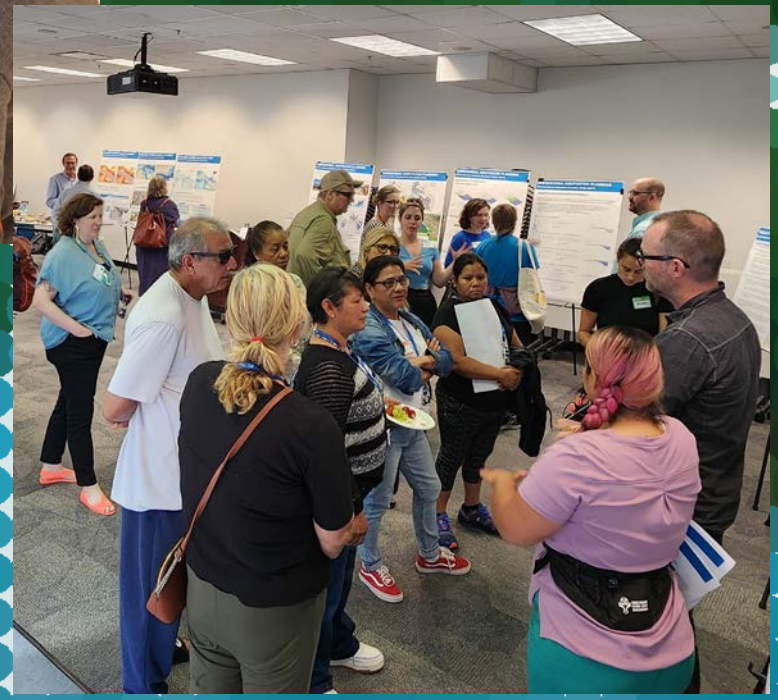
OAAC Adapt Projects

City of Alameda Transportation Commission

November 2024

6-B Exhibit 1
Transportation Commission Meeting
November 20, 2024

OAAC Adapt Overview



Oakland Alameda Adaptation Committee (OAAC):

A coalition of shoreline communities, agencies and stakeholders working to coordinate the Oakland Alameda subregion flood and adaptation projects to protect and restore water quality, habitat, recreation and community resilience.

OAAC: Project Partners

Agencies

CITY OF Oakland

Caltrans

ALAMEDA

PORT OF OAKLAND
Seaport. Airport. Everyone's Port.

East Bay Regional Park District

Alameda County Flood Control & Water Conservation District

CALIFORNIA WATER BOARDS
San Francisco Bay - R2

Community Partners

CASA
Community Action for a Sustainable Alameda

SOGOREA TE' LAND TRUST
LED BY URBAN INDIGENOUS WOMEN

SFEI | AQUATIC SCIENCE CENTER
SAN FRANCISCO ESTUARY INSTITUTE & THE AQUATIC SCIENCE CENTER

Hood Planning Group

Ninth Root

REAP CLIMATE CENTER

GREENBELT ALLIANCE

OAAC Subregional Goals

1. **Protect** Oakland-Alameda sub-region from the negative effects of expected sea level, inland flooding, and groundwater rise and liquefaction

2. Identify and develop opportunities for **multi-benefit** adaptations strategies

3. Avoid negatively affecting **neighboring subregions** through protection and adaptation measures

4. Utilize an **adaptation pathways** approach to address different SLR thresholds and time horizons. Identify near, mid, and long-term adaptation strategies

5. Enhance **transportation**, **recreation** corridors, **bay access**, and the San Francisco **Bay Trail**

6. Preserve and increase **open space** where possible.

7. Improve subtidal, intertidal, transitional, and upland habitat with **nature-based solutions**

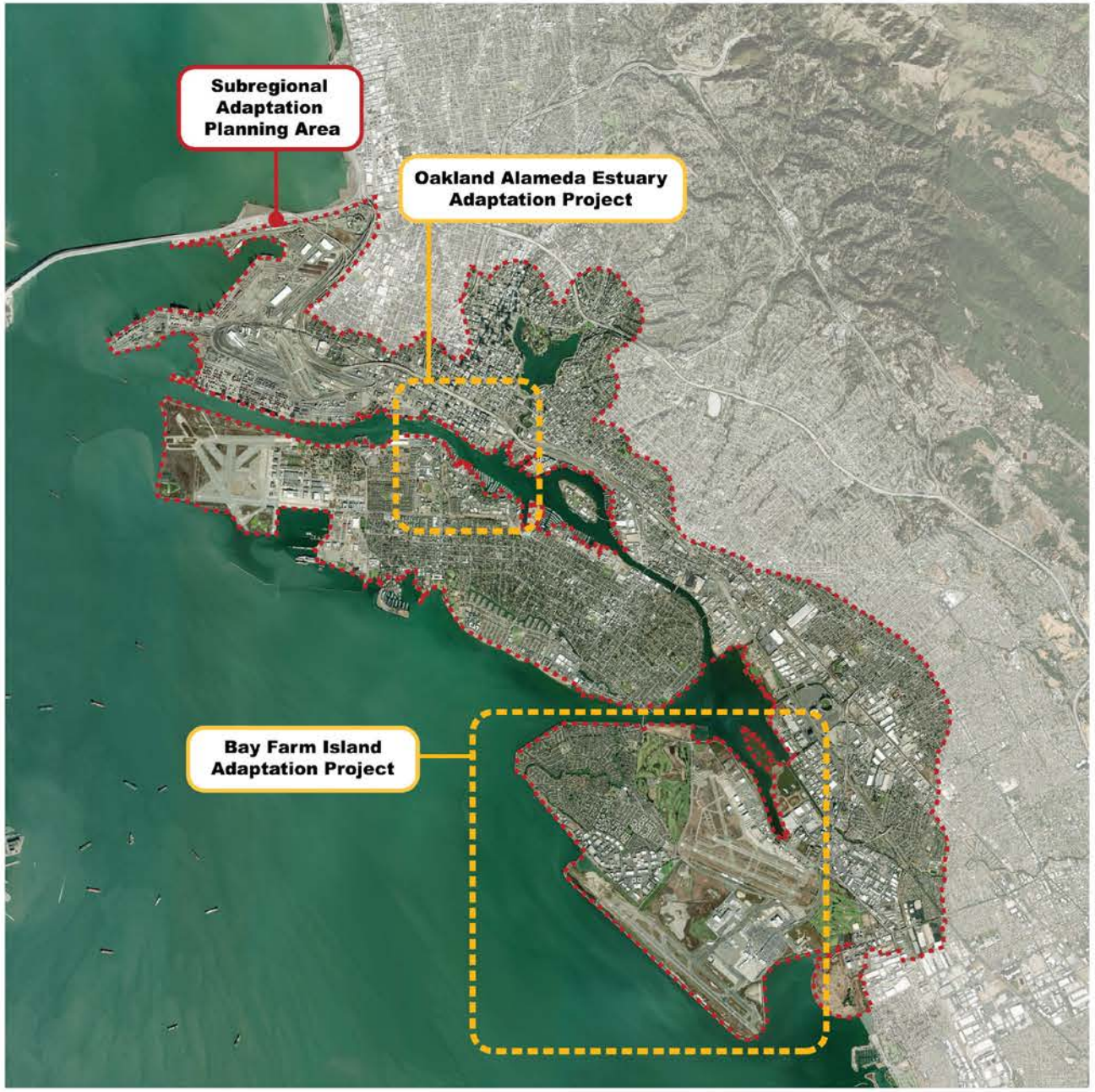
8. Improve **air quality**

OAAC ADAPT Projects

- The **Subregional Adaptation Plan** is a long-term plan that details preliminary strategies and pathways for shoreline communities to take as the climate and shorelines change over time

- The **Oakland Alameda Estuary Project** is a near-term sea level rise adaptation design concept to address increased coastal, stormwater, and groundwater flooding for up to two feet of sea level rise over the coming decades

- The **Bay Farm Island Adaptation Project** is a near-term sea level rise adaptation project to address two feet of sea level rise over the coming decades.



Schedule


2023 FALL
2024 JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
2025 JAN FEB MAR APR MAY JUNE JULY AUG SEPT
Planning Principles, Analysis and Criteria
Strategy Foundation
Strategy Development & Stakeholder Input
Strategy Refinement
Plan Completion & Council Hearings
Long-Term Subregional Adaptation Plan
Existing Conditions & Analysis
Develop Alternatives
Alternative Refinement & Stakeholder Input
Preferred Concept
30% Design Development of Preferred Concept
30% Design Completion & Council Hearings
Near-Term Bay Farm Island Adaptation
We are here!
Existing Conditions & Analysis
Develop Alternatives
Altenative Refinement & Stakeholder Input
Final Concept Development
Final Concept & Council Hearings
Project Grant Deadline Feb 2025
Near-Term Oakland Alameda Estuary Adaptation

Adaptation Measures

Sea Level Rise Project Criteria

Near Term

2060 - 2080
35 to 50-year adaptation project lifespan

2' of sea level rise

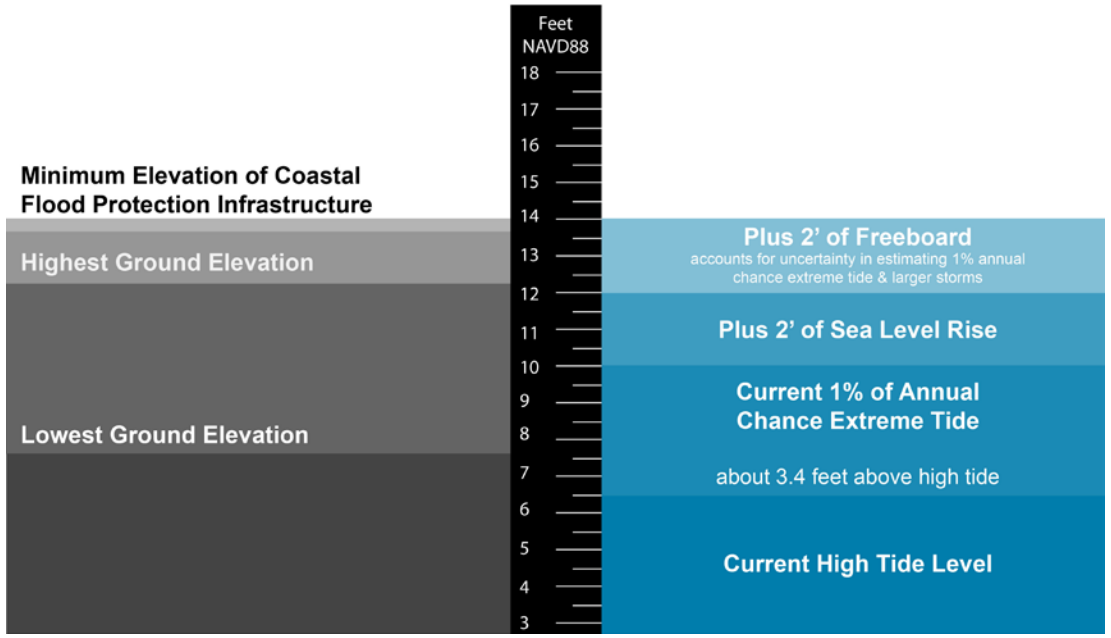
Protect to elevation +14’

