



# Active Protection Options

## Active Protection Subcommittee

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# Soft Protection Options

- **Dynamic Revetments**
- **Dune Management**
- **Beach Nourishment**



# Hard Protection Options

- Jetties
- Groins
- Continuous Shore Parallel Breakwaters
- Intermittent Shore Parallel Breakwaters
- Seawalls and Bulkheads
- Riprap Revetments



# Off The Beach Options

- Hawk Creek Bridge Protection Options
- Dune Management in the back dune area (covered in the soft protection options)

# ***Dynamic Revetments***



# ***Dynamic Revetments***

**Revetment made from cobbles and less steep than riprap (example: Cape Lookout)**

**PRO:** May be a useful as an allowed exception in areas not eligible for riprap (between Corvallis Ave and North Neskowin); relatively lower construction cost

**CON:** Severe storms can mobilize the cobbles leaving the community vulnerable; more regular maintenance required; cobbles will eventually be all over the beach; expensive to purchase and transport material

**CURRENT COMMITTEE ASSESSMENT:** A less adequate solution than riprap except for those areas where riprap is not permitted.

# ***Dune Management***



**Neskowin**



**Pacific City**

# ***Dune Management***

**Use of beach grass, sand fences, and (perhaps) dune grading to encourage dune growth**

**PRO: Useful in areas where the dunes are directly subject to wave action (between Corvallis Ave and North Neskowin); inexpensive**

**CON: Not suitable in areas like Neskowin where there is inadequate sand to rebuild the dunes**

**CURRENT COMMITTEE ASSESSMENT: Insufficient sand available on the beach to be an adequate solution for Neskowin**

# ***Beach Nourishment***



# ***Beach Nourishment***

**Addition of sand to the beach to dissipate wave energy and to add to the dune to increase its volume**

**PRO: Beach becomes higher and wider; easily constructed and maintained**

**CON: To be effective, a great deal of sand would have to be added, and regularly replenished – thus expensive ; No local source of sand; could require the addition of groins or breakwaters to keep the sand in Neskowin**

**CURRENT COMMITTEE ASSESSMENT: May not be suitable without the addition of other structures; an expensive solution for Neskowin**

# *Jetties*



# *Jetties*

**Shore perpendicular structures designed for harbor or inlet protection (examples: Newport and Tillamook)**

**PRO: Effective in maintaining a navigable channel**

**CON: Very expensive; downdrift erosion**

**CURRENT COMMITTEE ASSESSMENT: Not relevant at Neskowin**

# ***Groins***



# ***Groins***

**Shore perpendicular structures designed to trap sand and stabilize the beach**

**PRO: Traps sand moved along the beach by longshore current and wind**

**CON: Normally used on sand-rich beaches; not effective on beaches with rip currents, steep beach slopes, and cross-shore transport; downdrift erosion ; expensive**

**CURRENT COMMITTEE ASSESSMENT: Likely not effective at Neskowin**

## ***Continuous Shore Parallel Breakwaters***



## ***Continuous Shore Parallel Breakwaters***

**Shore parallel structures, either above or below the mean water line, designed to reduce wave energy**

**PRO: Beach width might be increased; wave energy is reduced in areas behind the structure**

**CON: Expensive to build and maintain; likely to require additional beach nourishment; difficult to predict impact on beach erosion**

**CURRENT COMMITTEE ASSESSMENT: Expensive for the situation at Neskowin (as much as \$370 million per mile to construct)**



## ***Intermittent Shore Parallel Breakwaters***



## ***Intermittent Shore Parallel Breakwaters***

**Intermittent shore parallel structures above the mean water line, designed to reduce wave energy**

**PRO: Beach width might be increased; wave energy is reduced in areas behind the structure**

**CON: Expensive to build and maintain; may increase erosion on either side of the structure; would require a feasibility study, including a quantitative analysis**

**CURRENT COMMITTEE ASSESSMENT: Expensive for the situation at Neskowin**

# *Seawalls & Bulkheads*



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**Vertical, self-supporting structures made of concrete or steel sheet piling**

**PRO: Useful for protecting the community behind it**

**CON: Expensive to build and maintain; likely to increase the erosion on the beach due to the reflection of waves back onto the beach; scour at the toe**

**CURRENT COMMITTEE ASSESSMENT: Not considered suitable for the Neskowin oceanfront due to likely increased beach erosion**

# ***Riprap Revetments***



# ***Riprap Revetments***

**Steeply sloping structure made from large rocks placed behind the beach; the current situation for most of the Neskowin beachfront**

**PRO: Useful in protecting the community behind it**

**CON: Expensive to build and maintain; not high enough currently in all locations to prevent overtopping; potential for scour at the toe; subject to isolated failures**

**CURRENT COMMITTEE ASSESSMENT: If properly constructed and adequately maintained, suitable for protecting the community under most circumstances in the medium term (10-20 years)**

# ***Hawk Creek Bridge Protection Options***



## ***Hawk Creek Bridge Protection Options***

**The Hawk Creek Bridge and the attached water and sewer lines are vulnerable to wave and tide action up the creek**

**PRO: Protection necessary to better protect the bridge and prevent isolation of the village; funding for design and construction potentially available from USACE.**

**CON: Cost might be high; at this time, no proposed solution**

**CURRENT COMMITTEE ASSESSMENT: Recommend the County and USACE immediately begin a feasibility study and planning process**



## ***Options Requiring Further Study or Action***

- **Continued maintenance of the Riprap Revetment**
- **Investigate raising the height of the Riprap Revetment and making it more uniform**
- **Hawk Creek Bridge Protection**
- **Investigate new innovative options that reduce wave energy**