



# South Bay Salt Pond Restoration Project

*Restoring the Wild Heart of the South Bay*





# HOW TO GET INVOLVED



**VISIT THE WETLANDS:**  
WALK,  
BIKE, HIKE,  
BIRDWATCH,  
KAYAK, FISH,  
HUNT, RELAX!

You can travel the new trails and take them to other regional trails and parks. You can view birds and open spaces, the wide-open Bay, paddle the sloughs, go fishing, hunt for ducks, or attend special events. See inside maps for details or get event info at <https://www.southbayrestoration.org/events>.

## INVITATION TO COMMUNITIES AND TRIBES

The Restoration Project has a long history of working with nearby community members. We are now making a concerted effort to welcome those who may have been systemically excluded from Bay restoration and open spaces. We extend a special invitation to local Tribes, community members, and environmental or social justice groups to engage with us so we can better serve your interests.

**VOLUNTEER:**  
RESTORE  
HABITATS,  
GROW PLANTS,  
HELP SCIENTISTS,  
STEWARD  
THE LAND

Partner non-profits and agencies host opportunities to get your hands dirty helping Bayside habitats and wildlife. You can plant native seedlings, pull weeds, pick up trash, count birds, or help with Refuge programs. Learn about volunteering opportunities at <https://www.southbayrestoration.org/vo>.



**ATTEND A MEETING OR TOUR:**  
LEARN AND SHARE

We invite your ideas and feedback! To learn about our progress or share thoughts on our work, you can attend a periodic virtual or in-person meetings or tours. See our Events and Meetings page, <https://www.southbayrestoration.org/events>, or reach out to us at <https://www.southbayrestoration.org/contact>.

# THANKS TO PARTNERS AND COMMUNITIES



The restoration of the South Bay's "wild heart" springs from long-standing broad community support to improve the health of the Bay. It proceeds with the collaboration, hard work, and resources of many individuals and organizations. The Restoration Project gives sincere thanks to all!

That includes Senator Dianne Feinstein, state and federal agencies, four foundations – the William and Flora Hewlett Foundation, the Gordon and Betty Moore Foundation, the Richard and Rhoda Goldman Fund, and the David and Lucile Packard Foundation – and Bay Area residents approving the Measure AA parcel tax.

Many people worked intensively to craft our restoration plan and science program and continue their involvement today as we make those plans a reality on the ground. Thanks also to Alviso community members, who worked closely with us on plans in their area, and to neighboring residents project-wide, who tolerate our construction work that will eventually provide them with nearby recreation and vibrant open spaces.

Photos credits: Top, Save The Bay; Middle, kayak, volunteer and tour photos by Judy Irving, Pelican Media - Front cover photo credits: Top, Pond A21 boat view, Jennifer McBroom, Olofson Environmental, Inc. Bottom, Pond A21 kite view, Cris Benton

 [www.southbayrestoration.org](http://www.southbayrestoration.org)





# WHAT IS THE SOUTH BAY SALT POND RESTORATION PROJECT?

It's the largest tidal wetland restoration effort on the West Coast, transforming 15,100 acres of former industrial salt ponds from Hayward to Menlo Park to a rich mosaic of wetland habitats and public open spaces. The

Restoration Project restores marshes and enhances ponds for fish, birds and other wildlife. It builds new trails and viewing areas that open up stretches of the South Bay shore to millions of community members. And its newly restoring tidal marshes will buffer South Bay communities from Bay flooding and sea level rise.

In 2003, federal, state, and local agencies launched this collaborative effort on lands reserved for nature and wildlife. This unprecedented restoration project, in the middle of a major urban center, is transforming an area half the size of San Francisco over 50 years into a thriving wetland ecosystem and accessible open space – restoring the wild heart of the South Bay for our and future generations.

