

# **CITY COUNCIL MEETING**

**FEBRUARY 16, 2021**

**PRESENTATIONS**

**PUBLIC HEARING**

**ITEM #6**

**PH-21-006**

**HAYWARD REGIONAL  
SHORELINE ADAPTATION  
MASTER PLAN**



# City Council

## Hayward Regional Shoreline Adaptation Master Plan

February 16, 2021

# Hayward Area Shoreline Planning Agency (HASPA)

- Established in 1970
- Includes City of Hayward, Hayward Area Recreation & Park District, and East Bay Regional Park District
- Purpose: To coordinate agency planning activities and adopt and carry out policies for the improvement of the Hayward Shoreline for future generations



# Hayward Regional Shoreline Adaptation Master Plan

- A priority project identified in Strategic Roadmap
- General Plan Policy HAZ-4.3  
Shore Realignment Master Plan



**SCAPE LANDSCAPE ARCHITECTURE DPC**

**HAYWARD REGIONAL SHORELINE ADAPTATION MASTER PLAN**

**HAYWARD CITY COUNCIL**

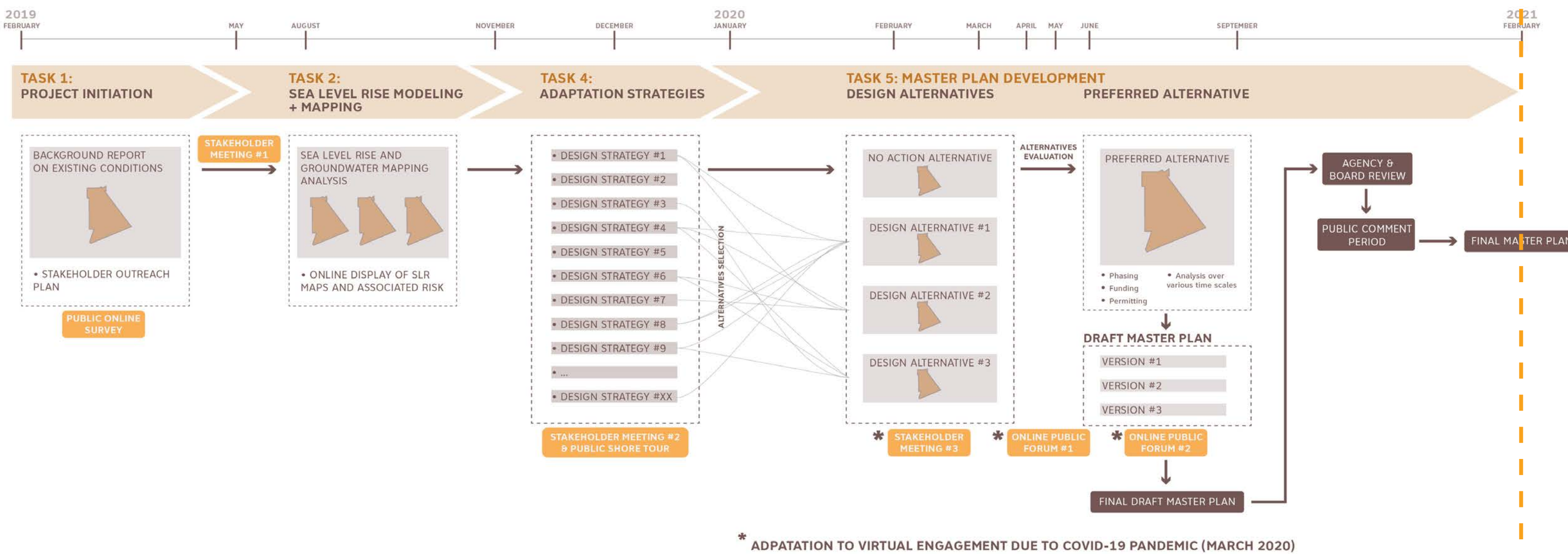
**FEBRUARY 16, 2021**

# AGENDA

- **Master Plan Process**
- **Master Plan Document**
- **Implementation**

# PROJECT SCHEDULE

WE ARE HERE!





# TASK 1: PROJECT INITIATION

## Background Report

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HAYWARD REGIONAL SHORELINE MASTER PLAN

FOR THE HAYWARD AREA SHORELINE PLANNING AGENCY (HASPA)

TASK 1 BACKGROUND REPORT & EVALUATION OF CURRENT CONDITION

SUBMITTED 06/14/2019  
PART OF A JOINT POWERS AGREEMENT  
OF COH, HARD AND EBRPD

**HAYWARD SHORELINE MASTER PLAN  
BAYLANDS ECOLOGY**

**LEGEND**

- TIDAL MUDFLAT
- TIDAL / MUTED TIDAL MARSH
- DIKED POND / WETLAND
- DIKED STORAGE AND TREATMENT PONDS
- INACTIVE SALT PONDS
- UPLAND LANDFILL

**BAYLANDS TODAY**  
**A MOSAIC OF ECOLOGY AND INFRASTRUCTURE**

The Hayward Regional Shoreline is a mosaic of bayland environments that supports diverse wildlife habitats and critical urban infrastructure. Formerly a zone of tidal marshes and natural salt ponds, this stretch of shoreline has undergone sequential transformations, resulting in the current mix of restored tidal marshes, inactive industrial salt ponds, filtration marshes, storage ponds, diked wetlands, landfills, solar fields, and biosolids drying beds. Restored tidal marsh is a dominant condition within the Hayward Regional Shoreline Master Plan Project Area. The following includes short descriptions of each tidally influenced marsh.

**Oro Loma Marsh** is a 364-acre fully tidal marsh restored in 1997. Once diked and degraded wetlands, this area now supports robust habitats, including salt marsh vegetation, seasonal wetlands, high refugia mounds, and tidal flats. The west section of this marsh drains directly into the bay and the east section drains to the bay via Sulphur Creek.

**Cogswell Marsh** is 250 acres of formerly diked baylands fully restored to tidal marsh in 1980. A reintroduction of bay tidal exchange facilitated the development of a more robust tidal marsh and supported the establishment of federally endangered Salt Marsh Harvest Mouse and Ridgway's Rail populations. Constructed nesting mounds, excavated tidal channels, and invasive species management have also contributed to the success of this ecosystem.

**Triangle Marsh** is an 8-acre muted tidal marsh system restored in 1990. Robust marsh habitat has developed within the site, but the West Winton Landfill backs onto the site and prevents any further marsh expansion or migration.

**HARD Marsh** is a 79-acre, fully tidal marsh comprised of mudflats and low marsh habitats. Restoration efforts began in 1986, and currently the marsh does not contain any high ground or islands for wildlife refugia.

**Salt Marsh Harvest Mouse Preserve** is a 27-acre site of muted tidal marsh managed by East Bay Regional Park District (EBRPD) to maintain habitat for the federally endangered Salt Marsh Harvest Mouse. Currently, there is limited high ground within the site, resulting in the need for combination gates to manage water entering and exiting the system.

**Fringe Marshes** are established on the outboard side of levees along the shoreline. These areas support unique habitats such as small beaches and rocky intertidal habitat.

**Landfills** are concentrated in the center of the project area where tidal baylands were filled with unknown debris and waste. The City of Hayward owned West Winton Landfill was capped and closed in 1974, and current monitoring protocols show no contamination to adjacent baylands. North of the city owned landfill is an Alameda County-owned West Winton Landfill. Conversations with experts led the Project Team to identify this area of the project site most in need of further research due to unknown infrastructure conditions.

