SF ESTUARY
Wetlands
Regional
Monitoring
Program

WRMP Implementation Work Plan

V3

June 2024 – June 2025

Version 6/20/24

Background

The Wetlands Regional Monitoring Program's (WRMP) mission is to deliver 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. This document describes the initial scientific monitoring activity that the WRMP intends to conduct in June 2024 – June 2025 to meet the program's mission under current, available funding from the Restoration Authority that has already been allocated to the WRMP. Additionally, this document identifies the monitoring logistics, including staffing, timing and frequency of data collection, and equipment needs associated with data collection.

The 2024-25 Implementation Work Plan pulls an initial subset of monitoring activity from the Monitoring Plan, which provides a vision for the first 10 years of WRMP monitoring, 2023-2033. The 2024-25 Implementation Work Plan does not provide detailed landowner coordination guidance, which will be captured in a separate document. The 2024-25 Implementation Work Plan also does not specify the methods, analysis, or results, which will be reported following data collection according to the methods described in the Standard Operating Procedures (SOPs).

This document captures scientific monitoring activity to be conducted with the known, secured sources of funding as of May 2024. Notably, the US EPA San Francisco Bay Program Office has secured a 5-year non-competitive exception for the WRMP for up to $17,000,000, for which the preliminary workplan budgets are included in Appendix 1. This document does not include a full description of monitoring implementation plans with the EPA Program Office funds because the timing for when this funding will become available for WRMP use is still not certain; WRMP staff will develop a revised Implementation Work Plan once that funding from the EPA Program Office available for use.

Summary of Funding for Monitoring Implementation, June 2024 - June 2025

Restoration Authority: The Restoration Authority has granted $1,500,000 to the San Francisco Estuary Institute for WRMP program development, indicator alignment, and data collection and analysis from January 2024-June 2025. Of

this, $1.2M has been allocated in the grant workplan for tasks related to data collection, analysis, and visualization. Specific tasks include developing the implementation workplan, aligning WRMP and SFBRA indicators, convening scientific workgroups to guide monitoring, updating WRMP website and SFBRA dashboard with data visualizations, and developing communication products showcasing initial monitoring results.

National Estuary Program: The National Estuary Program has committed 0.5 FTE for a San Francisco Estuary Partnership staff member to support the management, governance, and administration of the WRMP.

US EPA Wetland Program Development Grant – Phase 3: The EPA has granted $120,000 to SFEI for visualizations related to the People and Wetlands Workgroup.

Expected WRMP Funding Not Included in this Implementation Plan

US EPA Wetland Program Development Grant – Phase 4: Funding to advance regulatory alignment, equity and engagement, and collaboration with community-based groups. (Not included in this plan because funding is not intended for monitoring and the start date of funding is not yet determined.)

US EPA San Francisco Bay Program Office: $5,500,000 to SFEI and $5,000,000 to SFEP to advance WRMP data collection, analysis, information dissemination, and equity and engagement. (Not included in this Implementation Plan because start date of funding and the exact proportion for monitoring activity is not yet determined.)

Monitoring To Be Conducted in June 2024 - June 2025

In 2023, the WRMP TAC approved three near-term priority monitoring activities for the WRMP to pilot in 2024-25 using funding from the Restoration Authority (see the WRMP Near-Term Monitoring Implementation Priorities Memo). These activities center on analyses from the 2020 Baylands Habitat Map (BHM), conducting the California Rapid Assessment Method (CRAM) at wetland sites, and installing Sediment Elevation Table-Marker Horizons (SETs). These pilot monitoring activities are meant to help address three key information needs expressed in the WRMP's monitoring and management questions:

1. Improved understanding of restoration progress and measurement of tidal marsh extent. (addressed with BHM analyses).
2. Improved assessment of the condition of restored marshes (addressed with CRAM).
3. Improved detection of which marshes, if any, are showing indications of drowning due to sea level rise (addressed with SETs).

