



AB 691

Informational Webinar

June 26, 2018

Reid Boggiano, State Lands Commission

Maren Farnum, State Lands Commission

Abby Newman, State Lands Commission

Flower Moye, State Controller's Office

Tinya Hoang, Ocean Protection Council

Erik Martinez, California Coastal Commission

Carrie Boyle, California State Coastal Conservancy

Jackie Mandoske, Bay Conservation and Development Commission



Outline

- Introduction to AB 691
- Updated sea-level rise (SLR) guidance
- Assessment Criteria
 - Assessing SLR vulnerability and identifying assets
 - Mapping tools
 - Estimating financial costs of SLR impacts
 - Adaptation strategies
 - Previously submitted SLR assessments
- Resources on the web
- Questions

Introduction to AB 691

Assembly Bill No. 691

CHAPTER 592

An act to add Section 6311.5 to the Public Resources Code, relating to state lands.

[Approved by Governor October 5, 2013. Filed with Secretary of State October 5, 2013.]

LEGISLATIVE COUNSEL'S DIGEST

AB 691, Muratsuchi. State lands: granted trust lands: sea level rise.

Existing law vests with the State Lands Commission control over specified state lands, including tidelands and submerged lands. Existing law grants to various local entities the right, title, and interest of the state in and to certain tidelands and submerged lands in trust generally for purposes of commerce, navigation, and fisheries, and for other public trust purposes.

This bill would provide that addressing the impacts of sea level rise for all of its legislatively granted public trust lands shall be among the management priorities of a local trustee, as defined. The bill would require a local trustee whose gross public trust revenues average over \$250,000 annually between January 1, 2009, and January 1, 2014, to prepare and submit to the commission, no later than July 1, 2019, except as provided, an assessment of how it proposes to address sea level rise. The bill would permit, but not require, a local trustee whose gross public trust revenues are \$250,000 or less to prepare and submit to the commission an assessment. The bill would require a local trustee to consider and use relevant information from specified reports on sea level rise in preparing the assessment and would permit a trustee that has already completed an assessment on the impacts of sea level rise to submit that assessment to the commission. The bill would require that the commission make those assessments available to the public on its Internet Web site, and send electronic copies to certain other public entities.

By adding to the duties of local agencies that are local trustees of granted public trust lands, this bill would impose a state-mandated local program.

The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

The people of the State of California do enact as follows:

SECTION 1. The Legislature finds and declares all of the following:



