MRN-1/Bolinas Lagoon Sea Level Rise Adaptation Planning Study

BLAC Meeting 4/25/25

Meet the Team

CCWG
central coast wetlands group

Moss Landing Marine Laboratories

integral consulting inc.

Caltrans Bay Area

SJSU SAN JOSÉ STATE UNIVERSITY

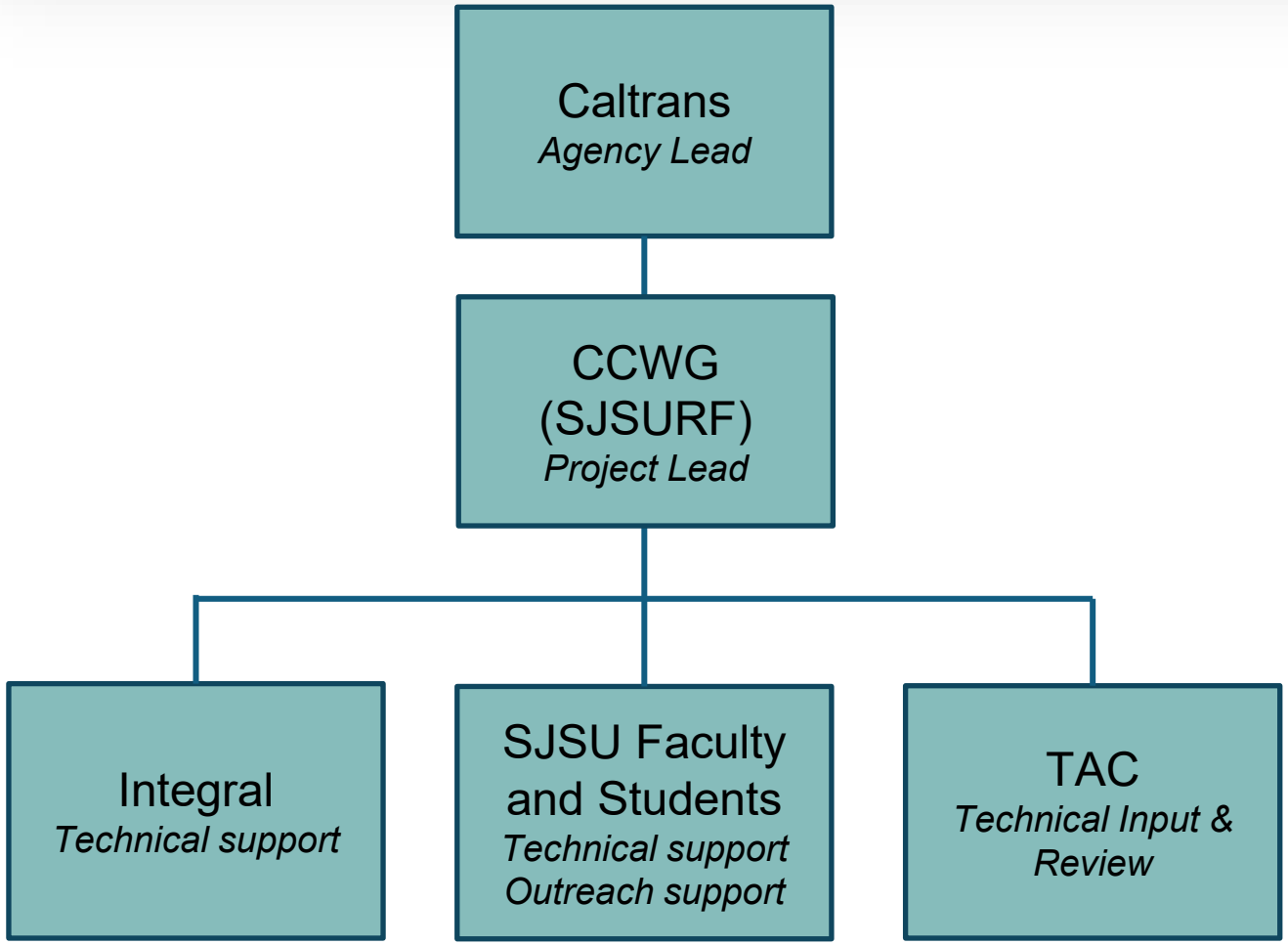
Central Coast Wetlands Group (CCWG)

- Moss Landing Marine Lab research affiliate
- Focus areas:
  - Wetland monitoring and restoration
  - Estuary monitoring and assessment
  - Watershed planning
  - Water quality monitoring
  - Climate change adaptation planning

