

SAN FRANCISCO BAY RESTORATION AUTHORITY

Staff Recommendation

April 11, 2018

**SAN LEANDRO TREATMENT WETLAND FOR POLLUTION REDUCTION,
HABITAT ENHANCEMENT, AND SHORELINE RESILIENCY**

Project Number: RA-007

Project Manager: Caitlin Sweeney

RECOMMENDED ACTION: Authorization to disburse up to \$539,000 to the City of San Leandro to: 1) to prepare detailed designs, permit applications, and environmental documentation for the conversion of a 4.3-acre wastewater storage basin adjacent to San Leandro's Water Pollution Control Plant to a multi-benefit treatment wetland, and 2) develop a shoreline resiliency and tidal marsh restoration vision for the surrounding area, in the City of San Leandro, Alameda County.

LOCATION: San Leandro, Alameda County; Measure AA Region: East Bay

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: [Project Location and Site Maps](#)

Exhibit 2: [Project Photographs](#)

Exhibit 3: [Project Letters](#)

RESOLUTION AND FINDINGS:

Staff recommends that the San Francisco Bay Restoration Authority adopt the following resolution pursuant to The San Francisco Bay Restoration Authority Act, Gov. Code § 66700-66706:

“The San Francisco Bay Restoration Authority hereby authorizes the disbursement of an amount not to exceed five hundred and thirty nine thousand dollars (\$539,000) to the City of San Leandro to prepare detailed designs, permit applications, and environmental documentation for the conversion of a 4.3-acre wastewater storage basin at the City of San Leandro's Water Pollution Control Plant to a multi-benefit treatment wetland, and to develop a community-based shoreline resiliency and tidal marsh restoration plan for the surrounding area.

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:

- a. A detailed work program, schedule, and budget.
- b. Names and qualifications of any contractors to be employed in carrying out the project.
- c. A plan for acknowledgement of Authority funding.”

Staff further recommends that the Authority adopt the following findings:

“Based on the accompanying staff report 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 §§ 66700, et seq.
2. The proposed authorization is consistent with The San Francisco Bay Clean Water, Pollution Prevention and Habitat Restoration Measure (Measure AA).
3. The grantee is not required to enter into a project labor agreement per Resolution 22 due to the planning nature of the authorized project.”

PROJECT SUMMARY:

Staff recommends the disbursement of up to \$539,000 to the City of San Leandro to prepare detailed designs, permit applications, and environmental documentation for the restoration of a 4.3-acre wastewater storage basin to create a multi-benefit treatment wetland at the City of San Leandro’s Water Pollution Control Plant (WPCP), and develop a community-based shoreline resiliency and tidal marsh restoration vision for the surrounding area.

The project will advance the reduction of wastewater-borne contamination and eutrophication via development of new forms of green infrastructure. For decades, San Francisco Bay has been recognized as a nutrient-enriched estuary, largely due to heavy inputs of nitrogen and phosphorus from 40+ wastewater treatment plants that discharge to its sub-embayments. Until recently, the Bay has resisted nutrient over-enrichment due to high turbidity, strong tidal mixing, and grazing by bivalves. However, ongoing observations by USGS and the San Francisco Estuary Institute (SFEI) suggest additional water quality limits and management actions are needed to protect SF Bay from the potential effects of nutrient over-enrichment, such as harmful algae blooms and low dissolved oxygen. Regulators have not yet required nutrient load reduction actions, but early actions by sources such as San Leandro’s WPCP are encouraged and are less costly than a regulatory response.

This project follows the successes of recent pilot projects at the Discovery Bay and Oro Loma wastewater treatment plants, which demonstrated green infrastructure can achieve incredibly high contaminant removal rates from treated wastewater that would otherwise be discharged through large pipes extending into SF Bay. These projects also demonstrated considerable habitat improvement potential through creation of freshwater and brackish wetlands within heavily urbanized portions of the Bay. Open water wetlands of the type piloted at Discovery Bay

are still novel and there is a need to apply those lessons learned at a larger demonstration scale in locations more likely to yield environmental outcomes and serve as learning-based models for other wastewater agencies. Implementation of this project will significantly improve habitat conditions at a contaminated shoreline site and is anticipated to reduce nitrogen waste from San Leandro's WPCP by at least 15-20%, equivalent to about 40,000 kg of nitrogen per year.

