R.O.N.D.A.

Reclamation Of Native Desert and Agriculture

A Salton Sea Water Importation Proposal by Jeff B. Geraci
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FOREWORD

I'm submitting this proposal because the people of Riverside and Imperial Counties continue to be misled. The absurd idea that exposed playa at the Salton Sea is causing asthma in children is completely unsupported by science and defies common sense. It is equally absurd to make the false claim that climate change is a major threat to the sea. The asthma problem started decades before the playa was ever exposed, and everyone is clearly ignoring the science presented by the Air Resources Board, which shows that the vast surrounding desert is emitting several times more particulates than the small footprint of the exposed playa. And climate change is not responsible for the significant water loss of the sea; that loss is a result of two major factors: the QSA water transfers and increased conservation by farmers- not climate change.

This committee must not review these proposals with tunnel vision, blindly fixated on the idea that construction of a grandiose water feature is the only solution. Rather, the objective should be to find the most feasible, economical and beneficial outcome for wildlife, human health and the environment; and that may or may not involve a massive body of water.

The ones driving the restoration need to level with the people and stop making promises that cannot be kept, giving false hope to desperate people. For starters, they can stop promoting this idea of a seawater importation scenario, for reasons that I list in my introduction. It's time for an honest and scientific approach to halting this perpetual hazardous condition that continues to threaten both wildlife and public health.

Seawater Importation is not a Realistic Alternative

Countless legal and political issues aside, importing sea water is not a feasible option for reducing or even maintaining the salinity in Salton Sea, and so this solicitation for sea water import proposals is an exercise in futility. Mary Bono's administration tirelessly explored and subsequently rejected the notion of sea water importation for good reason.

The volume of a Sea-to-Sea transfer is sensitive to the evaporation rate and the salinity of the incoming river water, and ocean water import exceeds Salton Sea export to accommodate evaporation. A Sea-to-Sea transfer would require a combined flow of about 5.2 to 7.2 million acre feet to maintain both the elevation and salinity of the Sea at a river inflow volume of 800,000, and 5.9 to 7.9 million acre feet at a river inflow volume of 700,000 acre-feet (The sea-to-sea transfer volume increases as the quantity of river water decreases). For every 100,000 acre-foot decline in river flow, the combined sea-to-sea transfer volume increases by about 700,000 acre-feet. Simply put, a seawater importation project would need to be about twice as large as the California State Water Project (SWP).

The current salinity of the Sea's tributaries ranges from >300-6000 TDS; compare this to the Pacific Ocean which is approximately 35,000 TDS. Importing water of a much higher salinity and increasing the annual salt burden by more than 5-fold, will not result in lower salinity. I now direct you to a simple reference that my colleagues and I presented at the science symposium in Sacramento a few years ago regarding the lack of feasibility of seawater importation, Figure 1:

