

# San Francisco Bay Sediment for Wetland Adaptation Project

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Item 10B

SF Bay Conservation and Development Commission  
Regional Sediment Management Program



# Presentation Overview

## What's the issue?

- Sea level rise means greater need to support wetland adaptations
- Prioritizing sediment and soil reuse for wetlands
- Regional sediment management efforts

## Sediment for Wetlands Adaptation Project

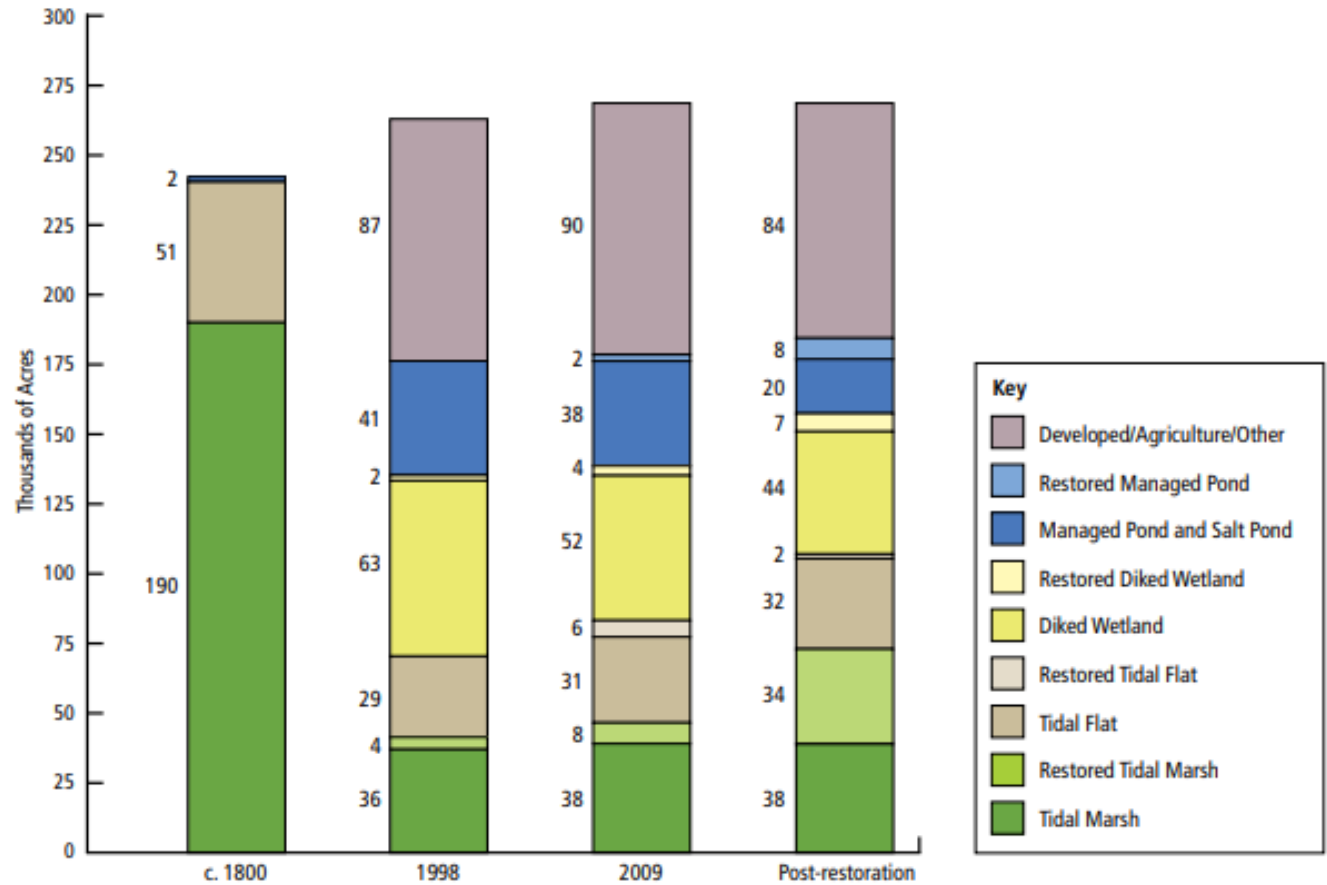
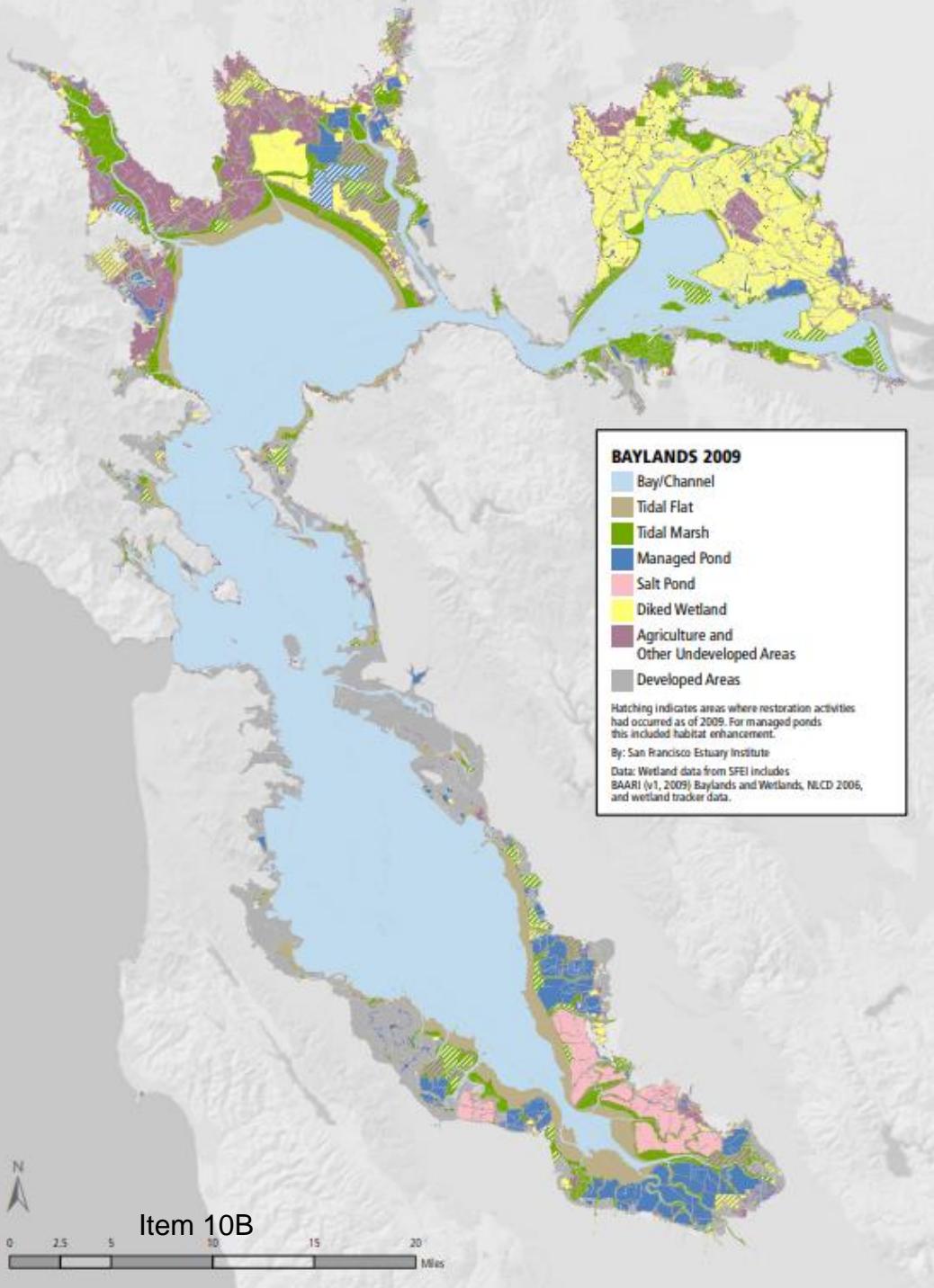
- Structure of project
- Current activities
- Stakeholder workshop

