# HASPA BOARD MEETING

**October 8TH 2020**

**How to provide spoken Public Comment during the HASPA Meeting:**

**Telephone:**
1. Call the appropriate Zoom meeting conference call number provided prior to the close of public comment on an item as indicated by the Meeting Chair. To comment or ask a question while on the phone, dial *9 to notify raise your hand. Your microphone will be unmuted when it is your turn to provide public comment. You will hear “you are unmuted”. Proceed with your comments.

**Online:**
1. To comment or ask a question, hit the Raise Hand button while in the Zoom meeting and wait to be called on by your screen name. When it is your turn, your name will be called out and you will be unmuted for the duration of your comment.

# AGENDA

**3:00 PM - CALL TO ORDER**

**3:01 PM - ROLL CALL**

**3:03 PM - APPROVAL OF HASPA MINUTES OF JULY 9, 2020**

1. Approval of the HASPA Minutes of July 9, 2020

**3:05 PM - REPORTS: Technical Advisory Committee (TAC)**

2. 2695-2893 W. Winton Update
3. 4150 Point Eden Way Update
4. 25800 Clawiter Road Update
5. Hayward Shoreline Adaptation Master Plan Update

**4:10 PM – Work Session Reports**

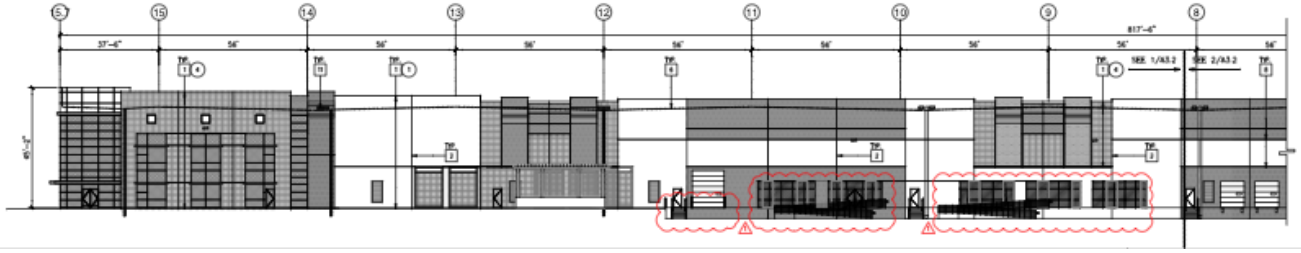
6. Implementation of Shoreline Adaptation Master Plan

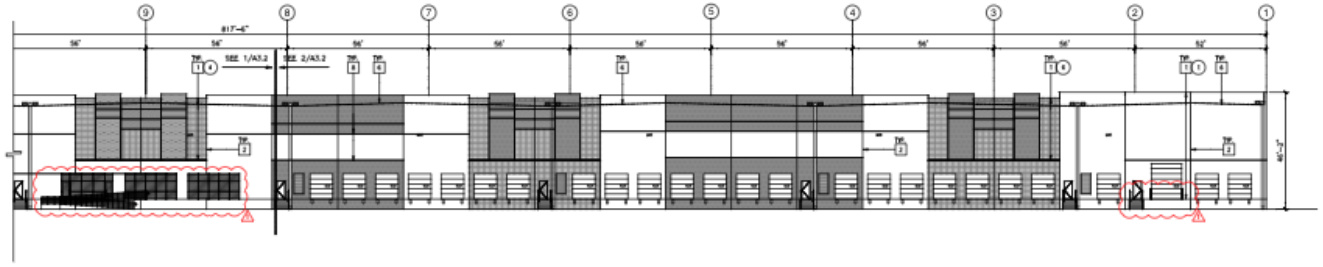
**4:40 PM- REPORTS: Board Members (Trustees)**

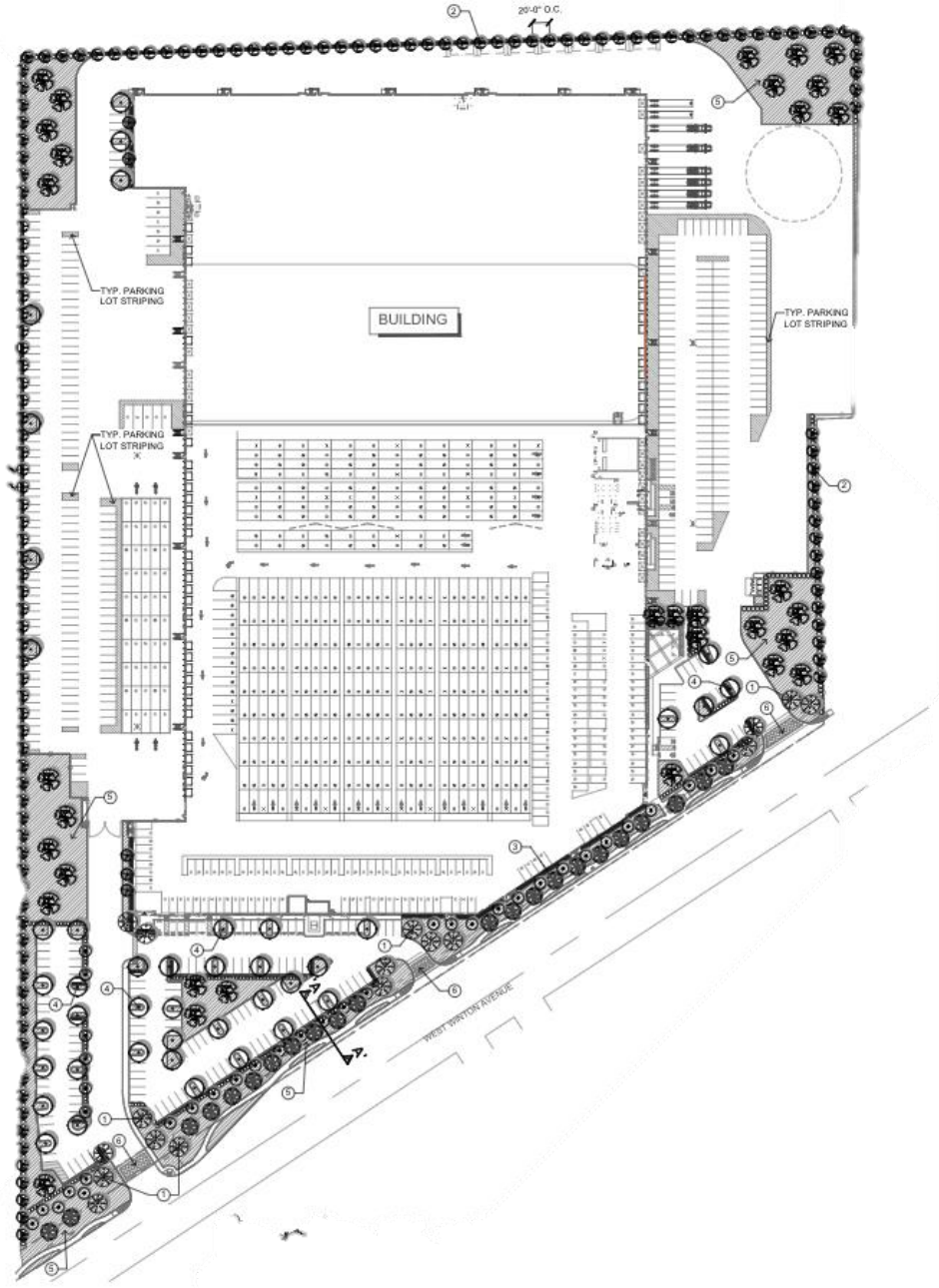
**4:50 PM - REPORTS: Setting of Agenda for Next Meeting (Trustees/TAC)**

**5:00 PM - ADJOURNMENT**

# 2695-2893 West Winton
# East Elevation
# & Site Plan







# 4150 Point Eden Way Renderings

# 25800 Clawiter Road Renderings

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SCAPE LANDSCAPE ARCHITECTURE DPC

HAYWARD REGIONAL SHORELINE ADAPTATION MASTER PLAN

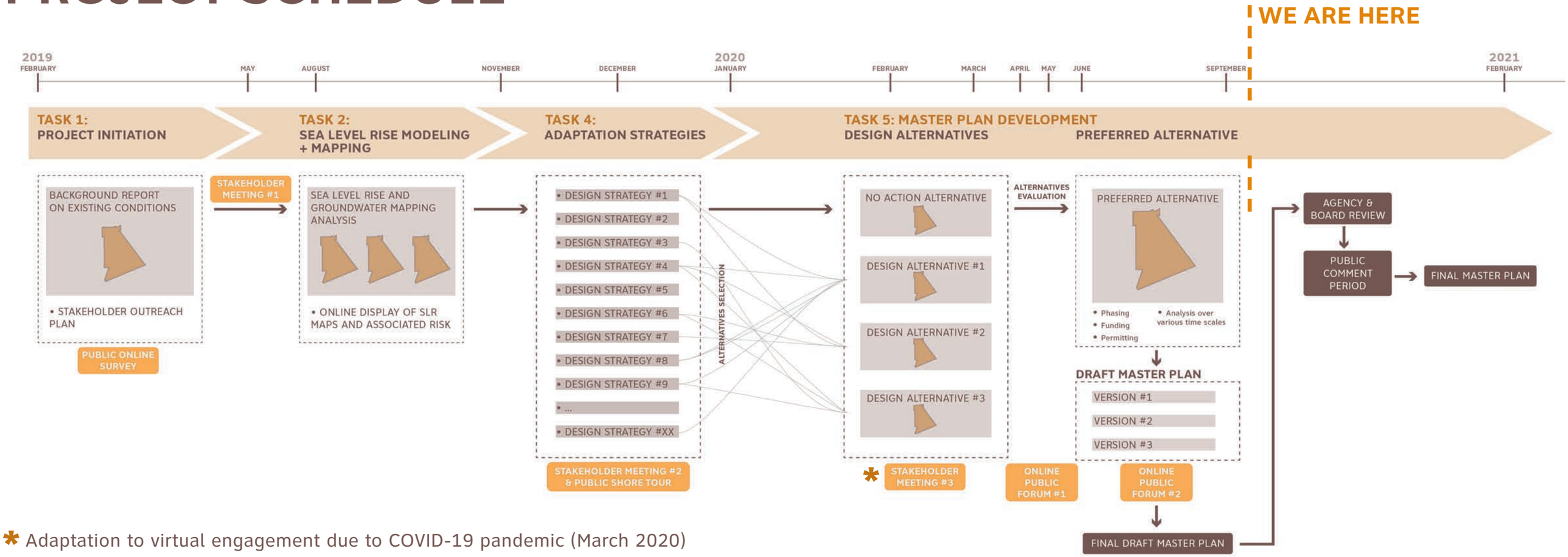
# HASPA BOARD MEETING

## OCTOBER 08, 2020

# AGENDA

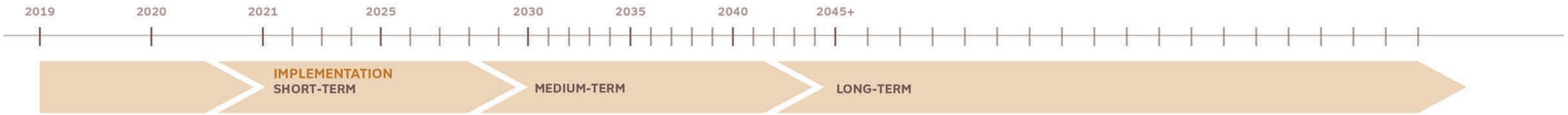
- Project Schedule
- Master Plan Document
  - Preferred Alternative
  - Cost Estimate
  - Phasing Plan
  - Recommendations and Considerations
- Next Steps

# PROJECT SCHEDULE




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

# IMPLEMENTATION




**MASTER PLAN PROCESS**

- EXISTING CONDITIONS ANALYSIS
- STAKEHOLDER OUTREACH
- SEA LEVEL RISE MODELING AND MAPPING
- ADAPTATION STRATEGIES RESEARCH
- MASTER PLAN VISION
- IMPLEMENTATION CONSIDERATIONS

