

SAN FRANCISCO BAY RESTORATION AUTHORITY

Staff Recommendation
December 10, 2021

Science Elements of the Wetlands Regional Monitoring Program for San Francisco Bay

Project No. RA-032
Project Manager: Heidi Nutters

RECOMMENDED ACTION: Authorization to disburse an amount not to exceed two million, nine hundred and fifteen thousand dollars (\$2,915,000) to the Aquatic Science Center (ASC) to implement two elements of the Wetlands Regional Monitoring Program (WRMP) for San Francisco Bay—implementing the monitoring site network and aligning San Francisco Bay Restoration Authority performance metrics with WRMP indicators.

LOCATION: All nine San Francisco Bay counties

MEASURE AA PROGRAM CATEGORY: Safe, Clean Water and Pollution Prevention Program; Vital Fish, Bird and Wildlife Habitat Program; Integrated Flood Protection Program; Shoreline Public Access Program.

EXHIBITS

- Exhibit 1: [WRMP Governance Structure](#)
- Exhibit 2: [WRMP Plan](#)
- Exhibit 3: [WRMP Development Phases](#)
- Exhibit 4: [Project Letters](#)

RESOLUTION AND FINDINGS:

Staff recommends that the San Francisco Bay Restoration Authority adopt the following resolution and findings:

The San Francisco Bay Restoration Authority hereby authorizes the disbursement of an amount not to exceed two million, nine hundred and fifteen thousand dollars (\$2,915,000) to Aquatic Science Center (ASC), a joint powers authority, to implement two elements of the Wetlands Regional Monitoring Program for the San Francisco Bay—implementing the monitoring site network and aligning Authority performance measures with WRMP indicators, including support of the WRMP Lead Scientist for these two elements. Of the funds authorized for disbursement, the Executive Officer shall not disburse more than one-half (\$1,457,500) until after June 30, 2023. Prior to commencement of the project, the grantee shall submit for the review and written approval of the Executive Officer of the Authority the following:

*SCIENCE ELEMENTS OF THE WETLANDS REGIONAL MONITORING PROGRAM FOR
SAN FRANCISCO BAY*

1. A detailed work program, schedule, and budget.
2. Names and qualifications of any contractors to be employed in carrying out the project.
3. A plan for acknowledgement of Authority funding.

Based on the accompanying staff recommendation and attached exhibits, the San Francisco Bay Restoration Authority hereby finds that:

1. The proposed authorization is consistent with The San Francisco Bay Restoration Authority Act, Gov. Code Sections 66700-66706.
 2. The proposed authorization is consistent with The San Francisco Bay Clean Water, Pollution Prevention and Habitat Restoration Measure (Measure AA).
-

PROJECT SUMMARY:

Staff recommends that the San Francisco Bay Restoration Authority (Authority) authorize disbursement of \$2,915,000 to Aquatic Science Center (ASC) to implement two elements of the Wetlands Regional Monitoring Program (WRMP) for the San Francisco Bay—implementing the monitoring site network and aligning Authority performance measures with WRMP indicators—over approximately three years and including support of the WRMP Lead Scientist for these two elements. The overall purpose of the WRMP is to improve the protection and restoration of tidal marsh ecosystems in the Bay by collecting monitoring data at a regional scale and translating it into the information needed by tidal marsh restoration planners, designers, funders, and regulators. This includes addressing priority management questions through WRMP data and providing clear guidance for permit-driven monitoring in order to answer those questions. Authority funding will (a) establish the WRMP monitoring site network in support of Authority restoration and management goals; and (b) develop performance metrics for habitat restoration to add to the Authority’s existing set of performance metrics. ASC is a joint powers authority made up of the State Water Resources Control Board and the Bay Area Clean Water Agencies (which is a joint powers authority made up of municipalities and special districts that provide sanitary sewer services). ASC is staffed by the San Francisco Estuary Institute (SFEI), a nonprofit organization.

