SCIENCE RESEARCH & DATA REQUIREMENTS FOR PROTECTING HAWAII’S COASTAL ZONE

Jim Buika, County of Maui Planning Department

Coastal Data Exchange Conference
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Fact: Beaches like this are disappearing...
...To be replaced by this
Maui has lost more than four miles of sandy beach in past century — report

By LEE IMADA, News Editor

HONOLULU — Eighty-five percent of sandy beachfront has eroded and 4.2 miles has been lost on Maui in the past century, according to a U.S. Geological Survey and University of Hawaii report released this week.

Those percentages were the highest in the report covering 150 miles of sandy shoreline or “essentially every beach” on Maui, Oahu and Kauai.

“The entire Kihei coast is eroding, except for a handful of places where sand is being trapped by walls,” said Charles Fletcher, associate dean of the University of Hawaii School of Ocean and Earth Science and Technology and lead author of the report “National Assessment of Shoreline Change: Historical Shoreline Change in the Hawaiian Islands.”

The “spires of the French Frigate Shoals” will be the inevitable fate of the Hawaiian Islands in millions of years and sea level rise is a natural factor in erosion, the report said. But the erosion is not all natural, and seawalls are among the leading man-made culprits.

In Kihei, which the report said lost 1.2 miles of beaches from 1900 to 2007, Fletcher noted how seawalls sprung up one after another along the Halama Street area near Kalama Park as residents attempted to protect their shorefronts. Erosion rolled north and beaches were lost.

“If you have a beely seawall, it will protect the land

See BEACHFRONT on the next page

Kaanapali Beach has shown an annual erosion rate of 3.2 inches over the last century, according to a U.S. Geological Survey and University of Hawaii report. Maui has lost 4.2 miles of sandy beach in the last century, according to the report, which is titled “National Assessment of Shoreline Change: Historical Shoreline Change in the Hawaiian Islands.”
Over the next several years, Maui will add another mile of sea walls to our shoreline…

In 2013, two 1200-foot revetments completed to protect threatened coastal highway in West Maui by HDOT under emergency declarations.
WHY ARE WE LOSING HAWAII'S BEACHES?

Rocky Point, Oahu: December 2013

FACTS: Deflated beaches and loss of sand due to:
1) Existing development built too close to the shoreline requires protection;
2) Seawalls are built as result of episodic storms (Keonenui Bay, Napili Maui 1980)
3) Seawalls cause cascading effect/domino effect, eliminating natural shorelines;
4) Coastal erosion and Sea Level Rise continue to deflate existing beaches.

Why is this happening?
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.

Growing problem: more and more existing shoreline structures are threatened and need protection.

CURRENT PATH: Hawaii’s sense of place is being threatened by seawalls and revetments, eliminating sandy shorelines.

- **Problem:** Planners and owners lack cost-effective alternatives

- **FACT:** Condos, roads, and critical infrastructure, built 30-to-50 years ago, were built too close to the ocean and are now falling into the ocean.

- **FACT:** We do not have adequate solutions in our tool kit to protect threatened development while preserving the coastal zone.

- **FACT:** Without research and data to support new laws and policies for additional mitigation tools, Hawaii will lose its sense of place.

- **FACT:** Our coastal environment is being negatively impacted by our requirements to protect failing development & infrastructure.
PROBLEM: Currently, seawall and revetment armoring are the only cost-effective solutions to protecting threatened structures.

SOLUTIONS 1 & 2: Shoreline Planners need science research, government support, and data evidence that (1) EROSION CONTROL STRUCTURES and (2) BEACH NOURISHMENT are environmentally friendly and cost effective.
Solution 1: Three Examples of Structural Alternatives to Seawalls and Revetments. One is natural and two are man-made.

Ko Olina Lagoon, Kapolei, Oahu, Manmade offshore groin/revetment. A healthy fish and coral ecosystem are forming as a result of the rock structure which preserves a sandy shoreline through wave energy dissipation. (Photo: J. Buika)
Solution 1: Three Examples of Structural Alternatives to Seawalls and Revetments. One is natural and two are man-made.

Lumahai Beach, Hanalei, Kauai. This natural formation mimics the manmade revetment at Ko Olina, Oahu, preserving the shoreline through wave energy dissipation, maintaining a sandy beach profile. (Photo: J. Buika).
Solution 1: Three Examples of Structural Alternatives to Seawalls and Revetments. One is natural and two are man-made.

500,000 reefballs have been deployed worldwide – none in Hawaii
Solution 1

Conclusion:

Counties require Alternatives to Shoreline Hardening: We need science & data to create additional cost-effective & environmentally friendly options: such as groins, breakwaters and artificial reefs...
Solution 2: Counties require research & data on environmental benefits and impacts of Beach Nourishment Projects, such as Sugar Cove, North Shore, Maui.
Solution 3: Episodic Storms must be planned for NOW…
With Scientists and Data Experts

This is what happened in Keonenui Bay, Napili Maui 1980…
Reaction>>> Build Seawalls

Rocky Point, Oahu: December 2013
RECONSTRUCTION TRADEOFFS: Without preplanning with communities our remaining beaches may be hardened.

NATURAL RESOURCES vs. BUILT ENVIRONMENT
RECONSTRUCTION DEBATE

REGULATORY CONTROL

RECOVERY SPEED
POST-DISASTER RECONSTRUCTION GUIDELINES AND PROTOCOLS
FOR THE CONSERVATION OF COASTAL RESOURCES AND PROTECTION OF COASTAL COMMUNITIES, MAUI COUNTY

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2014

“Building Back Safer, Stronger, Smarter!”
GUIDELINES

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<tr>
<th>Shoreline Type 1: Low hazard/sensitivity</th>
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<td>Shoreline Type 2: High hazard/sensitivity</td>
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PROTOCOLS

STREAMLINED ACTIONS

GO: Rebuild
• Follow BMPs

WAIT: Inspection Needed
• Assess damage
• Additional BMPs may be required

STOP: Impacts may be significant
• Environmental or cultural impacts must be mitigated

Public Service Announcement (PSA):
Instructions of the type of actions allowed per community

PSA:
Instructions to photograph, document and report damage & set up inspection date

PSA:
Guidance for following existing permit structure with public review to address environmental issues
Bottom line, post-storm, will we be ready to restore the beach or must we harden the shoreline?

Restore The Beach

Restoring the beach requires research to understand environmental impacts and cost-effective incentives.

Armor the Shoreline
Data Needs are related to Processes to
Build Back Safer, Stronger and Smarter

1. Disaster Declaration Process
2. Inspection Process
3. Best Management Practices
4. Mitigation strategies
5. Adaptive strategies
6. Plan reviews for rebuilding
7. Community priorities
8. Government jurisdictions (3)
9. Alternatives to shoreline hardening

Relocate / Retreat

Rebuild to code
WHY ARE WE LOSING HAWAII'S BEACHES?

Join us on Maui for the
Hawaii Congress of Planning Officials
Sheraton Black Rock, Ka’anapali
Sept. 10-12 2014, sign up for
Shoreline Tour & Shoreline Sessions

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