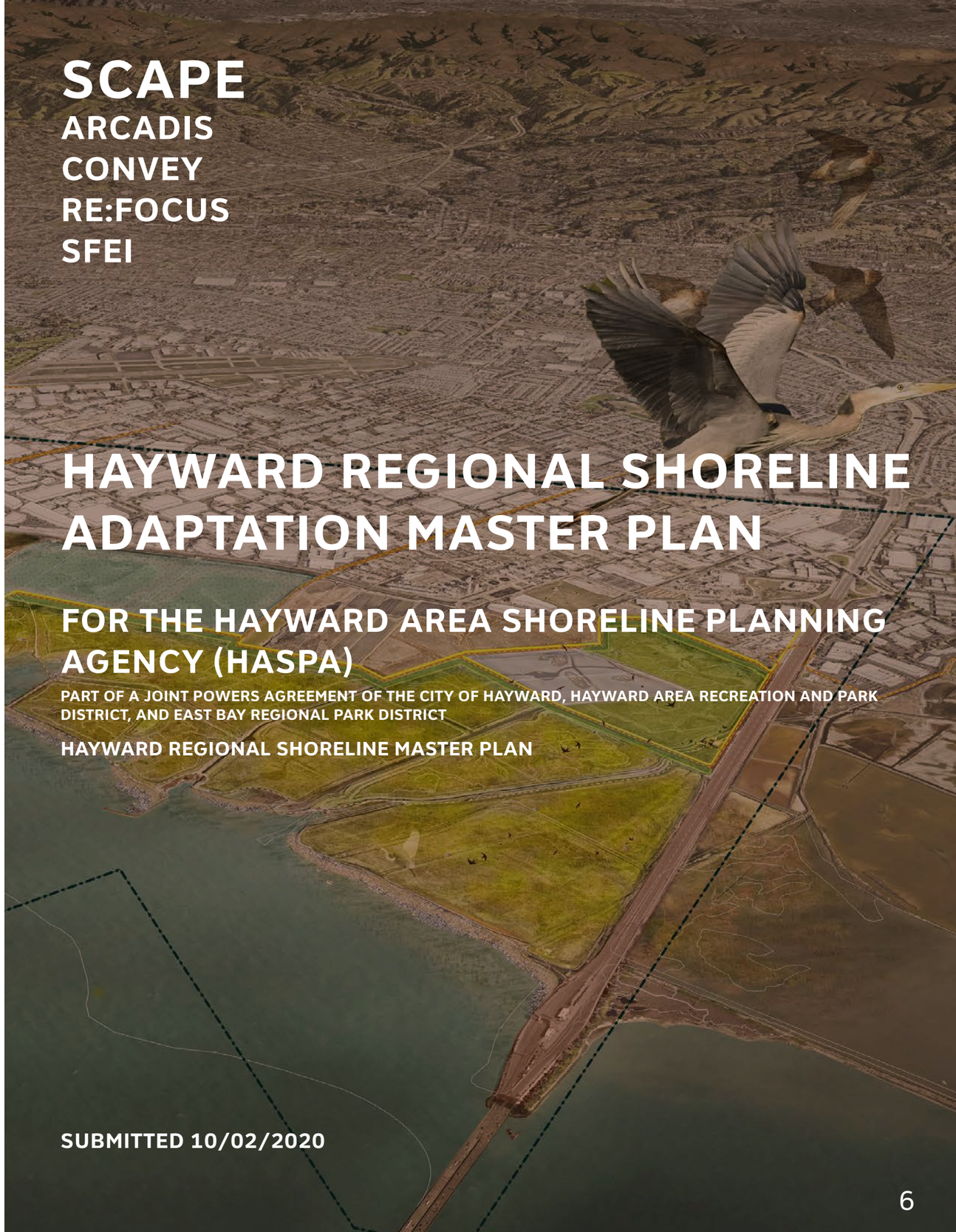
- ECOLOGICAL ENHANCEMENTS THAT ALIGN WITH EXISTING EFFORTS AND VULNERABLE SITES
- PILOT PROJECTS TO INFORM LARGER-SCALE APPLICATION OF STRATEGIES
- MONITORING PROTOCOL TO ANALYZE EXISTING CONDITIONS TO INFORM THE PRIORITIZATION OF STRATEGIES AS SEA LEVELS RISE
- INTERIM LEVEE RAISING TO REDUCE RISK UP TO THE EXISTING 100-YEAR STORM

- MULTI-BENEFIT INFRASTRUCTURE
- OPPORTUNITIES FOR STORMWATER MANAGEMENT
- TIDAL HABITAT ADAPTATION THROUGH ARTIFICIAL SEDIMENT APPLICATION TO HELP MARSHES KEEP PACE WITH SEA LEVEL RISE
- PROVIDE INDEPENDENT UTILITY TO SPECIFIC INLAND AREAS THROUGH BUILDING A LINE OF PROTECTION TO REDUCE RISK UP TO 4' OF SEA LEVEL RISE PLUS THE 100-YEAR STORM

- COMPLETE FULL LINE OF PROTECTION TO REDUCE RISK UP TO 4' OF SEA LEVEL RISE PLUS 100-YEAR STORM
- CREATE A LAYERED SYSTEM OF EROSION CONTROL INFRASTRUCTURE
- WASTEWATER TREATMENT ADAPTATION TO FACILITATE LOCAL DISCHARGE

# MASTER PLAN DOCUMENT

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



# THE ADAPTATION MASTER PLAN

## How to Read this Document

**Short Read** (a few minutes):

Read the Plan Overview & Goals, which outlines the purpose of the Master Plan, the project statement, and goals. These principles lay the foundation for the Master Plan.

**Medium Read** (30 minutes):

Read the Plan Overview & Goals, Context & Existing Conditions, which provides an overview of the study area and existing conditions inventory, Stakeholder Engagement, and A Vision for Shoreline Adaptation: The Hayward Regional Shoreline, which describes the Master Plan proposal and associated design strategies.

**Long Read** (60 minutes +):

Read the full plan, which outlines the research, design, and stakeholder engagement processes, culminating in the Preferred Alternative in A Vision for Shoreline Adaptation: The Hayward Regional Shoreline and an analysis of Implementation Considerations, which provides further details on how the Master Plan will be phased, funded, permitted, and managed over time.

**Key Terms:**

*Adaptation Strategies:* Physical design strategies that will help the shoreline adapt to climate change.

*Master Plan Assumptions:* This set of "rules" summarizes client and stakeholder feedback and set a framework to generate and compare the Design Alternatives.

*Design Alternatives:* Three initial visions for shoreline adaptation that outline spatial configurations of the Adaptation Strategies. These were formulated to solicit stakeholder, client, and public feedback, and were evaluated against a "no-action" scenario.

*Preferred Alternative:* The hybrid and final vision for the Hayward Shoreline. This was informed by feedback from the Design Alternatives.

## Document Summary

**Plan Overview & Goals**

This chapter provides an introduction to the Master Plan, the project purpose, goals, and an overview of the Master Plan process. These principles lay the foundation for the master plan as a whole.

**Context & Existing Conditions**

The Hayward Shoreline is a mosaic of Bayland environments that support diverse wildlife habitats, infrastructural assets, and recreational resources. This section provides an overview of the study area and a broad inventory of the existing conditions. This research served as a foundation for the design and development of the Master Plan.

**Stakeholder Engagement**

The Hayward Shoreline Adaptation Master Plan was developed through extensive stakeholder collaboration and public engagement that informed the planning process and fostered coordination across agencies, organizations, regulators, and the public. This section provides a summary of the stakeholder engagement process, which has the potential to be replicated in other planning efforts throughout the Bay to develop cohesive visions for shoreline adaptation. A detailed inventory of Stakeholder and Public Comments can be found in Appendix A: Stakeholder and Public Comments.

**Sea Level Rise and Flood Risk Impacts**

This section outlines the impacts of coastal flood risk, future trends, and provides a thorough analysis of three future sea level rise scenarios. This assessment identified potential future hazard areas for planning purposes in order to formulate appropriate adaptation strategies.

**Adaptation Strategies**

Based upon insight collected through public workshops and engagement, and as well as the analysis of sea level rise scenarios and related risks a catalog of potential design strategies to help the shoreline adapt to climate change were compiled. The feasibility and applicability of these strategies were evaluated across the project area, in consideration with the Project Goals and Policy Considerations. This section provides an inventory of the adaptation strategies identified as the most applicable to the Hayward Shoreline.

**Design Alternatives and Feedback**

This section provides an overview of the project parameters and considerations, including the Master Plan assumptions and policy considerations, which set a framework for the Master Plan. Three Design Alternatives were identified that combine a suite of adaptation strategies to meet the project goals. The spatial configuration and selection of strategies were carefully evaluated based on stakeholder and public feedback. This section also outlines a summary of stakeholder feedback.

**A Vision for Shoreline Adaptation: The Hayward Regional Shoreline**

This section introduces the Preferred Alternative, a future vision for the Hayward Shoreline to adapt to climate change. The hybrid Preferred Alternative was selected based upon further client and stakeholder feedback and includes two alternates with embedded flexibility. This chapter breaks the broad vision down into its respective parts, organized by theme, to provide further details.

**Implementation Concept**

The Preferred Alternative is evaluated further in this section to provide details on how the Master Plan vision will be phased, funded, permitted, and managed over time in coordination with all associated stakeholders. The Phasing Plan breaks down the Master Plan into discrete projects that are organized by time frame, Project Fact Sheets provide a detailed assessment of specific projects identified in the Phasing Plan, Non-Structural Strategies offer an overview of policy and programmatic recommendations, including financing, permitting, feasibility, and regional considerations.

*Supporting Documents:*

**Appendix A** provides a record of all stakeholder and public comments.

**Appendix B** provides a detailed breakdown of cost estimates for the three Design Alternatives, as well as the Preferred Alternative.

# THE MASTER PLAN PROCESS

**The Hayward Regional Shoreline Adaptation Master Plan builds upon existing planning efforts to coalesce around a shared vision to plan for, mitigate against, and adapt to sea level rise.**

**The Plan began with an analysis of the site's existing conditions in January 2019. This base of research led to an investigation and the development of adaptation strategies that proposed ways of adapting the shoreline to sea level rise. The applicable strategies were ultimately combined to form a comprehensive plan for shoreline adaptation.**

**Frequent stakeholder and public engagement directly informed the Master Plan throughout every stage.**

**This planning document is a forward-looking tool to guide the phased implementation of projects that will adapt the Hayward Regional Shoreline as sea levels rise and mitigate the impacts of climate change.**

# A VISION FOR THE HAYWARD REGIONAL SHORELINE

**The Hayward Shoreline Adaptation Master Plan envisions a diverse mosaic of Bayland environments that host recreational opportunities, facilitate educational programming, and support the continued operation of critical urban infrastructure.**

**As sea levels rise, this management framework establishes a targeted suite of design strategies and projects to facilitate shoreline adaptation over time.**

**Continued collaboration across agencies, landowners, and the public will ensure the future success of this effort to make the Hayward Regional Shoreline more resilient to climate change and more accessible to all.**

**OLIVER SALT PONDS**
Restored tidal habitat and Salinas Swap

**SR-92 BRIDGE APPROACH**
Causeway restores tidal connectivity

**GRAVEL BEACHES**
Outboard of existing levees

**HARD MARSH**

**HAYWARD MARSH**
Restored tidal habitat and least tern reloction

**ECOTONE LEVEE**

**EXISTING BAY TRAIL**
Maintained as long as possible and connected to the realignment

**COGSWELL MARSH**

**EDUCATION STATIONS**
Highlight key educational features, including pilot projects, adaptation strategies, and monitoring of climate change impacts

**HORIZONTAL LEVEE**
Treated wastewater effluent discharge from Hayward WPCF, built inland of existing Wet Weather Storage pond levee

**FRESHWATER TREATMENT MARSH**
Nutrient removal and wet weather storage for Hayward WPCF

# A FRAMEWORK FOR ADAPTATION

**The Hayward Shoreline Adaptation Master Plan provides a framework for shoreline adaptation that will guide the development of future projects to be implemented over time by proposing a piloting and monitoring strategy. Pilot projects will be the opportunity to test adaptation strategies, and to demonstrate their efficacy. Monitoring protocols will provide data on site-specific climate change impacts and track the pilot projects to scale-up shoreline adaptation through larger-scale applications of design strategies.**

**This framework of piloting, monitoring, and scaling-up will engage the community in shoreline adaptation, promote stewardship, and build capacity for future generations to adapt to climate change.**

**GRAVEL BEACH**
Outboard of existing levee to reduce erosion

**GRAVEL BEACH PILOT MONITORING**
Measure performance to inform larger-scale applications

**MONITORING MARKERS**

**SEA LEVEL RISE MONITORING**
Localized data informs the need and strategy for adaptation strategies

**EXISTING TIDAL MARSH**

# PREFERRED ALTERNATIVE

# PREFERRED ALTERNATIVE

## A COORDINATED VISION FOR THE HAYWARD REGIONAL SHORELINE

The Preferred Alternative balances risk reduction and ecological enhancement to foster a robust and layered system of shoreline adaptation. This hybrid configuration is based upon stakeholder feedback received during the Design Alternatives process.

