San Francisco ESTUARY PARTNERSHIP

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MEMORANDUM

Call to Accelerate Shoreline Actions in the San Francisco Bay Area

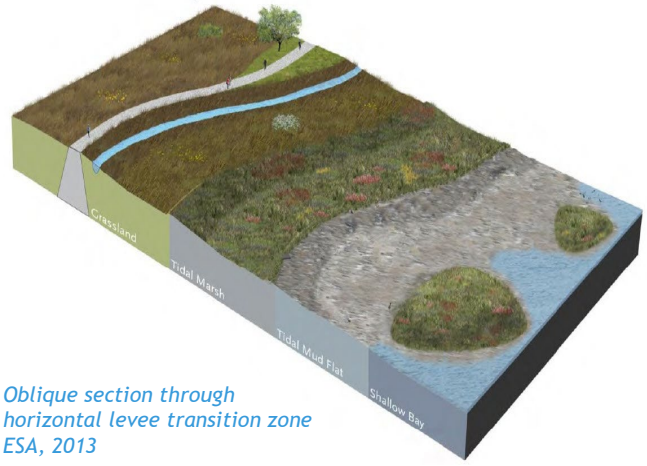
The San Francisco Bay Area must continue to bolster coastal resilience to avoid inundation of vital habitat and prevent hundreds of billions of dollars of damage to property and infrastructure. To address this critical challenge, the pathways through regulatory permitting of nature-based climate adaptation projects must be improved through coordination, technical support, and regulatory advancement.

"Nature-based Solutions (NbS) along the San Francisco Bay shoreline offer a pathway to sustainable coastal resilience that is equitable, economical, and long-lasting. Local, state, and federal guidance and policy all drive toward the importance of incorporating NbS as part of robust climate resiliency efforts. With innovative ideas comes challenges and opportunities. In particular, the regulatory pathways for NbS are not easily paved without careful planning and collaboration."[1]

Providing permitting pathways for innovative NbS projects at the shoreline is imperative. Indeed, Task 3-3 of the San Francisco Estuary Partnership's Estuary Blueprint calls for assessing regulatory policies, guidelines and regulations to accelerate nature-based adaptation consistent with overall protection of Estuary health (https://www.sfestuary.org/estuary-blueprint/). The companion to this memorandum, the white paper "Highlighting Regulatory Pathway Priorities for Nature-Based Shoreline Adaptation Projects in the San Francisco Bay Area" lays out key drivers for NbS in the San Francisco Bay Area, identifies advancements and outstanding challenges, and proposes pathways for expediting implementation of NbS within the Bay Area's complex regulatory landscape.

1 Harris-Lovett, S., Bradt, J., Juvera, L., Nutters, H., and Wren, I. Nature Based Solutions for Coastal Resilience, Habitat Enhancement, and Water Quality Improvement at the San Francisco Bay Shoreline: Challenges, Solutions, and Next Steps. San Francisco Estuary Partnership and Bay Area One Water Network, 2022.

What is a horizontal levee? A horizontal levee is one innovative NbS project type being explored in the San Francisco Bay Area. Horizontal levees can include flood protection, an ecotone slope, recreation access, and treated wastewater for subsurface water treatment and irrigation for vegetation.



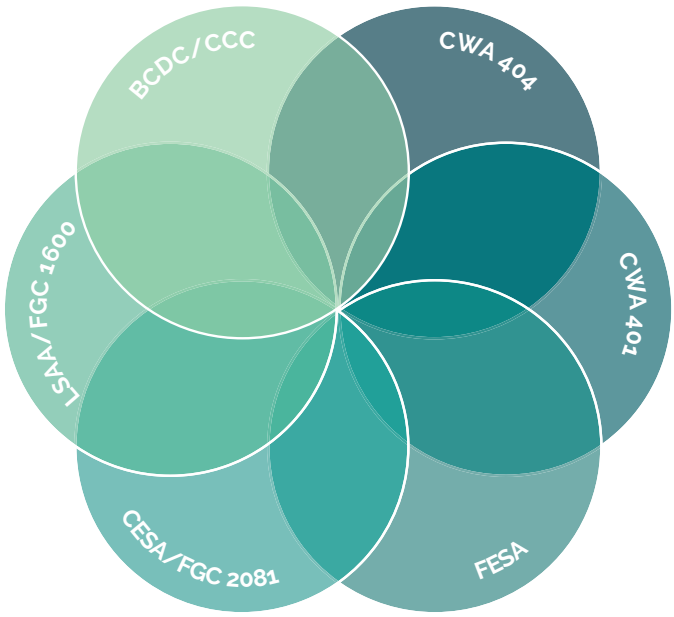
Oblique section through horizontal levee transition zone ESA, 2013

What are the benefits? Benefits are wide-ranging and long-term: carbon sequestration; environmental justice and equity (disadvantaged communities are disproportionately vulnerable to adverse sea level rise effects); recreation opportunities; wildlife and aquatic resources enhancement; and water quality improvement.

Photo: San Francisco Estuary Partnership Archive

What makes NbS and horizontal levee projects so challenging to build?

- NbS projects located within existing fringing tidal marsh habitat present unique permitting complexities, including: the placement of fill materials in wetlands to create the ecotone slope; the range of created and enhanced habitat types; and the intentional design to enable evolving habitat types in conjunction with sea level rise.
- Most current environmental regulations were not explicitly written for a changing climate future in which placing fill into bayland habitats might be necessary to prevent long-term effects of sea level rise and can be beneficial to rare or endangered species. Thus, further policy, implementation guidance, and regulatory planning efforts related to substantial short-term fill into habitats for longer-term beneficial outcomes are required to enable the broad range of invested participants to advance these NbS projects.
- Community engagement and representation are key components of successful NbS projects. Further, community-led shoreline adaptation projects can maximize the multitude of direct NbS benefits to both nature and human communities.
- Further sustained funding for planning and implementation of NbS actions will be required. Although NbS will cost less in societal and environmental benefits, they may have higher permitting and construction costs until they become more common-place.



