

   SOLUTIONS...DEFINED, DESIGNED, AND DELIVERED.

## Emerging Environmental Risks for the San Francisco Bay

March 30, 2017





## AGENDA

- Defining Sea Level Rise
- Sea Level Rise Impacts to Natural Habitats
- Sea Level Rise Impacts to Contaminated Sites and Industrial Facilities
- Managing Environmental Risks from Sea Level Rise
- Regulatory Outlook under the New Administration
- Questions/ Discussions

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3

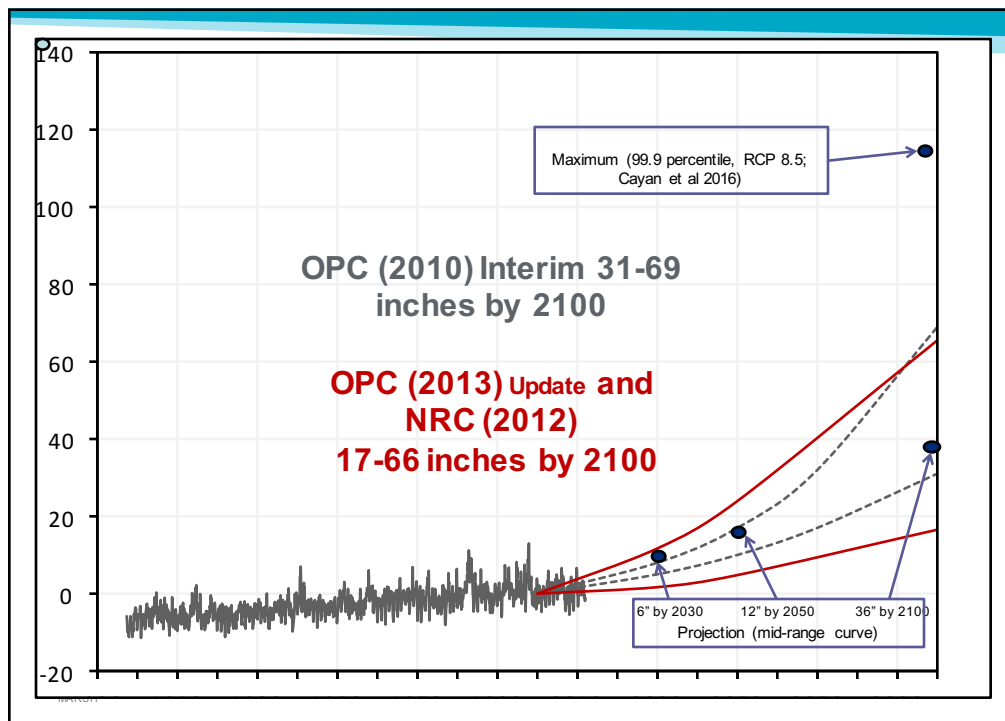
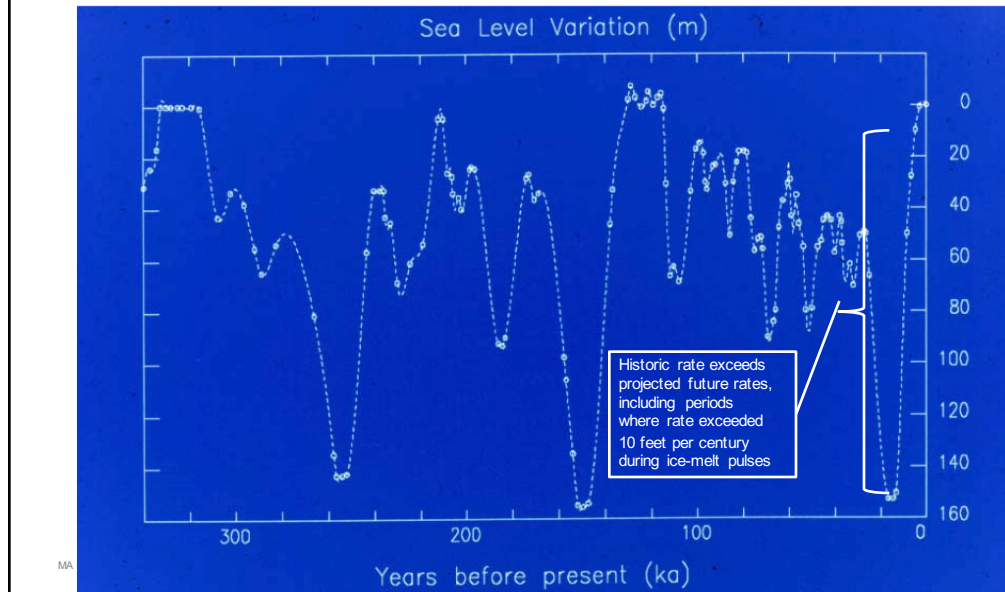