In addition to design of the treatment wetland, the project will include coordination with surrounding landowners to enhance shoreline resiliency for sea level rise adaptation. The Bay Conservation and Development Commission (BCDC) recently analyzed the vulnerability of wastewater infrastructure to sea level rise (SLR) in the East Bay, through to the Adapting to Rising Tides (ART) project. San Leandro's WPCP, built in 1939, is the oldest among those examined and 82% of the City's wastewater infrastructure is exposed to potential flooding at just 16 inches of SLR. Phase 1 of this Project involves the conversion of a marginal storage pond to a treatment wetland, ensuring this pond serves not just a single-use flood storage function but meets multiple goals of water quality improvement, habitat enhancement, public access, and SLR adaptation.

This project was developed through the SF Bay Nutrient Management Strategy (NMS) a multi-agency board managed by SFEI and charged with recommending management actions and individual projects that will reduce nutrient loading in San Francisco Bay.¹ This project meets multiple needs identified in the Baylands Ecosystem Habitat Goals Science Update 2015, including to

- “Identify and implement opportunities for taking advantage of treated wastewater and stormwater to create salinity gradients and maximize peat accumulation in the baylands, while protecting water quality and minimizing nutrient loading.” as well
- “Accumulate peat in diked baylands prior to breaching to increase elevations and sequester carbon.” (p. 105)

Following enhancement of the storage pond and demonstration its SLR adaptation potential, the project will facilitate the planning, design, fundraising and implementation of a larger shoreline resiliency and tidal marsh restoration effort to protect critical infrastructure and enhance ecological resources. This part of the project will initiate a longer-term shoreline resiliency and restoration element to improve shoreline ecology and protect critical infrastructure in the area. Engagement with community stakeholders and surrounding landowners (Oakland International Airport/Port of Oakland & East Bay Regional Parks District). The planning effort is needed to address options for enhancing shoreline resiliency to SLR and tidal marsh restoration to attenuate the effects of SLR.

This project will assist the disadvantaged community of San Leandro which has limited resources to address water-quality and SLR problems. Its staff does not have the expertise to design scientifically complex projects such as this. In the absence of pilot funding to professionally evaluate and design this project, City Council will not likely pursue nature-based or multi-benefit options. This project enables City staff to demonstrate the costs and benefits to

¹ NMS was formed by the San Francisco Bay Regional Water Quality Control Board (Regional Water Board), managed by SFEI, and includes agencies (e.g. Regional Water Board, US Environmental Protection Agency, National Oceanic and Atmospheric Administration, California Department of Fish and Wildlife, US Geological Survey), wastewater agencies, and non-profits.

City Council and other funders to ensure timely implementation. The City recognizes that nutrient removal is a Water Board water quality objective and that some action by the City to meet this objective is necessary. Although there is planning for this expense, the City needs to demonstrate the viability of this Project as a cost-effective alternative before committing money set aside for regulatory compliance. In addition to seeking internal funding, the City would leverage the deliverables from this project to apply for federal and state funds. Failure to take advantage of the opportunity presented by this project severely limit the likelihood of sustainable solutions for this site.

San Leandro maintains significant internal capacity to manage grants, contracts, and oversee engineering projects of this scale. Lands proposed for restoration are located on City property and City staff and engineers are knowledgeable of site history, opportunities, and constraints. San Leandro's capacity to manage the grant, contracts, and outreach processes will yield cost efficiencies over using contractors or other intermediaries. Further, City staff has already commissioned environmental analyses for the site when the City was considering filling the pond and using the site for equipment storage in 2014. Analyses include detailed water quality and geotechnical assessments, soil cores, and reclamation plans, which provide necessary site information for the proposed enhancement project. The City maintains appropriate project management and technical expertise to leverage their understanding of the site to efficiently achieve maximum benefit for the site. San Leandro is a member of the East Bay Dischargers Association (EBDA), which assisted Oro Loma Sanitary Agency in the implementation of an integrated treatment wetland and ecotone levee. Both EBDA and Oro Loma Sanitary District are deeply familiar with the scientific and technical challenges associated with this type of project and have committed to assisting San Leandro. As the coordinating entity for the NMS, SFEI shall provide support to City staff for convening a Science Advisory Committee, conducting agency coordination and providing design expertise.

The project site is located adjacent the Bay Trail. The site is highly visible from the Bay Trail and signage to educate the public regarding the history, science, and expected benefits of the Project will be developed during the implementation phase. Public tours are expected to receive interest from school groups, wastewater industry representatives, and others interested in green infrastructure.

