

# PACHECO MARSH RESTORATION PLAN FINAL REPORT

Prepared for  
The Muir Heritage Land Trust  
and  
Contra Costa County

Prepared by  
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with  
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## **1. INTRODUCTION**

### **1.1 BACKGROUND**

A Project Team consisting of the Contra Costa County Flood Control District (District), the Muir Heritage Land Trust (MHLT), and the East Bay Regional Park District (EBRPD) propose to restore wetland functions and wildlife habitat at the 126-acre Pacheco Marsh property, located east of Martinez, California (see Figure 1). This report summarizes the existing wetland habitat values at Pacheco Marsh and describes a plan for tidal wetland restoration at the site. Findings from this report will support environmental permitting and development final design documents. Over the past fifty years, construction of levees along the perimeter of the site has eliminated regular tidal inundation and placement of dredge spoils has substantially raised ground elevations. These changes have significantly diminished tidal wetland functions at Pacheco Marsh. Currently, Hanson Aggregate uses 20 acres at the northern end of the leveed site as a sand yard, and the Central Contra Costa Sanitary District (CCCSD) operates a sewer outfall that crosses the property. The District acquired the property in 2002, with the assistance of the MHLT and the EBRPD. As stated in the Memorandum of Understanding (MOU) between these agencies, the main goal of the acquisition is to restore wetland and wildlife habitat while accommodating the existing uses at the site and planning for future public recreation projects. To further the goals of the MOU, the MHLT contracted Philip Williams & Associates (PWA) to develop a restoration plan for Pacheco Marsh.

### **1.2 PURPOSE, SCOPE, AND REPORT ORGANIZATION**

The purpose of this study was to develop a feasible restoration plan that met the restoration goals of the project, and to describe the proposed action in sufficient detail to support environmental permitting. This included a delineation of the existing on-site wetland habitats. PWA and H.T. Harvey & Associates (HTH) developed and evaluated various restoration alternatives at a conceptual level before a preferred alternative was selected, with the assistance of the Technical Advisory Committee (TAC). We refined and evaluated the preferred alternative using a hydrodynamic model of the site, geomorphic principles, and the expected biologic response following tidal restoration. District staff assisted in the development of the restoration plan by collecting survey data and constructing a topographic model of the project area. Additionally, the District supplied a site characterization report that contained information on soil

contamination. No additional soil quality characterization or assessment was carried out by PWA or HTH for the purposes of the present study.

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Conclusions and recommendations are summarized in Section 2. Section 3 describes the physical and ecologic setting of the project site. Section 4 summarizes the goals and objectives of the proposed restoration. Opportunities and constraints are listed in Section 5, and were used to develop the restoration alternatives described in Section 6. Section 7 includes a detailed description of the restoration plan for the preferred alternative. Details of the hydrodynamic analysis and delineation of the existing on-site wetland functions are provided in the appendices.

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## **2. CONCLUSIONS AND RECOMMENDATIONS**

Conclusions:

Existing site topography, multiple land uses, and jurisdictional wetland areas are constraints to tidal marsh restoration. The proposed restoration plan provides for significant ecological enhancement within these project constraints by creating a mosaic of tidal marsh, transitional, and upland habitats throughout the site.

Marshplain excavation volumes are likely to drive construction costs. Therefore, the proposed plan limits grading to areas easily restored to tidal inundation and does not include any earthwork in areas where existing ground elevations are already suitable for high marsh habitat. The proposed plan will restore 69 acres of high-quality tidal marsh habitat.

Restoration alternatives with intensive long-term maintenance requirements were rejected in favor of self-sustaining tidal wetland systems. Although managed systems were rejected due to the associated long-term commitment of resources, natural tidal systems are considered biologically superior because of their greater degree of habitat connectivity with the adjacent marshes.

Costly off-site disposal of excavated material can be avoided by placing sediment in areas not restored to tidal marsh. Assuming a maximum on-site elevation of +13 ft NGVD, the proposed plan includes placement of approximately 330,000 cubic yards (CY) over 42 acres of upland habitat.

The proposed excavation will impact some potential existing jurisdictional wetlands, but will result in a significant overall increase in wetland acreage and habitat value. The excavation will replace about 7.5 acres of existing jurisdictional wetlands with upland and transitional habitat through on-site placement of material. However, over 44 acres of jurisdictional wetlands will be significantly enhanced over the long-term by restoring regular tidal inundation through levee breaching and marshplain excavation.

Characterization of the existing soil quality indicates that selenium and mercury concentrations exceed wetland cover standards set by the Regional Water Quality Control Board at some locations. Although the precise impacts to the grading plan are unknown since the soil analysis

did not describe the spatial variability or depth of metal concentrations, the quality of on-site soils may affect the proposed extent of marshplain excavation.

□ Tide range in the southwestern portion of the site following restoration will be significantly reduced (damped) unless the existing culvert is replaced with an appropriately sized structure and the upstream reach of the inlet channel is excavated. Numerical modeling indicates that four 48-inch culverts are needed to convey the full tide range under the solid-fill causeway to the west. Even with these elements included in the restoration plan, we expect some tidal muting over the short-term as the downstream reach of the under-sized inlet adjusts to the additional tidal prism.

□ Because of the need for the CCCSD to maintain access to the entire length of its buried effluent pipeline, no restoration actions were included in the 130-ft wide easement and the existing barrier to east-west biological connectivity will remain.

□ Public access components have yet to be developed, but the proposed plan accommodates future parking, trail staging, and on-site trail planning. In particular, the perimeter levee along the southwestern boundary of the site is maintained for integration into a looped trail that would connect the existing foot path to the west.

#### Recommendations:

□ Opportunities to reduce the east-west barrier to biological connectivity represented by the existing 130-ft wide easement should be explored in the future. Such opportunities may arise during infrastructure upgrades to the CCCSD effluent pipeline and depend on possible mitigation requirements.

□ The soil quality should be mapped and the proposed grading plan adjusted accordingly. Of particular interest is the vertical profile of metal concentrations. Potential changes to the grading plan may include over-excavation or limiting the aerial extent of excavation. Contra Costa County should contact the authors of the initial soil quality characterization (Jonas and Associates) to determine if the necessary data already exists and provide assistance in determining the specific location and depth of the elevated selenium and mercury concentrations. This characterization should occur during the next phase of design refinement, in order to address the uncertainties associated with soil quality and modify the proposed grading plan, if necessary. (See Appendix D for a description of unresolved soil quality issues.)

□ Public access features should be incorporated into the restoration plan. In particular, levee lowering along the southwestern boundary of the site should be considered in order to increase biological connectivity to the adjacent salt marsh and the ecological values of Pacheco Marsh.