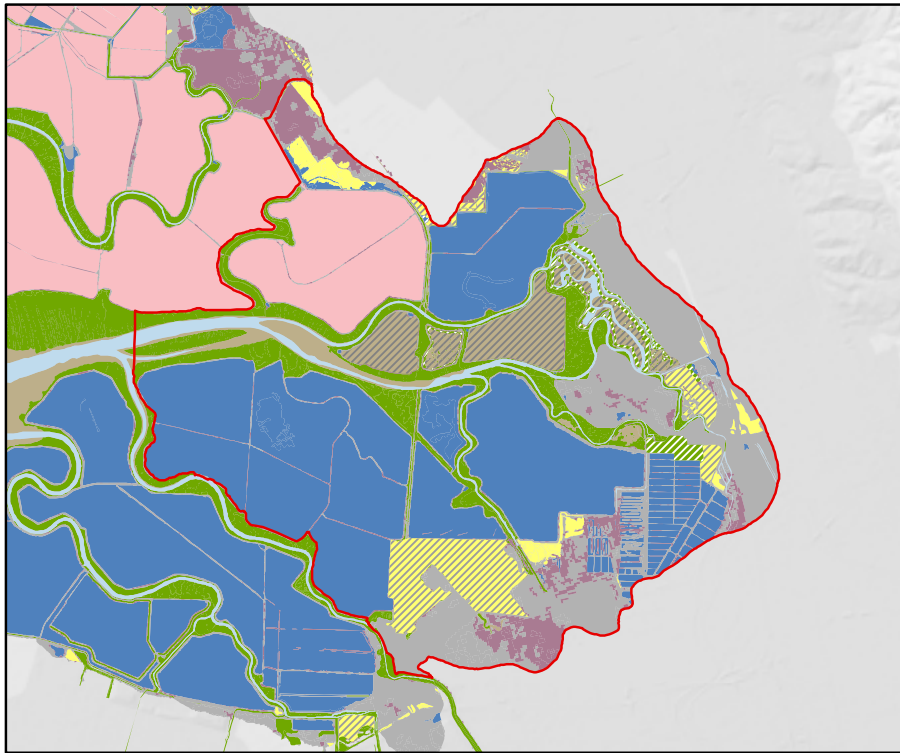


BAYLANDS SEGMENT P



COYOTE CREEK AREA

Southern end of San Francisco Bay between Alviso Slough and Albrae Slough

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 P.

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)



Unique Opportunities

Segment P provides excellent opportunities to develop large patches of tidal salt marsh along a major salinity gradient. This is one of few South Bay segments where it is possible to restore tidal brackish marsh. It is the only segment in South Bay that has a large area of vernal pools near the baylands. It also is the only area where a wide transition zone can be re-created between restored tidal marsh and a complex of vernal pools.

Segment Features and Setting

Historically, most of this segment was tidal marsh. There were numerous sloughs and ponds throughout the marshes, but very little adjacent tidal-flat habitat. Salinity was strongly influenced by high seasonal freshwater flows through Coyote Creek, one of the major tributaries to the subregion. On the northern edge of the segment was the only large area of vernal pools in South Bay, currently encompassing 719 acres and 250 ponds in the Warm Springs vernal pool unit of Don Edwards San Francisco Bay National Wildlife Refuge. Moist grasslands bordered much of the eastern side of the segment.

Today, much of this segment is developed. Managed ponds dominate the landscape, along with large landfills and the largest local sewage-treatment facility. Some narrow strips of tidal marsh occur outboard of the pond levees, and year-round discharge from the sewage-treatment plant creates brackish marsh in areas. Although the Warm Springs vernal pool area still exists, nearly all of the moist grassland in this segment has been developed for light industry or housing. Since the initial Goals Report, nearly all of the managed ponds in this segment have become part of the Don Edwards refuge and the South Bay Salt Pond Restoration Project (SBSPRP). These ponds are particularly important for wintering and migratory waterfowl due to their depth and low salinity.

The managed ponds in this area provide foraging and roosting habitat for shorebirds and for very large numbers of waterfowl in the deeper ponds. Some islands and levees in managed ponds and diked marshes also provide nesting habitat for snowy plovers (A22, A23), American avocets, black-necked stilts, double-crested cormorants, California gulls, Caspian terns, and Forster's terns.

