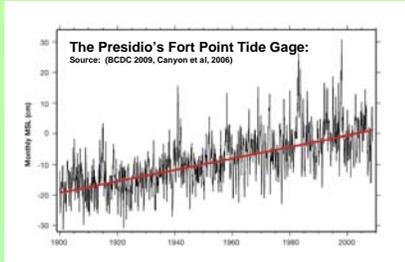


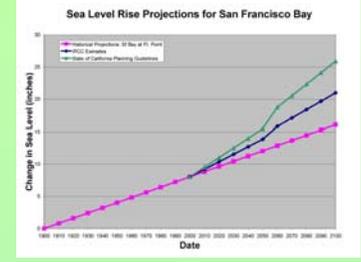
Sea Level Rise & Habitat Changes At Giacomini Wetlands

Sea level rise: An old trend is now accelerating



Projected Rate of Sea Level Rise in San Francisco Bay				
Source:	Rate to 2050 (in/yr)	Rate to 2100 (in/yr)	Estimated Change to 2050* (in.)	Estimated Change to 2100** (in.)
Historical Rates Analysis**:	0.08	0.08	8.8	16.1
Current IPCC* Projections:	0.45	0.61	13.9	21.0
State of CA Projections****:	0.30 - 0.43	0.43 - 0.61	12-17	20-55

* Projected change since 2000
** Based on 100+yr historical records at Ft. Point (Knauti, 1996), (Canyon et al., 2006)
*** IPCC is the International Panel on Climate Change
**** San Francisco Bay Conservation & Development Commission Planning Guidelines, 2008



Historical Trends: Presidio's Fort Point Tide Gage:

- This the longest continuous tide record in the US.
- Statistical analysis of the record found a historic sea level rise rate of 0.08 in./yr.

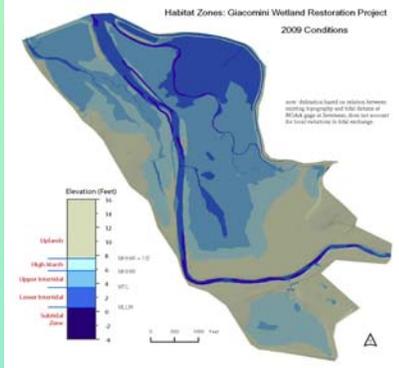
Scientists Agree:

- Sea levels are rising
- Sea level will continue to rise
- The rate of sea level increase will accelerate

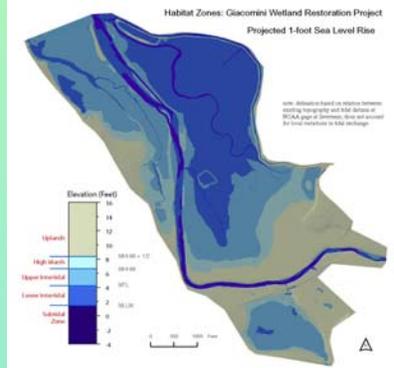
How Will Sea Level Rise Affect The Giacomini Wetlands?

Below are the 2009 and projected distributions of wetland habitat associated with moderate sea level rise and approximately 50yr 100yr planning horizons.

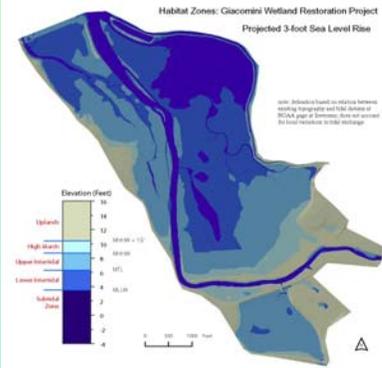
Wetland Habitats: 2009 Conditions



Wetland Habitats: 1-ft. Sea Level Rise



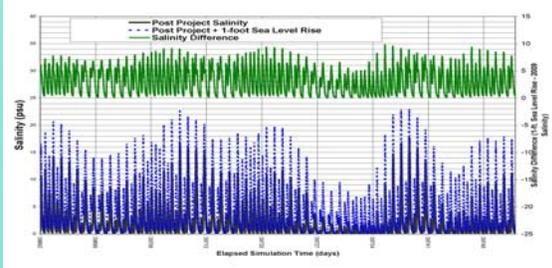
Wetland Habitats: 3-ft. Sea Level Rise



Wetland Acreage Impacts: The projected 1-ft. and 3-ft. increases in water level across the project significantly reduce the extent of inter-tidal habitat. The longitudinal (north-south) compression of the habitat zones is also evident, and reflects a loss in habitat diversity. Under storm conditions, the narrower upland transition zone will provide less acreage of high tide refugia, and a narrower buffer against coastal flooding.

Changes in Summer Salinity: In addition to changes in water level, salinity gradients across this brackish marsh will shift inward reducing the freshwater influences on the marsh. This will be particularly true during summer months when low tributary creek flows allow salinity to push landward at the head of Tomalpas Bay. Salinity impacts are greatest near the marsh inlet, and decrease with distance upstream. At Green Bridge, numerical models predict a 5 – 10 ppt increase in salinity during high tides.

Changes in Summer Salinity at Green Bridge: 2009 Conditions vs. 1-ft. Sea Level Rise



Good News: Despite these anticipated impacts, we believe the Giacomini Wetlands will provide some of the most **robustly sustained habitat** in region. The wetland currently contains expansive inter-tidal marsh areas and a broad upland transition zone which will accommodate natural upland migration of wetland features in response to sea level rise. In addition, the removal of levees along Lagunitas Creek re-established the connection between the marsh and Lagunitas creek floodplain. This geomorphic connection will promote accumulation of creek sediments on the marsh plain. Re-establishment of these natural geomorphic process will allow the marsh to evolve naturally, and improves it's chances of keeping pace with accelerated sea level rise.

