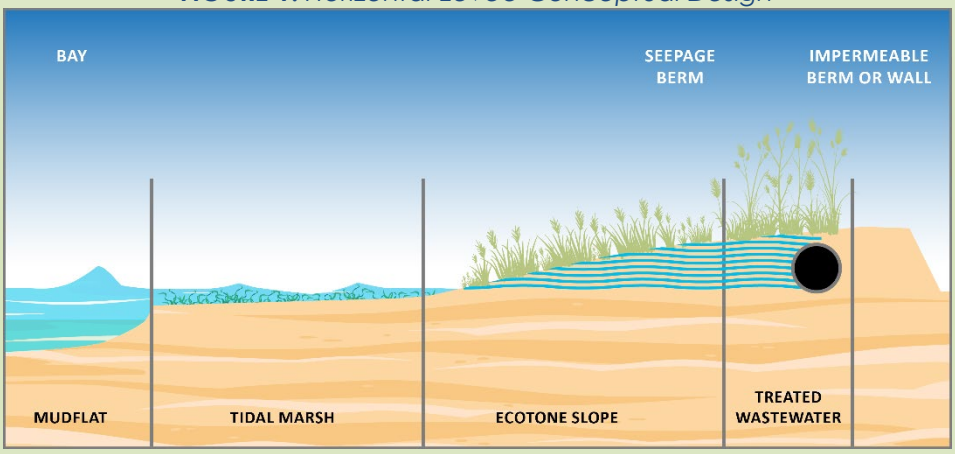
FACTSHEET

PALO ALTO HORIZONTAL LEVEE PILOT PROJECT

WHAT IS A HORIZONTAL LEVEE?

Horizontal levees are a green infrastructure alternative to traditional greyscape solutions (i.e., rip rap) for wave attenuation on the Bayside of flood control levees. Horizontal levees utilize a gently sloping, vegetated ecotone slope to provide multiple benefits beyond wave attenuation including refugia habitat, enhancement of transitional habitat between tidal wetlands and terrestrial uplands, sea level rise adaptation, and treated wastewater polishing.

FIGURE 1: *Horizontal Levee Conceptual Design*



CITY OF PALO ALTO HORIZONTAL LEVEE PILOT PROJECT (PAHLPP)

The City of Palo Alto (City) is collaborating with the San Francisco Estuary Partnership and ESA to design and construct a horizontal levee pilot in the Palo Alto Baylands. The project would utilize highly treated wastewater from the Regional Water Quality Control Plant to irrigate a vegetated ecotone prior to discharge into the San Francisco Bay. The City hopes to gain valuable information from this pilot to ultimately incorporate more horizontal levees into planned improvements to the current flood control levees surrounding Palo Alto and to supplement regional data gaps to encourage broader implementation of horizontal levees. The PAHLPP will be the first of its kind that receives treated wastewater for irrigation prior to discharge via shallow subsurface seepage to the Bay. This project has been funded by grants from the California Coastal Conservancy and the U.S. Environmental Protection Agency.

PROJECT OBJECTIVES

1. Improve and restore habitat along the Harbor Marsh perimeter for native species.
2. Adapt to sea level rise by providing a transitional slope that will support sediment accretion and accumulation.
3. Integrate a horizontal levee on the Bayfront of a traditional flood control levee to provide wave attenuation and vegetative protection for the flood control levee core.
4. Provide polishing treatment to treated wastewater.
5. Maintain and provide opportunities for compatible low-impact recreation and public engagement with nature.
6. Be on the leading edge of integrating habitat enhancement with sea level rise adaptation and novel wastewater treatment approaches around the San Francisco Bay.

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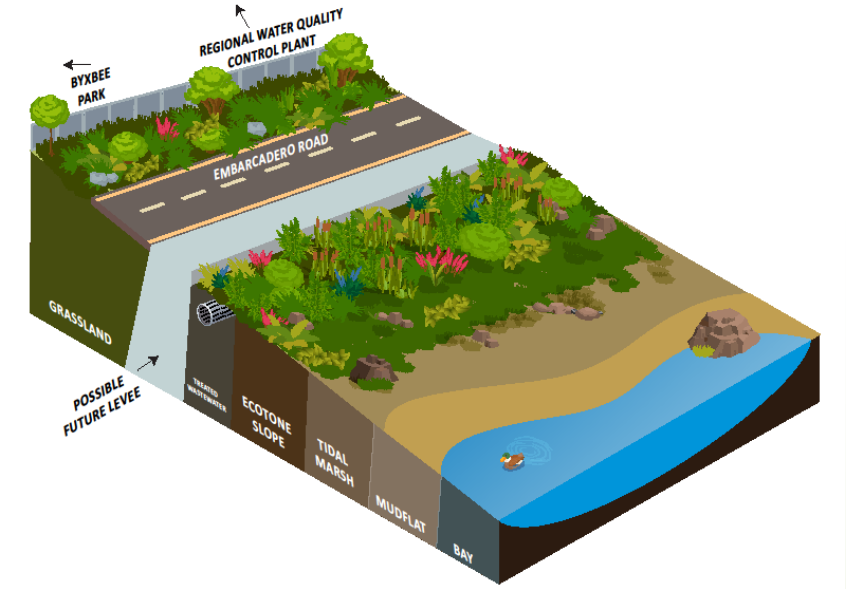
FIGURE 2: *Illustration of Palo Alto Horizontal Levee Pilot Project*



HOW DOES THIS FIT INTO THE REGIONAL FLOOD CONTROL IMPROVEMENT PROJECTS?

The current levees surrounding Palo Alto are not FEMA certified and routinely experience overtopping that threatens City infrastructure, private buildings, and other development west of Highway 101 with flooding. To improve the existing flood control levees, the City has partnered with nearby cities, county flood agencies, and State and Federal agencies in two major projects: the Strategy to Advance Flood protection, Ecosystems and Recreation along San Francisco Bay (SAFER Bay) Project and the South San Francisco Bay Shoreline Project (Shoreline Study). A shared goal of these projects is to incorporate natural infrastructure and habitat restoration, such as horizontal levees, into the flood control levee improvements. The PAHLPP is therefore coordinating closely with the flood control improvement projects. The PAHLPP is intended to provide knowledge and experience on how habitat restoration, horizontal levees, and public access can be incorporated into the designs of future flood control levees within Palo Alto and regionally.

REGIONAL WATER QUALITY CONTROL PLANT

Highly treated wastewater from the Regional Water Quality Control Plant will be used to replicate the historic freshwater seepage creating grassy wet meadow, freshwater/brackish marsh, and riparian scrub habitat that has been decimated by development along the shoreline. Wastewater from the communities of Palo Alto, Stanford University, Mountain View, Los Altos, Los Altos Hills, and the East Palo Alto Sanitary District is treated at the Plant to meet the water quality criteria from its National Pollutant Discharge Elimination System permits. The PAHLPP is expected to provide additional nitrogen removal while also reducing concentrations of contaminants of emerging concern in the treated wastewater prior to discharge into the Bay.

PROJECT TIMELINE

- Conceptual - Completed 2017
- Preliminary Design - Completed 2020
- Design - 2022
- Permitting/CEQA - 2022
- Construction - 2024

FOR MORE INFORMATION

https://www.sfestuary.org/truw-pahlp/

Samantha Engelage, Senior Engineer
Samantha.Engelage@cityofpaloalto.org

FIGURE 3: *Project location (red)*

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