PACIFIC INSTITUTE

Research for People and the Planet

May 6, 2005

P. Joseph Grindstaff
Chief Deputy Director
Department of Water Resources
1416 Ninth St., Room 1115-1
Sacramento CA 94236

Re: Salton Sea Ecosystem Restoration Plan Inflow Projections

Dear Director Grindstaff:

The Pacific Institute writes to express our concerns about, and objections to, the Salton Sea Ecosystem Restoration planning process' use of a series of projected reductions in inflows to the Salton Sea. These projected reductions were described in the presentations given to the Salton Sea technical subcommittee meeting in Ontario on March 10th and to the Salton Sea Advisory Committee meeting in Los Angeles on March 16th. (The March 16th presentation is posted online at www.saltonsea.water.ca.gov/docs/031605/Inflows.pdf; the March 10th presentation is not posted.) The following sections describe our concerns with the assumptions described in these presentations on inflow reductions, and offer what we believe to be a more credible range of potential inflows to the Sea.

March 10th Presentation

The March 10th presentation described the assumptions behind the inflow projections. These included the reductions in inflows due to the implementation of the Quantification Settlement Agreement (QSA) and related water transfers, as well as assumptions about reductions in the volume of water flowing to the Sea from Mexico, due to factors such as the construction of a new wastewater treatment plant and overall reduced deliveries of Colorado River water to Mexico. The presentation projected the annual average 'no action' inflow to the Salton Sea to be 984,250 acre-feet.

The presentation also described a number of assumptions about the potential variability of inflows. These assumptions included actions and events that could supposedly increase inflows to the Salton Sea by 300,000 acre-feet, or decrease them by an equivalent volume, in addition to the normal variation due to farming practices in the Imperial Valley. The presentation speculated that a potential 300,000 acre-foot increase in relative inflows could arise from a repeat of the mid-1980s wet cycle on the Colorado River (described as a 200 - 333 year flood event[1]), combined with a doubling of average rainfall on the surface of the Sea and a quintupling of local run-off into the Salton Sea. These are not realistic assumptions, particularly given the

[1] Holburt, Myron B. 1984. The 1983 high flows on the Colorado River and their aftermath. *Water International* 9: 99-105.

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current drawdown in Colorado River system storage, continued development in the Upper Basin, and the likelihood that climate change will decrease run-off in the basin in the future.

The assumptions behind the potential 300,000 acre-foot decrease were similarly unrealistic. The presentation included speculation that as much as 100% of current agricultural tilewater might be retained, to comply with Total Maximum Daily Load (TMDL) limits established by the Regional Water Quality Control Board (RWQCB). This speculation met with the strong objection of the Imperial Valley farmers who attended the meeting, who noted that farming in the Imperial Valley would be nearly impossible without leaching the soil; this leaching creates tilewater. It is not realistic to project a reduction in flows to the Sea on the premise that no tailwater in the Imperial Valley will flow to the Sea. While we are encouraged that the Salton Sea ecosystem restoration planning process recognizes the work of the RWQCB, we recommend that future water quantity and quality projections, especially those relating to the impact of TMDLs, be based on discussions with RWQCB staff and local interests.

The presentation also noted that 8,000 acres of wetlands on the New and Alamo rivers could be constructed "at full project implementation," resulting in an additional loss of 48,000 acre-feet of inflows. According to Bureau of Reclamation staff, there are a total of 4,276 acres available for gravity-fed wetlands on the two rivers (there are 44 other proposed wetland sites, but they would require pumping and so are cost prohibitive and would more than likely not be constructed). Of these 4,276 acres, approximately 75% would actually be wet acreage, meaning that "full project implementation" would be a maximum of 3,200 acres. At a standard wetland evapotranspiration rate of 5.5 acre-feet per acre, this would mean a total reduction of 17,600 acre-feet (not 48,000). However, even this acreage is too large to be included in the variability analysis, given that the total existing wetlands cover less than thirty acres. Given the close relationship between additional wetlands and Salton Sea ecosystem restoration, as well as the current lack of large-scale funding for expanding the wetlands, their construction should be assessed as part of the restoration process itself.

The variability analysis, based on the actions and events described above, projected a range of -348,000 to +300,000 acre-feet, generating what the presentation termed an "average inflow range" of 632,250 to 1,284,250 acre-feet. Applying 200+-year flood events and an unsubstantiated elimination of tilewater atop a 'no action' inflow belies the meaning of 'average.' This is a speculative, arbitrary range, and should not be used as part of the process.

March 16th Presentation

The March 16th presentation was brief, avoiding the contentious discussion from the previous week's technical committee meeting. Rather than identifying specific actions or events that could supposedly increase or decrease inflows to the Salton Sea, the presentation simply noted that the planning process "could assume ± 20% annual variability." The rationale for using "± 20% annual variability" was not explained. This annual variability was applied atop the "range of average annual flows (post-2017) of 800,000 to 1,000,000 acre-feet," effectively double-counting the projected variability in the volume of inflows to the Salton Sea. Using a 20% variability range atop the existing range of projected inflows yielded a "calculated range of average annual inflows = 640,000 - 1,200,000 acre-feet," a range curiously close to the "average inflow range" of 632,250 to 1,284,250 acre-feet from the March 10th presentation.

