HUMBOLDT BAY
SEA LEVEL RISE
ADAPTATION PLANNING PROJECT

Adaption Planning Working Group

AGENDA

April 24th 2013
DESIRED OUTCOMES

• Awareness of SLR Adaptation and Hazard Mitigation Planning Resources

• Establish Inundation Mapping Tides and Inundation Depths

• Agree on APWG’s Meeting Schedule

• Agree on APWG’s Goals and Objectives

• Agree on a Robust Stakeholder and Public Outreach Process

• Agree on How to Proceed with Adaptation Planning Process, and Next Steps
AGENDA

1. Introductions
2. California’s SLR Adaption Planning Resources
3. Hazard Mitigation Planning Resources
4. Vulnerability Assessment
5. 2013-2015 Meeting Schedule
6. Goals and Objectives
7. Stakeholder and Public Outreach
8. Adaptation Planning Process, Next Steps
California’s SLR Adaption Planning Resources

- California Climate Action Team & Climate Action Initiative: 2012 California Climate Adaptation Planning Guide
- California Coastal Commission: 2013: California Coastal Commission Strategic Plan 2013-2018
- San Francisco Bay Conservation and Development Commission: 2012: Adapting to Rising Tides Assessment
- State Lands Commission 2009: Sea Level Rise Preparedness
- California Energy Commission 2012: Adapting to SLR: Guide for California’s Coastal Communities
California’s SLR Adaption Planning Resources

• Caltrans:
  2011: Guidance on Incorporating Sea Level Rise

• Department of Fish and Wildlife:
  Climate Science Program

• San Diego:
  2012: Sea Level Rise Adaptation Strategy for San Diego Bay

• City of Santa Barbara:
  2012: Santa Barbara Sea Level Rise Study

• San Luis Obispo County:
  2012: Developing Adaptation Strategies for San Luis Obispo County

• NOAA Coastal Services Center:
  2012: Incorporating Sea Level Change Scenarios at the Local Level
California’s Hazard Mitigation Planning Resources

• Cal EMA State Hazard Mitigation Plan: 2010

• Humboldt Operational Area Hazard Mitigation Plan Update: 2013

• Department of Water Resources Statewide Flood Management Planning Program: California’s Flood Future: Recommendations for Managing the State’s flood Risk: 2013

• FEMA’s Proposed Detailed Flood Study for Humboldt Bay to Update the Flood Insurance Rate Map
What we are doing

- **Project DEM.** Whelan Gilkerson (PWA) is working on developing Project DEM for modeling and mapping using LiDAR, bathymetry, soundings, hyperspectral data.

- **Groundwater modeling.** Dr. Robert Willis reviewed literature to assess similar studies. Waiting on Project DEM.

- **Sea Level Rise Scenarios.** JKA reviewed and summarized (in progress) SLR scenarios for Humboldt Bay Region.

- **Tidal Boundary Condition.** JKA is developing 100-yr hourly sea level series for Crescent City Tide Station.
Crescent City Tide Levels

- Crescent City Monthly Maximum Tide Levels (~MMHW)
- Average Daily Maximum Tide Level (~MHHW)
- Average Monthly Maximum Tide Level (~MMHW)
- Average Annual Maximum Tide Level
Crescent City Tide Levels

The graph shows the tide levels over time, with data points for Crescent City annual maximum tide levels (~MMHW), average daily maximum tide level (~MHHW), average monthly maximum tide level (~MMHW), and average annual maximum tide level. The graph extends from 1913 to 2012, with tide levels ranging from 300 cm to 450 cm (STND). The data points are marked with black dots, and the trend lines are in blue, red, and green, indicating different tidal measurements.
Crescent City Tide Levels

The graph illustrates the annual maximum tide levels in cm (STND) over different return intervals (years) for various sea level rise (SLR) scenarios:

- **Existing Condition (0 cm SLR)**
- **50 cm SLR**
- **100 cm SLR**
- **150 cm SLR**
- **200 cm SLR**

The data shows a linear increase in tide levels with increasing return intervals and sea level rise.
Vulnerability Assessment
Update

• Draft Inundation Mapping: 1 to 2 months
• Inundation Mapping Tides:
  MMMW, MAHW, and 100 year Tide
• Inundation Depths: 0.0 (existing conditions),
  0.5, 1.0, 1.5, and 2 meter SLR Increments
• Inundation Mapping will be in ArcGIS Format
# Meeting Schedule: 2013-2015

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The purpose of the project is to support informed decision-making and encourage a unified, consistent regional adaptation strategy to address the hazards associated with sea level rise in the Humboldt Bay region.
Humboldt Bay Sea Level Rise Adaptation Planning Project

Goals

• Understand the current hazards associated with coastal flooding in the Humboldt Bay region and the predicted future effects of continued sea level rise.
• Gather the most current technical information regarding historical and future sea level rise in the Humboldt Bay region and the contributing effect of vertical land motion.
• Implement a robust public outreach program to share information and gather public input.
• Understand the linkages between sea level rise adaptation planning and related planning efforts.
• Identify opportunities for integrated adaptation strategies and coordinated response efforts across jurisdictional boundaries.
Humboldt Bay Sea Level Rise
Adaptation Planning Project
Stakeholder and Public Outreach

• Adaptation Planning Working Group:
  County, Eureka, Arcata, District, and CCC

• Stakeholders:
  Land Management-Wiyot Tribe, HBNWR, NCRA, DFW,
  Caltrans, and BLM;
  Resource Regulatory-DFW, USFWS, and NMFS;

• NGO: Sea Grant, Farm Bureau, Buckeye Conservancy,
  Humboldt Baykeeper, and Audubon

• Public:
SEA LEVEL RISE
ADAPTATION PLANNING PROCESS

VULNERABILITY ASSESSMENT → RISK ASSESSMENT → ADAPTATION STRATEGY
VULNERABILITY ASSESSMENT

- Shoreline Inventory
- Historic Inundation
- Relative Sea Level
- Outreach

- Inundation Model
- Groundwater Model
- Extreme Events
- Outreach

• Inventory Assets
• Assets Sustainability
• Assets Priority
• Outreach

- Response Capacities
- Outreach

• Hydro/Spatial Linkage
• Resiliency
• Economic Assessment
• Outreach

• LCP Amendments
• Outreach