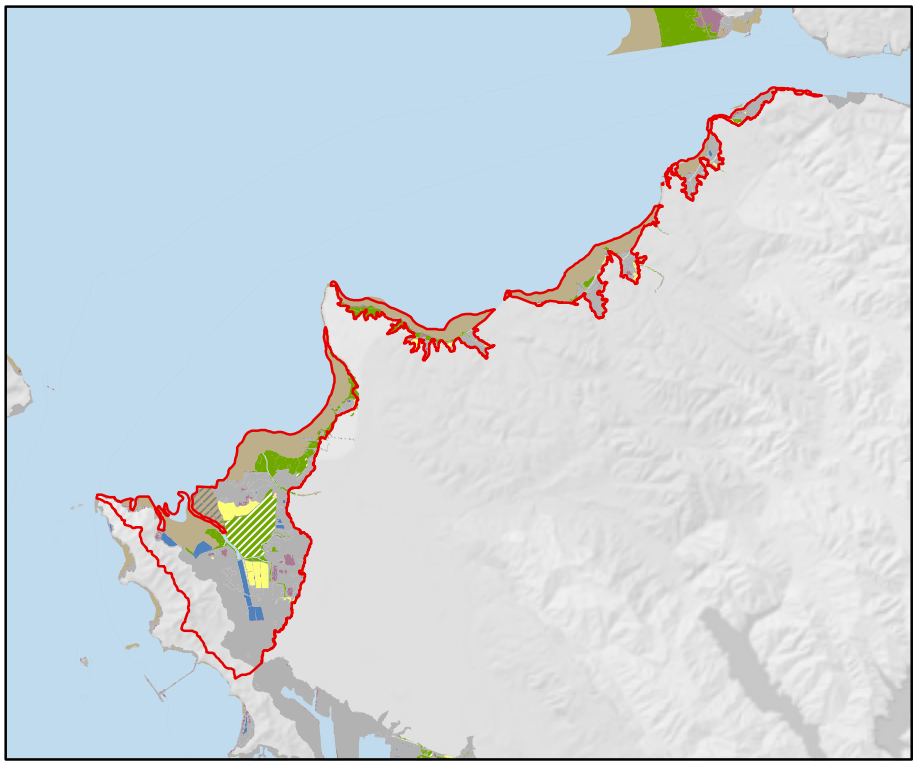
BAYLANDS SEGMENT H



CONTRA COSTA WEST

Southeastern edge of San Pablo Bay between Point San Pablo and the Carquinez Bridge

Baylands 2009

- Bay/Channel
- Diked Wetland
- Salt Pond
- Managed Pond
- Tidal Flat
- Tidal Marsh
- Agriculture and Other Undeveloped Areas
- Developed Areas

Red line shows the boundaries of Segment H.

Hatching indicates areas where restoration activities had occurred as of 2009. For managed ponds this included habitat enhancement.

By: San Francisco Estuary Institute

Data: Wetland data from SFEI includes BAARI (v1, 2009) Baylands and Wetlands, NLCD 2006, and wetland tracker data.

Imagery: ESRI World Imagery (updated 2015)

0 2
Miles

N

Unique Opportunities

In Segment H, many opportunities exist on public land, or may become available through conservation acquisitions of vacant land, to restore and enhance a wide range of subtidal offshore habitats as well as shoreline, stream, and terrestrial habitats; to restore connections among habitat types; and to set the stage for integrating habitat with shoreline protection. There is potential to restore a corridor of tidal marsh between Wildcat Marsh and San Pablo Marsh, as well as riparian vegetation along the streams that flow into these marshes. Multiple creeks (Wildcat, Pinole, and others) are already the focus of both community-based restoration efforts and US Army Corps of Engineers and Contra Costa County flood-control projects, and this work could be leveraged with additional activities that integrate climate-change adaptation techniques.

A variety of shoreline habitats could be restored on the Point Pinole and Point San Pablo peninsulas. From the north side of Point Pinole Regional Park to the Chevron refinery property, tidal and other disturbed wetlands and adjacent low-lying vacant uplands may become available for restoration, providing the opportunity to establish an extensive complex of diverse types of wetlands as well as upland transition zones, and enabling eventual wetland migration. Vacant low-lying uplands in creek floodplains could also be used as retention areas to relieve the upstream flooding of developed areas that may otherwise occur from storms of increasing intensity coupled with rising sea levels. Populations of tidal marsh plants of concern, including soft bird's-beak and salt marsh owl's-clover, could be restored. The segment also has multiple small habitat areas that include small but potentially viable populations, such as the steelhead run on Wildcat and Pinole Creeks. Conditions at some sites are suitable for native eelgrass and oyster restoration and enhancement. The largest eelgrass bed in the bay, offshore between Point Molate and Point Pinole, should be protected and enhanced.

