Building the Beach: Navigating the maze of Federal, State and Local Regulations

William Walsh
Principal Engineer
Walsh Engineering Associates

Werner Gilliam
Director of Planning and Development
Town of Kennebunkport
William R. Walsh PE, LEED

- Licensed Professional Engineer
- Twenty five + years of experience including:
  - Permitting; including DEP NRPA Sand Dune permits
  - Civil engineering
  - Site Planning
  - Project Management
Werner Gilliam CFM

• 15+ years of Experience working in a municipal setting with work including:
  • Permitting
  • Enforcement
  • Inspections
  • Residential Subdivision construction
• Certified Floodplain Manager
• Code Enforcement Officer
• Professional Planner for the town of Kennebunkport
What WEA does

- State Permitting:
  - Natural Resources Protection Act Permitting (NRPA – Chapter 355)
  - Sea Wall design and permitting - NRPA
  - Dock permits - NRPA
  - Stormwater Permitting (DEP Chapter 500)
  - Site Location of Development (Sloda)
  - Storm water Permits (Chap. 500)
  - Permit By Rule - PBR
  - Wetland Permitting and Mapping
- Federal Permitting- Army Corps of Engineers (ACOE):
  - Shoreline stabilization
  - Dock Permitting
  - Wetland Permitting
- Site design
- Construction management
Understanding Flood Maps
& How They Can Effect Your Beachfront Project
Flood maps

- Also known as FIRM
- Flood Insurance Rate Map
- Authorized under the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973
- Identify areas that are prone to various levels of flooding for the purposes of establishing flood insurance rates, and to assist communities in their efforts to promote sound floodplain management
Flood Maps

- The Flood maps, in addition to a locally adopted Flood plain Management Ordinance, regulate land use and construction activities within the areas identified.
- A typical requirement involves submittal of a flood elevation certificate, which shows actual elevation data prepared by a licensed surveyor.
- Ordinance establishes elevations for new construction, and substantially renovated existing structures.
- Most common construction requirement is elevating, with a pier style foundation or a crawlspace with flood vents.
Current Map
Current maps

• Based on flood probability estimates that, in many cases, are now out-of-date
• Hand-drawn on paper maps that had limited vertical accuracy or could not be easily matched to "real-world" geographical coordinates
• Based on elevation data that, in many cases, have been or will be superseded by more accurate data
New Maps

Also Referred to as DFIRM or Digital Flood Insurance Rate Map
New Maps

• As accurate as existing maps were when they were created.
• Identify areas where uncertainty in flood or land elevations exists.
• Digital, so they are easily analyzed with other digital data, such as locations of roads and buildings
• Elevation data acquired using LIDAR (Light Detection and Ranging) LIDAR measures the time needed for each emitted pulse to reflect off the ground and return to the sensor.
Zone Designations

- Zone VE: Same as V except with a detailed hydraulic analysis (elevations)
- Zone AE: Same as A except with a detailed hydraulic analysis. (elevations)
- Zone AO: Areas that have a 1 percent annual chance of shallow flooding (Sheet flow on sloping terrain)
- .2% annual chance of flooding no elevations or depths indicated
Help! I’m building a New House or Doing a Major Renovation

• Preliminary maps are in effect now for construction purposes. FEMA requires us to utilize the elevations on Preliminary Maps since the expectation is that they will become regulatory in the not too distant future.

• This time period should not be seen as “getting in before the regulations change” Constructing a new or substantially renovated home that does not meet the new elevations will only result in increased flood premiums later.

• Substantial Renovation is defined as a project that is greater than or equal to 50 percent of the Market Value of the Building.
Help! I’m building a New House or Doing a Major Renovation

• Existing Homes can be renovated within Floodplain areas without the need to elevate provided the project cost is below 50% of the market value of the structure.

• Typically general maintenance and Code required repairs are exempt from this rule.

• Reconstruction or new Construction will be required to meet elevation and construction requirements.
Help! I’m building a New House or Doing a Major Renovation
Help! I’m building a New House or Doing a Major Renovation
What about Zoning?