Previous Climate Change Planning Projects

- SLR and storm flooding on agriculture within the Salinas Valley
- West Cliff Drive Adaptation & Management Plan
- City of Santa Cruz LCP Strategies and Policies to Support Beach and Public Access Protection
- Santa Cruz IRWM Plan Update
- Moss Landing Harbor AB 691 SLR Vulnerability Assessment
- Evaluation of SLR Impact Projections & Adaptation Strategies for an update to the City of Santa Cruz Hazard Mitigation Plan
- Coastal Climate Change Vulnerability Assessments for Santa Cruz, City of Capitola, and Moss Landing communities
- Coastal Resilience Network in Monterey
- Greater Monterey County IRWM Plan - Climate Change Chapter
- Incorporating Natural Infrastructure into Regional Climate Adaptation Planning

Project Partners



Project Background

- Bolinas Lagoon is recognized by both Caltrans and Marin County as a priority vulnerable location in need of a climate adaptation solution
- Need to resolve safety issues from flooding on Hwy 1, to improve transportation system resiliency and reliability as well as lagoon function and habitat resiliency
- Segment between Stinson Beach and the “Bolinas Wye” is one of the most vulnerable segments in the Caltrans District
- Temporary flooding occurs now during extreme storm and tide events
- Entire highway will be vulnerable to regular and severe inundation by 2045

Project Overview

- Conduct a sea level rise adaptation planning study along a 5.41-mile segment of Hwy 1 in Marin County near Bolinas Lagoon
- Project will include the development of technical climate change adaptation strategies and designs, lagoon modeling, sediment conveyance, and high tide studies to create treatment plans/project alternatives
- July 9th official start date

Study area is along the eastern shoreline of Bolinas Lagoon, between Stinson Beach and Woodville.

STINSON BEACH & BOLINAS LAGOON
COASTAL RESILIENCE PROJECTS

1 The ***Bolinas Lagoon Wye Wetlands Resiliency Project*** will improve the function and resiliency of wetlands at the north end of Bolinas Lagoon by removing and elevating roads to allow space for Lewis Gulch Creek to be reconnected with its historic floodplain and for wetlands to migrate upland with sea level rise.

LEAD AGENCY: Marin County Parks
MORE INFO: ***parks.marincounty.org/projectsplans/land-and-habitat-restoration/wye-wetlands-bolinas-lagoon***

2 The ***MRN 1/Bolinas Lagoon Sea Level Rise Adaptation Planning Study*** will develop technical climate change adaptation strategies and designs, conduct lagoon modeling, sediment conveyance, and high tide studies, to create treatment plans and project alternatives at Bolinas Lagoon along Highway 1. This effort will address vulnerabilities to the area such as current and future weather events, increasing frequency and magnitude of natural disasters, and changing climate conditions including sea level rise.

LEAD AGENCY: Caltrans
MORE INFO: ***D4_ClimateResilience@dot.ca.gov***

3 The ***Stinson Adaptation & Resilience Collaboration (ARC)*** is supporting stakeholders in developing a sea level rise adaptation roadmap for Stinson Beach. In partnership with technical consultants, local agencies, and the community, Stinson ARC will assess which adaptation options are available to infrastructure and natural areas threatened by sea level rise. This roadmap will then help Stinson stakeholders make informed adaptation and resilience decisions.

LEAD AGENCY: Marin County Community Development Agency
MORE INFO: ***marincounty.org/depts/cd/divisions/planning/csmart-sea-level-rise/stinson-arc***

4 The ***South End Living Shoreline Project*** aims to establish new marsh and mudflat habitat and improve function of Bolinas Lagoon's transitional marsh habitat along its southern shoreline. To develop the best adaptation designs, technical studies will include modeling tides, sediment transport, and erosion hotspots. Strategies will focus on native plants and other natural elements to create wildlife refuge and stabilize the shoreline for greater resilience to sea level rise and increased storm surges.

LEAD AGENCY: Greater Farallones Association
MORE INFO: ***farallones.org/bolinas***

5 The ***Stinson Beach Flood Study*** evaluates effects of riverine, coastal, and groundwater flooding and future sea level rise at the Golden Gate National Recreation Area's (GGNRA) Stinson Beach property. This study is used to inform GGNRA's adaptation planning at Stinson Beach.