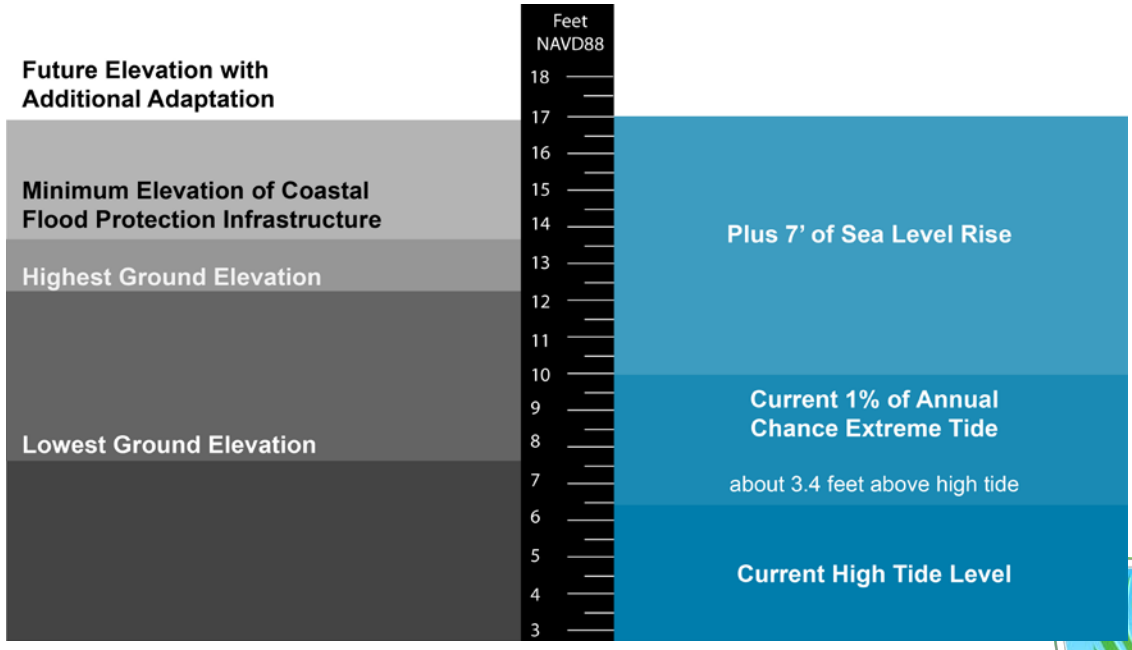
Long Term

2100+
Build upon near term projects

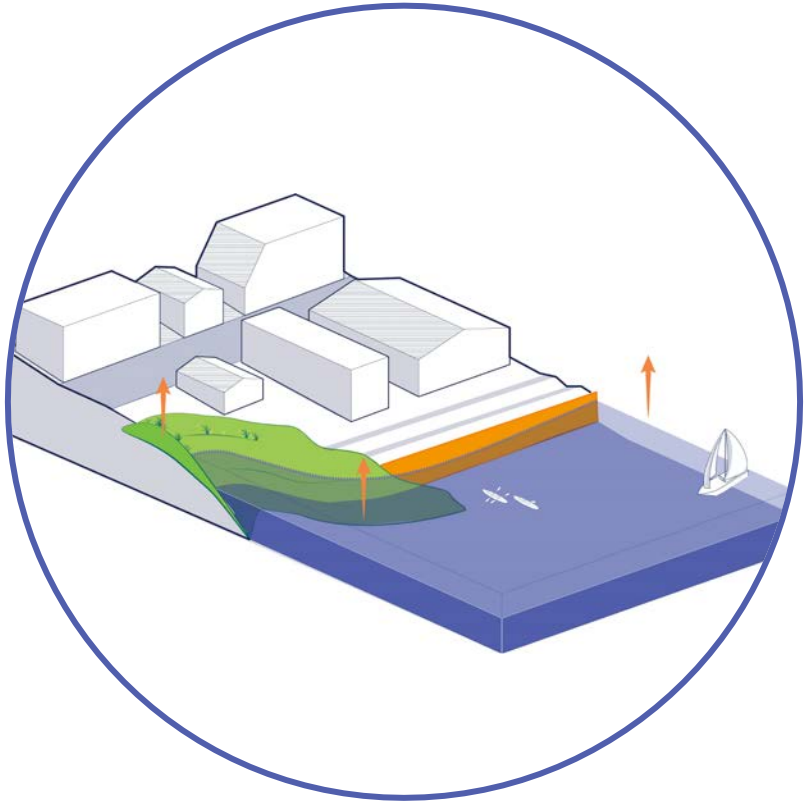
3.5 - 7' of sea level rise

Protect to elevation +17’



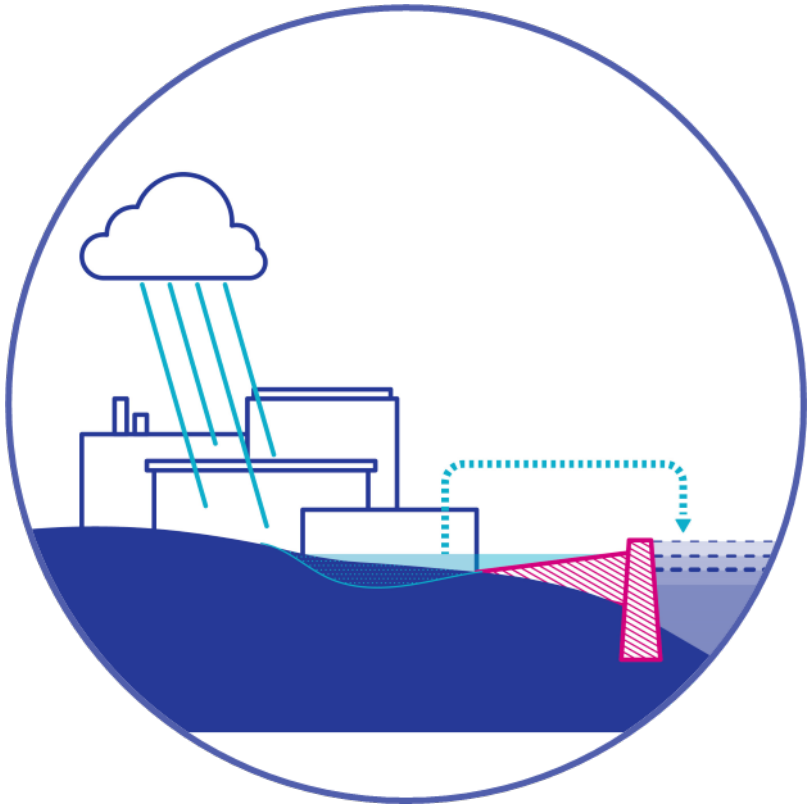


Combined Adaptation



Shoreline elevation to prevent coastal flooding from sea level rise and storm surges

+



Inland adaptation (green and grey infrastructure) to manage stormwater and groundwater

Seawall

Seawall at Jack London District

Levee with Seawall and the Bay Trail

Foster City Shoreline Protection Levee with Seawall and Bay Trail

Levee and Waterfront Park

Alameda Point at Seaplane Lagoon

Waterfront Park with Water Access

Waterfront Park with beach access and rocky intertidal habitat

Crane Cove Park, San Francisco

Stormwater detention basins

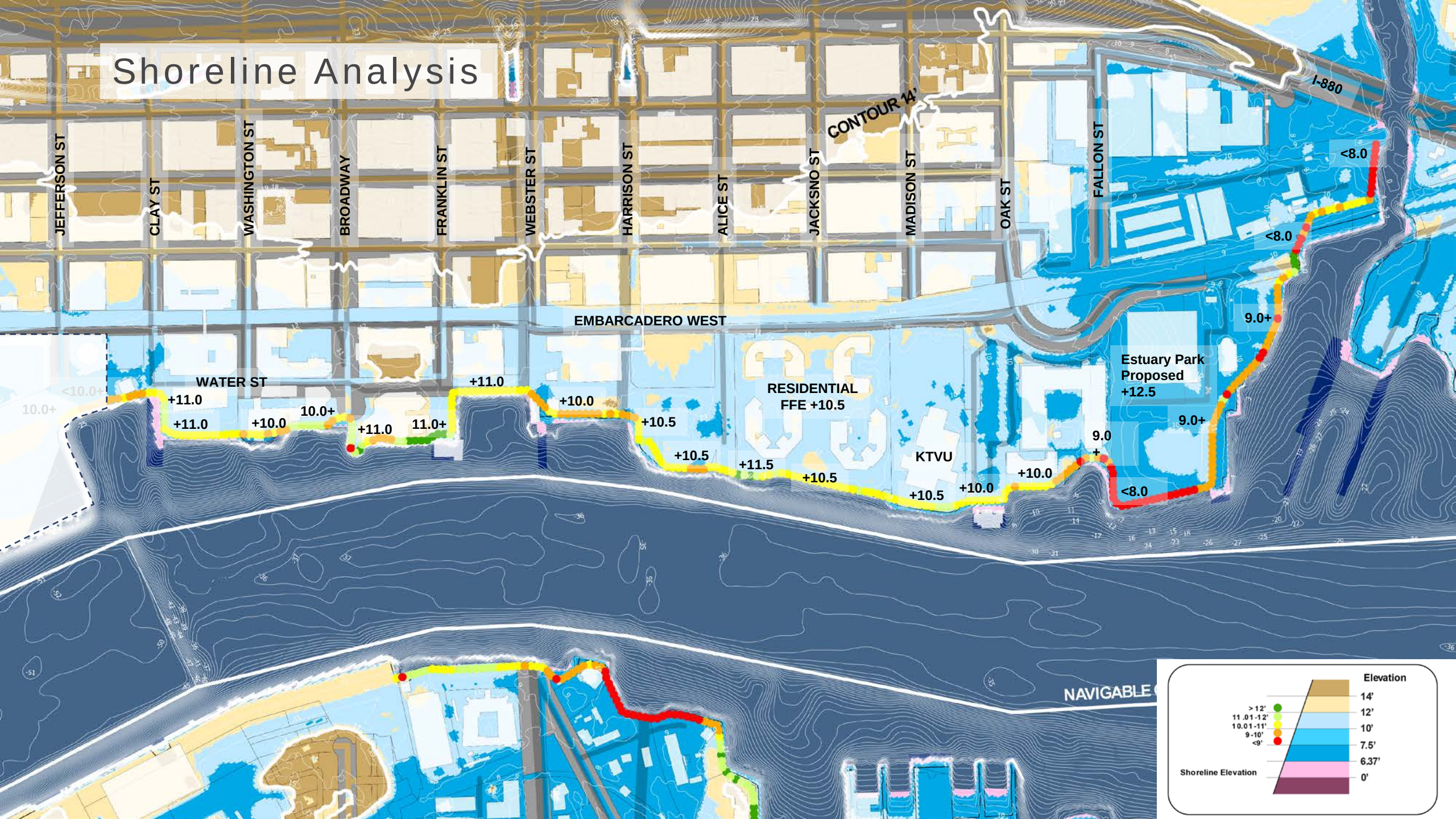
Stormwater Basin at Fifth and Eucalyptus Street, Alameda

Oakland-Alameda Estuary Near-Term Adaptation Project

November 2024


Project Area:
Oakland-Alameda Estuary
Jack London Square
Bohol Circle
I-880
Oakmont
The Landing
Barnhill Marina
Lake Merritt Channel
Estuary Park
Marina Village
Shoreline Park
OAKLAND ALAMEDA ESTUARY

