

Goat Rock Beach Jetty Feasibility Study

April 20, 2016

Russian River Estuary Community Meeting

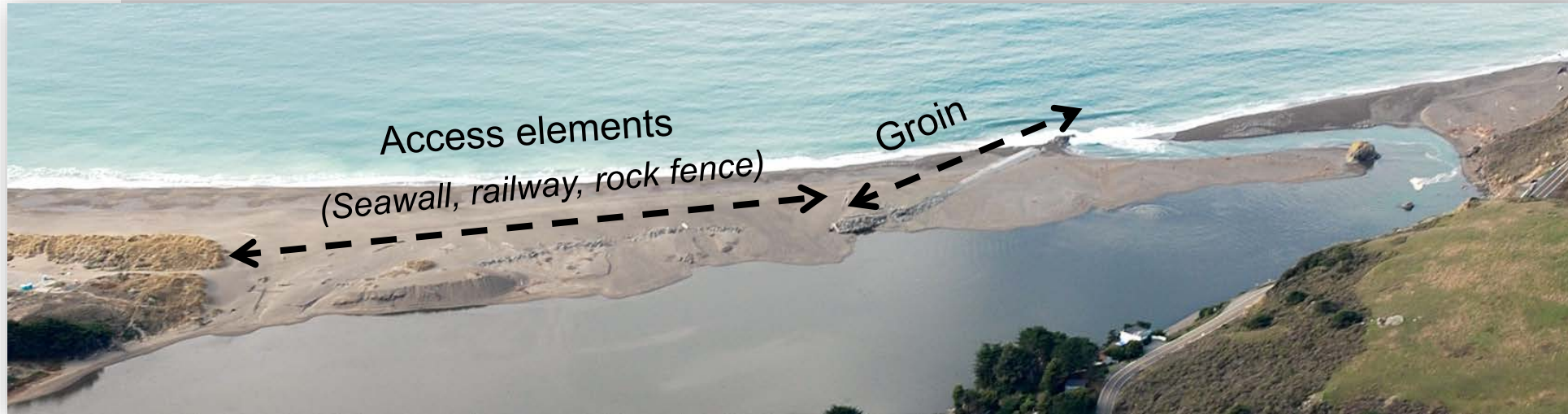
Monte Rio

Why Study the Jetty?



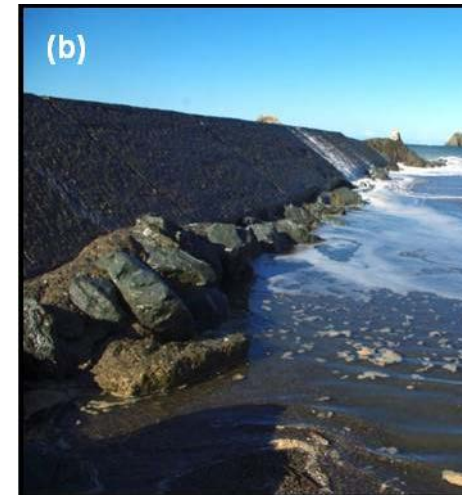
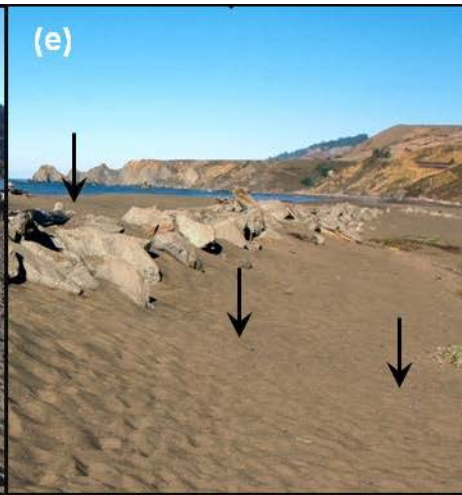
- National Marine Fisheries Service Biological Opinion (2008)
 - To improve steelhead rearing habitat, manage Russian River Estuary for more frequent lagoon conditions: higher water levels and fresher (less saline) conditions
 - Lagoon management season: May 15 – October 15
 - Artificial breaching when necessary to avoid flooding
 - Would modifying the jetty facilitate lagoon conditions?
(No funding source or implementing agency identified for jetty modifications)