In addition, the WRMP will begin monitoring the human dimensions of wetlands, starting with conducting a foundational spatial analysis of the benefits wetlands provide to communities and evaluating the degree to which communities and Tribes are represented in the composition of wetland restoration decision-makers. These indicators were approved by the Steering Committee in March 2024 and were determined to be of high priority by the People and Wetlands workgroup.

These early monitoring activities also address monitoring criteria identified by the WRMP:

- Help answer the program's Guiding and Management questions, particularly regarding the resilience of the region's wetlands to climate change.

- Provide a high return on investment.
- Leverage historical and/or existing datasets.
- Provide broad spatial coverage.
- Support evaluation of restoration projects within a regional context.

The 2024-25 monitoring activities described in this Workplan leverage ongoing WRMP and partner efforts to collect data and develop important information products quickly while piloting the process of implementing WRMP monitoring. Planned early monitoring activities for June 2024 - June 2025 are summarized in Table 1.

Table 1. Summary of pilot monitoring activities, expected cost, and associated deliverables.

Monitoring Activity	Expected cost	Funding Source	Deliverables
Baylands Habitat Map 2020 Analyses	$50,000	Restoration Authority	Information products related to: tidal marsh extent, relative inundation compared to tidal elevation, channel length and density, percent vegetation cover, and marsh migration space.
CRAM	$90,000	Restoration Authority	New CRAM data for 21 sites, regional CRAM analyses including interpretation of new results using Cumulative Distribution Functions and Habitat Development Curves
SETs	$28,500	Restoration Authority	Installation of 2 new SET arrays (occurred prior to June 2024), preliminary information products about marsh accretion rates and elevation change
Analysis of wetland benefits in relation to environmental justice communities	$120,000	EPA Wetland Program Development Grant	Map of wetland benefits (as reported in EcoAtlas) in relation to environmental justice communities
Representation of decision-makers	In-kind staff time	NOAA Fisheries	Information products related to decision-maker demographics

Baylands Habitat Map (BHM) 2020

The Baylands Habitat Map (BHM) 2020, which will be publicly released in June 2024, (previously known as the Baylands Change Basemap) is a foundational product and tool for the WRMP. The map is the first region-wide map since 2009 (Bay Area Aquatic Resources Inventory, BAARI) and uses state of the art imagery and machine-learning to identify and classify the Baylands into distinct habitat classes. This mapping product is critical to mapping the extent and change in Bayland habitats over time. It also provides the landscape and spatial context to calculate a number of additional important indicators from the basemap which can be tracked over time.

Managers are interested in metrics from the BHM since they capture summary biogeographic metrics, can be tracked remotely, and be calculated from all wetlands across the region. The Restoration Authority is interested in calculations of performance measures for recently restored parcels including aerial extent of restoration progress funded by the SFBRA in different stages of development (e,g., restored and vegetated, restored and evolving, planned restored).

The analyses planned from the BHM 2020 in 2024-25 are summarized in Table 2 and include:

1) Defining a marsh analysis unit for consistent tracking over time.
2) Defining marsh typology, a classification of marsh type based on history (e.g., historic or restored), landscape position (e.g. ,fringing, riverine), and hydrogeomorphic properties (e.g., channel sinuosity).
3) Tracking tidal marsh extent and restoration progress.
4) Delineating Baylands elevation capital, or relative elevation compared to tidal inundation, an indicator of vulnerability to sea-level rise.
5) Analysis of channel length and density, important for defining marsh typology and a functional indicator of interactions between the water and marsh habitats, including drainage, nutrient and sediment exchange, and aquatic habitat.
6) Additional indicators (e.g., percent vegetated cover and marsh migration space) will be considered as part of a process with the WRMP TAC and Steering Committee where the indicators are more clearly defined and methods agreed upon for calculation with additional funding. Further details can be found in the draft BHM 2020 Analyses Memo.

