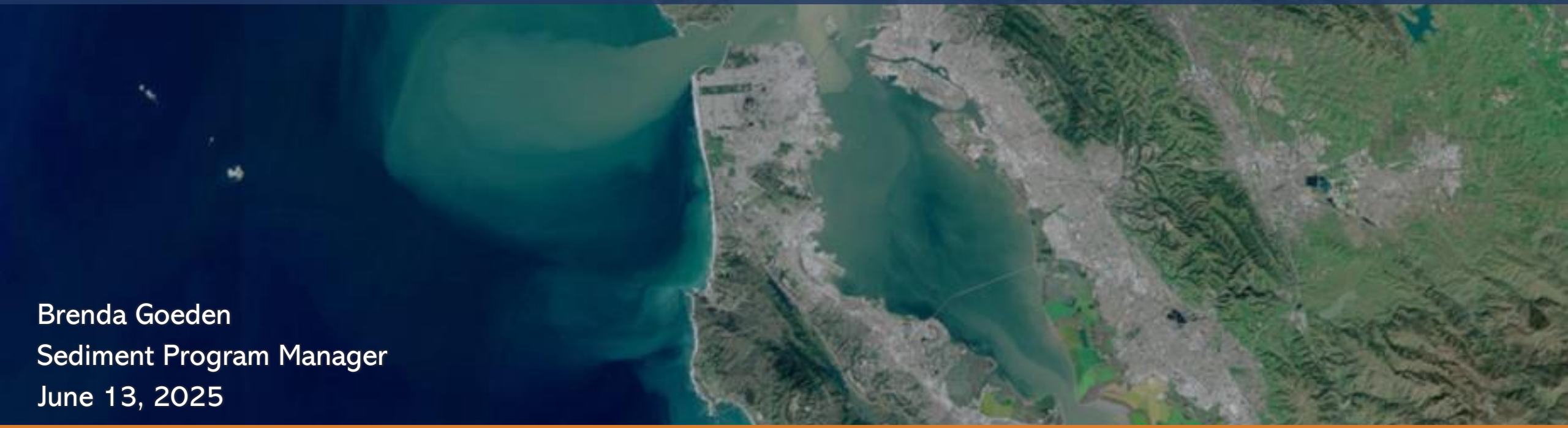
San Francisco Bay
Sediment for Wetland Adaptation Project



Brenda Goeden
Sediment Program Manager
June 13, 2025

SF Bay Conservation and Development Commission
Regional Sediment Management Program

