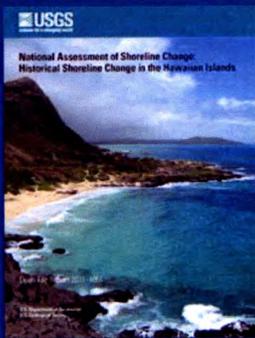




### EROSION IS WIDESPREAD ON MAUI

- 85% of Maui shorelines are experiencing long-term erosion.
- 76% of Maui Shorelines are experiencing short-term erosion.
- Maui's beaches are experiencing the highest rates of erosion for the Hawaiian islands.
- Maui has the highest percentage of beach loss.




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### COASTAL EROSION

#### Combination of Causes:

- Human Impacts to Sand Supply
- Currents & Seasonal Wave Conditions & Storms That Move Sand
- Sea-Level Rise




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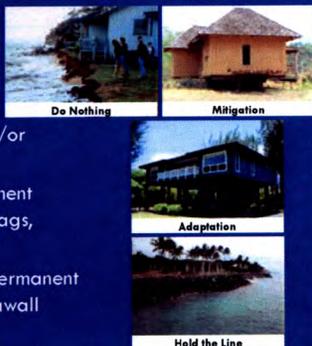
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### RESPONSE OPTIONS

- Do nothing
- Managed retreat
- Adaptation
  - Dune restoration and/or beach nourishment
  - Temporary or permanent erosion control (geobags, groins)
- Hard Stabilization: permanent rock revetment or seawall




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*Jan Tara Owens*

## PROTECT & RESTORE DUNES

**Seasonal beach profile adjustments**

**Normal beach profile**

**Adjustment for large waves**  
Dunes and beach release sand. Sand moves offshore.

**Recovery**  
Coastal dunes and beach store sand until next large wave event. Sand moves onshore.

**Large waves, which tend to occur seasonally in Hawaii, cause a beach to temporarily change its profile.**

degraded dunes

healthy dunes

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## DUNE PRESCRIPTION

- Move anything that's in the way (hardscape or vegetation)
- Stabilize the sand (add sand, fencing, and/or appropriate vegetation)
- Provide access pathways (including dune walkovers)
- Educate and monitor

**Coastal Sand Dunes**  
A Natural Protection

**Shifting Sands**

**Plant Kikaa**

**Restoration**    **Why the Boardwalk?**

**To Get Involved or Contribute:**  
[www.southmauivolunteers.com](http://www.southmauivolunteers.com)

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## Kamaole II Beach: Dune Restoration

**BEFORE**

**AFTER**

Kamaole II Beach Park  
March 7, 2011

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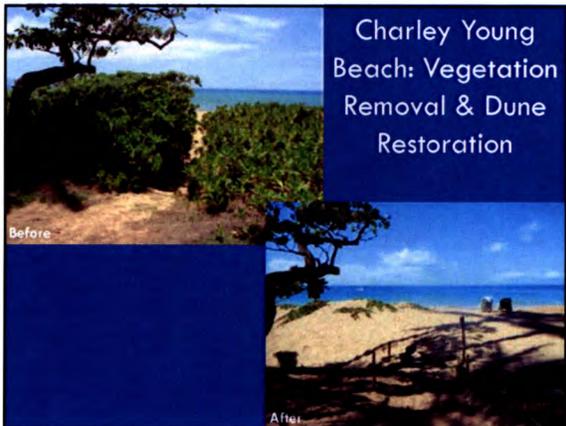
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### KANAHA BEACH PARK

- Set aside by State of Hawaii to County of Maui for public parks purposes (EO no. 2358)
- 1975 CDUP for County Park Use
- State of Hawaii Conservation District – Limited Subzone
- 2005 County of Maui Master Plan (incomplete)
- High Erosion Rates (=large setbacks)
- High flood/coastal inundation hazards
- Very sensitive coastal environment

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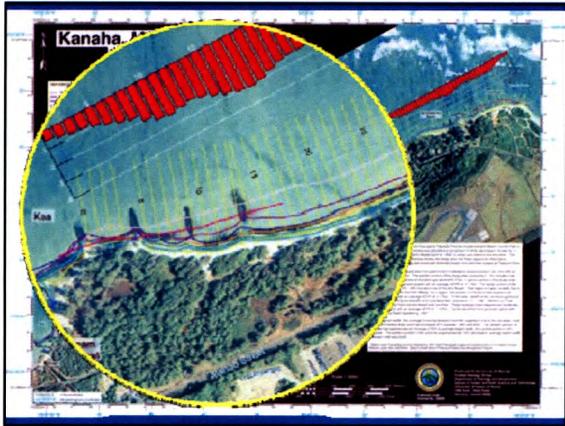
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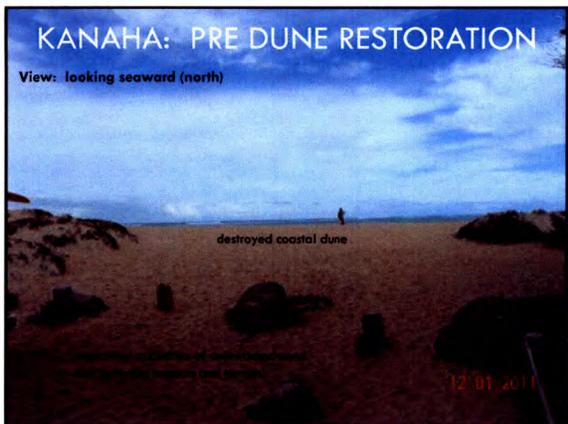
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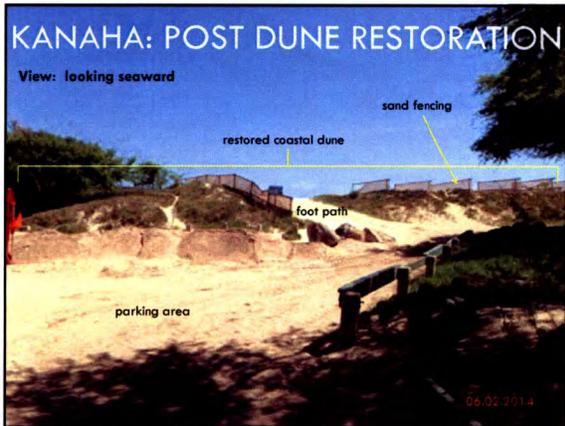
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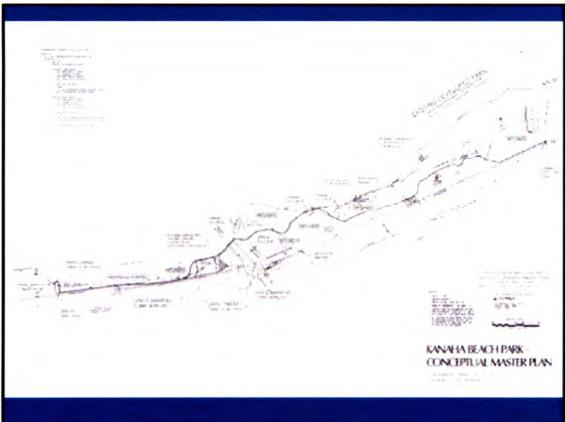
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