WRMP Background

The San Francisco Bay needs regional monitoring to support adaptive management of tidal wetlands restoration projects. Data collected under the WRMP will furnish the restoration community with a regional view of the status and trends of the baylands ecosystem in the short- and long-term. This is particularly important for baylands restoration in the face of sea level rise and other climate change stressors that threaten these important habitats.

The WRMP will improve wetland restoration project success by establishing regional-scale monitoring that is consistent and comparable across projects. This will increase the impact, utility, and application of permit-driven monitoring to inform science-based decision-making. Investments in a region-wide monitoring program can lead to cost and permitting efficiencies

SCIENCE ELEMENTS OF THE WETLANDS REGIONAL MONITORING PROGRAM FOR SAN FRANCISCO BAY

over time. Coordinated regional monitoring can yield benefits to reduce project-specific monitoring, as well as furnish resources for successful restoration design considerations. The program will fully be in place with the addition of a Lead Scientist to the staff, supported by funding from the Authority. Once in place, the WRMP will be a robust, science-driven, collaborative regional monitoring program that includes mapping changes to tidal marsh ecosystems, a monitoring site network, an open data sharing platform, and a comprehensive science framework.

Coordination with the San Francisco Bay Restoration Regulatory Integration Team (BRRIT) is ongoing. The WRMP will leverage the work of the BRRIT by developing detailed performance metrics to evaluate wetland health that align with regulatory requirements. Working closely with the BRRIT will ensure the performance metrics developed by the WRMP meet the needs of the regulatory agencies. In addition, coordinating with the BRRIT will support the process of integrating performance metrics and the monitoring network into wetland restoration permits, which will provide permit applicants with greater certainty about anticipated monitoring requirements.

The WRMP is a collaboration of diverse and far-reaching organizations and public entities representing major partners in wetland restoration, science, and community engagement, as illustrated in Exhibit 1. The WRMP is co-administered by ASC and San Francisco Estuary Project (SFEP). In 2020, these partners completed and approved the WRMP Plan, included in Exhibit 2. The WRMP Plan lays out priority steps for implementing the Science Program as well as governance and outreach priorities.

Separate Funding and Funders

The monitoring site network and its associated monitoring standards will complement a project recently funded under the USEPA's Wetland Program Development Grant, entitled "San Francisco Bay Wetlands Regional Monitoring Program Plan: Community Engagement, Ecosystem Indicators, Regulatory Alignment, and Information Delivery." As an instrument of capacity building, the USEPA's project chiefly focuses on facilitating stakeholder engagement, fostering data collection geared to the needs of community-based organizations (CBOs), and achieving greater regulatory alignment. The USEPA project will enlist the expertise of CBO specialists who might coordinate discussion, identify critical data needs, and engage their associated communities in the mission of the WRMP. With the Authority's funding to establish the monitoring site network around common standards, the community-based science will have greater impact and alignment with existing monitoring data. Being part of the WRMP at this early stage will solicit meaningful contributions from these valuable community members that bear the greatest impact.

PROJECT DETAILS:

Key Project Elements

The WRMP is seeking funding for Phase 3 (Exhibit 3) to implement key science priorities identified in the WRMP Plan. The proposal to the Authority is focused on specific elements of

*SCIENCE ELEMENTS OF THE WETLANDS REGIONAL MONITORING PROGRAM FOR
SAN FRANCISCO BAY*

the science implementation component—namely, operationalizing the monitoring site network and aligning Authority performance metrics with WRMP indicators. This work includes:

- **Establish Monitoring Site Network** – In coordination with the WRMP Steering Committee (SC) and TAC, the project team will develop monitoring protocols for key metrics, select monitoring sites, monitor at select locations to pilot methods, review and adapt monitoring protocols, and summarize results from the pilot-scale monitoring.
- **Align indicators between the Authority and WRMP** – The project team will compile regional data and produce a data inventory that serves high-priority indicators. Data will be collected in coordination with the TAC and SC to address the WRMP Management Questions. Funding will also support tracking landscape change across the region, preparation of accompanying accessible visualizations, and outreach and communications. The WRMP indicators salient to the Authority’s interests will help to inform key measures of restoration project performance.

