

San Francisco Bay Conservation and Development Commission

375 Beale Street, Suite 510, San Francisco, California 94105 tel 415 352 3600

State of California | Gavin Newsom – Governor | info@bcdc.ca.gov | www.bcdc.ca.gov

San Francisco Bay Coastal Management Program Assessment and Strategy 2026 to 2030 Enhancement Cycle



Prepared pursuant to the Provisions of Section 309 of the federal Coastal Zone Management Act for the Office for Coastal Management, National Ocean Service, National Oceanic and Atmospheric Administration

The San Francisco Bay Conservation and Development Commission
375 Beale Street, Suite 510
San Francisco, CA 94105

Final - November 2025

Introduction	2
Summary of Recent Section 309 Achievements	5
Section 309 Achievements Table	5
Phase I Assessment	7
Wetlands	7
Coastal Hazards	14
Public Access	19
Marine Debris	26
Cumulative and Secondary Impacts	30
Special Area Management Planning	39
Ocean and Great Lakes Resources	42
Energy and Government Facility Siting	49
Aquaculture	53
Phase II Assessment	55
Wetlands	55
Coastal Hazards	61
Strategy: Advance Regional and Local Efforts to Develop Subregional Adaptation Plans and Address Coastal Hazard Risk	68
5-Year Budget Summary	74
Summary of Stakeholder Survey and Public Comment	75

Introduction

Overview of the Section 309 Program

Section 309 of the Coastal Zone Management Act (CZMA), as amended in 1990 and 1996, establishes a voluntary coastal zone enhancement grant program to encourage Coastal Management Programs (CMPs) such as the San Francisco Bay Conservation and Development Commission (“BCDC” or “Commission”) to develop innovative approaches to improving the following nine enhancement areas: (1) wetlands, (2) coastal hazards, (3) public access, (4) marine debris, (5) cumulative and secondary impacts, (6) special area management planning, (7) ocean/great lakes resources, (8) energy and government facility siting, and (9) aquaculture. Under the Section 309 program, the Secretary of Commerce is authorized to make awards to states and territories to develop and submit for federal approval of program changes that support one or more enhancement area objectives. To be eligible for Section 309 funding, CMPs must successfully complete an Assessment and Strategy for review and approval by the National Oceanic and Atmospheric Administration’s (NOAA) Office for Coastal Management (OCM). The Assessment considers the extent to which problems and opportunities exist with regards to the enhancement area objectives and the effectiveness of current efforts to address those problems. The Assessment provides the factual basis for the CMP and OCM to cooperatively determine priority needs for program improvement.

The Strategy is a comprehensive, multi-year statement that identifies program changes and implementation activities needed to address enhancement area objectives identified as high priority in the Assessment. The Strategy is based on priority needs and information gaps identified in the Assessment and covers the 5-year period from fiscal year 2026 to fiscal year 2030.

Assessment and Strategy Development and Public Review Processes

This report is the culmination of a collaborative process to evaluate BCDC’s CMP. Public input on priority enhancement areas, key issues, and management needs was gathered through a survey sent to over 1,000 stakeholders. The Assessment and Strategy was also developed with input from BCDC staff, who contributed both individually and through group meetings. The report uses input from staff and stakeholders, along with various sources of public information, to assess the status of coastal resources, identify extent of problems and opportunities, and evaluate the effectiveness of existing management efforts across each of the nine enhancement areas. Two enhancement areas were designated as high priority: Wetlands and Coastal Hazards. In-depth assessments of needs and opportunities were conducted for these high priority enhancement areas. As a result, a single strategy for Coastal Hazards was developed to achieve program improvements.

Staff released a draft Assessment and Strategy on October 3, 2025 for public comment. The document was sent to the Commission and interested parties, and was posted on the BCDC website. During the public comment period, the Commission held a briefing on the draft Assessment and Strategy on October 16, 2025. No public comments were received.

BCDC's Coastal Management Program

Through the McAteer--Petris Act of 1965, the State of California granted BCDC authority to plan and regulate activities and development in and around the San Francisco Bay (Bay). The Suisun Marsh Preservation Act of 1977 expanded BCDC's permit jurisdiction over the 85,000-acre Suisun Marsh, the largest remaining wetland in California. Together, these two statutes form the legal basis of the management program for the San Francisco Bay Segment of the California Coastal Zone, which was approved by the U.S. Secretary of Commerce on February 16, 1977. These acts, respectively, are carried out through policies detailed in the San Francisco Bay Plan (Bay Plan) and the Suisun Marsh Protection Plan (Marsh Plan). The Commission's enabling legislation and associated policies focus on limiting fill, increasing public access to and along the Bay, and assuring that sufficient land is available for high priority water-dependent uses. BCDC administers a regulatory program based on the standards of the Bay Plan and Marsh Plan, in which permits are required for Bay filling and dredging and for development along a shoreline band extending 100 feet inland from the Bay. The Commission's Bay jurisdiction includes all parts of the Bay that are subject to tidal action, including sloughs, marshlands, tidelands, and submerged lands. The Commission also has jurisdiction over salt ponds, managed wetlands, and certain named tidal waterways adjacent to the Bay.

The Bay Plan has dual mandates to (1) protect the Bay as a great natural resource for the benefit of present and future generations; and (2) develop the Bay and its shoreline to their highest potential with a minimum amount of fill. To achieve these mandates, the Bay Plan includes policies on a range of topic areas, as well as maps delineating water-oriented priority use areas.

The Marsh Plan, while prepared pursuant to the Suisun Marsh Preservation Act of 1977, is also a more specific application of the regional policies of the Bay Plan for areas within the Suisun Marsh subject to the McAteer-Petris Act jurisdiction and supplements such policies to accommodate the unique characteristics of the Suisun Marsh. The Marsh Plan's objectives are to preserve and enhance the quality and diversity of the area's 85,000 acres of wetland habitat, and to ensure that uses of adjacent upland areas are compatible with marsh protection. The Commission maintains permit authority over development in the primary management area of the Suisun Marsh, which includes 89,000 acres of tidal marsh, managed wetlands, adjacent grasslands, and waterways. The Marsh Plan required that a Suisun Marsh Local Protection Program for the secondary management area of the Suisun Marsh be prepared by local governments and that those components be certified by BCDC. The Commission retains appellate authority over local government decisions within the secondary management area. The Bay Plan and Marsh Plan are living documents and the Commission can amend these plans to keep them current. In addition to amending the Bay Plan itself, BCDC, with the support and cooperation of local governments, can develop Special Area Plans containing enforceable policies and priority use designations. Special Area Plans are adopted by the Commission as amendments to the Bay Plan, and by local governments as amendments to their general plans and zoning ordinances.

For over a decade, BCDC has served a key role in regional planning for shoreline resilience. This role was augmented in 2023 through California Senate Bill (SB) 272. SB 272 requires all local governments within BCDC's jurisdiction to address coastal hazards through subregional San Francisco Bay shoreline plans (which BCDC is referring to as Subregional Shoreline Adaptation Plans) subject to approval by BCDC. The Commission voted to adopt the Regional Shoreline Adaptation Plan (RSAP) Guidelines in December 2024 through a Bay Plan Amendment to govern review and approval of Subregional Shoreline Adaptation

Plans. As a result, the RSAP is a plan of special needs pursuant to the McAteer-Petris Act and is part of the Bay Plan. BCDC also amended the Bay Plan to update findings and policies to incorporate the RSAP and guide future BCDC planning work.

The 27-member Commission is composed of one member from each of the nine Bay Area county boards of supervisors; four elected officials representing area municipalities appointed by the Association of Bay Area Governments; five state agency representatives from the Business and Transportation Agency, Department of Finance, Resources Agency, State Lands Commission, and the San Francisco Bay Regional Water Quality Control Board; two federal representatives of the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency; and seven appointees from members of the public, five appointed by the Governor and one each from the state senate and assembly. The Commission holds regular meetings and is served by an Executive Director and a staff of approximately 55.

Summary of Recent Section 309 Achievements

Below is a summary of BCDC’s program changes and major achievements since 2020. The changes and achievements are classified by enhancement area and include efforts identified as program enhancement strategies in the previous assessment, the San Francisco Bay Coastal Management Program Final Assessment and Strategy: 2021 to 2025 Enhancement Cycle (2021 to 2025 Assessment and Strategy), as well as other major achievements that were not specifically identified in the previous assessment, but help further program strategies or the NOAA 309 enhancement areas in general. The following table summarizes the achievements that are detailed below.

Section 309 Achievements Table

Enhancement Area	Achievement	Relationship to 2021-2025 Strategy and Funding Source
Wetlands	Regulatory Improvements for restoration projects (2021)	Strategy (Other Funding)
Wetlands	Suisun Marsh Policy Review (2021)	Strategy (309 Partially Funded)
Wetlands	Sediment for Wetland Adaptation Project (2022-2026)	Strategy (Other Funding)
Wetlands	Marsh Sediment Transport Study and Paper (2022)	Strategy (Other Funding, USGS, NERR)
Wetlands	Eelgrass Research and Restoration (Ongoing)	Strategy (Other Funding)
Wetlands	Soil Quality Data Work (Ongoing)	Strategy (Other Funding)
Wetlands	Nearshore Strategic Placement Project (Ongoing)	Strategy (Other Funding)
Coastal Hazards	Bay Plan Climate Change Policy Guidance (2021)	Strategy (309 Partially Funded)
Coastal Hazards	Bay Adapt Joint Platform (2022)	Strategy (Other Funding)
Coastal Hazards	Sea Level Rise Adaptation Funding and Investment Framework (2023)	Strategy (Other Funding)
Coastal Hazards	Regional Shoreline Adaptation Plan (BPA 1-24) (2024)	Strategy (309 Partially Funded)

San Francisco Bay Conservation and Development Commission
Coastal Management Program Assessment and Strategy
2026 to 2030

Coastal Hazards	Mission-Based Review of BCDC Permitting Program (2024)	Strategy (Other Funding)
Public Access	BCDC Public Access Policy Review (2024)	Strategy (309 Partially Funded)
Marine Debris	Derelict Vessel Removal (Ongoing)	Other Funding
Marine Debris	Bay Fill Removal (Ongoing)	Other Funding
Cumulative and Secondary Impacts	Contaminant Remediation (Ongoing)	Strategy (Other Funding)
Cumulative and Secondary Impacts	Mitigation Policy Guidance (2024)	Strategy (Other Funding)
Special Area Management Planning	Klamath Ferryboat San Francisco Waterfront Special Area Plan Amendment (BPA 1-20) (2020)	Strategy (Other Funding)
Special Area Management Planning	Contra Costa County Flood Control District Bay Plan Amendment (BPA 5-19) (2020)	Strategy (Other Funding)
Special Area Management Planning	Howard Terminal Bay Plan Amendment (BPA 2-19) (2022)	Strategy (Other Funding)
Special Area Management Planning	Amendment to the Suisun Marsh Local Protection Program (2022)	Strategy (Other Funding)
Special Area Management Planning	Seaport Plan Update (BPA 1-19) (2023)	Strategy (Other Funding)
Coastal/Estuarine Resources	Oyster Cove Marina Enforcement Moratorium (2022)	Strategy (309 Partially Funded)
Coastal/Estuarine Resources	Sand Mining Studies (2024)	Strategy (Other Funding)
Coastal/Estuarine Resources	Dredged Material Management – sediment quality and beneficial reuse (Ongoing)	Strategy (Other Funding)

Phase I Assessment

The following high-level assessments are intended to quickly determine which of the nine enhancement areas is a high priority enhancement objective that warrants a more in-depth assessment.

Wetlands

Section 309 Enhancement Objective: Protection, restoration, or enhancement of the existing coastal wetlands base, or creation of new coastal wetlands. §309(a)(1)

Note: For the purposes of the Wetlands Assessment, wetlands are “those areas that are inundated or saturated at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” [33 CFR 328.3(b)]. See also pg. 14 of the CZMA Performance Measurement Guidance¹ for a more in-depth discussion of what should be considered a wetland.

Resource Characterization

1. Using the tables below as a guide, provide information on the status and trends of coastal wetlands. Be as quantitative as possible using state or national wetland trend data.² The tables are information presentation suggestions. Feel free to adjust column and row headings to align with data and time frames available in your state or territory. If quantitative data is not available for your state or territory, provide a brief qualitative narrative describing wetlands status and trends and any significant changes since the last assessment.

The extent, status, and trends of wetlands in the nine Bay Area counties (given BCDC’s jurisdiction) are reported below. The data provided is based predominantly on state-specific data sources, including BCDC permit data and the California EcoAtlas, which compiles several different data sources to provide information about the quantity and quality of California wetlands, as well as the landscape context for considering wetland extent and condition. Additionally, data synthesized in the Baylands Ecosystem Habitat Goals Update (BEHGU) is reported as well as data from the Tracking Tidal Wetland Extent in San Francisco Bay report published by the San Francisco Estuary Institute in 2025.

The past San Francisco Bay Coastal Management Program Assessment and Strategy: 2021 to 2025 Enhancement Cycle (“2020 A&S”) calculated the current extent of wetlands using the Landscape Profiles tool in California EcoAtlas by summarizing the values for estuarine wetlands and palustrine wetlands sections for the 9 Bay Area counties. The discrepancies in the acreage estimate between the 2020 A&S and the current San Francisco Bay Coastal Management Program Assessment and Strategy: 2026 to 2030 Enhancement Cycle (“2025 A&S”) result from remarkable local efforts to create a more refined map that has been produced since the last assessment. For more information on the creation of the map and the difference in methodologies, please see the Tracking Tidal Wetland Extent in San Francisco Bay report produced by the San Francisco Estuary Institute (SFEI).

¹ coast.noaa.gov/data/czm/media/czmapmsguide.pdf

² National data on wetlands status and trends include NOAA’s Land Cover Atlas (coast.noaa.gov/digitalcoast/tools/lca.html), the U.S. Geological Survey’s National Land Cover Database (usgs.gov/centers/eros/science/national-land-cover-database), and the U.S. Fish and Wildlife Service’s National Wetland Inventory data (fws.gov/program/national-wetlands-inventory).

Current state of wetlands in 2024 (acres): _____53,700 acres³_____

Coastal Wetlands Status and Trends

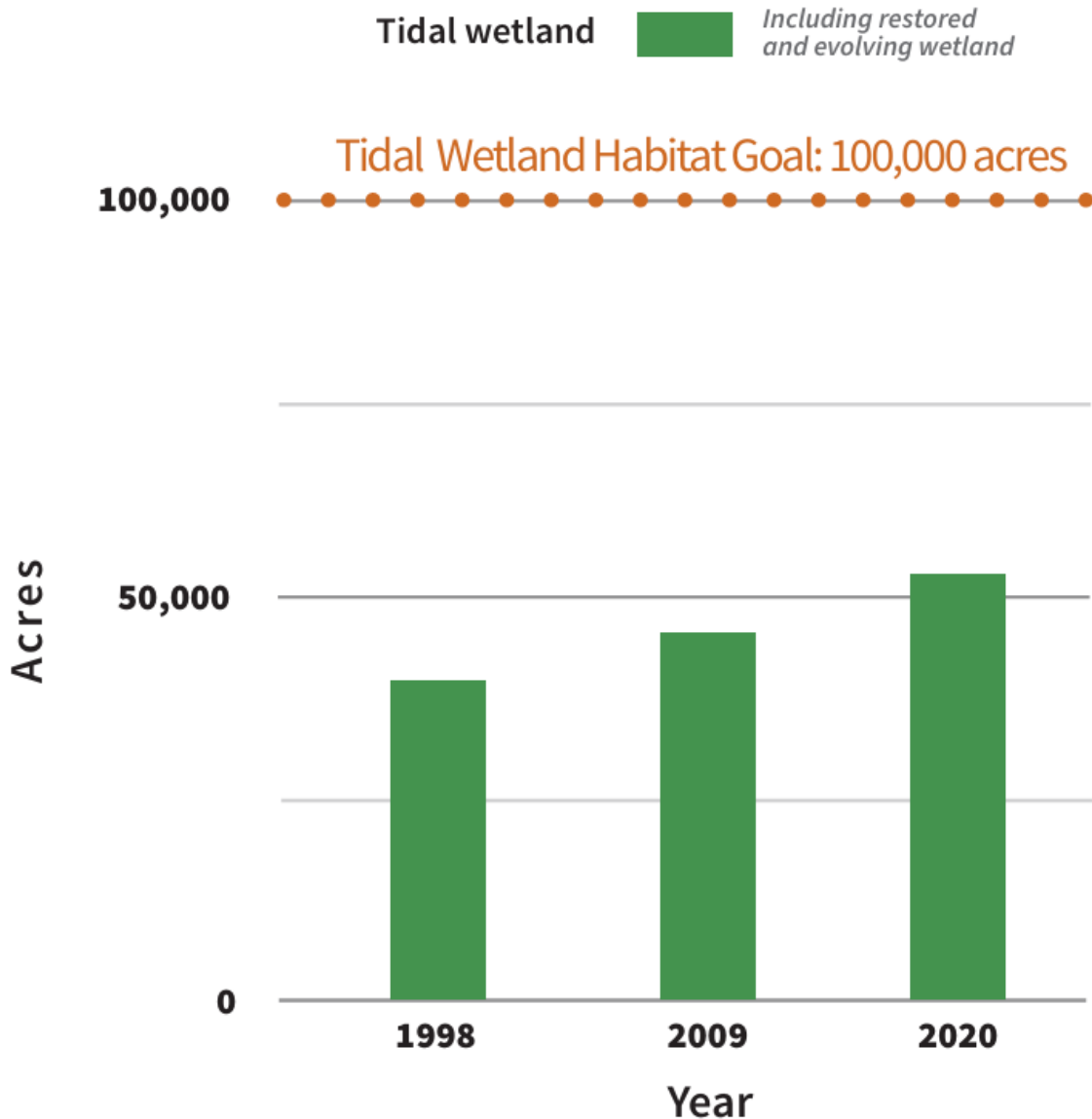


Figure 1: Change in tidal wetland over time. Comparing the new 2020 WRMP tidal marsh estimates with previous Baylands Ecosystem Habitat Goals Update estimates from 1998 and 2009. **Source:** Tracking Tidal Wetland Extent in San Francisco Bay. 2025. San Francisco Estuary Institute.

³ Tracking Tidal Wetland Extent in San Francisco Bay. 2025. San Francisco Estuary Institute.

Status of Coastal Wetlands: The status of coastal wetlands in the San Francisco Bay estuary was summarized in BEHGU:

“The configuration of baylands habitats has changed dramatically since 1800. Tidal marshes have become more fragmented, with much more edge relative to interior or core areas and some isolated habitat patches. These changes in habitat configuration are common in modern landscapes and are likely to reduce some support functions for resident marsh wildlife above and beyond the loss in habitat extent. Against a background of severe habitat loss, fragmentation has reduced the baylands’ ability to support wildlife by decreasing the connectivity between populations and increasing edge effects that promote predation and anthropogenic stress. Due to extensive fragmentation of once-large, nearly continuous marshes, the average size of tidal marsh habitat patches has declined since 1800. Large marsh patches in the current baylands are primarily composed of wide marsh areas connected by narrow fringing marsh... Marsh fragmentation varies across the region (Figure 1).”⁴

Since 1999, the pace of restoration has significantly accelerated in the region. In the 1999 Baylands Ecosystem Habitat Goals report, the Bay Area wetland management community set a target of restoring 100,000 acres of tidal marsh. Since then, while restoration and tidal marsh extent were increasing locally, the 2019 USFWS National Wetlands Report showed a national decrease in tidal marsh extent. As captured in the Tracking Tidal Wetland Extent in San Francisco Bay report, “our regional success highlights the value of multiple government agencies, scientists, and environmental organizations setting a shared goal for tidal marsh restoration.”⁵

Between 2020 and the end of 2024, BCDC authorized 1,018 acres of restoration in the Bay (Table 1), which is predominantly tidal wetland restoration, but also includes intertidal and subtidal estuarine habitat restoration. However, authorized restoration was not evenly distributed around the Bay, with the vast majority occurring in Contra Costa and Solano counties as part of the Lower Walnut Creek Restoration Project and the Bradmoor and Arnold Restoration Project. Over 25 acres of restoration were permitted in Alameda County and relatively small restoration projects were permitted in Marin, San Francisco, San Mateo, Santa Clara, and Sonoma counties. No restoration was authorized in Napa County.⁶ This increase in wetland acreage contributes to the regional goals established in BEHGU.

Table 1: Restoration permitted by BCDC 2020-2024⁷

Year	Acres of Restoration
2020	307
2021	643.4
2022	1.7
2023	35.1
2024	31
Total	1,018.3

⁴ Goals Project. 2015. The Baylands and Climate Change: What We Can Do. Baylands Ecosystem Habitat Goals Science Update 2015 prepared by the San Francisco Bay Area Wetlands Ecosystem Goals Project. California State Coastal Conservancy, Oakland, CA.