- Resource Protection is identified as Coastal Floodplain on Current Maps.
- DEP does not require us to zone developed areas as Resource Protection.
- Will require an ordinance change in order to not classify homes in new floodplain areas as a non-conforming use.
- If building elevation were to exceed 30’ height limit under the current ordinance a variance would be required.
Insurance Reality

30-Yr Comparison of Flood Rates
Zone AE - Post-FIRM Building - $100,000 structural coverage
Single Family - No Basement - One Story

Cumulative Insurance Premiums (Thousands of Dollars)

Year

* Assumes a 3.5% per year increase

$96,070
(2 ft below BFE)

$29,218
(at BFE)

$12,183
(2 ft above BFE)
Permitting process

Planning
- Due Diligence permitting analysis and gathering base data.
- Plan development, coordination with architects and Owner

Permitting
- Coordination and review with Regulatory Agencies
- DEP NERPA Application Preparation and Submittal
- Local Site Plan and Shoreline zone permit application

Construction
- Local Building permit
Case Study
Goose Rocks Beach
Kennebunkport, Maine
Kennebunkport Case Study

Goose Rocks Beach

- House Reconstruction
- Initial Issues Identified:
  - Sand Dune
  - Flood Zone:
    - Existing FIRM Maps - Zone C
    - Proposed DFIRM Maps, VE, AO and AE Zone
- Lot coverage exceeded 20%
- Garage Structure partially non-conforming
- Shoreland Zoning
- Habitat: Wading birds and Water Fowl
Existing Structure

Goose Rocks Beach
Existing Structure

Goose Rocks Beach
Existing Conditions

Goose Rocks Beach
Sand Dune Maps

Goose Rocks Beach
Habitat Mapping

Goose Rocks Beach
Flood Insurance Rate Map (1983)

Goose Rocks Beach
Flood Zone Map (2009)

Goose Rocks Beach
Lowest Floor Elevation

Goose Rocks Beach
Fema Flood Zones

Base Flood Elevations:
- BFIs are established at a flood level, including wave effects, for the 100-year flood or base flood.
- American Society of Civil Engineers (ASCE) 24-05 Flood Resistant Design and Construction

In V Zones and Coastal A Zones
- Structures supported on piles, columns or shear walls
- Foundation depth shall take into account erosion and scour.
- Walls must be designed so as not to produce debris that is capable of damaging structures (breakaway walls in Coastal A Zones require openings.)
- Decks, concrete pads, and patios shall be structurally independent of buildings and constructed to break away without producing damaging debris.

Designing for Flood Levels Above the BFE

Goose Rocks Beach
✔ Height: Restricted by Town
✔ BFE: Restricted by FEMA/Town

Building Height Analysis
Goose Rocks Beach
Existing Conditions

Goose Rocks Beach
Existing Area Analysis

Goose Rocks Beach
Concept Plan

Goose Rocks Beach
### Proposed Site Plan Area Analysis

Goose Rocks Beach

<table>
<thead>
<tr>
<th>Structure</th>
<th>Existing</th>
<th>Proposed</th>
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<tbody>
<tr>
<td>HOUSE</td>
<td>1,537.1</td>
<td>1,799.5</td>
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<tr>
<td>ROOF OVERHANGS</td>
<td>201.6</td>
<td>364.3</td>
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<tr>
<td>STAIRS AND LANDING</td>
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<td>202.6</td>
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<td>GARAGE &amp; CARPORT</td>
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<tr>
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<td>500 GALLON PROPANE TANK</td>
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<td>LANDSCAPING STEPS</td>
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<td><strong>TOTAL IMPERVIOUS AREA</strong></td>
<td>4,371.4</td>
<td>4,371.4</td>
</tr>
<tr>
<td><strong>PERCENT (% IMPERVIOUS</strong></td>
<td>35.6%</td>
<td>35.6%</td>
</tr>
</tbody>
</table>
Architectural Design

Goose Rocks Beach

Prepared by: Whitten Architects
Final Site Plan

Goose Rocks Beach
Permit Preparation and Application

2 to 3 months

Department of Environmental Protection

NRPA Sand Dune permit
3 to 4 months

Permit By Rule
1 month

Town

Site Plan Approvals
3 to 4 months

Shoreland Zone Permits
1 to 3 months

Town

Building Permits
2 weeks to 1.5 month

Permitting Schedule

Goose Rocks Beach
Existing Structure

Goose Rocks Beach
Existing Structure

Goose Rocks Beach
Completed Project

Goose Rocks Beach
Questions??

Thank You!

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