Jetty's Components



Access elements

Groin



Jetty's Relationship to Estuary Water Surface Elevations

Freshwater lagoon habitat May 15 – Oct 15



Inlet morphology



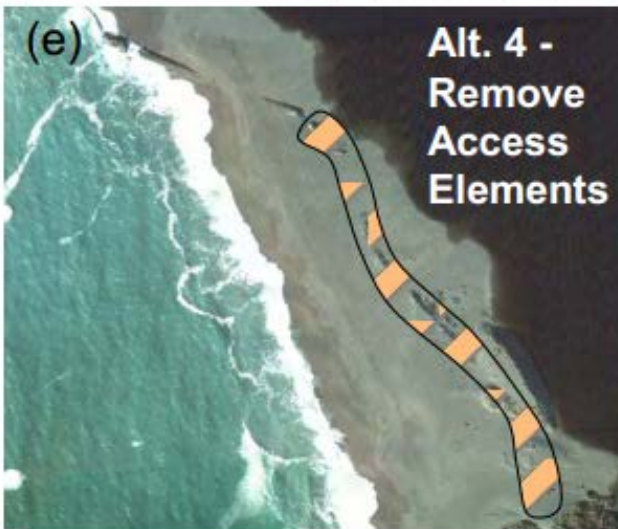
Jetty Study Components

- Jetty Structure
 - Historic and site assessment
 - Ground-penetrating seismic and radar exploration
- Groundwater Permeability
 - Groundwater monitoring wells
 - Remote sensing of seepage
- Beach and Inlet Morphology Assessment
 - Ocean waves modeling
 - Estuary water balance and inlet modeling
- Flood Risk Assessment
- Jetty Alternatives Development & Evaluation

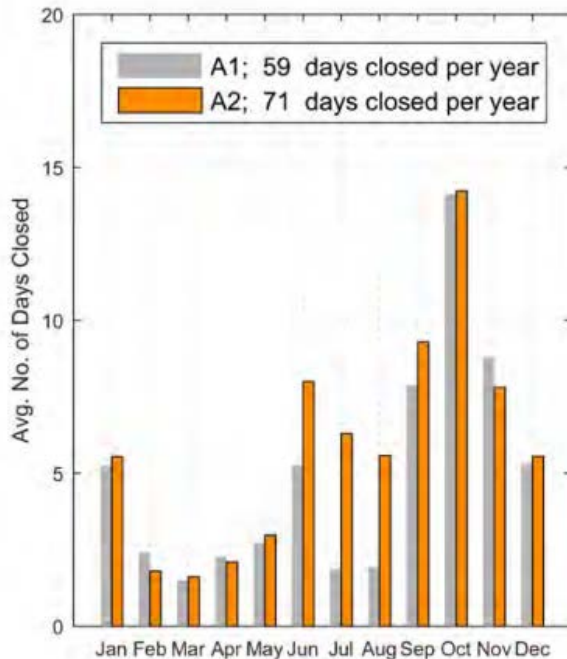
Summary of Existing Conditions Findings

- Fill at Goat Rock (now a parking lot) has blocked north-to-south sand transport, causing higher and wider beach south of the groin
- Sections of beach berm without access elements have ~3x greater seepage rates
- Beach migration in response to sea-level rise is likely to bury access elements
- Estuary water surface elevations and inlet closures can be predicted with a coupled water and sediment balance model
- Flooding: Inlet closure or ocean wave transmission may pose greatest flood risk