Site Description:

The Project site includes a 4.3-acre storage pond and adjacent upland areas owned by the City and managed by the San Leandro Water Pollution Control Plant (WPCP). The triangular-shaped pond is located at the western end of the treatment plant and the drainage channel to the east represents the former San Francisco Bay shoreline. It is bordered on the south and east by a drainage channel with direct connection to San Francisco Bay, and on the north by the Oakland International Airport and the Metropolitan Golf Links course. Other surrounding land uses include a gun club (property owned by the City), a waste transfer facility, and a 194-acre regional park operated by East Bay Regional Park District, known as the Oyster Bay Regional Shoreline Area.

The storage pond is identified as a component of the waste treatment system for the treatment plant within its National Pollutant Discharge Elimination System (NPDES) permit, which establishes compliance requirements under the federal Clean Water Act and state water quality regulations. The storage pond itself maintains the physical appearance of active salt ponds in the

region, void of vegetation in all areas except the perimeter of the site, with plant assemblages consistent with other heavily disturbed sites along San Francisco Bay. Historic photos from the early 1990s indicate the lands to the west of the storage pond were graded or otherwise disturbed but have since regained tidal marsh features. The long-term vision for this area would involve enhancing this site, the adjacent tidal channel, and surrounding shoreline through tidal marsh restoration, utilizing treated effluent for discharge and treatment through an ecotone levee.

PROJECT FINANCING

San Francisco Bay Restoration Authority	\$539,000
Project Total	\$539,000

In-kind contributions include \$23,500 in EBDA staff time (the Executive Director of EBDA and Ora Loma staff), and \$25,000 of SFEI staff time through the Nutrient Management Strategy.

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

The project is proposed by the City of San Leandro, an eligible local agency, as well as the owner and operator of the proposed project site, a shoreline parcel along San Francisco Bay. The bayland site is tidally influenced (partially inundated during high tide) yet separated from the Bay by a levee. The proposed project phases include planning, environmental studies, and permitting. The proposed project meets Section 66704.5(b) (1) of the Enabling Legislation (*Restore, protect, or enhance tidal wetlands, managed ponds, or natural habitats on the shoreline in the San Francisco Bay area, ...*) as it will develop a plan and design for the restoration of a multi-benefit treatment wetland and a long-term plan for enhanced ecosystem benefits for the surrounding area of the treatment wetland. Consistent with 66704.5 (b) (2), (*Build or enhance shoreline levees or other flood management features that are part of a project to restore, enhance, or protect tidal wetlands, managed ponds, or natural habitats*) the project will provide planning that will assist in protection of critical infrastructure from flooding. The proposed project also meets Section 66704.5(b)(3) (*Provide or improve public access or recreational amenities that are part of a project to restore, enhance, or protect tidal wetlands, managed ponds, or natural habitats identified in paragraph (1)*) as implementation of the project will include signage along the Bay Trail and public tours.

CONSISTENCY WITH MEASURE AA PROGRAMS AND ACTIVITIES:

The proposed project is consistent with the following program and activities of Measure AA:

The project will assist with the *Safe, Clean Water and Pollution Prevention Program* through planning for a natural wetlands strategy that will remove pollution, trash and harmful toxins from the Bay in order to provide clean water for fish, birds, wildlife and people.

It will support the *Vital Fish, Bird and Wildlife Habitat Program's* purpose through restoring wetlands and other Bay and shoreline habitats to benefit wildlife, including shorebirds and waterfowl, as well as by providing for stewardship, maintenance and monitoring of habitat restoration projects.

The project will assist with the *Integrated Flood Protection Program* by providing nature-based flood protection through wetland and habitat restoration along the Bay's edge and at creek outlets that flow to the Bay.

And finally, the *Shoreline Public Access Program's* purpose will be met through development of interpretive materials about pollution prevention, wildlife habitat, public access, and flood protection, to protect the Bay's health and encourage community engagement.

CONSISTENCY WITH MEASURE AA PRIORITIZATION CRITERIA:

1. **Greatest positive impact.** The proposed project is for the planning and design phase of the storage pond. Implementation of the resulting design will likely reduce discharges of nitrogen, phosphorus, pharmaceuticals, and other contaminants from the San Leandro WPCP by 15-20%; restore 4.3 acres of transitional wetlands for key shoreline species at a heavily disturbed shoreline area; and demonstrate the potential for natural remediation of contaminated sites and accretion of SLR-vulnerable lands, with regional- and statewide-implications for advancing green infrastructure. Located at a highly visible site along the Bay Trail and within a disadvantaged community, this project will serve as an educational resource for the public and agencies wishing to meet multiple environmental objectives via green infrastructure. Longer-term restoration and shoreline resiliency visioning and conceptual design establishes partnerships among major landowners (i.e. San Leandro, Port of Oakland, EBRPD) critical to successfully enhance ecological resources and protect critical infrastructure along some of the bay's most urbanized shoreline.
2. **Greatest long-term impact.** Modern baylands are generally void of transitional ecotones that form a gradient of subtidal habitat at the Bay margins to freshwater wetlands at the upland interface – a feature once typical of historical conditions along San Francisco Bay. The proposed project is anticipated to be the first phase of a long-term project to develop true transition zones from a wastewater-enhanced freshwater wetland to an enhanced tidal marsh/polishing wetland along the periphery of the proposed pond restoration site. It is first necessary to demonstrate the remediation and SLR-adaptation potential of converting a contaminated former storage pond into a high-performance treatment wetland. This site is located among some of the most industrial and disturbed shoreline areas of the Bay. Following implementation of this vision, communities and agencies throughout the region will see opportunities and risk mitigation strategies where they once saw former industrial areas sacrificed as a result of poor 20th century planning.

