

Complexities of Permitting a Waterfront Remediation and Restoration Project in California

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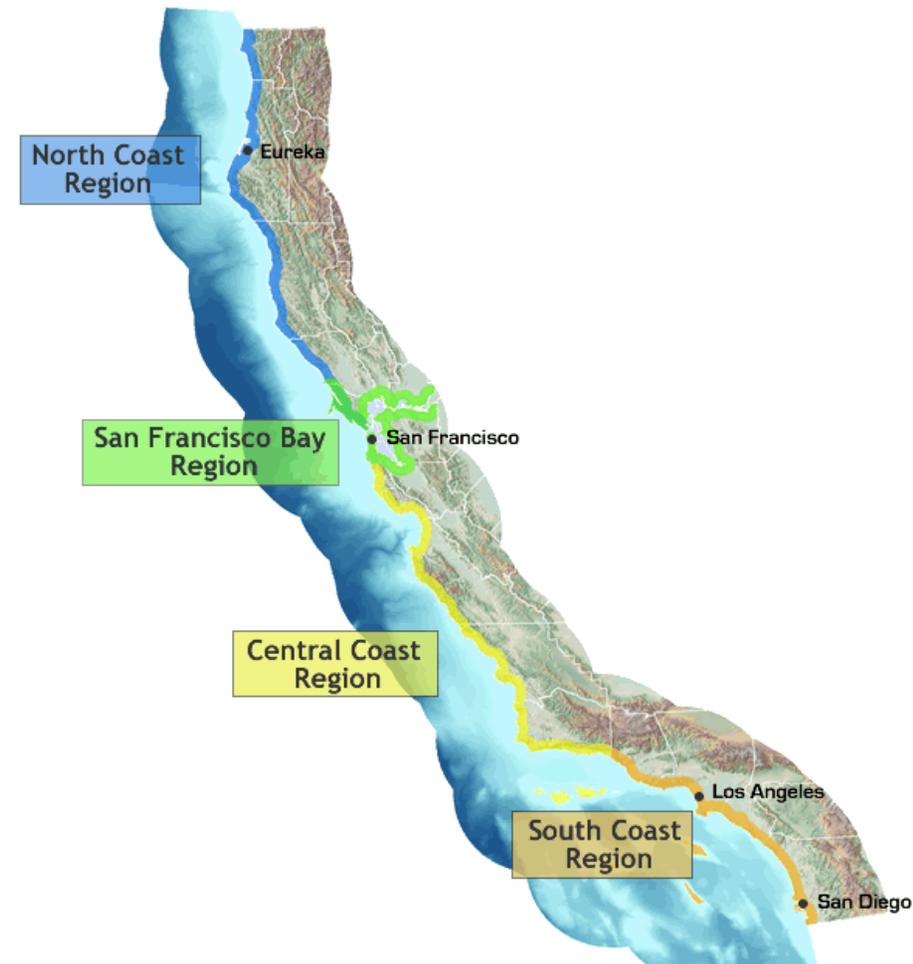
Outline

- Site and project overview
- Regulatory agency interaction
- Coastal Development Permit specifics
- Summary

Site and Project Overview

California Coastal Act Overview

- Offshore and coastline areas
- Promote orderly balanced use and conservation of coastal resources
- State-wide coastal plan and Local Coastal Programs



Site Description

- Small, narrow site in California Coastal Zone
- Distinct upland and waterfront areas
- Adjacent to historical downtown area



Project Description

- Cleanup and Abatement Order
- Remedy protective of human and ecological receptors, and groundwater
- Excavation of upland and waterfront areas
- Tidal exclusion during waterfront remediation
- Install erosion control