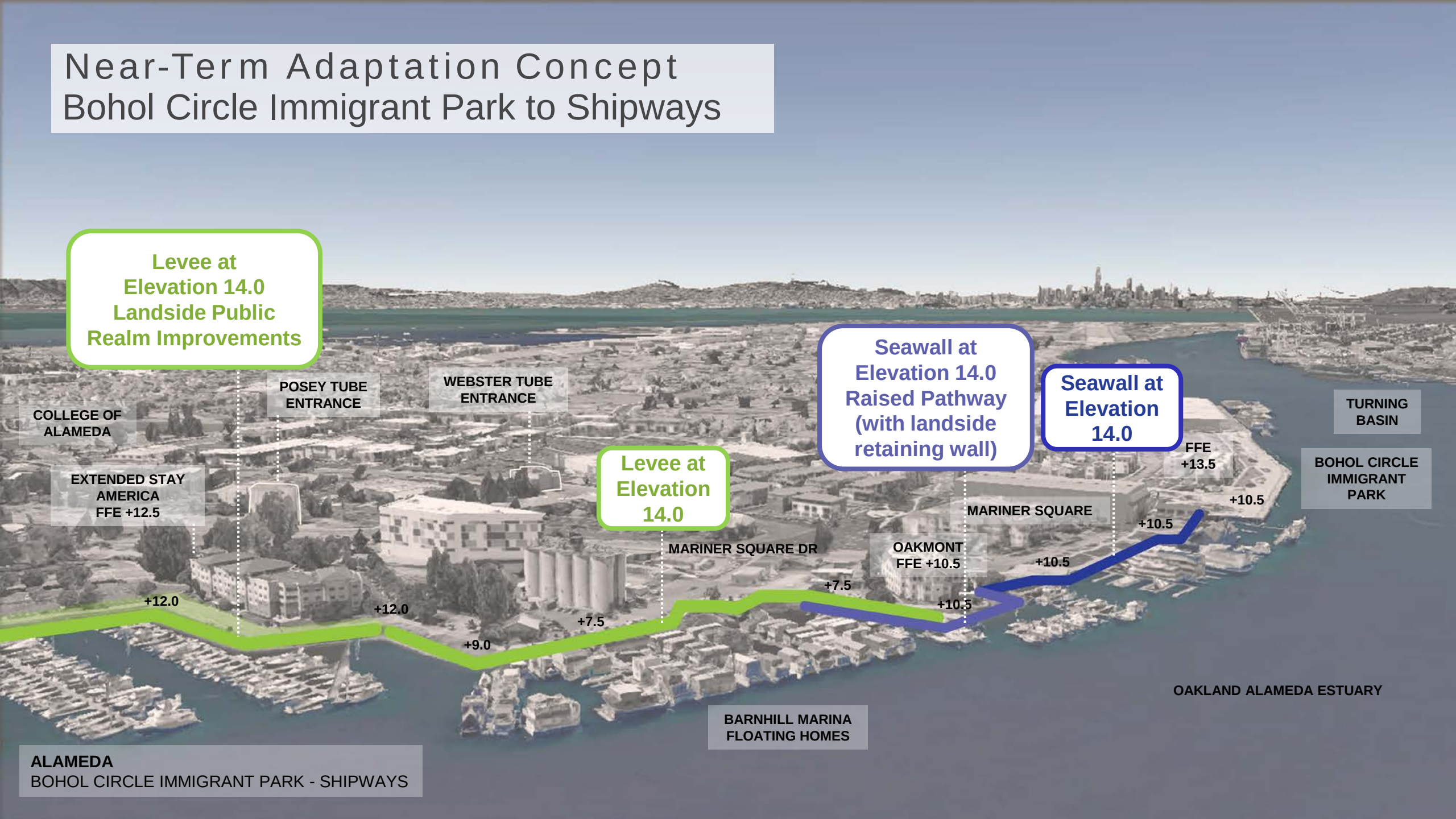
Shoreline Analysis


Shoreline Analysis
JEFFERSON ST
CLAY ST
WASHINGTON ST
BROADWAY
FRANKLIN ST
WEBSTER ST
HARRISON ST
ALICE ST
JACKSNO ST
MADISON ST
OAK ST
FALLON ST
CONTOUR 14'
I-880
EMBARCADERO WEST
WATER ST
RESIDENTIAL
FFE +10.5
KTVU
Estuary Park
Proposed
+12.5
<10.0+
10.0+
+11.0
+10.0
+10.5
+11.5
9.0+
9.0
+
<8.0
NAVIGABLE
Elevation
> 12'
11 .01-12'
10.01-11'
9-10'
<9'
Shoreline Elevation
14'
12'
10'
7.5'
6.37'
0'

Alameda Shoreline Adaptation

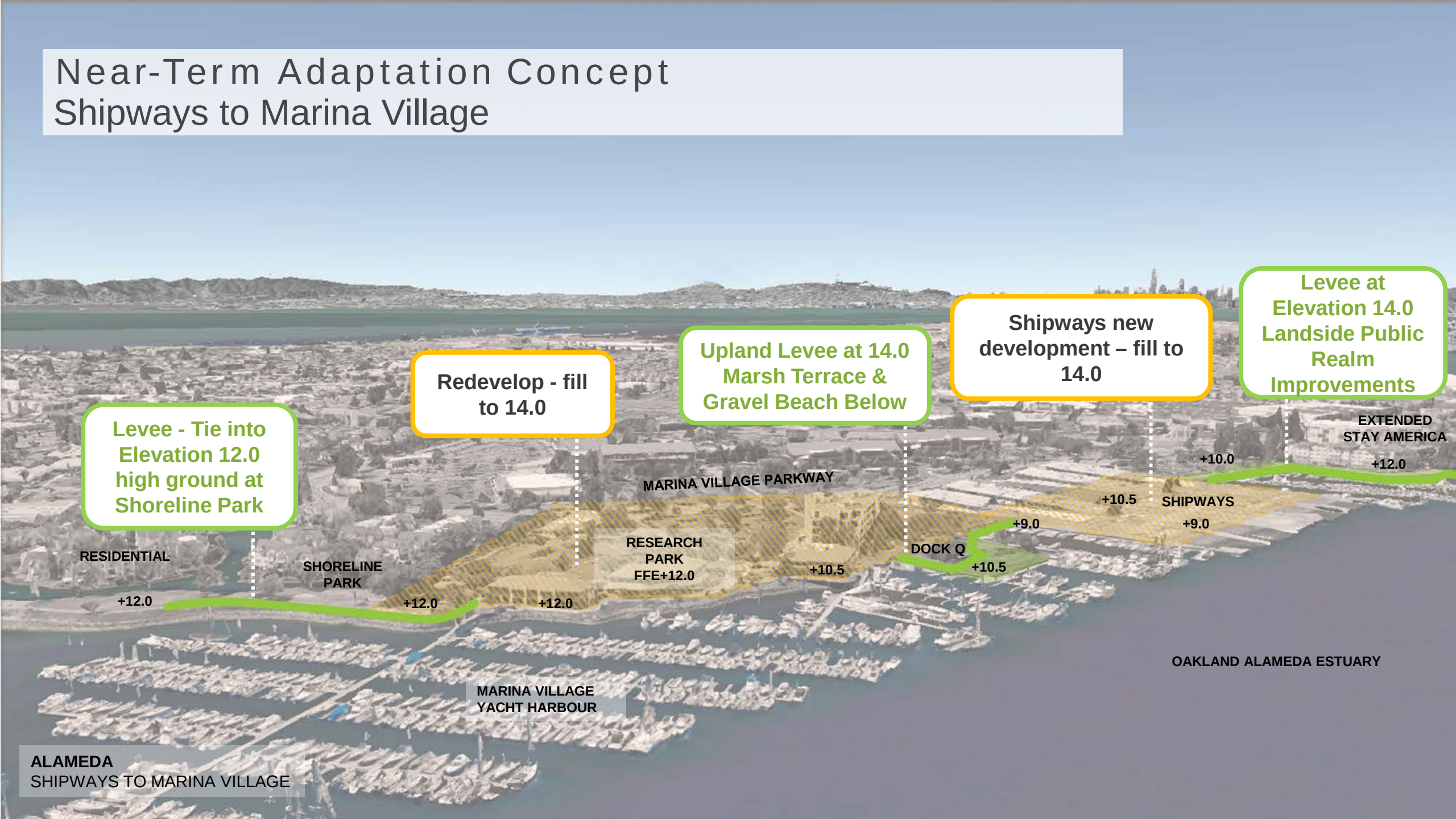
Bohol Circle Immigrant Park to Marina Village

Near-Term Adaptation Concept
Bohol Circle Immigrant Park to Shipways



ALAMEDA
BOHOL CIRCLE IMMIGRANT PARK - SHIPWAYS

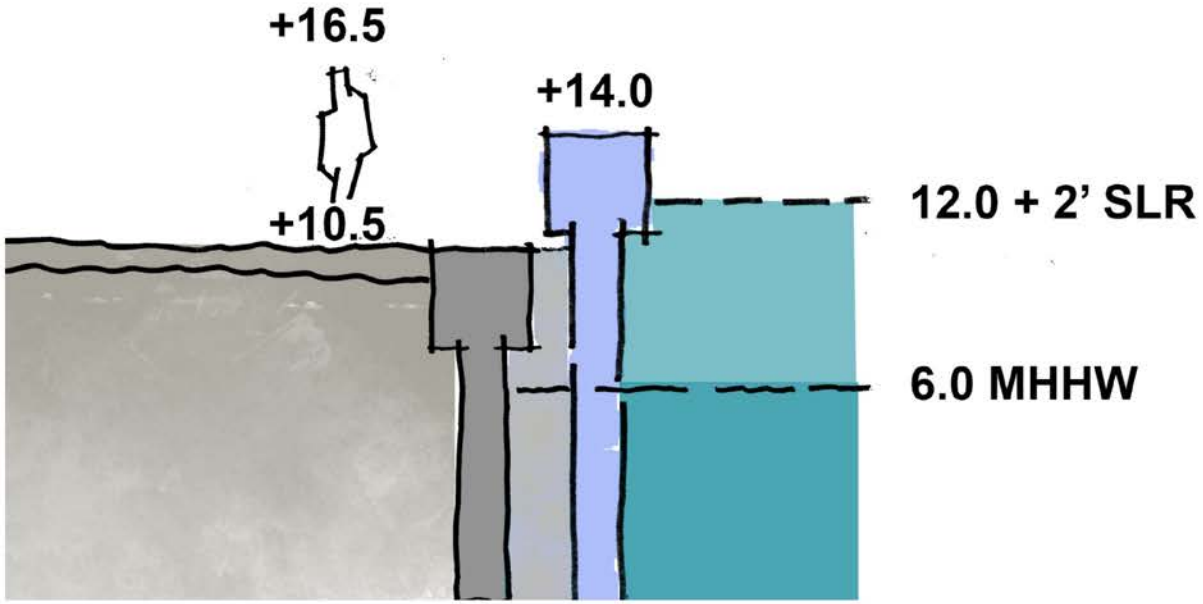
Near-Term Adaptation Concept
Shipways to Marina Village



Alameda Shoreline – Near Term Adaptation

Typical Condition (Oakmont to Bohol Circle)

Elevated **Seawall**

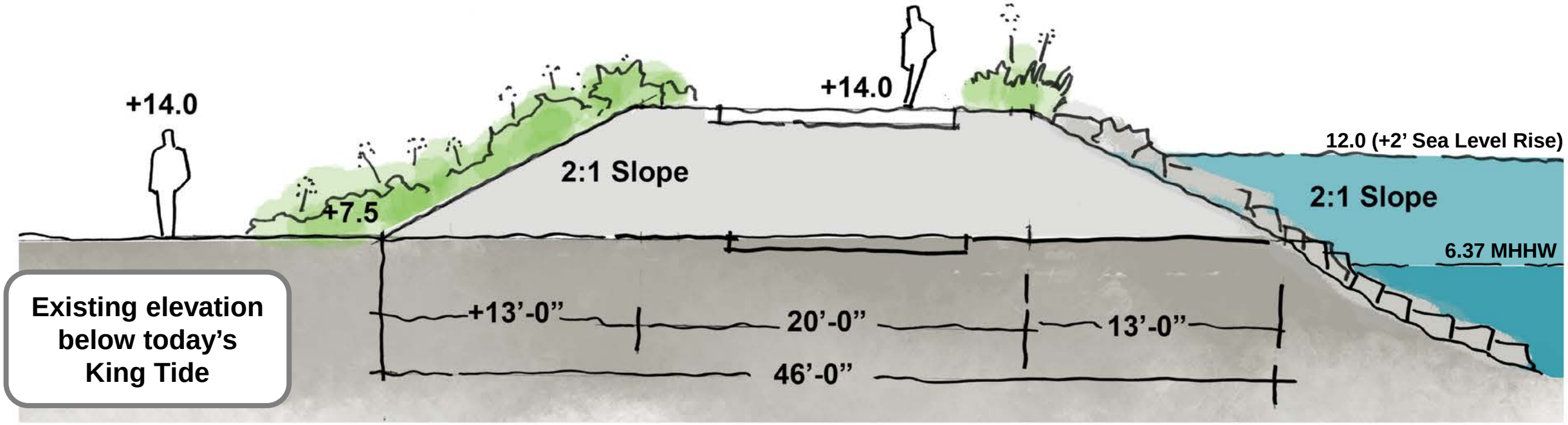


Alameda Shoreline – Near Term Adaptation

Typical Condition (Shipways to Barnhill Marina)

Shoreline **Levee**

Levee elevated to +14.0. Over 6 feet tall relative to adjacent grade.