The project includes work of the WRMP Lead Scientist who will devote 50% full-time equivalency to these two elements of the WRMP during the full span of the project. This position will coordinate the key scientific decisions to support standardized monitoring guidelines across the Monitoring Site Network, as well as the requisite deliberations regarding indicator alignment.

During the development of performance measures for the Authority, the Advisory Committee recognized the importance of coordinating with the WRMP. The members of the Ad Hoc Subcommittee on Performance Measures were initially interested in developing metrics to evaluate the progress of wetland habitat restoration projects funded by Measure AA but did not want to duplicate the work of the WRMP. Therefore, the Subcommittee decided to recommend an initial set of performance measures and wait until the WRMP completed its work before identifying appropriate ecological indicators for evaluating restoration project progress or recommending monitoring parameters for Authority projects. The first iteration of performance measures was developed by the Ad Hoc Subcommittee on Performance Measures and was presented to the Advisory Committee on June 29, 2018. WRMP staff participated in discussions, and the recommendation was made to continue coordination with the WRMP moving forward. Additional caveats listed in that report align with the WRMP approach, including the need to ensure the greatest efficiency and cost effectiveness possible in monitoring requirements.

More recently, in May 2021, the Authority’s Independent Citizens Oversight Committee (ICOC) asserted the need to make use of the WRMP’s regional perspective to enhance what is currently a project-based set of goals: “With respect to judging project success, the ICOC supports making a concerted effort to integrate project data (largely done on a permit-by-permit basis) into system-wide information, not only by tracking progress toward its primary obligation of meeting campaign goals, but also its contribution toward the larger ecosystem goals.”

Separately, the Advisory Committee made recommendations on the use of performance measures, including total acres of various habitat types to be constructed, at the September 12, 2018, Governing Board meeting. In response to the Governing Board’s support for these recommendations, staff included a performance measures table in the Authority’s Annual Report for Fiscal Year 2017-2018 and every year thereafter. The Advisory Committee’s report recommended that Governing Board direct staff to coordinate with the staff of the agencies and

*SCIENCE ELEMENTS OF THE WETLANDS REGIONAL MONITORING PROGRAM FOR
SAN FRANCISCO BAY*

organization developing the WRMP, who were separately developing performance metrics for assessing regional wetlands restoration progress, to determine how the metrics developed for the WRMP could be used to assess the effectiveness of Authority-funded wetland restoration projects over time.

The WRMP will evaluate performance of restoration projects in support for Authority efforts. The Management Questions of the WRMP work to assess: (1) how wetlands are changing over time, (2) how wetlands are performing within acreage goals, and what factors are driving success or failures within those projects, (3) how external drivers such as climate change and land-use change are affecting the success of restoration projects, (4) how acreage goals are affecting the distribution, health, and abundance of plants, fish and wildlife, and (5) how restoration projects affect public health, safety and recreation.

Success of the proposed project success will be evaluated by WRMP's Steering Committee annually, and the Chair or Vice Chair of the Steering Committee and Technical Advisory Committee, as well as program staff, will present progress reports to the Authority and other funders.

Performance will be measured against the following:

Monitoring Site Network Implementation:

1. *Number of monitoring sites established.* The current network of monitoring sites will be augmented with several Authority-funded project monitoring sites and other sites of interest. The specific candidate sites will be reviewed according to objective standards determined by the TAC, with the slate of sites formally adopted by the Steering Committee.
2. *Analyzed monitoring results.* Having a network of monitoring sites will facilitate coordinated monitoring in the region for the first time at this scale. In the third year of the project, the team, in consultation with the TAC, will produce written results from the monitoring network pilot, along with dynamic data visualizations to translate assembled data into information. These outputs will help to evaluate the efficacy of the pilot project and how best to conduct adaptive management in light of new or changed management concerns, as additional funding opportunities expand the project into the future.

