CLIMATE CHANGE (D): WEATHERING EXTREMES *TOGETHER*
MODULE 2

SEA LEVEL RISE AND FRESHWATER DROP

Jessica Davenport,
State Coastal Conservancy/San Francisco Bay Restoration Authority

NBWA
NORTH BAY WATERSHED ASSOCIATION

Climate Resilience: Let's Do This!

Weathering Extremes Together
North Bay Watershed Association Conference
April 8, 2022

Jessica Davenport
Deputy Program Manager, SF Bay Area Program

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Coastal Conservancy
STATE of CALIFORNIA

Goal of 100,000 Acres of Healthy Tidal Marshes

22,000 acres
Additional acquisition/ restoration to reach goal

25,000 acres
Protected/planned for marsh restoration

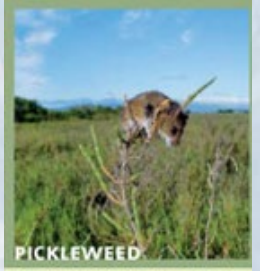
13,000 acres
Wetlands restored to tides since 2000

40,000 acres
Healthy tidal marsh as of 2000

Graphic: Save the Bay

Why Restore Bay Habitats?

- Home for hundreds of fish and wildlife species
- Filter for pollutants
- Outdoor recreational opportunities
- Flood protection by reducing wave energy
- Carbon sequestration



Sea Level Rise Threats

- Much of the San Pablo Baylands will be flooded by 2050
- Highway 37 already floods frequently

Growing Impacts

- Flood damage to communities
- Loss of low-lying shoreline roads, parks, and trails
- Loss of tidal wetlands

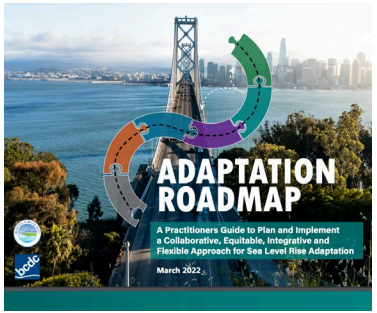
What if doing what we've been doing could help us adapt to sea level rise?

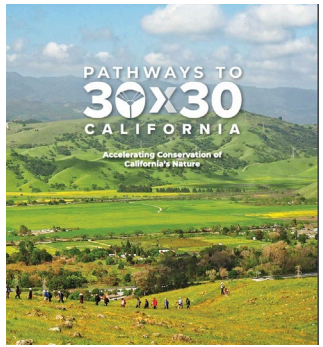
- Restoring tidal wetlands and other shoreline habitats
- Connecting people with nature
- Learning to collaborate on projects

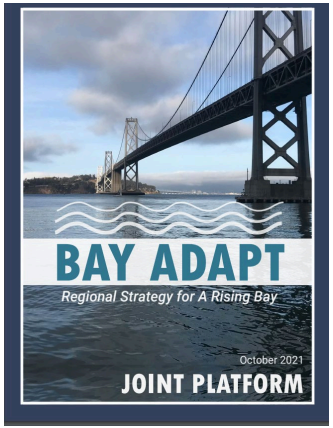
Let’s keep doing it AND commit even more to equity and resilience