***The map inside shows the new trails, wetlands and other enhancements built, planned, or underway!***

**RESTORATION PROJECT GOALS**

- 1  Restore and enhance a mix of **WETLAND HABITATS**
- 2  Provide wildlife-oriented **RECREATION AND PUBLIC ACCESS**
- 3  Maintain or improve **FLOOD RISK MANGAMENT**

## WHY RESTORE THE WILD HEART OF THE SOUTH BAY?

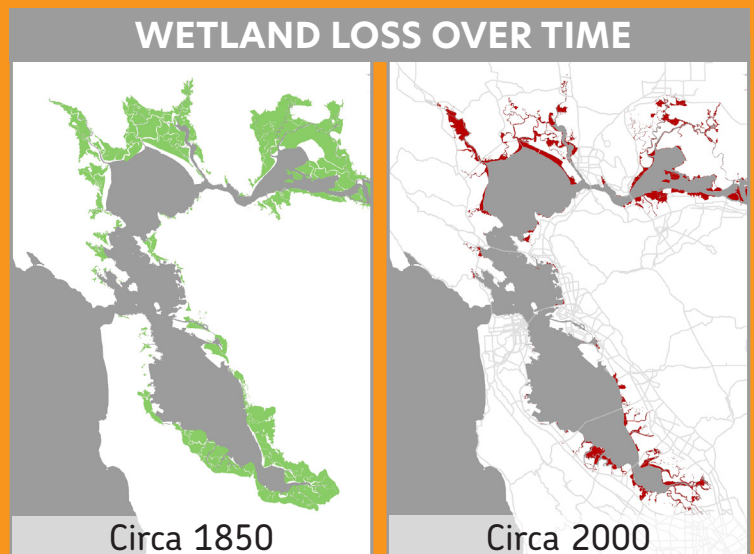
**San Francisco Bay lost over 85% of its tidal wetlands as the region urbanized and people filled and diked wetlands to farm, build, and produce salt.**

Then, the Bay Area came to realize what we had lost: as tidal marshes shrank, we saw a dramatic decline in animals who live in them, some now threatened with extinction. Because marsh filters toxic pollution and chemical runoff, Bay water quality declined. Because marsh acts like a sponge to absorb and slowly release waters, Bayside communities faced greater flood risks.

In recent decades, the Bay Area launched efforts to restore wetlands and reverse these troubling trends. As we reestablish these shoreline buffers,

we see other benefits: tidal marsh combats climate change by capturing and storing carbon. Wetlands offer a soothing environment for people, an escape from the city for our mental, physical and emotional health. And they provide food and shelter for wildlife – each year, the Bay's tidal marshes pulse with thousands of birds, fish and other animals there to forage, rest, and raise their young.

The South Bay Salt Pond Restoration Project will improve the health of San Francisco Bay for generations to come.



# RESTORATION PROJECT ACCOMPLISHMENTS

**We are working hard to make changes on the land to benefit people and wildlife. Since launching in 2003, the Restoration Project has:**

## FOR GOAL 1 • HABITAT

- ▶ Opened over 3,300 acres of former industrial salt-making ponds to the Bay so nature can transform them into vast green stretches of tidal marsh – endangered birds and mice are returning to these new wetlands to live and reproduce
- ▶ Enhanced more than 700 acres of former salt-making ponds with nesting islands and other features to attract thousands of shorebirds, ducks, and other waterbirds

**Photos:**

A former industrial pond transitions to marsh. Credit: Cris Benton.



## FOR GOAL 2 • RECREATION AND ACCESS

- ▶ Built over 7 miles of public trails
- ▶ Constructed an accessible launch for non-motorized boats
- ▶ Installed boardwalks, benches, interpretive signs and sites to view wildlife and historic salt-making structures
- ▶ Opened 2,000 additional pond acres for seasonal hunting

## FOR GOAL 3 • MANAGING FLOOD RISKS

- ▶ Built tens of acres of gentle slopes called “*habitat transition zones*” to help protect nearby urban areas from coastal flooding and allow habitats to grow uphill as tides rise
- ▶ Modified pond storage to help reduce Redwood City and Menlo Park flooding

## HISTORY AND CULTURAL CONTEXT

**Restoration Project acres have a long history of human presence and as sites of salt-making.** For thousands of years, California Native American tribes lived and thrived in villages around South and East Bay wetlands. As the region’s first salt harvesters, they collected salt from natural Bay salt ponds.

Beginning in the 18th century, settlers occupied Bay Area lands, displacing and dispossessing California Native Americans. The Spanish had continued using native salt-gathering practices in East Bay ponds. In the 1850s, after U.S. annexation, commercial salt-making began as landowners walled off parts of the Bay, creating ponds to evaporate salty water into salt crystals. Bay salt production reached its height in the 20th century at a million tons a year. Early this century, the Bay’s remaining salt-maker, Cargill, Inc., found it had more ponds than needed. Senator Dianne Feinstein led talks resulting in the 2003 \$100 million federal and state acquisition of Restoration Project acres. The new landowners reduced pond saltiness, producing massive jumps in waterbird populations. The first ponds were opened for restoration in 2006. Three years later, after a participatory public planning process, the Restoration Project began major construction.