⁵ Tracking Tidal Wetland Extent in San Francisco Bay. 2025. San Francisco Estuary Institute.

⁶ BCDC permit data.

⁷ BCDC permit data.

While BEHGU, the Tracking Tidal Wetland Extent in San Francisco Bay report, and BCDC permit data all demonstrate an overall increase in wetlands, the data on land cover change from the National Land Cover Dataset (NLCD) provide a different assessment (Table 2, Table 16 and Table 18 under Cumulative and Secondary Impacts of Development). The data shows that Woody Wetlands have increased by 123.3 acres and Emergent Wetlands have decreased by 318.1 acres. The reduction in Emergent Wetlands demonstrated by this dataset could be explained by the gradual process of wetland restoration. Once a diked area is breached to tidal action, a first step in many restoration projects, it often takes several years or more for vegetation to establish in the area. Thus, “restored wetlands” could appear on NLCD as open water or mudflat, although they are expected to eventually evolve into wetlands. Additionally, since NLCD aims to provide coverage across the country, the data uses a 30-meter resolution which is considered medium. While this is suitable for analyzing large areas where extreme detail isn’t required, analysis with this dataset faces precision limitations when differentiating small features at scales lower than 30x30 meters. Local reports are more reliable, such as BEHGU, the Tracking Tidal Wetland Extent in San Francisco Bay report, and BCDC permit data, all of which demonstrate the overall increase in wetlands acreage in the Bay region.

Table 2: How Wetlands Are Changing

Land Cover Type	Area of Wetlands Transformed to Another Type of Land Cover between 1996-2023 (Acres)
Development	443.2
Agriculture	1080.3
Barren Land	36.7
Water	5042.2

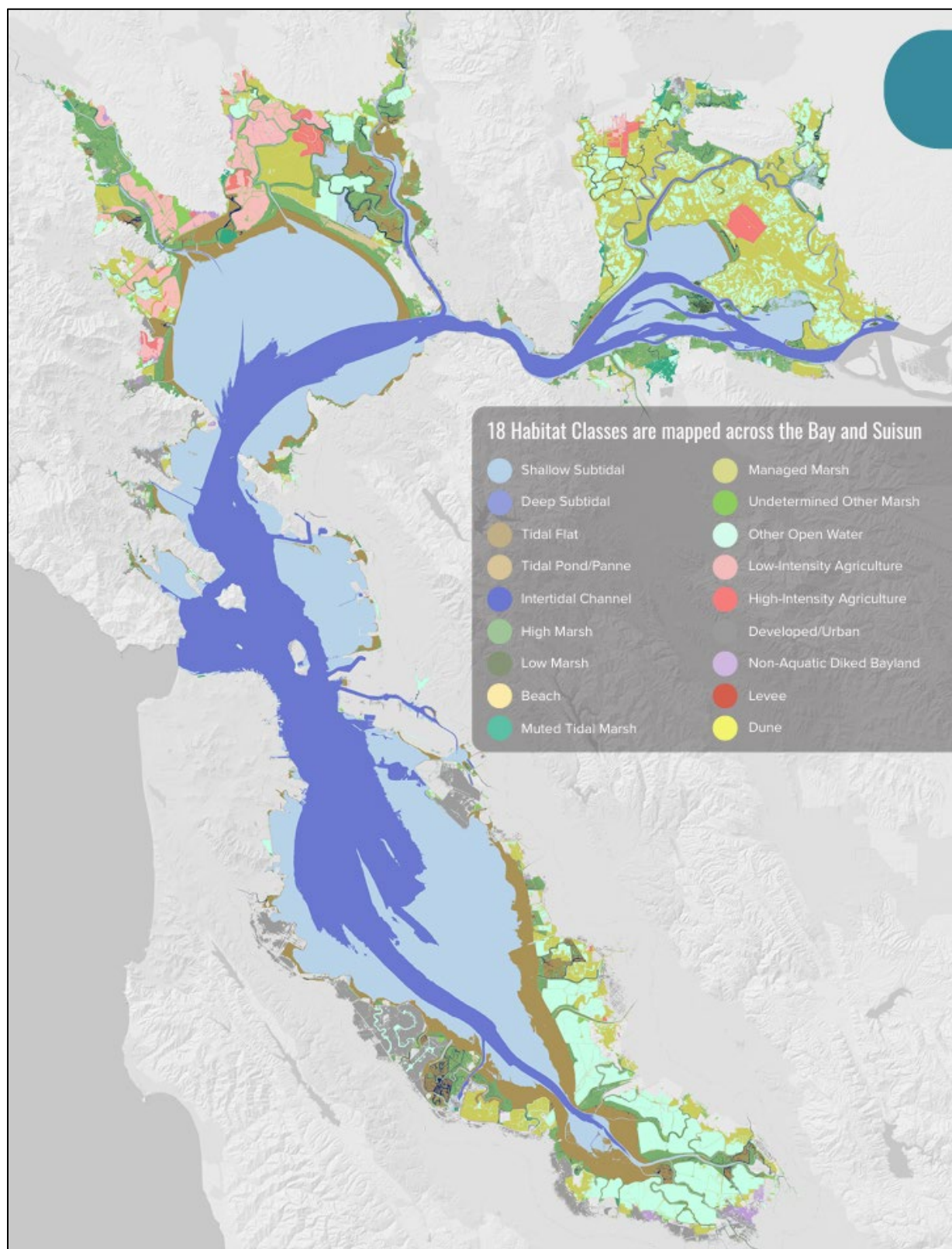


Figure 2: Distribution of habitat classes within the bay and its shoreline across the Bay region. **Source:** **Tracking Tidal Wetland Extent in San Francisco Bay. 2025. San Francisco Estuary Institute.**

Management Characterization

1. Indicate any significant changes at the state or territory level (positive or negative) since the last assessment that could impact the future protection, restoration, enhancement, or creation of coastal wetlands.

Table 3: Significant Changes in Wetland Management

Management Category	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Yes
Wetlands programs (e.g., regulatory, mitigation, restoration, acquisition)	Yes

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information.
 - a. Describe the significance of the changes;
 - b. Specify if they were 309 or other CZM-driven changes; and
 - c. Characterize the outcomes or likely future outcomes of the changes.

Amendment to the Suisun Marsh Local Protection Program

In March 2022, BCDC certified a comprehensive update to the individual management plans that constitute a part of the Suisun Resource Conservation District's (SRCD) element of the Suisun Local Protection Program. The amendment replaced 141 IMPs with 124 new plans for each managed wetland that governs their operation and maintenance activities. Finally, BCDC developed a GIS mapping platform called GEOMARSH in collaboration with SRCD to facilitate annual updates and more easily track and update changes to Management Plans for each duck club in the managed wetlands.

Lower Walnut Creek Bay Plan Amendment (BPA 5-19)

In 2020, the Commission approved an amendment to the Bay Plan to remove the Water-Related Industry Priority Use Area designation from a 172-acre site at Pacheco Creek near the city of Martinez. The removal of this designation allowed the Contra Costa County Flood Control District to proceed with the Lower Walnut Creek Restoration Project to restore and enhance approximately 386 acres of coastal wetland habitat along Walnut Creek and Pacheco Creek.

San Francisco Bay Sediment & Soil Beneficial Reuse Action Plan for Wetland Restoration Adaptation

BCDC has an ongoing EPA-funded joint regulatory and planning initiative called the Sediment for Wetland Adaptation Project (SWAP). In 2025, as part of this project, BCDC developed an Action Plan to identify actions that the region must undertake to beneficially reuse sediment and soil in wetland restoration. Created through a collaborative process, this Action Plan will guide agencies, dredgers, flood control managers, restoration practitioners, and other stakeholders on the steps necessary to improve and increase beneficial reuse of sediment and soil in wetland restoration and coastal hazard adaptation projects. For many years, resource managers engaged in sediment issues have discussed the many possible strategies to increase beneficial reuse but implementing them has been slow and

piecemeal. The Action Plan presents, for the first time, a cohesive approach to guide coordinated regional action.

Enhancement Area Prioritization

1. What level of priority is the enhancement area for the coastal management program?

High X
Medium
Low

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

The Bay Area historically used to be home to 190,000 acres of tidal marsh and now, after serious decline, stakeholders have restored tidal marsh to 53,700 acres around the region. The HIGH priority level was given to this enhancement area due to the historic loss of wetlands, the important need for more wetland restoration, and increasing threats to wetlands in the Bay Area from development and coastal hazards. Stakeholder input reflects that protecting, restoring, and enhancing wetland function in the Bay Area is a high priority (see “Summary of Stakeholder and Public Comment”). For stakeholders that selected wetlands, they identified coastal hazards and increasing erosion, lack of sufficient transition area for landward migration of wetlands, and challenges with sediment management and beneficial reuse of dredged sediment to be the highest priority issues.

Coastal Hazards

Section 309 Enhancement Objective: Prevent or significantly reduce threats to life and property by eliminating development and redevelopment in high-hazard areas, managing development in other hazard areas, and anticipating and managing the effects of potential sea level rise and Great Lakes level change. §309(a)(2)

Note: For purposes of the Hazards Assessment, coastal hazards include the following traditional hazards and those identified in the CZMA: flooding; coastal storms (including associated storm surge); geological hazards (e.g., tsunamis, earthquakes); shoreline erosion (including bluff and dune erosion); sea level rise; Great Lake level change; land subsidence; and saltwater intrusion.

Resource Characterization:

1. In the table below, indicate the general level of risk in the coastal zone for each of the coastal hazards. The following resources may help assess the level of risk for each hazard. Your state may also have other state-specific resources and tools to consult. Additional information and links to these resources can be found in the “Resources” section at the end of the Coastal Hazards Phase I Assessment Template:

- The state’s multi-hazard mitigation plan
- Coastal County Snapshots: Flood Exposure
- Coastal Flood Exposure Mapper
- Sea Level Rise Viewer/Great Lakes Lake Level Change Viewer

Table 4: General Level of Hazard Risk in the Coastal Zone

Type of Hazard	General Level of Risk ⁸ (H, M, L)
Flooding (riverine, stormwater)	High
Coastal storms (including storm surge)	High
Geological hazards (e.g., tsunamis, earthquakes)	High
Shoreline erosion	Medium
Sea level rise	High
Great Lakes level change	N/A
Land subsidence	High
Saltwater intrusion	High
Other (please specify)	High

2. If available, briefly list and summarize the results of any additional data or reports on the level of risk and vulnerability to coastal hazards within your state since the last assessment. The state’s multi-hazard mitigation plan or risk assessment or plan may be a good resource to help respond to this question.

Flooding Risk (includes sea level rise, coastal storms, land-based flooding)

⁸ Risk is defined as “the estimated impact that a hazard would have on people, services, facilities and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage.” *Understanding Your Risks: Identifying Hazards and Estimating Losses. FEMA 386-2. August 2001*

The Bay Area is predicted to be at high risk for coastal flooding. The Adapting to Rising Tides Bay Area assessment concluded that significant proportions of critical regional assets, specifically transportation infrastructure, communities, future development areas, and natural lands, will be exceedingly vulnerable to future coastal flooding. Not only are these systems vulnerable, but many critical assets are co-located, resulting in regional areas where flooding impacts will be particularly problematic.

Management Characterization

1. In the tables below, indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) have occurred that could impact the CMP's ability to prevent or significantly reduce coastal hazards risk since the last assessment.

Table 5: Significant Changes in Hazards Statutes, Regulations, Policies, or Case Law

Topic Addressed	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Elimination of development/redevelopment in high-hazard areas ⁹	No	No	No
Management of development/redevelopment in other hazard areas	Yes	Yes	Yes
Sea level rise or Great Lakes level change	Yes	Yes	Yes

Table 6: Significant Changes in Hazards Planning Programs or Initiatives

Topic Addressed	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Hazard mitigation	No	Yes	Yes
Sea level rise or Great Lakes level change	Yes	Yes	Yes

Table 7: Significant Changes in Hazards Mapping or Modeling Programs or Initiatives

Topic Addressed	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Sea level rise or Great Lakes level change	Yes	Yes	Yes
Other hazards			

2. Briefly state how "high-hazard areas" are defined in your coastal zone.

Definition of "High-Hazard Areas"

Within BCDC's jurisdiction, high-hazard areas are generally considered to be those areas that already experience or are predicted to experience flooding in the coming years. High-hazard areas also include areas with significant seismic risk for ground shaking and liquefaction.

⁹ Use the state's definition of high-hazard areas.

3. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
 - a. Describe the significance of the changes;
 - b. Specify if they were 309 or other CZM-driven changes; and
 - c. Characterize the outcomes or likely future outcomes of the changes.

Regional Shoreline Adaptation Plan – (BPA 1-24)

Building from the Bay Adapt Joint Platform, and as required in SB 272, BCDC staff have been working with a broad array of interested parties, including the Commission, a Rising Sea Level Commissioner Working Group, a Local Elected Officials Regional Task Force, a large advisory group of external stakeholders, and through partnerships with community-based organizations, to develop the draft Regional Shoreline Adaptation Plan (RSAP). The RSAP is a region-wide plan for the Bay shoreline that guides the creation of coordinated, locally planned adaptation strategies based on a regional vision (called the One Bay Vision), Strategic Regional Priorities, and Guidelines for Subregional Shoreline Adaptation Plans.

California Senate Bill (SB) 272 (Laird 2023): Sea Level Rise Planning and Adaptation was signed into law on October 7, 2023. SB 272 requires all local governments within BCDC’s jurisdiction to address coastal hazards through subregional San Francisco Bay shoreline plans (which BCDC is referring to as Subregional Shoreline Adaptation Plans) subject to approval by BCDC. Local government adaptation plans developed pursuant to SB 272 will be reviewed and approved by BCDC based on the Guidelines and Standards in the RSAP. The Commission voted to adopt the RSAP Guidelines in December 2024 through a Bay Plan Amendment. As a result, the RSAP is a plan of special needs pursuant to the McAteer-Petris Act and is part of the Bay Plan. BCDC also amended the Bay Plan to update findings and policies to incorporate the RSAP and guide future BCDC planning work. BCDC staff used NOAA 309 (FY23) funds to support coordinating development of the public access elements of the RSAP with findings that resulted from the NOAA 309 funded Public Access Policy Review (FY22) and Suisun Marsh Policy Review (FY20 and FY21).

Bay Adapt Joint Platform

In partnership with a broad range of Bay Area leaders, BCDC convened Bay Adapt: Regional Strategy for a Rising Bay: an initiative to establish regional agreement on the actions necessary to protect people and the natural and built environment from rising sea levels. Rather than specifying individual projects, the Bay Adapt Joint Platform lays out regional strategies that focus on overcoming barriers and identifying factors for successful adaptation outcomes we want throughout the region. The Commission voted to adopt the Bay Adapt Joint Platform in October 2021 (<https://www.bayadapt.org/jointplatform/>).

As part of the Bay Adapt Joint Platform, BCDC developed a consensus-based regional strategy comprised of 9 actions and 21 tasks aimed towards protecting people and the natural and built environment from coastal hazards. In addition, BCDC coordinated implementation for many of the tasks in the Joint platform in collaboration with key local stakeholders including the development of a Regional Shoreline Adaptation Plan, a Funding and Investment Framework, and a metrics program to track adaptation progress.

Seaport Plan Update (BPA 1-19)

In 2023, BCDC amended the San Francisco Bay Area Seaport Plan. BCDC undertook a comprehensive update to the Seaport Plan to improve the effectiveness of BCDC's regulatory guidance for port-related issues, including issues related to coastal hazards. The new Seaport Plan will provide more flexibility for the ports and better clarity for permittees and permit staff, ensuring that the plan will meet its designed goals to coordinate the planning and development of Bay port terminals while minimizing Bay fill. Finally, BCDC developed a new regional 2019-2050 Bay Area Seaport Forecast (Cargo Forecast) to project the growth of major cargo types and provide a high-level review of marine terminal capacity and expansion potential to the year 2050.

Sea Level Rise Adaptation Funding and Investment Framework

In 2023, BCDC released the Sea Level Rise Adaptation Funding and Investment Framework final report, in collaboration with the Metropolitan Transportation Commission and Association of Bay Area Governments. The report built on previous Adapting to Rising Tides projects, including the Financing the Future White Paper, the Shoreline Adaptation Project Map (SAPMap) and other regional planning work. Findings from the report found that protecting all portions of the shoreline that will experience sea level rise and storm surge by 2050 is estimated to cost \$95 billion. The final report will also help the region prepare for additional funding opportunities by improving resources for advocacy for state and federal funds.

As part of the report, BCDC developed a funding analysis to identify near-term coastal hazard adaptation needs and possible funding solutions and provide improved estimates of the total costs for regional adaptation, as well as potential approaches to pay for those costs. Finally, BCDC entered into a Memorandum of Understanding with 7 Regional and State agencies to advance sea level rise and flooding funding and coordination actions.

Regulatory Improvements

On May 21, 2021, the Commission amended BCDC regulations to improve the permitting process, with specific benefits for habitat restoration projects. The regulation change will facilitate the restoration of habitat in the Bay by providing a more efficient and less costly permitting pathway for restoration project proposals. In addition, on January 16, 2020, the Commission approved an increase in its application fees. However, the Commission incorporated a provision in the fee structure to allow reduced fees for multi-benefit restoration projects that receive Measure AA funding from the San Francisco Bay Restoration Authority (RA).

One key outcome from improving regulations is an amendment of BCDC regulations to include habitat restoration projects administratively, without requiring a hearing and vote before the full Commission. Another key outcome from improving regulations is an amendment BCDC's regulations to increase application fees but incorporate reduced fees for multi-benefit restoration projects that receive Measure AA funding and reduce costs to those projects.

San Francisco Bay Sediment & Soil Beneficial Reuse Action Plan for Wetland Restoration Adaptation
Please see Phase I Assessment for Wetlands on page 11 for more details.

Enhancement Area Prioritization

1. What level of priority is the enhancement area for the coastal management program?

High X
Medium
Low

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

The HIGH priority level was given to this enhancement area due to the significant impacts that coastal hazards will have on the San Francisco Bay Area’s social, economic, and ecological systems. Coastal flooding, groundwater rise, and seismic events are predicted to have widespread impacts on many critical regional systems, and thus collaborative development of adaptation solutions will be a top priority for BCDC in coming years. Stakeholder feedback reflected these concerns and identified Coastal Hazards as the highest priority enhancement area for BCDC’s Coastal Management program (see “Summary of Stakeholder and Public Comment”). For stakeholders that selected coastal hazards, they identified flooding for shoreline communities and disruption to adjacent critical infrastructure, challenges with funding for adaptation plans and projects, and sustainability of natural Bay ecosystems to be the highest priority issues.

Public Access

Section 309 Enhancement Objective: Attain increased opportunities for public access, taking into account current and future public access needs, to coastal areas of recreational, historical, aesthetic, ecological, or cultural value. §309(a)(3)

Resource Characterization

1. Use the table below to provide data on public access availability within the coastal zone.

Table 8: Public Access Status and Trends

Type of Access	Current number ¹⁰	Changes or Trends Since Last Assessment ¹¹ (↑, ↓, -, unknown)	Cite data source
Shoreline (other than beach) access sites	Over 1,239 acres and 184 miles of shoreline public access permitted since the inception of BCDC	Increase; 35 acres and 12 miles added since last assessment	BCDC Annual Report (2023)
Recreational boat (power or non-motorized) access sites	53 designated sites of the SF Bay Water Trail	Increase; 5 sites of the SF Bay Water Trail added since last assessment	San Francisco Bay Water Trail ¹²
Designated scenic vistas or overlook points	20	No change	Bay Plan Maps
Fishing access points (i.e. piers, jetties)	Over 75 fishing access points, including more than 40 public piers	Increase; 27 permits issued for pier renovation since last assessment	Recreation and San Francisco Bay ¹³ ; San Francisco Bay Shoreline Guide ¹⁴ ; BCDC permit data

¹⁰ Be as specific as possible. For example, if you have data on many access sites but know it is not an exhaustive list, note “more than” before the number. If information is unknown, note that and use the narrative section below to provide a brief qualitative description based on the best information available.

¹¹ If you know specific numbers, please provide. However, if specific numbers are unknown but you know that the general trend was increasing or decreasing or relatively stable or unchanged since the last assessment, note that with a ↑ (increased), ↓ (decreased), – (unchanged). If the trend is completely unknown, simply put “unknown.”

¹² San Francisco Bay Water Trail Trailheads Map. Accessed December 2024. San Francisco Bay Area Water Trail. <http://sfbaywatertrail.org/map/?id=182&type=trailheads>

¹³ Staff Report: Recreation and San Francisco Bay. 2006. BCDC.

¹⁴ San Francisco Bay Shoreline Guide. 2012. State Coastal Conservancy.

