Welcome Packet for New WRMP Steering Committee Members

January 2024

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Image credits: Shira Bezalel (left), Mike Vasey (right)

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Overview

Mission

The San Francisco Estuary restoration community is working rapidly to protect and restore wetlands that can provide flood protection, recreation, water quality improvement, habitat, and other benefits for surrounding communities. The Wetlands Regional Monitoring Program (WRMP) delivers coordinated regional monitoring of the San Francisco Estuary's wetlands to (1) inform science-based decision-making for wetland restoration and adaptive management and (2) increase the cost-effectiveness of permit-driven monitoring associated with wetland restoration projects. The WRMP is a robust, science-driven, and collaborative regional monitoring program that includes:

• Monitoring site network

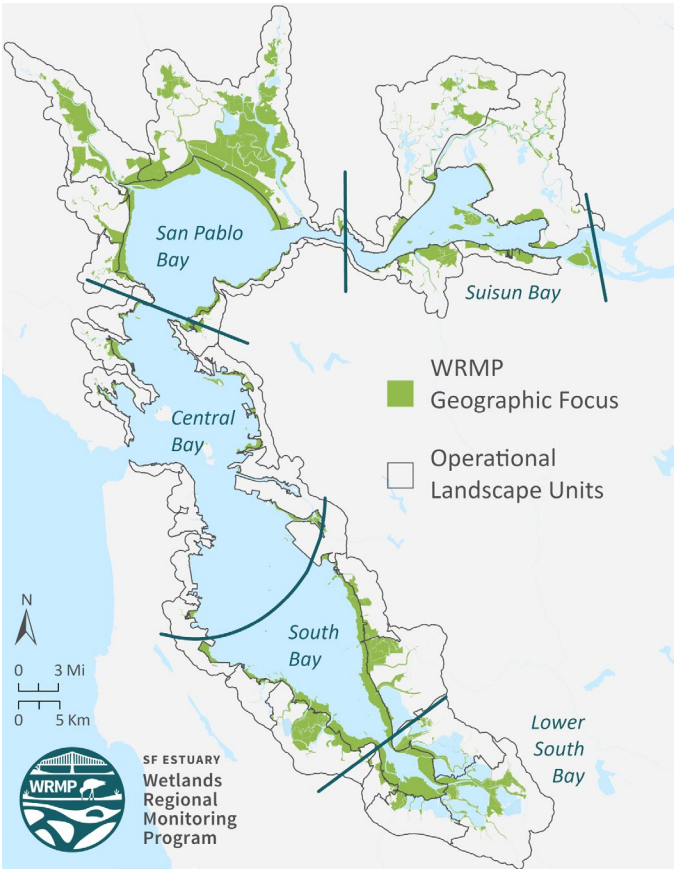
• Open data sharing platform

• Comprehensive science framework to guide monitoring.

Geographic Extent

The WRMP is currently focused on tidal wetlands across five subregions of the San Francisco Bay, with an interest in coordination with and possible future expansion to the Sacramento-San Joaquin Delta. This focus includes the subtidal areas (to 12 ft below Mean Lower Low Water), tidal flats, tidal marshes, and adjacent transition zones that form a portion of the "complete" tidal marsh ecosystem defined by the Baylands Ecosystem Habitat Goals Update. More detailed information on the geographic extent is available here.

The complete tidal marsh ecosystem includes subtidal areas, tidal flats, tidal marsh, and transition zones. Image credit: Xavier Fernandez.



