

Sand Dune Stewardship

Overview

- Sand dunes provide protection from storm surge flooding during coastal storms.
- Vegetation on sand dunes help to trap airborne sand, which helps build and stabilize the sand dune so that the dune can help prevent flooding.
- Sand dunes provide habitat for native Delawarean coastal species.
- Sand dunes provide aesthetic value.
- Ways to keep a sand dune healthy:
 - Plant native plants on the dune such as Cape American beach grass (*Ammophila breviligulata*) to re-vegetate the frontal and back dune zones.
 - Remove all trash and debris such as yard waste, tires, boats, etc.
 - Post signs on the dune notifying people to stay off the dunes.
 - Do not place boats on the dunes.
 - Do not drive or walk on the dunes.
 - Encourage community leaders to better steward sand dunes in your community by installing dune crossovers and sand fencing on public dunes.
- Additional considerations:
 - Install sand fencing to protect the dune from pedestrians as well as trap wind-blown sand.
 - Construct a dune crossover in order to avoid damaging the sensitive vegetation.
- Check to see if the dune is in a rare, threatened, or endangered shorebird habitat before altering the dune in any way. Action may be limited in areas within a protected shorebird habitat.



Key Takeaways

During coastal storms, high-energy waves can destroy protective sand dunes by washing away the dune base. Additionally, the high-velocity winds of coastal storms can cause erosion. Dune erosion can lead to receding and the eventual loss of dunes.

If the dune is destroyed, it no longer offers flood protection for the structures behind it.

Stewarding sand dunes makes dunes more likely to withstand wind and flooding events and can potentially reduce costs associated with coastal storm damage.



I-ADAPT

Shoreline Adaptation

Sand Dune Stewardship

Photo credit: DNREC

Estimated Costs/Benefits

*U.S. dollars (2022), estimates are subject to change

Potential Costs (500 sq ft dune)		Potential Benefits (1,000 sq ft structure)		
Item	Estimate	Post-Flooding Recovery Action	Estimate	
Cape American beach grass (1,000 plants)	\$1,550	Beach replenishment due to flood/wind erosion damage	\$295 per 5 tons of sand	
Seven pounds of slow release 10-10-10 fertilizer	\$25-\$50	Flood damaged structure recovery (professional clean-up, mold removal, replacement/ repair of flood damaged items)	1 inch water	\$10,800-\$53,500+
Dune signs	\$15-\$50		4 feet water	\$43,400-\$203,300+
ESTIMATED TOTAL COST	\$15-\$1,650	ESTIMATED TOTAL SAVINGS	\$11,095 - \$203,495+	

Expected Maintenance

- Dune stewardship is an ongoing process, all stewardship actions should be completed as needed.
- Fertilize new plantings and replace plants as needed.
- Remove trash/debris and repair sand fence/crossings.

Additional Resources

- [DNREC Beaches and Shorelines](#)
- [DNREC You Can Help Protect Beaches and Dunes](#)
- [Sea Grant Coastal Dune Protection & Restoration](#)

Resources can also be found at <https://de.gov/iadapt>

Potential Funding Sources

- [Building Resilient Infrastructure and Communities Grant \(BRIC\)](#)

Additional Actions

- Encourage neighbors and community leaders to also steward sand dunes to help increase dune stability.
- Construct sand fencing and install a dune crossover in order to avoid damaging the sensitive vegetation.

Permitting Agencies

Contacts for permitting requirements include but are not limited to the following:

- Your city and/or county government for local flood ordinances or regulations
- Your city and/or county government for building permits
- [DNREC Coastal Construction Permit](#)
- [DNREC Wetlands and Subaqueous Lands Permit](#)

Who to Contact

- Community leaders
- [811 Call Before You Dig](#)
- Native plant nursery

Technical definitions and more information are located on the I-ADAPT website: <https://de.gov/iadapt>.



This information is intended to be used for planning purposes. It is not intended to substitute or take precedence over the guidance of design engineers, contractors, utility companies or regulatory agencies.

For more information, contact DNREC's Division of Climate, Coastal and Energy at DNREC_IADAPT@Delaware.gov