Today, there are millions of people living along the Bay. Among them are today’s native people, who work to retain and revive their cultures and traditions, including land stewardship on their homelands. The Restoration Project is committed to engaging with local Tribes and community members who have time and interest to do so.

**People began harvesting San Francisco Bay salt thousands of years ago by scraping crystals** that appeared along the edges of naturally occurring East Bay salt ponds, called *salinas* or *salt pannes*, such as the great Crystal Salt Pond near present-day Hayward, shown on this map that replicates the historical channels and tidal marsh from U.S. Coast Survey maps ca. 1850. Landings provided a link between the land and water.



Source: Grossinger, R. M. & Askevold, R. A., 2005, *Baylands and Creeks of South San Francisco Bay*; Oakland Museum of California, Oakland, CA, 1:25,800 scale.





# GOAL 1 RESTORE AND ENHANCE WETLAND WILDLIFE HABITATS

The Restoration Project will provide a mix of wetland habitats including:

## 1 - TIDAL MARSH

Lush vegetation dominates these wetlands that also include meandering sloughs, mudflats, and shallow natural ponds. Marshes support a variety of fish and wildlife including secretive birds and mice (see below) threatened with extinction. Mudflats, rich with worms and bugs, are important shorebird feeding areas. Sloughs serve as nurseries for young fish such as leopard sharks and steelhead trout.

*Weaving Wetlands into Interconnected Ecosystems* • In nature, habitats transition from one to the other across land and water, offering pathways for nutrients, sediments, and wildlife to move and circulate. Tidal marshes grow above mudflats, gradually rising to high ground above the reach of tides. With urbanization around the Bay, habitats are now fragmented and squeezed. Many wetlands bump up against concrete. The Restoration Project seeks to build gentle slopes called **“habitat transition zones”** to connect marshes and uplands, reducing habitat fragmentation. These are particularly important in the face of sea level rise, as they provide more space to help wildlife escape storm tides and rising seas, and allow marshes to migrate uphill.

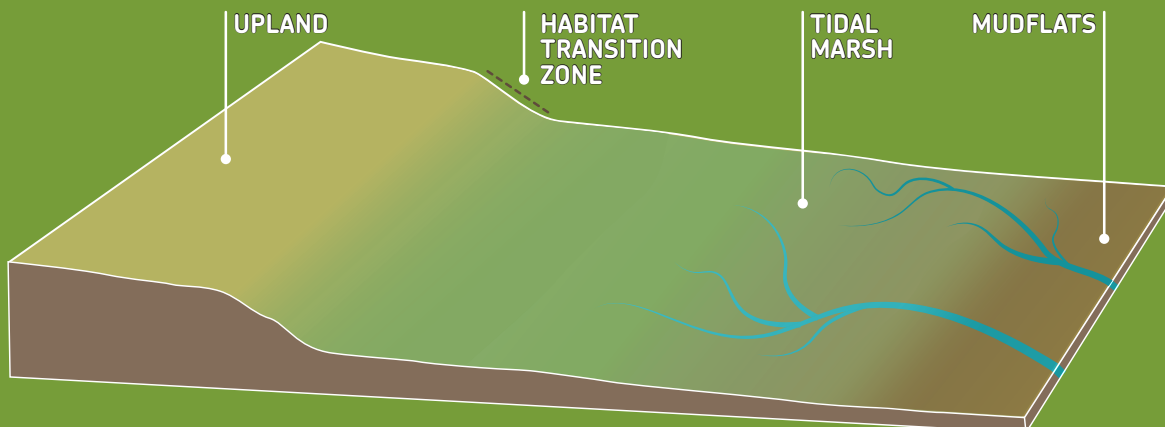
## 2 - MANAGED PONDS

We retain some constructed ponds as managed habitats so there is adequate acreage for migrating and resident shorebirds, ducks, and other waterbirds. The Bay is a crucial stop for birds migrating along the Pacific Flyway that runs from Alaska to Argentina. Ponds and nesting islands offer them food and a place to rest or nest. Managers keep some ponds dry to provide critical nesting habitat for threatened snowy plovers and endangered California least terns.