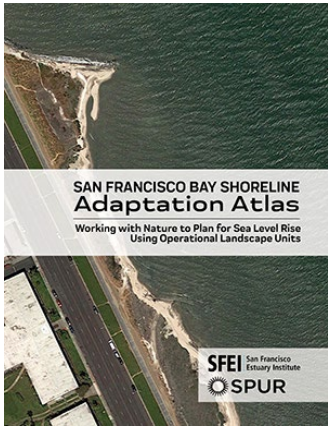
Planting Justice, Oakland


Marin City Climate Resilience and Health Justice





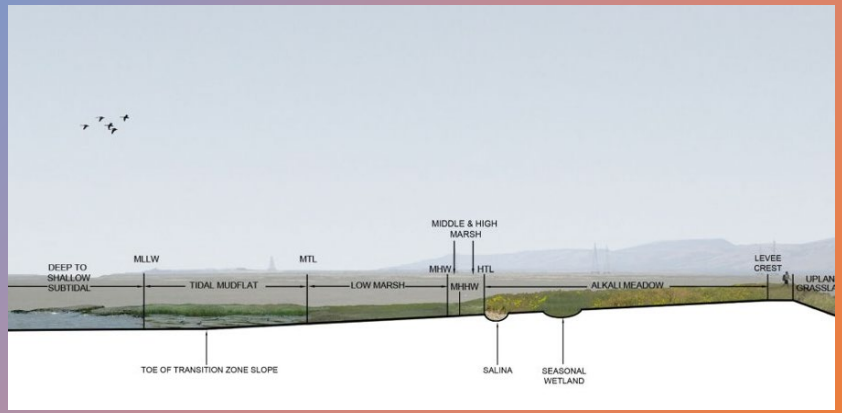




State and Regional Priorities and Guidance

Coastal Conservancy Climate Resilience Funding Priorities

- Nature-based climate adaptation
- Under-resourced communities
- Projects that can serve as models
- Projects that move needle on coastal resilience



South SF Bay Shoreline Project Ecotone Levee

Oro Loma Horizontal Levee

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Regional Opportunities

- **South Bay:** Greatest acreage of tidal marsh restoration underway
- **North Bay:** Greatest potential for additional tidal marsh restoration acreage
- **Central Bay:** Greatest opportunities for living shorelines and benefits to economically disadvantaged communities

What can the North Bay learn from the South Bay?

- **South Bay Salt Pond Restoration Project**
  - Will restore over 15,000 of acres of salt ponds to tidal wetlands and other habitats
  - Based on a 50-year vision
  - Led by an executive project manager
  - Ongoing research to support adaptive management, include SLR adaptation

San Pablo Baylands Collaborative: Shared Vision and Projects

- State Route 37-Baylands Group built on long history North Bay conservation partnerships
- Weaving together a landscape ecological vision for the 40,000-acre San Pablo Baylands
- Could benefit from executive project manager and adaptive management program