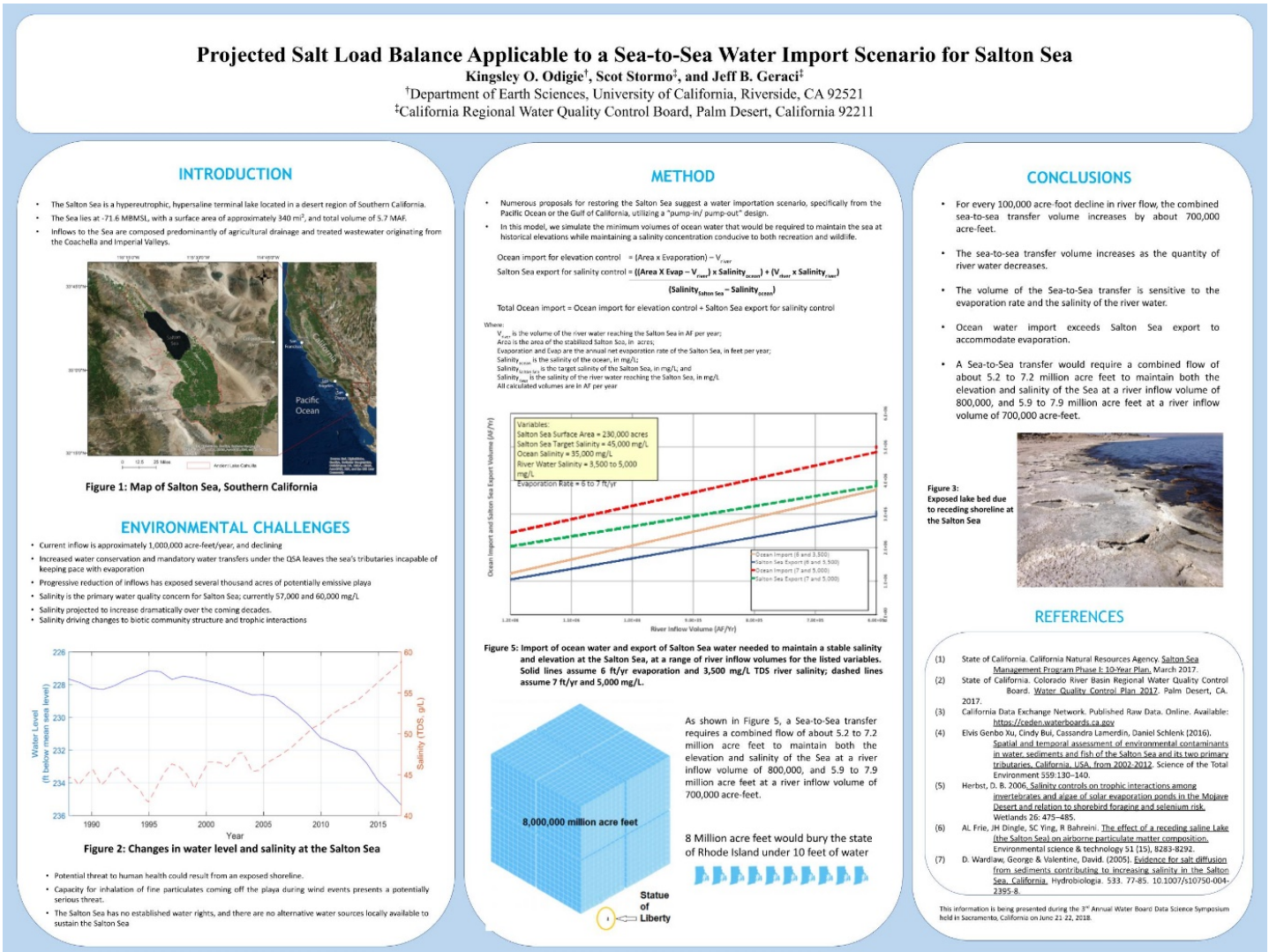

Figure 1: Salt Load Balance

Introduction

My proposal accelerates the natural process of revegetation along exposed playa, resulting in affordable, long-term and maintenance-free dust control and habitat for native terrestrial wildlife; additionally, this proposal prevents mass mortalities of birds and other wildlife by eliminating sources of polluted water, unlike the ten year plan and sea importation proposals. My proposal involves the importation of <100 AF/yr of Colorado River Water, and the temporary utilization of New River and Alamo River water. The importation of Colorado River water would not exceed 100 AF/yr, and it is used to create shallow pools within constructed oases for the purpose of providing habitat for pupfish, and for providing "drinkers" for terrestrial wildlife. New and Alamo River water is used on a temporary basis at startup for irrigation of seeds and seedlings.

Figure 2: Vegetation Overtaking North Shore Boat Launch

Over the last century, the Coachella and Imperial Valleys have lost countless acres of prime desert habitat to development along the valley floor. Desert valley floors support a greater biodiversity than those regions at higher elevations, and so we have a tremendous opportunity to reclaim and restore the valley floor of the Salton Basin. The Imperial Irrigation District has already achieved notable success in helping nature establish these plantings on several acres of playa.

Figure 3: Seedling Halophytes Established in Sand and Shells at the Water's Edge, Obisidian Butte

All along the shore of the sea, it is very apparent that vegetation is naturally establishing itself on exposed playa, even in hyper-saline saturated soils. In some places, vegetation is establishing itself within only inches of the water's edge (Figure 3).

These halophytes are well suited for saline and drought conditions. Historical satellite imagery from Google Earth demonstrates how quickly and aggressively this vegetation has already taken over exposed areas of the sea's shoreline. These plants require only sand and water to germinate and take root, and in some places, sand is not even a requirement. Figure 4 shows a seedling that germinated in a plug of algae among the barnacle shells.

My proposal is to provide the necessary catalyst needed to expedite the natural process of re-vegetation of the Salton Basin, which will result in the control of emissive dust. Once established, this dense vegetation will bind the soil, even after it dies. This re-vegetation process would keep pace with the receding shoreline, ensuring that ALL exposed playa is mitigated promptly, and at a fraction of the cost.

Figure 4: Halophyte Germinated in Algae and Barnacles

The vegetation already establishing itself on exposed playa is highly prolific and hardy, and it requires no maintenance once established. By utilizing artificial seed dispersal and temporary irrigation (a 2-6 month duration), this project would accelerate vegetative coverage of the exposed playa. In addition, my proposal would result in the reclamation of thousands of acres of productive agricultural land, which would otherwise be smothered in polluted wastewater under the 10-year plan and seawater import proposals.