Seal Beach, CA

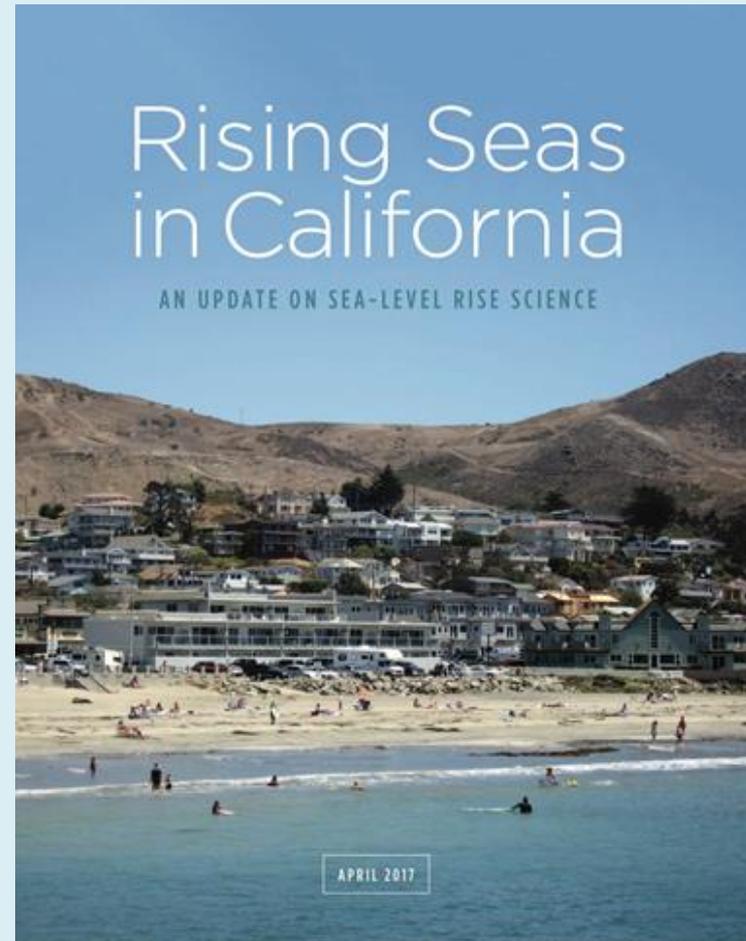
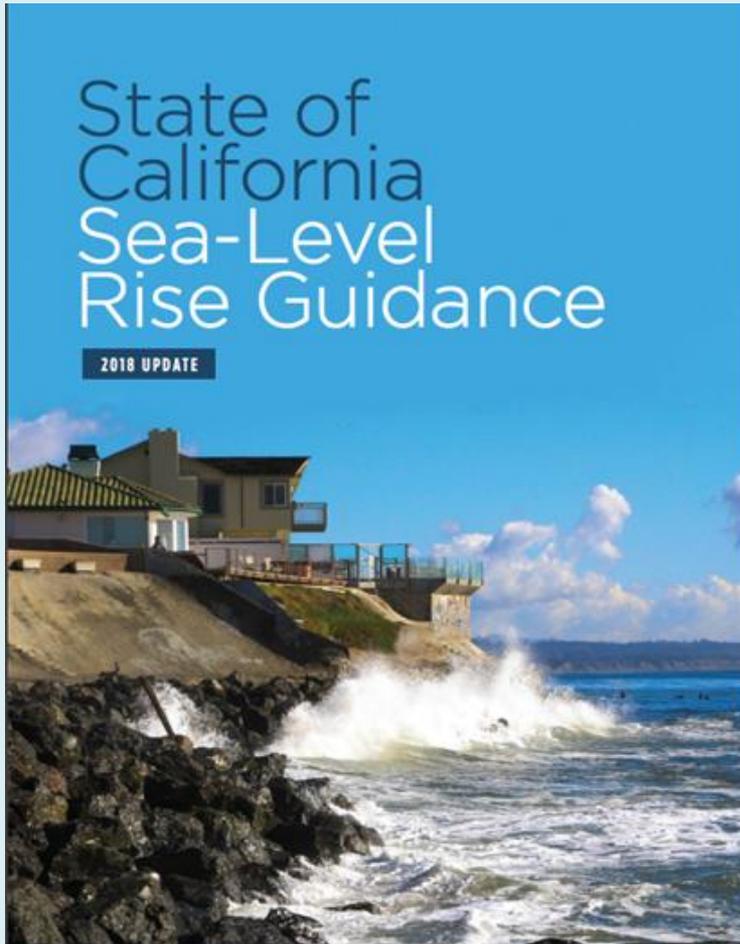
Photo: Frederic J. Brown



Santa Cruz, CA

Photo: Charlie Witmer

Sea-Level Rise Guidance



Guidance: http://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A OPC SLR Guidance-rd3.pdf
Rising Seas Report: <http://www.opc.ca.gov/webmaster/ftp/pdf/docs/rising-seas-in-california-an-update-on-sea-level-rise-science.pdf>