Inactive salt ponds and freshwater wetlands are also distributed throughout the site and contribute to habitat diversity. Some areas, such as the Oliver Salt Ponds, are historical resources that also support federally endangered bird species.

Sources:

- Adapting to Rising Tides, Hayward Resilience Study, January 2015.
- Philip Williams and Associates, LTD., Preliminary Study of the Effects of Sea Level Rise on the Resources of the Hayward Shoreline, March 2010.

HAYWARD REGIONAL SHORELINE MASTER PLAN

25

## Online Survey

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HAYWARD REGIONAL SHORELINE MASTER PLAN

FOR THE HAYWARD AREA SHORELINE PLANNING AGENCY (HASPA)

APPENDIX A: ONLINE SURVEY AND STAKEHOLDER INTERVIEWS

SUBMITTED 06/14/2019  
PART OF A JOINT POWERS AGREEMENT  
OF COH, HARD AND EBRPD

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HAYWARD REGIONAL SHORELINE MASTER PLAN

FOR THE HAYWARD AREA SHORELINE PLANNING AGENCY (HASPA)

COMMUNITY OUTREACH PLAN

SUBMITTED 06/14/2019  
PART OF A JOINT POWERS AGREEMENT  
OF COH, HARD AND EBRPD

## Community Outreach Plan



# TASK 2: DATA COLLECTION AND SEA LEVEL RISE MAPPING

## SLR Mapping Report

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HAYWARD REGIONAL

SHORELINE MASTER PLAN

FOR THE HAYWARD AREA SHORELINE

AGENCY (HASPA)

PART OF A JOINT POWERS AGREEMENT OF COH

EBRPD

TASK 2

DATA COLLECTION

AND SEA LEVEL R

MAPPING REPORT

SUBMITTED 11/26/2019

### TOPOGRAPHY AND BATHYMETRY

#### Topography

USGS conducted a Lidar campaign of the area in 2010 and generated a Digital Elevation Model (DEM). The vertical datum used is NAVD88. A number of modifications to this DEM were conducted by the San Francisco Bay Conservation and Development Commission (BCDC) in 2015 to represent the changes to the shoreline between 2010 and 2015. Moreover, the topography of the Hayward Marsh has been updated as part of this study to reflect the latest information collected by CLE Engineering in 2014, and provided by HASPA to the project team.

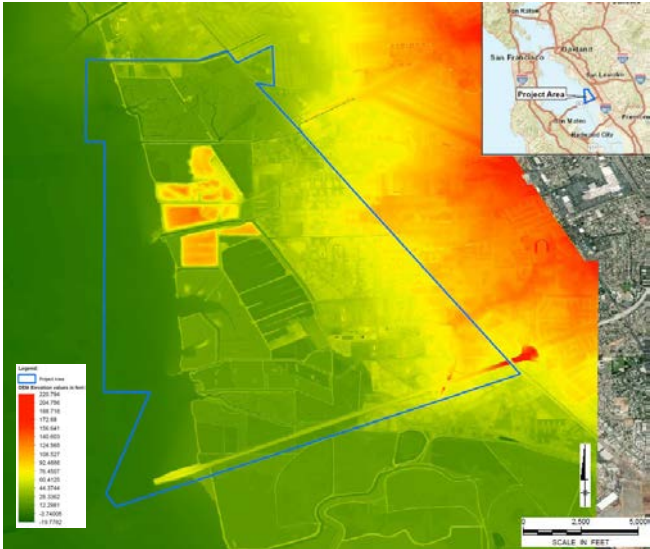


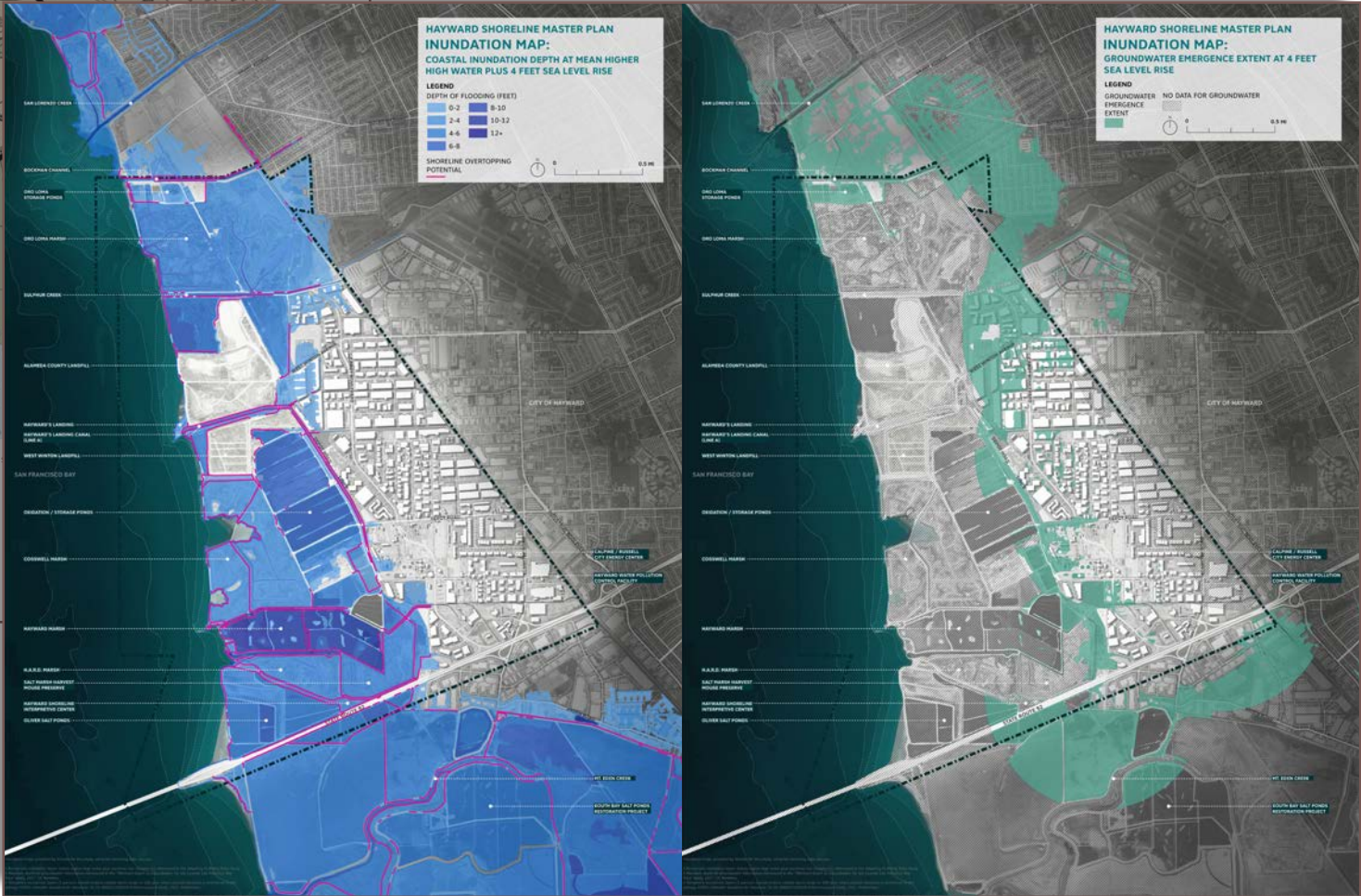
Figure 2: DEM elevations in the project area.

