Association of Bay Area Governments

Executive Board

September 21, 2023 Agenda Item 11.a.

San Franciso Estuary Partnership

Subject:

Advancing Nature-Based Shoreline Strategies—Briefing on the San Francisco Estuary Partnership's work to advance nature-based shoreline infrastructure for multiple benefits

Background:

The San Francisco Estuary region is experiencing an increasing urgency to address impacts related to climate change, including vulnerability to rising seas and storm surges along the shoreline. Prioritizing green infrastructure, or nature-based solutions (NBS) to climate adaptation challenges along the shoreline provides benefits to ecosystems and the health of the Estuary as well as to people.

Advancing NBS is consistent with state and federal level guidance, as well as recent regional planning efforts including the 2022 San Francsico Estuary Blueprint and Plan Bay Area 2050.

The work of the San Francisco Estuary Partnership (SFEP) is guided by the 2022 San Francisco Estuary Blueprint (Estuary Blueprint). The Estuary Blueprint is a collaborative, consensus-driven five-year roadmap for the San Francisco Estuary that identifies the top actions needed for increased climate resilience, improved water quality, healthier habitats, and thriving human communities. Included within the Estuary Blueprint are several actions and tasks focused on advancing projects that prioritize NBS as a multi-benefit climate adaptation strategy. SFEP's efforts to advance implementation of NBS are also captured in the Plan Bay Area 2050; specifically, Action 9g within the Environment Element to "Prioritize implementation of natural and nature-based solutions through SFEP's projects and programs."

SFEP is advancing NBS by partnering with local communities to develop on the ground projects from design to construction; bolstering regional capacity through technical support and learning networks; and addressing specific barriers to implementation, such as funding and regulatory processes. SFEP works with a broad range of partners to advance this portfolio of projects across the Estuary.

Nature-Based Solutions:

The International Union for Conservation of Nature and Natural Resources (IUCN) defines NBS as actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously benefiting people and nature.

NBS provides multiple benefits including flood protection, habitat, improved water quality, and Tribal, community and recreational benefits, and can help communities adapt to sea level rise. Projects can consist of existing or restored landscapes such as tidal marshes, as well as engineered systems that incorporate natural features or processes. Utilizing NBS alongside

traditional engineered approaches allows us to consider a future shoreline with protection for people and nature that is resilient, cost effective and adaptable.

One shoreline NBS project type is called a “horizontal levee” (sometimes also referred to as a “living levee” or “ecotone levee”). Horizontal levees are a re-imagining of how a levee looks and what it can do. Instead of a vertical wall to protect against storm surges, a horizontal levee is a gently sloping, vegetated slope that can provide multiple benefits including: protection against storms and rising sea levels; habitat for native species; and recreational and educational opportunities. In partnership with wastewater districts, horizontal levees can also filter treated wastewater, and remove contaminants such as nitrogen, phosphate and pharmaceuticals found in wastewater.

The Oro Loma Horizontal Levee was constructed in 2015 as a pilot project to study the potential for horizontal levees to provide wastewater treatment benefits. The project is a partnership between the Oro Loma Sanitary District, UC Berkeley, Valley Water, Save The Bay, SF Estuary Institute, East Bay Dischargers Authority, and SFEP. Results from the Oro Loma pilot show significant water quality benefits including removal of nutrients and contaminants of emerging concern. The Oro Loma Horizontal Levee continues to operate as a “living laboratory” for emerging issues of concern to the region with research ongoing at the site.

The success of the Oro Loma Horizontal Levee as well as further innovations in planning, policy and management of the shoreline has inspired additional communities located adjacent to the shoreline around the region to explore the implementation of nature-based solutions.

SFEP Role:

SFEP works at all scales and with a diverse suite of partners to advance NBS, including horizontal levees. At the regional scale, SFEP hosts technology transfer and information sharing workshops on a range of topics related to NBS, including racial and social justice, design & engineering, permitting, funding, and emerging best practices. At the local level, SFEP works directly with communities to advance on the ground projects. Many local jurisdictions are over extended and lack capacity to champion new projects despite significant support for NBS. As a result, SFEP has partnered directly with local jurisdictions and public landowners to lead design, engineering and permitting processes and support equity-centered stakeholder engagement. Regarding horizontal levees specifically, SFEP is currently working with wastewater districts, local municipalities, and community-based organizations on several horizontal levee projects located around the region including in Suisun/Fairfield, North Richmond, San Leandro, Hayward, and Palo Alto.

Issues:

None

Recommendations:

Information

Attachment:

A. Presentation

Reviewed:

Andrew Fremier