		Probabilistic Projections (in feet) (based on Kopp et al. 2014)				H++ scenario (Sweet et al. 2017) *Single scenario
		MEDIAN	LIKELY RANGE	1-IN-20 CHANCE	1-IN-200 CHANCE	
		50% probability sea-level rise meets or exceeds...	66% probability sea-level rise is between...	5% probability sea-level rise meets or exceeds...	0.5% probability sea-level rise meets or exceeds...	
				Low Risk Aversion	Medium - High Risk Aversion	Extreme Risk Aversion
High emissions	2030	0.4	0.3 - 0.5	0.6	0.8	1.0
	2040	0.6	0.5 - 0.8	1.0	1.3	1.8
	2050	0.9	0.6 - 1.1	1.4	1.9	2.7
Low emissions	2060	1.0	0.6 - 1.3	1.6	2.4	
High emissions	2060	1.1	0.8 - 1.5	1.8	2.6	3.9
Low emissions	2070	1.1	0.8 - 1.5	1.9	3.1	
High emissions	2070	1.4	1.0 - 1.9	2.4	3.5	5.2
Low emissions	2080	1.3	0.9 - 1.8	2.3	3.9	
High emissions	2080	1.7	1.2 - 2.4	3.0	4.5	6.6
Low emissions	2090	1.4	1.0 - 2.1	2.8	4.7	
High emissions	2090	2.1	1.4 - 2.9	3.6	5.6	8.3
Low emissions	2100	1.6	1.0 - 2.4	3.2	5.7	
High emissions	2100	2.5	1.6 - 3.4	4.4	6.9	10.2
Low emissions	2110*	1.7	1.2 - 2.5	3.4	6.3	
High emissions	2110*	2.6	1.9 - 3.5	4.5	7.3	11.9
Low emissions	2120	1.9	1.2 - 2.8	3.9	7.4	
High emissions	2120	3	2.2 - 4.1	5.2	8.6	14.2
Low emissions	2130	2.1	1.3 - 3.1	4.4	8.5	
High emissions	2130	3.3	2.4 - 4.6	6.0	10.0	16.6
Low emissions	2140	2.2	1.3 - 3.4	4.9	9.7	
High emissions	2140	3.7	2.6 - 5.2	6.8	11.4	19.1
Low emissions	2150	2.4	1.3 - 3.8	5.5	11.0	
High emissions	2150	4.1	2.8 - 5.8	5.7	13.0	21.9

Selection of SLR Projections

>> **STEP 1:** *Identify the nearest tide gauge.*

>> **STEP 2:** *Evaluate project lifespan.*

>> **STEP 3:** *For the nearest tide gauge and project lifespan, identify range of sea-level rise projections.*

>> **STEP 4:** *Evaluate potential impacts and adaptive capacity across a range of sea-level rise projections and emission scenarios.*

>> **STEP 5:** *Select sea-level rise projections based on risk tolerance and, if necessary, develop adaptation pathways that increase resiliency to sea-level rise and include contingency plans if projections are exceeded.*

Recommendations

- Social equity
- Coastal habitats and public access
- Water-dependent infrastructure
- Acute increases in sea-level rise
- Cross-jurisdictional coordination
- Community and regional planning
- Local conditions
- Adaptive capacity

Visualization Tools and Resources



Assessment Criteria

1. Assessment of SLR impacts
2. Maps of 2030, 2050, and 2100
3. Estimate of financial costs of SLR
4. Description of how trustee proposes to protect and preserve resources and structures that would be impacted by SLR

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Assessment of SLR Impacts

1. Inventory assets
2. Consider SLR impacts
 - a. Local conditions and trends
 - b. Extreme weather events, changing shorelines
 - c. Public Trust resources
3. Prioritize assets

Identifying Assets and Risks



Airports

- Inundation, flooding, impaired function



Natural Areas

- Loss of beaches, loss of public access, transformation



Community Land Use, Services, and Facilities

- Inundation, flooding, impaired function



Parks and Recreational Areas

- Loss of beaches, community space, public access



Contaminated Lands

- Leaking storage tanks, increase in non-point source pollution and saltwater intrusion



Seaports

- Inundation, flooding, impaired function



Energy Infrastructure, Pipelines, and Telecommunications

- Inundation, flooding, impaired function, salt water intrusion



Structured Shorelines

- Damage from extreme waves, impaired function



Ground Transportation

- Inundation, flooding, impaired function



Flood Control and Stormwater

- Impaired function, salt water intrusion



Hazardous Materials

- Leaking storage tanks, increase in non-point source pollution, saltwater intrusion



Water and Wastewater Systems

- Inundation, flooding, impaired function, salt water intrusion

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Maps of 2030, 2050, and 2100