#### Bathymetry

The bathymetry of the San Francisco Bay is typical of a sheltered tidal estuary system with broad shallow waters, and mudflats exposed at low tide. Soundings range from 0 feet-MLLW at the mudflats away from the shoreline, to -0.5 feet-MLLW at an offshore distance of 1,000 feet. The bathymetry gets deeper closer to the navigation channel, eastern edge of which is located about 5.8 miles from the shoreline.



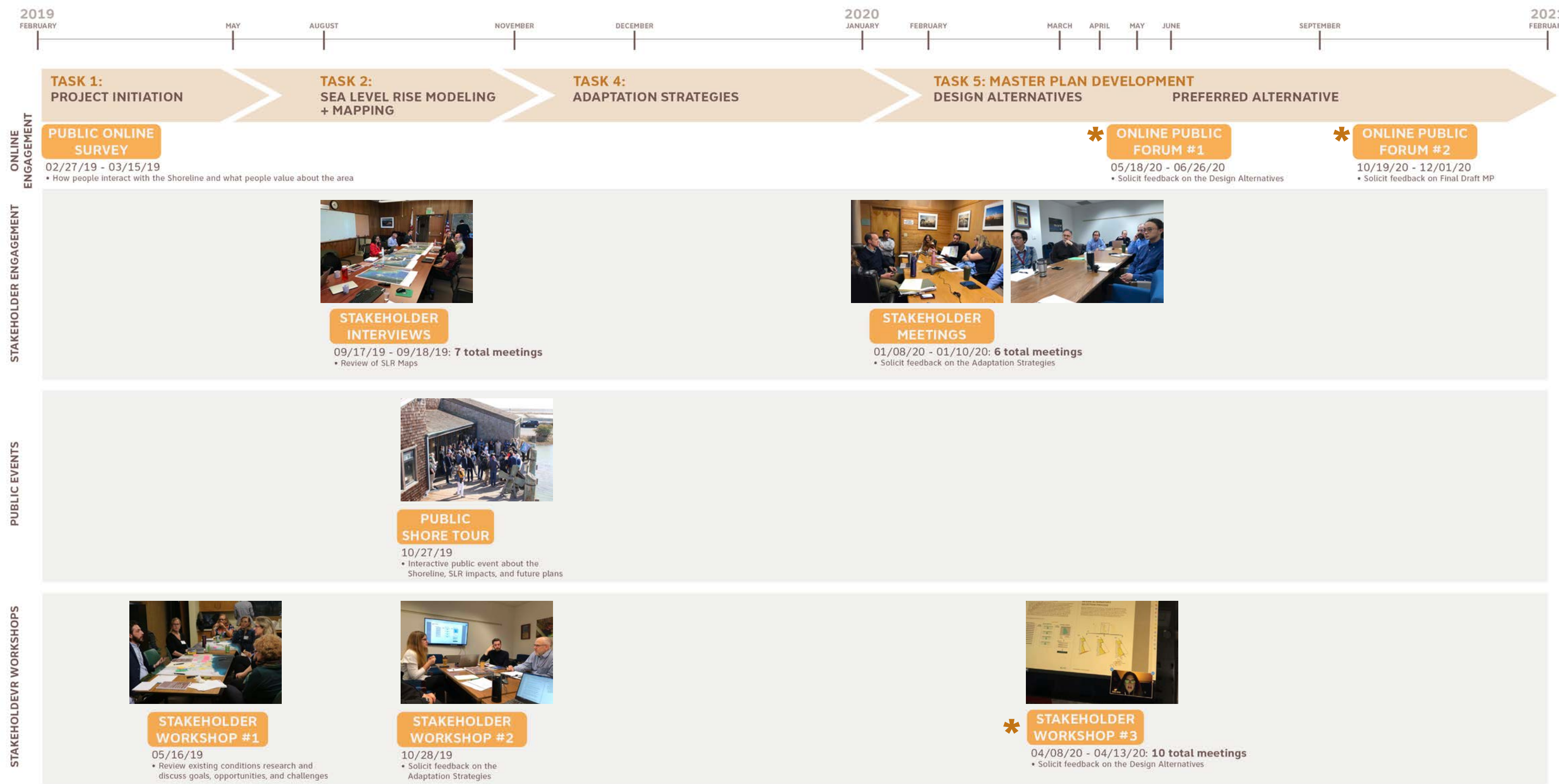
Figure 3: Excerpt of Nautical Chart 18651 highlighting the areas shown in green.





# TASK 3: PUBLIC OUTREACH

\* Adaptation to virtual engagement due to COVID-19 pandemic (March 2020)





# TASK 3: PUBLIC OUTREACH

- ONLINE SURVEY
- 13 STAKEHOLDER MEETINGS
- 3 STAKEHOLDER WORKSHOPS
- PUBLIC SHORE TOUR
- 2 ONLINE PUBLIC FORUMS



# TASK 4: PROJECT GOALS

- **CREATE A RESILIENT SHORELINE FOR PEOPLE AND ECOLOGY**
- **ENHANCE THE SHORELINE ENVIRONMENT TO REDUCE RISK TO CRITICAL INFRASTRUCTURE AND BUILT ASSETS**
- **BUILD SOCIAL RESILIENCE IN THE COMMUNITY**
- **BUILD CAPACITY FOR FUTURE GENERATIONS TO ADAPT TO CLIMATE CHANGE**



# TASK 4: ADAPTATION RESPONSES

## Adaptation Strategies Report

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HAYWARD REGIONAL  
SHORELINE MASTER PLAN

FOR THE HAYWARD AREA SHORELINE  
PLANNING AGENCY (HASPA) PART OF A JOINT POWERS AGREEMENT OF COASTAL CITIES

TASK 4  
GOALS AND POLICIES ME  
ADAPTATION STRATEGIES

SUBMITTED 02/21/2020

### PROJECT GOALS

#### PROJECT STATEMENT:

The Hayward Regional Shoreline Master Plan creates a framework for resilience to prepare for sea level rise (SLR), groundwater intrusion, and storm surge. The Master Plan is being managed by the Hayward Area Shoreline Planning Agency (HASPA), a joint power authority including the City of Hayward, Hayward Area Recreation and Park District (HARD), and East Bay Regional Park District (EBRPD).

The Hayward Regional Shoreline Master Plan project area is bounded on the north by the Bockman Channel (also called the Bockman Canal) and extends approximately 3.25 miles south to the State Route 92 San Mateo Bridge approach. The extent of the project area into the Bay was defined by the outermost limit of the Hayward Area Shoreline Planning Agency Jurisdictional boundary, and the inland extent of the project area are drawn at the rail corridor. In total, the project area covers six square miles of various land uses, including open space, urban infrastructure, industrial, and residential.

The project area supports ecological bayland resources, hosts recreational opportunities along the San Francisco Bay Trail, and facilitates educational programming for adjacent residential neighborhoods and businesses at the Hayward Shoreline Interpretive Center. The shoreline is also home to critical urban infrastructure, including wastewater treatment plants, the San Mateo-Hayward Bridge approach (State Route 92), and landfills. The Master Plan will develop various multi-benefit strategies for the shoreline, its existing infrastructure, and the surrounding natural habitat. The Master Plan will consider multiple planning time horizons and sea level rise scenarios. Additionally, it will consider a range of adaptation strategies that can evolve and respond over time to changing sea levels.

The shoreline master plan encompasses four goals.