The SBSPRP, in the first 10 years that ponds have been managed to benefit waterbirds, has seen greater numbers of shorebirds and dabbling ducks and has maintained the number of diving ducks using the managed ponds. The SBSP has also constructed islands for nesting at pond A16 within this segment (and within segments S and O) and other features that have the potential to enhance the carrying capacity of the managed ponds to benefit migratory, wintering, and breeding waterbirds.

The SBSPRP initiated tidal marsh restoration actions in adjacent areas starting with the breaching of ponds A21, A20, and A19 in the spring of 2006. Sedimentation was rapid, with some locations in pond A21 accumulating more than 220 mm in two to three years. These results indicate high suspended-sediment concentrations in the South Bay can, if sediment supplies remain as they have historically, sustain marsh restoration and sustainability to some extent into the future. Pond A17 was breached in October 2012.

The Warm Springs area of the SBSRP (ponds A22 and A23) supports nesting snowy plovers. The depredation of snowy plover nests continues to be an issue where nesting habitat exists, particularly in this area adjacent to grassland and landfills, both of which attract common ravens and other predators. Ongoing hazing and removal of predators is needed to reduce the depredation of snowy plovers.

The South San Francisco Bay Shoreline Study conducted by the US Army Corps of Engineers and the Santa Clara Valley Water District is also making progress. It has drafted plans for a tidal flood-protection levee to be constructed on the inland side of ponds A12, A16, and A18, with proposed tidal marsh restoration on some of the outboard ponds (pending further data on waterbird numbers in response to restoration actions). Construction is scheduled to begin on the levee in 2017.

The city of San Jose manages the San Jose–Santa Clara Water Pollution Control Plant (WPCP) and surrounding plant lands, totaling about 2,680 acres. The city prepared a Plant Master Plan to identify WPCP improvements needed to address the aging infrastructure, changing regulations, and odors, and to develop a comprehensive land-use plan for the site. The master planning effort yielded a preferred alternative that included near-term and long-term (to 2040) improvements to the plant, and various environmental, economic, and recreation uses for the plant lands. The city certified an environmental impact report and adopted the Plant Master Plan in November 2013. It is proceeding with the implementation of near-term WPCP improvements.

Implications of Drivers of Change

Managed ponds in this segment will become increasingly difficult to maintain and operate at their specified elevations and salinities. As sea levels rise, levees protecting the ponds will need to be maintained and raised. Tide gates will have to be modified, and gravity-driven systems supplemented by pumping. The 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 marsh edges, resulting in a narrowing of marshes. Sedimentation rates on existing and restored tidal wetlands are expected to slow over time as suspended-sediment concentrations in the bay decrease.

Considerations for Implementing the Actions

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

The near term presents significant opportunities to restore tidal marsh in managed ponds that will help create a continuous corridor of tidal marsh along the bayshore. This restoration would include the reconnection of complex channel networks, incorporating topographic variation by placing material to mimic features such as natural levees, and could incorporate shallow pans. To accelerate the accretion of marsh surface in the subsided ponds, dredge sediment could be placed either directly within the ponds or on adjacent mudflats to be taken by wave and tidal action into the ponds. Slopes to create elevation gradients along the transition zone between tidal marsh and terrestrial areas could be created next to existing levees to provide buffers and high-tide refugia as well as habitat in its own right.



Dumbarton Cutoff Line
—Newark Slough
Swing Bridge

While rates of sea-level rise are low, some of the managed ponds could continue to be managed to provide habitat for shorebirds and waterfowl by changing their water levels and salinity (within the infrastructure limits). Levees surrounding the ponds would have to be built up to maintain these ponds as sea levels rise further.

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

In the longer term, if the sea-level rise increases and sediment supply decreases as projected, it seems likely that the marsh plains will give way to narrower fringing marshes. Tidal marshes may be unable to keep up with the rising sea level, resulting in increased inundation of the marsh surface. This may lead to habitat conversion, perhaps to low marsh and mudflat. In addition, landward migration of the marsh is expected, and a gently sloping transition zone bayward of the levee would facilitate such a migration. Since there is considerable infrastructure in this segment, consideration should be given to filling in some of the managed ponds with material to create a gently sloping transition zone bayward of the levee. This would create space for marsh migration in the long term (and high-tide refugia in the short term).