### **Project Objectives:**

- Increased Collaboration
- Sediment to Wetlands Roadmap
- Possible Policy Changes
- Financing Strategy

# What's the Issue?

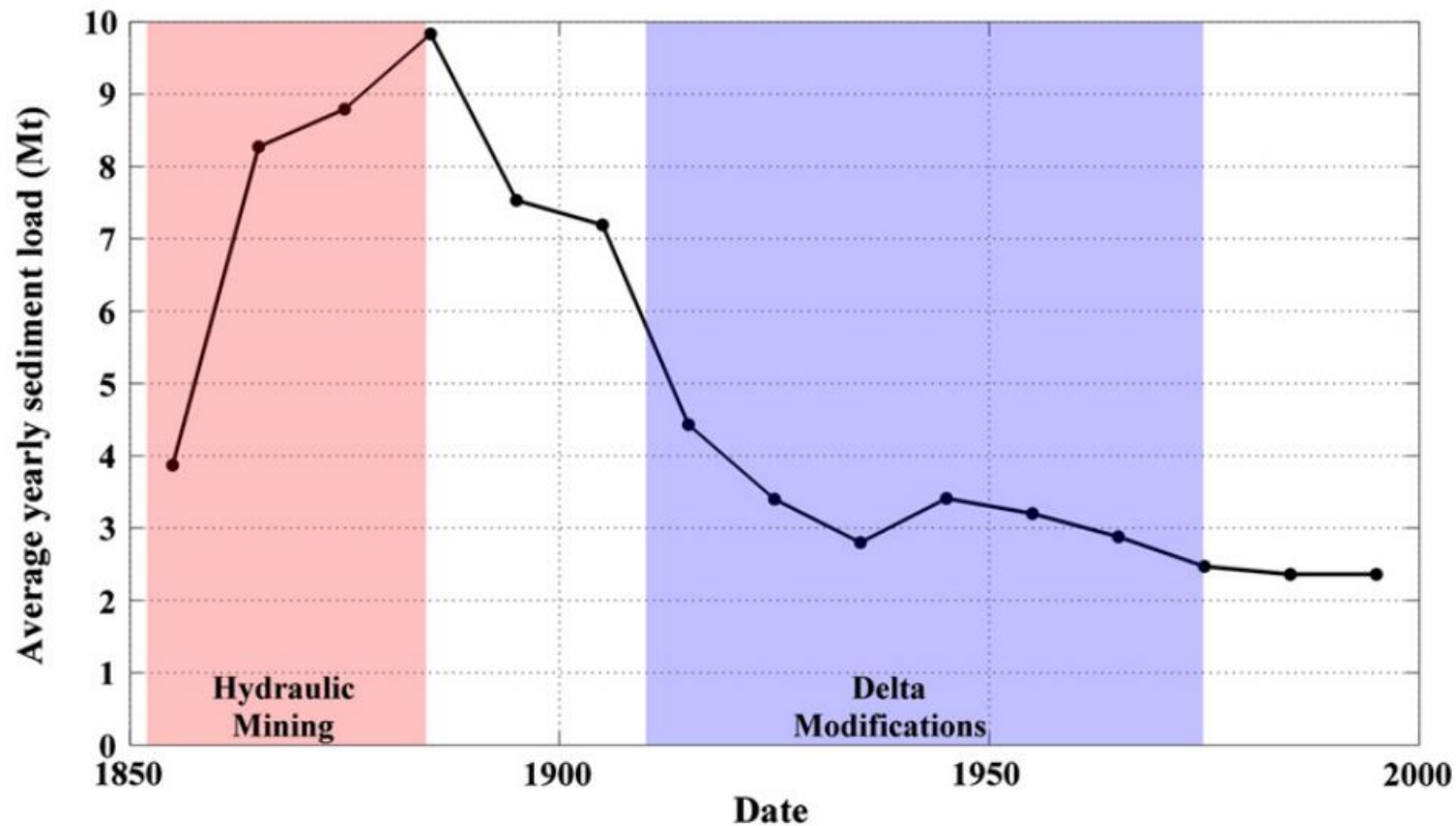
# Wetlands of the Bay Area



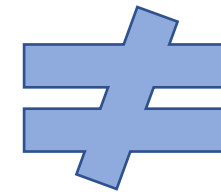
Goals Project,, California State Coastal Conservancy, 2015