LEAD AGENCY: National Park Service
MORE INFO: ***marincounty.org/-/media/files/departments/cd/slr/stinson/stinsonbeachintegratedfloodstudy_final.pdf***

6 The ***National Park Service (NPS) Parking Lot Rehabilitation Project*** will renovate deteriorated parking lots which have been damaged by flooding and storms. NPS is improving the parking lots in a way that respects natural features of the site such as Easkoot Creek and dunes.

LEAD AGENCY: National Park Service
MORE INFO: ***Stinson Beach Parking Lots Rehabilitation,*** *available at* ***nps.gov/goga***

These adaptation and resiliency projects are in different stages of implementation. Agency partners meet quarterly to ensure collaboration and coordination between projects as they progress.

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Project Goals

- Identify climate change adaptation strategies that can be utilized in the study area to maintain accessibility and improve short-, medium-, and long-term asset resilience to the impacts of sea level rise, storm surge, and cliff retreat/sediment conveyance
- Emphasize and assess restorative and nature-based solutions

Gather Existing Conditions & Summarize Opportunities and Constraints

- Conduct literature review and analysis of existing conditions, opportunities, and constraints (complete)
- Understand and briefly summarize constraints faced by the study area in a Site Review Document (in progress)

Existing Conditions - Clogged Culverts

Existing Conditions - Watershed Flooding

Existing Conditions - Storm Flooding

Existing Conditions - Erosion

Existing Conditions - Public Access

Public Outreach & Engagement

- Develop Public Engagement & Stakeholder Outreach and Technical Advisory Coordination Plan (complete)
- Conduct public engagement, community outreach, and cross-agency coordination activities
- Conduct two phases (input and feedback) of public engagement to collect public opinion on adaptation design options.

Technical Advisory Committee

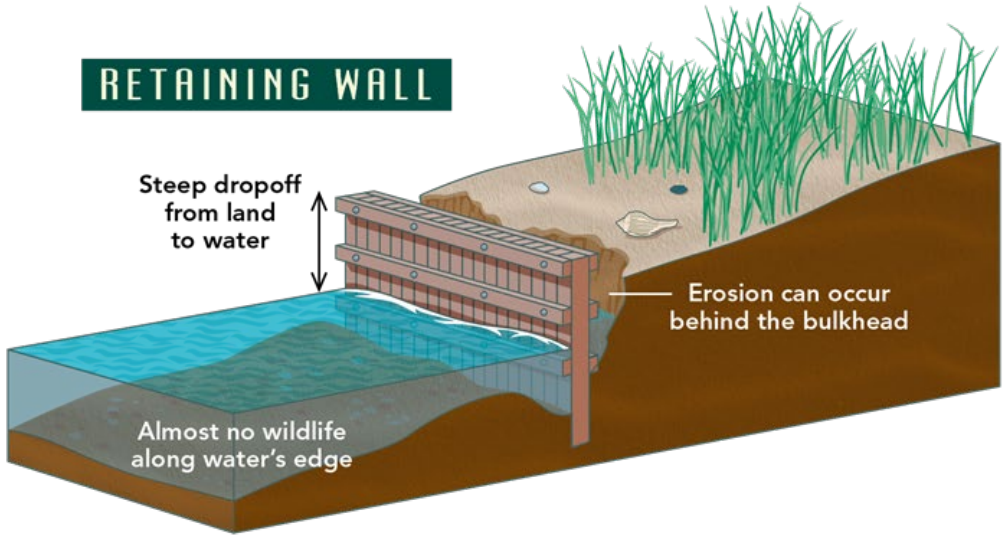
- Bolinas/Stinson Partners Group is serving as our TAC
- Attend quarterly meetings to provide updates and get feedback

Coastal Hazard Assessment

- Perform desktop analysis to gather readily available data to support the coastal hazards exposure and site vulnerability analysis
- Perform modeling and site characterization to develop a conceptual understanding of holistic natural and built systems and how these systems interact
- Site visits to collect targeted data to confirm desktop analysis
- Confirm sea level rise scenarios and establish minimum SLR impact thresholds