Alignment of Authority performance measures and WRMP Indicators:

1. *Number of Authority performance measures aligned with the WRMP's habitat indicators.* Accounting for habitat gains and losses can be deceptively challenging, particularly as sea-level rise challenges our best efforts. The WRMP's 23 indicators and its regionally calibrated approach provide broad insight about the "health" of San Francisco Bay's wetlands and the services they provide to wildlife and people. The alignment of these indicators with the Authority's performance measures for its grant program will ensure that common language leads each program to benefit from the continued success of the other, thereby reducing duplication of effort and extending the impact of system-wide monitoring. The more WRMP indicators are aligned with Authority performance measures, the greater the leveraged impact.
2. *Number of indicators aligned across regional programs.* Beyond the Authority, there are a number of other programs that regularly measure the health of the San Francisco Bay's

*SCIENCE ELEMENTS OF THE WETLANDS REGIONAL MONITORING PROGRAM FOR
SAN FRANCISCO BAY*

wetlands. By aligning performance measures broadly across programs—which would potentially include the San Francisco Bay Joint Venture, San Francisco Bay Regional Monitoring Program for Water Quality, and the State of the Estuary Report—the region’s various programs will base their assessments on the same scientific data, rather than yielding results that conflict due to semantic and programmatic misalignments.

WRMP PHASE 3 FINANCING:

San Francisco Bay Restoration Authority \$2,915,000
US Environmental Protection Agency Region 9 \$1,580,000
San Francisco Estuary Partnership \$523,000
Total Leveraged \$2,220,000
Project Total \$5,135,000

Although the Authority will be the sole funder of the project described in the authorization (the two science elements of the WRMP), ASC is leveraging additional funds toward the WRMP as a whole, as itemized above. Funding from the US Environmental Protection Agency Region 9 includes:

- \$1,058,000 from the Wetland Program Development Grant (spread over two grants) to support establishment of the WRMP Charter and Funding Plan, development of the Data Management system, and regulatory and community engagement.
- \$522,000 from the Water Quality Improvement Fund for development of the baylands habitat change basemap.

Additional leveraging support will be provided by the San Francisco Estuary Partnership in the amount of \$523,000 and in-kind staff support from the San Francisco Bay Regional Water Quality Control Board in the amount of \$117,000. These funds include support of WRMP Science Program workgroups and in-kind staff support.

Since ASC will spend the grant funds fairly evenly over the three-year time period of the project, the Authority will limit disbursement of funds to no more than one-half (\$1,457,500) up to June 30, 2023, with the rest disbursed after that, in and after the fiscal year (FY) 2023/2024. Limiting disbursement will enable the Authority to use FY 23/24 funds for this project, freeing up FY 2021/2022 and FY 2022/2023 funds for other projects.

CONSISTENCY WITH AUTHORITY’S ENABLING LEGISLATION, THE SAN FRANCISCO BAY RESTORATION AUTHORITY ACT:

The San Francisco Bay Restoration Authority Act (Act) establishes the Authority to raise and allocate resources for the restoration, enhancement, protection, and enjoyment of wetland and wildlife habitats in the San Francisco Bay and along its shoreline. Gov. Code § 66702(c). The Act gives the Authority the power to enter into contracts to carry out the purpose of the Act and to grant funds for eligible projects. Gov. Code §§ 66704, 66704.5. The Act makes clear that Authority grants can cover the costs of all phases of project planning and construction. Gov. Code § 66704.5(e).