Type of Access	Current number ¹⁰	Changes or Trends Since Last Assessment ¹¹ (↑, ↓, -, unknown)	Cite data source
Coastal trails/ boardwalks (Please indicate number of trails/boardwalks and mileage)	San Francisco Bay Trail: Over 350 miles in place, 500 miles planned	Increase; 352 miles in place as of 2024	San Francisco Bay Trail ^{15,16}
Acres of parkland/open space	Over 30,000 acres	Increase; 43 new park/open space permits issued since last assessment	San Francisco Baykeeper ¹⁷ ; Preserving Adapting to Rising Tides ¹⁸ ; BCDC permit data
Access sites that are Americans with Disabilities Act (ADA) compliant ¹⁹	Over 1,239 acres and 184 miles of shoreline public access permitted since the inception of BCDC	Increase; 35 acres and 12 miles added since last assessment; 55 public access sites added since last assessment	BCDC Annual Report (2023); BCDC permit data

- Briefly characterize the demand for coastal public access and the process for periodically assessing demand. Include a statement on the projected population increase for your coastal counties. There are several additional sources of statewide information that may help inform this response, such as the Statewide Comprehensive Outdoor Recreation Plan,²⁰ the National Survey on Fishing, Hunting, and Wildlife Associated Recreation,²¹ and your state's tourism office.

Public Access Demand and Assessment Process

¹⁵ <https://baytrail.org/about-the-trail/welcome-to-the-san-francisco-bay-trail/>

¹⁶ <https://opendata.mtc.ca.gov/datasets/san-francisco-bay-trail/about>

¹⁷ <https://baykeeper.org/shoreview/recreation.html>

¹⁸ Preserving Shoreline Parks in the Face of Climate Change. 2015. BCDC & Adapting to Rising Tides.

¹⁹ For more information on ADA see [ada.gov](https://www.ada.gov).

²⁰ Most states routinely develop "Statewide Comprehensive Outdoor Recreation Plans", or SCROPs, that include an assessment of demand for public recreational opportunities. Although not focused on coastal public access, SCROPs could be useful to get some sense of public outdoor recreation preferences and demand. Download state SCROPs at [recpro.org/resources--reports/scorp-resources](https://www.recpro.org/resources--reports/scorp-resources).

²¹ The National Survey on Fishing, Hunting, and Wildlife Associated Recreation produces state-specific reports on fishing, hunting, and wildlife associated recreational use for each state. While not focused on coastal areas, the reports do include information on saltwater and Great Lakes fishing, and some coastal wildlife viewing that may be informative and compares 2016 data to 2011, 2006, and 2001 information to understand how usage has changed. The most recent survey was conducted for 2022 but due to a change in methodology, results cannot be compared to previous reports. See [fws.gov/program/national-survey-fishing-hunting-and-wildlife-associated-recreation-fhwar](https://www.fws.gov/program/national-survey-fishing-hunting-and-wildlife-associated-recreation-fhwar).

The San Francisco Bay Area is a rapidly growing metropolis, with a projected population growth of 2.4 million people between 2010 and 2040, and it is expected to reach a population of 9.6 million people by 2040.²² Recreation located in the coastal zone is very popular among residents and tourists, and includes activities such as boating and sailing, hiking, kayaking, windsurfing, swimming, beach use, photography, surfing, scuba diving, and bicycling.²³ There is increasing demand for boat share programs, evidenced by growth of fleet size and membership in commercial sailing schools such as Olympic Circle Sailing Club (OCSC Sailing) and Club Nautique.²⁴ BCDC last officially assessed demand for coastal public access in its 2006 staff report, “Recreation and San Francisco Bay.”²⁵ According to the report, there was growing demand at the time for water-oriented recreation, including some newer water-oriented activities.

The California Department of Parks and Recreation assessed demand for outdoor recreation at a statewide level regularly until 2012 through the “Survey on Public Opinions and Attitudes on Outdoor Recreation in California,” but the survey has not been conducted since 2012. More recent surveys on public access in the region have not been found. Trends from the last survey, which were also reported in BCDC’s 2021 to 2025 Assessment and Strategy, demonstrate regional demand for recreation in 2012 (Table 9), and projected trends for top recreational activities through 2060 (Table 10). As per the report, the survey resulted in 5,831 total respondents.²⁶

Table 9: 2012 Regional Recreational Demand – Greater San Francisco Bay Area²⁷

Top Facilities Used	% of Survey Respondents	Top Activities	% of Survey Respondents	Top Latent Demand for Activities	% of Survey Respondents
Unpaved trail	65	Walking	49	Picnicking in picnic areas (with tables, fire pits, or grills)	55
Paved trail	58	Hiking on unpaved trails	42	Walking for fitness or pleasure on paved surfaces	33
Scenic observation/wildlife viewing area	54	Eating/Picnicking	30	Camping in developed sites with facilities such as toilets and tables (not including backpacking)	33

²² Plan Bay Area: Forecasting the Future. <http://2040.planbayarea.org/forecasting-the-future>

²³ San Francisco Bay Subtidal Habitat Goals Project. 2008. Battelle Memorial Institute. *Appendix I-2: Economic Valuation of San Francisco Bay Natural Resources Services*.

²⁴ OCSC Sailing and Club Nautique data, 2015.

²⁵ BCDC, 2006.

²⁶ Survey on Public Opinions and Attitudes on Outdoor Recreation in California. 2012. California Department of Parks and Recreation.

²⁷ California Department of Parks and Recreation, 2012.

Picnic table, picnic pavilion	53	Playing	27	Day hiking on unpaved trails	33
Open space to play	48	Sedentary Activities	22	Shopping at a farmer's market	31
Beach or Water Recreation area	44	N/A	N/A	Beach activities (swimming, sunbathing, surfing, wading, playing on beach)	31

Table 10: Projected Top Activity Participation through 2060 – Greater San Francisco Bay Area²⁸

Year/Activity	Walking (% of Survey Respondents)	Hiking (% of Survey Respondents)	Picnicking (% of Survey Respondents)	Playing (% of Survey Respondents)	Sedentary (% of Survey Respondents)
2020	54	46	33	29	23
2030	57	49	34	31	25
2040	60	52	36	32	26
2050	64	55	37	33	27
2060	67	58	39	35	28

3. If available, briefly list and summarize the results of any additional data or reports on the status or trends for coastal public access since the last assessment.

Public Access Trends and Emerging Issues

As noted in Table 8 above, the San Francisco Bay Trail and San Francisco Water Trail continue to expand to provide public access to the shoreline and water across the Bay. BCDC remains committed to partnering with these organizations to ensure the continuity and connectivity of the Bay Trail while providing a coordinated, improved, and safer set of water access locations. In addition to continued growth in these established programs, newer public access trends have emerged as well.

The projected impacts of coastal flooding on public access present challenges for shoreline development and restoration projects. The erosion of the shoreline and the inundation of beaches will reduce space for parklands and beaches in the coming decades. The Bay Trail, marshes and wetlands, and parks will all suffer from the impacts of coastal flooding through reduced accessibility for people and constrained space for natural ecosystems to thrive.

Management Characterization:

1. Indicate if the approach is employed by the state or territory and if there have been any significant state- or territory-level management changes (positive or negative) that could impact the future

²⁸ California Department of Parks and Recreation, 2012.

provision of public access to coastal areas of recreational, historical, aesthetic, ecological, or cultural value.

Table 11: Significant Changes in Public Access Management

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Yes	Yes	No
Operation/maintenance of existing facilities	No	Yes	No
Acquisition/enhancement programs	No	Yes	No

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
 - a. Describe the significance of the changes;
 - b. Specify if they were 309 or other CZM-driven changes; and
 - c. Characterize the outcomes or likely future outcomes of the changes.

San Francisco Waterfront: Public Access Expansion

BCDC has continued to require maximum feasible public access across permitting projects. Since the last assessment was completed, over 35 acres and 12 miles of public access were added to the Bay Area. BCDC has also continued its partnerships with the San Francisco Bay Trail and the San Francisco Water Trail to plan for increased and continuous access to the Bay's shoreline and open water. BCDC issued major permits for large mixed-use projects along the San Francisco waterfront which will open up much of the formerly industrial shoreline to public access. Additionally, the Bay Restoration Regulatory Integration Team (BRRIT), established during the previous cycle for the 2021-2025 Assessment & Strategy, facilitated early coordination with resource agencies on restoration projects to include long term provision and availability of public access such as the Bay Trail.

Two major permits providing public access to the bay shoreline are described here. BCDC Permit No. 2020.001.00, issued in 2021, for the India Basin Open Space and 700 Innes Mixed-Use Development Project requires the provision of 7.29 acres of public access, including a Bay Trail segment, trail network, boardwalk, and boat launch. BCDC Permit No. 2021.002.00, issued in 2022, for the 900 Inness Park Redevelopment Project requires the provision of 1.9 acres of new public access as part of an integrated park network.

BCDC Public Access Policy Review

In 2024, BCDC completed a NOAA-funded 309 study (FY22) to evaluate key issues related to the conflict among public access, wildlife/restoration, rising sea level, and community impact. The BCDC Public Access Policy Review documents some limited stakeholder perspectives and policy approaches through internal BCDC staff interviews, external stakeholder interviews, background research, and case studies of existing projects and permits. The findings for the Public Access Policy Review may inform BCDC staff

efforts, including, but not limited to, potential updates to guidance for staff and applicants, regional planning efforts through the Adapting to Rising Tides program and the Bay Adapt initiative, and possible future amendments of BCDC's plans. Working to address the diverse and often conflicting priorities of natural resource managers and advocates, public access advocates, permit applicants, and various regulatory agencies, is a priority for BCDC. Some of the findings from this policy review informed BCDC staff work on NOAA 309 funded support for development of the RSAP (FY 23), and as a result helped support a program change.

3. Indicate if your state or territory has a publicly available public access guide. How current is the publication and how frequently it is updated?²⁹

Table 12: Publicly Available Access Guide

Public Access Guide	Printed	Online	Mobile App
State or territory has? (Y or N)	Yes	Yes	No
Web address (if applicable)	https://mtc.ca.gov/operations/regional-trails-parks/san-francisco-bay-trail/map-numbers	https://baytrail.org/bay-trailmap.html http://sfbaywatertrail.org/map/	N/A
Date of last update	2012	Water Trail: 2022 Bay Trail: January 2024	N/A
Frequency of update	Approximately every 2-3 years, depending on how much new access has been added	Water Trail: Quarterly Bay Trail: Regularly-updates occur shortly after new access as added	N/A

Enhancement Area Prioritization

1. What level of priority is the enhancement area for the coastal management program?

High ☐
Medium ☒
Low ☐

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

The MEDIUM priority level was given to this enhancement area because, while public access is a core component and responsibility of BCDC's coastal program and therefore an important priority for BCDC as an agency, the issues identified by stakeholders related to public access were more appropriately considered and evaluated through the high priority coastal hazard enhancement area. Public access continues to successfully expand under BCDC's laws and policies, and the work of the Bay Trail project, and investment in public access growth will be necessary to maintain access to the shoreline well into

²⁹ Note some states may have regional or local guides in addition to state public access guides. Unless you want to list all local guides as well, there is no need to list additional guides beyond the state access guide. You may choose to note that the local guides do exist and may provide additional information that expands upon the state guides.

the future as public access is threatened by coastal hazards. This need is driven by uncertainty in the extent and timing of coastal flooding impacts on public access, reduced space for parklands and beaches due to shoreline erosion, and the complex interaction between all of these issues. Stakeholder input reflected a medium priority designation for public access (see “Summary of Stakeholder and Public Comment”). For stakeholders that selected public access, they identified long-term maintenance of public access in the light of coastal hazards, balanced distribution around the Bay to public access and water-oriented recreation as projects addressing coastal hazards are developed, and community access to public access facilities to be the highest priority issues. These are existing issues that are addressed through the high priority coastal hazard enhancement area, where these issues are interconnected with other issues of coastal hazards around the Bay.

Marine Debris

Section 309 Enhancement Objective: Reducing marine debris entering the nation's coastal and ocean environment by managing uses and activities that contribute to the entry of such debris. §309(a)(4)

Resource Characterization

1. In the table below, characterize the existing status and trends of marine debris in the state's coastal zone based on the best-available data.

Table 13: Existing Status and Trends of Marine Debris in Coastal Zone

Source of Marine Debris	Significance of Source (H, M, L, unknown)	Type of Impact ³⁰ (aesthetic, resource damage, user conflicts, other)	Change Since Last Assessment (↑, ↓, -, unknown)
Beach/shore litter	High	Aesthetic, resource damage, water quality	Increase
Land-based dumping	Unknown	Aesthetic, resource damage, water quality	Unknown
Storm drains and runoff	High	Aesthetic, resource damage, water quality	Unknown
Land-based fishing (e.g., fishing line, gear)	Low	Resource damage, user conflicts	Unknown
Ocean-based fishing (e.g., derelict fishing gear)	Low	Resource damage, user conflicts	Unknown
Derelict vessels	Low	Aesthetic, resource damage, water quality, user conflicts, navigational hazard	Decrease
Vessel-based (e.g., cruise ship, cargo ship, general vessel)	Low	Aesthetic, resource damage, water quality	Unknown
Hurricane/Storm	Medium	Aesthetic, resource damage, water quality	Unknown
Tsunami	Low	Aesthetic, resource damage, water quality	Unknown
Other (please specify)			

2. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends or potential impacts from marine debris in the coastal zone since the last assessment.

Derelict Vessels

In 2019, research was published quantifying the damage to eelgrass beds caused by vessels that illegally anchor for long periods of time in the Bay, some of which are abandoned or derelict vessels (ADV). The

³⁰ You can select more than one, if applicable.

study found that long-term illegal vessel anchorage causes visible scars in eelgrass beds, and has resulted in a 25-41% loss of eelgrass in the study area (Richardson Bay, Marin County, California).³¹

Litter

Littering of the shoreline and adjacent areas, often resulting in litter in the Bay, remains a prominent issue for the San Francisco Bay Area. Every year communities throughout the Bay Area participate in California Coastal Cleanup Day, which coincides with the International Coastal Cleanup Day, and tally the amounts of litter collected. In 2023 Coastal Cleanup Day events, the nine Bay Area counties collected 122,695 pounds of debris, including both trash and recyclables.³² The amount of litter collected has increased almost every year since the start of the pandemic in 2020.

Microplastics

Microplastics, or minute plastic particles formed by the breakdown of larger plastic debris, have been increasingly recognized as a potential threat to coastal ecosystems and human health. Microplastics can enter coastal waters through myriad pathways, including stormwater, wastewater, atmospheric deposition, rivers, and aquatic and shore activities. New research has started to assess the impacts and transport pathways of microplastics in the Bay Area, finding that these tiny particles are widespread in stormwater, treated wastewater, surface water, sediment, and prey fish.³³ Notably, the report found that stormwater discharges 300 times more microplastics than treated wastewater.

Management Characterization

1. Indicate if the approach is employed by the state or territory and if there have been any significant state- or territory-level management changes (positive or negative) for how marine debris is managed in the coastal zone.

³¹ Kelly, J.J., Orr, D., and Takekawa, J.Y. 2019. Quantification of damage to eelgrass (*Zostera marina*) beds and evidence-based management strategies for boats anchoring in San Francisco Bay. *Environmental Management* 64: 20-26.

³² California Coastal Cleanup Results. 2023. California Coastal Commission. Data Accessed in December 2024. <https://www.coastal.ca.gov/publiced/ccd/history.html>. The sum of data for the 9 Bay Area Counties is reported.

³³ Sutton, R.; Lin, D.; Sedlak, M.; Box, C.; Gilbreath, A.; Holleman, R.; Miller, L.; Wong, A.; Munno, K.; Zhu, X.; et al. 2019. Understanding Microplastic Levels, Pathways, and Transport in the San Francisco Bay Region. SFEI Contribution No. 950. San Francisco Estuary Institute: Richmond, CA.

Table 14: Significant Changes in Marine Debris Management

Management Category	Employed by State/Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Marine debris statutes, regulations, policies, or case law interpreting these	Yes	Yes	No
Marine debris removal programs	Yes	Yes	Yes

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
 - a. Describe the significance of the changes;
 - b. Specify if they were 309 or other CZM-driven changes; and
 - c. Characterize the outcomes and likely future outcomes of the changes.

Derelict Vessel Removal

Abandoned, deteriorating and unauthorized vessels adversely impact Bay resources and their removal can have significant and nearly immediate benefits to critical habitats and species. BCDC has continued ongoing efforts to promote the adoption, implementation, and enforcement of policies at the local level that result in the removal/control of derelict vessels. Removal of vessels improves the health of the Bay ecosystems, eliminates navigational hazards, and reduces pollution entering the Bay. At the end of 2024 in the month of December, the Richardson Bay Regional Agency reported a total of 21 illegally-anchored vessels, and no floating homes, down considerably from the 88 vessels and four floating homes that were in the bay when the RBRA and BCDC reached a settlement agreement in September, 2021 on completely reducing over time the number of illegally-anchored vessels in this area.

Bay Fill Removal

BCDC has continued to require the removal of bay fill and marine debris associated with permitted projects. BCDC issued several major permits for pier removal, pile removal, wharf and warehouse structure removal along the Bay shoreline that will remove fill from the Bay and work towards restoring the shoreline. Three major permits removing bay fill to the Bay shoreline are described here. BCDC permit M1996.005.04, issued in 2022, for the Ferry Point Pier Removal and Restoration Project requires the removal of approximately 1,040 12- to 14-inch diameter creosote-treated timber piles and 16,500 square feet of overwater creosote-treated wood decking from the Ferry Point Pier. BCDC permit M2023.018.00, issued in 2023, for Timber Pile removal in Crockett requires the removal of 450 creosote timber piles and deck debris. BCDC permit M2020.016.00, issued in 2021, for the Terminal Four Wharf, Warehouse, and Piling Removal Project requires the removal of a wharf, warehouse, pilings and structures.

Enhancement Area Prioritization

1. What level of priority is the enhancement area for the coastal management program?

High _____
Medium _____

Low X

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

The LOW priority level was given to this enhancement area because BCDC has limited authority over marine debris, particularly related to land-based sources, and has therefore been focusing primarily on issues regarding derelict vessels, derelict pile-supported structures, and non-authorized live-aboard vessels through permitting and enforcement activities. Additionally, stakeholder input ranked this enhancement area as a much lower priority than the six areas ranked as either high or medium priorities in this Assessment (see “Summary of Stakeholder and Public Comment”). Despite the low priority ranking in relation to other coastal management issues, BCDC will continue to work on important marine debris concerns pertaining to its jurisdiction through its regulatory and enforcement programs.

Cumulative and Secondary Impacts

Section 309 Enhancement Objective: Development and adoption of procedures to assess, consider, and control cumulative and secondary impacts of coastal growth and development, including the collective effect on various individual uses or activities on coastal resources, such as coastal wetlands and fishery resources. §309(a)(5)

Resource Characterization

1. Using National Ocean Economics Program Data on population and housing,³⁴ please indicate the change in population and housing units in the state's coastal counties between 2017 and 2021. You may wish to add additional trend comparisons to look at longer time horizons as well (data available back to 1970), but at a minimum, please show change over the most recent five-year period data is available (2017-2021) to approximate current assessment period.

Table 15: Trends in Coastal Population and Housing Units³⁵

	2017	2021	Percent Change (2017-2021)
Number of people	7,730,789	7,574,960	-2.01%
Number of housing units	2,902,533	2,984,468	2.82%

2. Using the tables below as a guide, provide information on land cover changes and development trends. Be as quantitative as possible using state or national land cover data.³⁶ The tables are a suggestion of how you could present the information. Feel free to adjust column and row headings to align with data and time frames available in your state or territory. If quantitative data on land cover changes and development trends are not available, provide a brief qualitative narrative describing changes in land cover, especially development trends, including significant changes since the last assessment.

Coastal Development Change

As shown in land cover imagery from 1996 and 2023 for the Bay Area (Figure 3, Figure 4), there have been substantial areas lost to development during this period. Table 18 below describes the changes in further detail. BCDC permitting data also provides some insight into how shoreline and land use has changed since the last assessment. Altogether, 21 major permits were issued between 2020 and 2024, including multi-use housing developments, new waterfront parks or other open spaces, structural shoreline protection projects, and the permanent mooring of the historic Klamath Ferryboat for public access. However, some of these permits also included restoration, contaminant remediation, and natural shoreline protection projects.³⁷ Through all these projects, the net increase in bay surface from 2020 to 2023 was 982.7 acres.³⁸

³⁴www.oceaneconomics.org/. Enter "Population and Housing" section and select "Data Search" (near the top of the left sidebar). From the drop-down boxes, select your state. Select the year (2021) then select "coastal zone counties." The default comparison year will be 2017 so no need to select a comparison year.

³⁵ National Ocean Economics Program – Population and Housing Data.
www.oceaneconomics.org/Demographics/PHsearch.aspx.

³⁶ National data on wetlands status and trends include NOAA's Land Cover Atlas (coast.noaa.gov/digitalcoast/tools/lca.html) and the U.S. Geological Survey's National Land Cover Database (usgs.gov/centers/eros/science/national-land-cover-database).

³⁷ BCDC permit data.