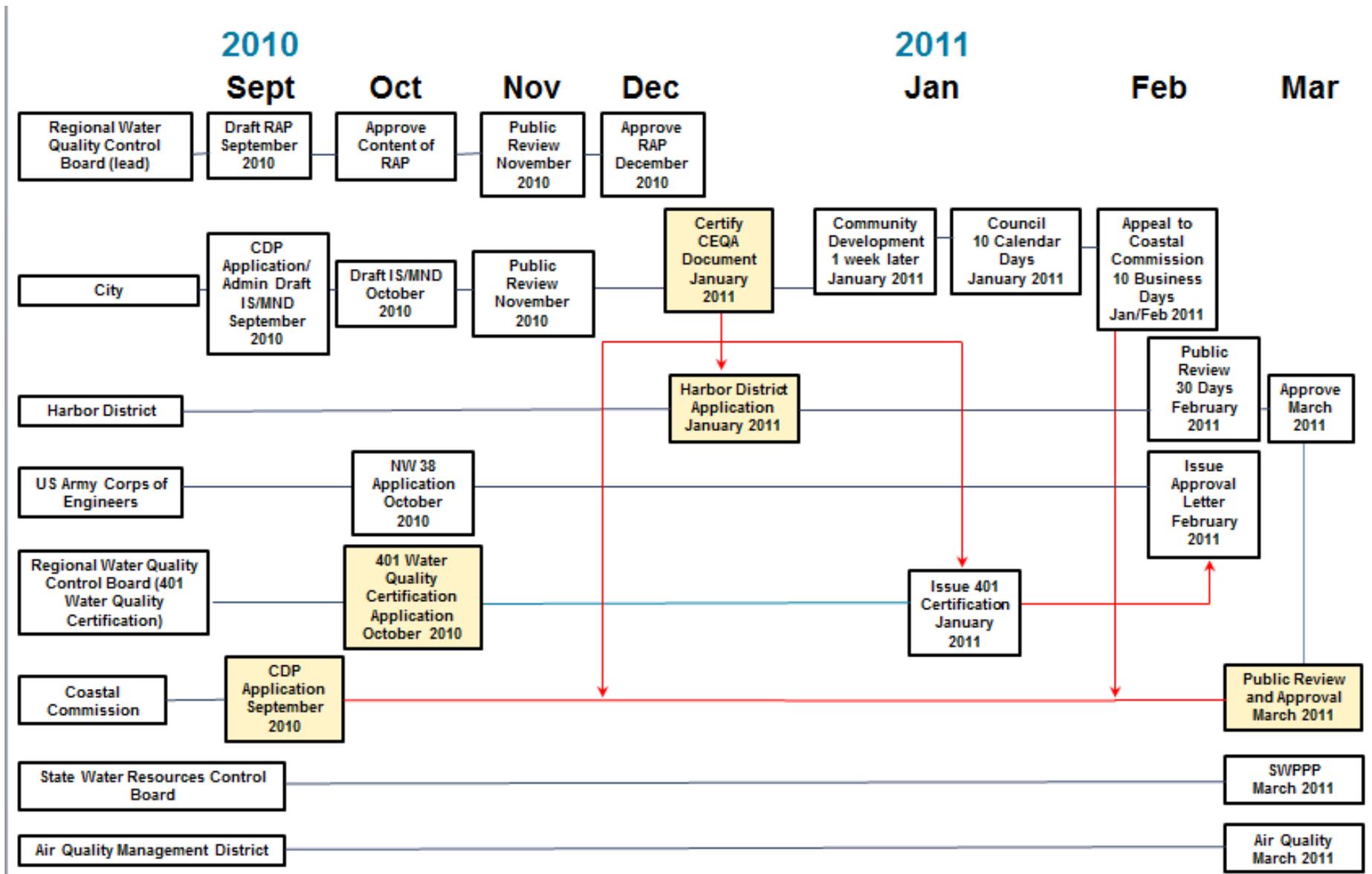


Regulatory Agency Interaction

Multiple Agency Jurisdiction

- United States Army Corps of Engineers
- National Marine Fisheries Service
- California Coastal Commission
- California State Water Resources Control Board
- California Department of Fish and Wildlife
- California Air Resources Board
- Local city permits and Local Coastal Program
- Local harbor district

Initial Permit Schedule



Coastal Development Permit

- Initially split between city (upland) and California Coastal Commission (waterfront)
- Inter-agency negotiations began nine months prior to proposed start date
- Process consolidated approximately one year into negotiations
- Approval granted approximately one year after plan
 - Waterfront associated plans approved over following year

Coastal Development Permit Specifics

Permit Requirements

- 22 distinct special conditions
 - 10 construction requirements
 - 4 natural resource mitigation/monitoring requirements
- 11 CDP-specific written plans
- Upland protection measures
- Eelgrass mitigation
- Tidal mudflat mitigation