Logistics of BHM Analyses

- **Scale of analyses:** Analyses of interest will be calculated from all marsh management units (MMUs) across the region.
- **Frequency of analyses:** The next updated mapping of the BHM is scheduled to occur in late 2024. The analyses will be revised after the next updated mapping is complete.
- **Duration of work:** Calculating metrics is relatively quick to do, however the process to agree on approach and methods, test and vet methods and review results can be time consuming. The process for vetting methods will occur through WRMP TAC meetings and smaller follow-up meetings of experts between June to December 2024 with metrics calculated from the BHM 2020 in January - March 2025.
- **Cost:** Approximately $50,000 is reserved for WRMP staff to coordinate with the TAC, perform analyses and develop products for reports.
- **Data storage:** Data will be stored on SFEI servers and uploaded to a WRMP profile in EcoAtlas
- **Development of information products:** Data and summary figures will be visible on EcoAtlas through the WRMP dashboard and/or linked to SFEI's Bayland Resilience Framework web map. Summarized findings will additionally be available through the WRMP's website (www.wrmp.org) for sharing with regional partners. Figures and summary graphics will be developed by WRMP staff with advice from the TAC if needed.
- **WRMP Staff contact**: Alex Braud

Table 2. WRMP Analyses derived from the BHM 2020, June 2024 – June 2025

Analysis/ Indicator	Who responsible	Status	Deliverable	Timeframe
Define marsh analysis unit for tracking change	Kelly Iknayan/ Alex Braud/ Jeremy Lowe (typology)	In process - combining hydrologic units from BRF with MMU polygons	Inclusion in Early Monitoring Report and EcoAtlas WRMP Profile	January-June 2024
Identify marsh "typology" for context	Alex Braud	In process		June-December 2024
Tidal marsh extent	April Robinson	In process - presenting very preliminary results at the TAC/SC meeting, will refine for the memo	Tidal Marsh Extent Memo	January-June 2024
Elevation capital	Alex Braud	Data available, decide on meaningful summary metric for WRMP adoption	Inclusion in Early Monitoring Report and EcoAtlas WRMP Profile	June- December 2024
Channel Length and Density	Alex Braud	In process - WRMP TAC to agree on meaningful summary metric for defining indicator	Inclusion in Early Monitoring Report and EcoAtlas WRMP Profile	June- December 2024
Percent vegetated (or UVVR)	Alex Braud	Data available - WRMP and regulators to decide on appropriate metric and method for analysis	Further definition of indicator and appropriate methods for WRMP future mapping	September 2024 - May 2025
Migration space/ Transition zone	Alex Braud	WRMP TAC to decide on appropriate metric and method for analysis	Further definition of indicator and appropriate methods for WRMP future mapping	September 2024 - May 2025

Data and summary figures from early WRMP monitoring efforts will be available for download and visible on EcoAtlas through the WRMP dashboard and/or linked to the Bayland Resilience Framework web map. Summarized findings will additionally be available through the WRMP website for sharing with regional partners. Figures and summary graphics will be developed by WRMP staff with advice from the TAC if needed.

California Rapid Assessment Method (CRAM)

The California Rapid Assessment Method (CRAM) is a Level 2 rapid assessment method for estuarine wetlands that scores various attributes of a wetland (physical, biotic, landscape setting, and hydrology) to develop an index of wetland condition. This method is standardized to apply across the state and to wetlands that vary in salinity and human history so that general condition can be assessed across this variability. CRAM is an important tool for tracking wetland health and can be interpreted against already established contextualization such as the Cumulative Distribution Function that shows where a wetland's condition falls along the spectrum of wetlands in a region. Similarly, Habitat Development Curves enable a restoration project CRAM score to be tracked over time and relative to expectations of how wetland conditions generally develop over time. CRAM can be utilized by managers and regulators to get a sense of restoration progress at a site.