³⁸ BCDC Annual Report. 2023. BCDC. <https://bcdc.ca.gov/wp-content/uploads/sites/354/2024/01/2023-AnnualReport.pdf>

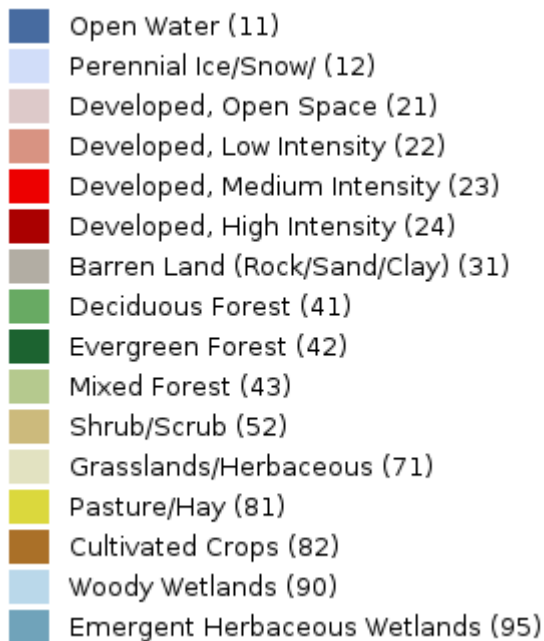
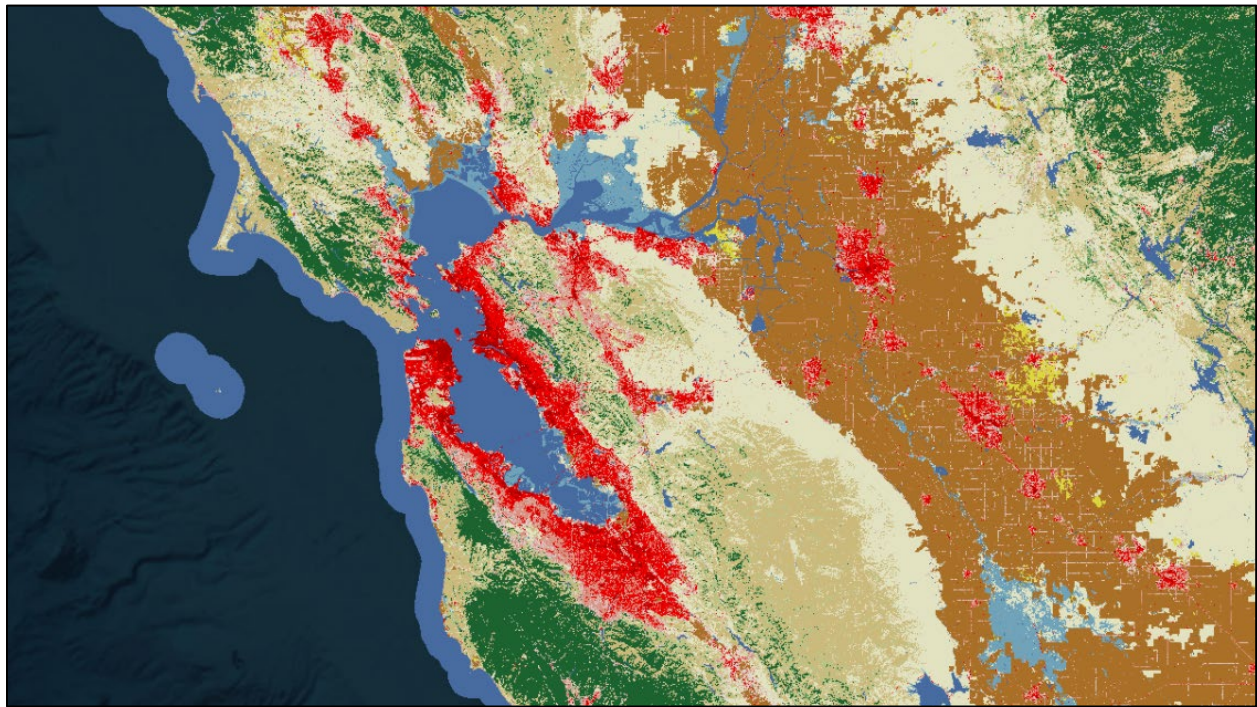


Figure 3: Distribution of land cover classes across the Bay region in 1996 with legend **Source:** Multi-Resolution Land Characteristics Consortium Data Viewer. National Land Cover Dataset: 1996 CONUS Land Cover. Viewed in January 2025. <https://www.mrlc.gov/viewer/>

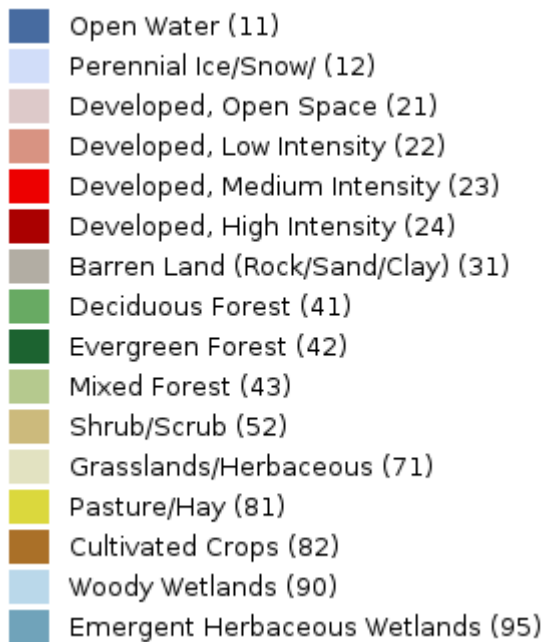
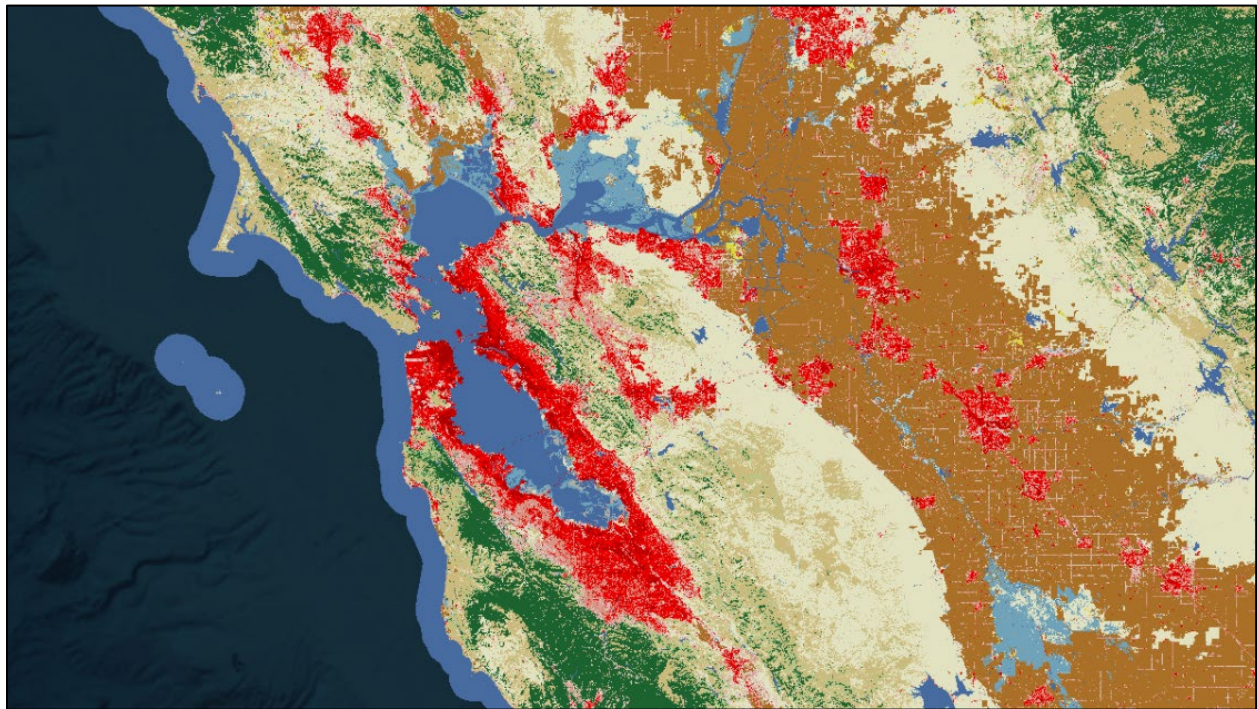


Figure 4: Distribution of land cover classes across the Bay region in 2023 with legend **Source:** Multi-Resolution Land Characteristics Consortium Data Viewer. National Land Cover Dataset: 2023 CONUS Land Cover. Viewed in January 2025. <https://www.mrlc.gov/viewer/>

Table 16: Distribution of Land Cover Types in Coastal Counties³⁹

Land Cover Type	Land Area Coverage in 2023 (Acres)	Gain/Loss Since 1996 (Acres)
Developed, High Intensity	46,268.3	6,333.2
Developed, Low Intensity	35,833.4	-1,806.3
Developed, Open Space	14,936.2	-3,914.2
Grassland	37,575.6	-4,939.7
Scrub/Shrub	4,135	-398.6
Barren Land	6,690.5	2,713.1
Open Water	322,236.9	-619.1
Agriculture	26,298.9	-3,710
Forested	2,857	96.3
Woody Wetland	412	123.3
Emergent Wetland	107,517.6	-318.1

Table 17: Development Status and Trends for Coastal Counties⁴⁰

	1996	2023	Percent Net Change
Percent land area developed	17.78%	19.85%	2.07%

Table 18: How Land Use Is Changing in Coastal Counties⁴¹

Land Cover Type	Areas Lost to Development Between 1996-2023 (Acres)
Barren Land	501.8
Emergent Wetland	431.9
Woody Wetland	11.4
Open Water	907.9
Agriculture	2,996
Scrub/Shrub	320.1
Grassland	4,434.4
Forested	112.8

- Briefly characterize how the coastal shoreline has changed in the past five years due to development, including potential changes to shoreline structures such as groins, bulkheads and other shoreline stabilization structures, and docks and piers. If available, include quantitative data that may be available from permitting databases or other resources about changes in shoreline structures.

³⁹ Data analysis conducted using National Land Cover Dataset: 1996 CONUS Land Cover; 2023 CONUS Land Cover. Viewed in January 2025. <https://www.mrlc.gov/viewer/>

⁴⁰ Data analysis conducted using National Land Cover Dataset: 1996 CONUS Land Cover; 2023 CONUS Land Cover. Viewed in January 2025. <https://www.mrlc.gov/viewer/>

⁴¹ Data analysis conducted using National Land Cover Dataset: 1996 CONUS Land Cover; 2023 CONUS Land Cover. Viewed in January 2025. <https://www.mrlc.gov/viewer/>

Table 19: Shoreline Inventory around the San Francisco Bay⁴²

Class	Percent	Miles
Engineered Levee	6	170
Berm	40	1,215
Shoreline Protection Structure	6	175
Embankment	19	558
Transportation structure (major road, railroad)	10	313
Natural Shoreline	2	66
Wetland	16	486
Other	1	29

- Briefly summarize the results of any additional state- or territory-specific data or reports on the cumulative and secondary impacts of coastal growth and development, such as water quality, shoreline hardening, and habitat fragmentation, since the last assessment.

Habitat Fragmentation

As described in the Wetlands Assessment above, tidal marshes have been fragmented by development since their historic pre-settlement state (around the year 1800). Against a background of severe habitat loss, fragmentation has reduced the baylands' support for wildlife by decreasing the connectivity between populations and increasing edge effects that promote predation and anthropogenic stress. Large marsh patches in the current baylands are primarily composed of wide marsh areas connected by narrow fringing marsh. The extent of wetland fragmentation is depicted in Figure 3 above. Despite this historic fragmentation of wetlands, recent restoration work has aimed at re-establishing connectivity in these habitats.⁴³

Secondary Impacts of Shoreline Protection

Recent research investigated the impact of local shoreline protection on regional flood risk aiming to understand how hydrodynamic changes due to shoreline adaptation interact with the built environment. Along hydrologically connected areas, flood risk reduction strategies in one jurisdiction may not provide necessary flood protection if adjacent shoreline jurisdictions have not coordinated their adaptation strategies.

Adaptation planning that only considers existing projects and shoreline infrastructure--without considering the interactions with planned shoreline modifications--could underestimate how water levels and tides will respond. According to Hummel & Stacey (2021), "protecting individual shoreline segments produces relatively small changes in tidal amplitudes for low increments of sea-level rise but can result in amplification of certain tidal constituents by up to 40% under higher sea-level rise

⁴² San Francisco Bay Shore Inventory: Mapping for Sea Level Rise Planning. 2016. SFEI Publication number 779. San Francisco Estuarine Institute-Aquatic Science Center, Richmond, CA. Mapping of Bay shore features was accomplished by digitizing the highest ridge or edge of the highest surface that was visible in the LiDAR derived DEM (USGS 2010, NOAA/OPC 2010) datasets.

⁴³ Goals Project, 2015. pgs 20-23.

scenarios.”⁴⁴ Hydraulic connectivity along the bay shoreline at 100-year storm surge with 3 ft. of sea-level rise is depicted in Figure 4 below.

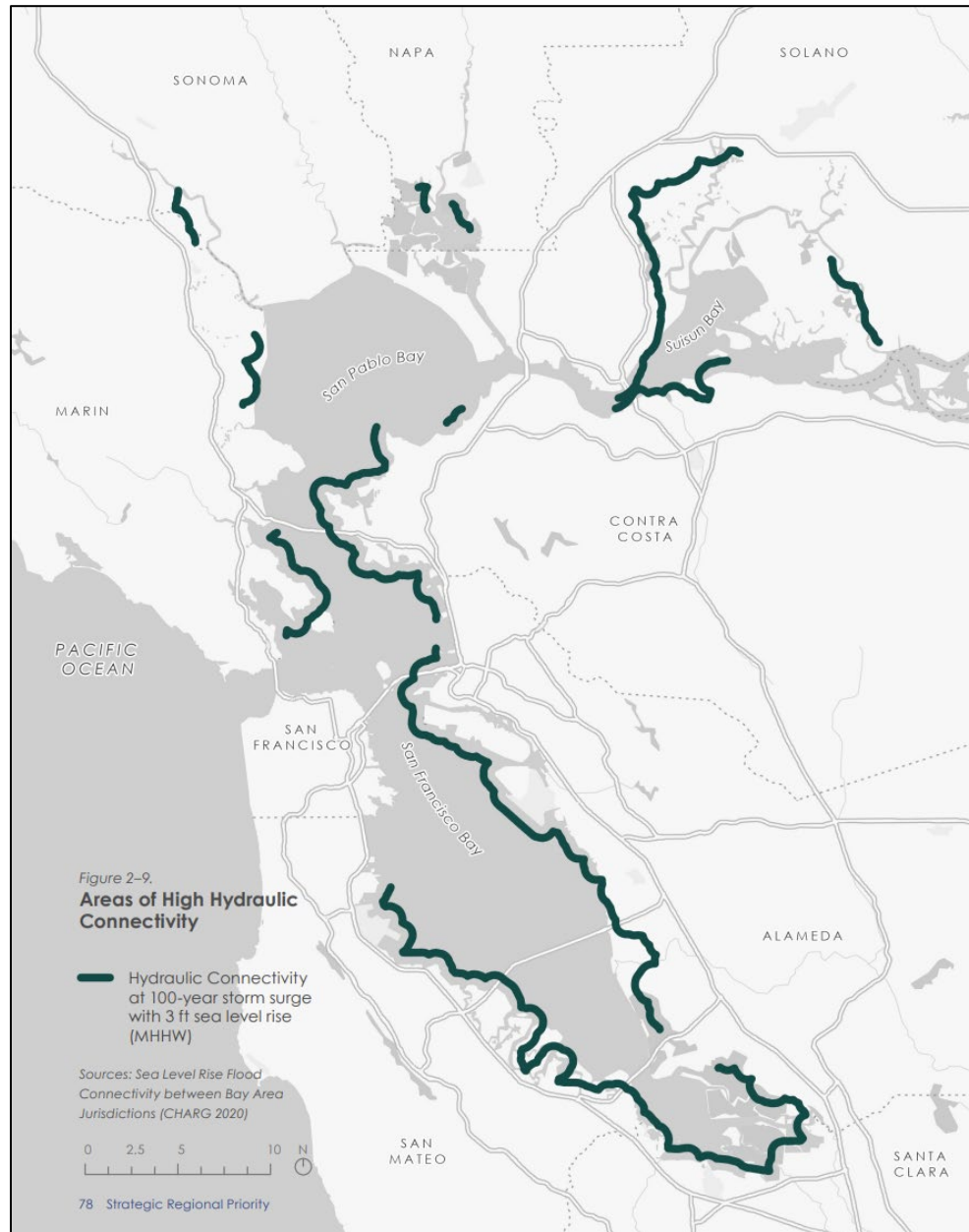


Figure 4: Areas of High Hydraulic Connectivity map shows bands of the shoreline that will be hydraulically connected under a 100-year storm + 3 ft. Sea level rise (MHHW) scenario. This was chosen to be consistent with the CA State SLR Guidance (2024) 2100 Intermediate sea-level rise scenario.

Source: Sea Level Rise Flood Connectivity between Bay Area Jurisdictions. 2020. CHARG.

⁴⁴ Hummel, M. A., & Stacey, M. T. 2021. Assessing the influence of shoreline adaptation on tidal hydrodynamics: The role of shoreline typologies. *Journal of Geophysical Research: Oceans*, 126, e2020JC016705. <https://doi.org/10.1029/2020JC016705>

Water Quality

The Bay's Regional Monitoring Program (RMP) has monitored numerous contaminants, including mercury, polychlorinated bisphenols (PCBs), contaminants of emerging concern (CECs), copper, and lead for over two decades. A 2017 RMP report summarizing trends of these contaminants through time indicates that concentrations of most contaminants in water, sediment, and wildlife have declined or remained stable during this period.⁴⁵ However, concerns have emerged that sea level rise-associated flooding of contaminated sites on San Francisco Bay's shoreline and in adjacent subtidal areas could result in mobilization of contaminants, posing health risks to human and natural communities. Additionally, a 2019 RMP report found microplastic pollution in every part of the Bay, at some of the highest levels measured globally. According to the report findings, urban stormwater runoff carries an estimated 7 trillion microplastics through creeks and streams, ultimately finding their way into the Bay.⁴⁶

Marine Transportation

Marine transportation in San Francisco Bay has steadily expanded over the past two decades, with plans to continue this expansion in coming years.^{47,48} The Water Emergency Transportation Authority (WETA)'s current operations include 17 vessels, 14 terminals (4 new terminals), 11 routes (4 new routes), to 8 cities (2 new cities).^{49,50} In 2016, WETA released a 20-year Strategic Plan that projected an expansion to 44 vessels serving 12 routes to 16 terminals.⁵¹ WETA is set to release the 2050 Service Vision which will set standards for enhancement and expansion of existing ferry service throughout the bay.

While ferries and water taxis provide benefits by reducing traffic and providing access to the water, they are also known to impact natural resources in the Bay Area and in other coastal environments. Ferry wakes have the potential to erode marsh shorelines in the San Francisco Bay,⁵² and in other regions shoreline erosion caused by boat wakes is well documented, although the location and presence of wind waves can influence the relative importance of boat wake impacts.⁵³ Ferry activity in the San Francisco Bay can also alter behavior of waterbirds and preclude waterbird use of open water habitats for extended periods.⁵⁴ A 2003 analysis of proposed expansion of ferries also identified marine mammal

⁴⁵ The Pulse of the Bay: The 25th Anniversary of the RMP. 2017. SFEI Contribution number 841. San Francisco Estuary Institute, Richmond, CA.

⁴⁶ Sutton, R; Lin, D; Sedlak, M; Box, C; Gilbreath, A; Holleman, R; Miller, E; Wong, A; Munno, K; Zhu, X; et al. 2019. Understanding Microplastic Levels, Pathways, and Transport in the San Francisco Bay Region. SFEI Contribution No. 950. San Francisco Bay Regional Monitoring Program for Water Quality: Richmond, CA.

⁴⁷ 2050 Service Vision and Expansion Policy. 2024. San Francisco Bay Area Water Emergency Transportation Authority.

⁴⁸ <https://sanfranciscobayferry.com/our-ferry-future/>

⁴⁹ Service Vision 2050. San Francisco Bay Area Water Emergency Transportation Authority.

<https://www.bayferry2050.org/service-vision>

⁵⁰ <https://sanfranciscobayferry.com/meet-our-fleet/>

⁵¹ 2016 Strategic Plan. 2016. San Francisco Bay Area Water Emergency Transportation Authority.

⁵² Lacy, J.R., and Hoover, D.J. 2011. Wave Exposure of Corte Madera Marsh, Marin County, California—a Field Investigation. US Geological Survey Open-File Report 2011-1183.