The northeastern half of this segment will likely remain highly urbanized with limited opportunities for large-scale restoration, although there are larger opportunities southwest of Point Pinole Regional Shoreline. Many small-scale restoration and green engineering projects could be undertaken to meet the co-objectives of improving habitat quality and protecting the existing infrastructure, shorelines, and baylands. Partnerships should be pursued with the industrial and residential communities along the shoreline to create habitat bayward of their flood-protection levees through horizontal levees, living shorelines, or other green infrastructure. Pilot projects here could improve water quality and environmental health, provide preliminary data to inform similar adaptation designs in other segments, and provide benefits to the greater baylands. Point Molate Beach Park and Point Pinole Regional Shoreline provide unique, visible opportunities to educate the public about wildlife habitat needs.

Segment Features and Setting

This segment receives heavy marine influences and thus high-salinity waters. Historically, this segment was characterized by a narrow shoreline band of small tidal marshes, beaches, and extensive tidal flats. A broad tidal flat once bordered most of the portion of this segment north of Point Pinole, except along the steep shoreline near Carquinez Strait. A string of small tidal marshes lay in small coves along this shoreline and at the entrances to Garrity, Pinole, Refugio, and Rodeo Creeks. A large tidal marsh

spanned much of the area between the San Pablo peninsula and Point Pinole and extended the length of lower Castro Creek. The adjacent uplands supported extensive areas of moist grassland and were dissected by numerous small streams that originated in the hills to the east. Some of these streams were bordered by riparian corridors and provided spawning and rearing habitat for steelhead. Some had lagoons at their mouth, and others terminated in willow groves.

This segment includes stretches of highly urbanized developed shorelines with a high-energy-wave environment and limited sources of local sediment. This segment has undergone considerable development, with cities, industrial areas, the Giant Powder Works plant, petroleum and natural gas facilities, wastewater treatment infrastructure, electrical utility projects, creek channelization, residential development, and transportation corridors. Landfills and other developments occupy many sites that were once tidal flat or marsh. Most of the tidal marsh in the Castro Creek basin has been filled for heavy industry (oil refinery and rail yard) and the West Contra Costa County Landfill. Some tidal marshes remain to the north and south of this landfill at the mouths of San Pablo and Wildcat Creeks, and a major tidal and seasonal wetland restoration project is under way at Breuner Marsh just south of Point Pinole. Union Pacific railroad tracks lie within a few yards of the shore for the entire distance north of Point Pinole, and almost no tidal marsh remains in this area. Tidal flats still abound throughout most of their historical distribution, and there are several sandy barrier beaches and lagoons. Small fringe beaches and rocky intertidal areas are present along many stretches of the segment, and intertidal and shallow subtidal areas support some of the most healthy and robust intertidal and subtidal eelgrass, oyster, and macroalgal beds in the bay. The largest eelgrass bed in the bay is located offshore between Point Molate and Point Pinole. Some vernal pools remain in the adjacent uplands.

Implications of Drivers of Change

The developed areas here will become increasingly difficult to protect as sea levels rise, but unlike segment L (Berkeley–Albany), this segment has some adjacent areas at appropriate elevations that could allow for the migration of baylands, particularly in the southwestern half.

Outboard levees in particular will be subject to greater wave action as water depths increase, allowing larger waves to propagate inshore. Increasing wave action will also accelerate the erosion of the small remaining marsh edges, resulting in the narrowing and potential loss of marshes and other unique habitats such as coarse beaches and rocky intertidal areas. This largely urbanized segment has development that directly abuts the shoreline, which limits migration space and areas for restoration-based adaptation. Innovative and experimental approaches need to be tested, which

Shorebirds at sunset

may include sediment placement, the use of uncontaminated on-site fill in restoration designs, and integrated multihabitat designs with multiple biological and physical objectives.