What my Proposal Does NOT do

My proposal works WITH nature, not against nature, and it does not undermine nature's own reclamation of the basin, whereas the 10-year plan and seawater importation projects propose to smother this land and this new plant life in polluted waste for another generation. Unlike other proposals, mine does not perpetuate an ecological and public health hazard that is costing taxpayers millions of dollars each year. And finally, my proposal does not come with an outrageous price tag, plagued by unproven science and wishful thinking.

The Salton Sea is unarguably one of the worst possible locations in California to construct a wetland system. In terms of evaporation, pollution, water scarcity, hydrology, local wildlife and climate, you would be hard-pressed to find a more unsuitable location. As such, my proposal is far superior to the Ten-Year Plan and seawater import in terms of environmental quality, sustainability, feasibility and cost/benefit.

The California Aquatic Resources Inventory (CARI) provides full coverage of wetland extent for California. According to more recent assessments of CARI data sets, combined with data from the National Hydrography Dataset (NHD) and the National Wetland Inventory (NWI), the loss of wetlands is significantly lower. In fact, the total acreage of existing wetlands in California as of 2016 is estimated at 4.3 million acres, not 2.9 million as previously suggested. That's enough wetland habitat to cover the entire state of Connecticut and the state of Rhode Island combined.

Specifically, the Ten-Year Plan is greatly inferior to my proposal in the following ways:

- Aquatic habitat in the Salton Basin is unsustainable, and the only available source water for expansive aquatic habitat is highly polluted wastewater
- Wildlife fatalities will continue to plague the region
- High desert temperatures will result in excessive water loss
- Restoration will force out native wildlife, which cannot survive in aquatic systems
- The habitats will create additional pathways by which bioaccumulation will occur, and dangerous bioaccumulation is already happening in nearby constructed wetlands and drains
- The outrageous cost of aquatic habitat prevents the mitigation of dust on all exposed playa
- The ten-year plan focuses on convenient low-hanging fruit, rather than strategic and critical priorities
- Tourists will not pay money to swim in contaminated waste
- The restoration does not aid the actual sea in any way, resulting in continued degradation
- The grandiose size of the restoration habitats makes them unmanageable
- Wetland design is non-existent; digging flat bottomed holes with sloped walls and filling them with water, then adding a few plants, does not constitute a productive wetland' habitat
- Pollution will shorten the habitat's lifespan, eliminating its assimilative capacity
- Inflows will decrease over time due to conservation and drought
- The concentration of pollutants in the inflows will increase as flows decrease
- Anticipated costs of the restoration continue to be grossly underestimated
- Revenue will not be generated from recreation due to poor aesthetics/ water quality
- The restoration is plagued with uncertainty, and the project will constantly be battling against nature
- Introducing less saline water will alter the biotic community; in the case of cyanobacteria, there is a real risk that lower salinities could favor new species that are more toxic than the current resident population; fresher water may also cause re-dissolution of contaminants from sediments and their interstitial fluid
- The opportunity costs of the restoration will be profound, and water quality will still be poor. It is not in the public's best interest to flush hundreds of millions of taxpayer dollars down a cesspool

Comparison of My Proposal vs. Ten Year Plan

ISSUE	CURRENT 10-YEAR PLAN	RONDA
Water Consumption	Demands massive volumes of contaminated agricultural and wastewater discharges from the New and Alamo Rivers for aquatic habitat, adding additional salts and contaminants to the basin, and depriving Salton Sea of critical dilution water	Saves the State of California millions of gallons of water. Utilizes a sustainable amount of river water for sustaining scattered oases with shaded pools
Dust Control	Fails to control dust on all exposed playa and fails to keep pace with receding shoreline. This plan will leave thousands of acres of exposed playa emitting dust, thus impacting human health	Controls dust on all exposed playa with native soil and flora, and it keeps pace with the receding shore line
Long Term Planning	The plan has no long-term significance. The use of water for dust mitigation is not sustainable, and it is an inefficient and temporary fix	Water is not used for dust mitigation, and the reclamation of native desert will be a permanent solution
Project Cost and Project Complexity	Hundreds of millions of dollars to develop a complicated network of berms, pumping stations, holding ponds, mixing ponds, sedimentation basins, and polluted wetlands	The cost per acre of reclaiming desert habitat is several times less than the cost of developing aquatic habitat, and MAINTENANCE is a fraction of the cost
Water Quality	Creates tens of thousands of acres of polluted aquatic habitat high in selenium, DDT, PCBs, PBDEs,pesticides, and more than 20 other pollutants. That is too much acreage to manage effectively.Bioaccumulation will leave a tainted and weakened fish population, placing fish-eating birds at risk	Is not a concern
Habitat	Creates an excessive and unnecessary amount of degraded and polluted habitat that will continue to result in bird and wildlife fatalities. The habitat will literally be on life support indefinitely, costing taxpayers millions annually	Creates a clean and productive habitat that is self-sustaining in the long term
Priority	Prioritizes habitat first, at the expense of adequate dust control, thus neglecting human welfare	Prioritizes the protection of public health by systematically blanketing the shoreline with native flora.
Wildlife	Forces out terrestrial native wildlife; entices birds to a hazardous area	Supports and promotes NATIVE desert wildlife. Incorporates measures such as bird scares to DISCOURAGE bird use of tnearby polluted rivers and agricultural drains.