⁵³ Bilkovic, D., M. Mitchell, J. Davis, E. Andrews, A. King, P. Mason, J. Herman, N. Tahvildari, J. Davis. 2017. Review of boat wake wave impacts on shoreline erosion and potential solutions for the Chesapeake Bay. STAC Publication Number 17-002, Edgewater, MD. 68 pp., and sources therein.

⁵⁴ Unpublished data: Takekawa, J.Y., Wilson, N.R., De La Cruz, S.W., and Anfinson, J.O. 2009. Effects of Ferry Traffic on Migratory Waterbirds in the San Francisco Bay. U.S. Geological Survey.

strikes/disturbance and impacts to state/federally listed species as potentially significant environmental impacts of increased ferry activity.⁵⁵ The cumulative effects of recently proposed increases in ferry activity in the San Francisco Bay Area have not been studied, but based on known impacts of ferries on natural resources, BCDC staff recognize that expansion of the ferry system must be carefully managed and planned with natural resources in mind.

Management Characterization

1. Indicate if the approach is employed by the state or territory and if there have been any significant state-level changes (positive or negative) in the development and adoption of procedures to assess, consider, and control cumulative and secondary impacts of coastal growth and development, including the collective effect on various individual uses or activities on coastal resources, such as coastal wetlands and fishery resources, since the last assessment.

Table 20: Significant Changes in Management of Cumulative and Secondary Impacts of Development

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Yes	Yes	Yes
Guidance documents	Yes	Yes	Yes
Management plans (including SAMPs)	Yes	Yes	Yes

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
 - a. Describe the significance of the changes;
 - b. Specify if they were 309 or other CZM-driven changes; and
 - c. Characterize the outcomes or likely future outcomes of the changes.

Regional Shoreline Adaptation Plan – (BPA 1-24)

Please see Phase I Assessment for Coastal Hazards on page 15 for more details.

Seaport Plan Update (BPA 1-19)

Please see Phase I Assessment for Coastal Hazards on page 15 for more details.

Enhancement Area Prioritization

1. What level of priority is the enhancement area for the coastal management program?

High _____
 Medium X
 Low _____

⁵⁵ URS Corporation, prepared for Water Transit Authority. 2003. Final Program Environmental Impact Report: Expansion of Ferry Transit Service in the San Francisco Bay Area.

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

The MEDIUM priority level was given to this enhancement area because of the diversity of critical issues leading to Cumulative and Secondary Impacts in the Bay and the management challenges of addressing those issues, as well as stakeholder input reflecting a medium priority designation for this enhancement area (see “Summary of Stakeholder and Public Comment”). For stakeholders that selected Cumulative and Secondary Impacts, they identified aging public infrastructure along the shoreline, development permitted in place of future flood protection and tidal marsh migration, and communication of flood risk by developers to homebuyers to be the highest priority issues. Since the last assessment, BCDC has also updated its policies, particularly with regard to SB 272 and the RSAP which require all local governments to address coastal hazards through Subregional Shoreline Adaptation Plans. As BCDC will be required to review and approve each plan, the need to consider cumulative impacts remains at the forefront of many subject-specific conversations, including wetlands, coastal hazards, and public access. This enhancement area was not ranked “High” priority because activities within the other high-priority enhancement areas will more effectively address the pressing needs for BCDC. The focus of BCDC’s coastal management program as it relates to Cumulative and Secondary Impacts will be addressed through these other related enhancement areas, such as the Coastal Hazards and Wetlands enhancement areas.

Special Area Management Planning

Section 309 Enhancement Objective: Preparing and implementing special area management plans for important coastal areas. §309(a)(6)

The Coastal Zone Management Act defines a special area management plan (SAMP) as “a comprehensive plan providing for natural resource protection and reasonable coastal-dependent economic growth containing a detailed and comprehensive statement of policies; standards and criteria to guide public and private uses of lands and waters; and mechanisms for timely implementation in specific geographic areas within the coastal zone. In addition, SAMPs provide for increased specificity in protecting natural resources, reasonable coastal-dependent economic growth, improved protection of life and property in hazardous areas, including those areas likely to be affected by land subsidence, sea level rise, or fluctuating water levels of the Great Lakes, and improved predictability in governmental decision making.”

Resource Characterization

1. In the table below, identify geographic areas in the coastal zone subject to use conflicts that may be able to be addressed through a SAMP. This can include areas that are already covered by a SAMP but where new issues or conflicts have emerged that are not addressed through the current SAMP.

Table 21: Opportunities for New or Updated Special Area Management Plans

Geographic Area	Major conflicts/issues
San Francisco Waterfront Special Area Plan	Align BCDC policies with the Port of San Francisco, update the geographic-specific policies of the Fisherman’s Wharf vicinity to match the Northeastern Waterfront vicinity, and establish a Sea Level Rise Public Education Initiative as a public benefit.
Local government shorelines	Conflicts between land use and coastal hazards, addressed through Subregional Shoreline Adaptation Plans developed pursuant to the Regional Shoreline Adaptation Plan and SB 272.

2. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends of SAMPs since the last assessment.

Management Characterization

1. Indicate if the approach is employed by the state or territory and if there have been any significant state- or territory-level management changes (positive or negative) that could help prepare and implement SAMPs in the coastal zone.

Table 22: Significant Changes in Special Area Management Planning

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
SAMP policies, or case law interpreting these	Yes	Yes	Yes
SAMP plans	Yes	Yes	Yes

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
- Describe the significance of the changes;
 - Specify if they were 309 or other CZM-driven changes; and
 - Characterize the outcomes or likely future outcomes of the changes.

Regional Shoreline Adaptation Plan – (BPA 1-24)

Please see Phase I Assessment for Coastal Hazards on page 15 for more details.

Seaport Plan Update (BPA 1-19)

Please see Phase I Assessment for Coastal Hazards on page 15 for more details.

Amendment to the Suisun Marsh Local Protection Program

Please see Phase I Assessment for Wetlands on page 11 for more details.

Enhancement Area Prioritization

1. What level of priority is the enhancement area for the coastal management program?

High _____
Medium X
Low _____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

The MEDIUM priority level was given to this enhancement area because of the many resource planning and protection issues in the Bay Area that could be addressed through special area management plans. Climate impacts, habitat, cumulative and secondary impacts, seaport management and development, and public access issues could all be undertaken in the context of special area management planning. Stakeholder input also reflected a medium priority designation for this enhancement area (see “Summary of Stakeholder and Public Comment”). For stakeholders that selected Special Area Management Planning, they identified area-specific habitat and wildlife restoration needs, landscape scale shoreline management and adaptation, and managed retreat and relocation of critical infrastructure to be the highest priority issues. This Enhancement Area was not ranked “High” priority because activities within the other high-priority enhancement areas will more effectively address the

pressing needs for BCDC. The focus of BCDC's coastal management program as it relates to Special Area Management Planning will be addressed through these other related enhancement areas, such as Coastal Hazards and Wetlands.

Ocean and Great Lakes Resources

Section 309 Enhancement Objective: Planning for the use of ocean [and Great Lakes] resources.
§309(a)(7)

Resource Characterization

1. Understanding the ocean and Great Lakes economy can help improve management of the resources it depends on. Using Economics: National Ocean Watch (ENOW),⁵⁶ indicate the status of the ocean and Great Lakes economy as of 2021 (the most recent data) in the tables below. Include graphs and figures, as appropriate, to help illustrate the information. Note ENOW data are not available for the territories. The territories can provide alternative data, if available, or a general narrative, to capture the value of their ocean economy.

Table 23: Status of Ocean and Great Lakes Economy for Coastal Counties (2021)⁵⁷

	All Ocean Sectors	Living Resources	Marine Construction	Ship & Boat Building	Marine Transportation	Offshore Mineral Extraction	Tourism & Recreation
Employment (# of Jobs)	145,576	2,123	2,899	N/A	16,165	576	117,362
Establishments (# of Establishments)	10,195	176	86	N/A	421	34	9,358
Wages (Millions of Dollars)	6,393	100	332	N/A	887	44	4,195
GDP (Millions of Dollars)	12,459	299	585	N/A	1,198	167	8,527

Table 24: Change in Ocean and Great Lakes Economy for Coastal Counties (2005-2021)⁵⁸

	All Ocean Sectors	Living Resources	Marine Construction	Ship & Boat Building	Marine Transportation	Offshore Mineral Extraction	Tourism & Recreation
Employment (# of Jobs)	3,572	1,211	394	N/A	6,038	-274	-3,953
Establishments (# of Establishments)	2,337	101	2	N/A	45	-16	2,117
Wages (Millions of Dollars)	2,545	86	185	N/A	368	20	1,621
GDP (Millions of Dollars)	3,258	264	261	N/A	264	124	2,858

⁵⁶coast.noaa.gov/digitalcoast/tools/enow.html. If you select any coastal county for your state, you are directed to various data displays for that county. In the upper left of the screen, click the "State" box, to the left of the county box so that the state name will be highlighted. Now the data will reflect statewide data for all of the state's coastal counties. Make sure "2021" is selected for the year (top right corner). You can then click through the sector types by selecting the icons along the top and the type of economic data (employment, wages, GDP, etc.), by clicking through the icons on the left.

⁵⁷ For Ship & Boat Building, information in the resource was unavailable due to it being "suppressed" for many Bay Area coastal counties. [www.coast.noaa.gov/digitalcoast/tools/enow.html](https://coast.noaa.gov/digitalcoast/tools/enow.html)

⁵⁸ For Ship & Boat Building, information in the resource was unavailable due to it being "suppressed" for many Bay Area coastal counties. [www.coast.noaa.gov/digitalcoast/tools/enow.html](https://coast.noaa.gov/digitalcoast/tools/enow.html)

2. Understanding existing uses within ocean and Great Lakes waters can help reduce use conflicts and minimize threats when planning for ocean and Great Lakes resources. Using Ocean Reports,⁵⁹ indicate the number of uses within the ocean or Great Lakes waters off of your state. To avoid duplication, energy uses (including pipelines and cables) are reported under “Energy and Government Facility Siting” in the following template. However, feel free to include energy uses in this table as well if listing all uses within ocean and Great Lakes waters in one place is preferred. Add additional lines, as needed, to include additional uses that are important to your state. Note: The Ocean Reports tool does not include data for the Great Lakes states. Great Lakes states should fill in the table as best they can using other data sources.

Table 25: Uses within Ocean or Great Lakes Waters⁶⁰

Type of Use	Number of Sites
Federal sand and gravel leases (<i>Completed</i>)	0
Federal sand and gravel leases (<i>Active</i>)	0
Federal sand and gravel leases (<i>Expired</i>)	0
Federal sand and gravel leases (<i>Proposed</i>)	0
Beach Nourishment Projects	2
Ocean Disposal Sites	11
Principle Ports (<i>Number and Total Tonnage</i>)	4 ports; 49,946,900 tons
Coastal Maintained Channels	18
Designated Anchorage Areas	24
Danger Zones and Restricted Areas	4

3. In the table below, characterize how the threats to and use conflicts over ocean and Great Lakes resources in the state’s or territory’s coastal zone have changed since the last assessment.

⁵⁹ coast.noaa.gov/digitalcoast/tools/ort.html. Select the “view quick reports” button and enter the name of your state or territory in the search bar. Some larger states may have the “quick reports” for their state waters broken into several different reports. Click on the “state waters” reports to view. Note the Ocean Reports tool also generates “quick reports” for national estuarine research reserve boundaries in your state. These reports are just a subset of the “state waters” report(s) so you can ignore the reserve “quick reports.” Use the icons on the left hand side to select different categories: general information, energy and minerals, natural resources and conservation, oceanographic and biophysical, transportation and infrastructure, and economics and commerce. Scroll through each category to find the data needed to complete the table. The top six categories in the table above are in the “energy and minerals” section while the other information to complete the table can be found under the “transportation and infrastructure” section.

⁶⁰ Data obtained from drawing a custom polygon around the San Francisco Bay in OceanReports (<https://www.coast.noaa.gov/digitalcoast/tools/ort.html>); information reported is within the polygon or within 10 nautical miles of the polygon area.

Table 26: Significant Changes to Ocean and Great Lakes Resources and Uses

Resource/Use Change in the Threat to the Resource or Use Conflict	Since Last Assessment (↑, ↓, -, unknown)
Benthic habitat (including coral reefs)	Increase
Living marine resources (fish, shellfish, marine mammals, birds, etc.)	Increase
Sand/gravel	Increase
Cultural/historic	Increase
Transportation/navigation	Increase
Offshore development ⁶¹	N/A
Energy production	-
Fishing (commercial and recreational)	-
Recreation/tourism	Increase
Sand/gravel extraction	Increase
Dredge disposal	Increase
Aquaculture	N/A

4. For those ocean and Great Lakes resources and uses in the table above that had an increase in threat to the resource or increased use conflict in the state's or territory's coastal zone since the last assessment, characterize the major contributors to that increase. Place an "X" in the column if the use or phenomenon is a major contributor to the increase.

Table 27: Major Contributors to an Increase in Threat or Use Conflict to Ocean and Great Lakes Resources

⁶¹ Offshore development includes underwater cables and pipelines, although any infrastructure specifically associated with the energy industry should be captured under the "energy production" category.

	Land-based development	Offshore development	Polluted runoff	Invasive species	Fishing (Commercial and Recreational)	Aquaculture	Recreation	Marine Transportation	Dredging	Sand/Mineral Extraction	Ocean Acidification
Benthic habitat (including coral reefs)	X	X	X	X	X	X	X	X	X	X	X
Living marine resources (fish, shellfish, marine mammals, birds, etc.)	X	X	X	X	X	X	X	X	X	X	X
Sand/gravel					X			X	X		
Cultural/historic	X						X			X	
Transportation/navigation	X				X		X		X	X	
Recreation/tourism			X								
Sand/gravel extraction					X			X	X		
Dredge disposal					X			X			

5. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends of ocean and Great Lakes resources or threats to those resources since the last assessment to augment the national data sets.

Sea Level Rise Adaptation Funding and Investment Strategy: Tool Development

In June 2023, MTC/ABAG and BCDC jointly published the Sea Level Rise Adaptation Funding and Investment Framework (“Framework”).⁶² The Framework was created to help the region prepare for near-term adaptation funding opportunities by improving BCDC advocacy for additional state and federal sources, while informing future discussions for long term adaptation funding approaches at the local and regional scales.

In the summer of 2024, an Interagency Memorandum of Understanding (MOU) was executed to coordinate funding and investment among regional agencies on sea level rise. BCDC, with the support of MTC will develop an Investment Strategy to identify local projects that need funding for design and construction, evaluate and categorize projects by their attributes, and use the analysis to prioritize projects to match with existing funding opportunities or seek new ones.⁶³ In consultation with a technical advisory committee, the Investment Strategy will consist of a project evaluation and prioritization tool, communications, and policy recommendations.

As part of the development of the Investment Strategy Tool, BCDC will also maintain an inventory and map of sea level rise projects and plans through the BCDC-managed Shoreline Adaptation Planning Map (SAPMap).

⁶² Sea Level Rise Adaptation Funding and Investment Framework Final Report. 2023. MTC, ABAG, BCDC. https://mtc.ca.gov/sites/default/files/documents/2023-07/SLR_Framework_Final_Report.pdf

⁶³ Sea Level Rise Adaptation Funding and Investment Framework Final Report. 2023. MTC, ABAG, BCDC. https://mtc.ca.gov/sites/default/files/documents/2023-07/SLR_Framework_Final_Report.pdf

Marine Transportation and Impacts to Coastal Habitats and Wildlife

As detailed in the Phase I Assessment on Cumulative and Secondary Impacts, commuter boating via ferry and water taxi has increased in recent years and is projected to increase further as the Bay's ferry system expands. Based on preliminary research findings in the Bay Area, and issues in other regions of California and around the country, this expansion has raised concern for BCDC staff about potential conflicts between natural resource protection and marine transportation.

Management Characterization

1. Indicate if the approach is employed by the state or territory and if any significant state- or territory-level changes (positive or negative) in the management of ocean and Great Lakes resources have occurred since the last assessment?

Table 28: Significant Changes to Management of Ocean and Great Lakes Resources

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Yes	Yes	Yes
Regional comprehensive ocean/Great Lakes management plans	Yes	Yes	Yes
State comprehensive ocean/Great Lakes management plans	No	No	No
Single-sector management plans	Yes	Yes	Yes

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
 - a. Describe the significance of the changes;
 - b. Specify if they were 309 or other CZM-driven changes; and
 - c. Characterize the outcomes or likely future outcomes of the changes.

The State of California is part of several regional ocean management partnerships—the West Coast Ocean Alliance, the West Coast Governors' Alliance on Ocean Health, and the West Coast Ocean Data Portal. While the West Coast Governors' Alliance and the West Coast Ocean Data Portal existed in some form prior to the last assessment, the West Coast Ocean Alliance was formed in December 2018 as a continuation of previous efforts including the West Coast Regional Planning Body and the West Coast Ocean Partnership.⁶⁴ However, none of these partnerships employ a comprehensive ocean management plan for the region.

⁶⁴ <https://www.westcoastoceanalliance.org/>

The state’s ocean management agency, the Ocean Protection Council, will soon release a draft of its Strategic Plan to Protect California’s Coast and Ocean for 2026-2030. According to the past Strategic Plan for 2025-2030, “the plan establishes an ambitious collective vision for protecting the intrinsic, cultural, ecological and economic benefits provided by California’s coast and ocean. Actions address issues ranging from sea-level rise and ocean acidification to universal coastal access, offshore wind energy, aquaculture, whale entanglement, plastic pollution, wetlands, beaches and fisheries.”⁶⁵

Within the San Francisco Bay sub-region, the San Francisco Bay Plan and the Suisun Marsh Protection Plan both manage multiple uses of the coastal zone, including living marine resources, benthic habitat, land-based development, recreation, public access, sand mining, and dredging. These plans manage coastal resources through enforceable policies, and work in the coastal zone must be permitted by BCDC to ensure that the project is consistent with BCDC’s policies. The Bay Plan was updated in 2023 and in 2024 to address some of the resources and uses discussed above, and to incorporate key updates from development of the Seaport Plan and the Regional Shoreline Adaptation Plan. In 2022, the Suisun Marsh Protection Plan Local Protection Program was amended to include 124 new Individual Ownership Adaptive Habitat Management Plans. These new plans provide a more flexible and practical framework for landowner’s wetland management. They incorporate 35 years of new scientific developments, including an adaptive management framework, and provide updated maps. Similarly, the Seaport Plan, a single-sector management plan administered by BCDC, was reviewed and updated in 2023. BCDC initiated the update process in 2019 and published a new regional Cargo Forecast to guide the plan’s development in 2020. The new Seaport Plan will provide more flexibility for the ports and improved clarity for permittees and permit staff, ensuring that the plan will meet its designed goals to coordinate the planning and development of Bay port terminals while minimizing Bay fill.

San Francisco Bay Sediment & Soil Beneficial Reuse Action Plan for Wetland Restoration Adaptation
Please see Phase I Assessment for Wetlands on page 11 for more details.

3. Indicate if your state or territory has a comprehensive ocean or Great Lakes management plan.

Table 29: Comprehensive Ocean or Great Lakes Management Plan

Comprehensive Ocean/Great Lakes Management Plan	State Plan	Regional Plan
Completed plan (Y/N) (If yes, specify year completed)	No	No
Under development (Y/N)	No	No
Web address (if available)	https://opc.ca.gov/webmaster/ftp/pdf/agenda_items/20200226/OPC-2020-2025-Strategic-Plan-FINAL-20200228.pdf	https://www.westcoastcoastalliance.org/
Area covered by plan	California	California, Oregon, Washington

Enhancement Area Prioritization

1. What level of priority is the enhancement area for the coastal management program?

⁶⁵ <http://www.opc.ca.gov/>

High	_____
Medium	__X__
Low	_____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

The Coastal and Estuarine Resources enhancement area encompasses several issues and use conflicts that are central to BCDC’s mission. However, stakeholders in the survey did not select this enhancement area among the top three highest priority enhancement areas (see “Summary of Stakeholder and Public Comment” section). For stakeholders that selected Coastal and Estuarine Resources, they identified land-based development, sub-tidal ecosystems and fisheries, and invasive species to be the highest priority issues. This enhancement area was not ranked “High” priority because activities within the other high-priority enhancement areas will more effectively address the pressing needs for BCDC. The focus of BCDC’s coastal management program as it relates to Coastal and Estuarine Resources will be addressed through these other related enhancement areas, such as through Coastal Hazards and Wetlands.

Energy and Government Facility Siting

Section 309 Enhancement Objective: Adoption of procedures and enforceable policies to help facilitate the siting of energy facilities and Government facilities and energy-related activities and Government activities which may be of greater than local significance. §309(a)(8)⁶⁶

Resource Characterization

1. In the table below, characterize the status and trends of different types of energy facilities and activities in the state's or territory's coastal zone based on best-available data. If available, identify the approximate number of facilities by type. For ocean-facing states and territories (not Great Lakes states), Ocean Reports⁶⁷ includes existing data for many energy facilities and activities.