## WHAT IS SEA LEVEL RISE (SLR)?

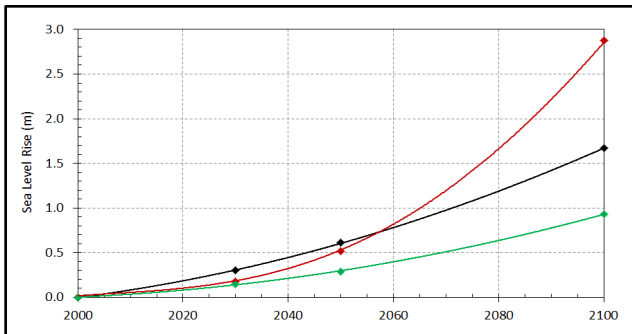
4

## Sea level - the past 300 thousand years

Sea level was nearly 500' lower about 15,000 – 20,000 years ago, and has been "steady" for last 5,000 to 6,000 years



## Sea level rise updates used for Los Angeles study AdaptLA



		NRC 2012		Cayan <i>et al</i> , 2016
Year		Mid (Green)	High (Black)	Extreme (Red)
2000	m/ft	0.000	0.000	0.000
2030	m	0.150	0.300	0.178
	ft	0.492	0.984	0.584
2050	m	0.290	0.610	0.519
	ft	0.951	2.01	1.70
2100	m	0.930	1.67	2.88
	ft	3.05	5.48	9.45

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Tabulation and plot by Ron Flick, Scripps and Terra Costa

## SLR IMPACTS TO NATURAL HABITAT

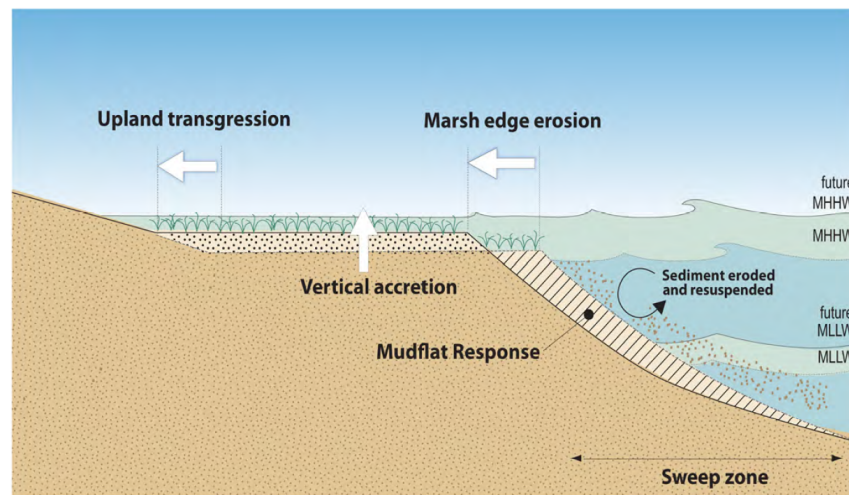
### The Evolution of the San Francisco Bay Estuary