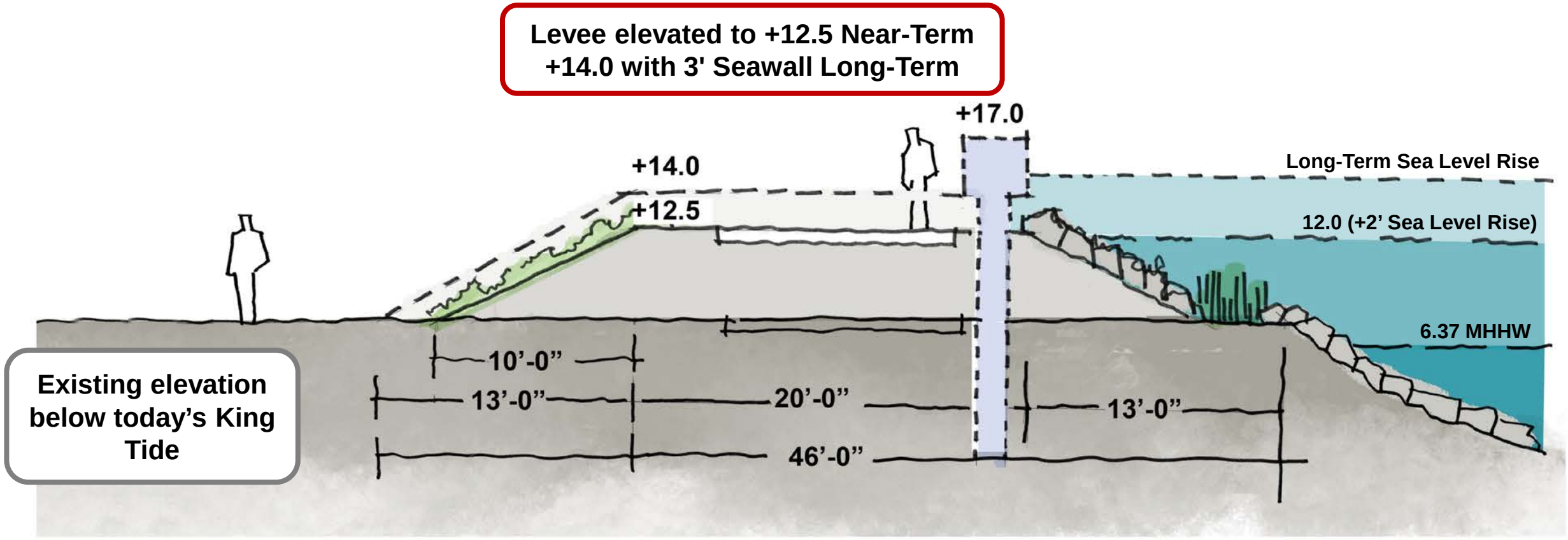


Existing elevation below today's King Tide

Alameda Shoreline – Long Term Adaptation

Typical Condition (Shipways to Barnhill Marina)

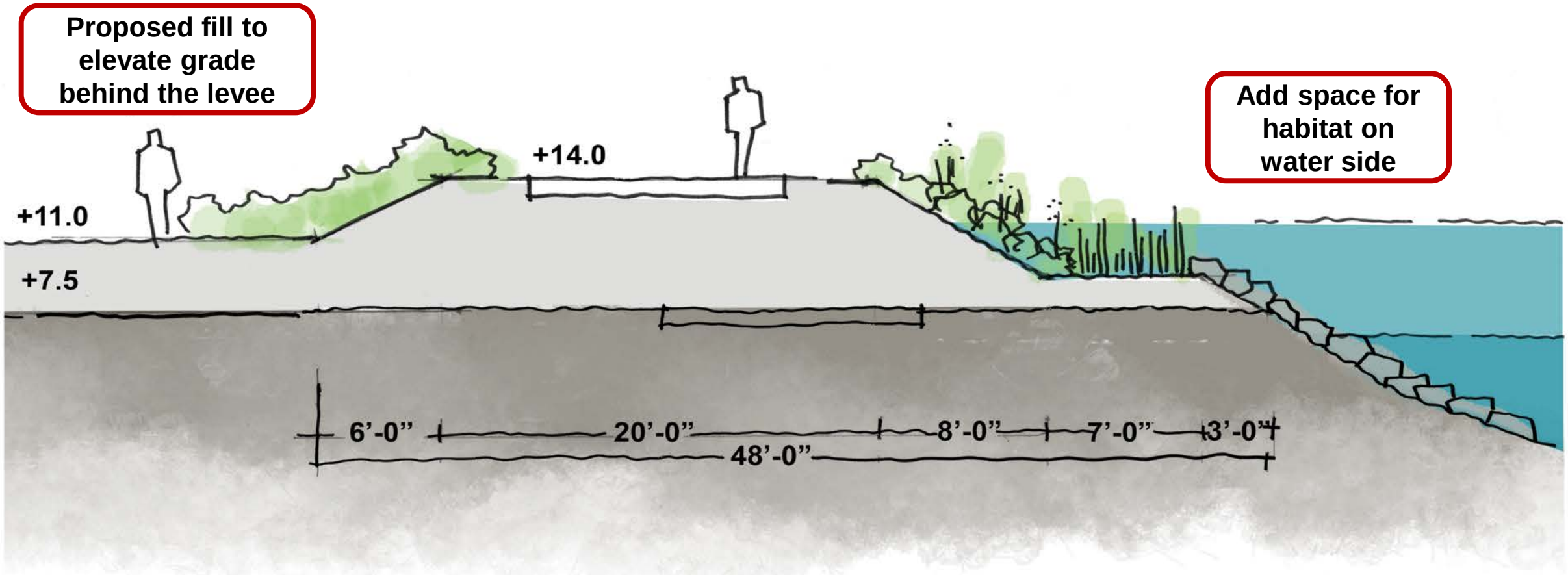
Shoreline **Levee with Seawall**



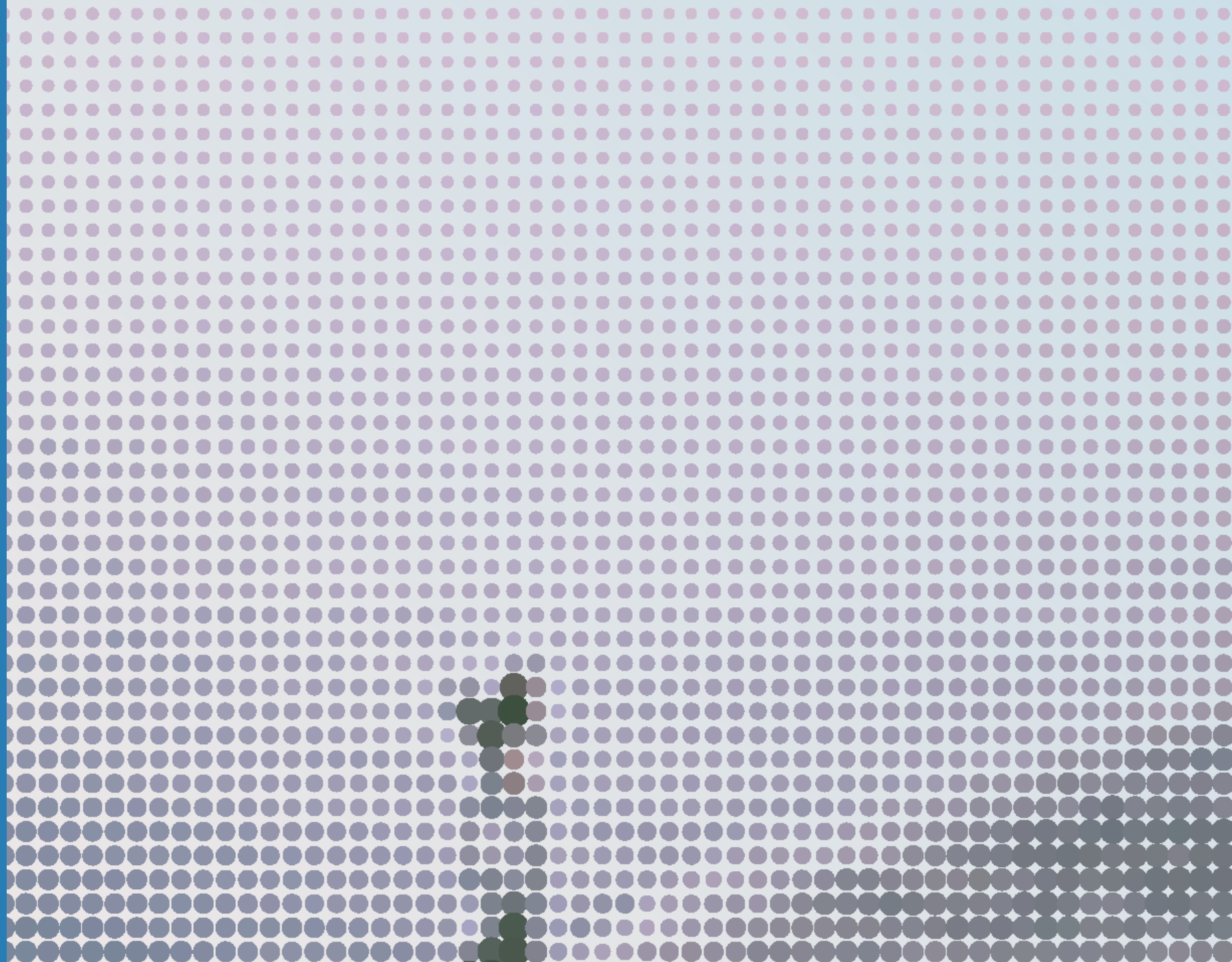
Alameda Shoreline – Near Term Adaptation

