

## Maine Beaches Conference

July 17, 2015

Notes from “Adapting to a Changing Coastline Using Best Practices and Following the Rules”

### Coastal Erosion Control Technologies ( Peter Hanrahan, EJ Prescott, Inc.)

- Books to read:
  - *High Tide on Main Street* (by John Englander) (Role of Carbon Dioxide in the atmosphere is a salient topic.)
  - *Waves and Beaches* (by Willard Bascom) (The Dynamics of the ocean’s surface)
  - *Design with Nature* ( by Ian L. McHarg: a Scottish landscape architect and a renowned writer on regional planning using natural systems)
- Threat of rising sea levels (example: Dade County, Florida is only 4 ft above sea level)
- Flooding is up 300-500%
- Response: (Hard and Soft Armor)
  - Improved permeability equals land preservation.
    - Infiltration trench
    - Salt marsh restoration
    - Barrier beach restoration
  - Multiple lines of defense
    - Beach nourishment (bring in sand, impractical & expensive)
    - Zig-zag fences
    - Soil envelopes (example: coir matting made into logs, cover with sand & plant with beach grass plugs, anchor deeply)
    - Turf reinforcement mats
    - Geosynthetic tubes (ten-year life span)
    - Gabion baskets (wire baskets filled with rocks—maybe not effective long term)
    - Marine mattresses filled with rock
    - Reefs: cover 1% of ocean floor but support 25% of ocean life
    - Artificial reefs (concrete, very large, 4-8 ft tall)
    - Rock restoration (using concrete)

### Adaptive Mangement for Coastal Erosion (Sue Schaller, Bar Mills Ecological)

- Wetlands wildlife biologist working for Bar Mills Ecological
- Healthy Dunes
  - Provide storm protection
  - Privacy
  - Support wildlife habitat
  - A green infrastructure
- Dunes are self-repairing if protected from people and non-native species
- Dune damage provides opportunity for wave overwash damage
- Soft solutions to protect dunes:
  - Post and rope fencing (mulch w/seaweed)

- Dune walkovers (elevated slatted-wood walkways, gaps between boards are critical for safety, walkway needs to slope, needs open risers on oceanside, width for private walkovers per DEP is 4 feet (DEP prefers height and width to be same))
- Seaweed
  - Texture holds sand
  - Adds nutrients
  - Shades soil
  - Holds moisture
- Biomimicry (slats stuck randomly in sand)
  - Passive sand trapping
- Zig-zag fencing
- Non-native species
  - Bittersweet, honeysuckle, autumn olive, Japanese knotweed
- Natives—key to dune restoration
  - Frontal Beach : beach pea, beach grass, seaside dusty miller
  - Mid Dune: pitch pine, sweet fern, beach plum, wooly beach heather
  - Back Dune: Virginia rose, common milkweed, staghorn sumac, meadow sweet, adams needle (yucca)
  - Coastal gardens: nine back, New Jersey tea, Virginia rose
- Q&A:
  - Passive trapping is only part of budget
  - Coordinated effort with the entire town is key
  - Dune grass defines the natural salt zone all the way down the beach

#### Dune Restoration—Community-based Approaches (Alyson Eberhardt, NH Sea Grant)

- Example: The Great Marsh Ecosystem
  - Five communities are part of this ecosystem: Hampton, Seabrook, Salisbury, Newburyport, Newbury
  - High population density in this system
  - Three Goals
    - Protect human and natural communities; increase coastal resiliency
    - Try experimental approaches
    - Engage the community
  - Case Study: Newbury Mass (Plum Island), *Replanting Beach Grass*
    - Once grant (state funds) obtained, explain project to the community and get them involved (volunteerism)
    - Hampton & Seabrook (Hampton Beach State Park)
      - Create common garden of native dune species to use for replanting
      - Use plants as a low-cost method of obtaining beach grass to replant
      - Try to get landowners to use this as a resource
      - School children were involved in replanting 200 plants (74 volunteers)
    - Newburyport
      - Biomimicry and replanting of beach grass

## Maine's Coastal Sand Dune Rules (Marybeth Richardson, Maine DEP)

- Portland office of DEP is most involved with sand dune rules.
- Maine Geological Survey Maps (MGS aerial photos: [tinyurl.com/d3tzznn](http://tinyurl.com/d3tzznn))
  - By beach
  - Front Dunes D1
  - Back Dunes D2
  - Erosion hazard areas
- All frontal dunes are regulated in the same way.
- Activities not requiring permit, some are walkway or path, ok if previously developed
- PBR—required for repair/dune restoration/underground utilities or propane tank/open fence. Can replace a house in a back dune area.
- Reconstruction in frontal dunes: buildings have to be in same footprint and raised.
- Restoration
  - Beach nourishment and dredging require a full Coastal Dune permit
  - Dune restoration or construction: PBR
- Seaweed issues
  - If raked, must be kept within the system, can use for compost.
- Seawalls
  - Can be maintained, repaired or replaced in the same dimension : PBR
  - New dimensions require full Coastal Dune permit.
  - Cannot construct a new seawall
- Essential Habitat require IF&W approval
- In V-zone (wave-action zone) building can only be reconstructed one time and must have post or pile foundation.
- Exemption for minor expansions in existing impervious areas (new rule in 2011)

## Permitting on the Beach (Bill Walsh, Walsh Engineering Associates, Inc.)

- WEA Types of Permitting:
  - Local and Municipal: site plan permits, shoreland zone permits, seawall permitting, dock permitting, stormwater permitting
  - State: Natural Resources Protection Act permitting-NRPA Sand Dune permits, seawall design and permitting (NRPA), NRPA Permit by Rule (PBR), dock permitting (NRPA), Site Location of Development Act permitting (SLODA), wetland permitting
  - Federal (Army Corps of Engineers—ACOE): shoreline stabilization, dock permitting, wetland permitting
  - A project can entail all or some of these items.
- Impact of new DFIRM Maps on the beach area:
  - Many properties will be in a flood zone (Zone C) now that were not before.
  - Towns consider flood zones “Resource Protection,” thus limiting types of improvements to structures.
  - Local zoning regulations that correspond to the new flood maps are in place even though new flood maps are not.

- Types of projects that require permitting:
  - Sand dune restoration
  - FEMA LOMA or LOMAR application
  - Revetment repairs (no new revetments allowed at the beach)
  - House additions, reconstruction
- Relevant regulations
  - NRPA Sand Dune Regulations
  - Local site plan and shoreland zoning regulations
  - FEMA base flood elevations
- Permitting process
  - Permitting analysis and data collection
  - Plan development
  - Coordination with review agencies
  - Preparation of DEP and Local permit applications
  - Building permit application
- Case Study
- Typical permitting schedule
  - NRPA, 2-4 months
  - Or PBR, 2-4 weeks
  - Town site plan application 1-4 months
  - Town shoreland zone permit, 1-3 months
  - Town building permit, 2-6 weeks
- Conclusion
  - New DFIRM mapping will affect most beach property owners
  - Many regulations exist for any activity in and around beach
  - Permitting process is complex