# Sediment as a Critical Bay Area Resource



Natural Sediment Supply  
to SF Bay



Sediment Needed by  
Baylands and Planned  
Wetland Restoration  
Projects

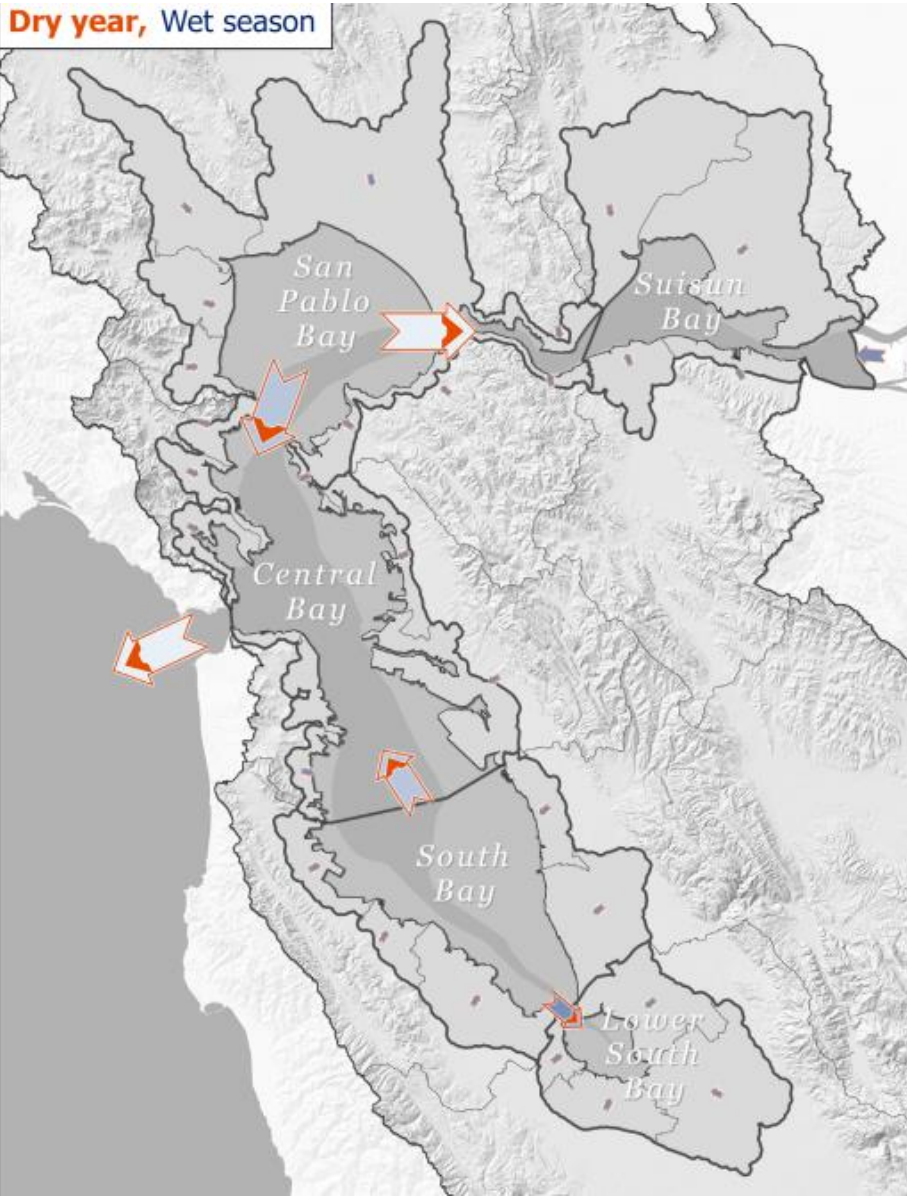
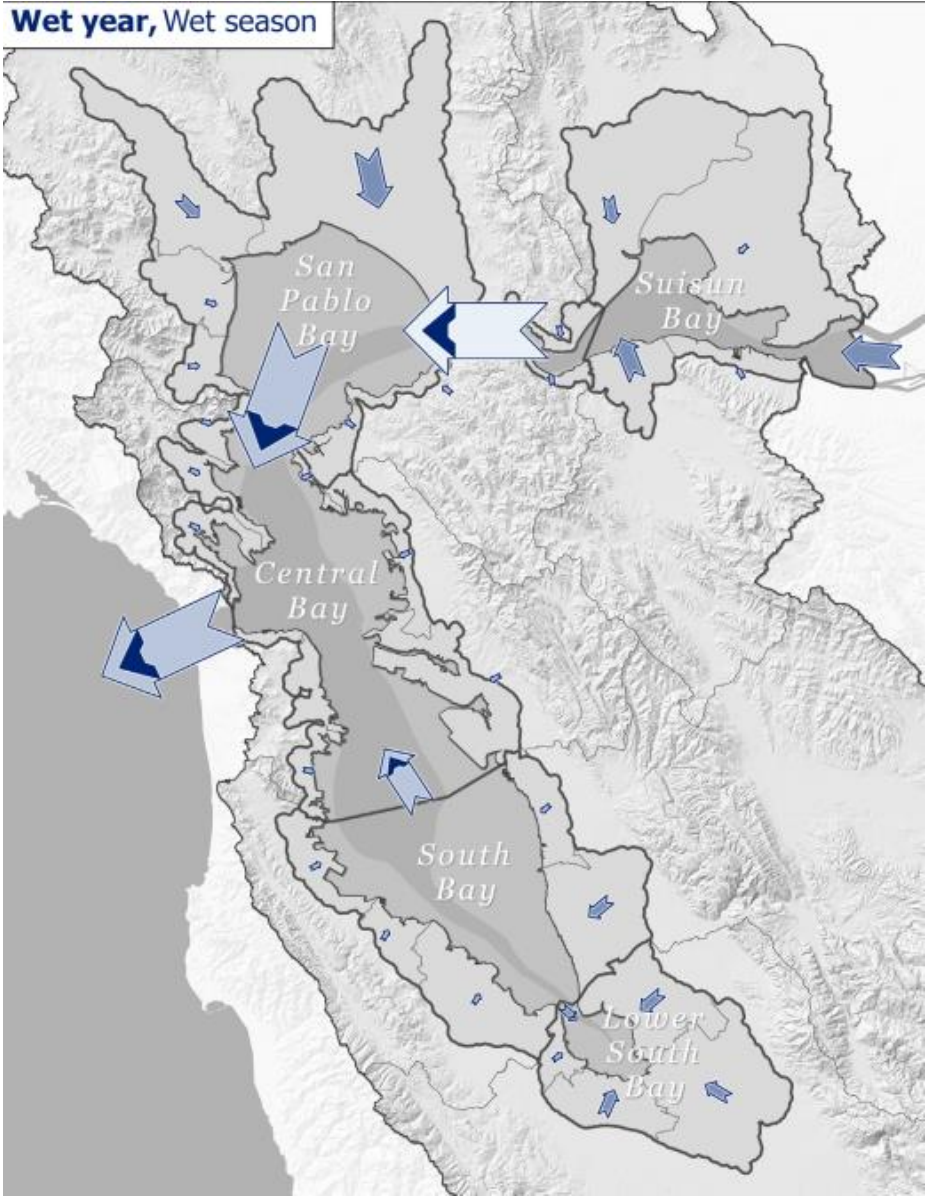
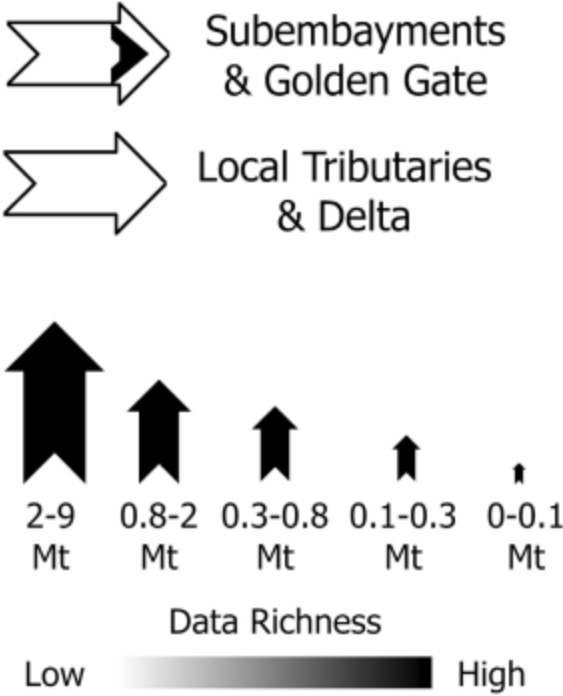
P.L. Barnard et al., Marine Geology 345, 2013