Logistics of Data Collection

- **Data collection sites:** CRAM will be conducted in WRMP priority Project, Reference and Benchmark Sites that have not been previously assessed using CRAM (21 sites, see Table 3). In the first year of data collection, CRAM will be conducted at one assessment area (AA) per selected site. The location of this assessment area will be determined by best professional judgment to be representative of the site. This approach becomes more difficult in sites that are highly variable or larger in size. The CRAM practitioners will do their best to select representative locations, conduct an additional assessment when appropriate and resources allow, and/or make note that the site is in need of additional assessment in the future.

- **Data collection timing and frequency:** Data will be collected in summer 2024 during one-week field campaigns in June- September, dependent on access and species considerations. Repeat CRAM assessment will be conducted in 3- to 10-year intervals as needed, depending on the specifics of each site.
- **Duration of data collection:** Data collection for CRAM takes on average a half day per AA. Time required varies depending on accessibility, the number of CRAM practitioners, the drive time to reach the site, among other variables. This time frame is dependent on previous planning efforts to map out AAs and obtain landscape context information in advance. In addition, post-processing of data is required to upload the data to e-CRAM for storage.
- **Cost for data collection and CRAM analyses:** ~$90,000
- **Data collection entities:** CRAM data will be collected by the developers and trainers of CRAM on staff at SFEI. Field assessments will be conducted by Sarah Pearce and David Peterson, supported by Sarah Lowe for planning and analysis.
- **Data storage:** Data will be stored on SFEI servers and uploaded to a WRMP profile in EcoAtlas.
- **Landowner communications:** Sarah Pearce and Donna Ball will contact landowners and get appropriate permits in advance of the 2024 field season.
- **WRMP Staff Contacts**: Sarah Pearce and Sarah Lowe, SFEI

Table 3. WRMP wetland sites (n=21) to be assessed with CRAM in Summer 2024.

Sub-embayment: Network Name	Wetland Site Name	Site Type	Size (acres)	Age/ restoration date
Suisun: Suisun Slough	**Hill Slough (Existing)**	Reference	1,700	
Suisun: Suisun Slough	**Wings Landing**	Project	270	2020
Suisun: Suisun Slough	**Hill Slough (Restoration)**	Project	850 (649 restored tidal marsh + 192 managed nontidal)	2020
San Pablo Bay: Napa-Sonoma	**Newer Raccoon Island**	Reference		1940's
San Pablo Bay: Napa-Sonoma	**Napa Plant Site**	Project	1460	2010
San Pablo Bay: Napa-Sonoma	**Pond 3**	Project	1344 (508?)	2006
San Pablo Bay: Napa-Sonoma	**Pond 6A**	Project	466	2019
San Pablo Bay: Napa-Sonoma	**Cullinan Ranch**	Project	1285	2015
West San Pablo Bay: Novato-Gallinas (plus lower Petaluma and extreme western Napa-Sonoma)	**Outer McInnis Marsh**	Reference	310	centennial marsh
West San Pablo Bay: Novato-Gallinas (plus lower Petaluma and extreme western Napa-Sonoma)	**Sonoma Baylands**	Optional Project	322	1996
San Pablo Bay: Wildcat Creek	**Wildcat Creek Marsh**	Reference	387	diked early 1900s, restored 1990's
San Pablo Bay: Wildcat Creek	**San Pablo Creek Marsh**	Benchmark	300	diked early 1900s
San Pablo Bay: Wildcat Creek	**Dotson Family Marsh (Restoration)**	Project	150 (check numbers)	2017
South Bay: Alameda Creek	**Cargill Mitigation Marsh**	Reference	49	1998
South Bay: Alameda Creek	**Pond E9**	Project	390	2010
Lower South Bay: Santa Clara Valley	**Older Warm Springs Marsh**	Benchmark		ancient marsh subject to subsidence
Lower South Bay: Santa Clara Valley	**Coyote Triangle Marsh**	Reference		ancient marsh remnant
Lower South Bay: Santa Clara Valley	**Pond A21**	Project	150	2006
Lower South Bay: Santa Clara Valley	**Pond A6**	Project	332	2010
Lower South Bay: Santa Clara Valley	**Pond A17**	Project	130	2012
Lower South Bay: Santa Clara Valley	**Warm Springs Marsh Restoration**	Project	271	1986