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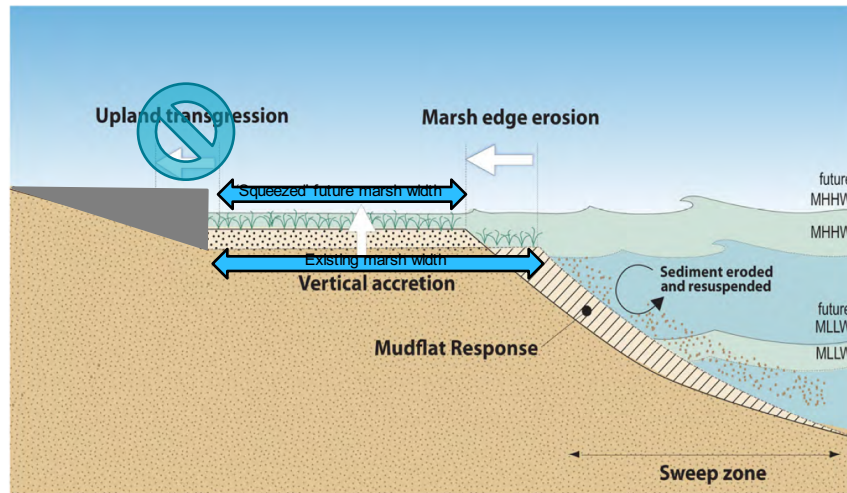
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Natural shores adapt to sea-level rise by migrating up and inland

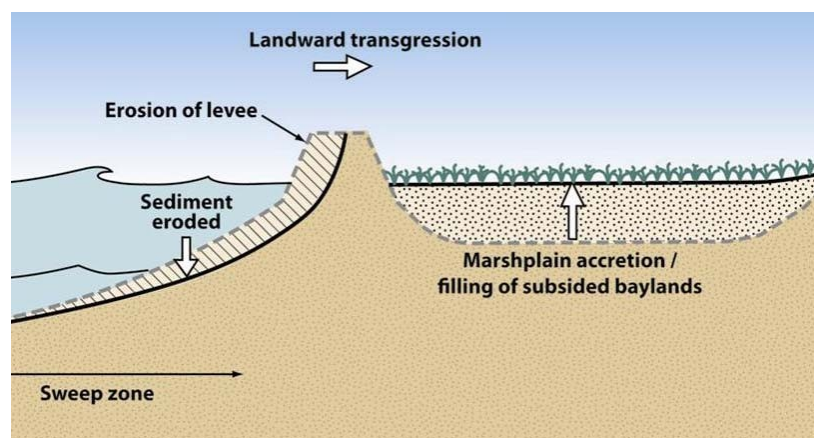


Seawalls and levees prevent shore migration and result in loss of wetlands and other natural shores

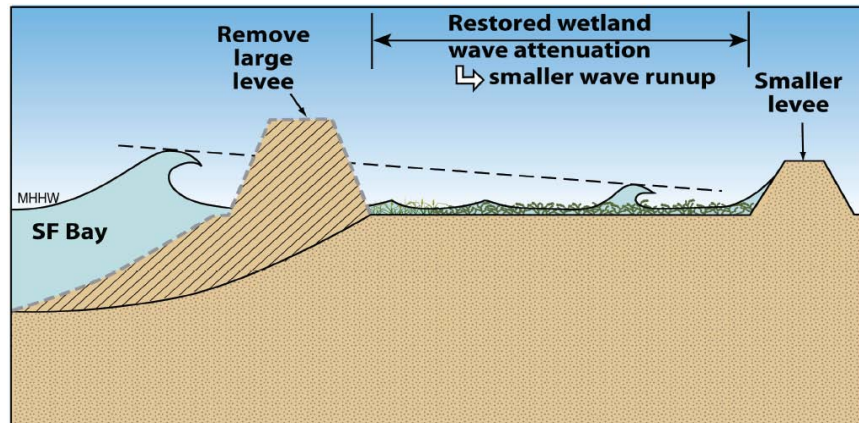
This "coastal squeeze" can be mitigated by landward realignment and use of nature-based, natural infrastructure approaches



Armored shore prevents marsh migration, which has been mitigated by restoration behind levees