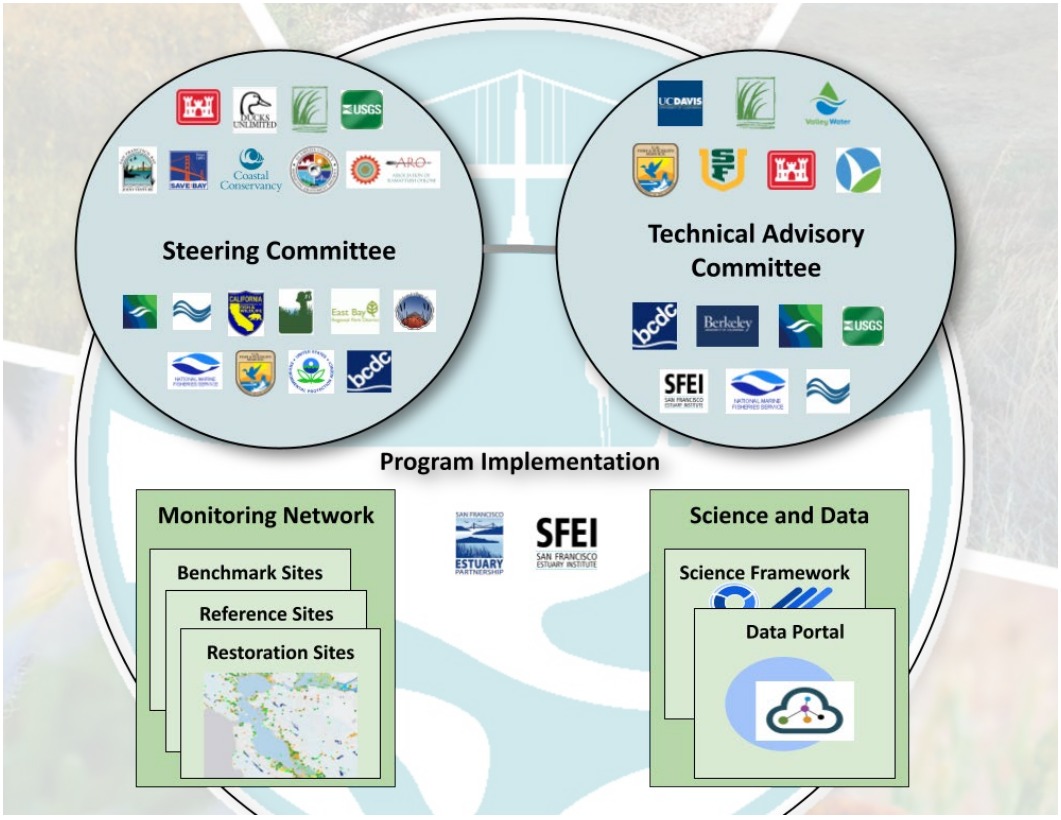
Within the five subregions of the Bay, the geographic focus of the WRMP is the portion of the complete tidal marsh ecosystem approximated by the green areas on the map. The WRMP may use Operational Landscape Units in planning and assessment.

Committee, Workgroup, and Staff Roles

The WRMP is co-administered by the San Francisco Estuary Partnership (SFEP) and the San Francisco Estuary Institute (SFEI). The role of WRMP staff from these organizations includes coordination and communications, seeking and managing funding (currently from grants), and managing data collection and distribution.

The WRMP is guided by the Steering Committee and Technical Advisory Committee. The **Steering Committee** is the decision-making body of the WRMP, while the **Technical Advisory Committee** makes recommendations on technical areas, such as monitoring sites and methods. **Workgroups** can be formed to fulfill specific needs of the Program, like development of indicators or standard operating procedures for monitoring.

Steering Committee decisions focus on guiding the overall Program priorities, including updates to the Guiding Questions and Management Questions, formation of long-term workgroups, and prioritization of monitoring site establishment. Steering Committee decisions about the Program budget will depend on funding sources. Currently, the WRMP is funded by grants and the Steering Committee's role focuses on guiding development of new funding sources in collaboration with WRMP staff and the Technical Advisory Committee.



WRMP organizational chart.

Relation to Other Efforts

The WRMP collaborates with partners in the Delta or Upper Estuary, so the science and tools can be comparable across the San Francisco Estuary. In addition, the WRMP coordinates with regional efforts, such as the San Francisco Bay Restoration Authority and Bay Adapt, and with other wetlands monitoring programs within the State of California via the Statewide Mapping Committee and California Wetland Monitoring Workgroup to share progress and information.

Phases + Accomplishments

Many partners have been interested in the concept of the WRMP for decades. Development of the current Program kicked off in 2016 with US EPA grant funding. Discussions and workshops among stakeholders and advisors led to accomplishments including:

- Description and rationale for near-term monitoring implementation priorities in September 2023.
- Selection of a monitoring site network in February 2023, including a suite of Benchmark Sites.
- Release of the WRMP Program Plan in 2020, which includes overarching Guiding Questions and Management Questions that monitoring plans will address. The Program Plan includes a Master Matrix of indicators to be monitored.
- Development of a Program Charter in 2021, and revision in 2022. The Charter formalizes the long-term Program structure and outlines guiding principles, governance, and administrative information.
- Sharing progress and future plans at the WRMP Virtual Open House, held in December 2021.
- Development of standard operating procedures (SOPs) that will guide monitoring for geospatial and fish/fish habitat indicators. Completion of the WRMP Data Fit-Gap Analysis informed development of the Geospatial SOP.

