Winter Storm: Beach Erosion

SETON HALL UNIVERSITY 1856

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Beach Erosions can be described as loss of sand due to wind and water movement. Sand can be transferred deeper in the water or can come up shore onto open roads. The movement of the sand can cause beaches to appear to have lower, scattered levels of sand. Storms in New Jersey have led to severe erosion on beaches, as well as destruction to boardwalks, homes, and businesses. Beach Erosions are very dangerous and have the power to leave permanent impacts wherever they hit.

*Pictured:* Jersey Shore beach eroded due to Winter Storm Sandy.

Causes & Effects

Some of the <u>causes</u> of beach erosion are:
- Storms with submerged or increased wave attack
- Increased wave energy
- Changes in the angle of waves
- Extreme winds
- Human impacts, such as retention walls
- Destruction of vegetation due to development
- Alterations of natural beach and sand slope
- Rising of sea level

Due to these events, some <u>effects</u> of beach erosions are:
- Flooding
- Movement and loss of sand/sediments
- Loss of habitats and landscape
- Loss of buildings and powerlines
- Damage to sand dunes and vegetation
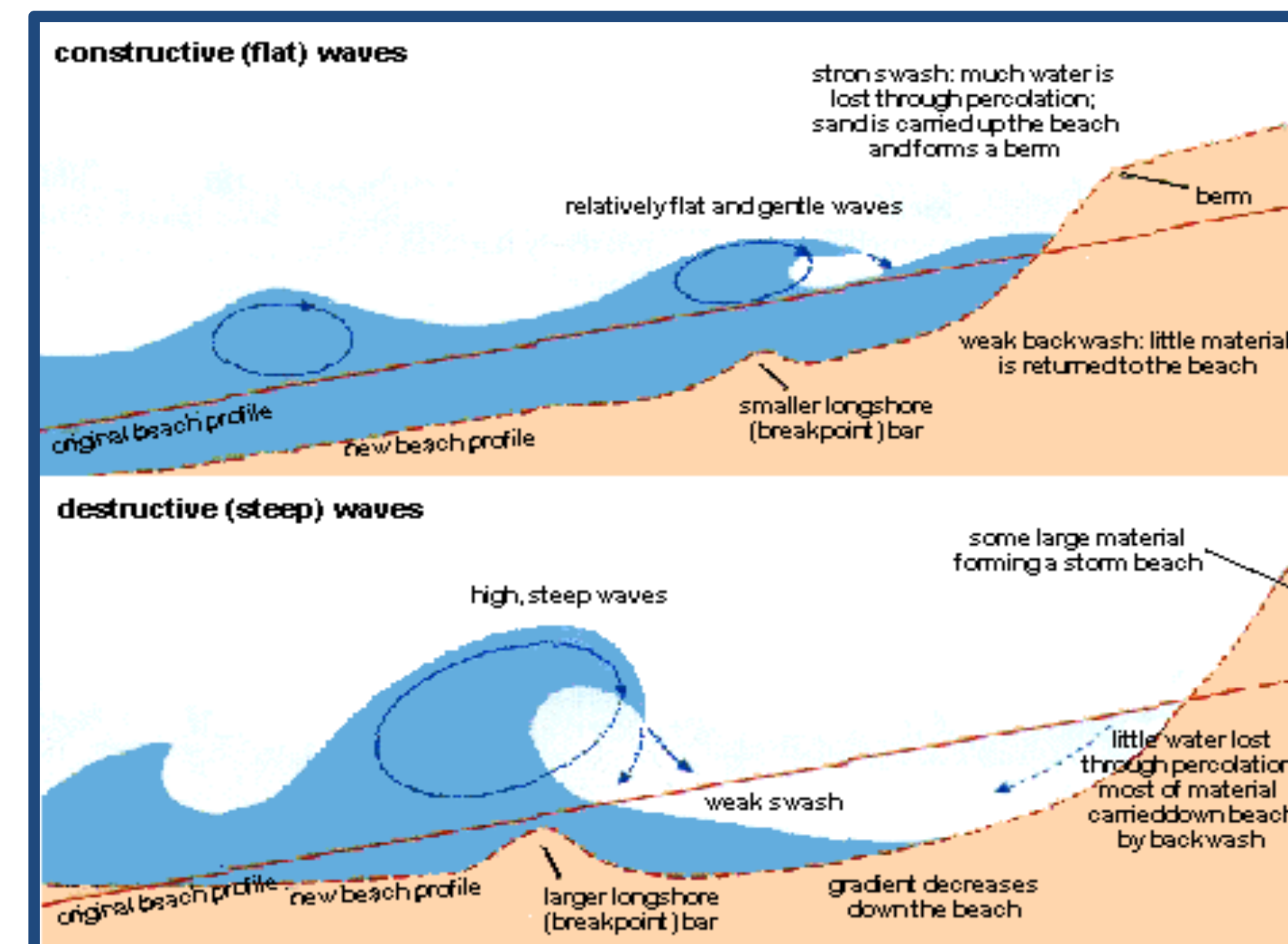
Types of Storms

- **New Jersey, primarily the Jersey Shore, has experienced a numerous amount of storms. Some of the storms that have impacted us are:**
  - Hurricanes (*Hurricane Sandy, 2012*)
  - Nor'easters (*Most recently: October 2019*)
  - Snowstorms (*Most recently: December 2019*)
  - Floods (*Most recently: July 2019*)
  - Tornadoes (*Most recently: November 2019*)

Solutions

There are many solutions that exist to help areas if they have been impacted by winter storms and beach erosion. Some of the solutions we found consist of hard methods (permanent) and soft methods (temporary). Those found to be the most helpful are:

- **<u>Sand dunes</u>**: *Sand dunes prevent water from going above the shoreline and impacting businesses, roadways, homes, etc.* **(hard)**
- **<u>Elevation:</u>** *Elevation helps to lift buildings and prevent water from flooding and allows the highest amount of storm surge to go under the building to avoid destruction to property.* **(hard)**
- **<u>Vegetation:</u>** *Vegetation allows for sand to be collected and held together which helps to trap sand, protect sand dunes from being warn away, and adds sand to sand dunes to further strengthen.* **(soft)**
- **<u>Storm Shutters:</u>** *Storm shutters protect buildings and stop water and strong winds from entering and breaking through.* **(soft)**

Sources

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