Redevelopment Sites

Shoreline **Levee w/ Raised Grade Inland**



Alameda Inland Flood Protection Concept



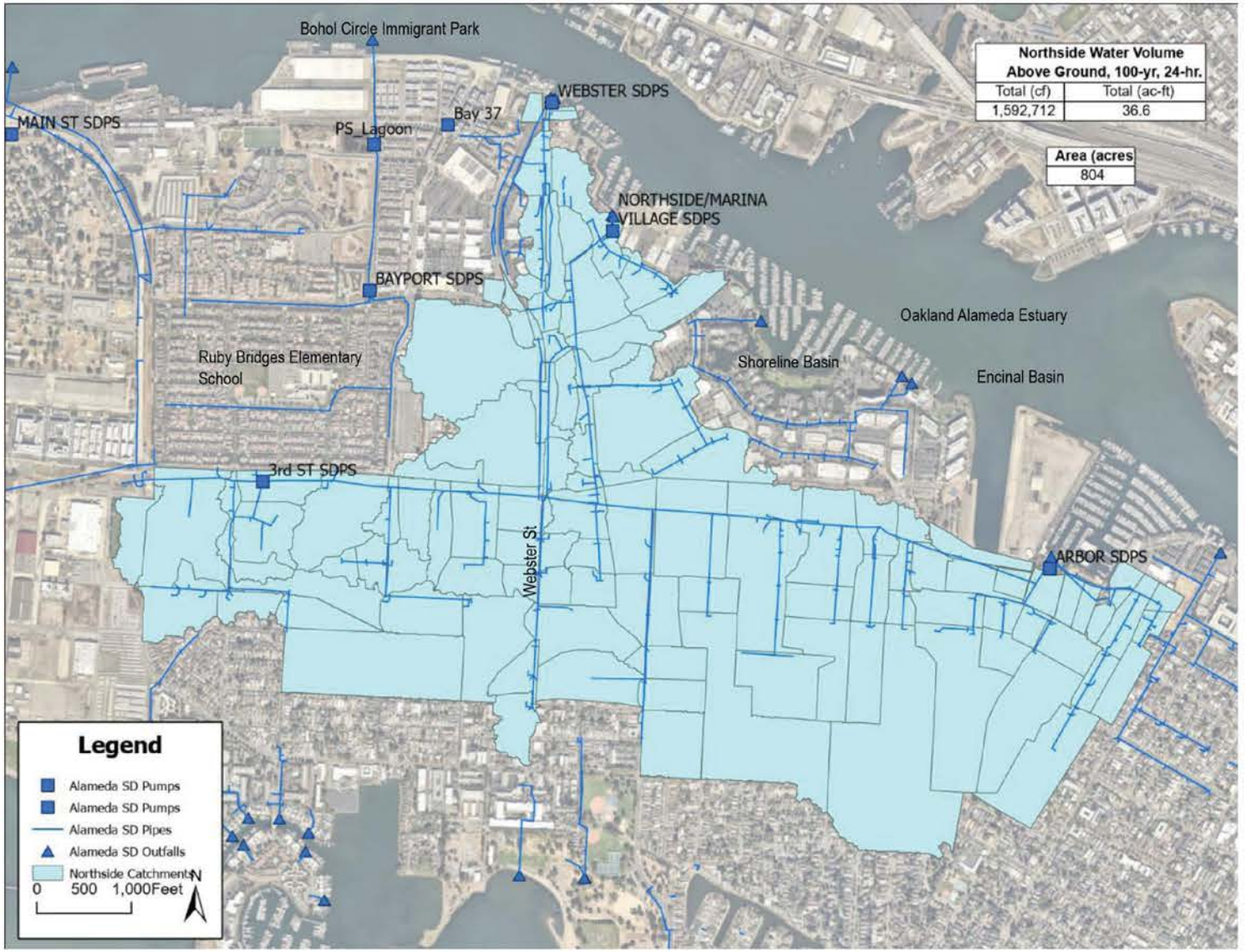
Inland Flooding Analysis
Stormwater Modeling: Northside of Alameda

- Volume of water above ground (stormwater flooding) currently generated by 100-yr, 24-hr storm: 36.6 acre-feet
- This is the volume of water that does not fit in Alameda's storm drain system today.
- Analysis includes stormwater detention for today's volume with added capacity for future increases.

Estimated Future Precipitation % Increase With Climate Change

		10-yr	100-yr
2050	3-hr	21.6%	25.8%
	24-hr	17.9%	22.1%
2060	3-hr	27.8%	32.7%
	24-hr	22.2%	26.8%
2070	3-hr	33.7%	39.3%
	24-hr	25.9%	31.2%
2080	3-hr	40.7%	47.1%
	24-hr	30.7%	36.6%
2090	3-hr	49.6%	56.9%
	24-hr	37.1%	43.7%
2100	3-hr	59.0%	67.2%
	24-hr	43.6%	51.0%

San Francisco Bay Area Domain SSP5-8.5



Inland Flooding Conceptual Detention Basin Locations

Inland Flooding Conceptual Detention Basin Parameters

Location	Type	Area (acres)	Approximate Ground Elevation at Location (ft NAVD88)	Approximate SD Main Ground Elevation at Location (ft NAVD88)	Approximate SD Main Invert Elevation at Location (ft NAVD88)	Target Storage Depth (ft)[1]	Detention Basin Media	Porosity	Depth (ft)	Excavation Depth (ft)[2]	Total Storage Depth (ft)	Storage Volume (acre-ft)	Total Storage Volume (acre-ft)
Jean Sweeney Park	Detention with GI	4.2	16.0	17.0	10.4	5.1	Ponding	1	1	4	5.1	4.2	16
							Soil	0.2	1.5			1.3	
							Modular Storage	0.95	2.6			10.4	
Neptune Park	Detention with GI	2.9	7.5	8.9	2.7	4.7	Ponding	1	1	3	4.7	2.9	10
							Soil	0.2	1.5			0.9	
							Modular Storage	0.95	2.2			6.1	
Marina Village Parkway ROW[3]	ROW GI with Detention	2.0	Varies	Varies	Varies	4.5	Ponding	1	1	Varies	4.5	2.0	6
							Soil	0.2	1.5			0.6	
							Modular Storage	0.95	2.0			3.7	
City of Alameda ROW[4]	ROW GI with Detention	0.3	Varies	Varies	Varies	4.5	Ponding	1	1	Varies	4.5	0.2	1
							Soil	0.2	1.5			0.1	
							Modular Storage	0.95	2.0			0.4	
Alameda #1	Detention with GI	1.3	7.5	6.6	2.7	2.4	Ponding	1	0.9	3	2.4	1.2	2
							Soil	0.2	1.5			0.4	
Alameda # 2 and #3	Detention with GI	0.8	7.5	7.3	2.0	3.8	Ponding	1	1	4	3.8	0.8	2
							Soil	0.2	1.5			0.2	
							Modular Storage	0.95	1.3			1.0	
College of Alameda #1A & #1B	Detention with GI	4.5	10.5	10.8	2.0	7.3	Ponding	1	1	7	7.3	4.5	26
							Soil	0.2	1.5			1.4	
							Modular Storage	0.95	4.8			20.5	
College of Alameda #2	Detention with GI	1.4	9.0	8.0	3.4	3.1	Ponding	1	1	4	3.1	1.4	3
							Soil	0.2	1.5			0.4	
							Modular Storage	0.95	0.6			0.8	
College of Alameda #3A-#3F	Grey Detention	15.1	15.0	11.5	2.7	7.3	Modular Storage	0.95	4	7	4.0	57	57
Bay Eagle Park	Detention with GI	0.6	9.0	9.9	3.7	4.7	Ponding	1	1	4	4.7	0.6	2
							Soil	0.2	1.5			0.2	
							Modular Storage	0.95	2.2			1.2	
Parking Lot - Marina Village Parkway	Detention with GI	1.6	9.0	10.0	5.4	3.1	Ponding	1	1	2	3.1	1.6	3
							Soil	0.2	1.5			0.5	
							Modular Storage	0.95	0.6			0.9	
REAP #1 (to Webster PS)	Detention with GI	1.2	4.5	6.9	2.7	2.7	Ponding	1	1	0	2.7	1.2	2
							Soil	0.2	1.7			0.4	
REAP #2 & #3 (to Marina PS)	Detention with GI	1.5	6.0	8.2	-0.8	7.5	Ponding	1	1	5	7.5	1.5	9
							Soil	0.2	1.5			0.5	
							Modular Storage	0.95	5			7.1	
												Total	**139**