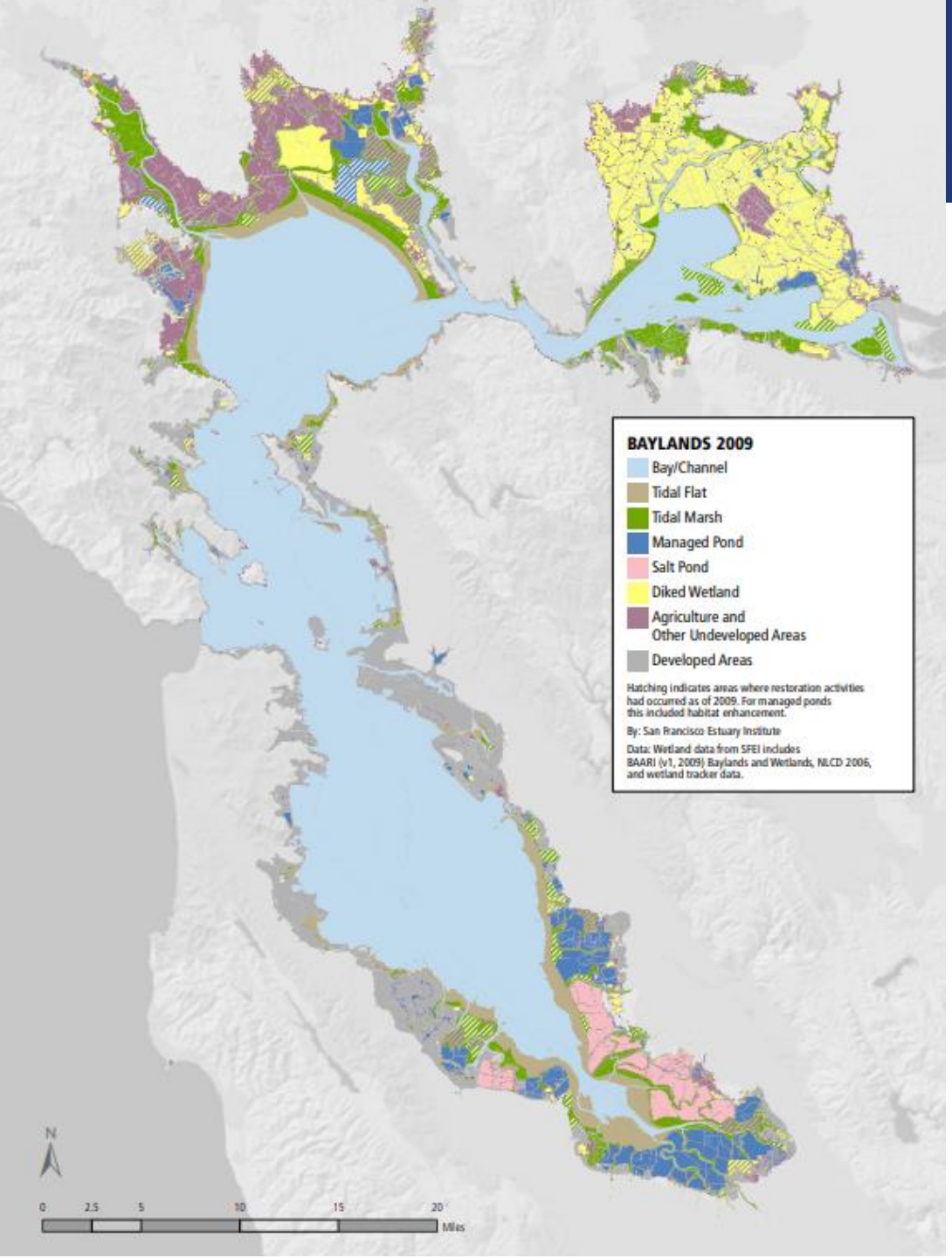
Sediment for Wetland Adaptation Project

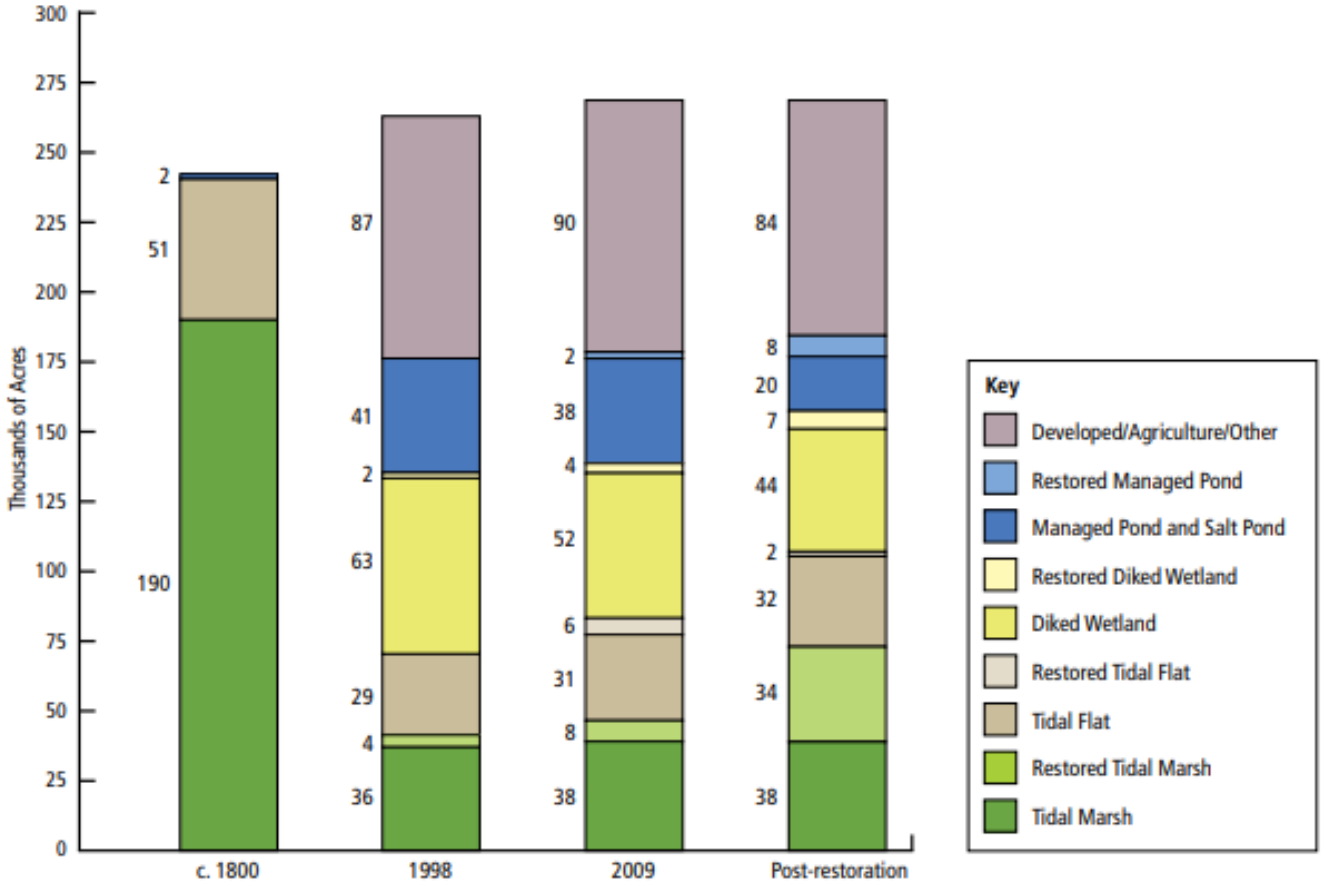
Photo: Hamilton Wetlands

Goal:

"Increase beneficial reuse of sediment and soil for wetland habitat restoration, resilience, and sea level rise adaptation in the San Francisco Bay Area."