3. **Leveraging resources and partnerships.** The proposed project leverages partnerships made through the involvement of EBDA agencies in groups including the NMS, ReNUWI, Resilient by Design, and Adapting to Rising Tides. These relationships draw pro-bono expertise from leading experts, such as UC Berkeley Professor David Sedlak; organizations like SFEI and consultancies involved in designing multi-benefit wetland restoration strategies throughout the region and state; and partner agencies like Oro Loma Sanitation District and the Ellis Creek Water Recycling Facility in Petaluma, which have recently successfully implemented similar innovative projects.

4. **Economically disadvantaged communities.** The proposed project site is located on the border of San Leandro and Oakland and the WPCP, as well as its entire service area, is a designated economically disadvantaged community, per California EnviroScreen 3.0 and Measure AA criteria. The project site is surrounded by a gun club, waste transfer facility, inactive landfill, municipal golf course, and the Oakland Airport. Residents in this area live with poor air quality, lack of open spaces, lack of public investment, and a general lack of access to the amenities and opportunities more affluent areas of the Bay Area take for granted. This project aims to enhance the natural resources of the area and provide educational resources to the surrounding communities, while also utilizing nature-based infrastructure to potentially reduce the community's water treatment costs over the long term. The traditional engineering approach to wastewater treatment serves little economic or other ancillary benefits to the community beyond reductions in nutrient loading. Implementation of nature-based approaches provides added jobs, reduces flood risk, enhances habitat quality, improves air quality, and enhances civic pride among the community.

5. **Benefits to economy.** The proposed project will enhance operational flexibility of the WPCP and represent an early nutrient reduction effort in advance of potential water quality standards within the next 5-10 years that could cost the WPCP between \$12 million to \$116 million, based on the level of treatment required, via traditional grey infrastructure-based treatment. Portions of this expense, which would be derived largely from local rate payers, would make it back to the local community. SFEI and the NMS has estimated approximately 40-50% of the nutrient load from regional wastewater plants could be reduced by employing green infrastructure at about 10% of the cost of grey infrastructure and conventional treatment approaches. This would yield several significant economic benefits to the region in terms of 1) reduced wastewater treatment bills; 2) direct investment in local labor and manufacturers to construct treatment wetlands along with the associated multiplier effects; and 3) additional ecosystem services associated with these systems that provide flood protection, habitat and public resources (i.e. amenities and educational resources).

6. **Engage youth and young adults.** In the design phase of the proposed project, a minimum of two charrettes will be held, including high school-aged students, serving to inform the long-term vision of the site. In addition, the environmental NGO, Save the Bay, will be engaged to implement the planting and maintenance phases of the project. Efforts will be made to engage the California Conservation Corps, which has carried out other restoration and maintenance projects in the region. Engagement of these groups will enhance regional capacity for the implementation and maintenance of green infrastructure projects. Following

implementation, it is anticipated that the site will be made available for scheduled school tours, featuring educational signage. Staff who are familiar with the science and engineering aspects of the project will be made available for hosting these tours. Monitoring of water quality and ecological metrics will be performed in part by UC Berkeley partners, serving as an additional resource for local graduate students training to enhance regional expertise in the design and monitoring of green infrastructure and habitat restoration projects.

7. **Monitoring, maintenance, and stewardship.** The proposed project is for the planning and design phase. However, following implementation, this project site would remain an element of the San Leandro WPCP, with requirements for maintenance and monitoring in perpetuity, pursuant to regulatory requirements. This ensures local resources will be committed to the maintenance and stewardship of the site for as long as it is retained under City ownership, which is not expected to change in the coming decades.