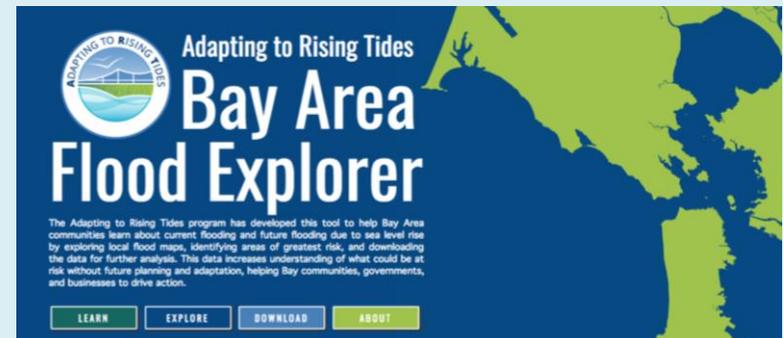
www.coast.noaa.gov/digitalcoast/



<https://riskfinder.climatecentral.org/>



<http://data.pointblue.org/apps/ocof/cms/>



www.adaptingtorisingtides.org
(Website live July 2018)

Maps of 2030, 2050, and 2100



SEA LEVEL RISE VIEWER

Surging Seas **RISK FINDER**



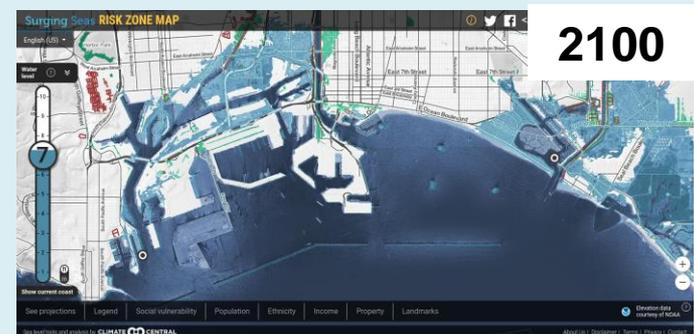
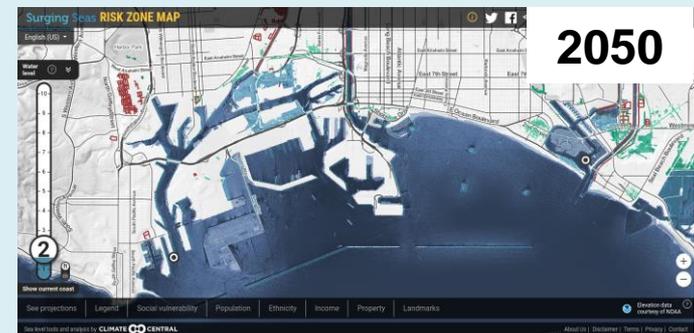
OCOF
OUR COAST OUR FUTURE



Adapting to Rising Tides
Bay Area Flood Explorer

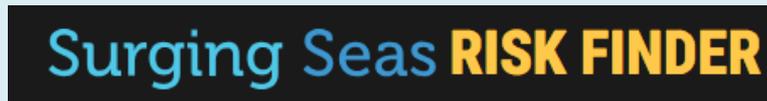
The Adapting to Rising Tides program has developed this tool to help Bay Area communities learn about current flooding and future flooding due to sea level rise by exploring local flood maps, identifying areas of greatest risk, and downloading the data for further analysis. This data increases understanding of what could be at risk without future planning and adaptation, helping Bay communities, governments, and businesses to drive action.

[LEARN](#) [EXPLORE](#) [DOWNLOAD](#) [ABOUT](#)



Ex: Los Angeles / Long Beach

Maps of 2030, 2050, and 2100



Ex: Oakland Airport

Assessment Criteria

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- 3. Estimate of financial costs of SLR**
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Estimate of financial costs of SLR impacts

Potential Methods of Asset Valuation:

- Replacement or repair costs of built or natural assets
- Non-market values of ecosystem services, public trust resources
 - Center for the Blue Economy
 - Duke Marine Ecosystems Services Partnership

Estimate of financial costs of SLR impacts

- Costs of 2030, 2050, and 2100 with a 100-year storm event
 - Combine maps w/ local & regional demographic and economic data to understand potential vulnerabilities
- Adaptation/mitigation measures and benefits
 - Consider both costs and benefits of various approaches, to inform implementation decisions