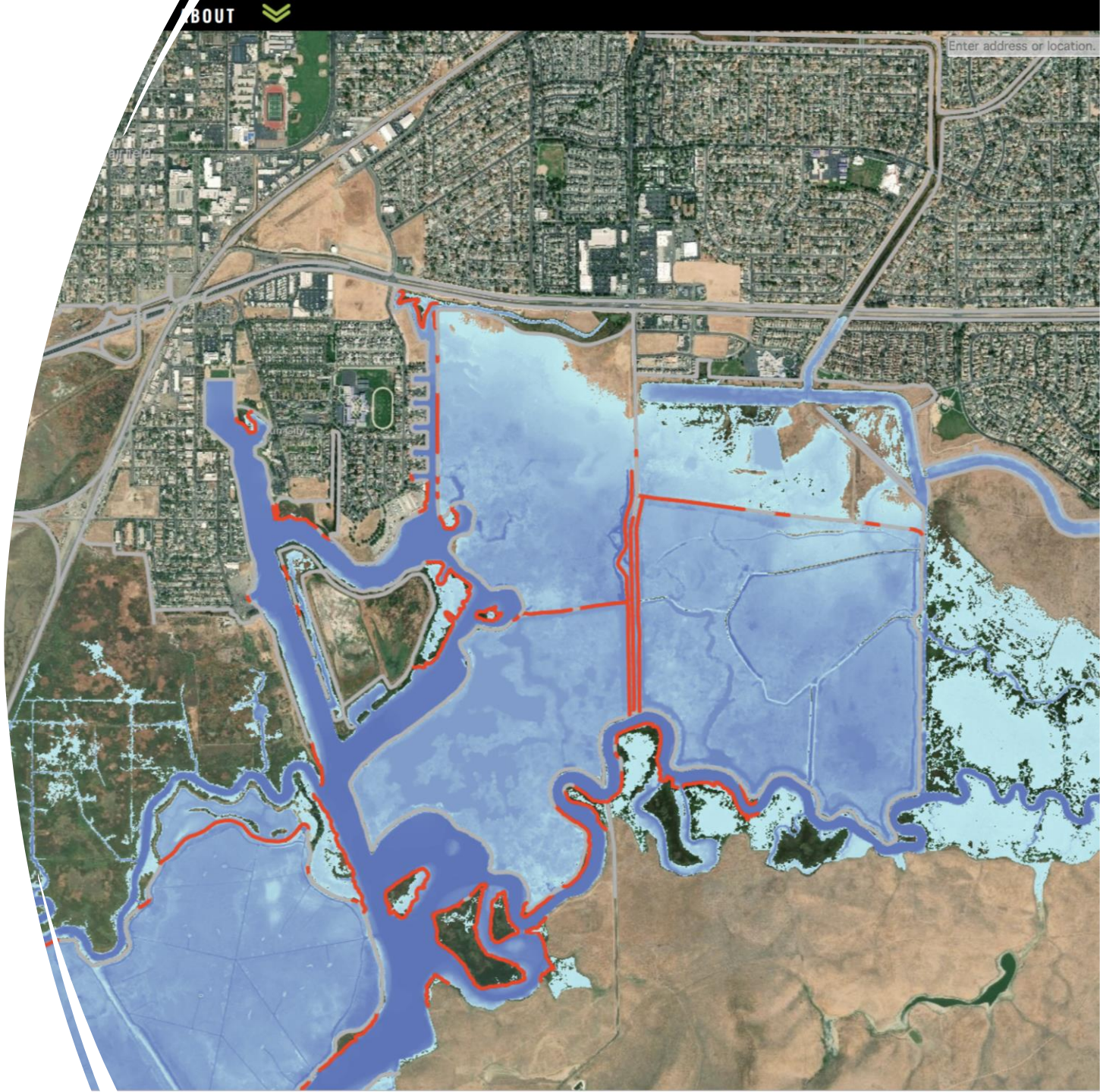
Wetlands of the Bay Area



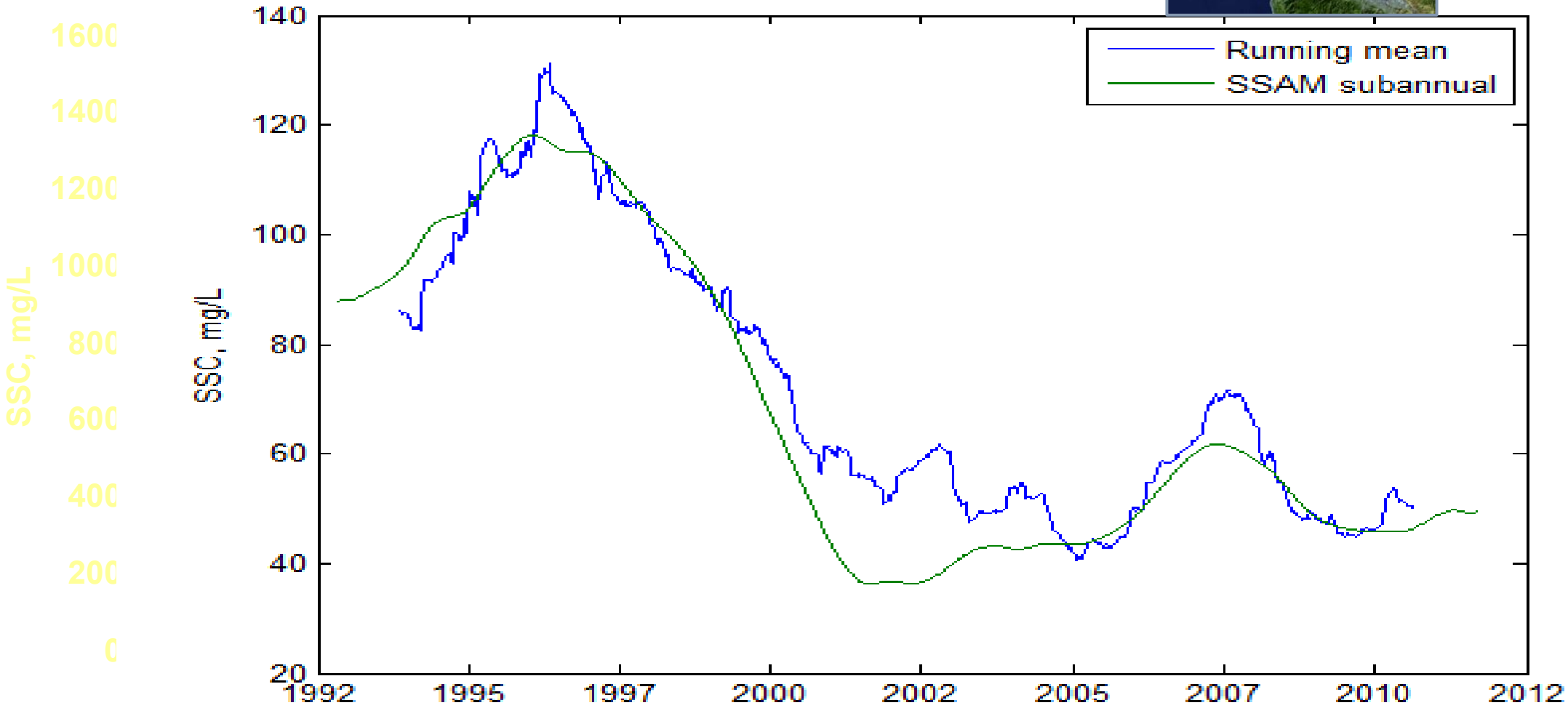


Goals Project,, California State Coastal Conservancy, 2015

Sea Level is Rising

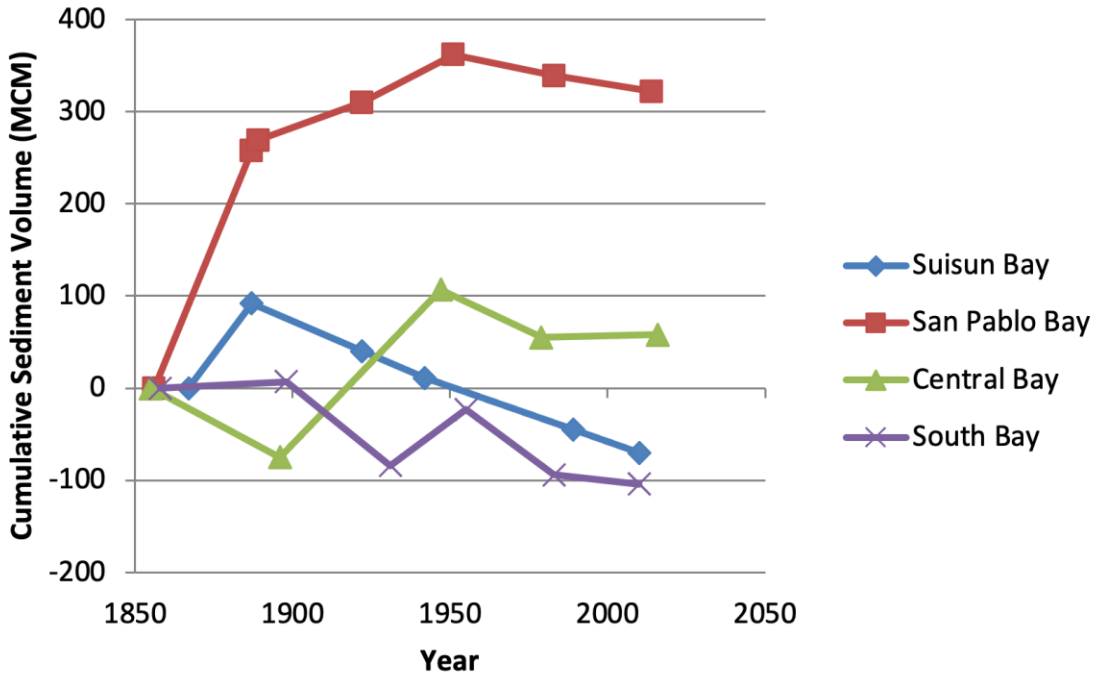


Decline in Suspended Sediment Supply from the Delta

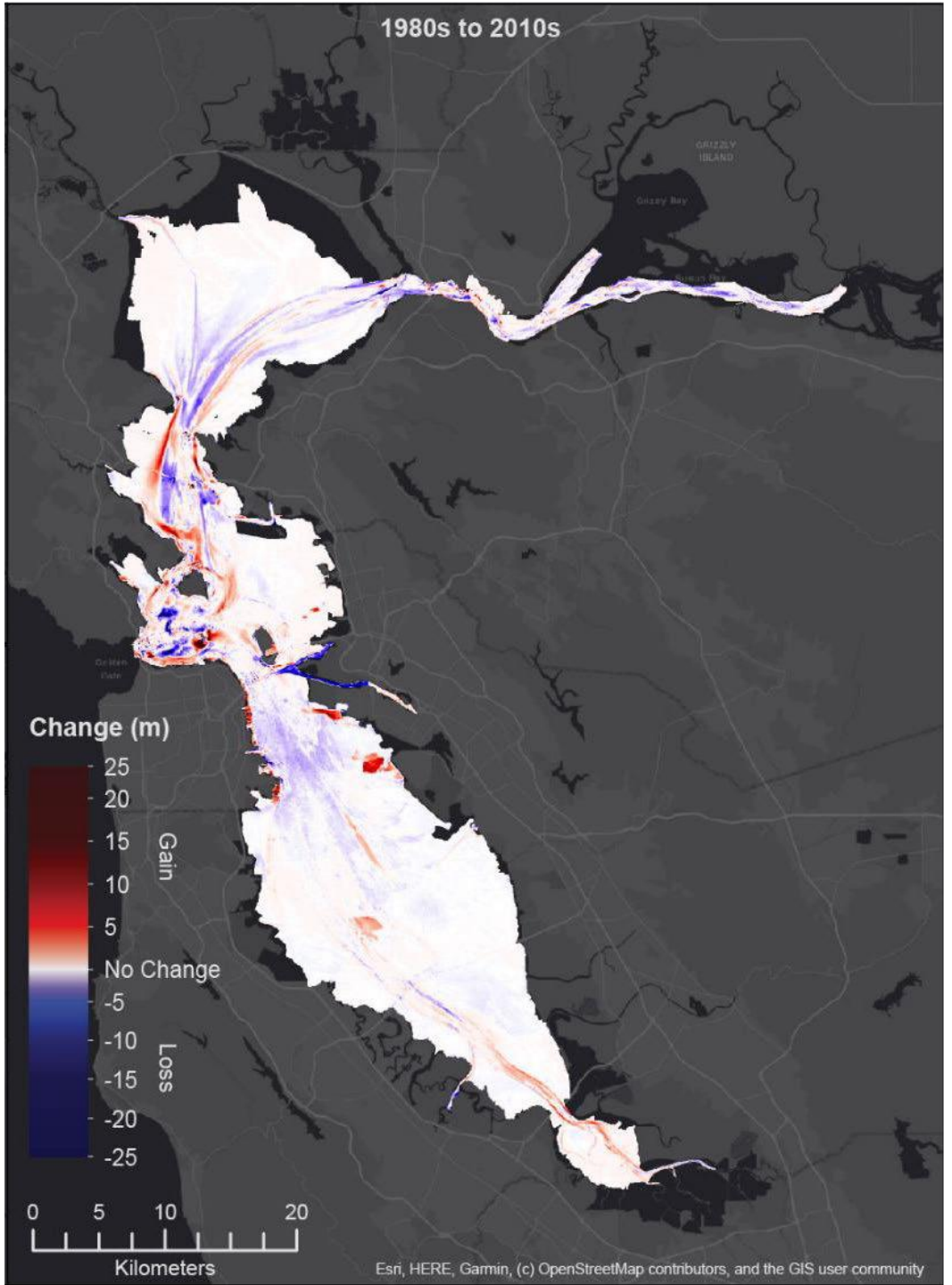


Changes in Bay Sediment Volume

Overall: Approximately 25 MCM loss
San Pablo Bay: 17 MCM loss
Central Bay: 3 MCM gain
South Bay: 10 MCM loss



Jaffee, B. et.al., USGS, 2021



How is our region is addressing this issue?