In the north end of the project area, the line of protection ties into existing levees along San Lorenzo Creek (1) and wraps in front of Oro Loma Wastewater Treatment Plant (2) to protect it in place before crossing Bockman Channel with a new tide gate. It then pulls back along the Union Pacific Rail Corridor (3), then aligns through the southeastern corner of Oro Loma Marsh (4) before crossing Sulphur Creek with a new tide gate and tying back to high ground at the two existing landfills (5). It then follows the western extent of the Wet Weather Storage ponds to the south (6). The alignment pulls back in the southern portion of the site to wrap the back of the Salt Marsh Harvest Mouse Preserve (7), then ties back along a new levee along the access road for SR-92 (8).

A large extent of tidal habitat is enhanced outboard of the line of protection. Tidal marshes, existing and restored, would be monitored over time with an adaptive management plan that could use sediment augmentation to sustain healthy mudflat and marsh elevations in strategic areas. New tidal marsh is restored at Frank's West and Hayward Marsh. Vulnerable ecosystems, like the Oliver Salt Ponds, would also be restored to tidal marshes as sea levels rise and make perimeter levee maintenance less feasible.

A layered system of erosion control measures utilizes gravel beaches to reduce the risk of erosion to levees that shelter the marshes behind. Bayside levees and interior levees would be retained in place to provide additional layered protection for as long as they are feasible to maintain. Erosion protection and subsurface cutoff along the two landfills reduces the risk of erosion and seepage.

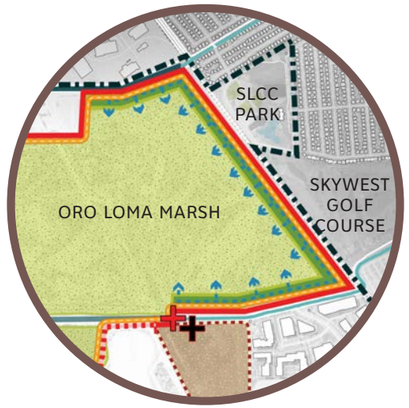
Inland detention ponds at Frank's East and the back portion of Oro Loma Marsh are utilized to hold stormwater before it is pumped to the Bay.

Critical wastewater treatment functions are maintained and enhanced at Oro Loma and Hayward Wastewater Treatment Plants with horizontal levees that outlet treated wastewater effluent across an ecotone slope. Hayward WPCF's existing functions are enhanced with a freshwater treatment marsh that provides nutrient removal and wet weather storage.

The Bay Trail is aligned to promote a diversity of experiences while reducing the risk of flooding.

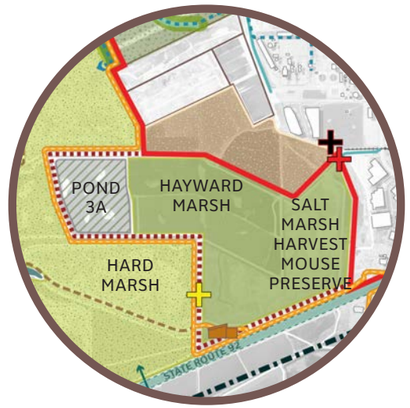
The Hayward Shoreline Interpretive Center is protected in place with interim levee raising and future adaptation could occur through the elevation of the building itself. Its location within a marsh maintains a direct connection to shoreline ecosystems. The San Lorenzo Community Park is also protected in place, but vulnerable to potential groundwater emergence.

Two alternate configurations are outlined below in two areas that may require additional flexibility to align with ongoing projects and permitting constraints.




**Northern Alternate**

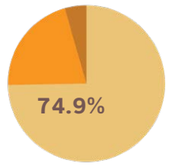
- May be easier to permit since the LOP is outside of BCDC Jurisdiction but more expensive due to lack of stormwater storage capacity




**Southern Alternate**

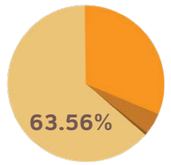
- Levee raising goes around Pond 3A (least tern nesting colony)

# PREFERRED ALTERNATIVE COST ESTIMATE



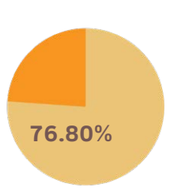

## LINE OF PROTECTION

| COST ITEM | | |
|---|---|---|
| Flood Protection Levee | $78,290,800 | 74.9% |
| Ecotone Levee | $21,638,660 | 20.7% |
| Levee Raising (Salt marsh mouse preserve) | $4,627,426 | 4.4% |
| **TOTAL (WITHOUT CONTINGENCY)** | **$104,556,900** | |



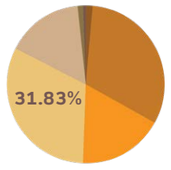

## TIDAL HABITAT

| COST ITEM | | |
|---|---|---|
| Tidal Marsh | $24,831,524 | 31.57% |
| Muted Tidal Marsh | $3,561,344 | 4.53% |
| New Muted Tidal Marsh Gate | $272,500 | 0.35% |
| Sediment Augmentation | $50,000,000 | 63.56% |
| **TOTAL (WITHOUT CONTINGENCY)** | **$78,665,400** | |



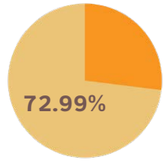

## EROSION PROTECTION

| COST ITEM | | |
|---|---|---|
| Erosion Control | $32,620,000 | 76.80% |
| Gravel Beach with headlands | $10,122,368 | 23.83% |
| **TOTAL (WITHOUT CONTINGENCY)** | **$42,742,400** | |




## STORMWATER MANAGEMENT

| COST ITEM | | |
|---|---|---|
| New Tide Gates | $3,945,800 | 1.43% |
| PS Bockman Channel | $87,943,591 | 31.83% |
| PS Sulfur Creek | $48,365,439 | 17.51% |
| PS Line A | $87,943,591 | 31.83% |
| PS Line F | $43,971,795 | 15.92% |
| Salt Pond/Stormwater Retention | $3,277,552 | 1.19% |
| Groundwater Management | $814,000 | 0.29% |
| **TOTAL (WITHOUT CONTINGENCY)** | **$276,261,800** | |

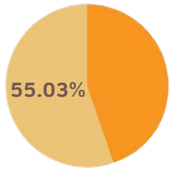



## WASTEWATER TREATMENT

| COST ITEM | | |
|---|---|---|
| Freshwater Treatment Marsh | $10,890,000 | 27.01% |
| Horizontal Levee | $29,424,500 | 72.99% |
| **TOTAL (WITHOUT CONTINGENCY)** | **$40,314,500** | |


## BAY TRAIL

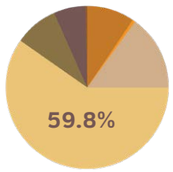
| COST ITEM | | |
|---|---|---|
| New Bay Trail (terrestrial surface prep) | $806,541 | 100% |
| **TOTAL (WITHOUT CONTINGENCY)** | **$806,500** | |




## HAYWARD SHORELINE INTERPRETIVE CENTER

| COST ITEM | | |
|---|---|---|
| Protected in place | $1,430,000 | 44.97% |
| Renovations | $1,750,000 | 55.03% |
| **TOTAL (WITHOUT CONTINGENCY)** | **$3,180,000** | |

# PREFERRED ALTERNATIVE COST ESTIMATE




## COST SUMMARY

| COST ITEM | | |
|---|---|---|
| Bay Trail | $806,541.00 | 0.2% |
| Erosion Protection | $42,742,368.38 | 9.3% |
| Interpretive Center | $3,180,000.00 | 0.7% |
| Line of Protection | $68,743,066.00 | 14.9% |
| Stormwater Management | $276,261,767.42 | 59.8% |
| Tidal Habitat | $40,575,864.33 | 8.8% |
| Wastewater Treatment | $29,424,500.00 | 6.4% |
| **TOTAL (WITHOUT CONTINGENCY)** | **$461,734,100** | |

## ANNUALIZED OPERATIONS & MAINTENANCE

| COST ITEM | LOW END | HIGH END |
|---|---|---|
| Bay Trail | $8,000 | $16,000 |
| Erosion Control | $427,000 | $854,000 |
| Interpretive Center | $64,000 | $96,000 |
| Line of Protection | $637,000 | $1,275,000 |
| Stormwater Management | $5,492,000 | $8,254,000 |
| Tidal Habitat | $299,000 | $596,000 |
| Wastewater Treatment | $806,000 | $1,210,000 |
| **TOTAL** | **$7,733,000** | **$12,301,000** |

## TOTAL

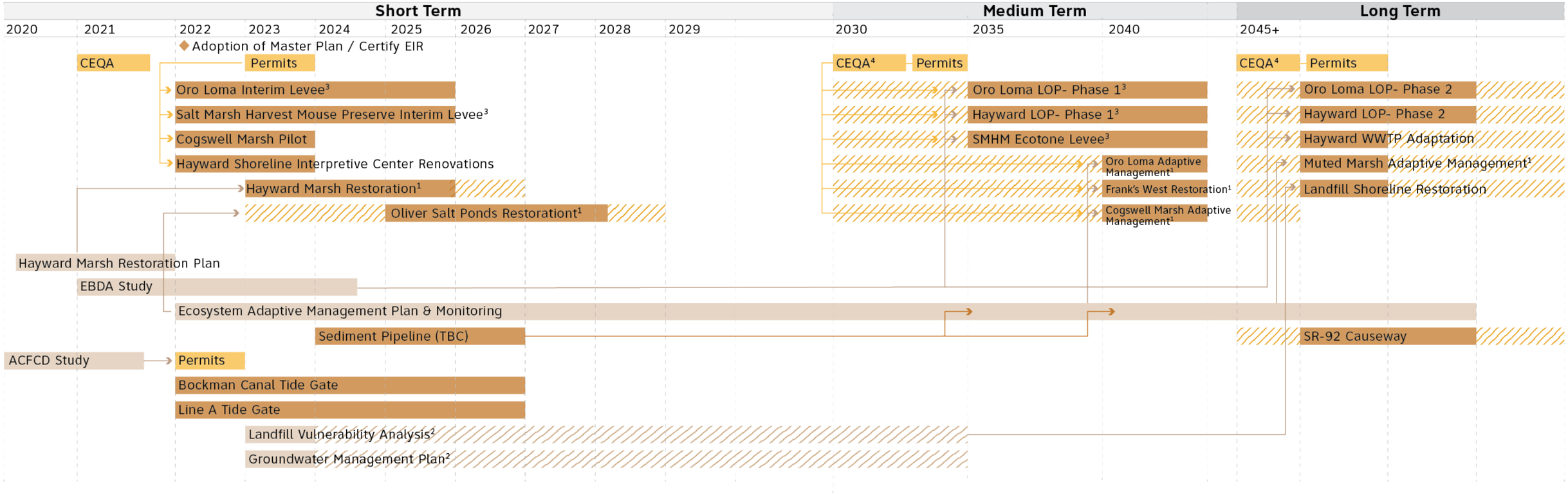
| COST ITEM | |
|---|---|
| **SUBTOTAL** | **$547,547,927** |
| DESIGN (10%) | $54,754,793 |
| MOBILIZATION (7%) | $38,328,355 |
| **TOTAL** | **$640,631,075** |
| CONTINGENCY (50%) | $320,315,537 |
| **TOTAL (WITH CONTINGENCY)** | **$960,946,600** |