CONSISTENCY WITH MEASURE AA PROGRAMS AND ACTIVITIES:

*SCIENCE ELEMENTS OF THE WETLANDS REGIONAL MONITORING PROGRAM FOR
SAN FRANCISCO BAY*

Measure AA provides that the purpose of the parcel tax is to support the “programs and priorities and purposes” of Measure AA, which are listed below. The tax revenues must be spent for those purposes in accordance with the procedures and limitations set forth in the Measure. The WRMP is consistent with these purposes because it would support Measure AA programs by improving wetland restoration monitoring and sharing of information about individual projects.

Within the broader purpose of the tax to support the programs and priorities of Measure AA, the tax revenues must be spent for either “general government purposes” or “projects for the benefit of the San Francisco Bay Area.” (See Measure AA Sections 3.B.6. and 3.C.3.) The WRMP will 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. Tidal marsh restoration in the Bay is currently subject to project-specific, site-scale monitoring that can obscure the effects of, and interactions between, important landscape-scale drivers such as sea level rise, changes in watershed hydrology and sediment supply, land subsidence, development, flood management activities, invasive species, and more. This creates an information gap and inconsistency that can make it difficult for decision-makers to develop, implement, and adaptively manage tidal marsh restoration projects to respond to these drivers, and support the long-term, landscape-scale resilience of healthy bayland ecosystems.

The proposed project is expected to benefit all of Measure AA’s four programs:

1. The Safe, Clean Water and Pollution Prevention Program’s purpose is to remove pollution, trash and harmful toxins from the Bay in order to provide clean water for fish, birds, wildlife and people.
2. The Vital Fish, Bird and Wildlife Habitat Program’s purpose is to significantly improve wildlife habitat that will support and increase vital populations of fish, birds, and other wildlife in and around the Bay.
3. The Integrated Flood Protection Program’s purpose is to use natural habitats to protect communities along the Bay’s shoreline from the risks of severe coastal flooding caused by storms and high water levels.
4. The Shoreline Public Access Program’s purpose is to enhance the quality of life of Bay Area residents, including those with disabilities, through safer and improved public access, as part of and compatible with wildlife habitat restoration projects in and around the Bay.

The restoration and regional monitoring of wetlands clearly promotes measures associated with Program 1 (water quality) and Program 2 (wildlife habitat). In addition, however, regional monitoring of vegetation biomass, distribution, and condition bear a direct influence on the efficacy of natural flood protection associated with Program 3 (flood protection).

Furthermore, the WRMP’s Guiding Question #5 (“How do projects to protect and restore tidal marshes affect public health, safety and recreation?”) provides evidence of the WRMP’s scope that embraces the goals associated with Program 4 (public access).

CONSISTENCY WITH MEASURE AA PRIORITIZATION CRITERIA:

*SCIENCE ELEMENTS OF THE WETLANDS REGIONAL MONITORING PROGRAM FOR
SAN FRANCISCO BAY*

Greatest positive impact. Currently, wetland monitoring is conducted on a site-by-site basis. Information produced by each monitoring effort is limited in scope and shared with a narrow set of stakeholders. The WRMP will fundamentally alter and improve who has access to monitoring data, and perhaps more importantly, what kinds of insights we can achieve at a regional scale. This will improve wetland restoration project success by establishing monitoring that is consistent and comparable across projects. This multifaceted enterprise will increase the impact, utility, and application of permit-driven monitoring to inform science-based decision-making. In short, the proposed project's greatest impact is its unique ability to measure impacts themselves—e.g., the impacts of restoration, sea-level rise, and development. The WRMP indicators, in their broadest terms, address the health of wetland habitats, the wildlife that benefit from those habitats, and the people who enjoy the existence of such landscapes. Only by measuring these critical indicators will we understand how we are performing as stewards of the landscape.

