



South Bay Salt Pond Restoration Project

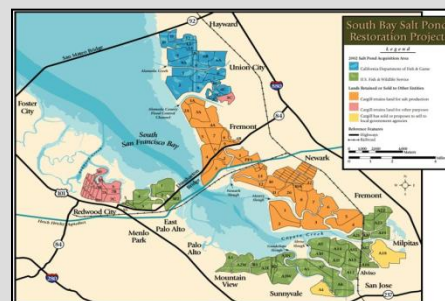
Restoring the Wild Heart of the South Bay



SEA LEVEL RISE AND MANAGEMENT NEEDS FOR THE SOUTH BAY SALT POND RESTORATION PROJECT, SAN FRANCISCO BAY

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Project Goals

- Restore & enhance a mix of wetland habitats
- Provide for flood management
- Provide wildlife-oriented public access & recreation opportunities

The South Bay Salt Pond Restoration Project is the largest tidal wetland restoration project on the West Coast. When complete, the project will restore 15,100 acres of former industrial salt ponds to a rich mosaic of tidal wetlands and other habitats. San Francisco Bay has lost an estimated 85% of its historic wetlands, causing dramatic declines in populations of marsh-dependent fish and wildlife, decreased water quality, and increased local flood risks. Restoration of these salt ponds provides an opportunity to begin to reverse these trends, by improving the health of the Bay. However, the urbanized setting of the Bay provides unique challenges and opportunities for estuarine restoration. In addition, this area is a site of global importance for shorebirds and waterfowl along the Pacific Flyway, with ponds providing necessary habitat for many of these bird species.

We have identified long-term alternatives for the Project, representing a continuum toward different end-states: one end at 50% of the former salt ponds converted to managed ponds for waterbirds and 50% restored to tidal habitat, and the other end of the continuum at 10% of the ponds converted to managed ponds and 90% restored to tidal habitat. The final mixture of managed ponds to tidal marsh habitat will depend upon the outcome of the Adaptive Management Plan, which is being implemented over the next 50 years and will allow for lessons learned from earlier phases to be incorporated into subsequent stages as management plans and designs of future actions are updated. We are relying on natural sedimentation processes to fill ponds to marsh elevations.

Restoration at this scale has generated a number of uncertainties related to sea-level rise (SLR) for the South Bay, including:

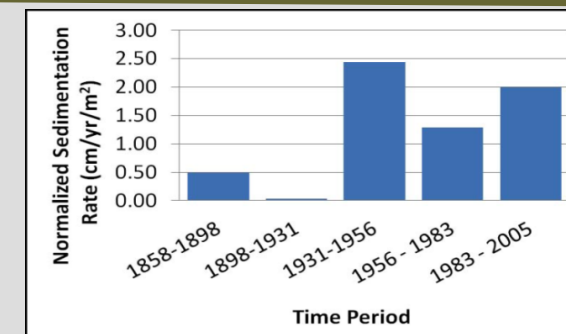
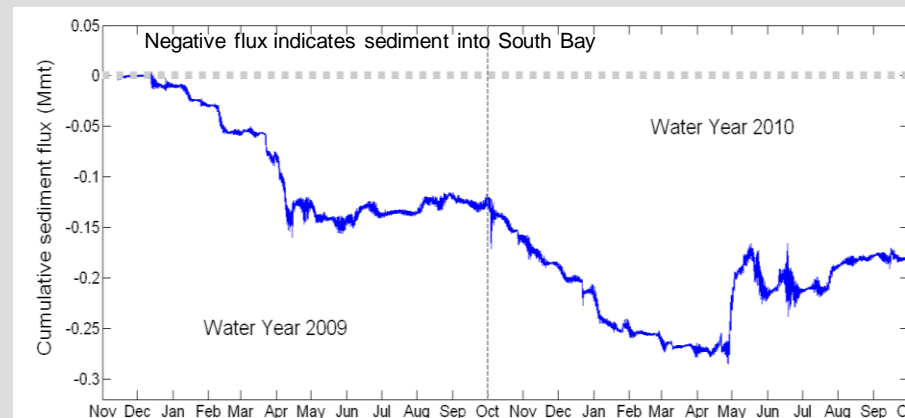
1. What is long-term sediment budget in South Bay to support restoration and maintain mudflat habitat?
2. What are expected high water events with SLR and how to provide refugia habitat for listed species?
3. What is expected long term (50 – 100 years) sustainability of marsh and mudflat habitat in south bay?

Sediment Questions

How much sediment coming into South Bay will be available to feed marsh restoration in the future? In 50 years? In 100 years?

Sediment Flux through Dumbarton Bridge (Schoellhamer, Shellenbarger, USGS)

- Preliminary data indicates sufficient sediment influx to support marsh restoration for next 50 years
- Will this trend continue?
- What of year to year variability?



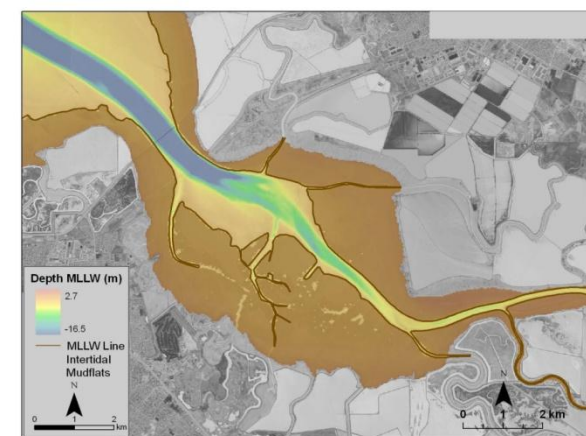
Historical variability in sedimentation (Jaffe, USGS)

- What will sedimentation rates be in the future in South Bay?
- Will amount of sediment decrease? At what rate?

Restoration Questions

Should we accelerate tidal marsh restoration to capture available sediment now?

How and where to create upland transitional habitat for refugia and/or marsh transgression?



Timing of Marsh Restoration:

- Restoration relies on natural sedimentation processes
- Uncertainty in future sediment supply

Should we restore marsh sooner to capture existing sediment?



Vulnerable Species: Increasing high tide and storm surge impacts on California Clapper Rail (Takekawa, Overton, USGS):

- Decreased adult survival with winter high tides
- Potentially increased predation
- Increased flood risk to nesting birds

How can we create refugia areas within a marsh for sensitive species?

Salt Pond Modeling Needs

SLR models that evaluate impacts starting with ponds of varying elevations, not starting from existing marsh habitat.

The rate of marsh accretion processes compared with the rate of SLR, at different timeframes in the future (50 years, 100 years).

Include how mudflats respond to SLR.

Levee construction assessment and SLR.