# PHASING PLAN

# 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.



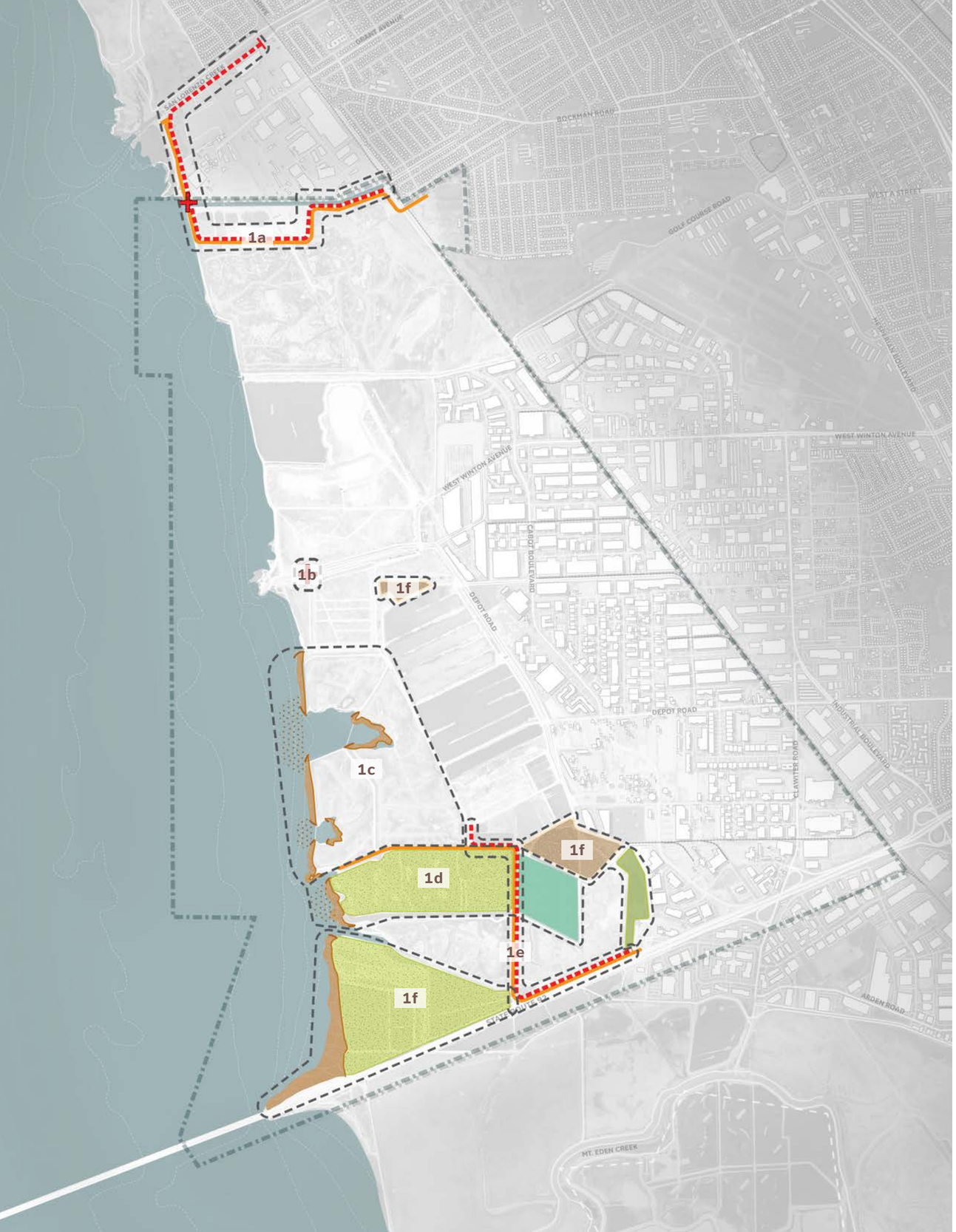

Legend

- Permitting
- Design & Construction
- Study, Monitoring

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

Footnotes

[1] Timing dependent on rates of SLR, erosion and sediment accretion, to be monitored through this management plan
[2] Timing flexible, needed to inform medium and long term projects
[3] Timing could be staggered with aligned projects, depending on funding and permitting
[4] CEQA update dependent on changes in scope since EIR




## SHORT TERM PROJECTS

The projects identified in the short term are projected to be constructed in less than 10 years. This time frame and associated projects are an initial idea of how the phasing may work, based on the Project Team's recommendations. These projects and time frames will need to be flexible, since the ability to implement a project depends on multiple external factors, such as funding acquisition, permitting, and construction cycles.

The short-term projects give priority to ecological enhancements that align with existing efforts and vulnerable sites.

Pilot projects will provide valuable information to inform a larger scale application of strategies in the medium and long-term.

Setting up a monitoring protocol in the short-term will provide valuable information to analyze existing conditions to inform what sites and strategies should be prioritized as sea levels rise.

Strategies such as interim levee raising aim to reduce risk up to the existing 100-year storm.

**Projects shown on the map:**

1a. Oro Loma Interim Levee

- Bockman Channel Pump Station
- Levee in front of Oro Loma WWTP and Sludge Ponds to the rail corridor
- Levee Raising along San Lorenzo Creek
- New Bay Trail- Oro Loma WWTP Section

1b. Line A Tide Gate Improvement

1c. Cogswell Marsh Pilot

- Gravel Beaches
- Marsh Management and Sediment Placement

1d. Hayward Marsh Restoration

- Tidal Habitat Restoration
- Muted Tidal Habitat Restoration
- Marsh Management and Sediment Placement
- Least Tern Colony Relocation
- Gravel Beach

1e. Salt Marsh Harvest Mouse Preserve Interim Levee

1f. Oliver Salt Ponds Restoration / Salinas Swap

- Gravel Beaches
- Sediment Placement
- Tidal Habitat Restoration
- Salinas habitat north of Hayward Marsh and near West Winton Landfill

**Projects not shown on the map:**

1g. Landfill Vulnerability Assessment

1h. Groundwater Management Plan

1i. Stormwater Management Study

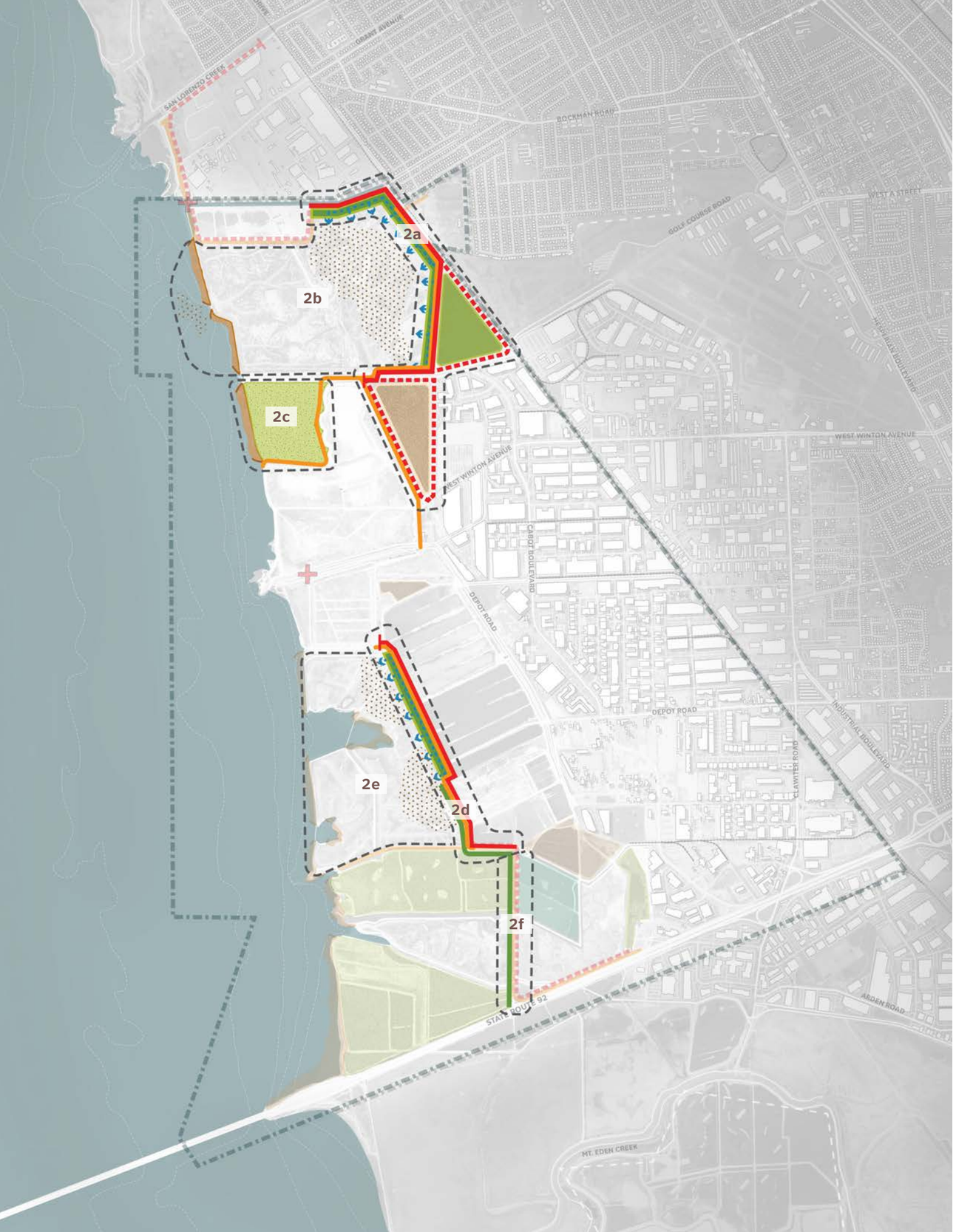
1j. EBDA Study

1k. Ecosystem Adaptive Management & Monitoring

1l. Hayward Shoreline Interpretive Center Renovation

1m. Sediment Pipeline

1n. CEQA




## MEDIUM TERM PROJECTS

The projects identified in the medium term are projected to be constructed in 10-25 years. This time frame and associated projects are an initial idea of how the phasing may work, based on the Project Team's recommendations. These projects and time frames will need to be flexible, since the ability to implement a project depends on multiple external factors, such as funding acquisition, permitting, and construction cycles.

The medium-term projects give priority to multi-benefit infrastructure and opportunities for stormwater management.

Tidal habitat adaptation to sea level rise is a crucial project in the medium-term. The rate of sea level rise and sediment accretion will provide data to inform what marshes will need artificial sediment application to keep pace with sea level rise.

Parts of the line of protection (LOP) are established to reduce risk up to 4' of sea level rise plus the 100-year storm. These discrete portions of levee provide independent utility to specific inland areas.

**Projects shown on the map:**

2a. Oro Loma LOP- Phase 1

- FEMA Certified Levee, designed to protect for 4' SLR plus 100-year storm
- Sulphur Creek tide gate and pump station
- Muted Tidal Habitat and Levee Raising
- Frank's East Salinas / Stormwater Detention
- First Mile Project Horizontal Levee
- New Bay Trail Section- back of Oro Loma Marsh

2b. Oro Loma Adaptive Management

- Gravel Beaches
- Marsh Management and Sediment Placement

2c. Frank's West Restoration

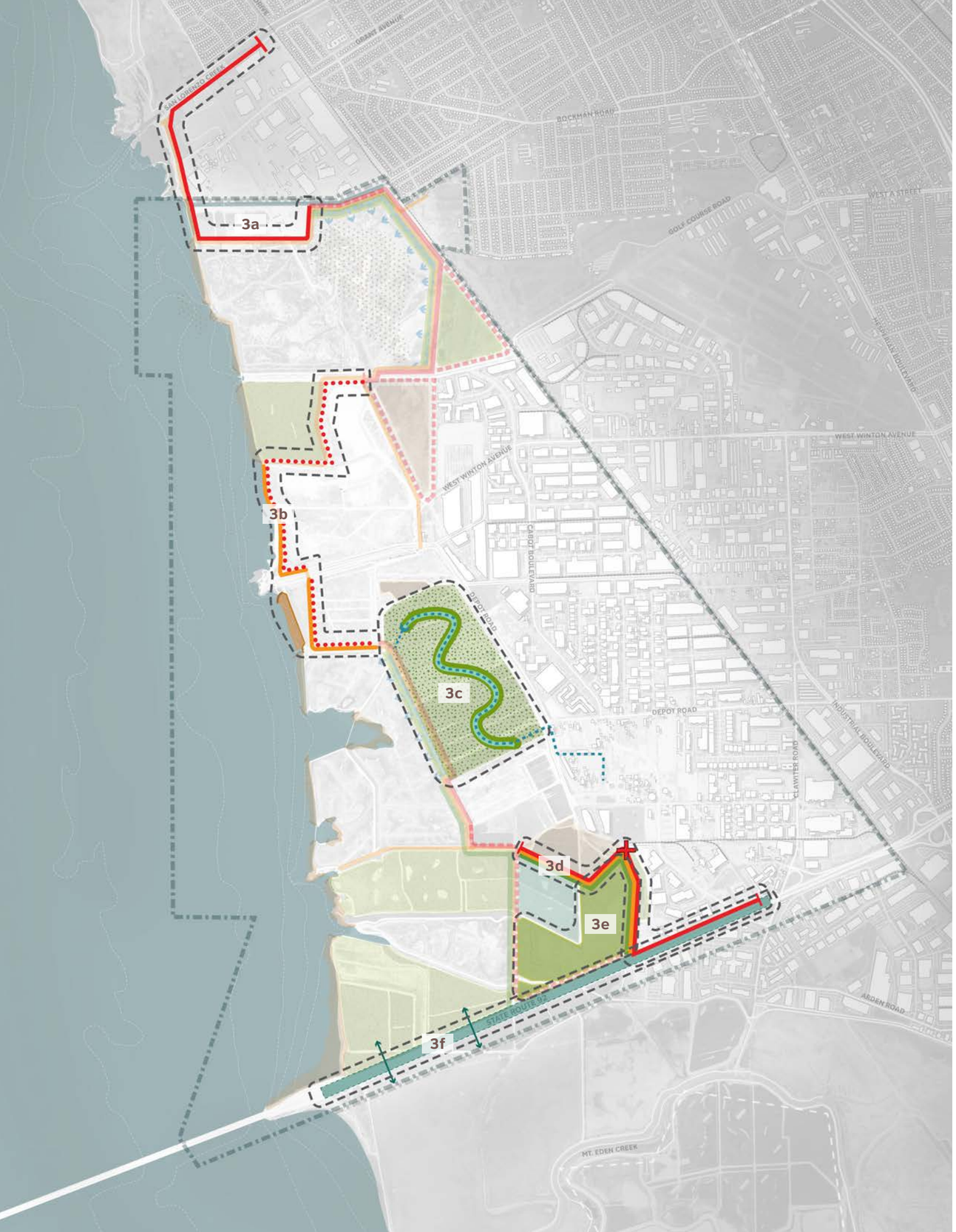
- Tidal Habitat Restoration
- Gravel Beaches