Regional Sediment Management = Management of coastal, estuarine, and riverine sediment within a system through balanced and sustainable solutions to sediment related needs.

Incorporates **all** sediment related activities:

- Navigation dredging
- Aggregate mining
- Reservoir and dam management
- Climate adaptation projects
- Flood protection and watershed management

Beneficial Reuse for Green Infrastructure

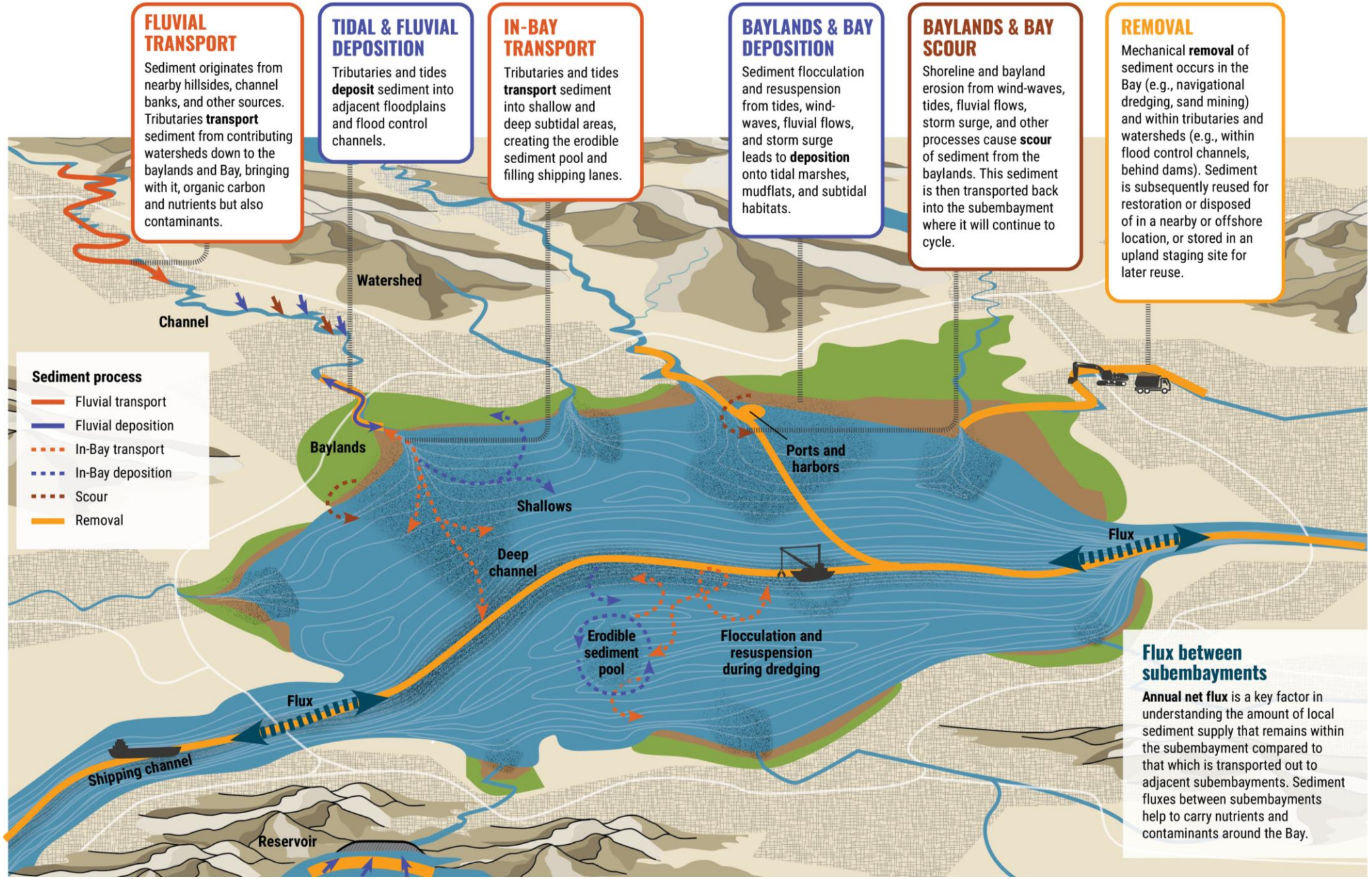
Beneficial Reuse = Turning would-be waste into a valuable commodity