⁶⁶ CZMA § 309(a)(8) is derived from program approval requirements in CZMA § 306(d)(8), which states:

"The management program provides for adequate consideration of the national interest involved in planning for, and managing the coastal zone, including the siting of facilities such as energy facilities which are of greater than local significance. In the case of energy facilities, the Secretary shall find that the State has given consideration to any applicable national or interstate energy plan or program."

NOAA regulations at 15 C.F.R. § 923.52 further describes what states need to do regarding national interest and consideration of interests that are greater than local interests.

⁶⁷coast.noaa.gov/digitalcoast/tools/ort.html. Select the "view quick reports" button and enter the name of your state or territory in the search bar. Some larger states may have the "quick reports" for their state waters broken into several different reports. Click on the "state waters" reports to view. Note the Ocean Reports tool also generates "quick reports" for national estuarine research reserve boundaries in your state but this is just a subset of the "state waters" report(s) so you can ignore the reserve "quick reports." Click on the wind turbine icon on the left ("energy and minerals") for information on energy production. While outside your coastal zone, you may also want to consider facilities/activities in "federal waters" that may have effects on your coastal zone.

Table 30: Status and Trends in Energy Facilities and Activities in the Coastal Zone⁶⁸

Type of Energy Facility/Activity	Exists in Coastal Zone (# or Y/N)	Change in Existing Facilities/Activities Since Last Assessment (↑, ↓, -, unknown)	Proposed in Coastal Zone (# or Y/N)	Change in Proposed Facilities/Activities Since Last Assessment (↑, ↓, -, unknown)
Pipelines	Yes	Unknown	Unknown	-
Electrical grid (transmission cables)	Yes	Unknown	Unknown	-
Ports	7	Unknown	No	-
Liquid natural gas (LNG)	43	Unknown	No	-
Electric Power Facilities (Oil)	1	Unknown	No	-
Electric Power Facilities (Gas)	No	Unknown	No	-
Electric Power Facilities (Coal)	No	Unknown	No	-
Electric Power Facilities (Nuclear)	19	Unknown	No	-
Electric Power Facilities (Wave)	No	Unknown	No	-
Electric Power Facilities (Tidal)	No	Unknown	No	-
Electric Power Facilities (Current, ocean, lake, river)	No	Unknown	No	-
Electric Power Facilities (Hydropower)	No	Unknown	No	-
Electric Power Facilities (Ocean thermal energy conversion)	No	Unknown	No	-
Electric Power Facilities (Solar)	95	Unknown	No	-
Electric Power Facilities (Biomass)	17	Unknown	No	-

2. If available, briefly list and summarize the results of any additional state- or territory-specific information, data, or reports on the status and trends for energy facilities and activities of greater than local significance in the coastal zone since the last assessment.

⁶⁸ California Energy Commission. GIS Data Hub: California Power Plants Data Layer (<https://caenergy.maps.arcgis.com/home/item.html?id=4a702cd67be24ae7ab8173423a768e1b>). Data Accessed in December 2024. Data represents operational power plant facilities for the 9 Bay Area counties.

3. Briefly characterize the existing status and trends for federal government facilities and activities of greater than local significance⁶⁹ in the state’s coastal zone since the last assessment.

Status and Trends

Since the last Assessment, 39 permits have been issued for projects relating to oil, gas, and pipelines. No new permits have been issued for other energy facility types. Activities undertaken for the permitted projects include inspections, maintenance, and repairs, time extensions to continue existing work, replacements for pipelines, piles, and other facilities such as fuel storage tanks, and structural repairs to comply with California Marine Terminal Engineering and Maintenance Standards (MOTEMS).⁷⁰

There are numerous federal government facilities or federally leased buildings within the nine Bay Area counties, and some within BCDC’s coastal zone jurisdiction. One of the most notable federal facilities in the coastal zone is the Military Ocean Terminal Concord (MOTCO). However, there have not been any proposed expansion or reduction in federal government facilities, or activities of greater than local significance at federal government facilities, in BCDC’s jurisdiction since the last assessment. The California Energy Commission is the state’s primary energy policy and planning agency. Further information on energy facilities and activities can be found at www.energy.ca.gov.

Management Characterization

1. Indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) that could facilitate or impede energy and government facility siting and activities have occurred since the last assessment.

Table 31: Significant Changes in Energy and Government Facility Management

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpretations	No	No	No
State comprehensive siting plans or procedures	No	No	No

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
 - a. Describe the significance of the changes;
 - b. Specify if they were 309 or other CZM-driven changes; and
 - c. Characterize the outcomes or likely future outcomes of the changes.

Enhancement Area Prioritization

⁶⁹ The CMP should make its own assessment of what government facilities may be considered “greater than local significance” in its coastal zone, but these facilities could include military installations or a significant federal government complex. An individual federal building may not rise to a level worthy of discussion here beyond a very cursory (if any at all) mention).

⁷⁰ BCDC permit data.

1. What level of priority is the enhancement area for the coastal management program?

High _____
Medium _____
Low X

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

The LOW priority level is due to BCDC's lack of jurisdiction over energy facility siting, and because the potential for new government facility siting is low. Regional efforts are focused on redevelopment, realignment, or reuse of government facilities, including closed military bases and regional airports. The focus of BCDC's coastal management program as it relates to these facilities will be on coastal adaptation, addressed under the Coastal Hazards enhancement area.

Aquaculture

Section 309 Enhancement Objective: Adoption of procedures and policies to evaluate and facilitate the siting of public and private aquaculture facilities in the coastal zone, which will enable states to formulate, administer, and implement strategic plans for marine aquaculture. §309(a)(9)

Resource Characterization

1. In the table below, characterize the existing status and trends of aquaculture facilities in the state's coastal zone based on the best-available data. Your state Sea Grant Program may have information to help with this assessment.⁷¹

Table 32: Status and Trends of Aquaculture Facilities and Activities

Type of Facility/Activity	Number of Facilities ⁷²	Approximate Economic Value	Change Since Last Assessment (↑, ↓, -, unknown)
Total Aquaculture	79	\$118,978,000	Increased economic value Decreased number of facilities
Food Fish	47	\$47,828,000	Increased economic value Decreased number of facilities
Sport Fish	13	\$13,985,000	Increased economic value Decreased number of facilities
Bait Fish	3	N/A	Increased number of facilities
Crustaceans	1	N/A	-
Mollusks	22	\$35,640,000	Increased economic value Increased number of facilities
Ornamental Fish	4	N/A	Decreased number of facilities
Misc. Aquaculture	8	\$20,897,000	Increased economic value Decreased number of facilities

2. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends or potential impacts from aquaculture activities in the coastal zone since the last assessment.

Management Characterization

1. Indicate if the approach is employed by the state or territory and if there have been any state- or territory-level changes (positive or negative) that could facilitate or impede the siting of public or private aquaculture facilities in the coastal zone.

⁷¹ While focused on statewide aquaculture data rather than just within the coastal zone, the *Census of Aquaculture* (agcensus.usda.gov/Publications/Census_of_Aquaculture/) may help in developing your aquaculture assessment. The census is conducted every 10 years and the last report was released in 2018. The report provides a variety of state-specific aquaculture data to understand current status and recent trends.

⁷² Be as specific as possible. For example, if you have specific information of the number of each type of facility or activity, note that. If you only have approximate figures, note "more than" or "approximately" before the number. If information is unknown, note that and use the narrative section below to provide a brief qualitative description based on the best information available.

Table 33: Significant Changes in Aquaculture Management

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Aquaculture comprehensive siting plans or procedures	No	No	No
Other aquaculture statutes, regulations, policies, or case law interpreting these	No	No	No

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
 - a. Describe the significance of the changes;
 - b. Specify if they were 309 or other CZM-driven changes; and
 - c. Characterize the outcomes or likely future outcomes of the changes.

Enhancement Area Prioritization

1. What level of priority is the enhancement area for the coastal management program?

High _____
Medium _____
Low X

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Due to contamination and lingering water quality issues, there have not been and are unlikely to be aquaculture facilities in San Francisco Bay until water quality improves. Additionally, there is no commercial harvesting of mollusks or ornamental fish. Therefore, the LOW ranking of this enhancement area has not changed since the previous Assessment.

Phase II Assessment

The following in-depth assessment is intended to help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems. This assessment focuses on enhancement areas identified as high priorities in the Phase I Assessment above.

Wetlands

In-Depth Resource Characterization

Purpose: To determine key problems and opportunities to improve the CMP's ability to protect, restore, and enhance wetlands.

1. What are the three most significant existing or emerging physical stressors or threats to wetlands within your coastal zone? Indicate the geographic scope of the stressor, i.e., is it prevalent throughout your coastal zone, or are there specific areas that are most threatened? Stressors can be development/fill; hydrological alteration/channelization; erosion; pollution; invasive species; freshwater input; sea level rise/Great Lakes level change; or other (please specify).

Table 34: Physical Stressors or Threats to Wetlands in the San Francisco Bay Region

	Stressor/Threat	Geographic Scope (throughout coastal zone or specific areas most threatened)
Stressor 1	Coastal flooding and increasing erosion	Regionwide.
Stressor 2	Lack of sufficient transition area for landward migration of wetlands	Regionwide, but these issues are more pronounced in the Central Bay and many parts of the South Bay, where significant development is directly adjacent to wetlands. In the North Bay, many wetlands are backed by agricultural land or limited development, so there are more options for wetland migration.
Stressor 3	Challenges with sediment management and beneficial reuse of dredged sediment	Regionwide, with more dredging occurring in Central and North Bay, wider mudflats, shallower water, and more wetland restoration occurring in the South, North and Suisun bays.

2. Briefly explain why these are currently the most significant stressors or threats to wetlands within your coastal zone. Cite stakeholder input and/or existing reports or studies to support this assessment.

These three stressors together result in a wetland system with limited resilience and increased risk for damage or loss. Coastal flooding threatens to drown wetlands as rising waters overtake vegetation that cannot survive with permanent inundation. Wetlands could survive rising waters by sediment accretion to maintain appropriate elevation, and/or by migration to higher elevations. However, with limited sediment and lack of migration space, wetlands may not be able to reach sufficient elevations to survive sea level rise. Stakeholders also recognize these three stressors as the most critical (see "Summary of Stakeholder and Public Comment" section).

- Are there emerging issues of concern but which lack sufficient information to evaluate the level of the potential threat? If so, please list. Include additional lines if needed.

Table 35: Emerging Issues of Concern for Wetlands

Emerging Issue	Information Needed
Habitat type conversion	Track patterns of wildlife use of various habitat types (e.g. variability in habitat use at small scales) over time to inform the extent of impacts when converting one wetland habitat type into another. Track changing habitat types from sea level rise and other factors over time such as restoration or shoreline adaptation.
Salinity changes	Analyze the extent to which salinity will change throughout the Bay and Suisun Marsh in response to sea level rise and changing riverine inflows. Evaluate the impacts salinity changes have on the ecosystem and special status species throughout the Bay. Evaluate how salinity changes in the Suisun Marsh effect land use and the operations of water management infrastructure that support managed wetlands in the region.
Restoration of subsided lands in Suisun Marsh	Analyze how agricultural and managed wetlands practices should be altered to reduce land subsidence. Develop a knowledge base about subsidence reversal from the limited number of examples we have.

In-Depth Management Characterization

Purpose: To determine the effectiveness of management efforts to address identified problems related to the wetlands enhancement objective.

- For each additional wetland management category below that was not already discussed as part of the Phase I assessment, indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) have occurred since the last assessment.

Table 36: Significant Changes in Wetland Management

Management Category	Employed By State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Wetland assessment methodologies	N	Y	Y
Wetland mapping and GIS	Y	Y	Y
Watershed or special area management plans addressing wetlands	Y	Y	Y
Wetland technical assistance, education, and outreach	N	Y	Y
Other (please specify)			

2. For management categories with significant changes since the last assessment, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information.
 - a. Describe significant changes since the last assessment;
 - b. Specify if they were 309 or other CZM-driven changes; and
 - c. Characterize the outcomes or likely future outcomes of the changes.

Significant Management Changes

Significant changes related to wetland management, particularly in terms of policy and permitting, are discussed in Phase I Assessment. Additional changes in wetland management have occurred since the last assessment as well.

Amendment to the Suisun Marsh Local Protection Program

Please see Phase I Assessment for Wetlands on page 11 for more details.

Lower Walnut Creek Bay Plan Amendment (BPA 5-19)

Please see Phase I Assessment for Wetlands on page 11 for more details.

Wetlands Regional Monitoring Program

As discussed in the Accomplishments section above, BCDC staff serve on the Steering Committee and the Technical Advisory Committee of the developing Wetlands Regional Monitoring Program (WRMP). The WRMP process has developed new workflows, standard operating procedures, protocols, and approaches for assessment of wetlands, and incorporates new wetland assessment methodologies, such as the use of high-resolution imagery gathered by drones, into its plan. BCDC staff have also informed the WRMP through their involvement in the SF Estuary Geospatial Working Group, which has contributed insight into geospatial techniques to use in monitoring approaches for the WRMP.

San Francisco Estuary Geospatial Working Group

BCDC staff have continued their participation in the San Francisco Estuary Geospatial Working Group, a group of researchers, managers, scientists, agencies, and are more engaged in coastal management and ecology. This multidisciplinary partnership emphasizes integration of geospatial technology in coastal management and restoration. Through the Working Group, BCDC staff have contributed to discussions and decisions around advancing wetland mapping and GIS throughout the estuary.

San Francisco Bay Sediment & Soil Beneficial Reuse Action Plan for Wetland Restoration Adaptation
Please see Phase I Assessment for Wetlands on page 11 for more details.

Effectiveness of Coastal Wetlands Management Efforts

Efforts to improve the Bay Area's management of coastal wetlands at BCDC are ongoing. The continued implementation of the Bay Restoration Integration Team has streamlined permitting for restoration projects. BCDC's permit process has continued to implement the Fill for Habitat Bay Plan amendment from 2019, driving changes in wetlands policy and management. In addition, the long-needed update to the Suisun Marsh Local Protection Program by the Suisun Resource Conservation District has improved managed wetland functioning throughout the Suisun Marsh. In a broader sense, the continually increasing area of wetlands restored, protected, and enhanced since BCDC's creation indicates that the Bay segment of the federally approved California Coastal Management Program, along with numerous partners throughout the region, has been successful in managing coastal wetlands to achieve shared restoration goals.

3. Identify and describe the conclusions of any studies that have been done that illustrate the effectiveness of the state's or territory's management efforts in protecting, restoring, and enhancing coastal wetlands since the last assessment. If none, is there any information that you are lacking to assess the effectiveness of the state's or territory's management efforts?

This section identifies the top four management priorities where there is the greatest opportunity for BCDC to improve its management of significant wetlands stressors. This section also identifies priority needs and information gaps to help address the management priorities.

Identification of Priorities

1. Considering changes in wetlands and wetland management since the last assessment and stakeholder input, identify and briefly describe the top one to three management priorities where there is the greatest opportunity for the CMP to improve its ability to more effectively respond to significant wetlands stressors. (*Approximately 1-3 sentences per management priority.*)

Management Priority 1: Implement the top priorities for the Sediment for Wetland Adaptation Project and improve beneficial reuse of sediment for wetland adaptation.

Description: Work to implement the top priorities of the Sediment for Wetland Adaptation Project: 1) expand implementation and regional coordination; 2) conduct regional planning and research; 3) improve federal, state and regional policy and communication; 4) align regulations and permitting; 5) support pilot projects for various placement strategies; 6) standardize and optimize testing for sediment and soil quality; 7) improve coordination of sediment and soil availability and placement; and 8) evaluate costs and increase available funding.

Management Priority 2: Improve regulatory permitting to support effective wetland restoration and adaptation along with coastal hazard adaptation projects.

Description: Implement changes to policies, regulations, and processes to further facilitate the timely implementation of wetland restoration and adaptation. This work aims to advance the goals of the Updated Baylands Ecosystem Habitat Goals (2015) as quickly and efficiently as possible.

Management Priority 3: Integrate wetland restoration and nature-based solutions into subregional coastal hazard planning in alignment with the Regional Shoreline Adaptation Plan.

Description: In alignment with the Regional Shoreline Adaptation Plan and regional restoration goals, support local governments integration of wetland restoration and nature-based solutions into local coastal hazard adaptation plans. Provide technical assistance, tools, strategies, and land use recommendations that consider and address wetland migration space, subsidence, land use conflict, nature-based flood protection, erosion control, beneficial reuse of sediment, and more.

2. Identify and briefly explain priority needs and information gaps the CMP has to help it address the management priorities identified above. The needs and gaps identified here do not need to be limited to those items that will be addressed through a Section 309 strategy but should include any items that will be part of a strategy.

Table 37 below identifies and briefly explains priority needs and information gaps of BCDC's Coastal Management Program. These will help BCDC address the management priorities identified above. The needs and gaps identified here are inclusive of the entire strategy, including those items that will be addressed through Section 309.

Table 37: Priority Needs and Information Gaps

Priority Needs	Need? (Y or N)	Brief Explanation of Need/Gap
Research	Yes	Investigate the effects of erosion control on wetlands, including the impact of hardened structures at the edge of wetlands, the use of hardened structures for erosion control and its impact on sediment transport.
Mapping/GIS	Yes	Maintain regular update cycles to ensure up to date data such as for mapping to detect baylands habitat change. Implement repeat collection of topographic LiDAR Digital Elevation Model data for shoreline areas to facilitate habitat mapping and coastal hazard analysis.
Data and information management	Yes	Continue alignment with the Wetlands Regional Monitoring Program (WRMP) to share and maintain regional wetland monitoring data, including both project-based monitoring and regionwide wetland health monitoring assessments. Project-specific monitoring data often is never shared beyond the initial agency or agencies who required the monitoring for compliance—align efforts collaboratively through a

Priority Needs	Need? (Y or N)	Brief Explanation of Need/Gap
		coordinated consensus-based process, such as through the WRMP.
Training/capacity building	Yes	Integrate wetland restoration into adaptation planning and land use for local government planners. Develop guidance for regulatory programs and project proponents on permitting wetland restoration programs and/or incorporating nature-based solutions in adaptation planning.
Decision-support tools	Yes	Build tools to prioritize how the region will spend limited resources (sediment, funding, etc.) on wetland restoration/enhancement/creation activities. Develop guidance for regulatory programs and project proponents on permitting wetland restoration programs and/or incorporating nature-based solutions in adaptation planning.
Communication and outreach	Yes	Improve the pre-application process and implement “Agile” project management techniques to encourage early and frequent communication between applicants and regulatory agencies to eliminate unnecessary delays. Update the Public Access Design Guidelines and provide improved guidance for wetlands projects that require public access and wildlife restoration sited together. Develop guidance for regulatory programs and project proponents on permitting wetland restoration programs and/or incorporating nature-based solutions in adaptation planning.

Enhancement Area Strategy Development

1. Will the CMP develop one or more strategies for this enhancement area?

Yes _____
No X

2. Briefly explain why a strategy will or will not be developed for this enhancement area.

A strategy will not be developed for the Wetlands enhancement area because the needs of the Wetland Enhancement Area will be address through the Coastal Hazards enhancement area strategy. Results from internal discussions with BCDC staff and from stakeholder and public input indicate that the top priorities in the region for Coastal Hazards rank higher than the top priorities in the region for Wetlands. However, the results from stakeholder input and the Phase I Assessment do indicate that protecting, restoring, and enhancing wetland function in the Bay Area is a high priority (see “Summary of Stakeholder and Public Comment”). For this reason, the priorities for the Wetlands enhancement area will be addressed through a combined strategy with Coastal Hazards, as the most pressing issues for wetlands relate to sustainability in light of shoreline resilience, coastal management, and sea level rise.

Coastal Hazards

In-Depth Resource Characterization

Purpose: To determine key problems and opportunities to improve the CMP's ability to prevent or significantly reduce coastal hazard risks by eliminating development and redevelopment in high-hazard areas and managing the effects of potential sea level rise and Great Lakes level change.

1. Based on the characterization of coastal hazard risk, what are the three most significant coastal hazards⁷³ within your coastal zone? Also indicate the geographic scope of the hazard, i.e., is it prevalent throughout the coastal zone, or are there specific areas most at risk?

Table 38: Physical Stressors or Threats to Coastal Hazards in the San Francisco Bay Region

	Type of Hazard	Geographic Scope (throughout coastal zone or specific areas most threatened)
Hazard 1	Sea level rise and groundwater rise (permanent inundation)	Regionwide
Hazard 2	Temporary flooding (resulting from coastal storms, wave runup, and riverine flooding)	Regionwide
Hazard 3	Compounding effects of multiple hazards	Regionwide

2. Briefly explain why these are currently the most significant coastal hazards within the coastal zone. Cite stakeholder input and/or existing reports or studies to support this assessment.