2d. Hayward LOP- Phase 1

- FEMA Certified Levee, designed to protect for 4' SLR plus 100-year storm
- Hayward WWTP Horizontal Levee
- New Bay Trail Section

2e. Cogswell Marsh Adaptive Management

2f. Salt Marsh Harvest Mouse Preserve Ecotone Levee




## LONG TERM PROJECTS

The projects identified in the long term are projected to be constructed in over 25 years. This time frame and associated projects are an initial idea of how the phasing may work, based on the Project Team's recommendations. These projects and time frames will need to be flexible, since the ability to implement a project depends on multiple external factors, such as funding acquisition, permitting, and construction cycles.

The long-term projects give priority to completing a full line of protection and creating a layered system of erosion control infrastructure.

Wastewater treatment plants are adapted to facilitate local discharge.

The line of protection (LOP) is established to reduce risk up to 4' of sea level rise plus the 100-year storm. This alignment will connect the discrete portions of levees built in the medium-term scenario.

**Projects shown on the map:**

3a. Oro Loma LOP- Phase 2

- FEMA Certified Levee, designed to protect for 4' SLR plus 100-year storm

3b. Landfill Shoreline Restoration

- Triangle Marsh Gravel Beach
- West Winton Landfill erosion protection and subsurface cutoff
- Alameda County Landfill erosion protection and subsurface cutoff
- New Bay Trail Sections

3c. Hayward WWTP Adaptation

- Freshwater Treatment Marsh

3d. Hayward LOP- Phase 2

- FEMA Certified Levee, designed to protect for 4' SLR plus 100-year storm
- Line F Tide Gate

3e. Muted Marsh Adaptive Management

3f. SR-92 Causeway

# SHORT TERM PROJECTS

| ID | STANDALONE PROJECT | PROJECT COMPONENTS | AGENCIES | NOTES |
|---|---|---|---|---|
| 1a | **Oro Loma Interim Levee** | • Bockman Channel pump station<br>• Levee in front of Oro Loma + Sludge Ponds<br>• Levee raising along San Lorenzo Creek<br>• New Bay Trail - Oro Lomo WWTP Section | ACFCD, HASPA, Oro Loma WWTP, Bay Trail, EBRPD | Designed to current 100-year, San Lorenzo Creek to rail corridor, includes new bay trail spur & near term sulphur creek tide gate/pump station |
| 1b | **Line A Tide Gate Improvement** | • Line A Tide Gate | ACFCD, HASPA | Pending results of ACFCD stormwater study, to protect from 2' of SLR |
| 1c | **Cogswell Marsh Pilot** | • Cogswell Marsh (sediment placement at breaches)<br>• Cogswell Marsh gravel beaches | EBRPD, BCDC, USACE | Sediment placement and gravel beaches to reduce erosion |
| 1d | **Hayward Marsh Restoration** | • Least Tern Colony relocation<br>• Hayward Marsh gravel beach<br>• Hayward Marsh tidal habitat restoration<br>• Diked Baylands east of the SMHM Preserve | EBRPD, BCDC, USACE, CDFW, HASPA | Timing dependent on pilot monitoring and Adaptive Management Plan |
| 1e | **Salt Marsh Harvest Mouse Preserve Interim Levee** | • Access road from Interpretive Center to Bay Trail Pedestrian Bridge<br>• Levee raising west of SMHM from Solar Fields to SE corner of SMHM Preserve | EBRPD, HASPA, HARD, ACFCD | Interim levee to protect from 2' of SLR, along current levee alignments from Interpretive center through HARD Marsh, ending at Hayward Marsh. Need to examine stormwater management needs. Restoration work could be separate but may be advantageous from funding/regulatory perspective to combine. |
| 1f | **Oliver Salt Ponds Restoration** | • Oliver Salt Ponds gravel beach<br>• Oliver Salt Ponds (sediment placement to raise pond)<br>• Oliver Salt Ponds<br>• Salinas habitat north of Hayward Marsh<br>• Salinas habitat near West Winton Landfill | EBRPD, BCDC, USACE, CDFW, HASPA | Timing dependent on pilot monitoring of adjacent sites and Adaptive Management Plan |
| 1g | **Landfill Vulnerability Assessment** | • Landfill vulnerability Assessment (characterisation, hydrogeology) | COH | To assess existing conditions and needs |
| 1h | **Groundwater Management Plan** | • Groundwater Management Plan | COH, Property Owners | To study feasibility of various approaches |
| 1i | **Stormwater Management Study** | • Stormwater Management Study | ACFCD | Already begun |
| 1j | **EBDA Study** | • EBDA Study | EBDA | To inform design of horizontal levee |
| 1k | **Ecosystem Adaptive Management Plan & Monitoring** | • Adaptive Management Plan | HASPA | To develop pilot and monitoring plan, identify triggers for restoration, inform future restoration plans |
| 1l | **Hayward Shoreline Interpretive Center Renovation** | • Hayward Shoreline Interpretive Center renovations | HARD | ADA Access improvements and facility needs / energy retrofits |
| 1m | **Sediment Pipeline** | • Don Castro Sediment Pipeline | ACFCD, EBRPD, BCDC | Deliver sediment to Baylands. Timing uncertain. |
| 1n | **CEQA** | • CEQA EIR | HASPA, EBRPD, COH, HARD | CEQA EIR for Master Plan projects. |

## MEDIUM TERM PROJECTS

| ID | STANDALONE PROJECT | PROJECT COMPONENTS | AGENCIES | NOTES |
|---|---|---|---|---|
| 2a | **Oro Loma LOP- Phase 1** | • Frank's East salinas<br>• Sulpur Creek Tide Gate, Pump station<br>• Oro Loma muted tidal levee raising<br>• First Mile project in the back of Oro Loma Marsh<br>• Frank's East levee raising<br>• Oro Loma southeastern triangle<br>• New Bay Trail - back half of Oro Lomo Marsh Section | ACFCD, HASPA, Oro Loma WWTP, Bay Trail, EBRPD | FEMA levee from Oro Loma sludge ponds to Landfill, includes stormwater improvements, sulphur creek tide gate, and Bay Trail sections |
| 2b | **Oro Loma Adaptive Management** | • Oro Loma gravel beaches<br>• Oro Loma Marsh (sediment placement at breaches)<br>• Oro Loma Marsh (sediment placement in eastern half) | EBRPD, BCDC, USACE | Timing dependent on pilot monitoring of adjacent sites and Adaptive Management Plan |
| 2c | **Frank's West Restoration** | • Frank's West gravel beach<br>• Frank's West (sediment placement to raise pond)<br>• Frank's West tidal habitat restoration | EBRPD, BCDC, USACE | Timing dependent on pilot monitoring of adjacent sites and Adaptive Management Plan |
| 2d | **Hayward LOP- Phase 1** | • Levee tie-back along raised SR-92 access road<br>• New Bay Trail - WWTP to SR92<br>• Hayward horizontal levee (South of Landfills) | ACFCD, HASPA, Oro Loma WWTP, Bay Trail, EBRPD, CalTrans, COH, Public Works | FEMA levee from Landfill to SMHM levee raising, includes horizontal levee and Bay Trail sections |
| 2e | **Cogswell Marsh Adaptive Management** | • Cogswell Marsh (sediment placement to raise eastern edges) | EBRPD, BCDC, USACE | Timing dependent on pilot monitoring and Adaptive Management Plan |
| 2f | **Salt Marsh Harvest Mouse Preserve Ecotone Levee** | • Ecotone levee from Wet Weather Storage Ponds to SR-92 | ACFCD, EBRPD | Ecotone levee in front of SMHM levee raising |

## LONG TERM PROJECTS

| ID | STANDALONE PROJECT | PROJECT COMPONENTS | AGENCIES | NOTES |
|---|---|---|---|---|
| 3a | **Oro Loma LOP- phase 2** | • FEMA levee around Oro Loma sludge ponds to tie-back at SLC channel | Oro Loma WWTP, ACFCD, HASPA | FEMA levee from Oro Loma sludge ponds to tie back along SLC, includes stormwater improvements, Bockman tide gate, and Bay Trail sections |
| 3b | **Landfill shoreline restoration** | • Triangle Marsh gravel beach<br>• West Winton Landfill erosion protection + subsurface cutoff<br>• Alameda County Landfill erosion protection + subsurface cutoff<br>• New Bay Trail - Alameda County Landfill<br>• New Bay Trail - West Winton Landfill | EBRPD, BCDC, COH, Bay Trail | Pending vulnerability assessment, includes erosion control and subsurface cut off, includes adjacent sections of Bay Trail |
| 3c | **Hayward WWTP Adaptation** | • Freshwater treatment marsh | COH, Public Works, EBDA, ACFCD | Freshwater treatment marsh for local discharge using horizontal levee |
| 3d | **Hayward LOP- phase 2** | • Line F tide gate + pump station<br>• Ecotone levee along new LOP around SMHM Preserve | ACFCD, HASPA, EBRPD | FEMA levee from SMHM levee raising to tie back near Clawiter Rd, includes stormwater improvements, Line F tide gate, and Bay Trail sections |
| 3e | **Muted Marsh Adaptive Management** | • Marsh Management + Sediment Placement | EBRPD, HASPA, BCDC | Adaptive Management of muted tidal habitat inland of SMHM Interim Levee |
| 3f | **SR-92 Causeway** | • SR-92 Causeway | CalTrans | CalTrans retrofit of SR-92 Bridge approach |

# 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

# RECOMMENDATIONS AND CONSIDERATIONS

# 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[1]:**

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 Trial 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[2]:**

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.

2. https://solartechonline.com/blog/california-solar-tax-credit/#:~:text=The%20Investment%20Tax%20Credit%20(ITC,down%20to%2022%25%20in%202021.

# STEWARDSHIP & EDUCATIONAL PROGRAMS

The Hayward Regional Shoreline is an extraordinary resource for adjacent communities, providing access to unique recreational and educational assets across a wide extent of Baylands. The future of the shoreline is dependent on active stewardship, maintenance, and education to ensure the longevity of healthy Baylands and public awareness.

The COVID-19 pandemic shed light on the importance of the Shoreline and its key role in providing accessibility to outdoor areas that benefits public health.

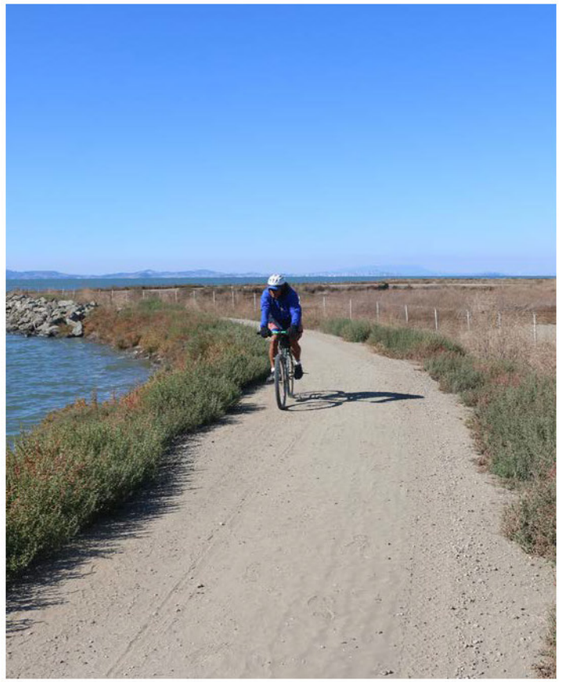
The diversity of ecosystems and built infrastructure that traverse the Hayward Regional Shoreline presents a variety of opportunities for education and stewardship. With new infrastructure improvements, incorporating educational programming will engage people in the new shoreline systems and recreational assets that shape the future of their environment.