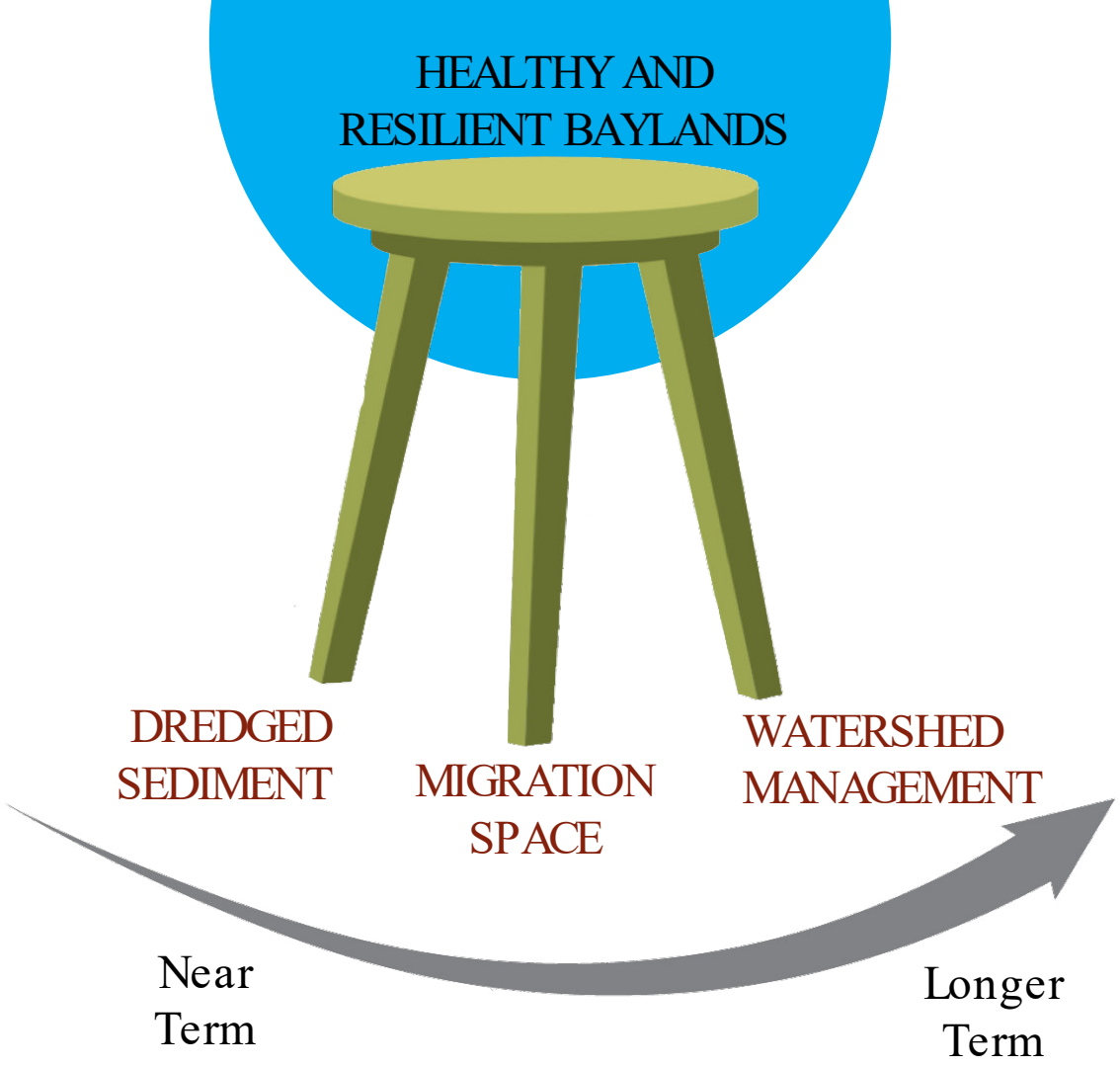
Message: Integrate, Don’t Mitigate

Integrate **infrastructure improvements** for SR 37 with existing and future **habitat** planning, conservation and restoration to ensure **healthy ecosystem function** and **resilience** to landscape scale change of the San Pablo Bay.

Result

Sediment Component

Timing



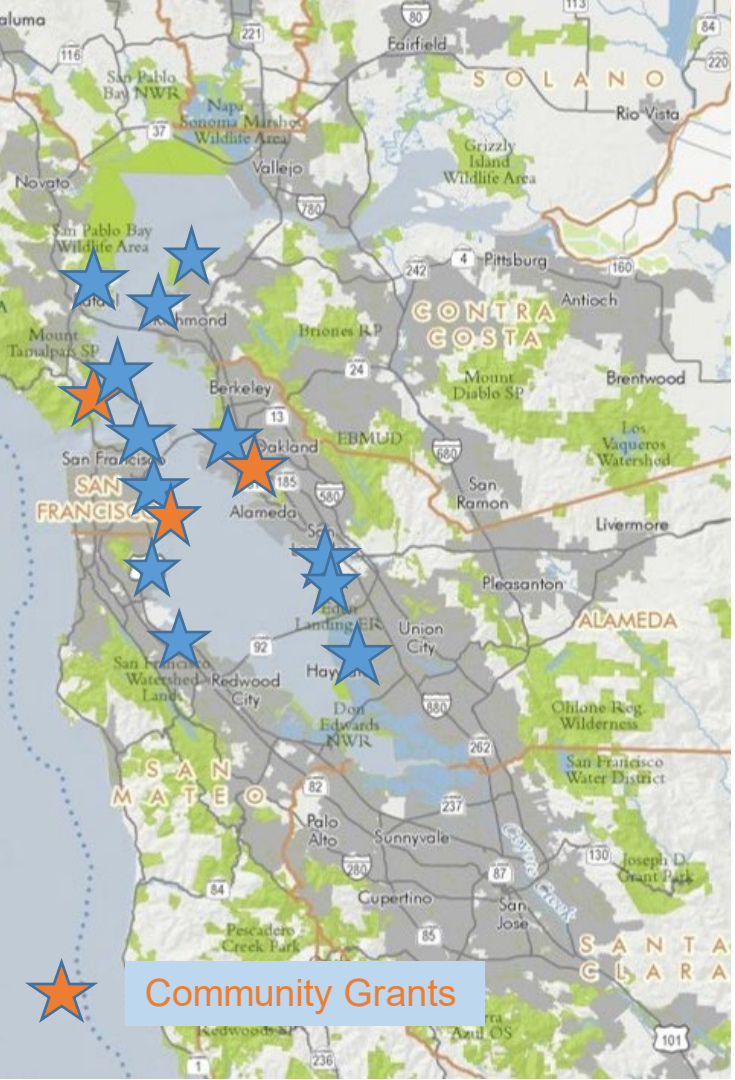
Source: Sediment for Survival, San Francisco Estuary Institute, 2021.