#### PROJECT GOALS

##### Create a Resilient Shoreline Environment for People and Ecology

- Enhance the shoreline's ecological value and adapt to sea level rise
- Enhance recreational opportunities and adapt to climate change
- Create a management framework for adapting to sea level rise over time
- Provide refuge to help endangered shoreline species to adapt climate change

##### Enhance the Shoreline Environment to Critical Infrastructure and Built Assets

- Align with and enhance existing management plans
- Reduce risk to regional critical utilities from groundwater intrusion, and flood events
- Reduce risk to transportation infrastructure from sea level rise, groundwater intrusion, and flood events
- Reduce risk to agency assets such as the San Francisco Bay Trail and marsh restoration projects

##### Build Social Resilience in the Community

- Promote social equity, environmental justice, and community engagement
- Preserve the local economy and increase resilience
- Prevent the disruption of key community assets

##### Build Capacity for Future Generations

- Build organizational and community capacity
- Provide a place for education, interpretation, and recreation of the shoreline and climate change
- Foster stewardship of the shoreline's cultural resources

## FINE AND COARSE GRAIN BEACHES

### Option 1: Beaches in front of Landfills

#### GOAL / OBJECTIVE

Reduce the risk of erosion to the two landfills and enhance shoreline ecology with gravel nesting habitat.

#### DESCRIPTION

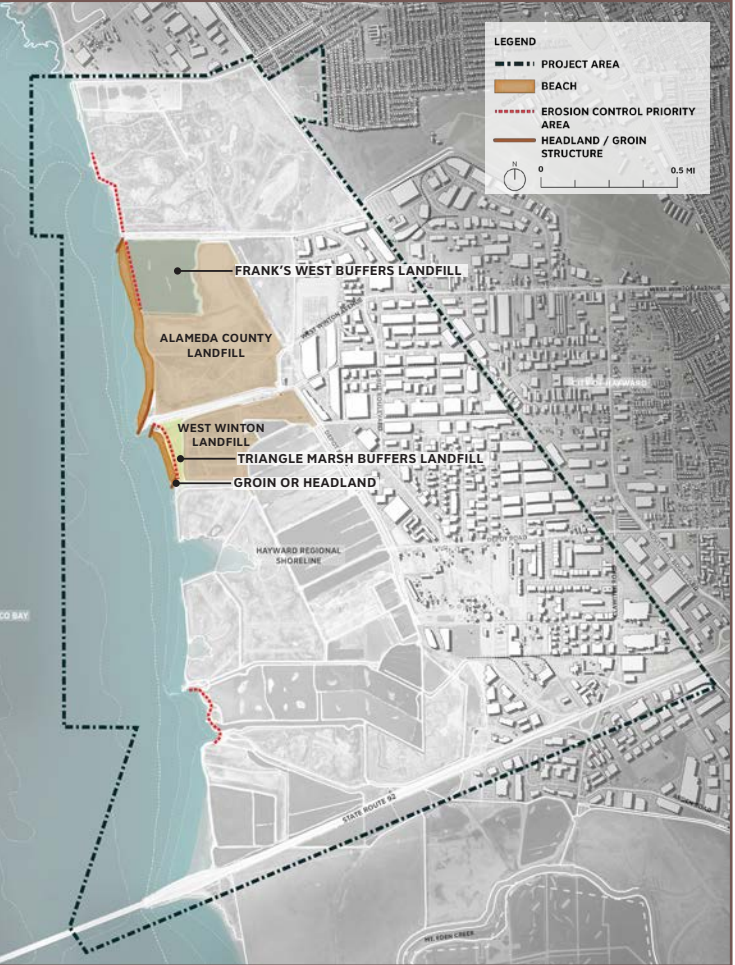
- Gravel beaches in front of Bay shoreline structures in front of Alameda County and West Winton Landfills

#### PROS

- Reduce erosion to landfill edges
- Reduce levee/berm maintenance adjacent to landfills
- Could enhance shorebird and beach habitat

#### CONS

- May require artificial replenishment
- May require the installation of lateral containment structures
- Considered as fill under current regulations, which might present permitting challenges





# TASK 5: DRAFT MASTER PLAN - DESIGN ALTERNATIVES

## Design Alternatives Report

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HAYWARD  
SHORELINE  
ADAPTATION  
FOR THE  
AGENCY

TASK 5  
DRAFT MASTER PLAN  
DRAFT

### #1: CLOSER TO THE BAY

This alternative looks at an alignment for the line of protection that reduces risk for a larger portion of the shoreline with a more conservative line of protection aligned closer to the Bay.

In the north end of the project area, the line of protection ties back along the San Lorenzo Creek channel and wraps in front of Oro Loma WWTP to protect it in place. It then cuts through the middle of Oro Loma Marsh and ties back to high ground at the two existing landfills. In the south, the alignment then follows the western edge of the oxidation ponds and cuts immediately south through Hayward and HARD Marsh. A raised access road along SR-92 ties back to high ground at the intersection of Clawiter Road.

This line of protection transforms existing tidal marsh into a muted system, which will be harder to manage with rising sea levels and subsiding land.

The assumed planning elevation for the line of protection is 14.3' NAVD88. The final design flood elevation will require further study and cost analysis.



### #2: DOWN THE MIDDLE

This alternative looks at an alignment that balances risk reduction and ecological enhancement with a line of protection that runs through the middle of the shoreline area.

The line of protection is pulled back in the north along the Union Pacific Rail Corridor and ties back to high ground at the San Lorenzo Creek channel. It then ties back to high ground at the two existing landfills and follows the western extent of the oxidation ponds to the south. The alignment pulls back in the southern portion of the site and cuts through the middle of the Salt Marsh Harvest Mouse Preserve, then ties back along a new levee along the access road for SR-92.

This alternative maintains a larger extent of tidal habitat, while still reducing risk to critical infrastructure.

The assumed planning elevation for the line of protection is 14.3' NAVD88. The final design flood elevation will require further study and cost analysis.



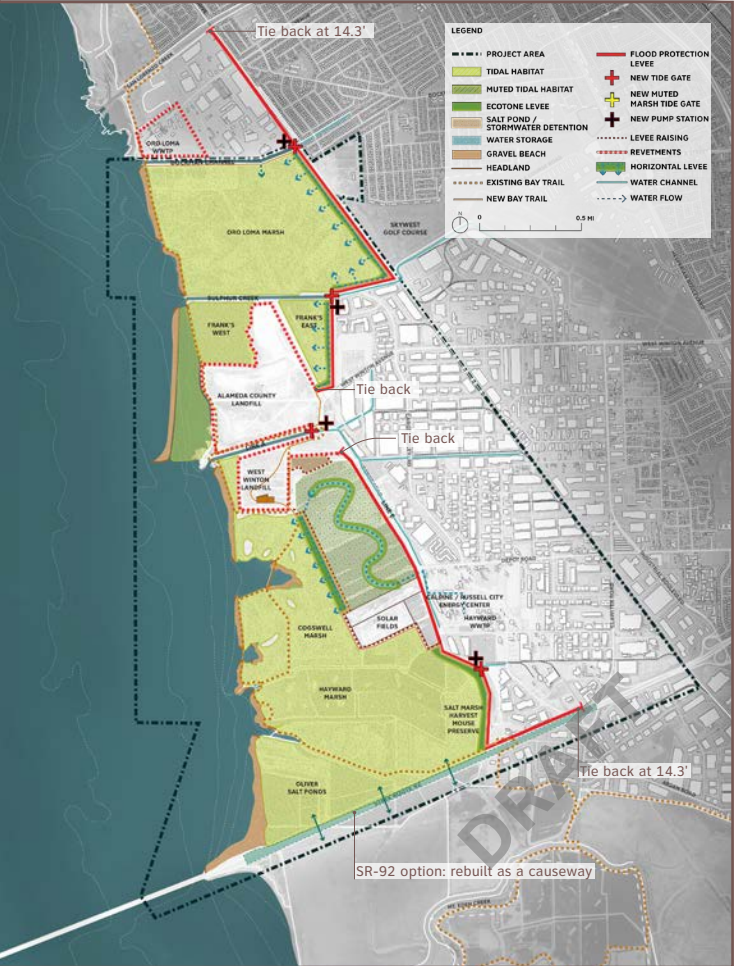
### #3: FURTHER INLAND

This alternative explores an alignment that is pulled the furthest inland to maximize ecological restoration along the shoreline and layer risk reduction infrastructure.