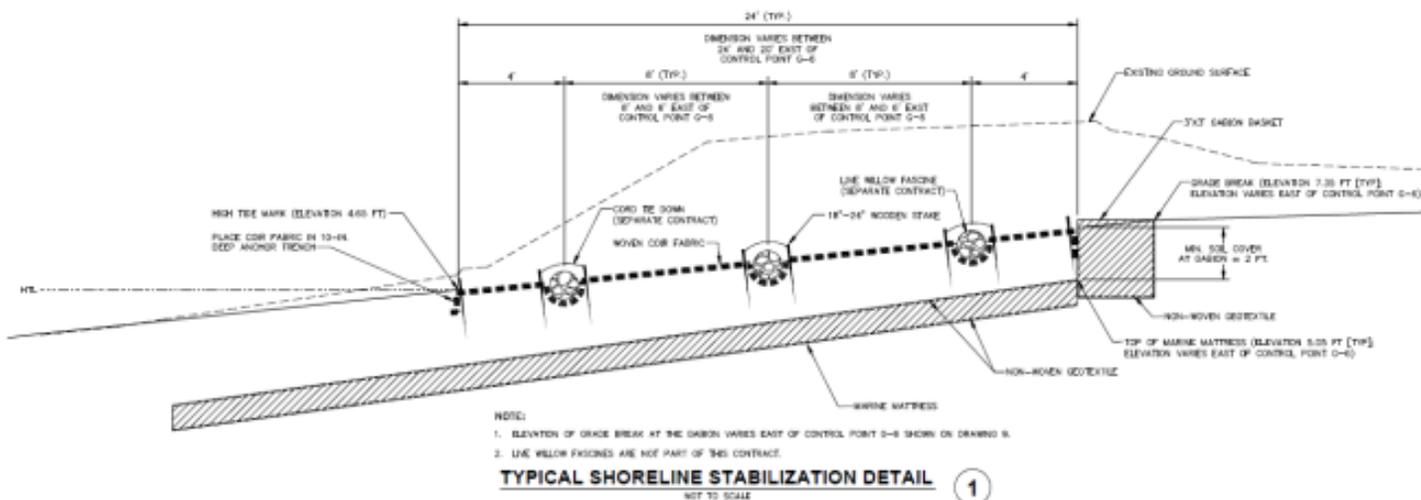
Upland Protection Measures

- Design objectives:
 - Protect adjacent properties
 - Prevent erosion into tidal areas
 - Protect future land use opportunity
- Original Design
 - Sand backfill, riprap armoring
 - Quantitative sizing
 - Similar to existing berm
 - Match adjacent boardwalk protection structure



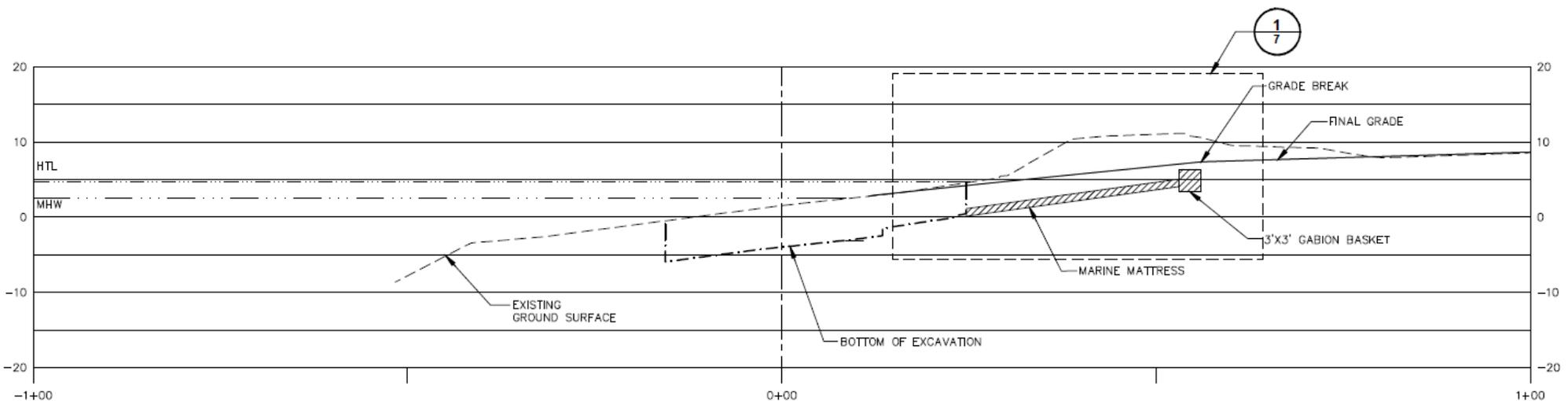
Upland Protection Measures

- Riprap design changed at agency request
- Developed “green” approach
 - Willow fascines
 - Subgrade marine mattress
 - Gabion basket



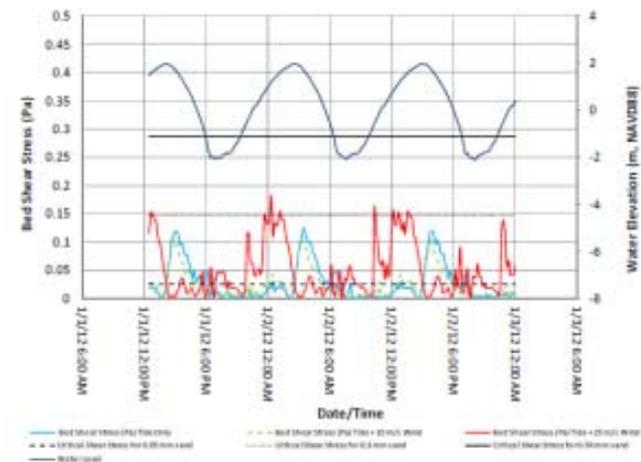
Upland Protection Measures

- Revised marine mattress design requested one year following initial submittal
 - Considered “fill” below high tide line
 - Quantitatively demonstrate need for erosion control
- Final plan approved approximately 18 months following initial design submittal