Reconnecting Creeks to Baylands: South Bay

- Reconnect Calabazas and San Tomas Aquino Creeks to Pond A8
- Deliver sediment to from flood control channels to tidal marshes

Reconnecting Creeks to Baylands: North Bay

- Reconnect Coyote Creek to Bothin Marsh
- Realign Bay Trail to perimeter of Marsh



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Meanwhile, in the Central Bay…

- San Rafael: Tiscornia Marsh Restoration and SLR Adaptation Project
- Marin City: Transforming an Urban Wetland
- Tiburon: Greenwood Gravel Beach
- San Francisco: Heron's Park Shoreline Resilience Project, India Basin Shoreline Park (900 Innes), and Candlestick Point Stewardship Project
- South San Francisco: Colma Creek Restoration and Adaptation
- Burlingame: Shoreline Park
- Richmond: North Richmond Living Levee Project and Terminal Four Wharf Removal
- Oakland: Oakland Shoreline Leadership Academy and Bay Restoration: Youth Engagement and Service Learning in East Oakland
- San Leandro: Treatment Wetland for Shoreline Resiliency and Long Beach Restoration
- Hayward: Restore Hayward Marsh

Living shorelines use plants or other natural elements—sometimes in combination with harder shoreline structures—to stabilize estuarine coasts, bays, and tributaries.

One square mile of salt marsh stores the carbon equivalent of **76,000 gal of gas** annually.

Marshes trap sediments from tidal waters, allowing them to **grow in elevation** as sea level rises.

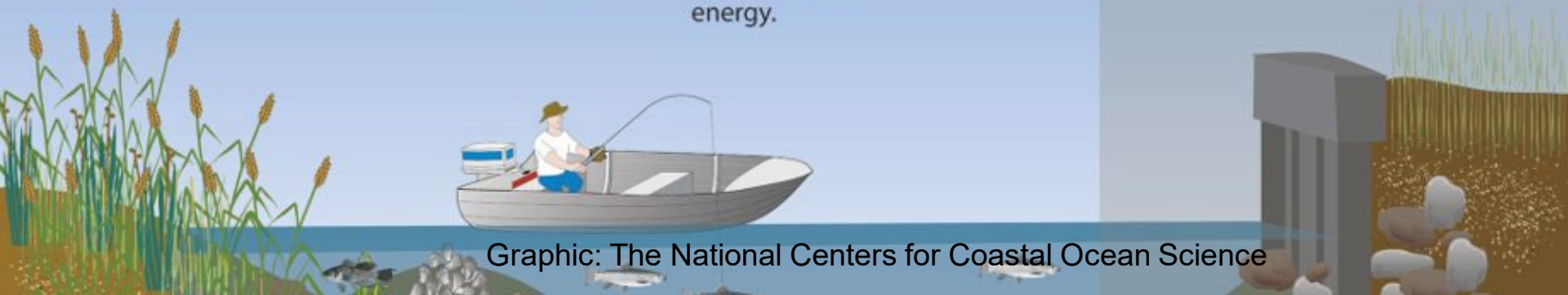
Living shorelines improve **water quality**, provide fisheries **habitat**, increase **biodiversity**, and promote **recreation**.

Marshes and oyster reefs act as natural **barriers** to waves. **15 ft** of marsh can **absorb 50%** of incoming wave energy.

Living shorelines are **more resilient** against storms than bulkheads.