Considerations for Implementing the Actions

NEAR TERM (NOW TO MIDCENTURY, PRIOR TO SLR CURVE ACCELERATION)

Immediate actions to enhance the existing baylands can help maximize resilience in this segment when sea-level rise rates will still be relatively low. Living breakwaters could be created around fringing marshes to preserve and enhance native eelgrass and oyster beds. Introducing fine sediment to recharge mudflats and marshes could increase vertical accretion rates. There are some opportunities to encourage the landward migration of marshland, but in many locations they are quite limited. However, opportunities to partner with the industrial and residential communities along the shoreline can be pursued to create habitat bayward of their flood-protection levees through horizontal levees, living shorelines, or other green infrastructure.

Diverse pocket habitats could be preserved, enhanced, or created, then linked together to form a subregional habitat corridor. Vertical enhancements could be installed in subtidal and intertidal areas where there is hardscape (living seawalls and substrate improvements to docks are two examples). Many existing habitats could be enhanced by improving tidegate management and removing trash, contaminated soils, and derelict boats.

LONG TERM (LATTER HALF OF THE CENTURY, AFTER SLR CURVE ACCELERATION)

In the long term, sea-level rise rates will likely outpace vertical accretion rates, and marshes in this segment generally do not have enough space to migrate landward to survive. Prior to that point, a plan for restoring or relocating the functions within the existing tidal marshes out of the hazard zone should be implemented. Creation of wetlands bayward of the flood-protection levees, possibly using wastewater to enhance habitat on the slope, could provide space for landward migration. The planned communities built over former wetlands and open bay in Hercules and other areas will be at risk for flooding as sea levels begin to rise. If opportunities for managed retreat become available, options to restore these areas to baylands habitats should be pursued.

Recommended Actions

FOR HABITATS AND THE LANDSCAPE IN GENERAL

- Design and restore complete tidal wetland systems, even at a small scale, that include tidal marshes, beaches, lagoons, and broad transition zones. Develop techniques for implementing active revegetation, high-tide refuge islands, and subtidal habitat restoration.
- Restore a tidal marsh corridor along the eastern edge of the Richmond Landfill to reconnect Wildcat Marsh and San Pablo Marsh.
- Protect and restore native oyster beds and eelgrass beds from the Carquinez Bridge to Point San Pablo.

- Restore vernal pools in the adjacent uplands.
- Protect land as it may become available to incorporate transition zones into restoration designs.
- Use clean on-site bay fill creatively in restoration designs, including using it to construct seasonal wetlands that may become tidal wetlands with rising seas.

FOR PARTICULAR WILDLIFE POPULATIONS

- Enhance East Brother Island for harbor seal breeding habitat as Castro Rocks becomes inundated.
- Assess predator impacts caused by West County Landfill to define specific actions for improvement.
- Protect and enhance Pacific herring spawning areas, such as Point Molate.
- Develop projects to assess effectiveness of artificial floating islands for nesting and high-tide refugia.
- Control invasive species, especially perennial pepperweed in high-marsh rare-plant associations, and invasive *Spartina* across the full tidal frame.

Restoration Benefits

The recommended projects for this segment would demonstrate to the public innovative techniques to restore and enhance habitats for many populations of key fish, amphibian, reptile, insect, mammal, and bird species. Restoring wetlands would enhance habitats for endangered species such as the Ridgway's rail and salt marsh harvest mouse. Reestablishing a tidal marsh corridor between the Wildcat and San Pablo Marshes would link these existing areas, increase tidal marsh acreage, and reduce the isolation of small-mammal populations. Restoring and improving marsh–upland transition zones would benefit populations of several rare plants. Restoring beach habitat could improve conditions for sensitive plant species. Protecting islands would assure suitable sites for colonial nesting birds. Restoring native oyster and eelgrass beds offshore would provide habitat for birds and fish, and might enhance food and nursery resources for species that use both wetlands and offshore shallow subtidal habitats. Living-shorelines designs might provide wave attenuation, sediment stabilization, and some flood protection in the near term for tidal marsh habitats on the shoreline.

Challenges

The major challenges in this segment are the large urban population, extensive fill along the shoreline, on-site contaminants, the existing infrastructure, bridges, and wastewater treatment plants, railroad tracks and spurs, derelict creosote wharfs and piling structures, the West County Landfill, major highways, flood-control considerations, exotic predators (e.g., rats and red fox), and invasive *Spartina*.