**Stewardship and Volunteer Programs:** These have the ability to build upon existing efforts at the Hayward Shoreline Interpretive Center to engage schools and the general public in the monitoring of wildlife and climate change impacts. Tracking and analyzing shoreline change will help communicate potential risks and aid in the building of a Hayward Regional Shoreline constituency. These programs can be facilitated by Naturalists and Biologists at the Hayward Shoreline Interpretive Center.

**Engagement with Schools and Service Learning:** The Hayward Shoreline Interpretive Center is set up to continue engagement with schools, and service learning with high schools and elementary schools. Connecting with students will tap into the younger generation to educate about the inherent value the Shoreline has and the need to continue to preserve its assets.

**Education Stations along the Bay Trail** can provide areas to rest and educate about the shoreline ecosystems, climate change, and adaptation strategies to climate change. A prototype of a simple kiosk and bench can easily be replicated along the shoreline to highlight key educational features.

**A robust monitoring and educational outreach strategy** can be incorporated in all future projects identified in the Phasing Strategy. This will raise awareness about the adaptation strategies and projects being implemented. Citizen science can supplement larger-scale monitoring efforts to help to inform broader applications of adaptation strategies.

# ONGOING PROJECTS

The following adjacent ongoing projects present opportunities for coordinating with the implementation of elements of the Hayward Regional Shoreline Adaptation Master Plan.

## 1. ORO LOMA HORIZONTAL LEVEE[1]

Project Summary: The Oro Loma Horizontal Levee is a pilot project to test an innovative approach to flood protection, ecosystem restoration, and wastewater treatment. Instead of a vertical wall to protect against storm surges, the Oro Loma Horizontal Levee project uses vegetation on a slope to break waves. The project consists of two components. The first is a two-acre wetland basin that can both remove nutrients from wastewater and provide extra wet weather storage capacity. The second is an experimental levee on one side of the basin. The combination of treatment wetlands and newly designed habitats, and surface and sub-surface filtering processes, will support native plants and purify water while providing flood protection.

Current Status: The project was completed in April 2017. A UC Berkeley research team is currently monitoring and evaluating the effectiveness of the project. The results will inform future discussions about horizontal levees on the East Bay Shoreline and beyond.

Coordination Opportunity: Monitoring and evaluation of the Oro Loma Horizontal Levee pilot is an opportunity to inform the design and implementation of the proposed Hayward Horizontal Levee.

Lead Agencies/Organizations: Oro Loma Sanitary District, Castro Valley Sanitary District, UC Berkeley

## 2. FIRST MILE HORIZONTAL LEVEE[2]

Project Summary: The First Mile Horizontal Levee project builds off the Oro Loma Horizontal Levee project. The goal of this project is to design and seek funding for a full-scale Horizontal Levee in the East Bay Discharge Authority service area. This project has received funding from the Environmental Protection Agency's (EPA) San Francisco Bay Water Quality Improvement Fund.

Current Status: As of December 2019, this project is in the siting, design, and permitting phase.

Coordination Opportunity: The First Mile Horizontal Levee could connect with the proposed Hayward Horizontal Levee in the northern reach of the study area to form a connective regional system for coastal protection, wastewater treatment, and ecosystem improvement.

Lead Agencies/Organizations: East Bay Dischargers Authority, San Francisco Estuary Partnership

## 3. TREATMENT WETLANDS STUDY FOR WET WEATHER STORAGE PONDS[3]

Project Summary: EBDA plans a feasibility study to examine the potential for seasonally repurposing the oxidation ponds for effluent treatment during the summer and wet weather storage during the winter.

Current Status: Scoping of study underway now.

Coordination Opportunity: This feasibility study could further examine the proposed horizontal levee throughout the Hayward study area as part of a regional strategy for managing wastewater and providing ecosystem restoration.

Lead Agencies/Organizations: East Bay Dischargers Authority, City of Hayward

## 4. HAYWARD MARSH RESTORATION STUDY[4]

Project Summary: EBRPD will be examining opportunities to improve the functioning of the tidal marsh habitat and potential for new high ground of islands for wildlife refugia, particularly least terns.

Status: Scoping of study underway now.

Coordination Opportunity: The Hayward Marsh study is an opportunity to further examine the preferred alternative and alternate configuration for Hayward Marsh including creation of tidal habitat, the alignment of coastal protection, and the location of the least tern nesting colony.

Lead Agencies/Organizations: East Bay Regional Park District

## 5. DON CASTRO SEDIMENT PIPELINE[5]

Project Summary: The Don Castro Sediment Pipeline will allow the Alameda County Flood Control and Water Conservation District to transport sediment removed from the bottom of the Don Castro Reservoir to the Salt Pond Restoration projects in the Eden Landing Salt Ponds. The existing sediment volume is estimated to be 450,000 cy. The preliminary design includes approximately 12.4 miles of 20" RCP and HDPE pipeline and four pump stations.

Status: Project under review and consideration by ACFCD

Coordination Opportunity: The sediment pipeline is a potential opportunity to provide a sediment source for the proposed marsh restoration projects in the Hayward Regional Shoreline Adaptation Master Plan

Lead Agencies/Organizations: Alameda County Flood Control and Water Conservation District

## 6. COUNTY LANDFILL SOLAR FARM[6]

Project Summary: West Winton landfill will be transformed into a solar farm, providing 6.6 megawatts of power, enough to power 1,200 homes. It is one of the largest solar project in the state and is part of the Regional Renewable Energy Procurement effort which aims to create solar network on publicly owned property around the Bay Area.

Status: Construction was expected to start in August 2015

Coordination Opportunity: Ongoing coordination is needed with the solar farm plan and the implementation of shoreline protection along West Winton Landfill

Lead Agencies/Organizations: Alameda County General Service Agency, Sun Edison

## 7. SAN LORENZO COMMUNITY PARK PHASE 2[7]

Project Summary: This project provides for the development of construction documents for the San Lorenzo Community Park Phase 2 & 3 portion of the existing 31-acre community park. Phase 1 improvements were completed in 2017. Phase 2 improvements include a multi-purpose field, two soccer fields, a dog park, community green, a neighborhood play area, additional picnic facilities and exercise stations and parking. Construction of Phase 2 will be funded with future Bond proceeds. The third and final phase will renovate the existing 8,200 square-foot community center as well as the remainder of the park adjacent to the center. Construction of phase 2 and 3 will be funded by future bond agreements.

Status: This project was estimated to start in the summer of 2020.

Coordination Opportunity: There is an opportunity to improve the connection from this park and other recreation assets in the region, as well provide stormwater retention, through the implementation of the Hayward Regional Shoreline Adaptation Master Plan.

Lead Agencies/Organizations: Hayward Area Recreation and Park District

## 8. ACFCD STORMWATER STUDY

Project Summary: ACFCD is studying the combined impacts of sea level rise (up to 2 feet) and increased precipitation on water levels in the bay and inland waterways, and examining potential flood control infrastructure needs throughout its service area.

Status: The first phase of the study to develop a model of the region is underway now. Future phases will include proposals for new and modified flood control infrastructure.

Coordination Opportunity: There is an opportunity to more deeply examine proposed near-term flood control infrastructure needs as part of this study, such as floodwalls along channels, tide gate, pump station improvements, and others as identified, in ways that are consistent with the preferred alternative.

Lead Agencies/Organizations: Alameda County Flood Control District

## 9. GRAVEL BEACH FOR EROSION CONTROL PILOT

Project Summary: The California State Coastal Conservancy is examining he feasibility of an expanded gravel beach in the south bay to provide shoreline habitat and reduce erosion of tidal marshes and mudflats.

Status: Under design now.

Coordination Opportunity: Monitoring and evaluation of the gravel beach pilot project offers an opportunity to inform the design and engineering of erosion control strategies for the Hayward Regional Shoreline Adaptation Master Plan.

Lead Agencies/Organizations: TBD


Sources:

1. Oro Loma Sanitary District, "Horizontal Levee Project," https://oroloma.org/horizontal-levee-project/

2. East Bay Dischargers Authority, "Projects," https://ebda.org/projects/

3. Source: Phone call with EBDA and Hayward Shoreline Master Plan Technical Advisory Committee, 6/29/2020

4. Source: Phone call with Hayward Shoreline Master Plan Technical Advisory Committee, 7/1/2020

5. Technical Memo from WRI to ACFCD, 11/15/13

6. Alameda County, Public Works Department, Resolution, May 7, 2015, http://www.acgov.org/board/bos_calendar/documents/DocsAgendaReg_05_12_15/SITTING%20AS%20THE%20FLOOD%20CONTROL%20AND%20WATER%20CONSERVATION%20DISTRICT/Regular%20Calendar/ACPWA_217937.pdf

7. Hayward Area Recreation and Parks District, Capital Improvement Projects, https://hard.icitywork.com/

# FUNDING & FINANCING RECOMMENDATIONS

With the global impact of the COVID-19 crisis, cities and utilities are facing unprecedented economic challenges. The timing of lockdowns and associated revenue losses in Spring 2020 aligned with the final quarter of many local government fiscal years and the balanced budget requirements of most state and local governments are likely to make coming budget years (starting with FY21) especially difficult. With that backdrop, funding and financing for major capital projects and infrastructure investments will not be as straightforward or predictable as in years past.

Despite these challenges, there are opportunities to strategically move forward green and resilient infrastructure projects as part of a broader economic recovery strategy. Taking advantage of these resources will require a balance between being opportunistic, particularly about short-term recovery and stimulus funds, and strategic about longer-term costs and needs. The following recommendations offer a flexible approach for pursuing short, medium, and longer-term resources to advance the vision for the full Hayward Shoreline Adaptation Master Plan. Most of these funding and financing options will require coordination among multiple stakeholders and decision-makers. Depending on the source (sectoral focus) of specific funds, the lead applicant will also likely vary. Because the budget and revenue impacts of COVID-19 are anticipated to be far-reaching, none of the recommended funding sources in this section are mutually exclusive, and pursuing multiple funding sources is strongly recommended as an "all of the above" approach to maximize both public and private resources for implementation.

## Recommendations

There are several key elements of the Hayward Shoreline Adaptation Master Plan that offer a strong basis for public funding and private financing to support ecosystem restoration and enable long-term risk reduction. These elements include:

- Protecting infrastructure and high-value assets (e.g., Oro Loma waste water treatment plant and sludge ponds, PG&E transmission lines)
- Protecting critical rail corridors and roadways (SR-92) from disruption
- Reducing short- and long-term flood risk and flood losses
- Enhancing regional economic resilience

The types of funds available for these kinds of projects can be divided into two main categories: ecosystem-specific funds and broader economic and regional development funding sources. While the Hayward Shoreline Adaptation Master Plan as a whole is designed to create myriad ecosystem benefits, the four elements above align particularly well with broad funder and investor interests in creating quantifiable benefits, for example, measurable risk reductions and long-term cost savings. Given the scope of the Hayward Shoreline Adaptation Master Plan, these types of funding applications should be as detailed as possible about the anticipated economic benefits and outcomes of the proposed project to support the pursuit of larger funding amounts rather than niche, piecemeal grants. For ecosystem specific funds, HASPA and its partners should seek support to quantify the economic and financial benefits of key ecosystem services for stormwater management, wastewater treatment, and erosion control, among other services to lay the data and analytic groundwork for tapping into larger and more general funding sources in future.

This section highlights several large-scale general and ecosystem-specific funding opportunities. The recommended resources are organized into three main categories:

- **Short-term:** Apply within the next 1-2 years for projects to be initiated and completed in less than 10 years
- **Medium-term:** Prepare applications for submission within 2-5 years for projects to be completed in the 10-25 year timeframe
- **Long-term:** Initiate long-term data gathering and analysis to support eventual application for projects in the 25+ year time horizon

The final sub-section lists additional non time-sensitive resources for regional projects or program-specific solutions, such as environmental education, that can also be pursued for project implementation, operations, and maintenance moving forward.