In the north, the line of protection is pulled back along the Union Pacific Rail Corridor and ties back to high ground at the San Lorenzo Creek channel. It then aligns to the eastern edge of Frank's East and ties back to high ground at the two existing landfills. It is pulled to the east of the oxidation ponds and follows the eastern extent of the diked Baylands to the south before tying back to high ground with a levee parallel to SR-92 along Clawiter Road.

This alternative prioritizes a larger extent of connected tidal habitat that is Bayward of the line of protection and incorporates ecological and risk reduction infrastructure along a wider extent of Baylands.

The assumed planning elevation for the line of protection is 14.3' NAVD88. The final design flood elevation will require further study and cost analysis.





# TASK 5: DRAFT MASTER PLAN - REPORT

- **246 page report**
  - Updates from board & agency review comments
  - Implementation Considerations
  - Phasing Plan
  - Implementable Projects
- **Appendix A: Stakeholder & Public Comments**
- **Appendix B: Cost Estimates**

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## **HAYWARD REGIONAL SHORELINE ADAPTATION MASTER PLAN**

**FOR THE HAYWARD AREA SHORELINE PLANNING  
AGENCY (HASPA)**

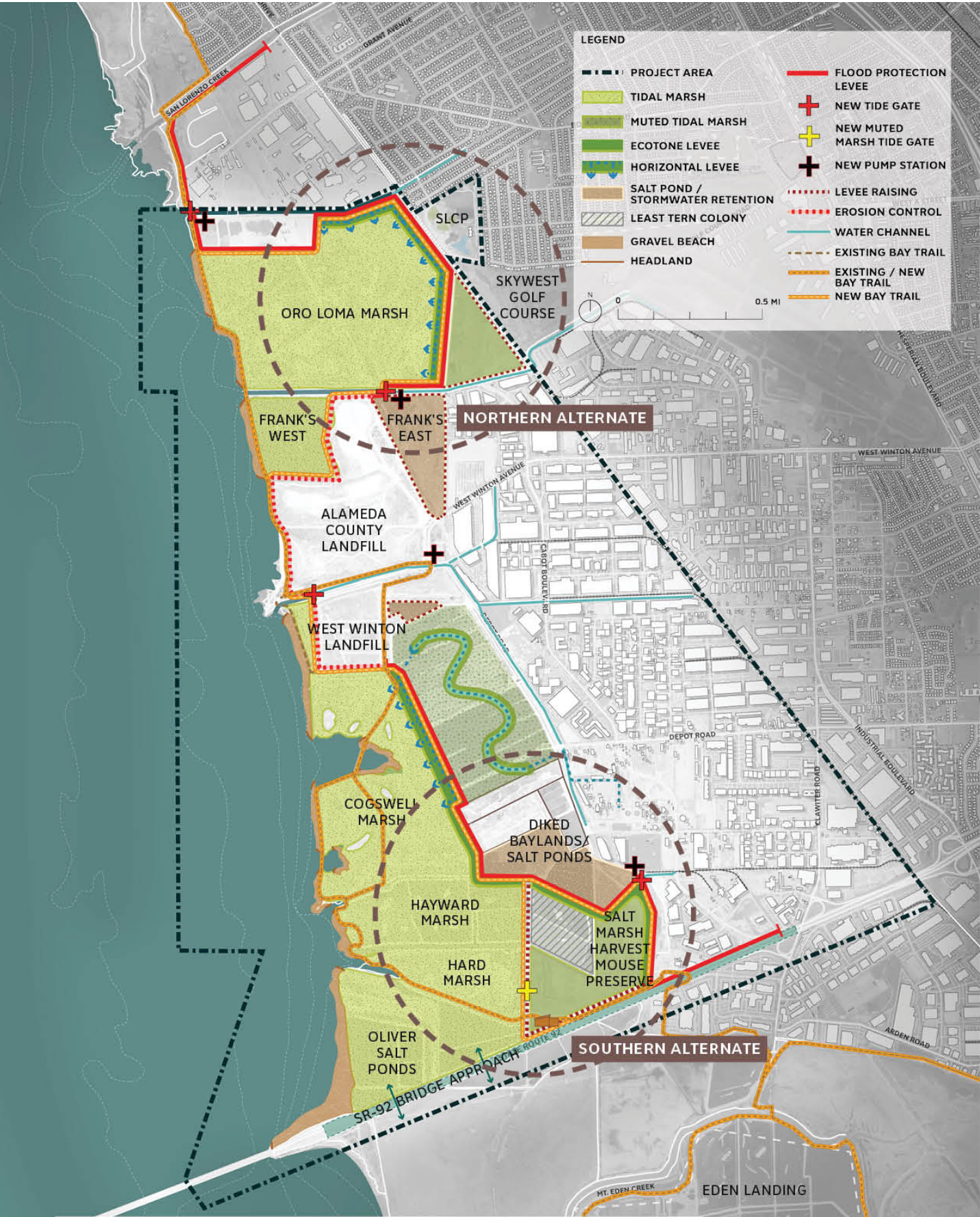
PART OF A JOINT POWERS AGREEMENT OF THE CITY OF HAYWARD, HAYWARD AREA RECREATION AND PARK DISTRICT, AND EAST BAY REGIONAL PARK DISTRICT