Greatest long-term impact. The WRMP is establishing a monitoring network to capture and measure change over time. The program will characterize the region's present habitats, so that it can, as precisely as possible, describe future impacts from stressors as well as designed improvements. The Authority shares this significant interest. However, the WRMP's unique proposition is the rigor of its science. Projects designed to be resilient to sea-level rise impacts, for instance, might bear unintended consequences for key species. Learning from these impacts and re-adjusting future designs will help restoration practitioners improve their projects for future wildlife and the communities of people. Future stakeholders—whether members of the general public who recreate in the Bay and along the Bay shoreline, public officials who want assurances of the most cost-effective methods to promote wetland habitat development, or academic researchers interested in reviewing the best available science—will benefit from the proposed investments in a strong baseline of scientific data.

Leveraging resources and partnerships. See PROJECT FINANCING section above.

Monitoring, maintenance, and stewardship. With its mission to improve the protection and restoration of tidal marsh ecosystems in the Bay through the collection and interpretation of monitoring data, the WRMP aligns well with this prioritization criterion. For the first time, monitoring will be conceived on a regional basis with commensurate regional and subregional analysis. The WRMP, in its success, will produce better-informed stewards of the regional system they wish to protect. Tidal marsh restoration planners, designers, funders, and regulators alike will benefit from a common set of information that can help them to identify shortcomings in current restoration projects, successful design strategies, and new regional impacts that might benefit from adaptation. Only regional monitoring can reliably furnish such information.

Coastal Conservancy's San Francisco Bay Area Conservancy Program. The project is consistent with the Coastal Conservancy's San Francisco Bay Area Conservancy Program criteria in that it is supported by adopted local or regional plans, including: the *Comprehensive Conservation and Management Plan* (or *Estuary Blueprint*), where development of a wetlands regional monitoring program is listed as Action 2; the *Implementation Strategy for the San Francisco Bay Joint Venture*, under Chapter 5 - Monitoring and Evaluation of Habitat Goals and Accomplishments); and *The Baylands and Climate Change: What We Can Do. Baylands Ecosystem Habitat Goals Science Update*, where recommended actions Highlight #3 call for

*SCIENCE ELEMENTS OF THE WETLANDS REGIONAL MONITORING PROGRAM FOR
SAN FRANCISCO BAY*

centralized monitoring and data access. In addition, the project is multijurisdictional and would serve a regional constituency, can be implemented in a timely way, provides opportunities for benefits that could be lost if the project is not quickly implemented, and includes matching funds from other sources of funding or assistance.

San Francisco Bay Conservation and Development Commission’s Coastal Management Program. The project is consistent with the San Francisco Bay Plan. Policy 8 in the Tidal Marshes and Tidal Flats section states that the Commission should “encourage and support regional efforts to collect, analyze, share, and learn from habitat monitoring data.”

San Francisco Bay Joint Venture’s Implementation Strategy. The project’s alignment with the SFBJV’s Implementation Strategy is readily evident in the overall purpose of the Joint Venture and the Strategy (as described in the Strategy) as including:

- a. Providing support for monitoring and evaluation of existing restoration projects
- b. Supporting monitoring of habitat restoration projects and research to improve future initiatives

In addition, Chapter 5 of the Implementation Strategy includes the following specific objective to: “Provide for regional coordination and communication of monitoring and evaluation of results...”

COMPLIANCE WITH CEQA:

The California Environmental Quality Act (CEQA) requires that public entities conduct environmental review prior to approving or funding a project. The CEQA Guidelines at 14 Cal. Code Regs. § 15378 define the term project as an action that has the potential for resulting in either a direct physical change in the environment or reasonably foreseeable indirect change in the environment. The proposed project primarily consists of developing guidance and resources for coordinated, regional monitoring of restoration projects. These activities will not result in a direct or reasonably foreseeable indirect physical change in the environment and therefore do not constitute a project that triggers the requirements of CEQA. The proposed project includes monitoring activities at select locations to assist with developing protocols. These monitoring activities are exempt from CEQA pursuant to 14 Cal. Code Regs. § 15306, which exempts “basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource.” The monitoring activities are for purposes of developing regional monitoring protocols and will not result in a serious or major disturbance to an environmental resource. Therefore, this aspect of the proposed project is exempt from CEQA.