Landward realignment of levees has economic and ecological benefits



## SLR IMPACTS TO CONTAMINATED SITES AND INDUSTRIAL FACILITIES

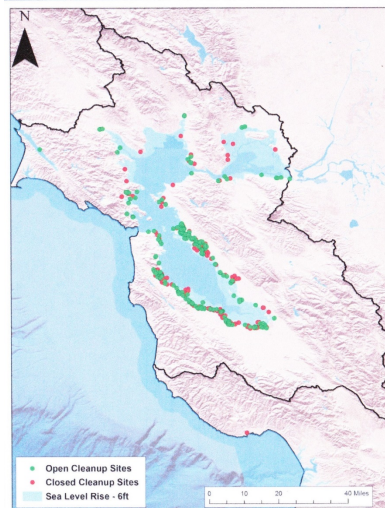


## Impacts of SLR on Contaminated Sites

Contamination from Open and Closed Sites:

- ✓ Proximity to Soil Surface
- ✓ Mobility in Water
- ✓ Toxicity to Aquatic Life

Source: SFRWQCB



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## Impacts of SLR on Industrial Sites

Concerns raised from:

- ✓ Landfills
- ✓ POTWs
- ✓ Industrial Plants



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## MANAGING RISKS FROM SLR

17

### Managing Risks from SLR

#### Permitting/Regulatory Controls

➤ **BCDC, *San Francisco Bay Plan* (as amended October 2011),  
Sea Level Rise Policies**

- ✓ Risk Assessments
- ✓ Sea Level Rise Projections
- ✓ Protecting Existing and Planned Development
- ✓ Designing Shoreline Protection
- ✓ Preserving Public Access
- ✓ Ecosystem Protection and Restoration
- ✓ Encouraging Resilient Development
- ✓ Preserving Undeveloped Areas
- ✓ Regional Strategy

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18

## Managing Risks from SLR

### Permitting/Regulatory Controls

➤ **BCDC, *Policies for a Rising Bay Project*, Final Report (November 1, 2016)**

- ✓ Fill for Resilience and Adaptation – Habitat Restoration and Protection
- ✓ Fill for Resilience and Adaptation – Innovative Shoreline Solutions
- ✓ Environmental Justice and Social Equity Policies
- ✓ Adaptive Management Policies

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19

## Managing Risks from SLR

### Permitting/Regulatory Controls

➤ **US Army Corps of Engineers, Nationwide Permit 54, Living Shorelines (effective as of March 19, 2017)**

- ✓ Covers construction and maintenance of living shorelines to stabilize banks and shores in coastal waters
- ✓ Must have a substantial biological component, either tidal or lacustrine fringe wetlands or oyster or mussel reef structures
- ✓ Structures and fill areas cannot extend into the waterbody more than 30 feet from the MLWL in tidal waters
- ✓ No more than 500 feet in length unless the banks
- ✓ Etc.

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20

## Managing Risks from SLR

### Permitting/Regulatory Controls

- **State Water Resources Control Board, Resolution on Comprehensive Response to Climate Change (March 7, 2017)**
  - ✓ Applies to recommendations on permits to protect “coastal infrastructure, wetlands, and other near-shore ecosystems”
  - ✓ SWRCB staff must, and RWQCB staff are encouraged to, “refer to projections of sea level rise”

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21

## Managing Risks from SLR

### Risk Transfer Mechanisms for Managing **Liabilities** from Contaminated or Industrial Sites

Contamination from various sources:

- ✓ Closed remedial sites
- ✓ Open remedial sites
- ✓ Landfills
- ✓ Waste water treatment plants
- ✓ Industrial facilities

May lead to various 3<sup>rd</sup> party claims:

- ✓ Clean-up
- ✓ Bodily Injury
- ✓ Property Damage
- ✓ Natural Resource Damage

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22

## Managing Risks from Sea Level Rise

### Risk Transfer Mechanisms for Closed, Open or Industrial Sites – Insurance Solution?

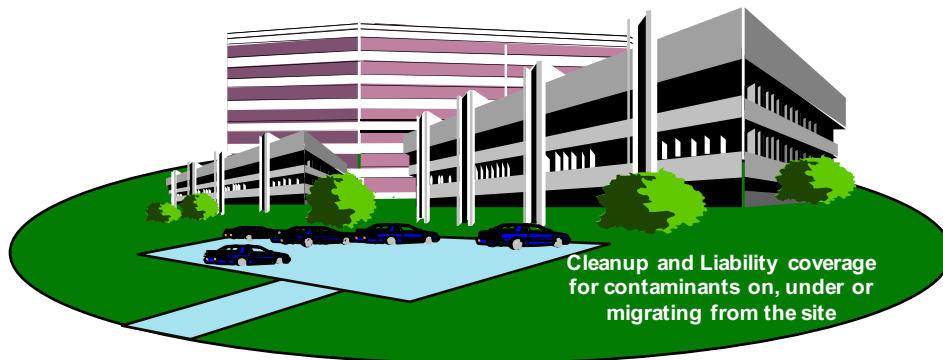
#### Pollution Legal Liability:

- ✓ Coverage for clean-up costs
- ✓ Government re-openers
- ✓ 3<sup>rd</sup> Party Torts (Bodily Injury/Property Damage)
- ✓ Natural Resource Damage
- ✓ Defense costs

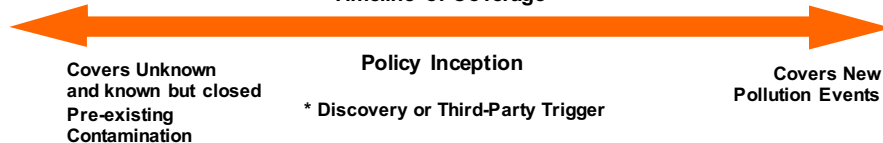
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### Pollution Legal Liability... Covers Sites or Property



#### Timeline of Coverage\*



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24

## REGULATORY OUTLOOK UNDER THE NEW ADMINISTRATION

25

### Flurry of Executive Orders

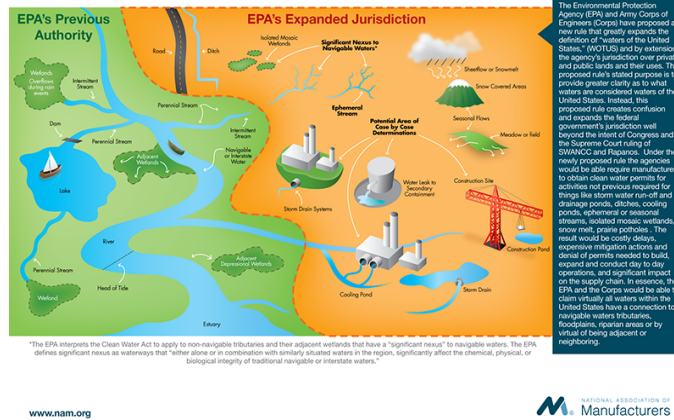
- “Comprehensive Plan for Reorganizing the Executive Branch” E.O. dated March 13, 2017
- “Expediting Environmental Reviews and Approvals for High Priority Infrastructure Projects” E.O. dated January 24, 2017
- **“Restoring the Rule of Law, Federalism, and Economic Growth by Reviewing the ‘Waters of the United States’ Rule” E.O. dated February 28, 2017**

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## What Prompted the New Twist for WOTUS?

### EPA's New Proposed Rule Greatly Expands Their Jurisdiction over Water and Land Use



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## What Does the WOTUS Executive Order Do?

- Requires review for consistency with policies to
  - ensure waters kept free from pollution, but . . .
  - economic growth is promoted, regulatory uncertainty is minimized, and "due regard" given to roles of Congress and States.
- Requires EPA and the Army Corps to "consider" interpreting the term "navigable waters" in light Justice Scalia's opinion in *Rapanos v. United States*.

**What does that mean...?**

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### Probably this...

- Relatively permanent, standing or continuously flowing bodies of water “forming geographic features that are described in ordinary parlance as streams, oceans, rivers, and lakes.”

### and not this...

- Channels through which water flows intermittently or ephemerally, or channels that periodically provide drainage for rainfall.

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## What Does All of this Mean for Sea Level Rise?



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## QUESTIONS AND DISCUSSION





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