CRAM Information Product Logistics

- **Information product description**: CRAM summary scores will be calculated and attribute scores evaluated for each site. Summary scores will be interpreted in relationship to a San Francisco estuarine cumulative distribution function (CDF curve) where the site score can be understood in relation to the range of wetlands in the Estuary. Project site scores will be interpreted using a habitat distribution curve (HDC) that can track restoration progress relative to restoration age. These products will be prepared in Fall 2024. (Note: the CDF and HDC curves were previously developed through EPA Wetland Program Development Funds in support of establishing standardized

local and regional monitoring tools to help resource managers track restoration project performance and changes in wetland conditions over time at local and/or regional scales.). Products will be prepared in the three months post field season (Sept-Dec 2024).

- **Information product storage:** eCRAM and SFEI server database, for display on EcoAtlas WRMP profile.
- **Communications approach**
    - Public Access to Data: CRAM survey results will be publicly available on EcoAtlas and through the WRMP Profile on the EcoAtlas platform.
    - Technical Summary Report: After fieldwork and data collection is complete, Sarah Pearce will prepare a short technical summary report (<10 pages) that includes (at a minimum) a brief description of the work completed, a map of AA locations, and a basic summary of the 2024 CRAM results. The draft report will be reviewed by Sarah Lowe, Donna Ball, and Christina Toms.
    - SFEI will develop a 20-30 minute presentation for the WRMP TAC and SC to update them of the results of the 2024 CRAM survey results.
- **WRMP staff contacts**: Sarah Lowe, SFEI, and Sarah Pearce, SFEI

Sediment Elevation Table - Marker Horizons

Sediment Elevation Tables (SETs) measure fine-scale change in elevation in a wetland. Monitoring accretion and elevation change in wetlands is key to assessing the ability of San Francisco Estuary's tidal wetlands to keep pace with rising sea levels and other impacts of climate change. Individual Sediment Elevation Table-Marker Horizon (SET-MH) sites measure total elevation change, accretion and shallow subsidence (compaction or expansion). When monitored across a regional network, relative rates of change in these factors can be derived and build an understanding of regional marsh resilience to sea-level rise.

Logistics of Data Collection

- **Data collection sites:** In partnership with the South Bay Salt Pond Restoration Project, the WRMP established new SET-MH arrays (four SETs total, two along the marsh edge and two in the marsh interior) at Ravenswood Pond R4 in the Belmont-Redwood OLU. The WRMP also established a new SET-MH array at Raccoon Island in the Napa OLU in March 2024. Costs to establish the Ravenswood Pond A4 array and one set of monitoring were covered by the South Bay Salt Pond Restoration Project with the expectation that future monitoring will be provided by the WRMP as part of the network data collection. In 2024-25, data will be collected at these newly established SET-MH sites along with an additional twelve other SET-MH sites (see Figure 1).
- **Data collection timing and frequency:** Data will be collected once a year at all of the sites in the Fall of 2024-25.
- **Duration of data collection:** Data collection takes approximately a half day per location.
- **Cost**
    - Monitoring and data analysis: $15,000 for monitoring of the SET network.
    - New Installation: $3,500 for new SET-MH array (includes 4 SETs)
    - Equipment/Software: approximately $10,000 for new SET installation. USGS owns the equipment necessary to read the SETs.
- **Data collection entities:** Staff from the USGS will be collecting, recording and managing data.
- **Data storage and management:** Raw data and metadata will be stored and processed at USGS and shared with the WRMP and the public through a USGS data release (sciencebase.gov) within 3-6 months post monitoring. Data will also be provided directly to the WRMP and then stored on SFEI servers in a database for inclusion in the WRMP profile tool of EcoAtlas.
- **Landowner communications:** USGS will communicate with landowners for access to sites.
- **Contacts**
    - WRMP staff: Donna Ball