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# Current Conditions of Sediment Movement

## Average Net Flux During Wet Season



# Beneficial Reuse for Green Infrastructure

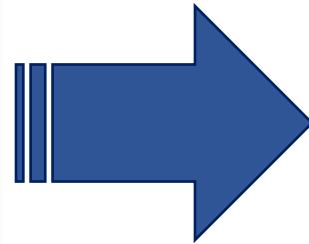
Beneficial Reuse = Turning would-be waste into a valuable commodity

## Sediment & Soil

**Dredging** - navigation channels & flood protection channels

**Upper watersheds** - reservoirs, disconnected creeks

**Excavated soils** - construction





# How is our region is addressing this issue?

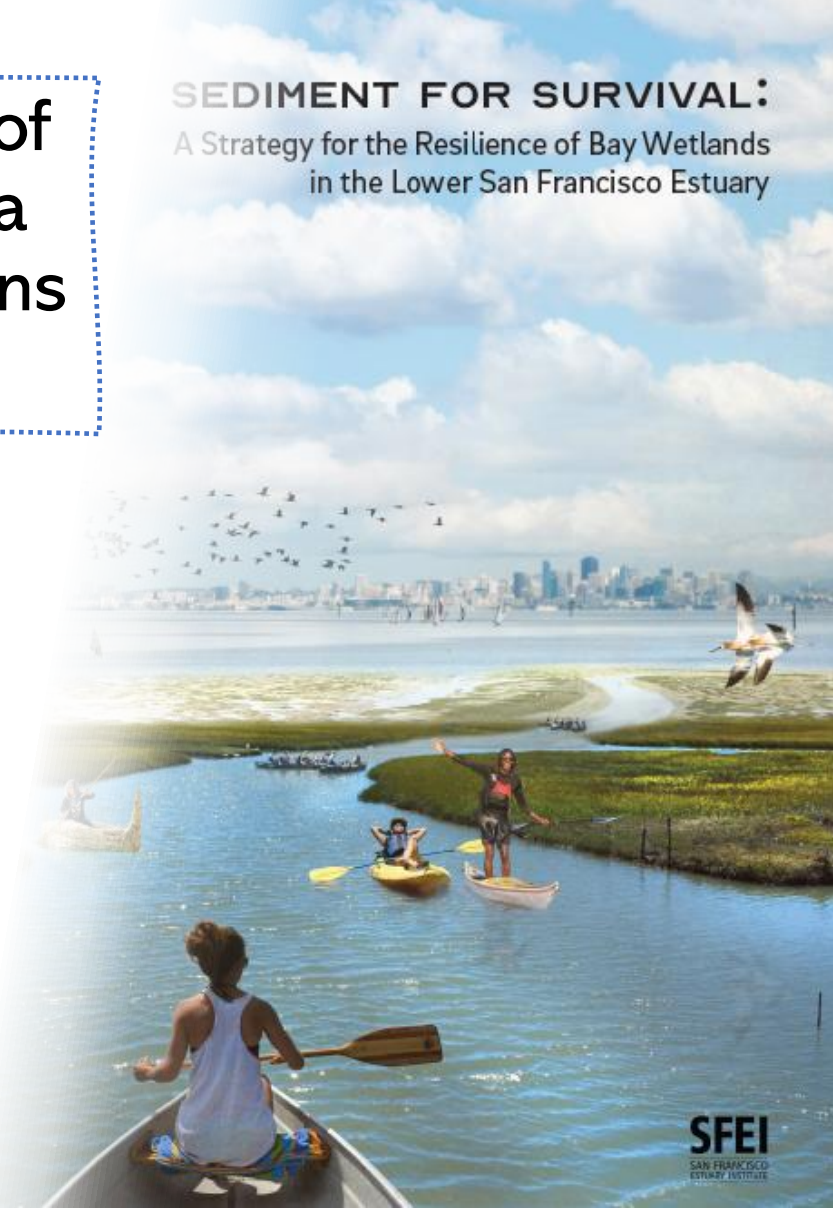
**Regional Sediment Management = Management of coastal, estuarine, and riverine sediment within a system through balanced and sustainable solutions to sediment related needs.**

**Incorporates all sediment related activities:**

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

## **SEDIMENT FOR SURVIVAL:**

A Strategy for the Resilience of Bay Wetlands  
in the Lower San Francisco Estuary