Recreation	Deters recreation by creating thousands of acres of polluted habitat plagued with offensive odors and colors. Visitors will be turned off from body-contact recreation due to poor aesthetics and poor water quality.	This proposal includes multiple palm oases with pools to provide the NATURAL habitat of Desert Pupfish,and to provide a drinking source for terrestrial wildlife.
Maintenance	(1) Hundreds of millions of dollars to maintain, with no guarantee of funding (2) Thousands of tons of silt will need to be dredged regularly and disposed of, requiring the burning of fossil fuels and causing more dust. (3) Miles of expensive berms requiring constant repair and replacement (4) Pumps and pipelines breaking down and being replaced and re-routed (5) As water supplies diminish, some of the newly created habitat will be forced to go dry, and dust will return (6) Costly regulations will be imposed on farmers and other dischargers, because as water conservation continues, there will be less dilution, and the water coming into the project will be more concentrated in contaminants, exceeding EPA standards. (7) Constant control of invasive species will be needed on thousands of acres (8) Mixing ponds, retention ponds, sediment basins and habitats will all require expensive and constant maintenance. (9) Proper salinities will have to be constantly monitored and maintained to keep up with evaporation/ stagnation (10) Costly water quality and wildlife monitoring will be required indefinitely for the life of the project	Once established, the reclaimed desert habitat will be self-sustaining, protected by the enforcement of designated land uses
Fish	Puts birds at risk for disease and bioaccumulation	Eliminates the remaining fish population in Salton Sea before birds become infected.
Labor	Hundreds of millions of dollars paid to contractors for construction and administration	Capitalizes on the help of environmental groups, schools and other entities to assist in the planting of native flora
Mosquitos and vectors	Thousands of acres of unmanageable, shallow aquatic habitat will be a breeding ground for mosquitos and other vectors, creating a serious human health risk if water toxicity kills off the mosquitofish.	The non-toxic pools located in constructed oases will maintain healthy Mosquito fish and Pupfish populations

Comments

Given the complex detail of the accompanying cost template, it is not possible for me as an individual to ascertain that information in total; it seems premature to delve into that level of detail at this stage of the process. Suffice to say that the per-acre cost of my proposal is well below that of the ten-year plan. As such, completion of the cost template should be deferred to a later time.

Public participation

Unlike the ten-year plan, my project allows ALL people of all skill levels the opportunity to actively participate in the restoration. Virtually anyone can assist in growing vegetation on the playa, and by doing so, the public will have a sense of contribution and pride; something they will not get from a seawater import or ten-year plan project. My project does not rely 100% on paid contractors doing all of the work, then disappearing over the mountain when it's done.

Irrigation

Irrigation would be accomplished by utilizing a combination of water trucks and pumps/temporary irrigation lines. These lines would be moved closer to the water incrementally as the sea recedes, allowing the re-vegetation process to keep pace with the exposed playa. The initial irrigation would leach out excess salts from the soil, while continued temporary irrigation would promote the germination of seeds. There is no shortage of 'free' New and Alamo river water for irrigation, which is high in nutrients such as nitrogen and phosphorous.

Seeding

Metal grates would be dragged behind tractors along the exposed playa, creating a path of small furrows where seeds would be deposited prior to irrigation. In areas where sand is lacking, supplemental sand would be spread on the area prior to seeding. Alternatively, a sand/seed/water slurry could be pumped onto the exposed playa in a single process using a wide-diameter hose. The knowledge of local farmers would be advantageous to successfully implement my proposal, and the participation of schools, environmental groups and other entities would expedite the project and build community support by actively planting new ground cover.

Oases

Oases will be scattered throughout the project. Oases would consist of clusters of palms surrounding small constructed pools of Colorado River water that would provide shade for recreators, drinking water for wildlife and habitat for pupfish. Natural oases are popular with hikers and nature enthusiasts alike, providing a cool and attractive area for both people and wildlife. These pools require minimal maintenance, which could be handled by volunteers as part of an "Adopt an Oasis" program. For a sizable donation (used to provide maintenance for the oasis), a person can "adopt" an oasis and have it named after someone of their choosing.