- Subcontractor: Karen Thorne, PI (kthorne@usgs.gov) and McKenna Bristow, field lead (mbristow@usgs.gov)

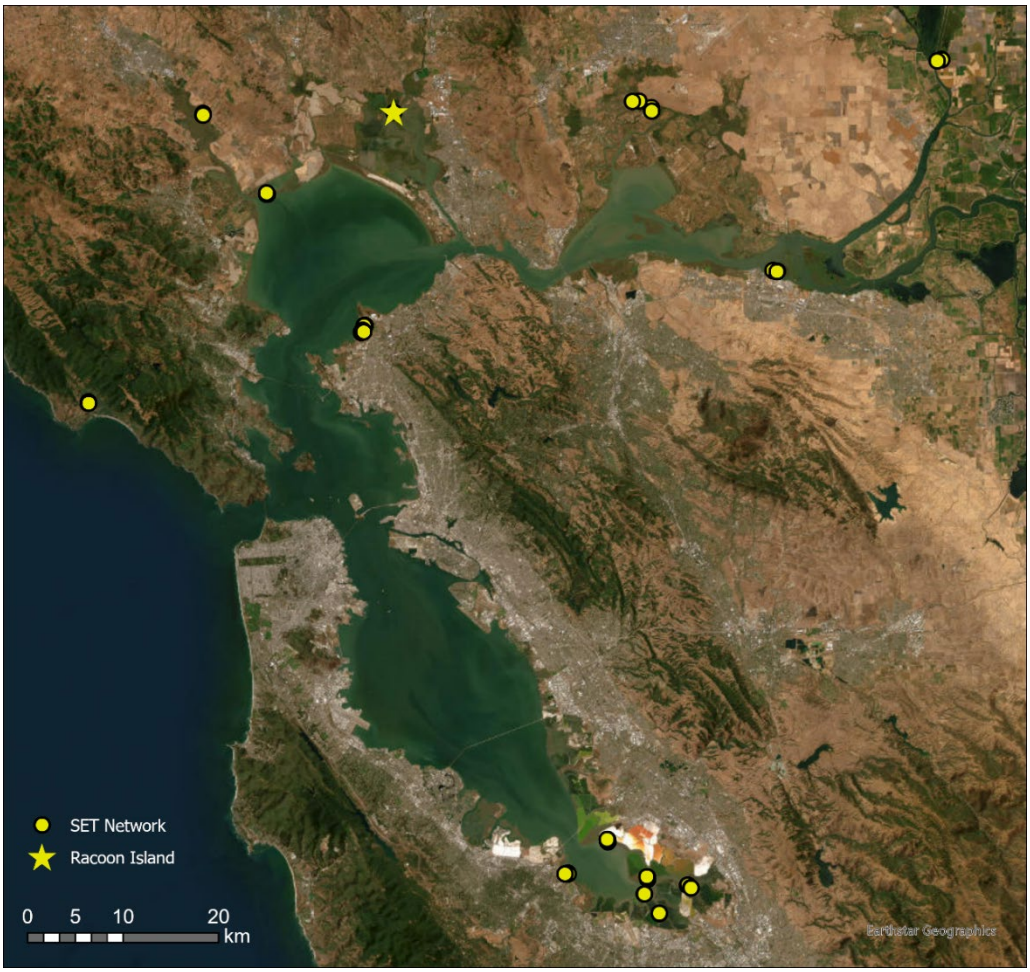

Figure 1. Existing SET-MH locations with new installation location (star). Bolinas Lagoon and Miners Slough are located on the map but are not part of this budget to read as they are outside the scope of the WRMP.