**HAYWARD REGIONAL SHORELINE MASTER PLAN**

**SUBMITTED 10/02/2020**



# PREFERRED ALTERNATIVE





# FINAL MASTER PLAN - REPORT

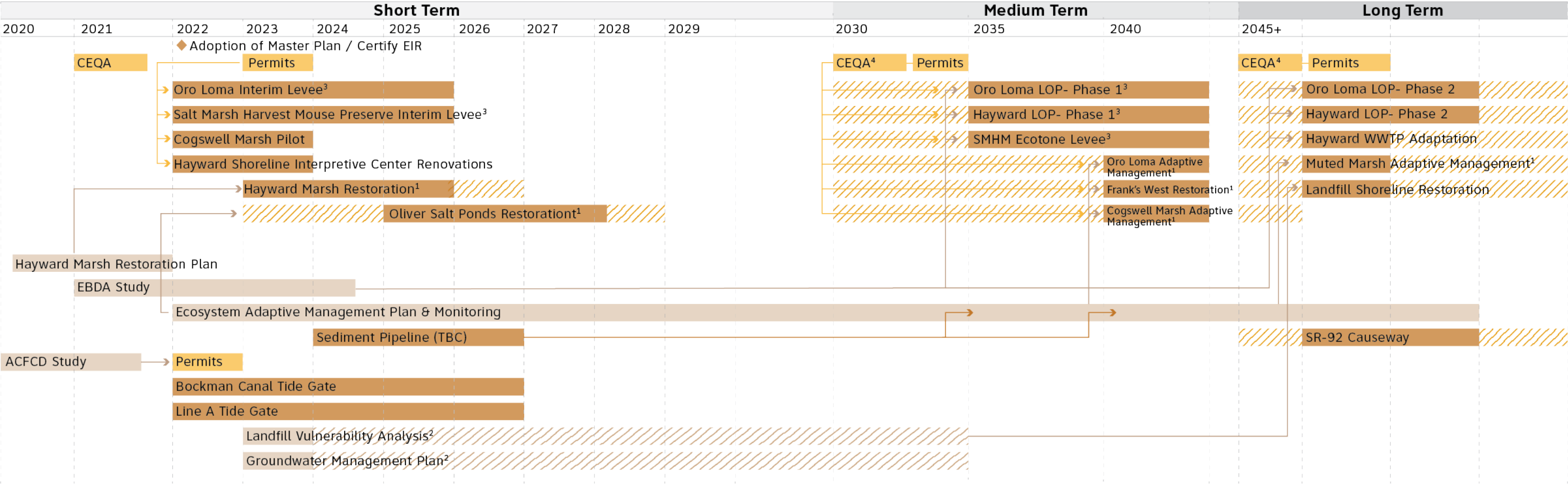




# PHASING STRATEGY

## IMPLEMENTATION SCHEDULE

The Preferred Alternative is a long-term vision that will be broken down into discrete projects that will be phased over time. The projects identified in the Phasing Plan are initial recommendations, based on guidance from the Project Team. The actual time frames for each project will need to be flexible to align with design, permitting, funding, and construction timelines on a project basis.



Legend

- Permitting
- Design & Construction
- Study, Monitoring

\*Hatching represents timing flexibility, see foot notes for more information

Footnotes

<sup>1</sup> Timing dependent on rates of SLR, erosion and sediment accretion, to be monitored through this management plan

<sup>2</sup> Timing flexible, needed to inform medium and long term projects

<sup>3</sup> Timing could be staggered with aligned projects, depending on funding and permitting

<sup>4</sup> CEQA update dependent on changes in scope since EIR

# ORO LOMA INTERIM LEVEE

## PROJECT SUMMARY

This project is intended to protect the Oro Lomo wastewater treatment plant and surrounding industrial district from flooding. It includes a flood protection levee designed with meet today's 1% annual chance flood with allowance for mid-range sea level rise, but with a foundation system that allows for the levee to be elevated in the future to accommodate a higher elevation with sea level rise.

The project also includes a new Bay Trail spur extending inland from the shoreline and could provide a connection across the rail line to San Lorenzo Community Park.

A new tide gate and pump station on Bockman Canal is also proposed, which would be planned in coordination with ACFCD pending the results of their stormwater study.

## PROJECT SITE & OWNERSHIP

The site is located in the northern reach of the study area. It is owned by the Oro Loma Sanitary District.

## KEY STAKEHOLDERS

- HASPA
- City of Hayward
- Oro Lomo Sanitary District
- Bay Trail
- East Bay Regional Parks District

- Alameda County Flood Control District
- San Francisco Bay Conservation and Development Commission
- U.S. Army Corps of Engineers

## PERMITTING ASSESSMENT

Regulators are likely to be supportive of the intent of this project, but the permitting process will be extensive.



## COST ESTIMATE

High (>\$20 M.)

## TIME FRAME

Short Term

## FUNDING & FINANCING RECOMMENDATIONS

- **State of California Department of Water Resources Coastal Watershed Flood Risk Reduction**  
<https://www.grants.ca.gov/grants/coastal-watershed-flood-risk-reduction-2/>
- **FEMA Building Resilient Infrastructure and Communities (BRIC)**  
<https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities>



# SALT MARSH HARVEST MOUSE PRESERVE INTERIM LEVEE

## PROJECT SUMMARY

This project is an interim levee designed to preserve important endangered species habitat, as well as some of the critical infrastructure inland of the site such as the Calpine / Russel City Energy Center and the Hayward Wastewater Treatment Plant. It is intended to protect against today's 1% annual chance flood and in the future will remain as a buffer from more frequent storm events while the long-term Hayward Line of Protection project located further inland will provide greater protection to inland critical infrastructure. The project includes levee raising west of the SMHM preserve from the Solar Fields to the SE corner of the SMHM Preserve. It is planned to run along the current levee alignments from the Hayward Interpretive Center through HARD Marsh. A new spur of the Bay Trail would be provided on top of the levee, which would connect back to the existing Bay Trail along the northern levee of Hayward Marsh.

## PROJECT SITE & OWNERSHIP

- The project site is located in the southern reach of the study area, slightly inland from the Bay. East Bay Regional Parks District owns most of the site, with some portions owned by the City of Hayward.

## KEY STAKEHOLDERS

- HASPA
- East Bay Regional Parks District
- City of Hayward
- Hayward Area Recreation and Park District

- Alameda County Flood Control District
- San Francisco Bay Conservation and Development Commission
- U.S. Army Corps of Engineers

## PERMITTING ASSESSMENT

Regulators are likely to be supportive of the intent of this project, but the permitting process will be extensive. There will be special review regarding impacts on endangered species.



## COST ESTIMATE

Medium (\$5-\$20 M.)

## TIME FRAME

Short Term

## FUNDING & FINANCING RECOMMENDATIONS

- **FEMA Building Resilient Infrastructure and Communities (BRIC)**  
<https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities>
- **CA Department of Fish and Wildlife Endangered Species Conservation and Recovery Grant Program**  
<https://wildlife.ca.gov/Grants/Endangered-Species>





# POLICY AND PROGRAMMATIC RECOMMENDATIONS

Achieving the master plan vision for the Hayward Regional Shoreline will require collective action on behalf of numerous stakeholders in Hayward and the Bay Area. The following recommendations for policy changes and development of new programs will, along with the structural projects outlined in the master plan, advance a forward-looking vision for the Hayward Regional Shoreline. These include policies that may be pursued by HASPA, its member agencies, as well as other stakeholders in the region. Some of the concepts outlined in this section can be advanced immediately as part of the early project phases, while others will take time to develop consensus among stakeholders and work towards implementation.

The Master Plan vision was shaped through research into existing plans and policies, as well direct engagement with stakeholders charged with planning for the future of the Hayward Regional Shoreline and the Bay Area. See chart on page 126 for a summary of relevant organizations, agencies, plans, and policies.

## 1. Advance regional dialogue into mechanisms for balancing the protection of at-risk communities and infrastructure and restoring ecosystems.

**Key Stakeholders:** HASPA, BCDC, ACFCD

There is broad support and consensus throughout the region on the need to plan for sea level rise with a focus on habitat restoration, and an evolving playbook on how to balance long-term, conflicting needs. Planning agencies, regulatory bodies, and infrastructure operators are well-aligned on the need to plan for sea level rise. While there is no clear answer on how to balance the needs of vulnerable infrastructure and communities with the opportunities to maintain and improve habitat, there are many active organizations focused on developing policies and plans to address all aspects of these issues.

HASPA should coordinate with the San Francisco Bay Conservation and Development Commission (BCDC) and other area stakeholders on using the Hayward Regional Shoreline Adaptation Master Plan as a case study in developing innovative solutions that balance these conflicting needs and developing guidance for how other stakeholders in the region can undertake similar processes.