37 acre-ft

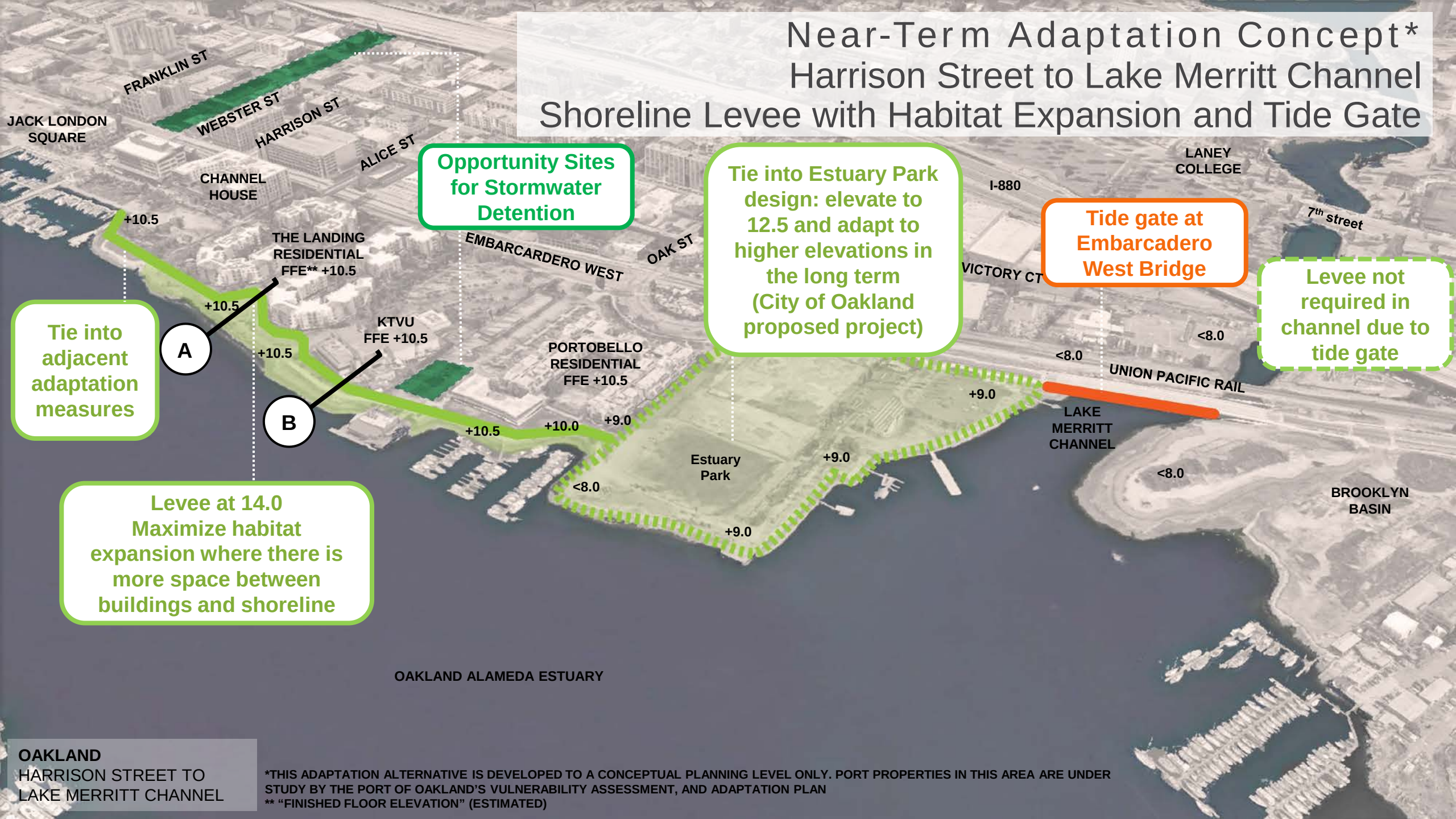
Oakland Shoreline Adaptation Concepts

Jefferson Street to Lake Merritt Channel

Jack London Square - Port of Oakland Area of Study*

*AREA IS UNDER STUDY BY THE PORT OF OAKLAND'S VULNERABILITY ASSESSMENT, AND ADAPTATION PLAN

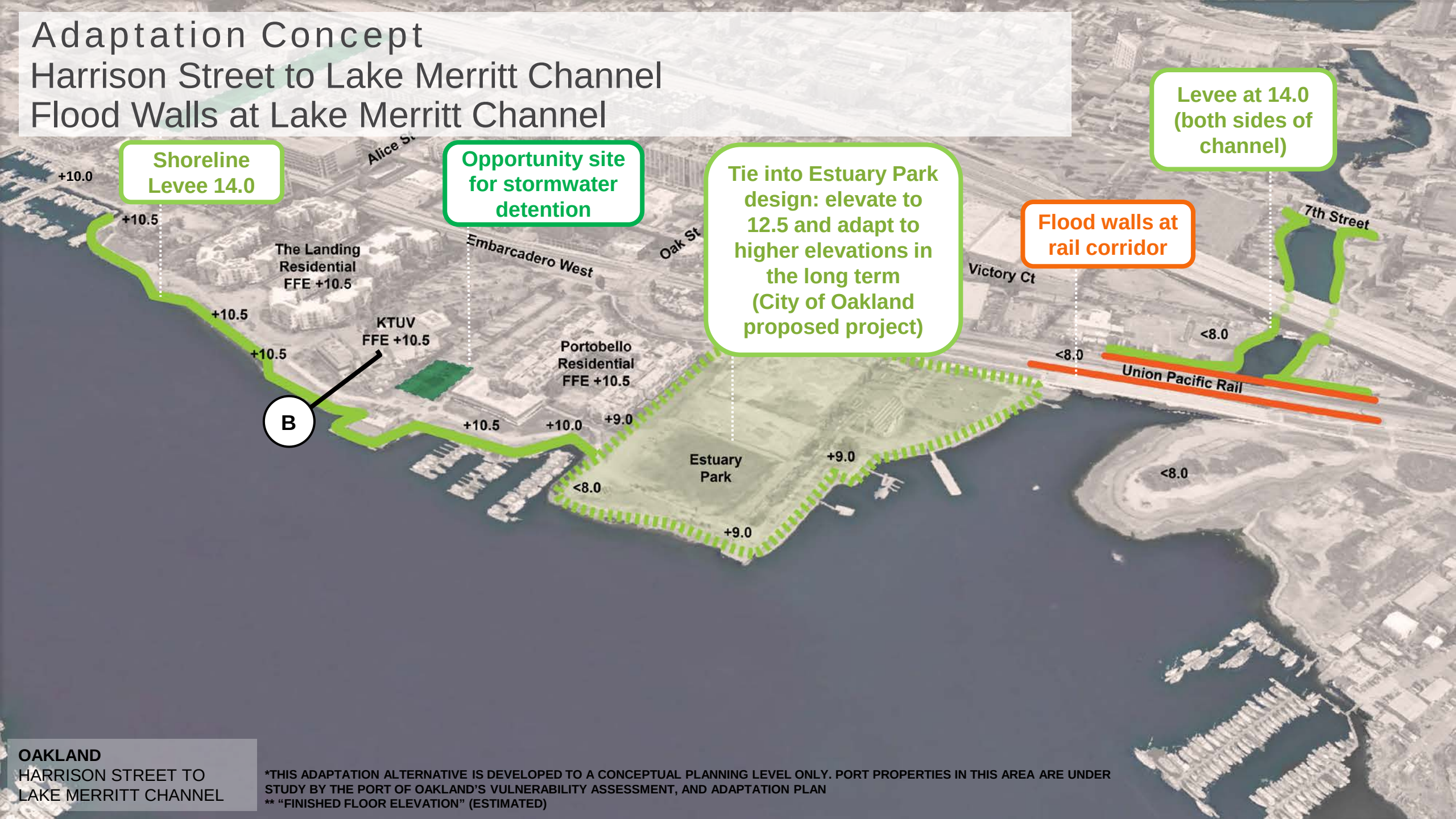
Near-Term Adaptation Concept*
Harrison Street to Lake Merritt Channel
Shoreline Levee with Habitat Expansion and Tide Gate



OAKLAND
HARRISON STREET TO
LAKE MERRITT CHANNEL

*THIS ADAPTATION ALTERNATIVE IS DEVELOPED TO A CONCEPTUAL PLANNING LEVEL ONLY. PORT PROPERTIES IN THIS AREA ARE UNDER STUDY BY THE PORT OF OAKLAND'S VULNERABILITY ASSESSMENT, AND ADAPTATION PLAN
** "FINISHED FLOOR ELEVATION" (ESTIMATED)

Adaptation Concept
Harrison Street to Lake Merritt Channel
Flood Walls at Lake Merritt Channel



OAKLAND
HARRISON STREET TO
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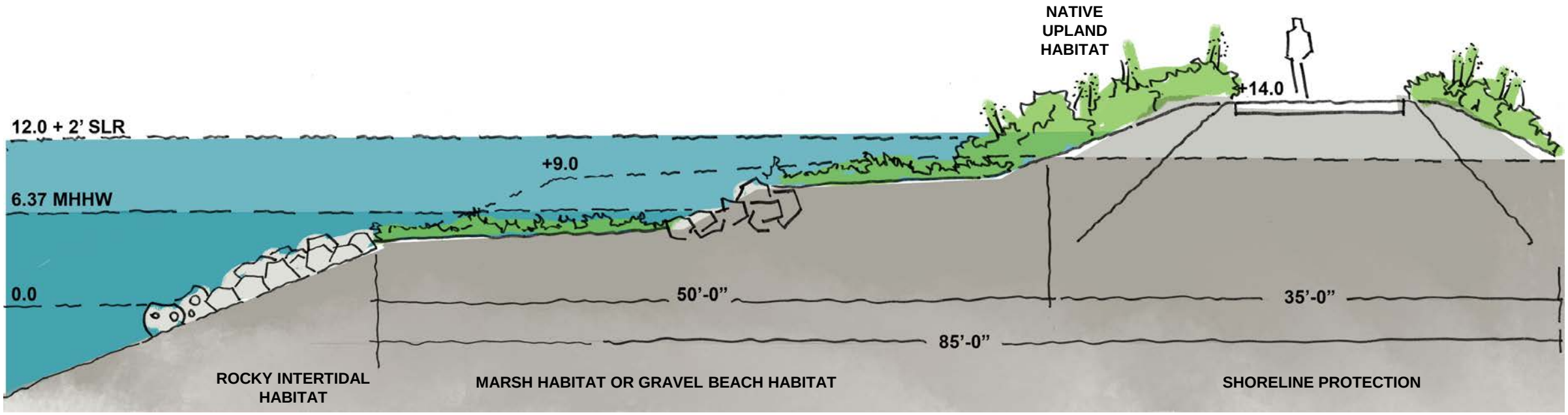
** "FINISHED FLOOR ELEVATION" (ESTIMATED)

Oakland Shoreline – Near-Term Adaptation Concept

Harrison Street to Lake Merritt Channel

Upland Levee with Habitat Expansion

Focused where more space is available between buildings and existing shoreline



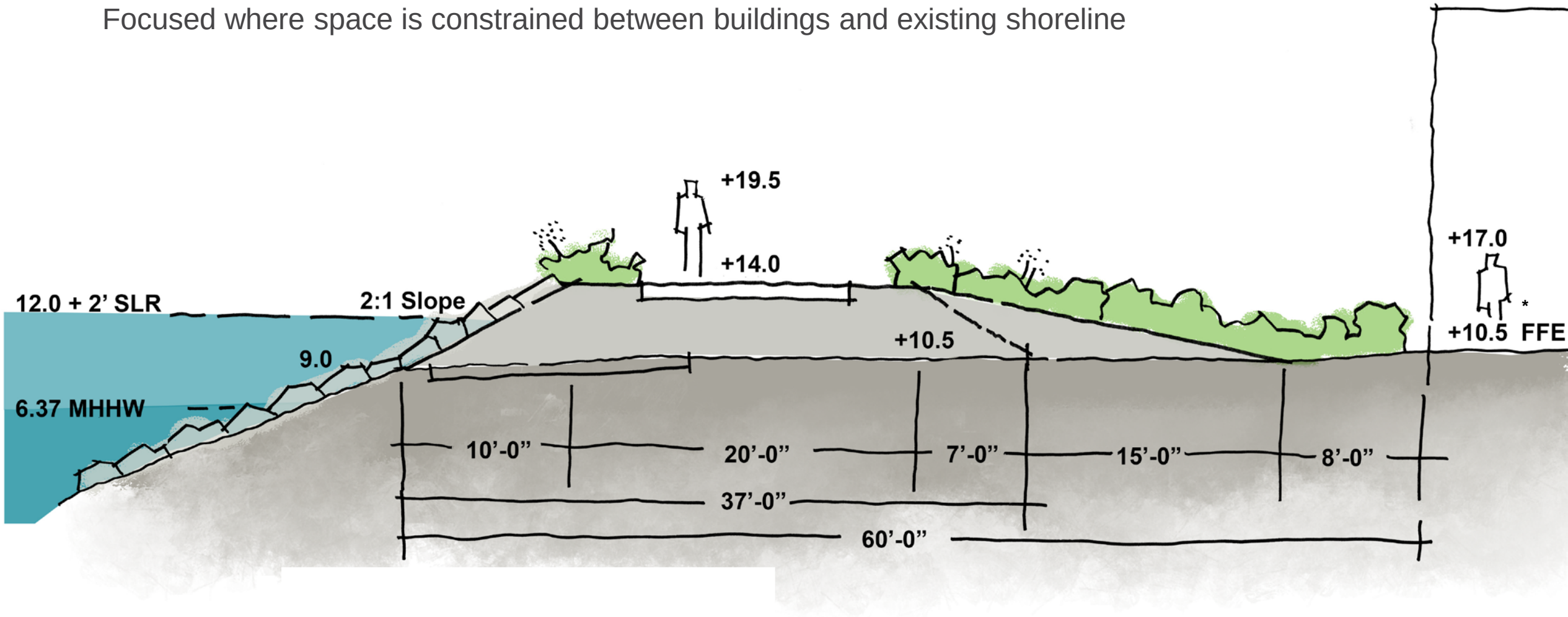
Section A: Station 41 – Lawn Area at The Landing