Call to Action

Addressing the challenges and opportunities laid out in the White Paper will require active commitment from regulatory agencies, project proponents, funders, applied research collaboratives, and community partners. Three priority action areas are identified below to achieve broad national-level goals and regional goals. The presumption is that national- and statewide-level goals will take longer and require more effort to achieve, while regional goals may be achievable in a 2–5 year timeframe.

Priority 1 - Funding for Engagement

The actions described in this memo require coordinated efforts and in some cases, dedicated funding support to implement. Key actions:

- Funding support to enable current staff, hiring additional staff, and/or engaging with regulatory experts outside the region to focus on developing a process to address complex permitting challenges for NbS projects.
- Funding support to advance and implement community-led pilot projects around the region, including support for navigating the permitting process.
- Funding support for an agency-vetted facilitator to implement technical workshops, policy improvement workshops, informational exchange forums, and development of programmatic tools (i.e. programmatic biological opinions, LOPs, etc.) and policy efficiencies (i.e. CEQA exemptions, process guidance, etc.).

Priority 2 - Technical Engagement

Provide guidance and technical assistance to regulatory permit managers to support evaluation of NbS projects and empower increased effectiveness for project application reviews (i.e., handling risk and uncertainty when evaluating impacts and benefits across temporal and spatial scales). Assess and evaluate existing resources nationally to identify and apply effective approaches to resolve climate change adaptation challenges with federal and state agency mandates (e.g., Clean Water Act Section 404(b)(1), Endangered Species Act, California Fish and Game Code, San Francisco Bay Plan). Key actions:

- Provide technical assistance to regulators and permit practitioners, such as guidance from project design engineers, hydrologists, and restoration ecologists, on the NbS design process, innovative design refinements and practices, modeling of ecosystem effects, and adaptive management and maintenance measures to maximize long-term benefits.
- Convene representatives to work collaboratively to address key challenges and identify research needs, such as adaptive monitoring and evaluating habitat impacts during project implementation in comparison to the long-term habitat benefits of the project.

Priority 3 - Regulatory Advancement

Identify significant regulatory sticking points and elevate regulatory engagement across regions, agencies, and with project proponents to shift the regulatory landscape for NbS projects. Key actions:

- Engage decision-makers to support and implement the shifting regulatory landscape. For instance, this may require high-level policy change and/or regulatory implementation guidance, both of which need explicit inward and outward agreement within the hierarchy of each agency and amongst the various regulatory agencies, respectively.
- Leverage and coalesce innovative work and proven programmatic efficiencies happening within regulatory agencies. This could include identification of regional projects or programs to pilot test permit pathways specific to SF Bay shorelines.
- Identify needed advocacy areas and champions among relevant organizations; engage in setting actionable commitments and goals.
- Identify approaches that incentivize application of NbS projects, for instance in support of SB272. Partner closely with communities and practitioners around identifying permit pathways for NbS. An example approach is establishing subregional scale permitting options to achieve shared climate adaptation goals for community-led NbS initiatives. This will require fluency with permit phasing and long-term adaptive management actions.

There are a number of ongoing parallel efforts to resolve permitting complexities for climate change adaptation projects specific to the Bay Area. This includes Regionally Advancing Living Shorelines led by the State Coastal Conservancy, with the goal to establish a permitting pathway for a suite of living shoreline actions (i.e., covered activities in sub-tidal zones). Additionally, the San Francisco Bay Conservation and Development Commission has been leading the Adapting to Rising Tides program to assess regional challenges to sea level rise and explore potential policy improvements, and working to develop a *Regional Shoreline Adaptation Plan*.

In summary, multi-benefit projects in sensitive baylands habitats are challenging to design and regulate. This becomes increasingly challenging in an unknown future condition and the use of novel or progressive project approaches and/or methods. Without strong and immediate regulatory technical and policy support for NbS actions, there will be extremely limited implementation of these important multi-benefit projects in SF Bay to bolster climate change adaptation. As climate change risks increase along our shorelines, regulatory agencies must keep pace with NbS project demand to ensure the best multi-benefit environmental outcomes.

To ignite discussions and action commitments, a companion presentation and actionable workplan are included as attachments to this Memo.

Why we need Nature-based Solutions along the San Francisco Bay shoreline:

- ***San Francisco Bay's wetlands and mudflats are the first line of defense*** from sea level rise for many of the Bay's shoreline communities and for critical infrastructure. They are more resilient and adaptive than levees and seawalls, and they provide both cost-effective protection and many essential ecological and recreational benefits for the people of the Bay Area.
- The economic assets (like highways, sewage treatment plants and buildings) of the SF Bay shoreline at risk from flooding due to climate change ***are valued at $100 Billion dollars***.
- There is broad scientific consensus that for much of the Bay's shoreline, ***wetlands provide the most effective and beneficial method to protect infrastructure*** from sea level rise and storm surge.

Dusterhoff, S., McKnight, K., Grenier, L., and Kauffman, N. 2021. Sediment for Survival: A Strategy for the Resilience of Bay Wetlands in the Lower San Francisco Estuary. A SFEI Resilient Landscape Program. A product of the Healthy Watersheds, Resilient Baylands project, funded by the San Francisco Bay Water Quality Improvement Fund, EPA Region IX. Publication #1015, San Francisco Estuary Institute, Richmond, CA.

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