# Sediment for Wetland Adaptation Project

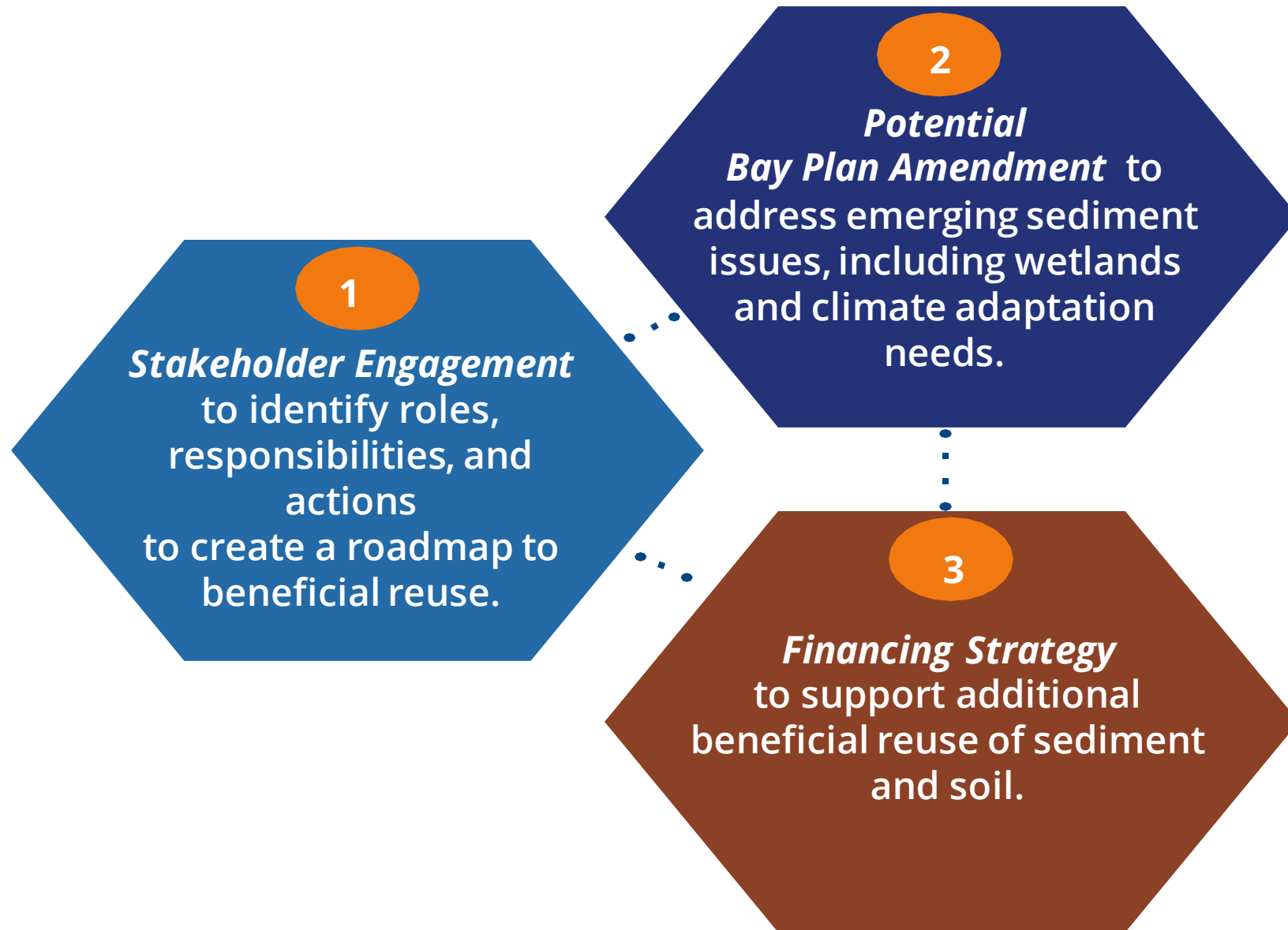
# Sediment for Wetland Adaptation Project



## Goal:

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

# Three Project Phases





# Current Project Activities

## Project [webpage](https://www.bcdc.ca.gov/swap/Sediment-for-Wetland-Adaptation-Project.html)

- Factsheet
- Workplan with tasks
- Grant details
- Issue papers

## BCDC Commissioner Working Group

- Upcoming public meetings:
  - November 17
  - January 19

## Inter-agency Core Team Workshop preparations

**San Francisco Bay**  
**SEDIMENT FOR WETLAND ADAPTATION PROJECT**

Wetland restoration is needed to protect the San Francisco Bay ecological habitat and its vibrant shoreline communities from flooding due to sea level rise and storms. Funded by the U.S. Environmental Protection Agency and the Ocean Protection Council, the San Francisco Bay Area **SEDIMENT FOR WETLAND ADAPTION PROJECT** will investigate the management, funding, and policy challenges of restoring Bay wetlands through reuse of soil and sediment and propose new policies to ensure Bay wetlands and shorelines keep pace with sea level rise.