Fully implementing the Master Plan will require an extensive permitting process. Recent reforms aimed at streamlining the process are positive signs, though they are focused on ecological restoration, and it is unclear how hybrid grey infrastructure approaches will be treated. In order to advance the Master Plan as well as similar approaches throughout the region, BCDC and other permitting agencies should coordinate on additional permitting reforms to balance near-term habitat impacts with long-term ecosystem health.

In addition, HASPA should coordinate with ACFCD and other stakeholders on how to integrate this Master Plan into their long-term plans for flood protection and stormwater management.

## 2. Increase flood protection standards for new construction and renovations.

**Key Stakeholders:** City of Hayward

A significant portion of Hayward’s industrial district is at risk storm surge, sea level rise and groundwater emergence. Increasing standards for new construction means incorporating higher standards of flood protection to reduce risk to future development. Some areas may be removed from the floodplain following the construction of a FEMA-certified levee, however, additional code standards are still recommendation to serve as redundancy measures in the case of overtopping.

Hayward’s current municipal code requires that the lowest floor in any new or substantial improvement of any residential structure to be at or above the Base Flood Elevation (BFE). The lowest floor of a nonresidential structure, including the basement, is required to be floodproofed so that the structure’s walls located below the base flood level are substantially impermeable to the passage of water. To increase standards for new construction, an amount of “freeboard,” or additional elevation above the BFE could be required and applied to all FIRM zones. These floodplain requirements also could be extended to the 500-year floodplain.

Additional improvements could include strengthening storage requirements for hazard materials in areas at risk from storm surge, as well as modifying stormwater management standards and incorporating additional requirements to manage rising groundwater tables.

These are several examples of how codes can be modified to advance the resiliency of future development to flooding. The City should pursue

a thorough review of its code standards to identify ways in which new buildings could be designed to withstand storm surge through floodproofing and manage more stormwater on site.

## 3. Remove regulatory impediments to higher standards of flood protection

**Key Stakeholders:** City of Hayward, BCDC, BRRIT

In Hayward, existing regulatory impediments may hinder enacting further resilience measures. These could include zoning height limits, permitting requirements and fees, and any unintended side effects of these policies. Removing regulatory impediments would make it easier, faster, and more affordable to adopt resilience measures.

Hayward’s Industrial District encourages the development of industrial uses to promote a desirable and attractive working environment with a minimum disruption to surrounding properties. Currently under this zoning, there are no height limits in this area for industrial buildings. The maximum height for an office or commercial building is 40ft. Retaining walls which are not a part of walls of buildings shall not exceed 6 feet in height as measured from finished grade elevation to top of wall.

Hayward should review zoning code limits on buildings and walls to ensure that they would not pose a barrier to property pursuing floodproofing. Additional measures could include working alongside the San Francisco Bay Restoration Regulatory Integration Team (BRRIT) to improve the permitting process in terms of either shortening the length of providing technical assistance for the pre-application phase for flood management infrastructure.

## 4. Provide support for property owners to protect assets through loans, grants, and tax incentives.

**Key Stakeholders:** City of Hayward, State of California

A main deterrent to building resilient new construction projects or the retrofitting of existing buildings is funding. Funding in the form of loans, grants, and tax incentives will ensure more developers and property owners are able to promote resilient development. These funding mechanisms can be modeled after existing programs in California like water board brownfield remediation loans/grants or solar tax credits.

### Brownfield remediation grant<sup>1</sup>:

The Targeted Site Investigation Program (TSI) is funded by the United States Environmental Protection Agency (U.S. EPA). TSI Program has been part of California

Department of Toxic Substances Control (DTSC) CERCLA 128(a) State and Tribal Response Program Grant. DTSC provides environmental services to local governments, school districts, and non-profit organizations to facilitate the return of brownfields to safe and productive uses. The program focused on properties with a clear need for redevelopment, strong redevelopment potential, real or perceived contamination, and municipal/ community support for redevelopment. Assessment, investigation, and cleanup planning have been provided to over 100 projects, in 68 cities, and 30 counties, throughout the State of California.

### Solar tax credits<sup>2</sup>:

The Investment Tax Credit (ITC) grants an amount of 26% of the purchase cost of your solar system to homeowners. A tax credit is a dollar-for-dollar reduction in the income taxes that a person or company would otherwise pay the federal government. The ITC is based on the amount of investment in solar property. Both the residential and commercial ITC are equal to 26 percent of the basis that is invested in eligible solar property which has begun construction through 2019.

Using the brownfield remediation grants and solar tax credits as example funding mechanisms, Hayward could work to develop and secure funding for resilient development.

## 5. Develop technical support and education to help industrial businesses understand risks from sea level rise and develop mitigation actions

**Key Stakeholders:** City of Hayward, private agencies, local non-profits, and community groups

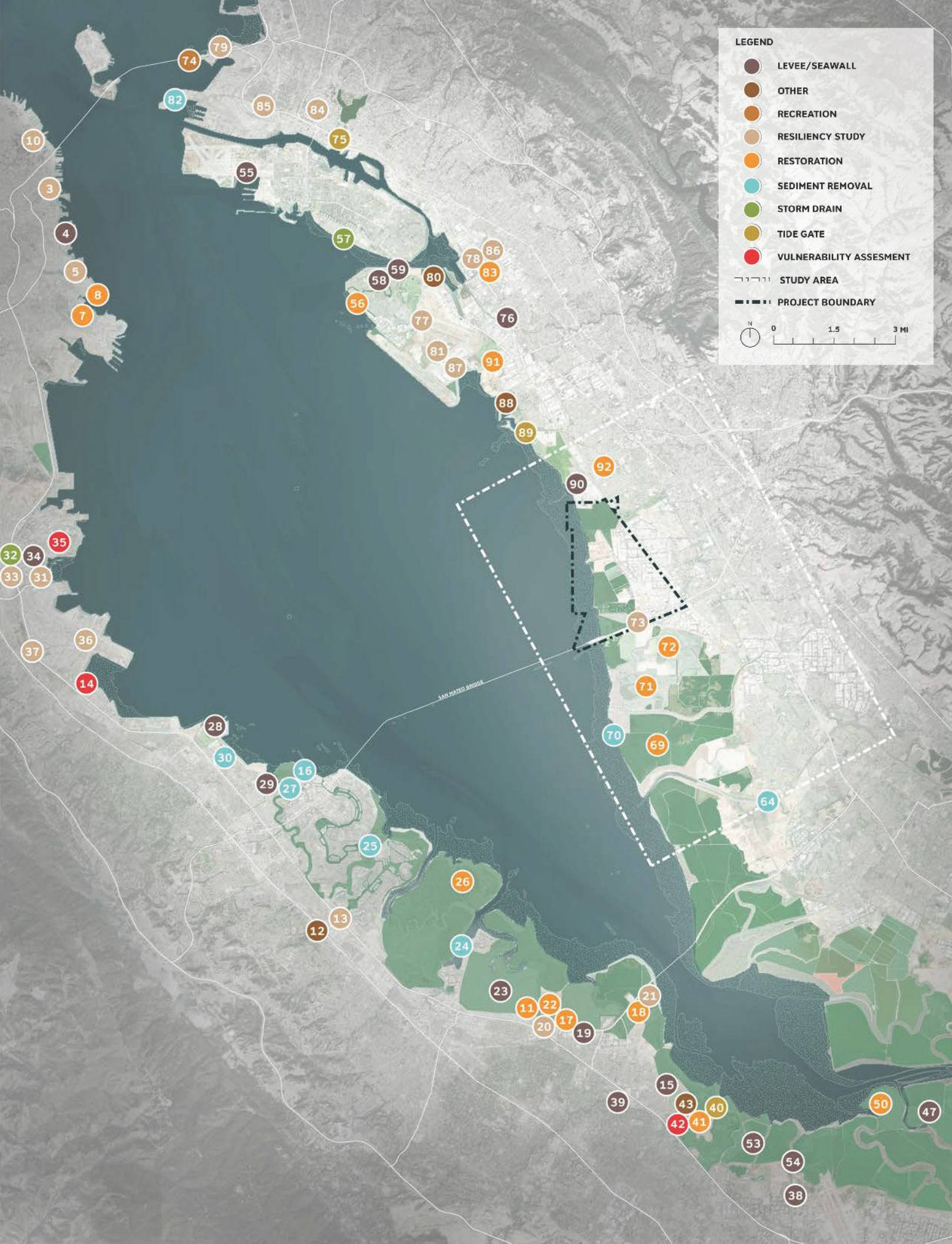
In order to develop effective resilience measures within Hayward’s industrial district, climate and flood risk must be broadly understood by stakeholders in the area. Providing technical support and education specifically to industrial businesses in the area may increase protection and reduce risk. Technical support and education may include awareness campaigns, community engagement, risk audits, risk modeling, and more.