## Leveraging Existing Sources of Support & Meeting Matching Fund Requirements

The Hayward Shoreline Adaptation Master Plan is well aligned with multiple complementary initiatives and investments. In addition to providing direct support for aspects of the Hayward Shoreline Adaptation Master Plan, projects that are already funded or highly likely to move forward can help meet local funding "match" or cost-share requirements that can be up to 50% of the total award for some larger federal funding applications. Examples of these types of existing and potential near-term sources of support include:

**Transforming Shorelines Project**—In 2019 the Oro Loma Sanitary District completed construction on a $9.1 million, 8-million gallon wetland basin or 'horizontal levee.' In addition, the USEPA made a $1.5 million award to the San Francisco Estuary Partnership to evaluate the project for its treated wastewater filtration and storm surge protection benefits and complement EBDA's related work on the First Mile Horizontal Levee Project.

**US Army Corps of Engineers Resilient San Francisco Bay Project**—In 2018 the Army Corps selected the San Francisco Bay as one of ten communities in its beneficial use of dredged material pilot program. The total project cost is estimated to be $51.05 million over 10 years. The California State Coastal Conservancy covers the 35% non-federal cost-share requirement for the project as the non-federal sponsor and implementing agency for four restoration sites.

**Wetlands Mitigation Banking**—Explore engagement with BART, CALTRANS, and other major project developers seeking wetlands mitigation options to provide funding for eligible segments of the project, including creating a publicly owned conservation or mitigation bank for eligible portions of the Hayward Shoreline Adaptation Master Plan.

## Short-Term Regional and Federal Funding Opportunities

The level of detail in the Hayward Shoreline Adaptation Master Plan offers a strong basis for applying for larger regional and federal grants (~$10-$30 million) for the next level of design development and implementation. The amounts of funding and application timeframes vary by agency, but the funding opportunities below are already available or anticipated to be released in the 2020 and 2021 calendar years. These early stage funds can significantly advance the next phase of project design and implementation and lay the groundwork for seeking additional resources for future phases of work.

**Department of Commerce Economic Development Administration (EDA) FY20/21 Public Works and Economic Adjustment Assistance Program**

The EDA makes annual grants for projects that support sustainable regional economic growth and diversification. Two of its key investment priorities are:

(1) Recovery & Resilience: Projects that assist with economic resilience and long-term recovery from natural disasters and economic shocks.

(2) Critical Infrastructure: Projects that establish the fundamental building blocks of a prosperous and innovation-centric economy and a secure platform for American business, including physical (e.g., broadband, energy, roads, water, sewer) and other economic infrastructure.

The portions of the Hayward Shoreline Adaptation Master Plan that specifically protect infrastructure and access to critical services (via rail and roadways) are especially well suited for this type of funding. The ceiling for awards is $30 million, applications are accepted on a rolling basis until program funds are expended, and projects must connect to an existing EDA approved Comprehensive Economic Development Strategy (CEDS). An additional $1.5 billion in funds was also made available in May 2020 for projects that help communities "prevent, prepare for, and respond to coronavirus" or respond to "economic injury as a result of coronavirus."

*Recommendation:* Reach out to ABAG to discuss how the Hayward Shoreline Adaptation Master Plan connects to the current Bay Area CEDS and explore options for applying for $5-$30 million in funds. Identify potential matching funds to meet EDA's 50% cost-share requirement for standard public works grants and develop more detailed workforce and job creation benefits estimates in preparation

# PERMITTING CONSIDERATIONS

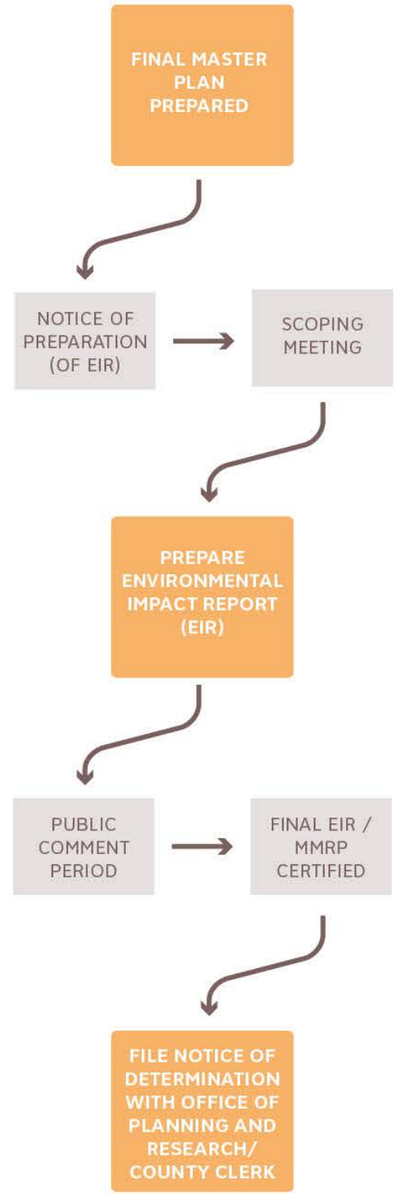
Implementation of the Hayward Regional Shoreline Adaptation Master Plan will require numerous permits and an environmental review process. This process will engage a variety of local, state, and federal agencies, many of whom have been engaged throughout the process to lay the groundwork for the implementation of the plan.

**California Environmental Quality Act (CEQA)** requires state and local agencies to assess the potential environmental impacts of proposed projects, disclose this information to decision makers and the public, and reduce the impacts to the extent feasible. Following the completion of the Master Plan, HASPA will determine how to proceed with preparing an Environmental Impact Report (EIR), which should include potential elements and projects. There may be potential environmental impacts to wetlands and endangered species that will require analysis and potential mitigation. The CEQA process will also involve public review and comment, as well coordination with permitting actions by various resource agencies (see below).

If federal funding or federal discretionary approval is required by any element of the Master Plan, HASPA will also need to follow the requirements of the National Environmental Policy Act (NEPA), including the development of an Environmental Impact Statement (EIS). The EIS and EIR can be combined into a single document but must meet the requirements of both.

In addition to environmental review, permits from a variety of state and federal agencies will likely be required for elements of the master plan. This includes:

- Bay Conservation and Development Commission (BCDC)
- California Department of Fish and Wildlife (CDFW)
- San Francisco Regional Water Quality Control Board (WQCB)
- U.S Fish and Wildlife Service (USFWS)
- NOAA Marine Fisheries Service (NMFS)
- U.S. Army Corps of Engineers (USACE)




**CEQA Flow Process**

Notes:

1. CEQA– California Environmental Quality Act
2. EIR– Environmental Impact Report
3. MMRP – Mitigation, Monitoring, and Reporting Plan

# FEASIBILITY & CONSTRUCTABILITY CONSIDERATIONS

A broad range of feasibility and constructability considerations were incorporated into the development of alternatives and selection of the preferred alternative. However, there are additional issues that will need to be evaluated in subsequent engineering feasibility and design phases, as described below.

**Line of Protection**

More detailed analysis is needed to determine an optimal flood protection design height, considering costs, technical feasibility, and risk reduction benefits. A detailed cost benefit analysis should be conducted that compares the costs of the flood protection system, including design, permitting, and mitigation, to the cost of inaction.

More information and technical analysis of urban hydrology and hydraulics is needed to develop a comprehensive strategy for flood protection, in coordination with ACFCD.

Geotechnical surveys will be required to better understand subsurface conditions, which may inform the feasibility of the line of protection alignment and other project elements, as well as their eventual design.

In addition, more detailed technical analysis will be needed to evaluate the proposed tie-ins to high ground, access needs across the line of protection (for transportation connectivity, wildlife, safety, etc.) as well as evaluate the potential for increasing flood levels in surrounding communities.

Land ownership will need to be confirmed and any necessary easements (for construction as well as operations and maintenance) will need to be identified and secured.

To qualify the area for reduced flood insurance premiums, the flood protection levee will need to be designed to meet FEMA standards. This includes:

- Meeting flood elevation and freeboard requirements, which have been assumed throughout the master plan)
- Designing openings and closures following sound engineering practice, which often means limiting active deployable elements),
- Ensuring the stability of the embankment and foundation to erosion, seepage, and settlement
- Interior drainage must be managed, which will require further analysis of the joint probability of interior and exterior flooding

At the landfills, more information on existing conditions is needed to better understand what is needed from a flood control perspective, and to evaluate the need to address other issues, including the potential need for subsurface cut-off to prevent release of contaminants.

**Tidal Habitat**

Further analysis is needed of the proposed muted marsh tide gates at HARD Marsh to ensure water levels are maintained at elevations appropriate for target ecosystems.

**Erosion Control**

More detailed study of erosion process and drivers and engineering solutions will be needed, particularly around the landfill where more information is needed on existing conditions and future needs and objectives.

**Stormwater Management**

More detailed analysis of the stormwater management system will be needed including geotechnical surveys as mentioned above, as well as coordination with ACFCD to develop a management plan. While there has been significant new analysis of groundwater emergence risks, more analysis is needed to understand effectiveness of various approaches to managing groundwater.

In addition, while there is inland storage identified in the preferred alternative, identification of additional inland storage opportunities to reduce pumping needs is recommended.

**Wastewater Treatment**

Further technical engineering analysis is needed of wastewater management elements of the preferred alternative in coordination with EBDA. This includes assessing space needed for the treatment wetland, as well as how the design may be impacted by the potential decommissioning of the EBDA pipeline.

**SR-92**

Additional study is needed of the proposed elevated pile-supported structure as part of a long-term plan for the bridge is needed.

# OPERATION & MAINTENANCE CONSIDERATIONS

As a dynamic, highly managed coastal system, ongoing operations and maintenance will be an import element of the success of the Master Plan. Likewise, the operations and management approach of various project elements need to be adaptable and dynamic in order to respond to changes in conditions and evolving needs. The operations and management considerations outlined below will be highly dependent on the rate of sea level rise, which is highly uncertain. Thus, ongoing monitoring and reevaluation of operating procedures and maintenance needs will be necessary.

Additional coordination with ACFCD, EBDA and others will also be needed to develop more specific plans for operations and management of specific elements of the Master Plan.

**Line of Protection**

In addition to the design requirements to meeting FEMA standards above, the flood protection levee and related stormwater drainage system needs have an operations and maintenance plan, which must include:

- Flood warning system, including triggers for emergency operation and proof of adequate time between triggers and completed operation of all closure structures and mechanized drainage elements
- Operational plan including specific names or titles of responsible individuals
- Periodic operation and inspection of closure structures and mechanized drainage systems
- Provision of manual backup for the activation of any automatic systems

In addition, FEMA requires that one or more public agencies be identified as responsible parties for the operations and maintenance plan (it cannot be a private entity).

**Tidal Habitat**

Sediment sources need to be identified and a plan for monitoring the impacts of sea level rise on wetlands and placement of sediment will need to be developed.

**Erosion Control**

Erosion should be monitored over time. Ongoing maintenance and repairs will be necessary, and needs will evolve over time dependent on storm events and the rate of sea level rise.

**Stormwater Management & Wastewater Treatment**

Active stormwater management and wastewater treatment structures, such as pump stations and tide gates on Bockman Channel, Sulphur Creek, and Line A will require funding for ongoing operation. These needs depend upon storage capacity and may be re-evaluated as additional storage opportunities are identified. All elements will require ongoing maintenance and repairs, as necessary.

