

Eelgrass Restoration

Flood Adaptation Measure



ECOLOGICAL INFRASTRUCTURE



WATER LEVEL RANGE:

Intertidal to subtidal

SHORELINE LOCATION:

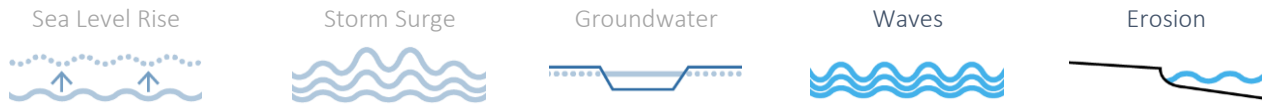


Eelgrass bed in New England ©Cornell Cooperative Extension Marine Program

DESIGN LIFE N/A	ADAPTABILITY High	IMPACT ON THE WATERFRONT Minor Intervention	CONSTRUCTION COST TBD
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COASTAL FLOOD HAZARDS MITIGATED:

Enhancements can provide flood protection when combined with other physical infrastructure



MEASURES COMPATIBILITY:		ECOSYSTEM SERVICES: Measure may affect these shoreline values			
Flood	Seismic	↑	—	↑	↑
Vegetated Terraces, Revetments, Levees	N/A	Aquatic Habitat	Terrestrial Habitat	Water Quality	Carbon Storage
		—	—	—	—

DESCRIPTION:

Eelgrass is a flowering underwater plant that exists completely submerged. Growth of eelgrass improves water quality as well as transparency by trapping and storing particles and dissolved nutrients. Eelgrass growth can result in wave attenuation, bottom stabilization and habitat creation.

CONSIDERATIONS:

- Eelgrass beds provide a number of ecological benefits but require considerable labor and time to install and monitor.
- Feasible sites have soft substrates, low wave energy, shallow elevation, and suitable water quality (salinity, turbidity).

ADVANTAGES:

- Eelgrasses provide wave attenuation and bottom stabilization with no additional installation of infrastructure.
- Increase biodiversity and provides marine habitat.

DISADVANTAGES:

- Potentially significant construction cost.
- Potential long-term monitoring.

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- Migration pathways for eelgrass beds should be considered in anticipation of sea level rise.

CONSTRUCTION IMPACTS TO THE PUBLIC:

- Feasible locations are generally distanced from marine traffic. Because installation and monitoring would likely occur outside of marine traffic areas and from the water, construction impacts to the public would likely be negligible.

SEA LEVEL RISE ADAPTATION OPPORTUNITIES:

- Adaptable to water levels. Will migrate as water levels change if an adequate migration pathway is present.

CASE STUDIES:

- None cited.

DESIGN OPPORTUNITIES:

Ecological Enhancements

- Measure is an ecological enhancement.

Urban Design

- Eelgrass beds can attract recreational water users seeking to view wildlife.

Form

- Form is subject to environmental conditions, and largely invisible to the public.

DESIGN CONSIDERATIONS:

- Eelgrass will require certain design considerations to be successful, including focus on performance factors such as waves, currents, tides, turbidity, water quality, and salinity conditions.

SITE-SPECIFIC CONSIDERATIONS:

- Water levels, waves, and currents should be well defined. Eelgrasses prefer shallow waters and low energy wave environments.
- Eelgrass requires a soft substrate (fine gravel, sand, mud) to root.

INSTALLATION AND CONSTRUCTABILITY CONSIDERATIONS:

- Initial installation is labor intensive and will require monitoring in order to ensure long term establishment.

OPERATIONS AND MAINTENANCE CONSIDERATIONS:

- In early years of installation, the eelgrass will require maintenance and monitoring, but once it is established, it will be self-sustaining.