Logistics of SET Information Product Development

- **Information product description:** Initial data visualizations of SET monitoring will be prepared by USGS and provided to the WRMP by June 2024. WRMP staff will then incorporate products into presentations and on the WRMP profile of EcoAtlas. Between June and December 2024, WRMP staff will develop SET-MH products that best address WRMP interests and explore accretion rates, and elevation change at local marshes more within the context of other WRMP information products.
- **Information product storage**: SFEI server for inclusion in EcoAtlas WRMP profile.
- **Communications approach**: Information products will be shared through WRMP presentations, and a WRMP report and on the WRMP profile of EcoAtlas. USGS will develop a 15-minute presentation for the WRMP TAC and SC to update them of the results.
- **WRMP staff contact**: Kelly Iknayan and Donna Ball, SFEI

Spatial Analysis of Wetland Benefits

The WRMP is compiling a map of wetland restoration projects in the San Francisco Bay region and their stated benefits using existing data in EcoAtlas, overlaid with a map of environmental justice (EJ) communities. WRMP staff will calculate summary metrics to track distribution of wetland project benefits relative to EJ communities as a measure of equity. This information product will enable funders, regional planners, project implementers, and others to better identify areas where EJ communities may be underserved by certain types of wetland restoration projects, and where multi-benefit restoration can address gaps.

- **Scale of analysis:** The analysis will include the shoreline restoration projects in the San Francisco Bay region, as documented in EcoAtlas.
- **Frequency of analysis:** The map will be updated dynamically as new restoration projects are added to EcoAtlas, and summary metrics will be updated annually.
- **Duration of work:** Expected completion of analysis and information products by June 2025.
- **Cost:** $120,000 (includes development cost)
- **Information product storage:** SFEI server for inclusion in EcoAtlas WRMP profile or dashboard.
- **Communications approach:** Data and summary metrics will be visible on EcoAtlas through the WRMP profile or dashboard, and might be added to the People & Wetlands StoryMap depending on feasibility. WRMP staff will share the information product and how to use it with the Steering Committee and in targeted meetings with interested stakeholders (e.g. SFBRA, SFBJV, BCDC staff, municipalities, People & Wetlands Workgroup).
- **WRMP staff contact:** Alexandra Thomsen, SFEP and Cristina Grosso, SFEI

Representation of Wetland Restoration Decision-Makers

The WRMP is surveying groups with influence on decision-making in publicly-funded wetland restoration projects to evaluate their representativeness of the region's communities. WRMP staff and partners are developing a survey to gather demographic/representation information and will coordinate with relevant program and committee managers to distribute the survey. Survey data will be compared with community data from the American Community Survey to evaluate representativeness. The survey will be repeated over time, and compared with updated community data, to track changes. Survey results will inform wetland restoration-related program and committee managers of how well their staff/members reflect the demographics of the communities they serve. This indicator will also promote inclusivity in these influential spaces (through open-ended survey responses and case studies/resources compiled by WRMP staff and partners).

Logistics of Data Collection

- **Data collection locations:** Data will be collected virtually through a combination of in-meeting and email surveys to groups that do work related to wetland restoration and management at a regional scale in the Bay and (to the extent possible) the Delta. Criteria are being developed by WRMP staff, in collaboration with the People & Wetlands Workgroup, to identify survey recipients (such as members of committees, boards, workgroups, and agency staff) operating across the following areas of wetland restoration and management: public funding, expert advisory input, project implementation, permitting, and monitoring.
- **Data collection timing and frequency**: Data collection will occur during the fall of the analysis year. Groups receiving the survey have term limits ranging between 2-4 years, thus data collection will repeat every 3 years.
- **Cost for data collection and analysis**: In-kind staff time from NOAA Fisheries (includes survey development cost).