## WILDLIFE IN THE WETLANDS AND THEIR HABITATS

	SALT MARSH HARVEST MOUSE	CALIFORNIA RIDGWAY'S RAIL	STEELHEAD TROUT	WESTERN SNOWY PLOVER	AMERICAN AVOCET	RUDDY DUCK
SPECIES						
HABITAT						
	TIDAL MARSH: Pickleweed	TIDAL MARSH: Tidal Channel	TIDAL MARSH: Tidal Channel	DRY POND	WET POND	WET POND

## HABITAT TRANSITION ZONES CONNECT TIDAL MARSH AND UPLANDS



**Graphics and photos:**  
Wildlife and habitat transition zone graphics by SFEI. Wildlife photos: Mouse, rail and avocet, credit Judy Irving, Pelican Media. Steelhead, credit Oregon State University, CC BY-SA 2.0. Plover, credit Jenny Erbes, Point Blue. Duck, credit Don DeBold, CC BY 2.0. Habitat photos: Pickleweed, credit SFBayWalk, CC BY 2.0. Tidal channel, credit Steve Martarano, USFWS. Wet pond, credit Josh Ackerman, USGS.





GOAL 2

# EXPAND RECREATION AND PUBLIC ACCESS

The Restoration Project is building ADA-accessible trails, viewing platforms, and interpretive signs across its 15,100 acres to provide wildlife-oriented public access to South Bay shores and wetlands.

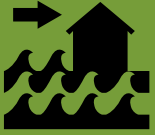
Trails offer a way to walk, run, and bike off city streets along the wide-open edge of the Bay, amid ponds, sloughs, and marshes. Visitors can birdwatch, smell the tang of salt, feel the force of brisk Bay winds, and see some of the millions of birds passing through. They can see ruins and learn about 19th century salt-making. They can come on their own or explore through partner programs and tours. The photographs on this page offer examples of the types of activities available.

For more information, see the back of this brochure and its maps of built and planned trails and other amenities. A readable barcode on that page links to directions and more detailed on-site information about trails, viewing areas, boating, hunting and fishing.



Photos: Kayaker, credit Tracy Grubbs. Walkers, credit Jack Morris. Hunter, credit Aric Crabbe, Bay Area News Group. Photos of person at interpretive sign and of bikers, credit Judy Irving, Pelican Media. Tour group, credit Dave Haling. Family, credit Don DeBodd, CC BY 2.0. Birdwatcher with spotting scope, credit Monica Vallez. Fishing on pier, credit Miguel Marquez, USFWS.





GOAL 3

# MAINTAIN OR IMPROVE MANAGEMENT OF SOUTH BAY FLOOD RISKS

**THE WETLAND SPONGE EFFECT** • Coastal residents and valuable real estate are at risk of tidal flooding and sea level rise. The tidal marshes we restore, once established, can serve as critical natural buffers against floods to benefit nearby human communities. Wetlands act as giant sponges, absorbing floodwater during storms and then slowly releasing it back into the Bay. Marshes also shield land, levees, and other shoreline infrastructure from damaging storm waves.

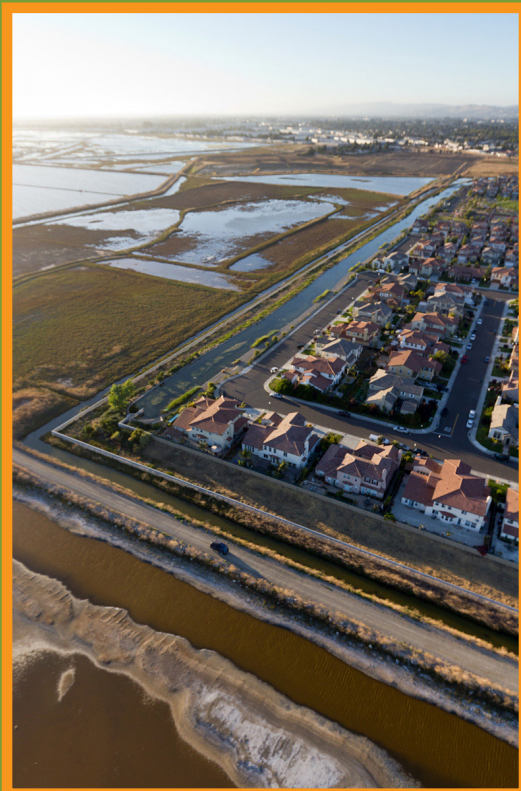


The Restoration Project is also committed to maintaining or improving existing levels of flood protections. This work can complement engineered levees and other systems constructed by flood protection agencies. Our construction includes raising berms and building sloped habitat transition zones to absorb waves and protect nearby lands. The Restoration Project also collaborates with local flood protection efforts, such as the South San Francisco Bay Shoreline Project that is building engineered levees along Alviso and other Santa Clara County shoreline communities, and partners with those working to adapt shorelines to sea level rise.



