

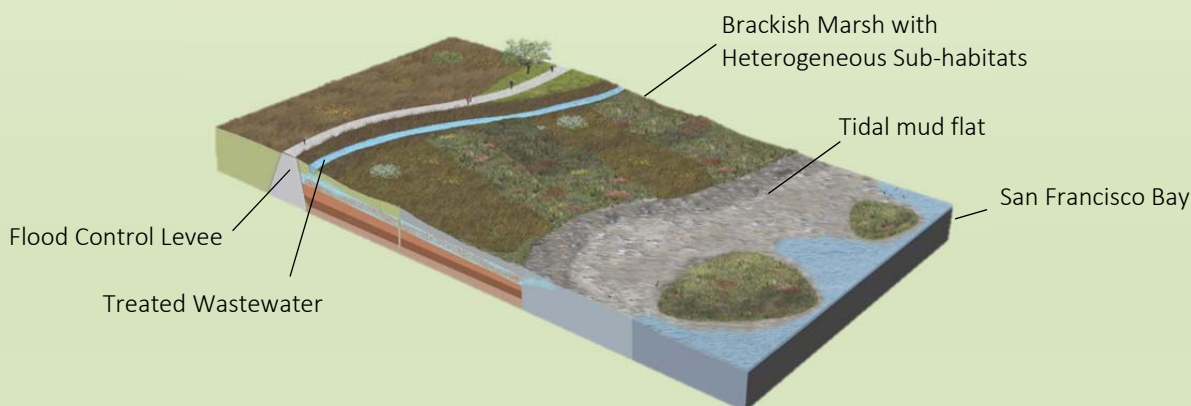
FACTSHEET

PALO ALTO HORIZONTAL LEVEE PILOT PROJECT

WHAT IS A HORIZONTAL LEVEE?

A horizontal levee is a flood control levee with a gently sloping berm along the Bay shoreline which provides key transitional habitat between tidal wetlands and terrestrial uplands. Horizontal levees utilize green infrastructure rather than traditional greyscape solutions (i.e., rip rap) to include habitat enhancement, wastewater polishing, and sea level rise adaptation benefits to traditional flood control infrastructure. These systems include a vegetated, gently sloped, ecotone on the bayside of the levee that provides transitional and refugia habitat for marsh species such as the Salt Marsh Harvest Mouse and Ridgway's rail.

FIGURE 1: *Horizontal Levee Conceptual Design*



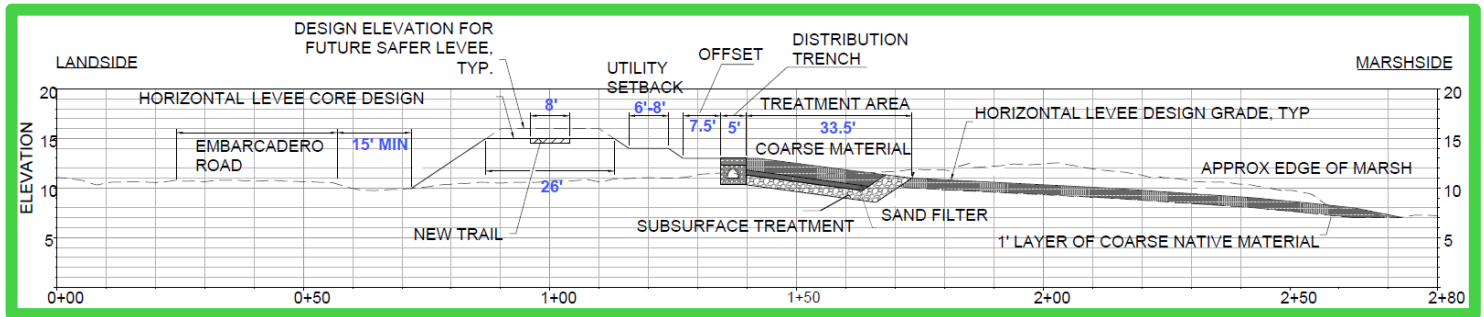
CITY OF PALO ALTO HORIZONTAL LEVEE PILOT PROJECT (PAHLPP)

The City of Palo Alto (City) is evaluating 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 into planned improvements to the current flood control levees. The current levees are not FEMA certified and routinely experience overtopping that threatens City infrastructure, private buildings, and other development west of Highway 101 with flooding. Through implementation of the PAHLPP, the City aims to fulfill select goals from the Baylands Comprehensive Conservation Plan (in progress) and the City's Comprehensive Plan. The PAHLPP will be the first of its kind that receives treated wastewater for irrigation providing polishing treatment prior to discharge via shallow surface/subsurface seepage to the Bay.

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 freshwater plants which build organic soils that may be able to keep pace with some level of sea level rise.
3. Reduce flood risk by integrating 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. Enhance social infrastructure by providing 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.

FIGURE 2: Proposed Palo Alto Horizontal Levee Pilot Project



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

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 including considerations for construction sequencing. In addition, the PAHLPP is intended to provide knowledge and experience on how habitat restoration and public access can be incorporated into the designs of future flood control levees within Palo Alto and regionally along the South Bay.

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 2019
- Design - 2022
- Permitting/CEQA - 2022
- Construction -2023

FOR MORE INFORMATION

www.CleanBay.org

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



FIGURE 3: Project location (yellow – initial location; red – new location)