33% of shorelines in the U.S. will be **hardened** by **2100**, decreasing fisheries habitat and biodiversity.

Hard shoreline structures like **bulkheads** prevent natural marsh migration and may create seaward **erosion**.



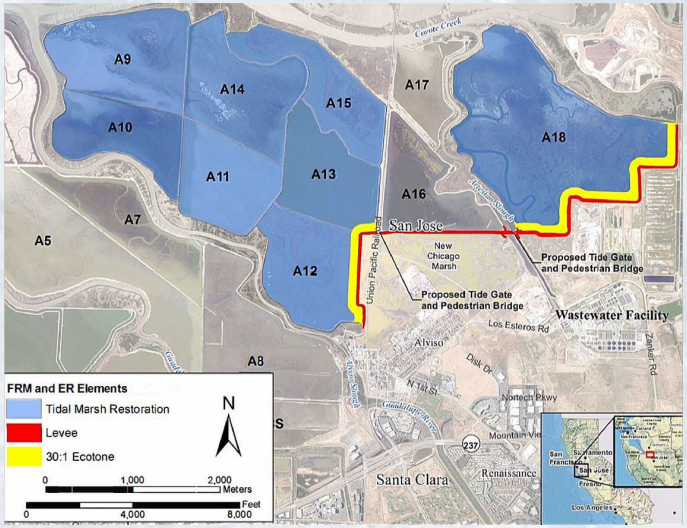
Graphic: The National Centers for Coastal Ocean Science

Living Shorelines in SF Bay

- Oyster reefs
- Eelgrass bed and tidal marsh restoration
- Coarse beaches

Bringing it all together…

South San Francisco Bay Shoreline Project



Both include:

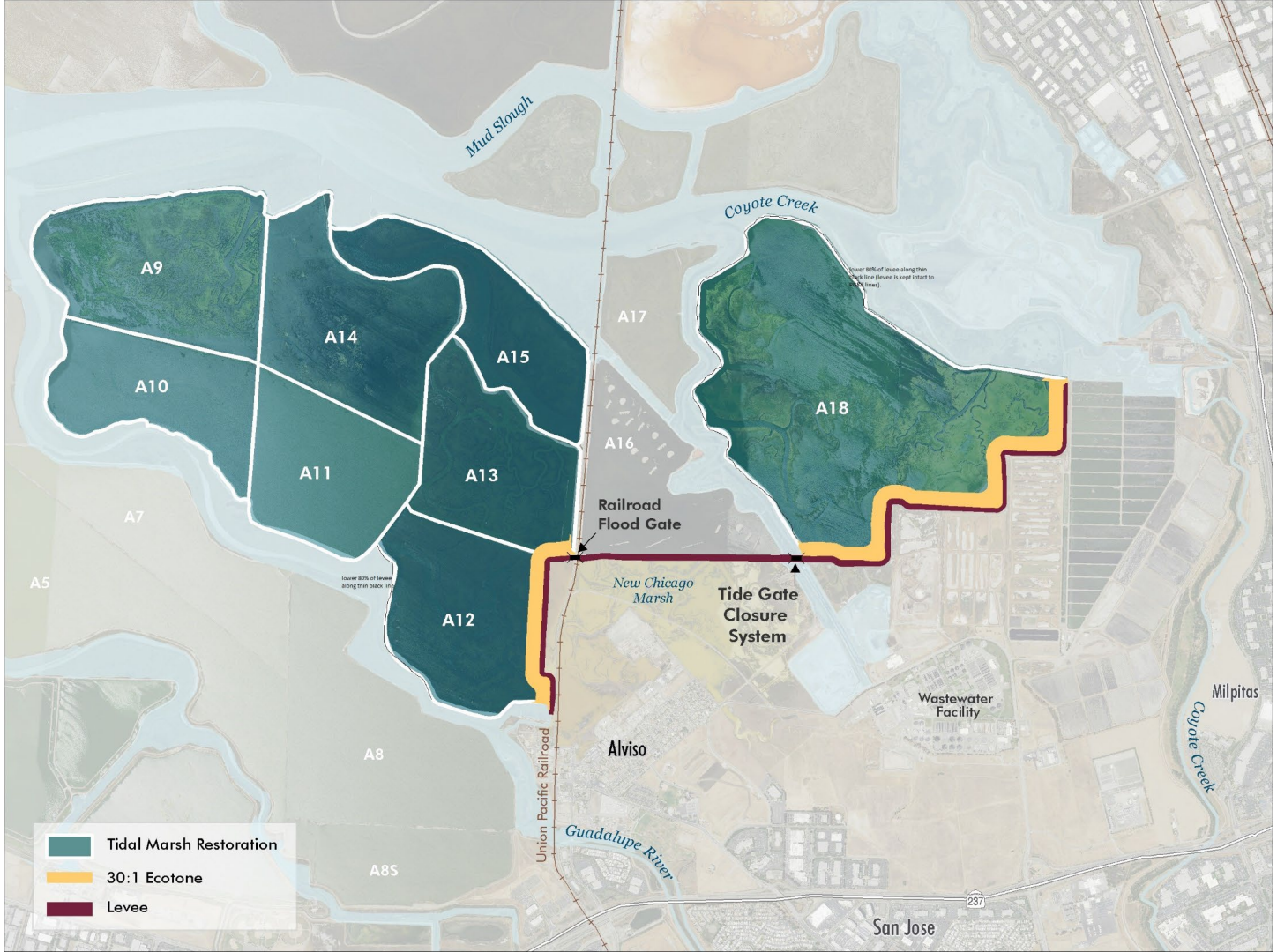
- Habitat restoration
- Adaptation to sea level rise
- Public access
- Benefits to economically disadvantaged communities