Sediment & Soil

Dredging - navigation channels & flood protection channels

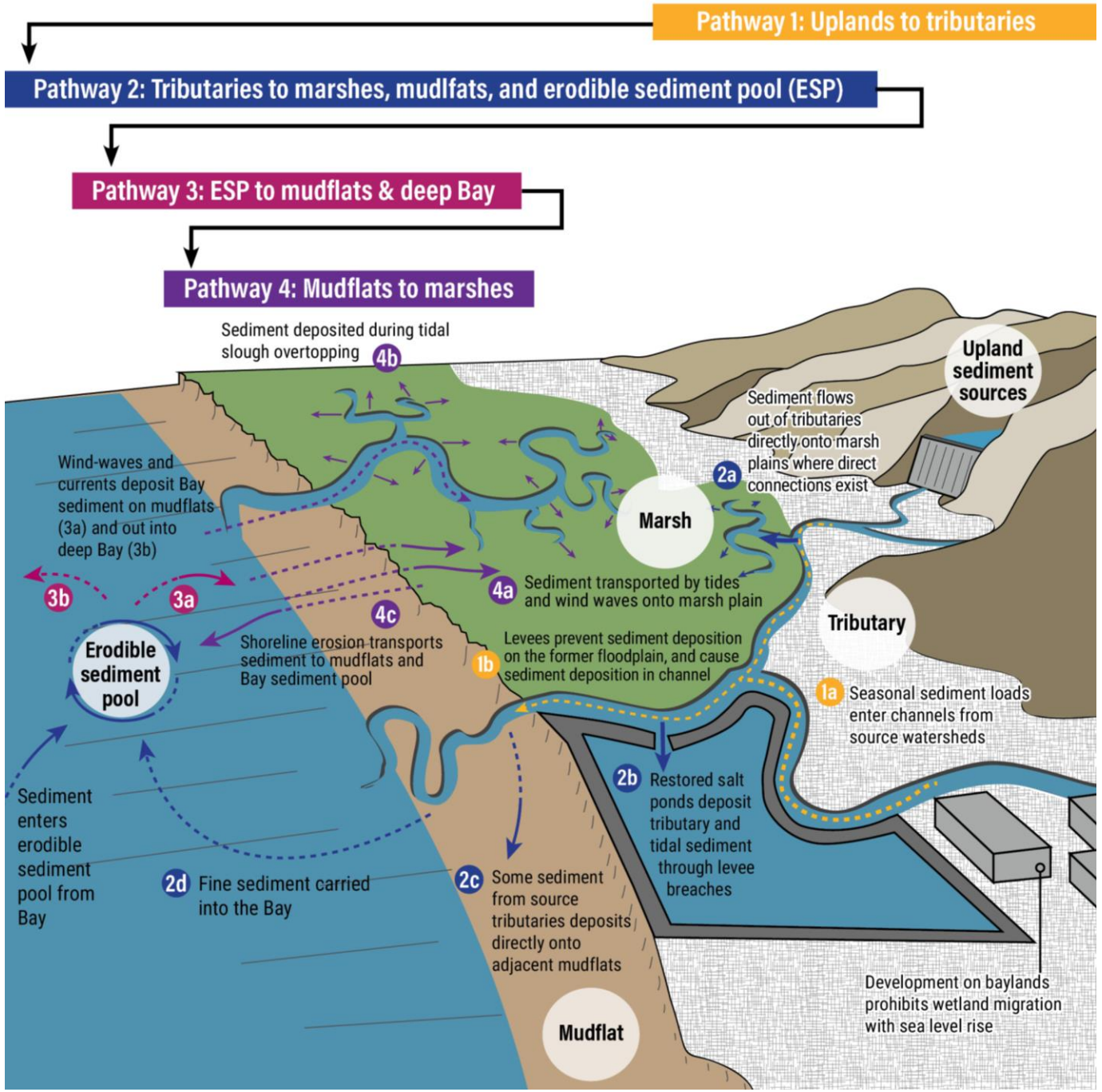
Upper watersheds - reservoirs, disconnected creeks

Excavated soils - construction



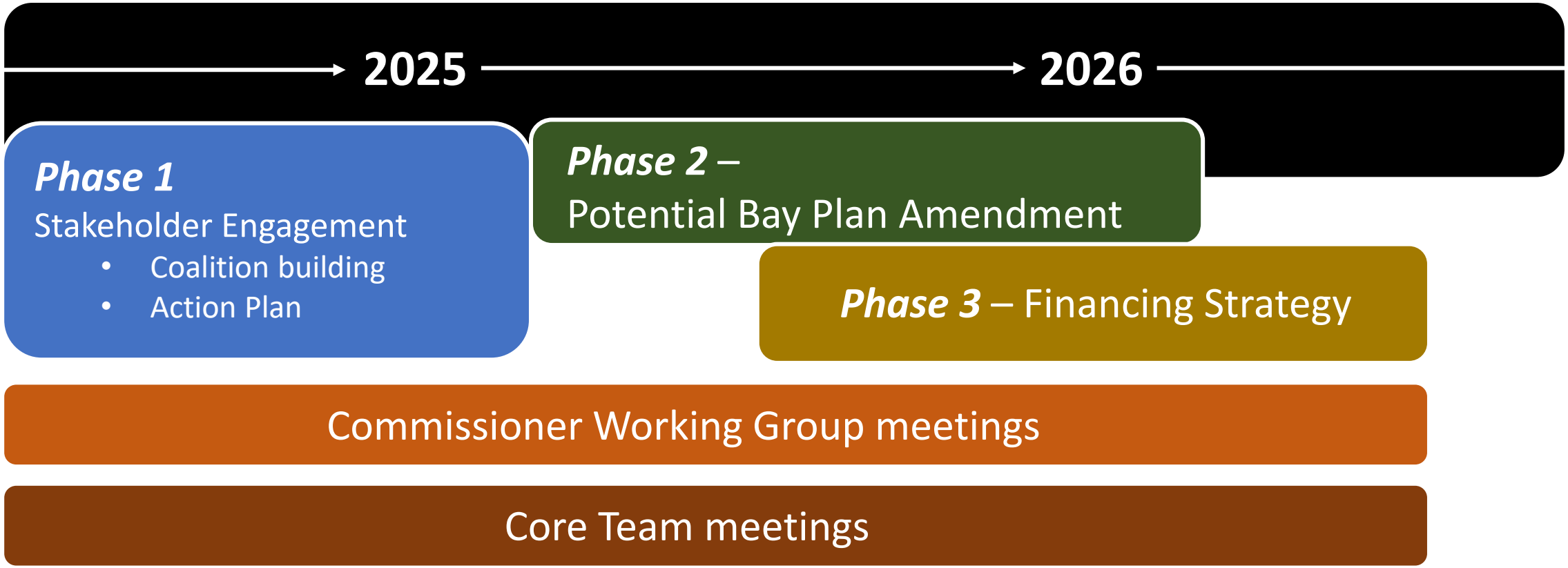
SFEI, Fine Grain Sediment Conceptual Model, in preparation