Current work includes refinement and development of new indicators, development of additional standard operating procedures, development of platforms for managing and sharing data, coordination with regulators and other programs, and equitable engagement with Tribes and frontline communities.

Summary of major activities during WRMP development and implementation phases, 2016-2025.

What to Expect at Steering Committee Meetings

Meeting Format + Expectations

Steering Committee meetings are held quarterly. Meeting dates can be found on the WRMP website. Meetings are facilitated by the Steering Committee Chair or Vice Chair.

Steering Committee members are expected to be engaged and active participants in the WRMP, including reading the agenda packet and being prepared to discuss and act on recommendations from the Technical Advisory Committee, and other issues related to the Steering Committee's primary tasks. Participation can take many forms, including providing written comments over email/chat or verbal comments during meetings, participating in polls and surveys, and meeting individually with Committee Chairs, Vice Chairs, or WRMP staff. Members are expected to attend as many Steering Committee meetings as possible.

Steering Committee members are welcome to attend any Technical Advisory Committee or workgroup meetings. Current grants provide some funding support for Steering Committee members who may need it to attend meetings and sit on workgroups. Contact WRMP staff about meeting invites and funding support.

Roster of Members

The Steering Committee is composed of organizational members of diverse stakeholder groups: regulatory agencies, project implementers/land managers, funders, community-based organizations, Native American tribes, and environmental non-governmental organizations. Each organizational member typically has a primary representative and an alternate, though alternates are not required. The Steering Committee roster is on the WRMP website.

Acronyms + Commonly Used Phrases

The acronyms and commonly used phrases in the following sections are intended to serve as a quick reference during (or outside of) meetings.

Acronyms

Acronym	Definition	Description/Additional Information
ASC	Aquatic Science Center	A Joint Powers Authority created by the State Water Resources Control Board and the Bay Area Clean Water Agencies, and staffed entirely by SFEI employees. www.sfei.org/about/about-aquatic-science-center
BAARI	Bay Area Aquatic Resources Inventory	Detailed base map of the Bay Area's aquatic features that have been mapped using a standard mapping protocol and includes all wetlands, open water, streams, ditches, tidal marshes and flats. BAARI can be used to track changes in the amount, extent and condition of aquatic resources, serve as the base map for environmental monitoring study designs, and support resource planning and management efforts. www.sfei.org/baari
Bay RMP	Regional Monitoring Program for Water Quality in San Francisco Bay	Provides water quality information and data that regulators and decision-makers need to manage the Bay effectively. www.sfei.org/programs/sf-bay-regional-monitoring-program

BCDC	San Francisco Bay Conservation and Development Commission	Local agency responsible for regulating all dredge and fill work conducted in San Francisco Bay, including the San Pablo and Suisun Bays, sloughs and certain creeks and tributaries that are part of the Bay system, salt ponds and certain other areas that have been diked-off from the Bay. https://bcdc.ca.gov/
BEHGU	Baylands Ecosystem Habitat Goals Update	Yielded a report called *The Baylands and Climate Change: What We Can Do*. The report is an update to the 1999 Baylands Ecosystem Habitat Goals, which for the first time set comprehensive restoration goals for the San Francisco Bay. The report synthesizes the latest science—particularly advances in the understanding of climate change and sediment supply—and incorporates projected changes through 2100 to generate new recommendations for achieving and sustaining healthy baylands ecosystems. https://baylandsgoals.sfei.org/
BRRIT	San Francisco Bay Restoration Regulatory Integration Team	Formed to improve the permitting process for multi-benefit habitat restoration projects and associated flood management and public access infrastructure in the San Francisco Bay and along the shoreline of the nine Bay Area counties (excluding the Delta Primary Zone). www.sfbayrestore.org/san-francisco-bay-restoration-regulatory-integration-team-brrit
CBO	Community-based Organization	An organization that is driven by community residents in all aspects of its existence. https://sph.umich.edu/ncbon/about/whatis.html
CCMP	Comprehensive Conservation and Management Plan	Maps out the regional actions needed for a healthy, resilient San Francisco Estuary. First created in 1993, the document is now called the 'Estuary Blueprint'. Progress is currently underway for the 2022 Estuary Blueprint Update. www.sfestuary.org/estuary-blueprint/