Develop Adaptation Strategies, Treatment Plans, and Concepts

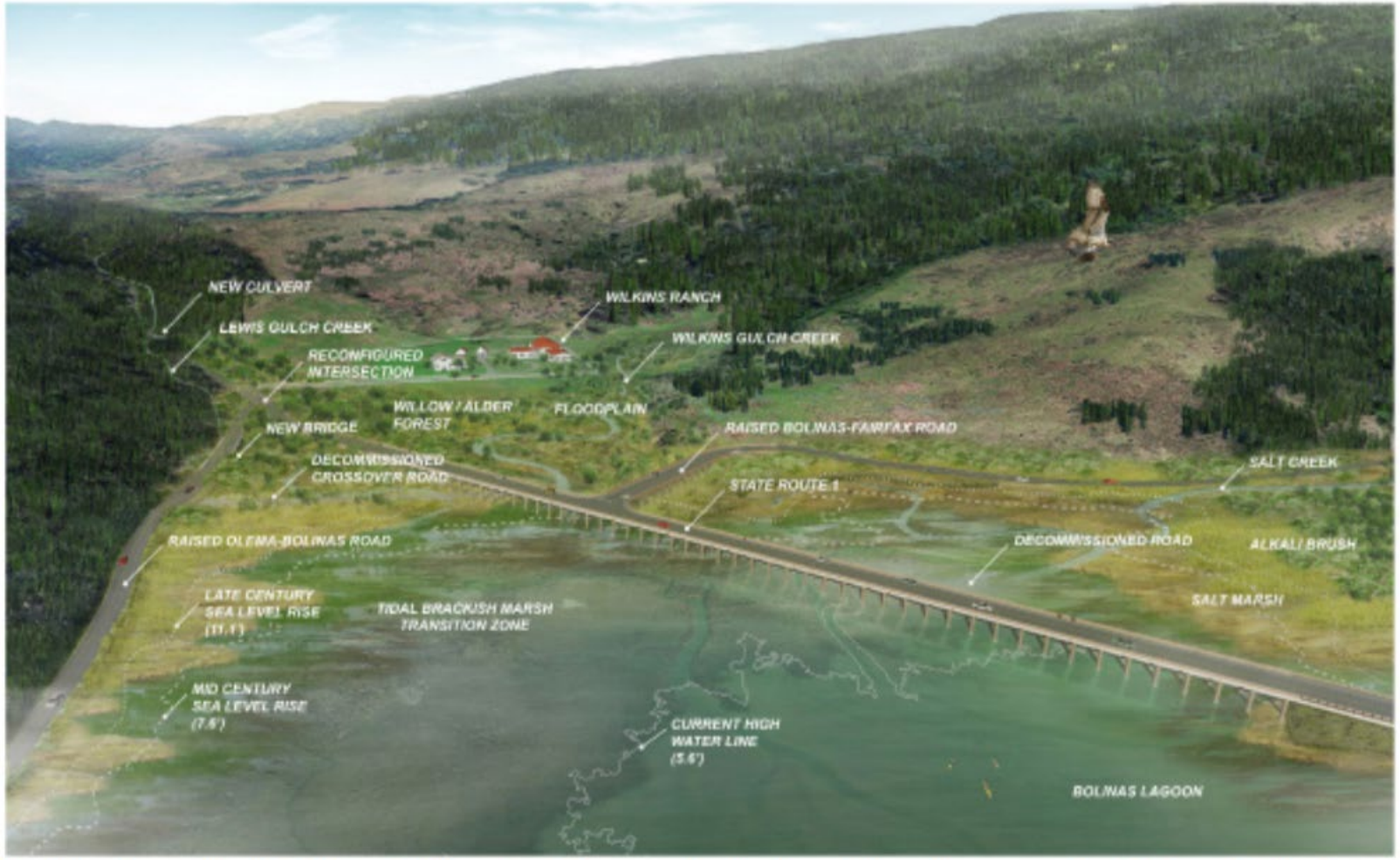
- Produce adaptation strategies and designs, conceptual plans, and graphics for planning level concepts to be used by Caltrans staff to develop future projects in study location
- Final Study Report will include two treatments plans or conceptual level adaptation pathways that effectively address long term coastal climate change impacts *(short, medium and long term)*



'Hard' infrastructure like retaining walls abruptly severs the ecological connection between the coast and water.

Not only do Living Shorelines defend land against destructive waves, but they also provide crucial habitat for fish and wildlife.

Example: Bolinas North End
Long term adaptation



The Bolinas Lagoon North End Project includes a suite of changes to local roads, wetlands, and streams to reduce flooding and make them more resilient in the face of the additional 3–5 feet of sea level rise expected over the next century.

Near Term Actions

- Currently working on:
  - Site Review/Existing Conditions Report
  - Prepping for Phase 1 of outreach
    - Project StoryMap
  - Initial modeling of hazards

How can you get involved?

- Participate in our survey
- Opportunity to comment on hazards and adaptation options via Felt Map