# GOVERNANCE CONSIDERATIONS

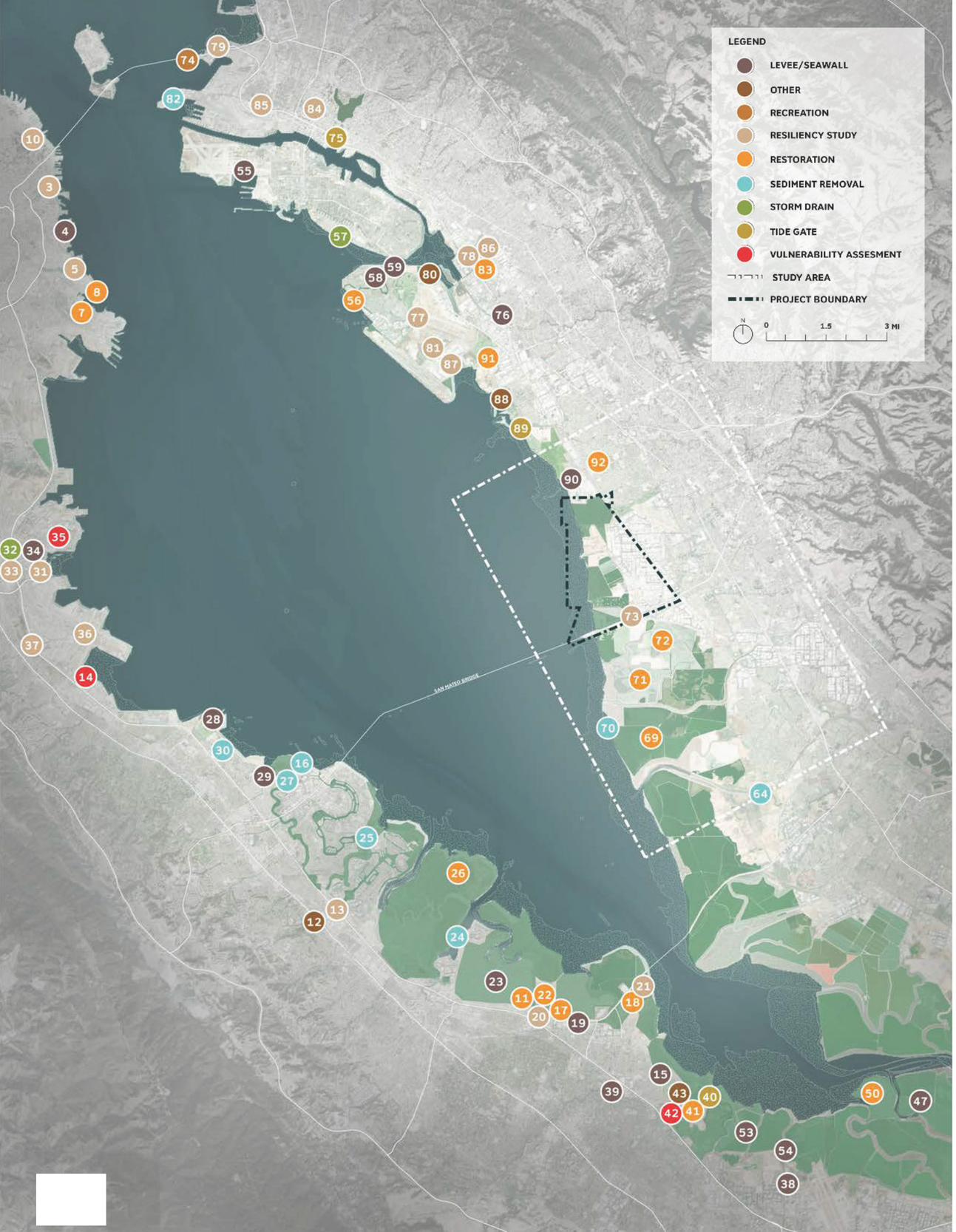
## COORDINATION ACROSS AGENCIES AND ORGANIZATIONS

Implementation of the full range of proposed projects that are part of the preferred alternative will rely on actions of multiple stakeholders. As the lead for the development of the master plan, HASPA and its member agencies are critical stakeholders who are likely to take a lead role in implementing elements of the proposed project that are under their direct control, however other elements will require leadership from other agencies, including Alameda County Flood Control District (ACFCD), East Bay Dischargers Authority (EBDA), CalTrans, and others. In addition, there are numerous additional projects in the study area that present near-term coordination opportunities or necessities (as discussed on page 220). To achieve the long-term vision of the Master Plan and ensure that the actions of individual agencies and private entities are coordinated, additional forms on ongoing governance should be explored. Potential options, which are not mutually exclusive, include:

- Dedicated staff at HASPA member agencies: The Technical Advisory Committee, made up of key staff from City of Hayward, EBRPD, and HARD, has led the development of the master plan. To ensure the ongoing coordination of these agencies to implement the plan, dedicated staff resources will be required. An additional option would be to create a position within one or more member agencies that is dedicated to resilience planning and the implementation of the Master Plan.

- Regional coordination entity: To facilitate implementation of projects beyond the direct control of HASPA member agencies, new forms of regional coordination are needed. There are many existing forums and potential avenues that could form the basis of this coordination within the Bay Area, such as the Bay Adapt platform led by BCDC, or the San Francisco Bay Regional Coastal Hazards Adaptation Resiliency Group (CHARG) effort led by the Bay Area Flood Protection Agencies Association. A new entity specifically focused on the Hayward Region, that includes HASPA as well as other key entities such as ACFCD, may be appropriate. This approach is being taken in other parts of the Bay Area, such as the San Mateo Flood and Sea Level Rise Resilience District, a proposed new agency created to coordinate across jurisdictional lines and leverage state and federal funding sources.

*Union Pacific Rail Corridor between Skywest Golf Course and Oro Loma Marsh*




# 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. Doolitle 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 - Tennesse 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

# NEXT STEPS

# NEXT STEPS

- **Final Public & Stakeholder comment period on project website from 10/12 - 11/30**


PROVIDE FEEDBACK ON THE MASTER PLAN HERE

## PURPOSE OF MASTER PLAN

The **Hayward Regional Shoreline Adaptation Master Plan** was commissioned in 2019 by the **Hayward Area Shoreline Planning Agency (HASPA)** a joint powers agency consisting of representatives from the City of Hayward, East Bay Regional Park District (EBRPD), and Hayward Area Recreation and Park District (HARD).

The Master Plan will develop various multi-benefit strategies for the shoreline, its existing infrastructure, and the surrounding natural habitat in order to adapt to Sea Level Rise. Ultimately, it will act as a road map and help guide the development of future projects in a coordinated effort between state and local agencies, landowners, and the public. The Plan will be a forward looking tool for preparation, mitigation, and adaptation to climate change.

# NEXT STEPS

- **Adoption of Master Plan**
- **HASPA pursuit of grant funding**
- **Implementation!**

**IMPLEMENTATION**
**SHORT-TERM**

- ECOLOGICAL ENHANCEMENTS THAT ALIGN WITH EXISTING EFFORTS AND VULNERABLE SITES
- PILOT PROJECTS TO INFORM LARGER-SCALE APPLICATION OF STRATEGIES
- MONITORING PROTOCOL TO ANALYZE EXISTING CONDITIONS TO INFORM THE PRIORITIZATION OF STRATEGIES AS SEA LEVELS RISE
- INTERIM LEVEE RAISING TO REDUCE RISK UP TO THE EXISTING 100-YEAR STORM

**MEDIUM-TERM**

- MULTI-BENEFIT INFRASTRUCTURE
- OPPORTUNITIES FOR STORMWATER MANAGEMENT
- TIDAL HABITAT ADAPTATION THROUGH ARTIFICIAL SEDIMENT APPLICATION TO HELP MARSHES KEEP PACE WITH SEA LEVEL RISE
- PROVIDE INDEPENDENT UTILITY TO SPECIFIC INLAND AREAS THROUGH BUILDING A LINE OF PROTECTION TO REDUCE RISK UP TO 4' OF SEA LEVEL RISE PLUS THE 100-YEAR STORM

**LONG-TERM**

- COMPLETE FULL LINE OF PROTECTION TO REDUCE RISK UP TO 4' OF SEA LEVEL RISE PLUS 100-YEAR STORM
- CREATE A LAYERED SYSTEM OF EROSION CONTROL INFRASTRUCTURE
- WASTEWATER TREATMENT ADAPTATION TO FACILITATE LOCAL DISCHARGE

# THANK YOU!

# Short-Term Project Matrix

| Project Name | Project Description | Lead Agencies |
|---|---|---|
| Oro Loma Interim Levee | 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.<br><br>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.<br><br>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. | ACFCD, HASPA, Bay Trail, Oro Loma WWTP, EBRPD |
| Line A Tide Gate Improvement | This project is pending the results of the Alameda County Flood Control District's study of the combined impacts of sea level rise (up to 2 feet) and increased precipitation on water levels in the bay and inland waterways.<br><br>This study will examine potential flood control infrastructure needs throughout the service area, including San Lorenzo Creek, Sulphur Creek, Bockman Canal, Line A, and Line F. Other improvements are proposed to be integrated into adjacent flood protection levee projects, but Line A should move forward independently. The Line A tide gate will be relocated to connect the high points of the two landfills. Potential strategies include tide gate improvements, raising of canal walls, or other features to protect the service area from flooding from stormwater, sea level rise, and storm surge. | ACFCD, HASPA |
| Cogswell Marsh Pilot | This pilot project includes sediment placement to augment the marsh and a gravel beach along the shoreline to reduce marsh erosion. This pilot is intended to test these strategies as a sustainable strategy for adapting the area marshes. The pilot will be monitored as part of the ecosystem adaptive management plan and inform mid and long term restoration projects. | EBRPD, BCDC, USACE |

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|---|---|---|
| Hayward Marsh Restoration | This project aligns with the current Hayward Marsh Restoration Plan currently underway with East Bay Regional Park District. It is intended to promote the health and resilience of Hayward Marsh and incorporate new restoration projects for shoreline resilience. The design and management of Hayward Marsh will be informed by the pilot monitoring and the Ecosystem Adaptive Management Plan. This project includes the Least Tern Colony relocation, a gravel beach, tidal habitat restoration, and includes the diked bay lands east of the SMHM Preserve. | EBRPD, BCDC, USACE, ADFW, HASPA |
| Salt Marsh Harvest Mouse Preserve Interim Levee | 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 Waste Pollution Control Facility. 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.<br><br>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. | EBRPD, HASPA, HARD, ACFCD |
| Oliver Salt Ponds Restoration | The timing of this project is dependent on the pilot monitoring of adjacent sites and the Adaptive Management Plan. Oliver Salt Ponds is vulnerable to sea level rise and its restoration can facilitate long-term resilience. Tidal habitat restoration is paired with new salt pond habitat that will provide similar shorebird habitat further inland, where it is less vulnerable to inundation. This project includes the Oliver Salt Ponds gravel beach, sediment placement, and the Salinas habitat north of Hayward Marsh and near West Winton Landfill. | EBRPD, BCDC, USACE, CDFW, HASPA |

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|---|---|---|
| Landfill Vulnerability Assessment | The purpose of this project is to assess the existing conditions and resiliency issues of Alameda County and West Winton landfills. Both sites were closed in the 1970s but were not designed to experience inundation or wave action. The conditions of the cap and the contents of the landfill are largely unknown, and more data investigation and analysis are needed to understand how they may be impacted by erosion, coastal flooding, sea level rise, and groundwater emergence. Once this investigation has been done, design solutions and phasing for how to address these issues can be developed. | COH, ACFCD |
| Groundwater Management Plan | The purpose of this project is to study the feasibility of various approaches for managing rising groundwater tables due to sea level rise. As the sea level rise maps demonstrate, portions of the industrial district and residential areas are vulnerable to potential groundwater emergence with 2 feet of sea level rise and with 4 or 7 feet of sea level rise greater portions of surrounding neighborhoods are also impacted.<br><br>Rising groundwater cannot be mitigated through the approaches that address inundation from tides or coastal surge. Seepage barriers below seawalls or levees can mitigate temporary groundwater rise due to a coastal storm but are not effective at preventing elevated groundwater tables due to gradual sea level rise. | COH, Property Owners |
| Stormwater Management Study | This project has already begun. | ACFCD |
| EBDA Study | The purpose of this study will be to gather information to inform the design of horizontal levee within the project area. | EBDA |
| Ecosystem Adaptative Management Plan & Monitoring | The purpose of this project is to develop an ecosystem management plan for the mosaic of existing and proposed wetland complexes in the Hayward Shoreline. This management plan will focus on identifying in greater detail the potential impacts of sea level rise on tidal wetlands and muted marshes through the development of an ongoing monitoring program. This will include monitoring of tide levels and sediment accretion, as well as tracking of changes in vegetation to identify potential triggers for restoration and to inform future restoration plans. This program can include opportunities for community stewardship and volunteering. | HASPA |

| | | |
|---|---|---|
| Hayward Shoreline Interpretive Center Renovation | This project includes overall improvements to address structural and programmatic needs of the interpretive center including ADA access improvements and energy retrofits. | HARD |
| Sediment Pipeline | This project is to create a pipeline from the Don Castro Reservoir to the bay to provide a sediment source for restoration and adaptation projects. The Don Castro reservoir has filled with sediment, reducing its flood control capacity. This sediment has the potential to be piped in a slurry to the Hayward shoreline for reuse. Alameda County Flood Control District has studied the pipeline as a cost-effective piece of infrastructure that would increase flood capacity. There is great potential to utilize the sediment slurry in new restoration or adaptation projects to create a multi-benefit piece of infrastructure that can be utilized over time. | ACFCD, EBRPD, BCDC |