Hayward could partner with organizations like The Business Resiliency Initiative (BRI) to promote resiliency plans for industrial businesses along the shoreline. BRI is a project launched by Valley Vision and its partners to increase the resilience of our regional economy by increasing the preparedness

Sources:

1. [https://www.cclr.org/DTSC\\_Funding#.":text=Targeted%20Site%20Investigation%20\(TSI\)%20Program,school%20districts%2C%20and%20nonprofit%20organizations](https://www.cclr.org/DTSC_Funding#.).  
2. [https://solartechonline.com/blog/california-solar-tax-credit/#.":text=The%20Investment%20Tax%20Credit%20\(ITC,down%20to%2022%25%20in%202021](https://solartechonline.com/blog/california-solar-tax-credit/#.)





# REGIONAL CONSIDERATIONS

**Advancing a Regional Strategy:** There are numerous projects in the Bay Area seeking to provide shoreline protection, habitat restoration, and stormwater management. These are being advanced by a variety of local, state, federal and private actors. Coordinating with these actors towards a regional strategy will ultimately be necessary to build towards addressing these issues in a cohesive and comprehensive way.

## Project List:

### Levee/Seawall

- 4. Pier 70 Project
- 15. San Francisquito Creek - S.F. Bay to Hwy 101
- 19. New Facebook Campus
- 23. Cargill Salt Works Redwood City
- 28. Coyote Point Eastern Promenade
- 29. San Mateo Levee + Wastewater Plant Upgrade
- 34. Colma Creek Flood Control Zone Channel Improvement Project
- 38. Google Campus Expansion
- 39. San Francisquito Creek - Upstream of Hwy 101
- 44. SBSPR: Ponds A9-15, A18
- 47. FWS and SCVWD Levee Maintenance
- 53. SBSPR: Mountain View Ponds
- 54. Stevens Creek Levee
- 55. Alameda Point Development
- 58. Alameda-Harbor Bay Isle Lagoon Protection
- 59. Veteran's Court Resiliency Project
- 66. Laguna Creek Channel Widening and Floodwall
- 76. San Leandro Creek Levee Project
- 90. San Lorenzo Creek Levee Project

### Other

- 12. Three Cities Creek and Novartis Improvement
- 43. Palo Alto Wastewater Treatment Outfall
- 45. RWF CIP Master Plan Projects
- 60. Albany Beach
- 68. Laguna Creek I-880 Crossing Improvement
- 80. Doolittle Drive Enhancements
- 88. San Leandro Coastal

### Recreation

- 61. Bay Trail
- 74. Gateway Park

### Resiliency Study

- 2. Alcatraz Embarkation Study
- 3. Mission Creek Climate Adaptation Project
- 5. Islais Creek Climate Adaptation Project
- 10. BART Sea Level Rise and Flooding Resiliency Study: Embarcadero
- 13. Belmont Creek Watershed Management Plan
- 20. Bay Front Canal and Watershed Resilience
- 21. East Palo Alto and Dumbarton Bridge Resilience Study
- 31. SFO/San Bruno Creek/Colma Creek Resiliency Study
- 33. South SF Flood Risk Study
- 36. Climate Ready SFO
- 37. BART Sea Level Rise and Flooding Resiliency Study: SFO/Millbrae
- 73. MTC/BCDC/BART/Caltrans/FHWA Project Hayward Area
- 77. Oakland/Alameda Resiliency Study
- 78. MTC/BCDC/BART/Caltrans/FHWA Project Oakland Coliseum Area
- 79. MTC/BCDC/BART/Caltrans/FHWA Project Bay Bridge Approach

- 81. Port of Oakland AB 691 SLR Analysis
- 84. Oakland Preliminary Sea Level Rise Road Map
- 85. BART Sea Level Rise and Flooding Resiliency Study: West Oakland
- 86. BART Sea Level Rise and Flooding Resiliency Study: Coliseum
- 87. BART Sea Level Rise and Flooding Resiliency Study: Oakland Airport

### Restoration

- 1. Horseshoe Cove Restoration
- 7. India Basin 900 Innes Remediation
- 8. Heron's Head Living Shoreline
- 9. Crissy Marsh - Tennessee Hollow
- 11. Bayfront Canal and Atherton Channel Flood Management Plan
- 17. SBSPR: Ravenswood
- 18. SBSPR: SF2
- 22. Bayfront Canal and Atherton Channel Flood Protection and Restoration Project
- 26. Bair Island Restoration Project
- 41. Palo Alto Horizontal Levee
- 46. SBSPR: A8
- 48. SCVWD: Hg and Steelhead
- 49. SBSPR: A16/17
- 50. SBSPR: A6
- 51. Calabasas Creek and San Tomas Creek Realignment
- 56. BFI Shore Protection
- 62. North Basin Living Shoreline
- 67. SBSPR: Island Ponds
- 69. SBSPR: Southern Eden Landing
- 71. SBSPR: E8A/9/8X
- 72. SBSPR: E12/13
- 83. Zone 12 Line M Railroad Crossing
- 91. San Leandro Treatment Wetland
- 92. San Lorenzo Creek Restoration and Sediment Replacement

### Sediment Removal

- 16. Baywinds
- 24. Redwood City Port Deepening Project
- 25. Foster City Dredging
- 27. San Mateo Dredging
- 30. North Shoreview Flood Improvements
- 64. Alameda Creek Dredging
- 70. Alameda Sediment Disposal Site
- 82. USACE Annual Dredging of Oakland Harbor

### Storm Drain

- 32. Colma Creek Connector
- 57. Storm Drain System Upgrades

### Tide Gate

- 40. Palo Alto Flood Basin Structure Improvement
- 65. Fremont Blvd Widening and Tide Gate Structures
- 75. Lake Merritt Connection
- 89. Estudillo Canal Tide Gates

### Vulnerability Assessment

- 6. Crissy Field SLR Analysis
- 14. City of Millbrae Sea Level Rise Adaptation Assessment
- 35. South SF Shoreline Assessment of Vulnerable Properties and Livelihoods
- 42. Palo Alto Baylands Vulnerability Assessment
- 52. Silicon Valley 2.0
- 63. San Francisco Bay Trail Risk Assessment and Adaptation Prioritization Plan



# IMPLEMENTATION



**THANK YOU!**