## ABSORBING THE EFFECTS OF SEA LEVEL RISE

Tidal marshes are a nature-based solution against the impacts of sea level rise and global climate change.



### Q. HOW DO TIDAL MARSHES HELP PROTECT AGAINST SEA LEVEL RISE?

**A.** They encourage the build-up of sediment, growing as seas rise and helping to create a new shoreline with a higher elevation.

### Q. WILL SEA LEVEL RISE COVER RESTORED MARSHES?

**A.** Established tidal marshes become very efficient sediment traps. They tend to preserve themselves by growing higher as they age, if enough sediment is available in Bay waters. Marshes that are established soon are expected to keep pace with rising seas. But we are uncertain about the long term. If we don't restore marshes now, future restoration work may be drowned by sea level rise.

### Q. DO TIDAL MARSHES HELP REDUCE FUTURE CLIMATE CHANGE?

**A.** Yes. They capture large amounts of carbon. Unlike many freshwater marshes, they release only negligible amounts of methane, a powerful greenhouse gas. Tidal marshes may be more efficient than trees at removing carbon from the atmosphere.

**Photos:** Top: King tides flooded the Palo Alto Baylands Nature Preserve marshes in January 2023, marooning a damp salt marsh harvest mouse on a boardwalk and flooding a ramp. Credit: California King Tides Project ([coastal.ca.gov/kingtides](http://coastal.ca.gov/kingtides)). Bottom left: Project ponds by Hayward. Credit: Cris Benton.

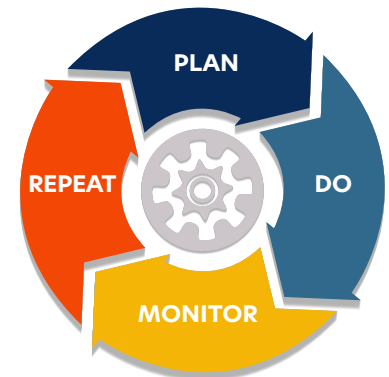


# SCIENCE & ADAPTIVE MANAGEMENT: LEARNING AS WE GO

**Nature is complex, and humans know only so much about it.** That's why we undertake each step of our 50-year restoration project carefully, taking the time to learn from our actions as we go. That way, we can shift strategies and actions to try to achieve the best outcomes for nature and for people in the face of scientific uncertainties. This intentional approach of continuously making adjustments as we learn is called **Adaptive Management**.

**Science is the key to our adaptive management program.** As needed, scientists monitor and evaluate new data on everything from bird and fish population numbers to water quality to how marshes are forming. This information guides our decisions on how to manage ponds and how to design future construction of restoration, public access, and flood risk management projects.

## ADAPTIVE MANAGEMENT APPROACH



**Because of these uncertainties,** Restoration Project managers did not identify a set number of acres of tidal salt marsh to restore. Instead, we've agreed on a range, from 50% to 90% of the total 15,100 acres. This means that we will restore at least 50%, or 7,500 acres, of tidal marsh. We can restore more ponds to tidal marsh, as long as enough pond acres remain for the needs of pond-dependent waterbirds.

For more information, see the Project website's science page at [www.southbayrestoration.org/science](http://www.southbayrestoration.org/science).

**Photos clockwise from left:** Josh Scullen banding chicks, credit San Francisco Bay Bird Observatory. Jon Kuntz examining threatened longfin smelt, credit James Ervin, UC Davis OG Fish Lab. Refuge scientists surveying for Ridgway's rails via airboat, credit Julie Kitzenberger.

## SCIENCE & ADAPTIVE MANAGEMENT: THE NEEDS OF WILDLIFE DRIVE MARSH RESTORATION



PONDS



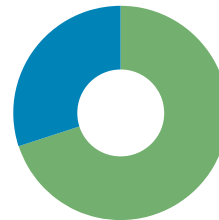
TIDAL MARSH

How much tidal marsh the Restoration Project ultimately restores depends on how many ponds need to be kept for bird use.

50% / 50%



30% / 70%



10% / 90%