Stakeholder outreach as part of the 2026-2030 Assessment and Strategy, Regional Shoreline Adaptation Plan (RSAP), and the Sea Level Rise Adaptation Funding and Investment Framework confirms results from past BCDC reports and studies, that communities, ecosystems, and built infrastructure are vulnerable to coastal flooding throughout the region. In the future, coastal flooding impacts are predicted to intensify significantly for several critical systems. Acting now to better understand and adapt to increased flooding is essential to minimize future risk. Flooding of shoreline communities and disruption to adjacent critical infrastructure was chosen as a critical issue by over 80% of stakeholders who selected coastal hazards among the top three priority enhancement areas. Temporary flooding could result from coastal storms and riverine inputs in the short term, and permanent inundation of critical shoreline assets could result from sea level rise and associated groundwater rise in the long term, with continued exacerbation of flooding by temporary sources. In addition to flooding, the Bay Area is particularly susceptible to seismic hazards, which intensify the potential impacts of flooding. Thus, understanding the combined effects of seismic events and flooding, and solutions for mitigating this risk, will be essential.

3. Are there emerging issues of concern, but which lack sufficient information to evaluate the level of the potential threat? If so, please list. Include additional lines if needed.

⁷³ See list of coastal hazards on pg. 27 of this assessment template.

Table 39: Emerging Issues of Concern for Coastal Hazards

Emerging Issue	Information Needed
Groundwater flooding	Analyze how groundwater will interact with sea level rise and whether groundwater rise impact stormwater induced flood risk. Identify the ways in which structures, areas, and communities will be affected by groundwater flooding. Determine the adaptation options that will be available to address this issue.
Contaminant mobilization	Identify existing sources of uncapped contaminants, or sites that were not remediated to contain contaminants when groundwater rises, that could be mobilized by Bay water or groundwater infiltration. Identify predicted outcomes of contaminant mobilization.
Effects of combined fluvial and tidal flooding	Determine the predicted impacts on coastal infrastructure, communities, and natural areas when both riverine and stream flooding and tidal flooding (sea level rise, coastal wave runup, etc.) cause impacts.
Effects of shoreline protection on other areas bay-wide and on Bay surface area, volume, and natural resources	Conduct more detailed studies of potential secondary impacts of shoreline protection structures in specific geographic sub-regions of the Bay on neighboring areas and other areas across or around the Bay. Complete detailed studies of optimal placement (landward vs bayward) of hardened and other shoreline protection structures to minimize cumulative impacts on Bay volume, surface area, and natural resources.
Saltwater intrusion	Analyze the extent of predicted saltwater intrusion into the water table and groundwater, and how this intrusion will increase flooding/affect freshwater drinking supplies.
Stormwater and wastewater systems as points of water intrusion	Identify where stormwater and wastewater systems are vulnerable, how sea level rise could result in saltwater intrusion in these areas, and what are the consequences of that intrusion (i.e. model where additional flooding might occur and impacts to treatment plants).
Bay-Delta connections	Determine the impacts of changes in the Delta and beyond on the Bay, and vice versa.

In-Depth Management Characterization

Purpose: To determine the effectiveness of management efforts to address identified problems related to the coastal hazards enhancement objective.

1. For each coastal hazard management category below, indicate if the approach is employed by the state or territory and if there has been a significant change since the last assessment.

Table 40: Significant Changes in Coastal Hazards Statutes, Regulations, and Policies

Management Category	Employed by State/Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Change Since the Last Assessment (Y or N)
Shorefront setbacks/no build areas	N	N	N
Rolling easements	N	N	N
Repair/rebuilding restrictions	Y	Y	N
Hard shoreline protection structure restrictions	Y	Y	Y
Promotion of alternative shoreline stabilization methodologies (i.e., living shorelines/green infrastructure)	Y	Y	Y
Repair/replacement of shore protection structure restrictions	Y	Y	Y
Inlet management	N	N	N
Protection of important natural resources for hazard mitigation benefits (e.g., dunes, wetlands, barrier islands, coral reefs) (other than setbacks/no build areas)	Y	Y	Y
Repetitive flood loss policies (e.g., relocation, buyouts)	Y	Y	Y
Freeboard requirements	N	N	N
Real estate sales disclosure requirements	N	N	N
Restrictions on publicly funded infrastructure	N	N	N
Infrastructure protection (e.g., considering hazards in siting and design)	Y	Y	Y
Other (please specify)			

Table 41: Significant Changes to Coastal Hazard Management Planning Programs or Initiatives

Management Category	Employed by State/Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Change Since the Last Assessment (Y or N)
Hazard mitigation plans	N	Y	Y
Sea level rise/Great Lake level change or adaptation plans	Y	Y	Y
Statewide requirement for local post-disaster recovery planning	N	N	N
Sediment management plans	Y	Y	Y
Beach nourishment plans	N	Y	N
Special Area Management Plans (that address hazards issues)	Y	Y	Y
Managed retreat plans	N	N	N
Other (please specify)			

Table 42: Significant Changes to Coastal Hazard Research, Mapping, and Education Programs or Initiatives

Management Category	Employed by State/Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Change Since the Last Assessment (Y or N)
General hazards mapping or modeling	Y	Y	Y
Sea level rise mapping or modeling	Y	Y	Y
Hazards monitoring (e.g., erosion rate, shoreline change, high-water marks)	N	Y	Y
Hazards education and outreach	Y	Y	Y
Other (please specify)			

- Identify and describe the conclusions of any studies that have been done that illustrate the effectiveness of the state's management efforts in addressing coastal hazards since the last assessment. If none, is there any information that you are lacking to assess the effectiveness of the state's management efforts?

Regional Shoreline Adaptation Plan – (BPA 1-24)

Please see Phase I Assessment for Coastal Hazards on page 15 for more details.

Bay Adapt Joint Platform

Please see Phase I Assessment for Coastal Hazards on page 15 for more details.

Seaport Plan Update (BPA 1-19)

Please see Phase I Assessment for Coastal Hazards on page 15 for more details.

Sea Level Rise Adaptation Funding and Investment Framework

Please see Phase I Assessment for Coastal Hazards on page 16 for more details.

Regulatory Improvements

Please see Phase I Assessment for Coastal Hazards on page 16 for more details.

San Francisco Bay Sediment & Soil Beneficial Reuse Action Plan for Wetland Restoration Adaptation

Please see Phase I Assessment for Wetlands on page 11 for more details.

Effectiveness of State Coastal Hazards Management Efforts

With the adoption of the Bay Adapt Joint Platform, the passage of SB 272, the adoption of the Regional Shoreline Adaptation Plan (RSAP), among other efforts cited above, the state has been very effective in moving collaborative efforts and program changes to address coastal hazards. In ongoing work, the effectiveness of BCDC's management efforts will be particularly evident as the agency implements the RSAP. The RSAP technical assistance program will support local jurisdictions to develop subregional shoreline adaptation plans, leading to tangible steps towards improved coastal hazards management regionwide. It is essential to note that BCDC is only one of many agencies working to address coastal hazards in the region, and that intergovernmental coordination and partnership will be central to achieving regional resilience goals.

Identification of Priorities

1. Considering changes in coastal hazard risk and coastal hazard management since the last assessment and stakeholder input, identify and briefly describe the top one to three management priorities where there is the greatest opportunity for the CMP to improve its ability to more effectively address the most significant hazard risks. *(Approximately 1-3 sentences per management priority.)*

This section identifies the top three management priorities where there is the greatest opportunity for BCDC to improve its management of significant coastal hazards stressors. This section also identifies priority needs and information gaps to help address the management priorities.

Management Priority 1: Successfully lead the Bay Adapt Program that will support local jurisdictions with regional analysis of the Bay-wide impacts of sea level rise and coastal flooding.

Description: Convene, coordinate, and align key regional entities to execute Bay Adapt Joint Platform actions, including alignment with BCDC's regulatory program, regional agencies, and others; facilitate meaningful engagement between shoreline community based organizations and shoreline plans and projects; track and communicate progress around regional shoreline resilience to the public, our partners, the legislature, and the media; provide sufficient funding and technical assistance for the participation of community leaders at all levels of project planning and implementation; develop new regional analyses to assess the costs of inaction, study risks from coastal flooding, and complete other analyses as necessary.

Management Priority 2: Advance regulatory improvements to support efforts to restore and enhance the Bay's natural resources and increase public access to the Bay.

Description: Improve coordination and collaboration with regulatory partners and applicants to address coastal hazards in the regulatory process, from pre-application to application to project implementation; enhance analyst expertise and training on these issues; better leverage technology and tools to address these issues in regulatory approval process; better communicate risk and regulatory priorities to the public.

Management Priority 3: Support sub-regional/local adaptation planning and regulatory processes towards achieving the goals set by the Regional Shoreline Adaptation Plan, in compliance with California Senate Bill 272.

Description: Advance implementation of the Regional Shoreline Adaptation Plan (RSAP) through continued outreach and engagement with local governments, communities, and stakeholders to support the development of Subregional Plans compliant with the RSAP, per California Senate Bill 272. This also includes developing resources, guidance, materials, and tools to help constituents prepare for sea level rise, flooding and other coastal hazards within their Subregional Plans.

2. Identify and briefly explain priority needs and information gaps the CMP has for addressing the management priorities identified above. The needs and gaps identified here should not be limited to those items that will be addressed through a Section 309 strategy but should include any items that will be part of a strategy.

Table 43 identifies and briefly explains priority needs and information gaps that BCDC's Coastal Management Program has for addressing the management priorities identified above. The needs and gaps identified here are not limited to those items that will be addressed through a Section 309 strategy but include items that will be part of a strategy.

Table 43: Priority Needs and Information Gaps

Priority Needs	Need? (Y or N)	Brief Explanation of Need/Gap
Research	Yes	Complete research on 9-county groundwater rise mapping. Complete research to identify better approaches to evaluating interconnected flood risk across projects.
Mapping/GIS/modeling	Yes	Update regionwide flood maps based on best available information, including 2025 LIDAR derived topographic data, water surface modeling and tidal datum epoch updates, and incorporate regionwide modeling for shallow groundwater rise.
Data and information management	Yes	Continue mapping adaptation projects around the bay (e.g. Shoreline Adaptation Project Map) and leverage that data to inform local jurisdiction planning, regional funding priorities, and changes to flood risk.
Training/Capacity building	Yes	Provide resources to local governments, who often do not have the in-house expertise, available funding, or regionwide influence, to increase their capacity to respond to adaptation planning challenges at a local level. Improve regional

Priority Needs	Need? (Y or N)	Brief Explanation of Need/Gap
		coordination of sea level rise adaptation activities. Build BCDC staff capacity on emerging issues around adaptation to enhance regulatory program outcomes.
Decision-support tools	Yes	Develop tools, such as more detailed and specific guidance and tools for permit applicants and adaptation planning pathways, to help organizations at the local and regional level to choose the right combination of adaptation strategies based on the challenges they face, economic feasibility, and regional context.
Communication and outreach	Yes	Although many governments and communities in the Bay Area recognize that changes associated with coastal hazards could pose problems eventually, because these changes (particularly sea level rise) are slow to occur, they often do not feel the urgency to act now in preparation for future hazards. Increase communication and outreach to convey the urgency of preparing for future sea level rise scenarios now, while achieving regional resilience is still possible and much more feasible. Enhance the regulatory program's capacity to communicate risks and positive outcomes to permit applicants, and regulatory expectations for addressing these risks.

Enhancement Area Strategy Development

1. Will the CMP develop one or more strategies for this enhancement area?

Yes X
No

2. Briefly explain why a strategy will or will not be developed for this enhancement area.

Coastal hazards were identified as the highest priority for the CMP through stakeholder and staff surveys and the Phase I Assessment. While planning for coastal hazard adaptation has advanced significantly in the past decade, work must still be done to ensure implementation of strategies that can create a more resilient Bay Area. This includes three key areas: implementing sub-regional/local adaptation planning to meet Regional Shoreline Adaptation Plan goals (in compliance with California Senate Bill 272), providing technical assistance to the regulatory programs that restore and enhance the Bay's natural resources and increase public access to the Bay, and evaluating and improving policies in the Bay Plan policies, policy guidelines, and regulatory authority.

Strategy: Advance Regional and Local Efforts to Develop Subregional Adaptation Plans and Address Coastal Hazard Risk

I. Issue Area(s)

A. The proposed strategy or implementation activities will *primarily* support the following high-priority enhancement area(s) (*check no more than two*):

- | | |
|--|---|
| ☐ Aquaculture | ☐ Cumulative and Secondary Impacts |
| ☐ Energy and Government Facility Siting | ☒ Wetlands |
| ☒ Coastal Hazards | ☐ Marine Debris |
| ☐ Ocean/Great Lakes Resources | ☐ Public Access |
| ☐ Special Area Management Planning | |

B. The proposed strategy or implementation activities will also support the following enhancement areas (*check all that apply*):

- | | |
|---|---|
| ☐ Aquaculture | ☒ Cumulative and Secondary Impacts |
| ☐ Energy and Government Facility Siting | ☐ Wetlands |
| ☐ Coastal Hazards | ☐ Marine Debris |
| ☒ Coastal/Estuarine Resources | ☒ Public Access |
| ☒ Special Area Management Planning | |

II. Strategy Description

A. The proposed strategy will lead to, or implement, the following types of program changes (*check all that apply*):

- ☐ A change to coastal zone boundaries;
- ☒ **New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;**
- ☒ **New or revised local coastal programs and implementing ordinances;**
- ☐ New or revised coastal land acquisition, management, and restoration programs;
- ☒ **New or revised special area management plans (SAMP) or plans for areas of particular concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,**
- ☒ **New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government, and other agencies that will result in meaningful improvements in coastal resource management.**

B. **Strategy Goal:** The goal of this strategy is to support development of the new Regional Shoreline Adaptation Plan program and identify and execute program improvements to align BCDC's existing Regulatory Program with the new Regional Shoreline Adaptation Plan program. This strategy will support regional and local coastal hazard planning and permitting through updated policies, resources, guidance, research, best practices, and data and maps.

C. Description

Strategy Description: This strategy focuses on updating BCDC's coastal management program to advance planning and regulatory improvements that support coastal hazard adaptation in Bay Area communities through building the Regional Shoreline Adaptation Plan program and integrating the existing Regulatory program with the new Regional Shoreline Adaptation Plan program.

In partnership with a broad range of Bay Area leaders, BCDC developed the Bay Adapt Joint Platform, an initiative to establish regional agreement on the actions necessary to protect people and the natural and built environment from rising sea levels. Rather than specifying individual projects, the Bay Adapt Joint Platform lays out regional strategies that focus on overcoming barriers and identifying factors for successful adaptation outcomes throughout the region. The Commission voted to adopt the Bay Adapt Joint Platform in October 2021. BCDC coordinated implementation for many of the tasks identified in the Joint platform in collaboration with key local stakeholders including the development of a Regional Shoreline Adaptation Plan, a Funding and Investment Framework, and a metrics program to track adaptation progress.

Subsequently, California Senate Bill (SB) 272 was signed into law on October 7, 2023. SB 272 requires all local governments within BCDC's jurisdiction to address coastal hazards through Subregional Shoreline Adaptation Plans (Subregional Plans) subject to approval by BCDC. Subregional Plans developed pursuant to SB 272 will be reviewed and approved by BCDC based on the Guidelines and Standards in the Regional Shoreline Adaptation Plan (RSAP), which was developed out of the Bay Adapt process. The Commission voted to adopt the RSAP Guidelines in December 2024 through an amendment to the Bay Plan. Through these processes, BCDC has been granted new authority with regard to coastal management.

This strategy will assist in the implementation of SB 272 and the RSAP and will further the program changes that have granted BCDC new authority with regard to coastal hazards. As SB 272 and the RSAP program represent a new program function BCDC, there will be an initial implementation period focused on learning from early experiences, studying program effectiveness, and identifying key challenges that will inform future program refinements and policy adjustments.

In addition, this strategy will address pressing concerns on how the region adapts to coastal hazards, including gaps between BCDC's regulatory program and authority and subregional shoreline adaptation plan process. SB 272 does not provide the Commission with any new regulatory authority to review permit applications for projects for consistency with SB 272, the RSAP, or Subregional Shoreline Adaptation Plans, and does not otherwise amend the McAteer-Petris Act. The RSAP and Subregional Plans are advisory for BCDC's permitting process. For example, BCDC may approve a Subregional Plan, but if a future project is submitted for a BCDC permit that does not align with that plan, BCDC does not have the authority to deny a permit for the project based on that inconsistency. Additional process and investigation must occur to determine what, if any, the issues and any necessary solutions result from the divergence between SB 272 and BCDC's regulatory authority. This may include changes to BCDC's enforceable policies and new/revised guidelines, procedures, and policy documents, which will ensure alignment between what BCDC can permit and condition through its regulatory program and the shoreline adaptation strategies that have been developed through coastal hazard planning processes.

As a result, this strategy will include tasks related to two tracks: (1) **Building the RSAP Program** by evaluating and revising the RSAP Guidelines and advancing the RSAP technical assistance program to support local jurisdictions tasked with submitting Subregional Plans; and (2) **Integrating BCDC's Regulatory Program with the RSAP Program** by evaluating and advancing improvements to the Bay Plan and other BCDC plans, policy guidelines, and regulatory authority to advance the goals of the RSAP.

III. Needs and Gaps Addressed

At the highest level, this strategy addresses the need to accelerate coastal hazard adaptation planning efforts and integrate SB 272 planning requirements with BCDC's regulatory program. To create a more resilient Bay Area, there are still many needs in terms of research, regional coordination, increased local capacity, guidance, and policy/regulatory changes. This strategy provides necessary research and policy changes to improve overall understanding of flooding risks and adaptation solutions for Bay Area communities, infrastructure, and ecosystems. The strategy calls for increased technical assistance to local jurisdictions for the development of Subregional Plans which will include coastal hazard adaptation strategies. Finally, the strategy proposes major program changes to improve regulatory processes and facilitate implementation of sea level rise adaptation measures for the natural and built environment. These program changes could include Bay Plan amendments to support connecting the RSAP to BCDC's regulatory program and implementing the RSAP goals in the context of Subregional Plans, and update key guidelines by incorporating new environmental science and coastal hazards impacts, among other potential program changes. As wetland and habitat restoration are critical for successful adaptation in the Bay Area, this strategy will also address needs and issues related to wetlands. The research and regional coordination components of this strategy will inform the program changes, and additional GIS and mapping may be necessary to implement the program changes once they are complete.

IV. Benefits to Coastal Management

This strategy will build upon recent regional planning efforts by working toward implementation of recommended actions. By providing necessary information, regional coordination, and updated enforceable policies, this strategy will facilitate activities that will build resilience and ultimately improve the management of coastal hazards and wetlands. Because coastal hazards and wetlands management are central to BCDC's coastal program, the strategy will greatly benefit coastal management in the Bay Area.

V. Likelihood of Success

This strategy capitalizes on numerous recently completed planning efforts, research studies, policy changes, and collaborative processes to address coastal hazard adaptation of the built and natural environments. Additionally, increasing demand from the public, elected officials, and the state for immediate action on coastal hazard adaptation continues to drive these efforts forward. Because the strategy builds on this impetus and previous work, including existing relationships, research, and fora for discussion, it is highly likely that proposed program changes to increase resilience will succeed.

VI. Strategy Work Plan

Total Budget: \$643,750

Year 1-2

Goal: Evaluate and identify opportunities to implement SB 272 and the Regional Shoreline Adaptation Plan through key improvements to policies, processes, resources, guidance, research, best practices, and data and maps, including potential updates to the Bay Plan, regulations, and the Regional Shoreline Adaptation Plan.

Description of potential activities:

- **Building the RSAP Program.** Identify opportunities to revise authorities, guidance, procedures, and policy documents to implement the RSAP Guidelines and support local jurisdictions tasked with submitting Subregional Shoreline Adaptation Plans. Potential opportunities include:
 - Seek amendments to BCDC's regulations to clarify procedures on future Commission updates to the RSAP
 - Develop external pre-consultation and consultation guidance for jurisdictions for Subregional Shoreline Adaptation Plans, including templates, protocols, and other technical assistance;
 - Create internal guidance and training program for BCDC staff on interpretation of RSAP Guidelines and assessment of BCDC policy during the review process;
 - Produce fact sheets, informational handouts, and other documents on common adaptation and governance issues to support BCDC and local government decision-making;
- **Integrating BCDC's Regulatory Program with RSAP Program.** Working with stakeholders, research and identify potential for Bay Plan amendments, revisions to other BCDC authorities (including the McAteer-Petris Act, BCDC regulations, Suisun Marsh authorities), and/or future guidance or tools for whether and how to 1) coordinate the regulatory program with BCDC's authority under SB 272 and the RSAP; and 2) promote regional resilience planning and adaptation to coastal hazards through improvements to BCDC's regulatory program that advance priorities in the RSAP.