CDFW	California Department of Fish and Wildlife	State agency under the California Natural Resources Agency that manages and protects the state's wildlife, wildflowers, trees, mushrooms, algae and native habitats. https://wildlife.ca.gov
CRAM	California Rapid Assessment Method	Cost-effective and scientifically defensible rapid assessment method for monitoring the conditions of wetlands throughout California. www.cramwetlands.org
CWMW	California Wetland Monitoring Workgroup	Improves the monitoring and assessment of wetland and riparian resources by developing a comprehensive stream, wetland, and riparian area monitoring plan for California and through increasing coordination and cooperation among local, state, and federal agencies, tribes, and non-governmental organizations. The Workgroup reviews technical and policy aspects of wetland monitoring tool development, implementation and use of data to improve wetland management in California. www.mywaterquality.ca.gov/monitoring_council/wetland_workgroup
Delta RMP	Delta Regional Monitoring Program	Stakeholder-directed program formed to collect water quality data necessary for improving our understanding of Delta water quality issues. https://deltarmp.org/
DSC/DSP	Delta Stewardship Council/Delta Science Program	California government agency tasked with managing the Sacramento–San Joaquin River Delta. Its Delta Science Program performs analysis and synthesis of scientific information to report on status and trends of key scientific issues within the Delta. https://deltacouncil.ca.gov/delta-science-program/

EBRPD	East Bay Regional Parks District	System of parklands (73 parks spanning across 125,000 acres) in Alameda and Contra Costa counties to the east of San Francisco. www.ebparks.org
EPA or USEPA	U.S. Environmental Protection Agency	Federal government agency tasked with environmental protection matters. www.epa.gov
IEP	Interagency Ecological Program	Consortium of State and federal agencies that conduct broad ecological monitoring, research, modeling, and data syntheses to provide and integrate information for the management of the San Francisco Estuary. https://iep.ca.gov/
MAD	Mosquito Abatement District	A public agency with the responsibility of controlling mosquito populations through authority granted by the CA Health & Safety Code section 2000. Member agencies use science-based vector control strategies to protect public health and improve quality of life for California residents. www.mvcac.org
NERR	National Estuarine Research Reserve System	Network of 30 coastal sites designated to protect and study estuarine systems across different biogeographic regions of the US, including the San Francisco Bay. https://coast.noaa.gov/nerrs
NGO	Non-governmental Organization	Typically a voluntary group or institution with a social mission, which operates independently from the government.

NMFS	National Marine Fisheries Service	Informally known as NOAA Fisheries, is a federal agency within the U.S. Department of Commerce's National Oceanic and Atmospheric Administration that is responsible for the stewardship of U.S. national marine resources. www.fisheries.noaa.gov
NOAA	National Oceanic and Atmospheric Administration	Federal agency with a mission to understand and predict changes in climate, weather, ocean, and coasts, to share that knowledge and information with others, and to conserve and manage coastal and marine ecosystems and resources. www.noaa.gov
OLU	Operational Landscape Unit	Connected geographic areas sharing certain physical characteristics that would benefit from being managed as a unit to provide particular desired ecosystem functions and services. www.sfei.org/adaptationatlas
QA/QC	Quality Assurance/ Quality Control	QA includes written methods and processes developed **before** data are collected to ensure data are collected and processed to meet specific quality standards. QC is part of QA and provides methods to review data **after** they are collected to determine whether they met criteria and goals for quality.
SBSPRP	South Bay Salt Pond Restoration Project	The largest tidal wetland restoration project on the West Coast, working to restore 15,100 acres of industrial salt ponds. https://www.southbayrestoration.org/
SC	Steering Committee	Decision-making body of the WRMP that guides overall Program priorities. www.wrmp.org/about/committees-and-workgroups/#steering-committee