Sediment Transport Mechanisms to Marshes



SFEI, Fine Grain Sediment Conceptual Model, in preparation

SWAP Timeline & Working Groups



Sediment & Soil Sources

- Barriers
- Challenges
- Solutions

Action Development Process

1. Expert interviews
2. Core Team brainstorming
3. Initial matrix of issues and actions
4. 2-day workshop with breakout sessions
5. Sifting, sorting, and consolidating potential solutions

To be an action it had to…

- ***Be focused on increasing beneficial reuse of sediment and soil,***
- ***Be achievable in 1-5 years,***
- ***Have an Identifiable champion(s), and***
- ***Have regional support***

Goals

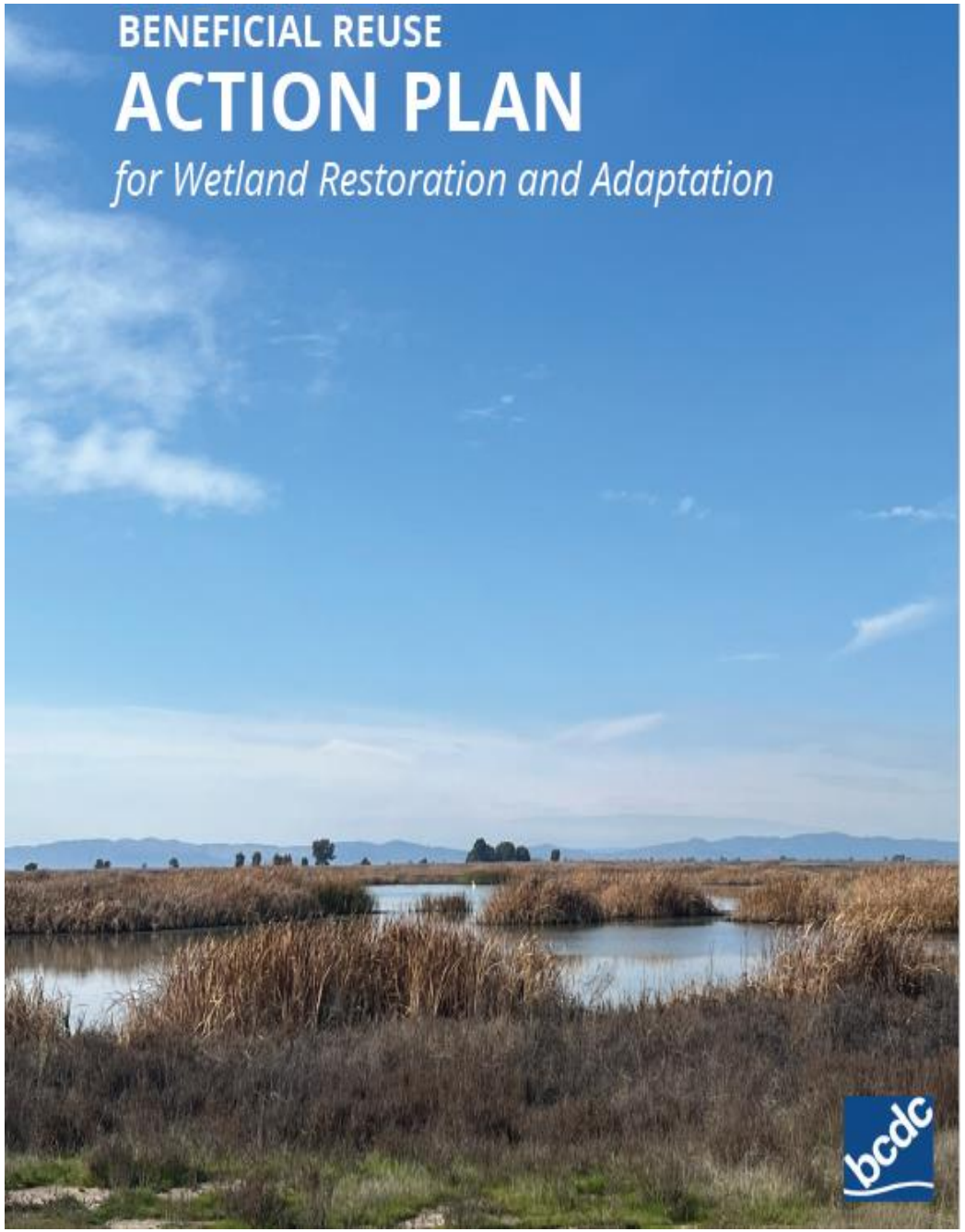
1. Expand and strengthen Partnerships

2. Site Identification and Preparation

3. Coordinate and Timing

4. Policies and Regulations

5. Funding



Principle 1. **Coordination and Collaboration** to organize the many entities working in this space.

Principle 2. **Meaningful Community Engagement** to ensure that communities around the Bay understand the positive and negative impacts of increased beneficial reuse of sediment, and to ensure communities have opportunities to provide input on restoration planning and decision-making about the use of sediment and soil.

Principle 3. **Environmental Stewardship** to support existing and restored wetlands as sea levels rise and adaptation becomes key.

Principle 4. **Transparency** to ensure that all stakeholders can track progress and provide input.

Principle 5. **Speed and Agility** because there is limited time to restore wetlands and capture available sediment and soil as sea levels rise.

Principle 6. **Capitalizing on Other Work** in this space and building off existing progress.

Issue Summary

Increasing beneficial reuse of sediment and soil requires expanded and strong collaboration. There is an established, interconnected, and well-coordinated network of partners that support beneficial reuse in the Bay Area, working to increase funding, reduce policy hurdles, and improve processes at the federal and regional level. The partnership has included federal and state agencies, and non-profit organizations representing the restoration and environmental community and construction (both marine and terrestrial) industry. The LTMS program has led to successful efforts to beneficially reuse navigation dredged sediment but is limited in scope and community. Regional partnership needs to grow to include leaders from more sectors of sediment management, including the private sector. This Action Plan includes a focus on building partnerships that will support the implementation and achievement of additional actions that remove barriers to beneficial reuse.

Objective 1.1: Align Regional Coordination and Action Plan Oversight

BCDC partnered with the San Francisco Estuary Institute, San Francisco Bay Joint Venture, San Francisco Bay Regional Water Quality Control Board, State Coastal Conservancy and U.S. Environmental Protection Agency to guide development of the Action Plan, and these entities will continue working together to track the Plan's implementation. Once a coordinated approach to implementation is established, this effort can be transformed and transferred to that forum. The objective of this set of actions is to align and create broader regional coordination and establish a partnership structure for implementation of the Action Plan.