Oakland Shoreline – Near-Term Adaptation Concept

Harrison Street to Lake Merritt Channel

Shoreline Levee with Public Access

Focused where space is constrained between buildings and existing shoreline



Section B: Station 43 – Oakland – KTVU

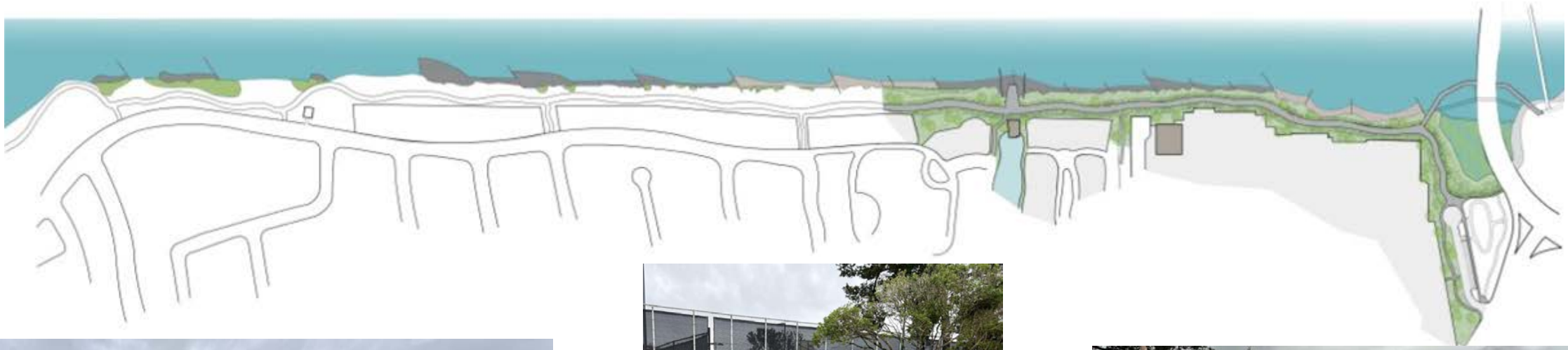
*FFE: FINISHED FLOOR ELEVATION" (ESTIMATED)

Bay Farm Island Adaptation Project

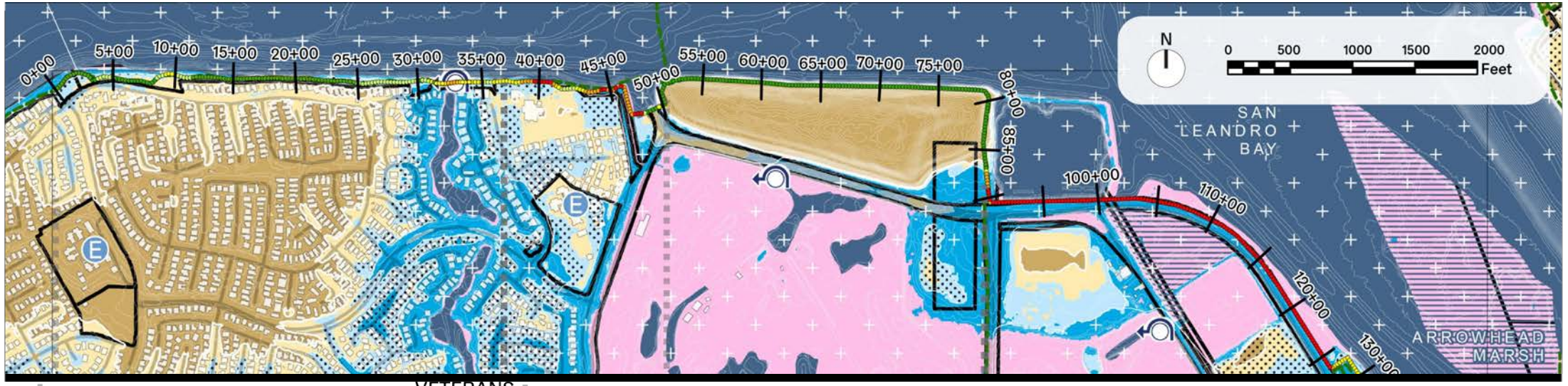
November 2024

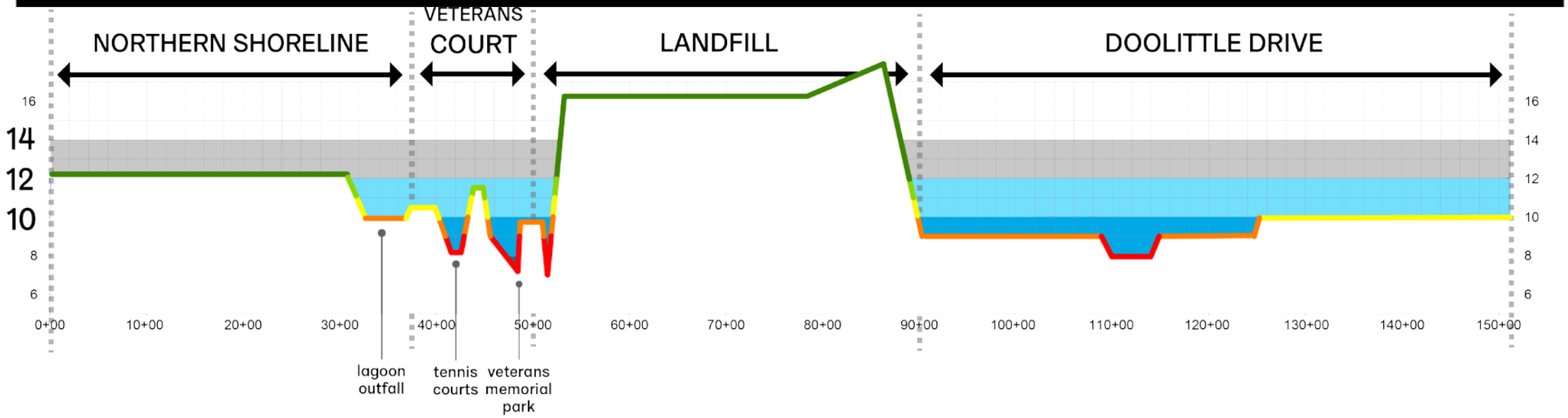
Near-Term Project Area

NORTHERN SHORELINE	LAGOON OUTFALL	VETERANS COURT



Elevation Deficiencies





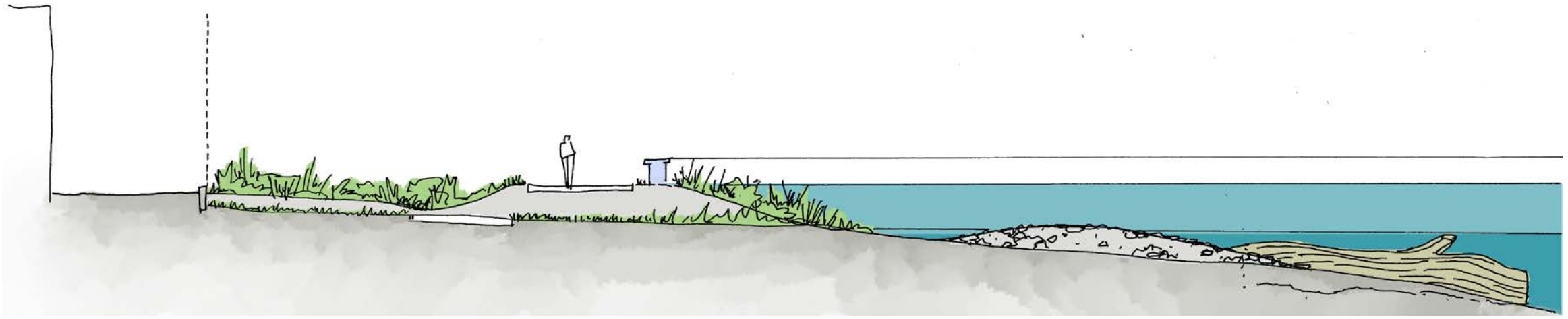
Current Flood Conditions

Preferred Adaptation Alternative Development

Preferred Near-Term Alternative

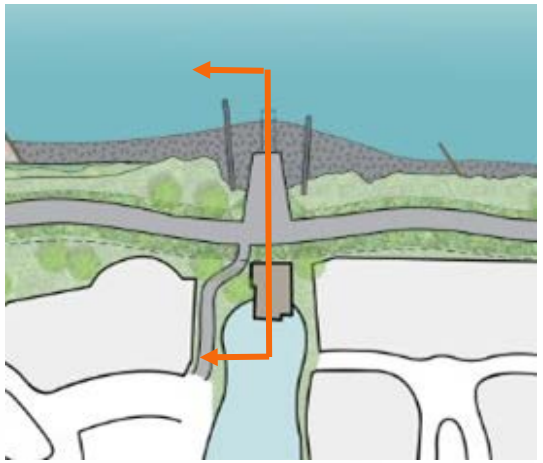
- Levee improvements from lagoon outfall to Veterans Court
- Lagoon management: Tide gate & pump station replacement
- Storm drain system modifications to remove penetrations
- Nature-based solutions

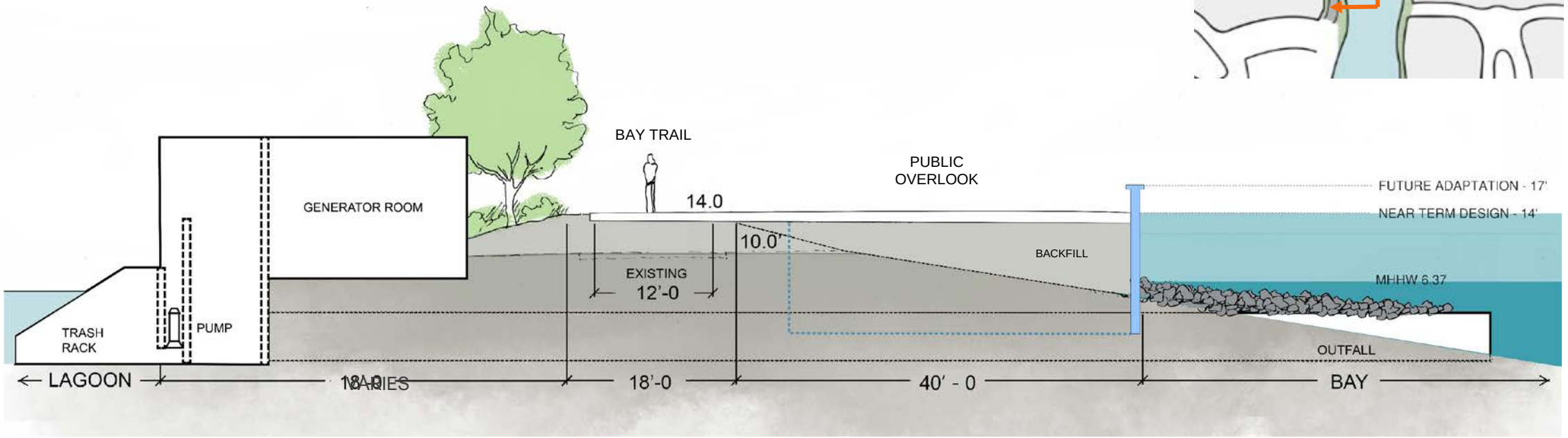
Levee Improvements / Recreational Trail



Levee Improvements / Marsh Creation

Pump Station & Tide Gate Replacement





- Interior drainage analysis/improvements to comply with FEMA 65.10
- Maintain existing lagoon circulation & stormwater management goals
- Clarify Operations & Maintenance responsibilities
- Obtain ROW, easements

Remove Levee Penetration
(Redirect Gravity System Outfall to Lagoon)