SCC	State Coastal Conservancy	Non-regulatory state agency that supports projects to protect coastal resources and increase opportunities for the public to enjoy the coast. https://scc.ca.gov/
SF Bay	Estuary Downstream of the Delta	Geographic area comprising the five WRMP subregions including Suisun Bay, San Pablo Bay, Central Bay, South Bay, and Lower South Bay.
SFB NERR	San Francisco Bay National Estuarine Research Reserve	Encompasses over 3,700 acres of tidal marshes and undeveloped uplands that serve as research sites, outdoor classrooms, and recreation destinations. https://sfbaynerr.sfsu.edu
SFBJV	San Francisco Bay Joint Venture	Public-private partnership that works to protect, restore and enhance habitats through project implementation and by advancing related science, policy and communication priorities. www.sfbayjv.org/
SFBRA	San Francisco Bay Restoration Authority	Regional agency created to fund shoreline projects that protect, restore, and enhance SF Bay through the allocation of funds raised by the Measure AA parcel tax. www.sfbayrestore.org/
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board	Regional regulatory agency focused on water quality. www.waterboards.ca.gov/sanfranciscobay
SFEI	San Francisco Estuary Institute	SFEI and SFEP co-administer the WRMP. SFEI provides independent science to assess and improve the health of the waters, wetlands, wildlife and landscapes of San Francisco Bay, the California Delta and beyond. sfei.org

SFEP	San Francisco Estuary Partnership	SFEP and SFEI co-administer the WRMP. SFEP is a National Estuary Program, housed within a regional government agency (the Association of Bay Area Governments/ Metropolitan Transportation Commission). SFEP builds partnerships and manages multi-benefit projects that improve the health of the Estuary. www.sfestuary.org
SLR	Sea Level Rise	Increase in the level of the world's oceans due to the effects of global warming. https://education.nationalgeographic.org/resource/sea-level-rise
SOP	Standard Operating Procedures	Detailed technical guidance document that identifies acceptable methods to consistently and repeatedly produce the products needed to address specific management questions and indicators. The level of detail included in the SOP can indicate compliance with governmental requirements, improve comparability of products, add credibility, and help with legal defensibility. Examples of SOPs developed by the WRMP include the Geospatial SOP for Indicators 1 and 3.
TAC	Technical Advisory Committee	Makes recommendations on technical areas of the WRMP, such as the selection of monitoring sites and development of monitoring methods. www.wrmp.org/about/committees-and-workgroups/#tac
TMDL	Total Maximum Daily Load	Maximum amount of a pollutant allowed to enter a waterbody so that the waterbody will meet and continue to meet water quality standards for that particular pollutant. www.epa.gov/tmdl/overview-total-maximum-daily-loads-tmdls

UAS/UAV	Unoccupied Aerial System or Vehicle	Aircraft operating or designed to operate autonomously or to be piloted remotely without a pilot on board. UAS/UAV are used for wetland monitoring, restoration monitoring, sediment volume estimations, and trash surveys. www.sfei.org/projects/uas
USACE	U.S. Army Corps of Engineers	Federal agency with a mission to deliver vital engineering solutions, in collaboration with partners, to secure our Nation, energize our economy, and reduce disaster risk. www.usace.army.mil
USFWS	U.S. Fish and Wildlife Service	Federal agency responsible for conserving, protecting, and enhancing fish and wildlife and their habitats. USFWS is charged with enforcing Federal Wildlife Laws and Protecting Endangered Species. www.fws.gov
USGS	U.S. Geological Survey	Federal scientific agency of the US government that studies the landscape, its natural resources, and the natural hazards that threaten the landscape. www.usgs.gov
WRAMP	Wetland and Riparian Area Monitoring Plan	Comprehensive framework and toolset for the monitoring and assessment of aquatic resources within the watershed or landscape context. https://mywaterquality.ca.gov/monitoring_council/wetland_workgroup/wramp/index.html
WRMP	Wetlands Regional Monitoring Program	Monitors tidal marsh habitat in the San Francisco Estuary. www.wrmp.org

Commonly Used Phrases

Ambient Condition

Ambient condition is the status of any or all aspects of the distribution, abundance, diversity, form, structure, and biotic composition of one or more areas of tidal marsh for a prescribed time period.

Assessment

An assessment is a report of the ambient condition or status or trends of one or more areas of tidal marsh, using the monitoring and assessment methods of the WRMP.

Baseline Condition

The baseline condition of one or more areas of tidal marsh is their ambient condition at the beginning of a series of consecutive monitoring periods.

Bay Adapt

A regional strategy and initiative to establish regional agreement on the actions necessary to protect people and the natural and built environment from rising sea levels. For more information, visit www.bayadapt.org.