Index #	Action	Status & *Champion(s)*
1.1.1	Convene a working group of agencies, restoration project sponsors, dredgers, and core stakeholders to explore and ultimately select a preferred implementation model and entity or entities to lead implementation of this Action Plan. The working group will provide direction to oversee this work and establish regular check-ins to track progress.	In progress *U.S. EPA and other partners*
1.1.2	Create an Action Plan tracking mechanism to document progress on focus areas and actions.	In progress *BCDC*
1.1.3	Explore the potential for a regional beneficial reuse coordinator to develop a better system to work with sediment and soil source providers and sites.	Not yet started *U.S. EPA and other partners*

Objective 3.3: Foster Outreach and Advocacy

Many entities are not familiar with the benefits of beneficially reusing sediment and soil as a tool for sea level rise adaption and habitat restoration, nor with the challenges of transporting these resources to a site. Some local entities may have concerns that need to be addressed. Creating partnerships between local governments, construction firms, and communities can help the region better understand beneficial reuse for restoration and sea level rise adaptation, potentially leading to the increased availability of material sources. This work could make sediment and soil reuse in wetland projects more efficient and effective by facilitating permitting and transportation, resolving property ownership issues, and alleviating concerns about construction impacts.

Index #	Action	Status & *Champion(s)*
3.3.1	Develop an outreach strategy targeting sediment and soil source managers so they gain greater insight into the need for additional sediment or soil, site-specific demands, and resource quality and quantity.	Not yet started
3.3.2	Continue advocacy to and education of stakeholders and the public on the connection between beneficial reuse and flood protection, and the need to increase funding and beneficial reuse.	In progress *U.S. EPA, USACE, and other partners*
3.3.3	Provide education, support, and guidance to project proponents and local governments on permitting, transport, and restoration/adaptation methods that beneficially reuse sediment and soil.	Not yet started
3.3.4	Improve communication and coordination between restoration projects, local agencies, flood protection managers, and private dirt brokers to create feedback opportunities, better partnerships, and incentivize beneficial reuse of sediment and soil over use of landfills and aquatic disposal.	Not yet started

Focus 1: Implementation and Regional Coordination

Objective 1.1: Align Regional Coordination and Action Plan Oversight

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1.1.2	Create an Action Plan tracking mechanism to document progress on focus areas and actions.	In progress *BCDC*
1.1.3	Explore the potential for a regional beneficial reuse coordinator to develop a better system to work with sediment and soil source providers and sites.	Not yet started *U.S. EPA and other partners*

Focus 2. Federal, State, and Regional Policy and Collaboration

Objective 2.3: Improve State & Regional Coordination

Index #	Action	Status & *Champion(s)*
2.3.1	In coordination with the Ocean Protection Council (OPC), the California Natural Resources Agency (CNRA), and the California Environmental Protection Agency (CalEPA), develop regional recommendations on a state-wide beneficial use policy and implementation structure. Work with other regions and state agencies to establish these beneficial reuse recommendations.	In progress *California Sediment Management Workgroup (CSMW), OPC, CalEPA*
2.3.2	Work with CNRA, CalEPA, other state agencies, and state legislators to develop a funding and state-wide legislation strategy focused on supporting beneficial reuse of sediment and soil for sea level rise adaptation, habitat benefits, and recreation. Formalize the existing coalition to pursue legislative approaches/opportunities in the interest of the San Francisco Bay region.	In progress *OPC, BCDC, Water Board, U.S. EPA, SCC*

Regional Planning and Evaluation

Objective 3.3: Foster Outreach and Advocacy

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Focus 6. Sediment and Soil Quality

Objective 6.1: Evaluate and Coordinate Testing Requirements for Upland/Flood Control Soil and Sediment

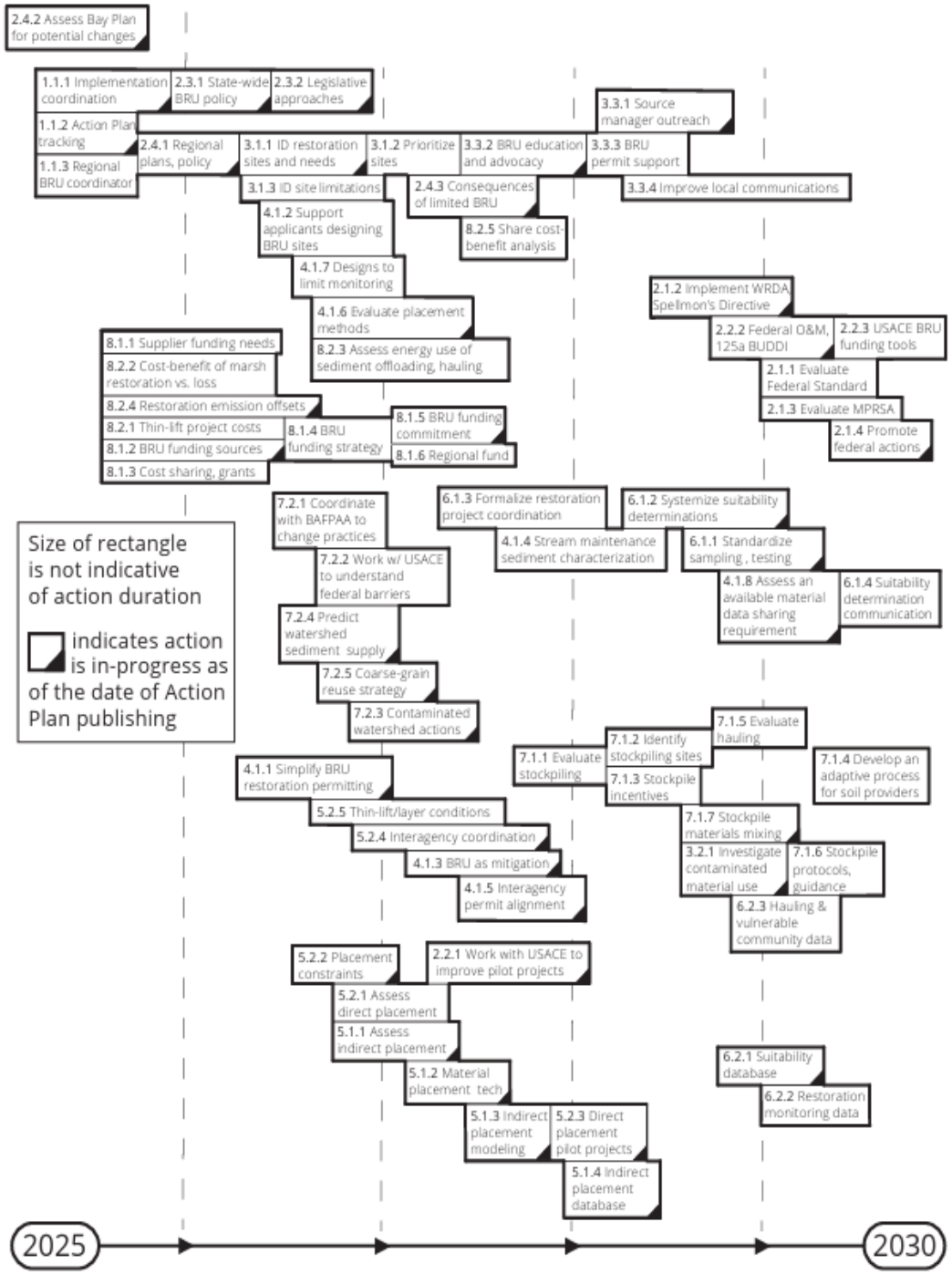
Index #	Action	Status & *Champion(s)*
6.1.1	Standardize sampling and testing protocols, as well as the acceptance criteria and guidance for beneficial reuse of (1) streambed and/or flood-channel maintenance sediment, and (2) construction soil to improve placement decision-making.	In progress *Water Board, BCDC, flood protection agencies, restoration practitioners*
6.1.2	Emulate DMMO process to construct a "tier-testing" system for suitability determinations among agencies managing flood control, stream maintenance, and construction soil. Identify grain size thresholds of sediment/soil above which sediment quality tests could be waived (i.e., sand, gravel). Seek agency consensus and document the known guidance for the region.	In progress *Water Board*
6.1.3	Formalize coordination between the LTMS/DMMO and the BRRIT and restoration projects to expand support for beneficial reuse of sediment and soil with their expertise.	Not yet started
6.1.4	Improve communication when further clarification of a suitability determination is needed. If necessary, consider developing technical documents that highlight specific concerns regarding flood protection and construction soil suitability for beneficial reuse.	Not yet started