- **Data collection entities**: WRMP staff (Alex Thomsen) will coordinate with relevant program and committee managers to distribute the survey. In the case of emailed survey requests, WRMP staff will obtain email lists from public websites and/or list managers.
- **Data storage**: Individual survey response data will be stored online, in a location private to survey administrators (SFEP staff Alex Thomsen, Sasha Harris-Lovett, Hannah Kempf; NOAA Fisheries fellow Ally Malilay), to protect confidentiality. Summary-level data and anonymous open-response data will be shared with respective program/committee managers and summary-level data will be shared publicly on the WRMP website (www.wrmp.org).
- **WRMP staff contact**: Alex Thomsen, SFEP

Information Product Logistics

Information product description: The primary information product will be a summary and graphic comparing race/ethnicity of survey respondents with community demographics (American Community Survey data for the 9-county Bay Area and, if applicable, the 3 Delta counties). Other survey data (languages spoken, age, gender, etc.) will also be summarized in figures and compared to community data when available.

- **Scale of analysis:** The analysis will summarize data at the regional level. If Delta survey data are available, Bay and Delta results will be summarized separately.
- **Information product storage**: Information products will be stored on the WRMP website (www.wrmp.org) and upcoming State of Our Estuary website.
- **Timing of analysis:** Expected completion of analysis and information products by the end of 2024.
- **Communications approach**: The primary information product will be displayed on the WRMP website, State of Our Estuary: Status & Trends website, and might be added to the People & Wetlands StoryMap. Summary-level survey data and anonymous open-response data will be shared with respective program/committee managers over email.

Conclusion

In total, the WRMP plans to spend approximately $288,500 directly on monitoring data collection and information product development in 2024-25, based on current available funding from the Restoration Authority and the EPA Wetland Program Development Grant, and leveraging in-kind support from project partners. The WRMP expects additional expenditures on data collection and information product creation during the 2024-25 time period, pending new funding from the EPA SF Bay Program Office. This document will be updated as the WRMP secures additional funding.

Appendix I. Proposed WRMP Budgets for the EPA Program Office (funding expected in Fall 2024)

	SFEI workplan (2 years)	SFEP workplan (3.5 years)
1. Establish the WRMP Monitoring Site Network (SFEI)	**$208,092**	**$0**
Implementation prioritization	• Implementation Work Plans • Maps and descriptions of sites with established monitoring • Scientific coordination with regulatory agencies, project implementers, land managers, and related projects and programs	
Monitoring site network establishment		
Monitoring site network coordination		
2. Collect, analyze, and disseminate data (SFEI)	**$4,256,822**	**$1,684,275**
Data collection	• Topography - LIDAR data • CRAM (wetland condition) • Water surface elevation and inundation • Salinity and suspended sediment • Sediment accretion • Vegetation • Transition zones • Permanent survey control points • Wetland visitation • Flood risk reduction • Special study on sense of belonging • Demographics of wetland decision-makers • Spatial distribution of wetland benefits to communities	
Data synthesis & analysis		
Data visualization		
Data reporting		
Data dissemination		
Data management		
Fish and fish habitat monitoring	**$1,500,000 (of $4,256,822 above)**	
3. Develop indicators, metrics, and methods for assessing tidal marsh condition (SFEI)	**$483,432**	**$400,382**
Indicators & metrics	• Tidal marsh extent, elevation, and channel length and density •New indicators and SOPs for birds, mammals, and human dimensions • Regional indicator alignment	
Methods		
4. WRMP governance, management and administration	**$507,450**	**$1,145,264**
Governance	• Steering Committee and TAC meetings and coordination • Updates to management questions and Charter as needed • Program management • Budgeting • Subawards and contracts • Grant administration and reporting	
Program Management		
Program Administration		
5. Equitable engagement	**$44,204**	**$1,767,151**
Advancing the WRMP Equity Plan	• Co-creation of equitable programming with community-based orgs (i.e. community-engaged monitoring, workforce development, educational opportunities) • Engaging youth leaders with the Estuary Youth Council • Co-creation of wetland programming with Tribes • Tracking Equity and Engagement Plan implementation • Alignment of WRMP with regulatory & wetland restoration implementer needs	
Regulatory and Project Implementer Engagement		