Baylands

The baylands of the San Francisco Estuary include the existing intertidal areas plus any other areas of the Estuary that would be intertidal if levees, sea walls, tide gates, and other features that completely or partially obstruct the landward excursion of the usual daily flood and ebb of the tides were removed.

Baylands Change Basemap

Baylands Change Basemap will update the existing map of tidal marsh, tidal flats and diked baylands to incorporate the many changes in baylands distribution and abundance that have occurred over the last two decades. For more information on this USEPA-funded project, visit www.sfei.org/projects/baylands-change-basemap.

Beneficial (or Designated) Uses

Beneficial (or designated) uses are required by the Clean Water Act and are utilized to set water quality criteria. Each state, territory and authorized tribes are required to specify goals and expectations for how each water body is used. Typical beneficial/ designated uses include:

- Protection and propagation of fish, shellfish and wildlife
- Recreation
- Public drinking water supply
- Agricultural, industrial, navigational and other purposes

Blue Carbon

Blue carbon is the term for carbon captured by the world's ocean and coastal ecosystems, mostly by algae, seagrasses, macroalgae, mangroves, salt marshes and other plants in coastal wetlands. For more information, visit https://oceanservice.noaa.gov/facts/bluecarbon.html.

EcoAtlas/Project Tracker

EcoAtlas (ecoatlas.org) is a set of tools for visualizing and sharing environmental information on where are the wetlands and how are they doing. Project Tracker (ptrack.ecoatlas.org) standardizes habitat project data across programs for analytical and reporting purposes. For more information, visit www.sfei.org/ecoatlas/index.php.

Ecosystem Services

Ecosystem goods and services produce the many life-sustaining benefits we receive from nature—clean air and water, fertile soil for crop production, pollination, and flood control. These ecosystem services are important to environmental and human health and well-being.

Fit-Gap Analysis

The Data Fit-Gap Analysis describes the data needs for the indicators associated with the WRMP, evaluating those data needs against the availability, quality, resolution, scope, and format of current datasets.

Guiding Questions

The WRMP Steering Committed identified five Guiding Questions and Priority Recommended Actions. Each Guiding Question is associated with a tiered set of Management Questions that address more specific information needs for the tidal wetland restoration community. Answering the Guiding Questions will be largely sequential, but collecting data necessary to answer each may begin out of sequence.

Indicator

An indicator shows or suggests the condition or existence of something. The WRMP addresses their guiding questions through a tiered sequence of management and monitoring questions that are in turn answered by a suite of key environmental indicators and metrics.

Living Shoreline

A living shoreline is a coastal edge constructed of natural materials such as native vegetation or cobble that protects the shoreline from erosion while providing habitat for fish and other wildlife.

Management Question

The WRMP aims to address information needs by folding existing and proposed future tidal marsh monitoring efforts into a new regional framework that focuses on key management questions of interest to decision-makers.

Master Matrix

The WRMP Master Matrix lays out a set of indicators, the metrics used to evaluate them, and connections between indicators and the broader Guiding, Management, and Monitoring Questions that will inform restoration and management. The Master Matrix was published with the WRMP Program Plan in 2020 and is a "living document" that can be updated over time.

Monitoring

Monitoring consists of documented observations of tidal marsh condition repeated through space or over time using the WRMP methods. There is no minimum or maximum

size of the monitored area or length of the monitoring period. The WRMP recognizes three kinds of monitoring:

- **Compliance Monitoring** is a permit, grant, or contract requirement that is used to determine whether permittees, grantees, and contractors are complying with their permits, grants, or contracts.
- **Project Monitoring** is used to assess the status and trends of a single tidal marsh project, relative to its performance criteria and ambient condition.
- **Ambient Monitoring** is used to assess the ambient condition of one or more areas of tidal marsh (see definition of ambient condition). Ambient monitoring is necessary to assess the effects of regional conditions on local projects, as well as the effects of projects on regional conditions, and to assess the effectiveness of policies and programs used to protect and restore tidal marshes.

Monitoring reveals patterns of change in tidal marsh condition through space and over time. These patterns of change can be translated into hypotheses about their causes and effects. Research is needed to test the hypotheses. In short, monitoring reveals how conditions change, whereas research explains why.