Major Milestones:

- **Major Milestone 1 – Building the RSAP Program: Prioritized List of Support Materials and Process Improvements for Subregional Shoreline Adaptation Plan Implementation:** Draft assessment of pre-submittal and submittal support needs, process guidance requirements, staff training priorities, and informational materials that will be developed in subsequent years to support local jurisdictions in preparing Subregional Plans.
- **Major Milestone 2 – Integrating BCDC's Regulatory Program with RSAP Program: Prioritized Bay Plan Amendment and Policy Research Agenda:** Initial research assessment and evaluation of potential Bay Plan Amendments, BCDC authority revisions, guidance documents focusing on coordinating the regulatory program with BCDC's authority under SB 272 and the RSAP, sediment beneficial reuse implementation, environmental science updates, and other critical policy changes needed to align the RSAP with BCDC's regulatory program.

Budget: \$128,750/year (\$257,500)

Year 3-4

Goal: Pursue implementation through key improvements to policies, processes, resources, guidance, research, best practices, and data and maps, including potential updates to the Bay Plan, regulations, and the Regional Shoreline Adaptation Plan to support regional and local coastal hazard planning and regulatory functions.

Description of potential activities:

- **Building the RSAP Program.** Initiate processes to revise authorities, guidance, procedures, and policy documents to implement the RSAP Guidelines and support local jurisdictions tasked with submitting Subregional Shoreline Adaptation Plans as identified in Year 1-2 activities;
- **Integrating BCDC's Regulatory Program with RSAP Program.** Advance Bay Plan amendments, legislation related to BCDC authority, and/or regulation, procedures, or guidance regarding issues such as coastal hazards, nature-based solutions, public access, regulatory processes, or other emerging concerns that coordinate BCDC's Regulatory program with SB 272 and the RSAP, and address RSAP adaptation goals through formal policy development, stakeholder engagement, and regulatory review processes.

Major Milestones:

- **Major Milestone 1:** Develop highest-priority support materials and systems identified in Years 1-2, including key guidance documents, internal trainings, and other critical resources needed by local jurisdictions for subregional shoreline adaptation plan development and submission.
- **Major Milestone 2:** Initiate formal policy review processes and possible policy development for priority Bay Plan amendments and guidance documents addressing coastal hazards, nature-based solutions, public access, and regulatory processes that connect the RSAP to BCDC's regulatory program.

Budget: \$128,750/year (\$257,500)

Year 5

Goal: Pursue implementation and evaluation for newly updated policies and guidelines that advance the Regional Shoreline Adaptation Plan.

Description of potential activities:

- Develop guidance and other technical assistance based on research and regional coordination that support local jurisdictions tasked with submitting Subregional Shoreline Adaptation Plans, support BCDC's review of those same plans, and address regulatory policy and process improvements that connect the RSAP to the BCDC Regulatory program.
- Develop guidance or training materials related to new regulatory processes or Bay Plan amendments to support interpretation and implementation in project review.

Major Milestones:

- **Major Milestone 1:** Development of comprehensive technical assistance and training program and refinement of highest priority support materials based on Years 3-4 feedback and learning.
- **Major Milestone 2:** Advance formal policy development and regulatory review processes for priority Bay Plan amendments and guidance documents addressing coastal hazards, nature-based solutions, public access, and regulatory processes that connect the RSAP to BCDC's regulatory program.

VII. Fiscal and Technical Needs

A. Fiscal Needs: Because of the broad scope of coastal hazard adaptation efforts, 309 funding alone is not sufficient to carry out the proposed strategy. BCDC has other sources of funding that will also contribute to completion of this strategy. The strategy will rely on BCDC's general fund, funding allocation from California's Cap-and-Trade program (Greenhouse Gas Reduction Fund), additional grants and contracts, and will leverage funds provided by partners through efforts such as Bay Adapt and the Bay Restoration Regulatory Integration Team.

B. Technical Needs: BCDC staff will continue to work with a broad base of local, regional, state, and federal partners to advance this strategy and ensure that policy/management changes are based on the best available information. BCDC staff have fostered numerous partnerships with technical experts and decision-makers that will be leveraged to ensure this strategy is successful. This includes other regional, state, and federal agencies; local jurisdictions; academic institutions; the regulated community; private entities; community-based organizations, and nonprofit organizations. Implementing several of the management priorities will require technical support from environmental scientists, restoration ecologists, engineers, and planners in order to effectively execute the new guidelines in the Regional Shoreline Adaptation Plan and provide technical assistance for local jurisdictions tasked with submitting subregional San Francisco Bay shoreline plans. Additionally, implementation of management priorities related to coastal hazards and wetlands (including coordination of regionwide coastal adaptation work) may require regular mapping work to detect baylands habitat change, evaluate the extent of groundwater rise regionwide, and grow the online database of adaptation projects around the bay (e.g. Shoreline Adaptation Project Map). Finally, modeling may be necessary to predict benefits and impacts of planned shoreline protection projects and better evaluate interconnected flood risk across various projects.

5-Year Budget Summary

Strategy Title	Anticipated Funding Source (309 or Other)	Year 1 Funding	Year 2 Funding	Year 3 Funding	Year 4 Funding	Year 5 Funding	Total Funding
Support regional and local coastal hazard planning through updated policies, resources, best practices, and data and maps.	Section 309	\$128,750	\$128,750	\$128,750	\$128,750	\$128,750	\$643,750
Total Funding		\$128,750	\$128,750	\$128,750	\$128,750	\$128,750	\$643,750

Summary of Stakeholder Survey and Public Comment

Stakeholder Outreach

In November 2025, BCDC staff distributed an online survey to gather stakeholder feedback on enhancement area priorities, the critical problems related to those enhancement areas, and opportunities for improvement related to coastal resource management. The survey was sent to over 1,000 stakeholders, including the mailing lists for BCDC Commissioner Working Groups, Bay Adapt, the Long Term Management Strategy for Placement of Dredged Material in the Bay Region (LTMS), the Regional Shoreline Adaptation Plan (RSAP), the Bay Adapt Implementation Coordinating Group, the Electeds Task Force Interested Parties, the Sediment and Beneficial Reuse Interested Stakeholders, and other interested parties. The survey was also sent to BCDC’s Commissioners and Alternates, Design Review Board, and Engineering Criteria Review Board. Additionally, the survey was distributed internally to BCDC staff. 156 individuals representing a diversity of sectors and interests, including 24 staff members, completed the survey (Figure 5).

Figure 5: Self-identified Stakeholder Identification

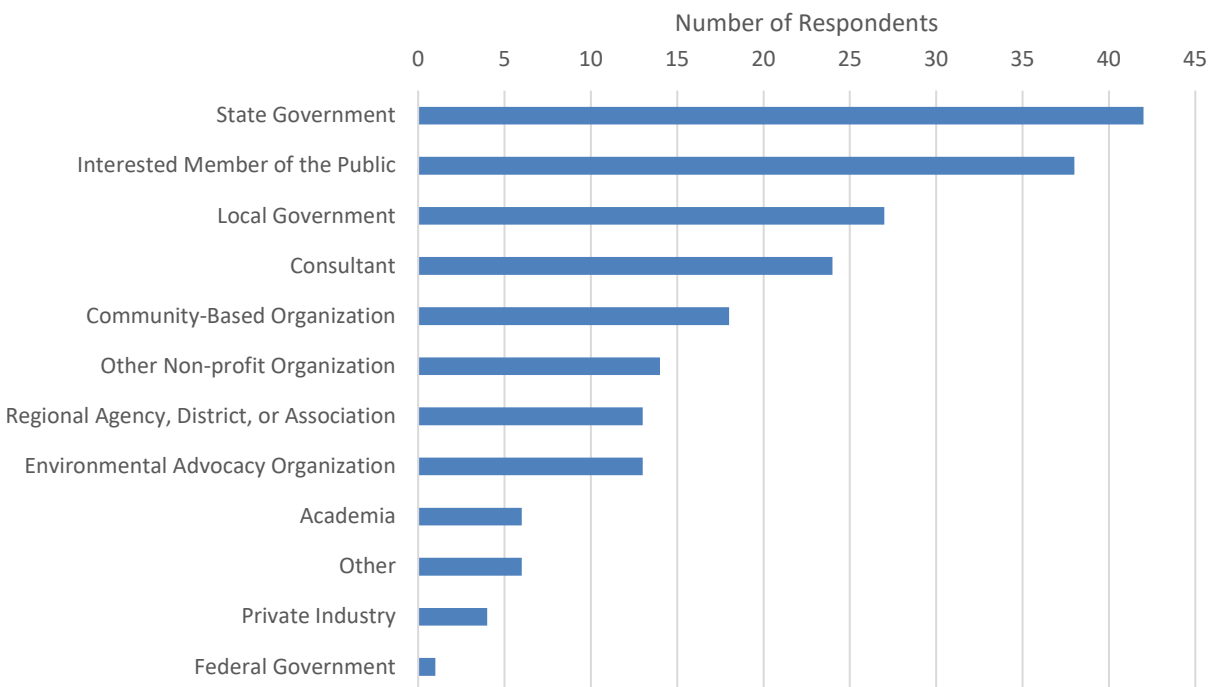


Figure 5: Stakeholders were asked to indicate the sector(s) in which they worked, with the opportunity to select any sectors that applied.

Enhancement Area Priorities

Generally, survey responses identified a need to focus on Coastal Hazards and Wetlands as high priority enhancement areas, with many stakeholders prioritizing Public Access as well (see Figure 6). Coastal Hazards ranked highest, with 80% of stakeholders and 96% of staff identifying this enhancement area as a first, second, or third priority. Wetlands received similar responses, with 73% of stakeholders and 75% of staff identifying this enhancement area among their top three priorities. For Coastal Hazards, 58% of

staff and 40% of stakeholders identified this enhancement area as the first priority and for Wetlands, 31% of stakeholders and 21% of staff identified this enhancement area as the first priority (see Figure 7). None of the other enhancement areas surpassed 10% of the vote for first priority from either stakeholders or staff.

Public Access was the third highest priority for stakeholders, with 38% of respondents ranking this as their first, second, or third priority, and was very important for staff as well, with 54% of staff identifying Public Access as first, second, or third priority. However, public access was ultimately determined to be a medium priority for this assessment, because the concerns identified by stakeholders were more appropriately addressed through the high priority Coastal Hazard enhancement area. Three other enhancement areas received moderate response rates: Cumulative and Secondary Impacts, Special Area Management Planning, and Coastal and Estuarine Resources. 23-34% of stakeholders identified these enhancement areas among their top three priorities and 17-33% of staff identified these enhancement areas among their top three priorities. Marine Debris and Energy and Government Facility Siting were much lower priority for both staff and stakeholders. Aquaculture was not included in the survey, as this Enhancement Area is not relevant for BCDC's Coastal Management Program.

Figure 6: Selection of Enhancement Area among Top Three Priorities

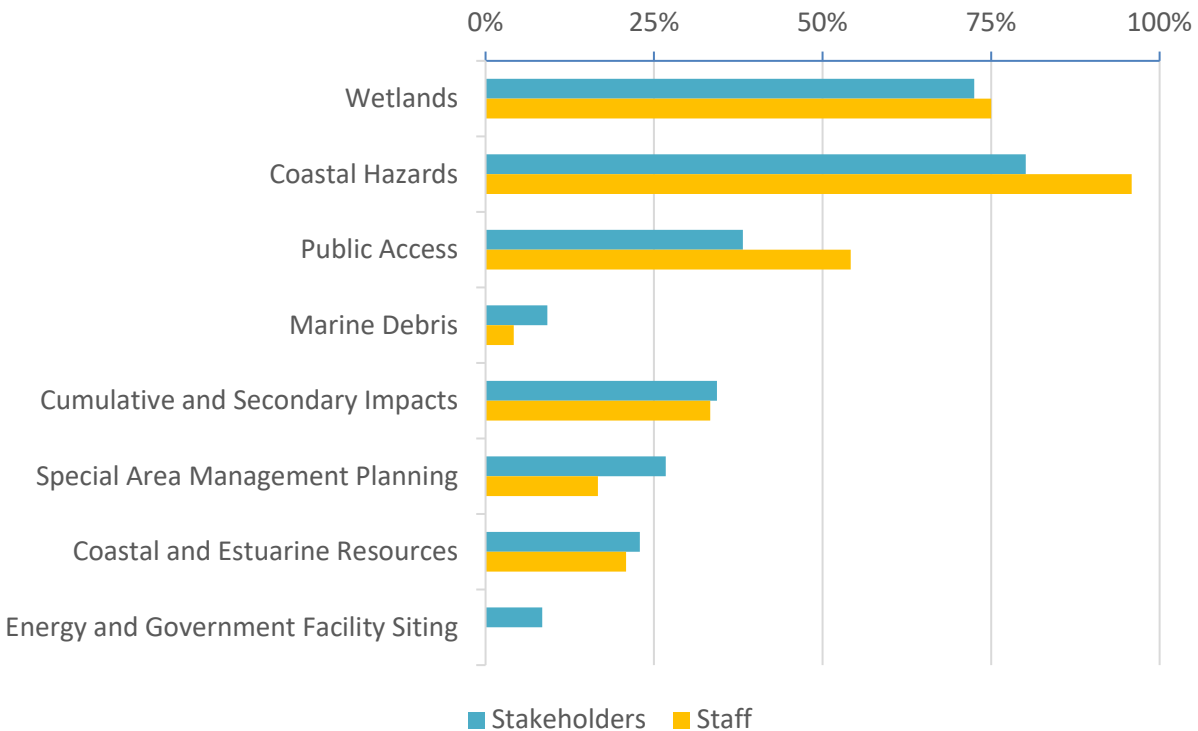


Figure 6: Percentage of staff and stakeholders identifying each enhancement area among their top three priorities.

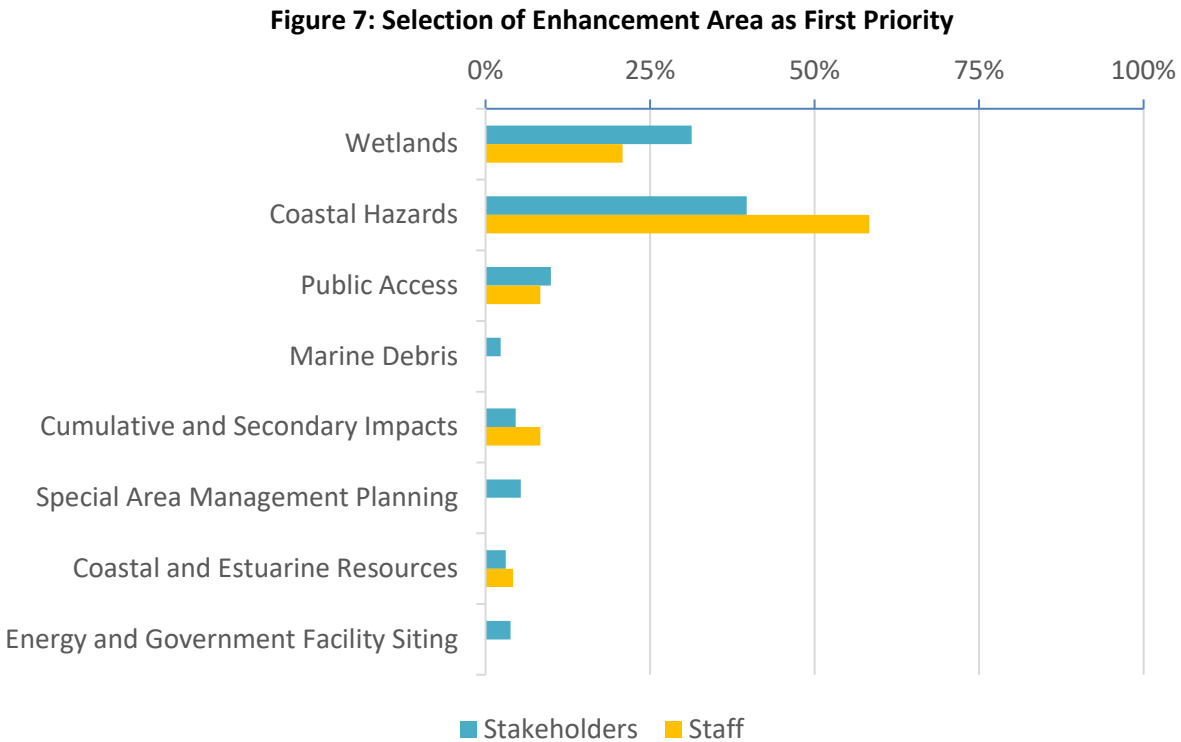


Figure 7: Percentage of staff and stakeholders identifying each enhancement area as their first priority.

Critical Issues, Management Challenges, and Solutions

- **Wetlands.** The top three priorities stakeholders and staff identified for wetlands are sea level rise and increasing erosion (*95 votes*), lack of sufficient transition area for landward migration of wetlands (*71 votes*), and challenges with sediment management and beneficial reuse of dredged sediment (*65 votes*). As honorable mention, challenges to funding restoration and habitat creation projects is also listed as a top priority (*63 votes*). For wetlands, these four priorities received a significantly greater share of the votes than the other listed priorities.
- **Coastal Hazards.** The top three priorities stakeholders and staff identified for coastal hazards are flooding shoreline communities and disruption to adjacent critical infrastructure (e.g. hospitals, airports, highways, water treatment facilities, etc.) (*106 votes*), challenges with funding for sea level rise adaptation plans and projects (*85 votes*), and sustainability of natural Bay ecosystems as sea level rises (*85 votes*). As honorable mention, local planning and land use for sea-level rise adaptation (SB 272) is also listed as a top priority (*82 votes*). For coastal hazards, these four priorities received a significantly greater share of the votes than the other listed priorities.
- **Public Access.** The top three priorities stakeholders and staff identified for public access are long-term maintenance of public access (*42 votes*), community access to public access facilities (*39 votes*), and balanced distribution around the Bay to public access and water-oriented recreation (*38 votes*). As honorable mention, loss of access due to sea level rise and storm

events is also listed as a top priority (36 votes). For public access, the vote distribution is relatively balanced across the various listed priorities.

- *Cumulative and Secondary Impacts.* The top three priorities stakeholders and staff identified for cumulative and secondary impacts are aging public infrastructure along the shoreline (38 votes), development permitted in place of future flood protection and tidal marsh migration (34 votes), and communication of flood risk by developers to homebuyers (33 votes). As honorable mention, both of the next two priorities received the same number of votes, hardening of some Bay shorelines and not others, leading to disproportionate flooding impacts on communities (31 votes) and the expansion of shoreline armoring and rip rap and disincentives for the use of nature-based solutions (31 votes). For cumulative and secondary impacts, the vote distribution is relatively balanced across all listed priorities.
- *Special Area Management Planning.* The top two priorities stakeholders and staff identified for special area management planning are landscape scale shoreline management and adaptation to sea level rise (29 votes) and managed retreat for communities and relocation of critical infrastructure (25 votes). Both of the next two priorities received the same number of votes, meeting area-specific habitat and wildlife restoration needs (17 votes) and improved regional management of public access to ensure landward migration of public access facilities as the sea level rises (17 votes). For special area management planning, the vote distribution is relatively balanced across all listed priorities.
- *Coastal and Estuarine Resources.* The top three priorities stakeholders and staff identified for coastal and estuarine resources are land-based development (26 votes), sub-tidal ecosystems and fisheries (23 votes), and invasive species (17 votes). As honorable mention, recreation is also listed as a top priority (12 votes). For coastal and estuarine resources, the vote distribution is relatively balanced across the various listed priorities.
- *Marine Debris.* Marine debris did not receive a high number of votes therefore the vote distribution for critical issues is not included here.
- *Energy and Government Facility Siting.* Energy and Government Facility Siting did not receive a high number of votes therefore the vote distribution for critical issues is not included here.
- *Aquaculture.* Aquaculture was not included in the survey, as this Enhancement Area is not relevant for BCDC's Coastal Management Program.

Management Challenges and Solutions for Improvement

Across all enhancement areas, the following challenges related to coastal resource management were identified as the most relevant and important to address for the region: (1) local capacity to address impacts, (2) funding for planning and response to impacts, and (3) regional coordination for planning and regulatory functions. The other management challenges that received a significant number of votes include lack of meaningful engagement between decision-makers and communities, limited authority/jurisdiction to address issues as sea level rises, and difficulty in obtaining necessary permits and regulatory approvals.

Results from the survey indicate the following solutions for improvement should be highest priority for BCDC: (1) provide resources to increase the region's capacity to respond to key coastal issues, such as planning tools, guidance, trainings, and pathways to obtain funding; (2) increase regional coordination on coastal planning and adaptation strategies; and (3) work with other regulatory agencies to streamline and coordinate review of projects. The other solutions for improvement that received a significant number of votes include developing more effective communication and public outreach tools to

improve transparency and accessibility, seeking expanded authorization for BCDC to more comprehensively address challenges facing the Bay, and aligning BCDC's regulatory and planning programs by updating policies, expanding authority and jurisdiction, and/or increasing capacity.