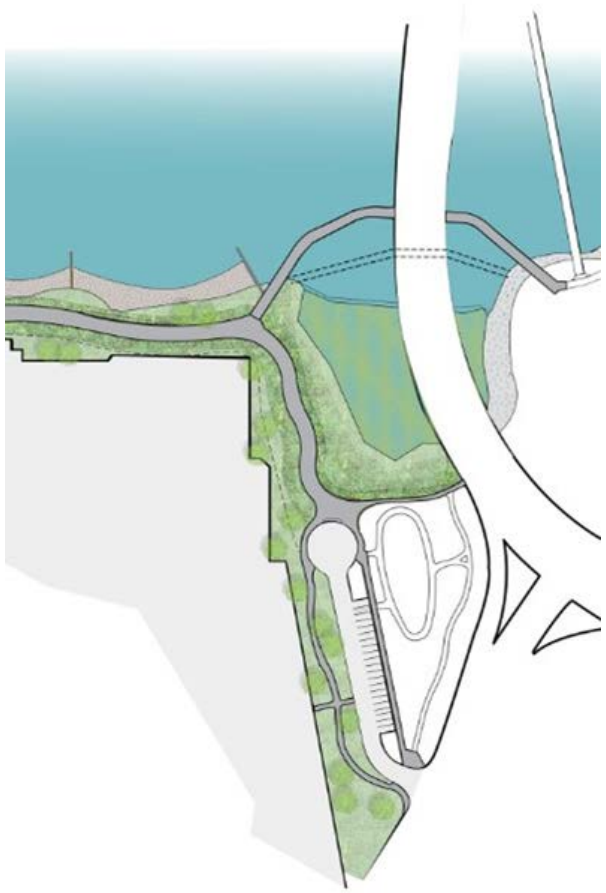
- New gravity pipe to be constructed as part of levee construction
- New pipe to follow levee toe rather than go through Palm Beach Ln
- Construction implications through private property
- Separate HOA?
- Assumption of new lagoon operations plan

Preliminary Hydrology Evaluation				
	100-yr, 24-hr (2024)		100-yr, 24-hr (2060)	
Design Parameter	Lagoon Only	Lagoon + Waterfront	Lagoon Only	Lagoon + Waterfront
Drainage Area (acres)	433	442	433	442
Pump Rate (cfs)	22.28	22.28	80	80
Inflow Volume (acre-ft)	129	131	170	174
Peak Storage (acre-ft)	170	173	153	155
Peak Elevation (ft)	5.7	5.8	5.2	5.2

Nature-Based Solutions

- Rock & wood groins
- New tidal marsh
- Gravel placement
- Sand + gravel placement

Adaptation Alternative - Veterans Court



- Losing public road/parking past Park
- Currently 40 parallel parking spaces
- 20-25 formal spaces maintained, including ADA spaces
- Access & maintenance of proposed levee
- Coordinating with Caltrans on options for future bicycle/pedestrian bridge and access (long term)

BRIC Grant & Long-Term Planning

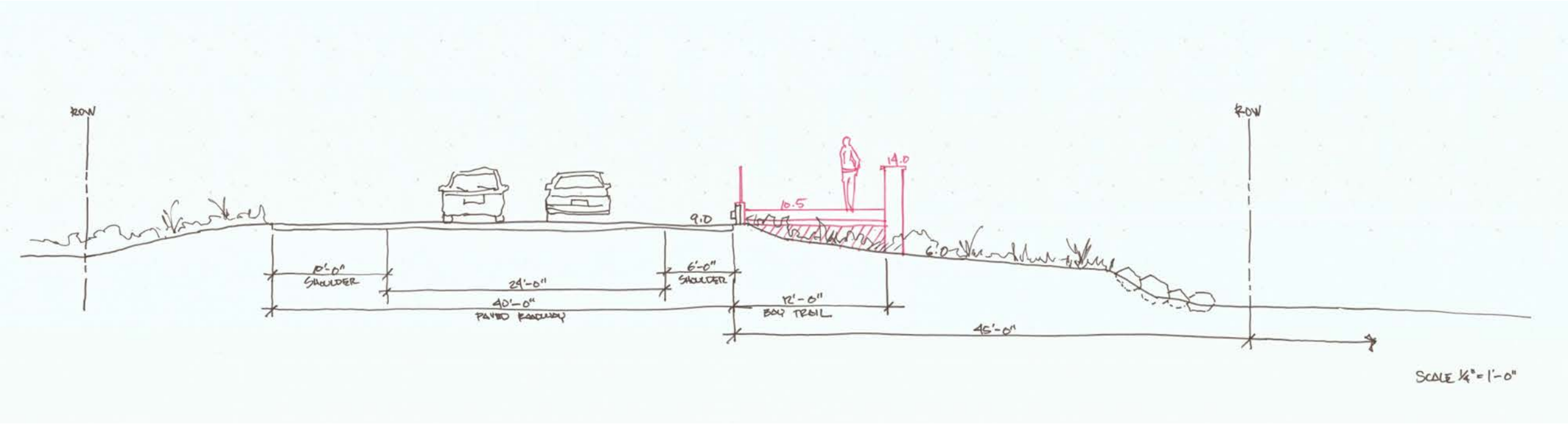
Process, Funding & Projects

OAAC's grant application is benefiting from FEMA's newly designated Community Disaster Resilience Zones (CDRZ). FEMA considers these zones as the most at-risk and in-need of disaster resilience actions across the nation. The Oakland International Airport and portions of east Oakland and San Leandro are included within a CDRZ. BRIC projects that benefit a CDRZ are eligible for a 90:10 cost share with the Federal government, meaning FEMA will cover 90% of the total project costs, and the local communities will cover 10% of the project cost. This represents a significant cost savings to the local communities. OAAC's grant application is also providing benefits to east Oakland's communities in compliance with the Justice40 Initiative to ensure 40% of the benefits of Federal investments flow to disadvantaged communities.

The BRIC grant application includes six projects that will reduce flood risk, improve natural habitats, and provide community benefits. The project concepts are subject to change as the projects advance through the design process. These projects will address at least 2 feet of sea level rise.

Bay Trail Gap

Proposed Adaptation



Subregional Adaptation Planning

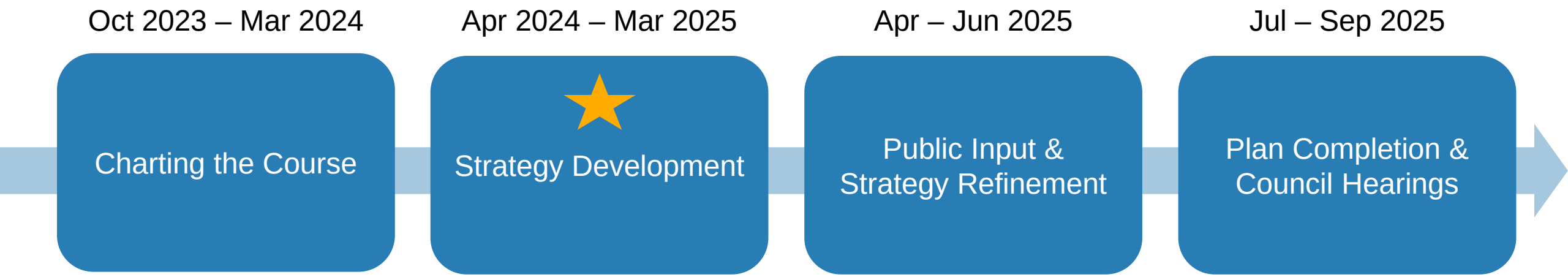
November 2024

Clarification of Authority and Purpose

The Subregional Adaptation Plan **does not overrule the land use authority** of any individual jurisdiction overlapping with the Subregion.

Through this process, the project partners will create a first iteration of the Subregional Adaptation Plan. The first iteration will have gaps compared to the BCDC Regional Shoreline Adaptation Plan draft guidelines. Future studies will continue to build on the plan and address gaps, pending funding.

Subregional Adaptation Plan Process



Subregional Adaptation Plan Process

Oct 2023 – Mar 2024

Charting the Course

Apr 2024 – Mar 2025

Strategy Development

Apr – Jun 2025

Strategy Refinement & Public Engagement

Jul – Sep 2025

Plan Completion & Council Hearings

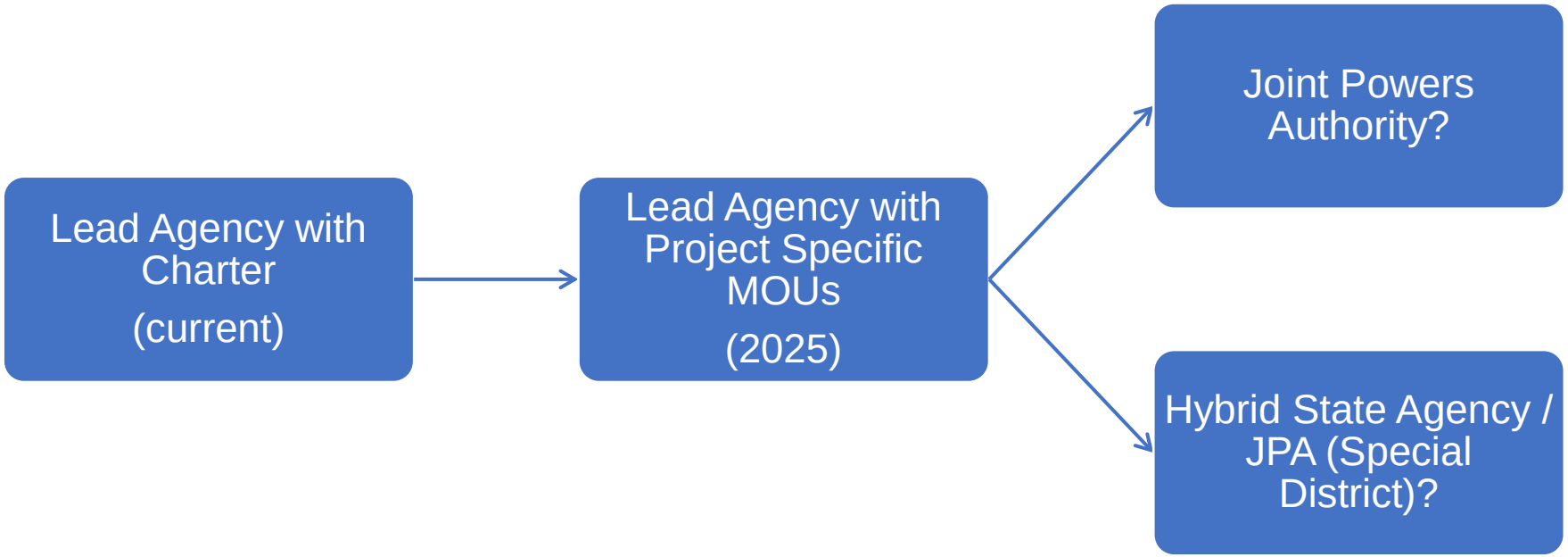
Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec | Jan | Feb | Mar

Strategy Co-creation Project Partner Workshops (3)

Strategy Synthesis

Partner-led Internal Review

Governance: Recommended Evolution



Governance: Project-specific MOUs

Project	Funding source	MOU partners	Other potential partners
Bay Farm Island/Doolittle Project	BRIC	• City of Alameda • City of Oakland • Port of Oakland	• Caltrans • EBRPD • Community Partners
Estuary Project	WRDA	• City of Alameda • City of Oakland • Port of Oakland	• Caltrans • Community Partners

Subregional Adaptation Planning

Key milestones

- ✓ Subregional Goals
- ✓ Planning Principles
- ✓ Existing Conditions Report
- ✓ *Community Engagement*
- (✓) Exposure and Vulnerability Memo
- ✓ Governance White Paper
- Long-Term Strategy Development, Evaluation, and Engagement
- *Community Engagement (ongoing)*
- Subregional Adaptation Plan* (first iteration)

**The Subregional Adaptation Plan does not overrule the land use authority of any individual jurisdiction overlapping with the Subregion.*