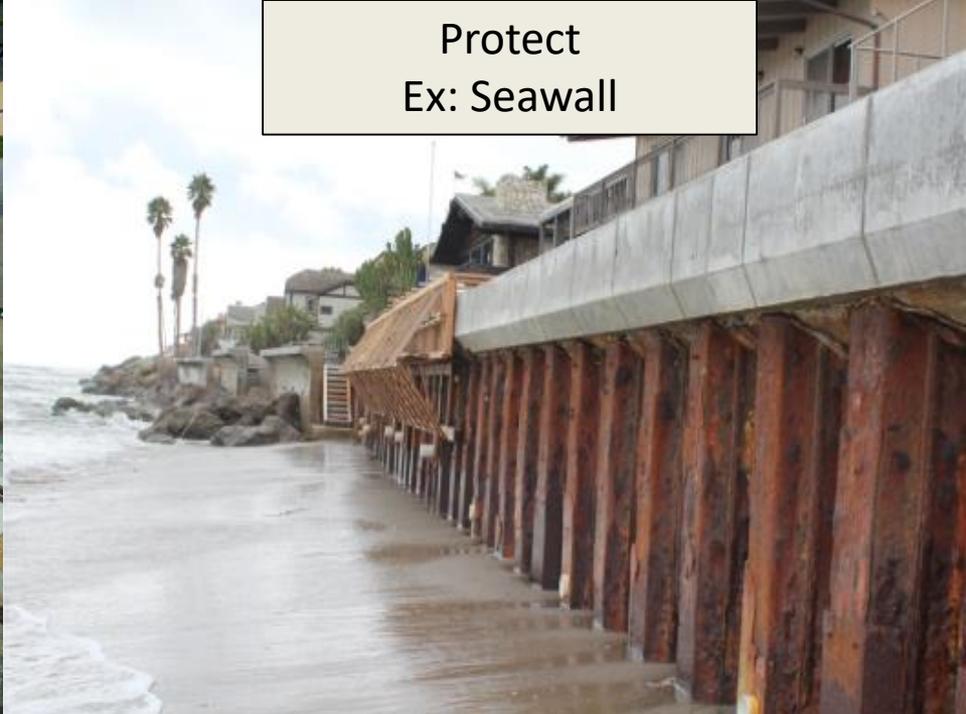
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No intervention



Protect
Ex: Seawall



Accommodate
Ex: Living shoreline (edging)



Managed retreat

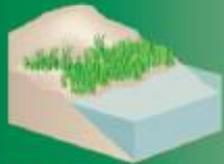


Adaptation Approaches

GREEN - SOFTER TECHNIQUES

GRAY - HARDER TECHNIQUES

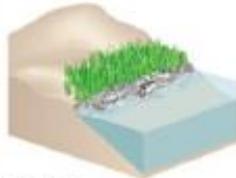
Living Shorelines



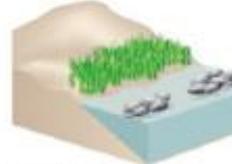
VEGETATION ONLY - Provides a buffer to upland areas and breaks small waves. Suitable for low wave energy environments.



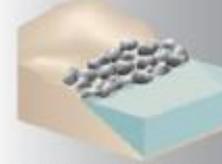
EDGING - Added structure holds the toe of existing or vegetated slope in place. Suitable for most areas except high wave energy environments.



SILLS - Parallel to vegetated shoreline, reduces wave energy, and prevents erosion. Suitable for most areas except high wave energy environments.



BREAKWATER - (vegetation optional) - Offshore structures intended to break waves, reducing the force of wave action, and encourage sediment accretion. Suitable for most areas.



REVETMENT - Lays over the slope of the shoreline and protects it from erosion and waves. Suitable for sites with existing hardened shoreline structures.



BULKHEAD - Vertical wall parallel to the shoreline intended to hold soil in place. Suitable for high energy settings and sites with existing hard shoreline structures.