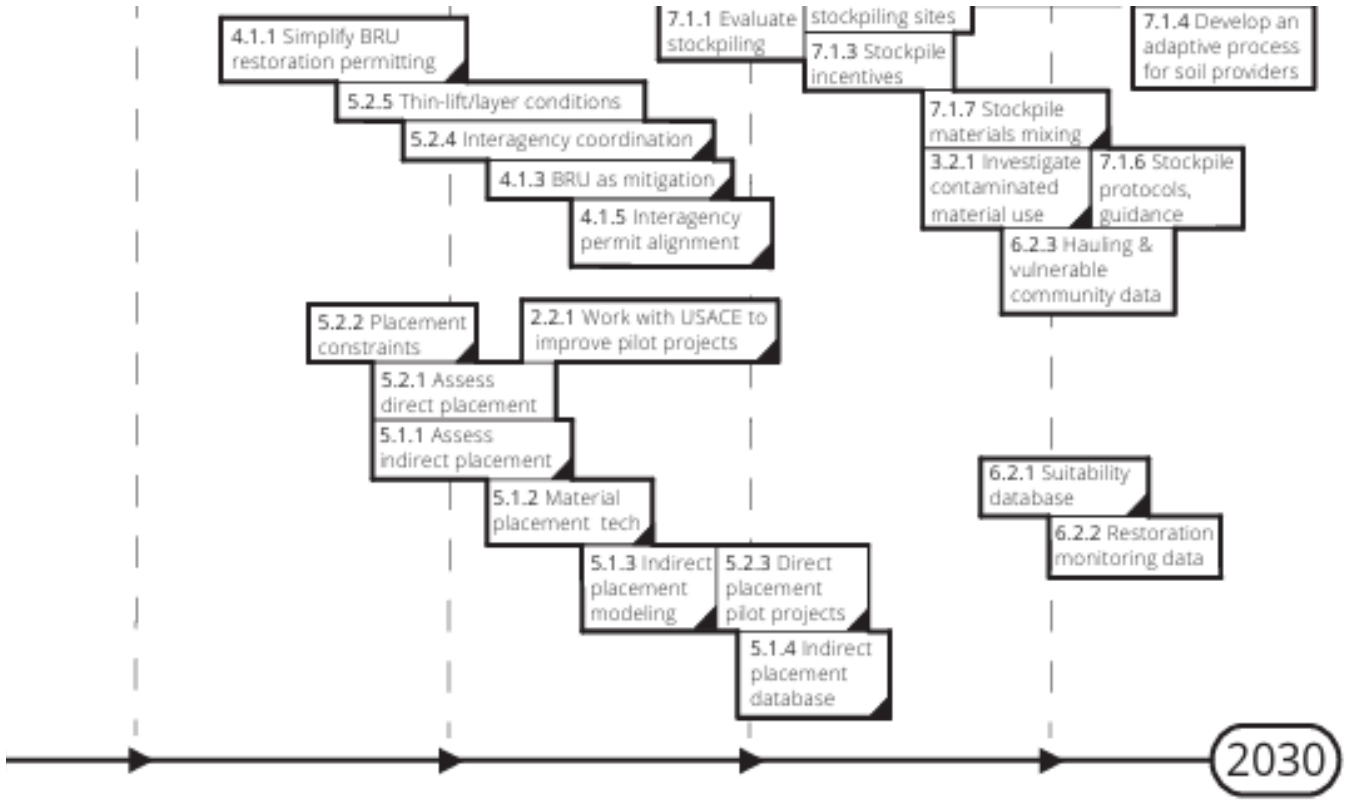
Focus 7. Coordination of Sediment and Soil Availability and Placement

Objective 7.1: Assess Land-Based Stockpiling Feasibility and Develop Management Procedures and Best Practices

Index #	Action	Status & *Champion(s)*
7.1.1	Evaluate the benefits and challenges of stockpiling available soil and sediment so that the timing of available materials may be decoupled from the need.	Not yet started
7.1.2	At the subregional level, identify available and potential stockpiling sites (both for construction and dredged materials) or a network of stockpiling sites near restoration sites for temporary, one-time, or long-term use. Prioritize areas that would minimize impacts to habitat, such as landfills or industrial sites. Investigate the potential for stockpiling at active and planned restoration sites. Consider documenting identified stockpiling sites in SediMatch.	Not yet started
7.1.3	Identify willing owners and operators/managers, including public agencies (public works, flood control agencies, and sanitary districts) of stockpile sites and collaborate with them on the development of "use incentives." Identify funding for purchasing or leasing sites.	Not yet started
7.1.4	Develop an adaptive process for construction soil providers that supports testing, screening, and hauling dirt to stockpile areas or restoration sites. Investigate, document (via guidance), and share successful model agreements, liability transfers, and best practices between soil providers and restoration sponsors.	Not yet started
7.1.5	Work with construction companies to identify best haul routes and practices, analyze hauling impacts associated with upland soil delivery to beneficial reuse sites (traffic, air quality, greenhouse gases, road conditions, recreational facilities, etc.), and evaluate appropriate haul distances from restoration site to source material.	Not yet started
7.1. 6	Create and document clear protocols and guidance for how stockpile sites should be encouraged to be managed and operated to ensure regulatory issues are addressed, permitting can occur efficiently, and habitat harm is minimized.	Not yet started
7.1.7	Assess feasibility of sorting and mixing stockpiles to improve management, quality, and use of sediment/soil. Develop a regional strategy and protocols to support implementation of materials mixing if determined feasible.	In progress *Water Board, BCDC, SBSP*

Suggested Action Prioritization





San Francisco Bay Plan

- Guides the review of projects under the McAteer-Petris Act
- Policies related to:
  - Protection of the Bay as a Resource
  - Development of the Bay and Shoreline
- Policies are updated periodically

Bay Plan Cover (Source: BCDC)

Financing Strategy

- Research, evaluate & document costs
- Research, evaluate, & document potential funding opportunities
- Assess and document benefits of wetland restoration and beneficial reuse
  - Convert to monetary value?
- Work with Financing the Future Working Group to identify non-traditional funding strategies
- Create a financing strategy for beneficial reuse and habitat restoration

Questions / Discussion

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Photo: King Tides Project (N San Mateo Road, Marin)