



City Council Staff Report

From: City Manager

Report Type: CONSENT CALENDAR

Lead Department: Public Works

Meeting Date: April 21, 2025

Report #:2503-4336

TITLE

Approval of Amendment No. 1 to the Cooperative Agreement with the Association of Bay Area Governments to Construct the Horizontal Levee Pilot Project (WQ- 22001) to Reflect an Additional \$2 Million in California Coastal Conservancy Grant Funds; CEQA Status – Exempt under Section 15133

RECOMMENDATION

Staff recommends that the City Council approve and authorize the City Manager or their designee to execute Amendment No. 1 to the agreement between the Association of Bay Area Governments and the City for implementation and construction of the Horizontal Levee Pilot Project (WQ-22001) to reflect an additional \$2 million in grant funding from the California Coastal Conservancy.

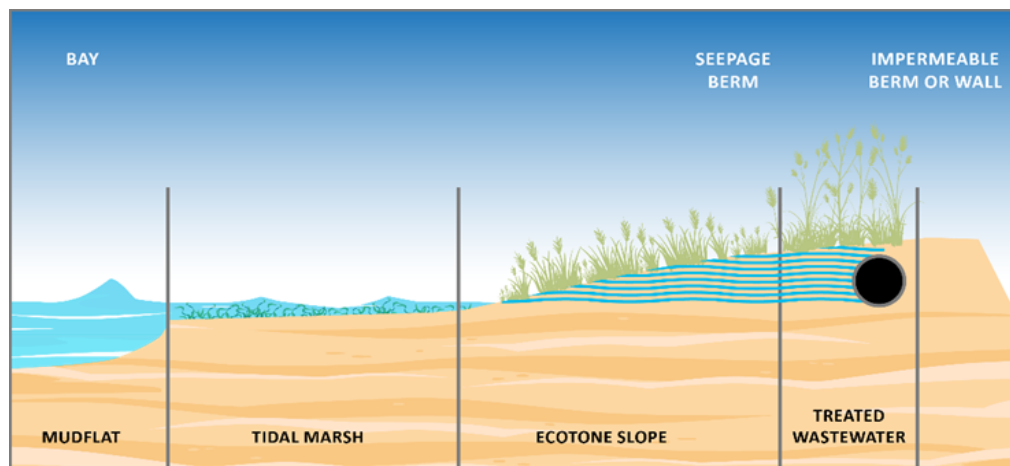
EXECUTIVE SUMMARY

In 2024, the City entered into a Cooperative Agreement with ABAG to formalize responsibilities of both parties concerning funding, construction, and monitoring of the Horizontal Levee Pilot Project. The current Cooperative Agreement requires an amendment to account for the recently awarded California Coastal Conservancy grant. Horizontal levees are a green, nature-based, multi-beneficial alternative to traditional greyscape solutions (e.g., rip rap, sheet piling) for wave attenuation on the bayside of flood control levees. Since 2017, the City has been working in collaboration with the Association of Bay Area Governments (ABAG – host agency for the San Francisco Estuary Partnership) to design and eventually construct the Horizontal Levee Pilot Project (WQ-22001) on the east side of Harbor Road near Byxbee Park.

BACKGROUND

Horizontal levees are a nature-based alternative to traditional greyscape solutions (e.g., rip rap, sheet piling) for wave attenuation on the bayside of flood control levees (Figure 1). Horizontal levees utilize treated wastewater to irrigate a gently sloping, vegetated ecotone slope that provides wave attenuation as well as refugia, transitional habitat between tidal wetlands and

terrestrial uplands, sea level rise adaptation, and polishing treatment of treated wastewater. A unique aspect to horizontal levees is their use of treated wastewater to irrigate the ecotone slope. Other ecotone slopes that have been built in the area utilize passive irrigation or potable



water for irrigation of the vegetated area.

Figure 1: Illustration of a horizontal levee system.

Unlike much of the shoreline along the San Francisco Bay, the Palo Alto shoreline, while highly developed and altered, continues to sustain tidal marsh. The Palo Alto Baylands shoreline is comprised of low levees and a closed landfill. Directly behind these levees are City assets that are critical infrastructure, including the City's Regional Water Quality Control Plant (RWQCP), airport, the Palo Alto Flood Basin, roads, and light commercial development. Potential flooding of City infrastructure, buildings, and other development west of Highway 101 is limited by the existing levees. However, these levees are not engineered to meet Federal Emergency Management Agency (FEMA) accreditation standards, and in many locations do not provide 100-year flood protection.