Monitoring Site Network

Wetland sites where WRMP data are collected. Sites are categorized as:

- **Benchmark Sites**: Mature marshes that indicate the likely long-term conditions of existing and restored marshes.
- **Reference Sites**: Marshes at mid- to late stages of evolution that help forecast the rate of project development as habitat.
- **Project Sites**: Restoration projects implemented over roughly the past 20 years that improve understanding of restoration designs and management.

Multiple-Benefit Conservation

Conservation efforts designed to simultaneously benefit local communities of people, enhance ecological function, and improve habitat quality for fish and wildlife. Link to more information (Gardali et al. 2021).

Project

A project is any on-the-ground human action that creates, restores, enhances, rehabilitates, or maintains one or more areas of tidal marsh. The WRMP recognizes four kinds of projects:

- Actions that impact aquatic resources (i.e., impacts)
- Actions that mitigate for impacts to tidal marsh or other aquatic resources (e.g., compensatory mitigation) by creating, restoring, enhancing, or rehabilitating one or more areas of tidal marsh
- Non-compensatory, voluntary actions to create, restore, enhance, or rehabilitate one or more areas of tidal marsh
- Field-based aquatic resource monitoring or research

Regulatory

Relating to the control or direction of an activity by a set of rules, laws, etc. In the context of the WRMP, regulatory agencies are government agencies that issue permits or other regulatory approvals or authorizations for wetland restoration projects in the San Francisco Estuary, including the USEPA, Water Board, and BCDC.

San Francisco Bay (or Bay)

The San Francisco Bay (or Bay) refers to the geographic area comprising the five WRMP subregions including Suisun Bay, San Pablo Bay, Central Bay, South Bay, and Lower South Bay.

San Francisco Bay, Sacramento-San Joaquin River Delta (or San Francisco Estuary)

The San Francisco Bay, Sacramento-San Joaquin River Delta (or San Francisco Estuary) refers to the geographic area comprising the San Francisco Bay defined above and the Sacramento-San Joaquin River Delta or Delta.

Science Framework

The Science Framework is the technical heart of the WRMP around which strategies for governance, funding, and data management are or will be structured. To ensure the high value and relevance of the WRMP, the Technical Advisory Committee will address the five Guiding Questions and Priority Recommended Actions developed by the Steering Committee.

Status and Trends

The status and trends of one or more areas of tidal marsh is the comparison of their current and previous ambient conditions, relative to their baseline conditions.

Tidal Marsh

Tidal marsh is any area of the intertidal zone that is at least 25% covered with rooted, living, vascular vegetation. Tidal marsh areas are defined cartographically as unique polygons of tidal marsh in Bay Area Aquatic Resource Inventory (BAARI) or Delta Aquatic Resource Inventory (DARI), for which the minimum mapping unit for tidal marsh is 0.25 acres. In the field, there is no minimum or maximum size of a tidal marsh area. The complete tidal marsh ecosystem includes an area of tidal marsh plus other adjoining intertidal areas and their adjoining subtidal area to a depth of minus twelve feet (relative to local Mean Lower Low Water), plus the transition zone that adjoins the tidal marsh area.

Transition Zone

A transition zone is defined as the area of existing and predicted future interactions among tidal and upland terrestrial or subtidal fluvial processes that result in mosaics of habitat types, assemblages of plant and animal species, and sets of ecosystem services that are distinct from those of adjoining estuarine, riverine, or terrestrial ecosystems (Goals Project, 2015).

Wetlands

Wetlands are transitional lands between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water, and have one or more of the following attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is saturated with water or covered by shallow water at some time during the growing season of each year (Cowardin et al. 1979).

WRMP Charter

The WRMP Charter was developed by a workgroup of Steering Committee members and WRMP staff and undergoes periodic revision. More detailed information about the Steering

Committee and Technical Advisory Committee focus areas, structure, member expectations, decision-making, and more can be found in the Charter.

WRMP Program Plan

The WRMP Plan, or Program Plan, was published in April 2020 and underwent a limited update in June 2023. It includes the overarching Guiding and Management Questions that monitoring is being designed to address; the science framework, including categories of sites that will be monitored and the Master Matrix of indicators; and a data management approach.

Other Useful Resources

Frequently Asked Questions about the WRMP

Guidelines for Inclusive Conversations

Steering Committee Meeting Page - Upcoming meeting dates and past meeting materials