What is the basis for using "± 20% annual variability"? Is it simply the round number closest to the projection from the March 10th presentation? Is there a standard number used by the Department for planning restoration projects of this nature? And, perhaps most importantly, to what degree will this range exclude otherwise feasible project alternatives?

Likely Inflows to the Salton Sea

The Institute offers the following numbers and projections as an alternative to the inflows projected to date. Average annual inflows to the Salton Sea prior to the implementation of the Quantification Settlement Agreement (QSA) were approximately 1,340,000 acre-feet per year.[2] The following reasonably foreseeable actions will reduce inflows to the Salton Sea, by approximately the volumes indicated:

Action	*Reductions in Inflow by Year 2026 (af/yr)*
QSA / IID Transfer	303,000
Mexicali Power Plant Operations	10,500*
Mexicali Wastewater Treatment Plant Operations	21,500*
Reduced Colorado River flows to Mexico	50,000*
All-American Canal lining & reduced returns from Mexico	20,000†
Total projected reductions:	**405,000**

Sources: *from March 10th presentation; †Assumes that lining will decrease seepage flows to Mexico by 67,700 acre-feet annually. This water is currently extracted for irrigation in the New River watershed; reduced seepage will eventually decrease the elevation of the aquifer, increasing the cost of extraction and ultimately decreasing the amount of water applied to crops, reducing run-off.

The combined impact of these actions will result in an average future inflow to the Salton Sea of approximately 935,000 acre-feet/year. However, actual annual and monthly inflows to the Sea will continue to fluctuate, due to irrigation and cropping patterns, precipitation events, soil leaching, and climatic variability.

The Imperial Irrigation District (IID) provides the vast majority of inflows to the Salton Sea. These inflows fluctuate on an annual, monthly, and daily basis, and will generate the greatest source of variability for the restoration planning process. According to the Bureau of Reclamation's Salton Sea Accounting Model (SSAM), which relied on IID data, the projected average annual flow to the Salton Sea from IID without the QSA would be 995,413 acre-feet.[3] The SSAM uses historical flows from IID to predict future flows.[4] The SSAM projects that the average annual discharge to the Sea from IID after 2017 (after which time IID is not required to provide mitigation water to the Sea) through 2074 would be 720,741 acre-feet. For this period of 57 years, the standard deviation is 67,172 acre-feet. Assuming that the IID annual historical discharge to the Sea is both normally distributed and a reasonable predictor of future inflows

[2] IID Water Conservation and Transfer Project Draft Environmental Impact Report/Environmental Impact Statement Habitat Conservation Plan, January 2002 (Draft EIR/EIS and HCP) Appendix F, SSAM p.5; Cohen et al. 1999. *Haven or Hazard*. Oakland: Pacific Institute, p. 11.

[3] Draft EIR/EIS and HCP, Appendix F, Table 4.1.

[4] While this use of historical data may be valid for projecting long-term averages, it is not appropriate to use these projections for predicting inflows on a year-by-year basis, as was done in the March presentations.

suggests that slightly more than 99% of future annual inflows to the Salton Sea will be in the range of 760,000-1,110,000 acre-feet, assuming that other sources of inflow remain constant.

At the March 10th and March 16th meetings, the presenters explained that the variability analysis was necessary to assess project feasibility and for engineering design. What was not clear from the presentation was whether the variability analysis was an effort to identify every possible future action that potentially could reduce inflows to the Sea (however implausible some of these actions might be). What remains unclear is the degree to which the results of this analysis will be used to disqualify alternatives that might otherwise be feasible.

We urge you to clarify the objective of the variability analysis at the next meeting of the Advisory Committee. Our hope is that this analysis will be used to identify potential problems with project alternatives and possible solutions to such problems, and not as a screening criterion that rejects alternatives that cannot function well under the full range of potential inflows.

Local Climate Change

The potential impacts of climate change on the Salton Sea basin have not been discussed as part of this process. Although the current institutional regime would insulate the Imperial Irrigation District and the Coachella Valley Water District from reductions in their Colorado River entitlements, local impacts of climate change could affect inflows to the Salton Sea. Recent studies suggest that California could experience temperature increases of 1.2 – 3.1°C over the next 44 years.[5] Such temperature increases will directly affect the amount of water evaporating from the surface of the Salton Sea, and will indirectly impact the volume of water flowing into the Sea, by increasing the rate of evapotranspiration from fields. These impacts should be investigated and discussed as part of the variability analysis.

We look forward to discussing the development of inflow projections at the May 18th Advisory Committee meeting.

Sincerely,

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cc: Salton Sea Advisory Committee

[5] K. Hayhoe, et al., *Emissions pathways, climate change, and impacts on California*, published by the National Academy of Sciences, August 24, 2004, at www.pnas.org/cgi/doi/10.1073/pnas.0404500101.