An emerging regional goal and best practice for levee improvement is to incorporate nature-based solutions, such as horizontal levees, to provide flood protection that can evolve in the future, restore Bay habitats, and enhance public access. Since design considerations for horizontal levees are still early in their development, a permanent pilot project was pursued to answer outstanding questions about permitting requirements, construction costs, and site-specific design parameters (e.g., plant palettes). Information from Palo Alto's Horizontal Levee Pilot Project will inform the design for potential additional future horizontal levees around Palo Alto and the greater Bay Area.

Since 2017, the City of Palo Alto has collaborated with ABAG – the host entity for the San Francisco Estuary Partnership – to evaluate and design a permanent horizontal levee pilot project within the Palo Alto Baylands with the following objectives:

1. Be on the leading edge of integrating habitat enhancement with sea level rise adaptation and novel wastewater treatment approaches around the San Francisco Bay;

2. Integrate a horizontal levee on the bayfront of a traditional flood control levee to provide wave attenuation;
3. Adapt to sea level rise by providing a vegetated transitional slope that will build organic soils and support sediment accretion and accumulation to allow for future tidal marsh migration;
4. Improve habitat along the perimeter of Harbor Marsh for native species;
5. Provide polishing treatment to treated wastewater; and
6. Maintain and provide opportunities for compatible low-impact recreation and social infrastructure.

On January 22, 2024, the City Council adopted Ordinance No. 5616,¹ Approving a Plan for Improvements to the Palo Alto Baylands as part of the Horizontal Levee Pilot Project that includes:

1. construction of a berm and horizontal levee along a portion of existing, poor-quality upland habitat adjacent to Harbor Marsh within the Palo Alto Baylands Nature Preserve;
2. installation of various native plants on the Project site to restore diverse transitional habitats including freshwater marsh, wet meadow, and riparian scrub;
3. installation of an underground pipeline to transport treated wastewater along Embarcadero and Harbor Roads to the horizontal levee for native plant irrigation;
4. realignment of a portion of the Marsh Front Trail as required to accommodate the horizontal levee and reconnect habitats; and
5. installation of educational signage and provide opportunities for public participation in community science activities.

The City entered into a Cooperative Agreement with ABAG pursuant to Council approval and authorization¹ in 2024 that divided responsibilities between the agencies accordingly:

1. ABAG will use grant funding it obtained to provide Project construction, construction management, and related permit compliance;
2. the City will actively participate during project construction and provide oversight of change orders and budget overruns, assist with public outreach, obtain and pay for required construction permits, implement the Monitoring and Adaptive Management Plan, and once constructed, own and operate the Project.

¹ City Council, January 22, 2024; Agenda Item #5, SR #2303-1230, <https://portal.laserfiche.com/Portal/DocView.aspx?id=70190&repo=r-704298fc&searchid=9c1fbb64-ea58-49cc-806f-fa4c6e785a84>

ANALYSIS

Funding sources for Horizontal Levee Pilot Project (WQ-22001) construction at time of Cooperative Agreement approval were from the Environmental Protection Agency (EPA) Breaking Ground, Nature Based Solutions for Resilient Shorelines, and National Estuary Program Bipartisan Infrastructure Law grants. These grants were awarded to and are administered by ABAG and required local match of in-kind services (e.g., non-monetary contribution) from the City of \$3.4 million, which the City was to provide by showing proof of expenditures in the RWQCP's Capital Improvement Program projects. The project was bid through ABAG in Spring 2024 and received three bids for construction that exceeded the total available budget at the time. Since then, the bids expired while the project team evaluated ways to decrease construction costs (e.g., bidding earlier in the year) as well as ways to increase available budget (e.g., pursue additional grant opportunities). In November 2024, the California Coastal Conservancy awarded ABAG \$2 million to construct the Project with no local match requirement. Amendment No. 1 (Attachment A) to the Cooperative Agreement between ABAG and the City includes modifications in several locations to account for this additional funding source.

With the addition of California Coastal Conservancy funds, the project has a total of \$4.9 million available for construction and construction management (see below table for detailed breakdown of project funding including the changes described in this report). The proposed amendment to the Cooperative Agreement adds the California Coastal Conservancy grant of \$2 million to the ABAG contributions to the project and decreases the City's required local match for construction from \$3.4 million to \$1.4 million to be provided in-kind from Long Range Facilities Plan Update expenses instead of expenses from the Local Advanced Water Purification Facility project. The project was re-bid in early 2025 and received four bids within the new construction budget. Construction is anticipated to begin in Spring 2025 and end in early 2026.