Jetty Alternatives

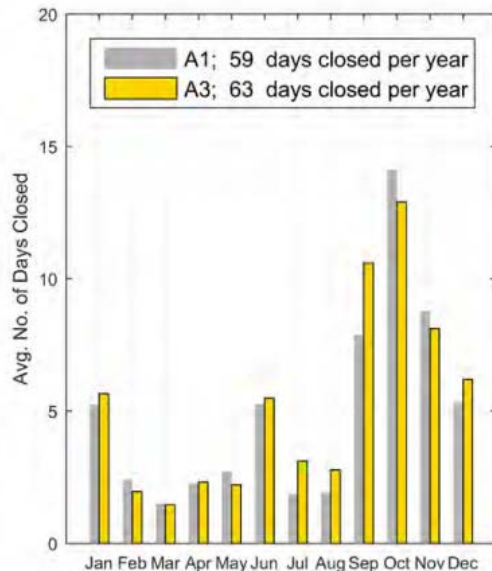


Alternative 2 – Notch Jetty



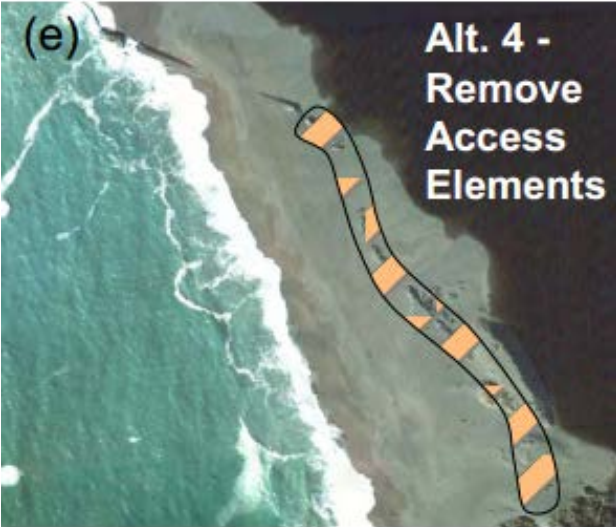
- No change in seepage or wave overwash
- May increase inlet migration south of groin by up to 250 ft
- Largest potential to increase in water surface elevations (up to 18% annually, 37% during management period)
- Implementation challenges: channel erosion, equipment access, fish passage, reverting to north of groin, increase management, fixed elevation relative to SLR
- Smaller traffic and access impacts during construction
- Estimated cost: \$1.6M

Alternative 3 – Remove Groin

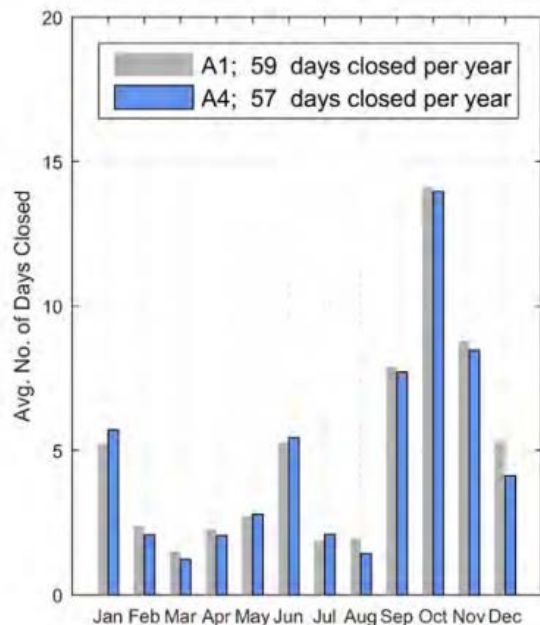


- Some increase in seepage (~20%)
- No change in wave overwash
- May increase inlet migration south of groin by up to 400 ft
- Similar closure, water levels, and beach management as current conditions
- Larger traffic and access impacts during construction
- Estimated cost: \$15.3M
- Alt 3a – Degrade in Place
 - Leaves groin materials dispersed on the beach
 - Estimated costs: \$2.1M

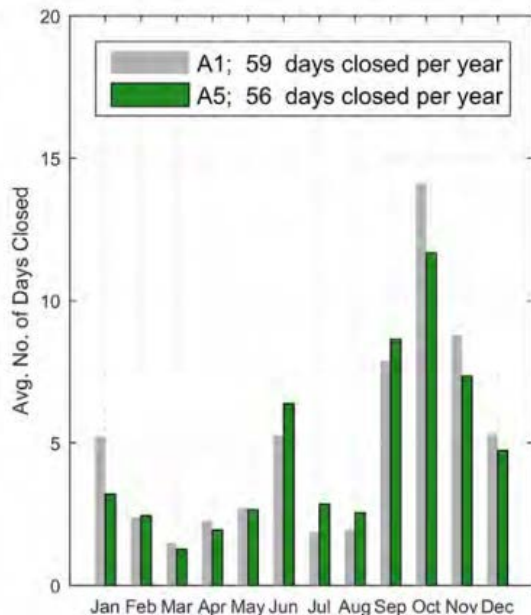
Alternative 4 – Remove Access Elements



- Larger increase in seepage (~40%)
- Larger increase in wave overwash
- Likely to maintain inlet north of groin
- Similar closure, water levels, and beach management as current conditions
- Moderate traffic and access impacts during construction
- Estimated cost: \$3.9M



Alternative 5 – Remove Full Jetty



- Largest increase in seepage (~60%)
- Largest increase in wave overwash
- May increase inlet migration by up to 1,000 ft
- Similar closure, water levels, and beach management as current conditions
- Largest traffic and access impacts during construction
- Estimated cost: \$18.1M

Jetty Alternatives