Upland Protection Measures

- Used Delft3D™ model to evaluate erosion
 - Wind/tide and vessel waves
 - Depth average velocities
 - Near-bed shear stress
- Estimated erosion rates without erosion control
 - 10 cm/yr from tidal and wind wave action
 - 1.7 m/yr from vessel generated waves
- Estimated D_{50} (4 in.) and D_{100} (7 in.) for erosion control



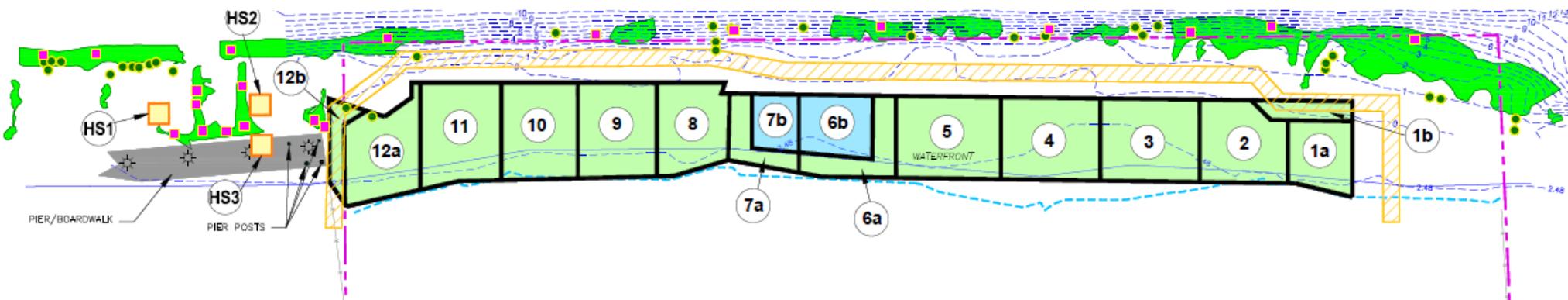
Eelgrass Mitigation

- Subtidal and intertidal habitat
- Differing requirements from various agencies
- Negotiated one mitigation and monitoring procedure
- Requires submission of a minimum of 3 separate reports



Eelgrass Mitigation – Key Components

- 30 day pre- and post-construction surveys
- No impacts to eelgrass beds
- Mitigation based on impacts to levels of individual turions
- Mitigation to be installed at 4.82:1 with final target of 1.2:1



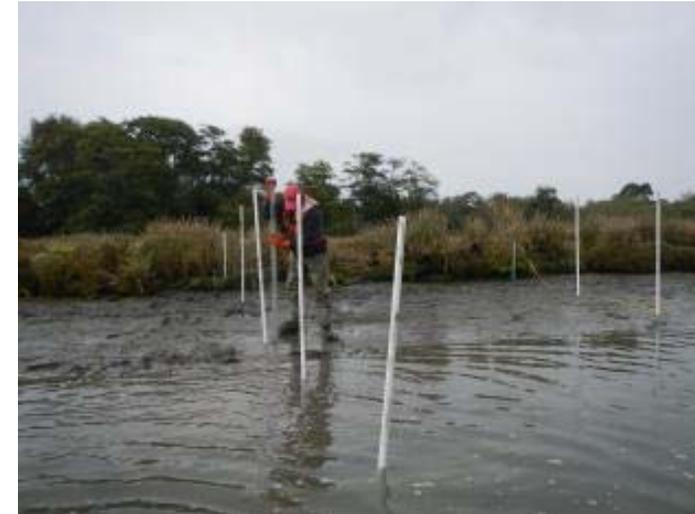
Tidal Mudflat Mitigation

- Specific to CDP
- No established guidelines
- Objectives: reestablish benthic community and maintain marine substrate
- Final plan developed with Coastal Commission ecologist staff input



Tidal Mudflat Mitigation

- Reestablish biomass similar to pre-remediation
 - Confounding factors: grain size and natural variability
- CDP study power requirement
 - Pilot study to evaluate sample size
 - Extremely high variability
- Pre-remediation study and 5 year minimum monitoring
 - Biomass and erosion



Summary



Lessons Learned

- Discuss agency resources to accommodate schedule objectives
- Request technical staff involvement early
- Competing objectives of multiple agencies will likely delay permitting process
- Obtain early agreement on specific design parameters
- Coastal Development Permit likely requires detailed plans duplicative of other permits

Imagine the result