Project Phase	ABAG Contribution	Source(s) of ABAG Funding	City Contribution	Source(s) of City Funding
Preliminary Design (completed)	\$620,673 (paid)	<ul style="list-style-type: none"> Integrated Regional Water Management Program Grant State Coastal Conservancy Proposition 1 Grant 	\$275,000 (paid)	Wastewater Treatment Plant Fund and Secondary Treatment Upgrades Project
Design & Permitting (99% complete)	\$763,661 \$563,660 (paid)	<ul style="list-style-type: none"> EPA NBS for Resilient Shorelines Grant EPA Bipartisan Infrastructure Law Funding 	\$1,316,794.29 (paid)	Wastewater Treatment Plant Fund and Secondary Treatment Upgrades Project ^a
Construction & Construction Management	\$3,073,882 \$4,860,846 (pending)	<ul style="list-style-type: none"> EPA NBS for Resilient Shorelines Grant EPA Breaking Ground Grant EPA NEP Bipartisan Infrastructure Law Funding State Coastal Conservancy 	\$3,429,459 \$1,429,459 (pending)	Local Advanced Water Purification Facility Project Long Range Facilities Plan Update ^a
Post-construction Monitoring & Reporting	\$0	Not Applicable	\$777,055 (pending)	Wastewater Treatment Plant Fund
Operation & Maintenance	\$0	Not Applicable	Unknown	Wastewater Treatment Plant Fund
		Total City In-Kind Contributions	\$4,802,868 2,802,868	CIP Projects ^a
Total ABAG Contributions	\$6,045,179	Total City Direct Costs	\$995,440	Wastewater Treatment Plant Fund ^b

^aCity is leveraging funds spent on planned Capital Improvements that are occurring upstream of the PROJECT at the wastewater treatment plant; actual out-of-pocket expenses for this project are lower than reported in this table.

^bMajority of direct costs are paid for out of the City's CIP WQ-22001 for the Horizontal Levee Pilot Project. Some direct costs were paid for out of the Wastewater Treatment Plant Fund prior to creation of the project as a CIP.

FISCAL/RESOURCE IMPACT

Funding for the Horizontal Levee Pilot project (WQ-22001) is included in the Wastewater Treatment Fund FY 2025 Adopted Capital Budget. The addition of the California Coastal Conservancy grant and proposed amendment to the Cooperative Agreement decreases the City's in-kind contributions needed for construction of the project by \$2 million (from \$3.4 million to \$1.4 million) but does not change the direct costs to be contributed by the City. In addition to the in-kind contributions, the City plans to contribute approximately \$1.0 million to the project for direct payments related to permitting, environmental review, community outreach, and monitoring studies, which are paid for by the Wastewater Treatment Fund. Approximately \$0.2 million has already been paid, \$0.6 million is encumbered in contracts with the United States Geological Survey² and others for required monitoring, and another \$0.2 million is recommended to be funded in future years for the project. Funding in future years is subject to Council approval as part of the annual budget appropriation process.

STAKEHOLDER ENGAGEMENT

Since the beginning of the project in 2017, staff has conducted more than 20 stakeholder engagement activities including several community events (e.g., bioblitzes to tally pre-project animal and plant species) and specific presentations to local non-governmental organizations. In addition, the project team elicited feedback from the Parks and Recreation Commission throughout the design phases as described in the January 22, 2024 staff report. A project website (www.cityofpaloalto.org/horizontallevee) has been created to keep stakeholders updated and photo-point monitoring sites began collecting photos from the community since June 2023. Stakeholder engagement will continue during construction and after through strategic partnerships with local non-governmental organizations including Save the Bay, Nuestra Casa, the Association of Ramaytush Ohlone, and Environmental Volunteers. These activities will include community planting, photo-point monitoring, educational signage, and community science activities.

ENVIRONMENTAL REVIEW

This project is exempt from review under the California Environmental Quality Act (CEQA) under section 15133 of the CEQA Guidelines (small habitat restoration). In addition, the City and ABAG will obtain permits/permit coverage determinations from the United States Army Corps of Engineers and the United States Fish and Wildlife Service.

ATTACHMENTS

Attachment A: Amendment to the Cooperative Agreement

APPROVED BY: Brad Eggleston, Director Public Works/City Engineer

² City Council, April 22, 2024; Agenda Item #9, SR #2402-2683,
<https://cityofpaloalto.primegov.com/Portal/viewer?id=0&type=7&uid=38f23377-beed-4560-9ef9-c038832bfae3>