Living Shorelines Benefits



- Reduce erosion
- Accrete sediment
- Attenuate wave energy
- Create fish and wildlife habitat
- Can provide outdoor recreation
- May sequester carbon
- May buffer ocean acidification

Living Shorelines Limitations



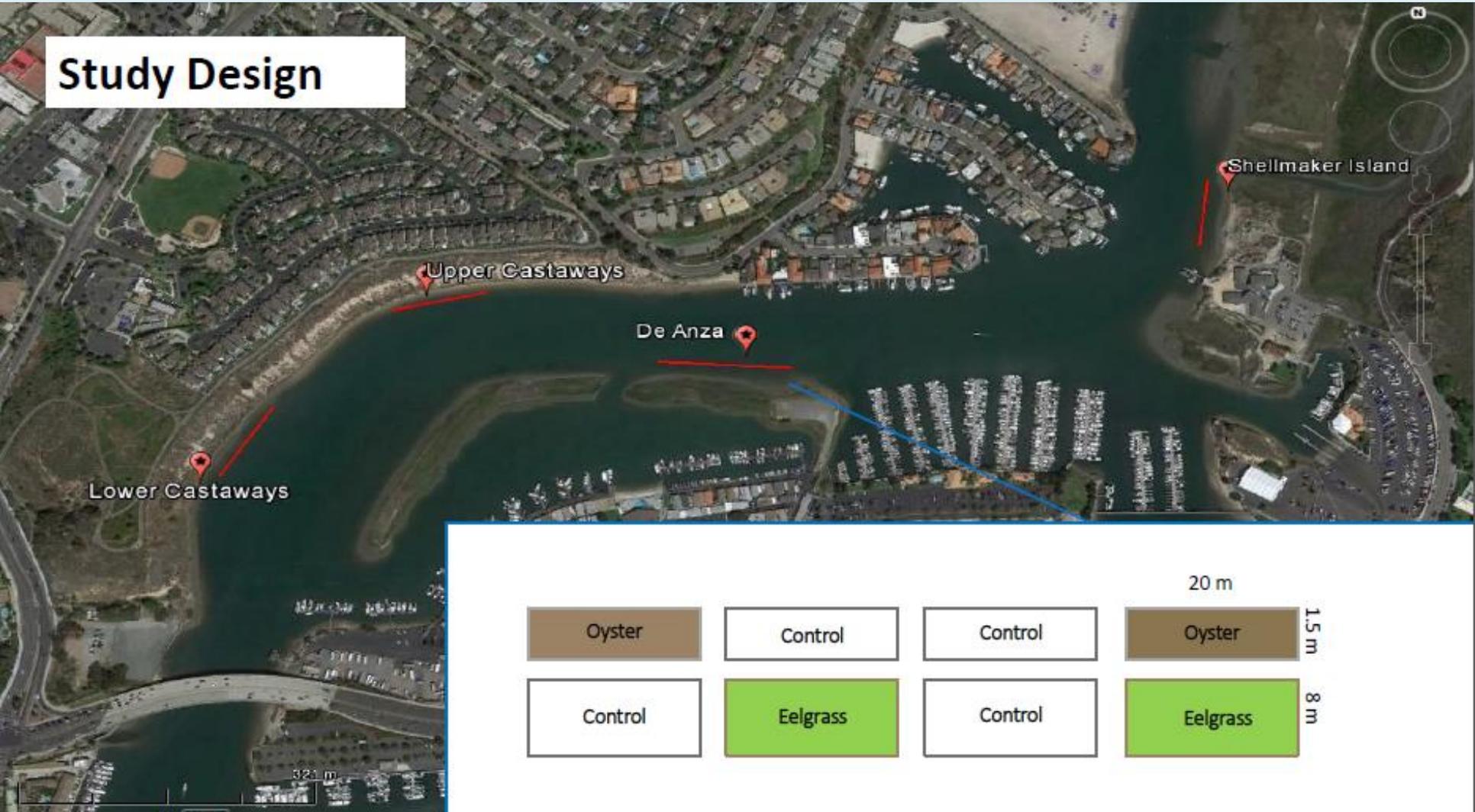
- Must consider local features
- Not suitable for every site
- Permitting can be complicated