8. **Coastal Conservancy's San Francisco Bay Area Conservancy Program.** This project is consistent with the Bay Area Conservancy Program selection criteria (Pub.Res. Code § 31163(c) in the following ways:
 - a) *Consistency with S.F. Bay Plans.* This Project is supported by relevant local or regional plans calling for enhanced shoreline resiliency and improvements to SFB water quality. Examples include:
 - *The Baylands and Climate Change: What We Can Do. Baylands Ecosystem Habitat Goals Science Update 2015.* A selection of relevant recommended actions include:
 - Reconnect streams, and the sediment loads they carry, to the baylands. Determine how other freshwater sources, like treated wastewater effluent and stormwater, may be safely reconnected to the baylands through carefully monitored pilot projects. (p. 97);
 - Identify and implement opportunities for taking advantage of treated wastewater and stormwater to create salinity gradients and maximize peat accumulation in the baylands, while protecting water quality and minimizing nutrient loading. Accumulate peat in diked baylands prior to breaching to increase elevations and sequester carbon. (p. 105);
 - Encourage baylands restoration as an outcome of, and a reason to accelerate, the realignment of infrastructure at risk from sea-level rise, including railroads, transmission lines, roads, fuel lines, and wastewater treatment systems. (p. 107) Adapt current policies to allow for the development and application of new, environmentally safe approaches that increase the ecological resiliency of the baylands... (p. 114);
 - *Comprehensive Conservation and Management Plan for the San Francisco Estuary* (Action #17: Improve regulatory review, permitting, and monitoring processes for multi-benefit climate adaptation projects; Action #22: Expand the use of recycled water; Action #25: Address emerging contaminants; Action #28: Advance nutrient management in the Estuary)

- b) *Serving Regional Needs.* This Project meets objectives associated with serving a regional constituency and involving multi-jurisdiction partnerships. Implementation of the Phase I, (restoration of a 4.3-acre storage pond to multi-benefit treatment wetland) will serve a regional constituency through demonstration of a novel and cost-effective approach to nutrient reduction and restoration of freshwater/brackish wetland habitat. The primary constituency for this demonstration is regional wastewater agencies interested in utilizing green infrastructure for nutrient load reductions or otherwise interested in managing under-utilized lands for multiple water quality and habitat-related benefits. The Phase II, long-term visioning for this Project will engage multiple landowners and potentially multiple municipalities, to plan for local shoreline resiliency and restoration.
 - c) *Timely Implementation.* San Leandro is committed to implementing this planning, design and permitting project in a timely manner and will actively seek internal and external funding to implement the storage pond restoration project in parallel to this planning effort.
 - d) *Need.* A tangible benefit will be close coordination between the NMS and Regional Water Board, which has expressed strong interest in developing processes for streamlined and transparent regulatory review, permitting, and monitoring requirements for multi-benefit climate adaptation projects. This project provides an impetus and nexus for pushing forward solutions to key regional problems. Additional benefits include the input regarding opportunities and constraints to enhancing marginal and contaminated lands along the shoreline via green infrastructure and input regarding the adaptive management of such lands as they evolve to meet complex flood protection and habitat restoration objectives, which will be considered as part of the long-term visioning process.
 - e) *Matching Funds.* The project employs matching funds from the City and in-kind services through partnerships with local universities, EBDA agencies, community groups, the NMS and BACWA. In addition, the City intends of pursuing implementation grant funding in parallel with this Project to ensure timely implementation after obtaining relevant approvals.
9. **San Francisco Bay Conservation and Development Commission's Coastal Management Program.** The proposed project is consistent with the Bay Conservation and Development Commission's Bay Plan, specifically with the Climate Change policies that encourage: habitat enhancement of undeveloped areas vulnerable to flooding, using shoreline protection measures that incorporate natural Bay habitat, innovative approaches to sea-level rise adaptation, and shoreline remediation to reduce risk to water quality.
10. **San Francisco Bay Joint Venture's Implementation Strategy.** The proposed project is consistent with the Implementation Strategy and has been conditionally approved (as a planning project) as a Joint Venture project. The Joint Venture has requested the City return for further review when the project design is complete.

COMPLIANCE WITH CEQA:

The proposed project is statutorily exempt from the provisions of CEQA under 14 Cal Code of Regulations § 15262, because the project will only involve preparation of planning studies for possible future actions that have not yet been approved, adopted or funded. The planning studies will consider environmental factors. In addition, the proposed project is categorically exempt from CEQA pursuant to 14 Cal. Code of Regs. § 15306, which exempts basic data collection and resource evaluation activities that do not result in a serious or major disturbance to an environmental resource. Staff will file a Notice of Exemption upon approval of the proposed project.