmlands reporting disproportionately high salt and selenium loadings, and sediment settling basins) could reduce selenium concentrations in the impoundments below EPA’s existing criterion for the protection of aquatic life, and possibly as low as the potential new EPA criterion of 2 µg/L. Agrarian Research and Management Company, Ltd. has reported significant reductions in selenium concentrations with the use of constructed wetlands, affording additional reason to believe that this impact may be mitigable.

Conclusion

The evaluation highlights a number of challenges facing the proposal as written, and the need for clarification and revision. The Pacific Institute welcomes the suggestions and recommendations of reviewers (and others) on methods to improve the proposal and address the challenges noted in the evaluation. Future iterations would benefit from the development of a reasonable baseline,

which could assist reviewers in making comparisons and would inform the continuing policy-level debate on the future of the Salton Sea.