**Project Background**  
Two hundred years ago, vast wetlands lined the shoreline of San Francisco Bay. Wetlands provide natural habitat for a diverse array of fish and wildlife between the Bay and uplands. They also absorb flood waters, improve water quality, and buffer waves along the shoreline. By the 1950s, however, 80% of these wetlands were destroyed due to diking and draining of the San Francisco Bay primarily for agricultural, industrial, and commercial purposes. Today, large areas of subsided lands ring the Bay where marshes used to exist.

To ensure that existing Bay wetlands and shorelines persist in light of sea level rise and decreased sediment supply, there must be enough sediment delivered and retained on tidal marshes and mudflats. Over time, if the natural sediment supply is not enhanced or supplemented, it is predicted that wetlands will not keep up. According to San Francisco Estuary Institute's 2021 Sediment for Survival Report, between 450 and 650 million cubic yards of sediment and soil would be needed to restore and sustain the Bay's wetlands in the face of sea level rise through 2100. Some prospective wetland restoration sites will require a large volume of sediment just to raise the site elevations to an appropriate level relative to the tides to promote marsh plant establishment and channel development. All restored and existing wetland habitats will likely need infusions of sediment to keep up with rapidly rising seas. Additional material will be needed to adapt the Bay shoreline to protect communities, infrastructure, parks, and natural areas from a rising bay.

*"Between 450 and 650 million cubic yards of sediment and soil would be needed to restore and sustain the Bay's wetlands in the face of sea level rise through 2100."* — San Francisco Estuary Institute Sediment for Survival Report (2021)

**Exploring Solutions**  
The Bay is regularly dredged to remove sediment and maintain the region's waterways for commercial, military, flood control, and recreational purposes. A portion of this dredged sediment is used to help restore wetlands, while the rest is treated as a waste product and disposed of in the Bay or deep ocean, but more of this dredged sediment could be used beneficially. Sediment dredged from Bay tributaries and flood protection channels can contribute to restoration of wetlands and be used for other sea level rise adaptation purposes, as can sediment trapped in upper watersheds, behind reservoirs and dams, and soil excavated during construction projects.

Facilitating the movement of the supplemental sediment supplies will require coordination, collaboration, and mobilization from a coalition of like-minded people working together to move the issue forward.

**Our Process**  
The San Francisco Bay Conservation and Development Commission (BCDC) has received funding to improve coordination, funding, and policies around sediment and soil issues. The project includes three phases focused on increasing beneficial reuse of sediment and soil for wetland habitat restoration, resilience, and sea level rise adaptation in the Bay Area.

**Collaboration is Key**  
BCDC is partnering with the San Francisco Estuary Institute, San Francisco Bay Joint Venture, San Francisco Bay Regional Water Quality Board, State Coastal Conservancy and U.S. Environmental Protection Agency on this project. Together, along with scientists, environmentalists, dredgers, community and business leaders, and more, these agencies will create a shared vision on how to harness the power of sediment reuse in the Bay Area.

**How to Get Involved**  
The benefits of this **SEDIMENT FOR WETLAND ADAPTATION PROJECT** will be seen by communities and the environment for generations to come. Your input and engagement will help ensure the project's success. BCDC hosts Commissioner Working Group meetings every other month, where you can listen, learn, and voice your opinions. There will also be public workshops. To be added to the contact list, stay informed about progress, and learn about upcoming opportunities to get involved, please contact:  
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SAN FRANCISCO BAY CONSERVATION & DEVELOPMENT COMMISSION

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**EPA** | **SFEI** | **AQUATIC SCIENCE CENTER**  
SAN FRANCISCO ESTUARY INSTITUTE & THE AQUATIC SCIENCE CENTER

**CALIFORNIA Water Boards** | **SAN FRANCISCO BAY JOINT VENTURE** | **Coastal Conservancy**

# Stakeholder Workshop

## Details:

- January 23 and February 13, 2024
- Pre-workshop reading materials: issue papers (under development)

## Goals:

- Build coalition of stakeholders
- Identify roles, responsibilities, and actions

## Objectives:

- Create a **Sediment to Wetlands Roadmap**





# Questions / Discussion



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Item 10B



Photo: Eden Landing