Upper Newport Bay Living Shorelines Project



ORANGE COUNTY
COASTKEEPER

Study Design



Cardiff State Beach Dune Restoration



Coastal
Conservancy



MOFFATT & NICHOL



Living Seawalls



2050
sea level

2030
sea level



Acceptable Submission Material(s)

Local Coastal Program (LCP)

City of Pacific Grove LCP Implementing Ordinances

Chapter 23.90 LOCAL COASTAL PROGRAM IMPLEMENTATION

23.90.010 Purpose and General Provisions of the Coastal Implementation Plan

(a) The purpose of this Chapter is to implement the City of Pacific Grove Local Coastal Program Land Use Plan, in accordance with the requirements of the California Coastal Act of 1976.

(b) Applicability. The regulations found in this chapter shall apply to all areas of the City of Pacific Grove located within the Coastal Zone as established by the State Legislature.

(c) Local Coastal Program Adoption. This Chapter establishes the City of Pacific Grove Coastal Implementation Plan representing, in conjunction with the other applicable Chapters of Title 23 PGM, the coastal zoning ordinance, and establishing the requirements for issuance of Coastal Development Permits.

(d) Coastal Zoning Districts. Zoning districts are hereby established within the City's Coastal Zone and the allowable uses and development standards are included in Chapters 23.91 through 23.100, which together with this Chapter constitute the Coastal Implementation Plan. Coastal Zone districts are differentiated by the designation "(CZ)." The standards presented in these Chapters, as well as regulations presented in other Titles and Chapters of the Municipal Code not specifically included within the Coastal Implementation Plan, shall be effective as applicable, inasmuch as those regulations do not conflict with the Land Use Plan or this Implementation Plan. For example, the City's regulations concerning signs and vacation rentals apply within both inland areas and the Coastal Zone, but any conflicting provisions in the Land Use Plan or this Implementation Plan would have force within the City's Coastal Zone.

The following Land Use Plan land use designations and corresponding zoning districts are within the City's Coastal Zone. Allowable land uses, permit requirements, development standards, including height limitations and setbacks from property lines are established for each zoning district in the City's Coastal Zone in the PGM sections listed. The locations of each zoning district are shown on the Coastal Zoning Map.

Land Use Plan Designation	CZ Zoning District (s)
LDR 1-2 Low Density Residential	R-1, R-1-B-4
MDR 8-10 (MHP) Medium Density Residential for Mobile Home Park	MH
MDR 8-10 Medium Density Residential	R-3, R-3-M
MHD 10-20 Medium-High Density Residential	R-4
V-A Visitor Accommodation	R-3-M
V-C Visitor Commercial	C-1, C-V, C-V-ATC, R-1, R-2, R-3-M
SSC Sunset Service Commercial	SSC
P Professional	R-4

Third Draft Implementation Plan

2

June 1, 2016

Vulnerability Assessment



HUMBOLDT BAY Shoreline Inventory, Mapping and Sea Level Rise Vulnerability Assessment

Aldaron Laird
Trinity Associates

Local Hazard Mitigation Plan

2016 Sacramento Countywide Local Hazard Mitigation Plan Update December 2016



Prepared for:
Sacramento County
Department of Water Resources
827 7th Street, Room 301
Sacramento, CA 95814
(916)874-6851

Prepared by:
Foster Morrison Consulting, LLC
5628 W Long Pl
Littleton, CO 80123
303.717.7171



Note: Please do **not** submit entire documents, only materials that pertain to the boundary of your granted lands. General Plans are also accepted.

Resources on the Web

<http://www.slc.ca.gov/Info/AB691.html>

Contact and Follow-up

- Reid Boggiano, Public Land Management Specialist
Reid.Boggiano@slc.ca.gov, (916) 574-0450
Main point of contact
- Maren Farnum, Environmental Scientist
Maren.Farnum@slc.ca.gov, (916) 574-0966
- Abby Newman, Sea Grant Fellow
Abby.Newman@slc.ca.gov, (916) 562-0023
- Flower Moye, Sea Grant Fellow
FMoye@sco.ca.gov, (916) 324-6610