Tiscornia Marsh Restoration and Sea Level Rise Adaptation Project

Alviso, 1983

South Bay Shoreline Project

Partners: USACE, Valley Water, Coastal Conservancy, USFWS, and more


Mud Slough
Coyote Creek
A9
A14
A15
A10
A11
A13
A12
A17
A16
A18
A7
A5
A8
A8S
Railroad
Flood Gate
New Chicago
Marsh
Tide Gate
Closure
System
Wastewater
Facility
Milpitas
Coyote Creek
Alviso
Union Pacific Railroad
Guadalupe River
237
San Jose
Tidal Marsh Restoration
30:1 Ecotone
Levee

Pelican Media


Photo Credit: Damien Kunz
San Rafael Bay
Tiscornia Marsh
Wildlife Habitat
Owned by Marin Audubon Society
Donated by Mary Tiscornia


Existing riprap
Excavate new tidal channels that connect to existing tidal channel
San Rafael Canal
Western Levee Tie-off Alternative 1
Wetlands
Convert Diked Marsh to Tidal Marsh
Construct Coarse Jetty
Western Levee Tie-off Alternative 2
Construct new levee and ecotone
Restore Tidal Marsh
Construct Coarse Beach
San Rafael Bay
Pickleweed Park
Tiscornia Marsh
Set back and raise levee, construct ecotone
Canal Neighborhood
Project Site
Ecotone Slope
New Tidal Marsh
Existing Wetland
New Coarse Beach
Lowered/Breached Levee
New Levee
Raised/SetbackExistingLevee
New Tidal Channel
Shoreline Levee/Trail
0
300
Feet

What can the conservation community do to address sea level rise?

- **Rural Areas**
  - Acquiring Land from Willing Sellers
  - Expanding Existing Partnerships
  - Connecting Watersheds to the Baylands
- **Urban Areas**
  - Building Relationships and Trust
  - Addressing Legacy Pollution
  - Building Living Shorelines
- **Both**
  - Restoring Habitat
  - Adapting Public Access
  - Reducing Flood Risk

Coastal Conservancy Strategic Plan Update

$500M for Coastal Resilience

- Kick-off Webinar (recording avail.)
- Tribal Outreach
- Regional Meetings
- SCC Board Meeting Discussions
- Surveys
- Public Comment Period
- Final Plan in December 2022

Fill out our survey and add your project ideas to our map:
https://scc.ca.gov/about/plan/

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Thank you!