At some point in the future, the degree of sea-level rise may make it unrealistic to maintain the managed ponds to benefit waterbirds. Prior to that point, a plan for restoring or relocating the functions of these ponds should be implemented that would move them outside the hazard zone. Simply restoring tidal action to the managed ponds late in the century may result in the creation of deep tidal ponds. To alleviate this, “warping up” the ponds could be undertaken during the earlier part of the century, allowing the accretion of the pond to be managed as well.

Recommended Actions

FOR HABITATS AND THE LANDSCAPE IN GENERAL

- ◆ Restore tidal marsh throughout most of the segment prior to 2030, providing a continuous corridor of tidal marsh along the shore across a gradient of salt to brackish marsh.
- ◆ Create transition zones on gentle slopes in front of flood-risk-management levees (or other high-ground areas). Protect open space, including landfills, as it becomes available to incorporate into future transition zone designs.
- ◆ Optimize the management of ponds for a diverse suite of waterbirds, including shorebirds and waterfowl. Modify pond management as necessary to accommodate sea-level rise and other changes by modifying water-control structures, managing pond to facilitate warping, and reconfiguring or relocating ponds as necessary.
- ◆ Reestablish native riparian vegetation and otherwise improve the riparian corridor along Coyote Creek in conjunction with the City of San Jose Plant Master Plan.
- ◆ Restore vernal pools near baylands, and develop methods to enhance freshwater inputs to them in the event of prolonged extreme drought conditions.

- ◆ Consider ways to increase sediment supply to the tidal baylands. Methods could include placing sediment directly in marshes or placing dredged sediments on adjacent mudflats to be reworked by wave and tidal action to increase local suspended-sediment concentrations and marsh-accretion rates.
- ◆ Enhance and restore native oyster beds at suitable areas.
- ◆ Remove or elevate the railroad currently bisecting habitat.

FOR PARTICULAR WILDLIFE POPULATIONS

- ◆ Modify and manage ponds to enhance snowy plover breeding success in ponds A22 and A23, and islands in A16, as well as habitat for other waterbirds on islands and levees in managed ponds.
- ◆ Continue predator management at waterbird nesting habitats.
- ◆ Continue treatment of invasive *Spartina*, and consider revegetation plantings, high-tide-refuge islands, and other enhancements.

Restoration Benefits

Restoring tidal marsh along the shore would provide dispersal corridors (where none now exist) for the Ridgway's rail and the salt marsh harvest mouse, allowing these species to move between neighboring segments while minimizing predation and decreasing their vulnerability to local extinction. Implementation of the recommendations would increase rare plant species populations by enhancing the tidal marsh–moist grassland transition zone and vernal pools in the Warm Springs area. This would benefit the only remaining populations of California tiger salamander and tadpole shrimp near the baylands. Enhancing in-stream conditions in Coyote Creek could benefit steelhead populations. Freshwater discharges from the San Jose treatment facility should be managed to minimize large-scale conversion of saline–brackish tidal marsh while maintaining the large heron and egret rookery in Artesian Slough.

Challenges

Challenges in this segment include legacy mercury contamination, PG&E transmission lines and other utility corridors, flood-protection considerations, historical land subsidence, freshwater outflow from wastewater-treatment facilities, landfills as a source of avian predators, the presence of heavy metals in some of the older sewage-treatment ponds, the operation and maintenance of salt ponds in the absence of salt production, the loss of snowy plover habitat, and predator management. Invasive *Spartina* remains a critical priority, constraint, and consideration for some existing marshes and for restoration planning in this segment. Oyster drill populations may limit native oyster restoration. The SBSRP is one of the key regional plans for this segment. Planning will require coordination with local agencies and organizations, including the Don Edwards San Francisco Bay National Wildlife Refuge, San Jose Water Pollution Control Plant, Santa Clara Valley Water District, and the community of Alviso.