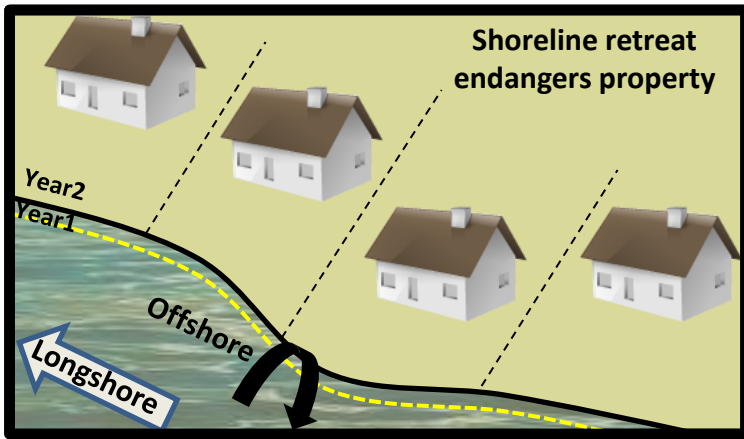


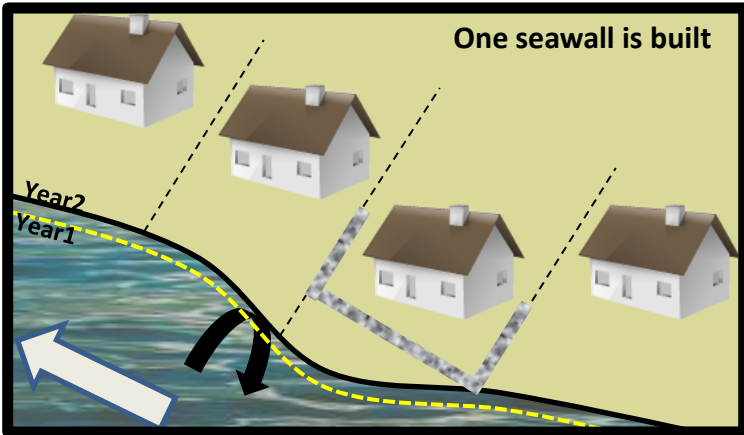
# Impacts of Armoring on a Sandy Shoreline (Generalized Example)

1



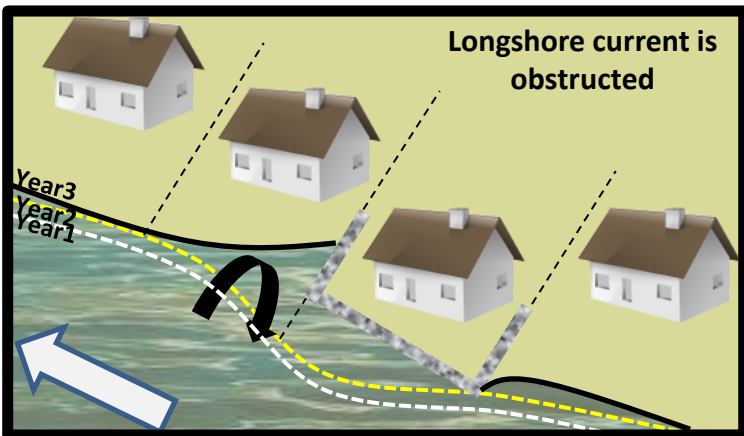
1. Waves mobilize sand, which moves offshore [loss to system] and parallel to shore [longshore currents]. Sand carried by longshore currents provides material for downdrift beaches. In most natural systems, the shoreline is bordered by a sandy strip of beach which advances landward and can threaten buildings.

2



2. Seawalls, bulkheads, and revetments can protect property at the expense of the beach. Hard structures reflect waves sharply, causing greater turbulence, increased sediment in suspension, accelerated longshore currents, and thus greater erosion.

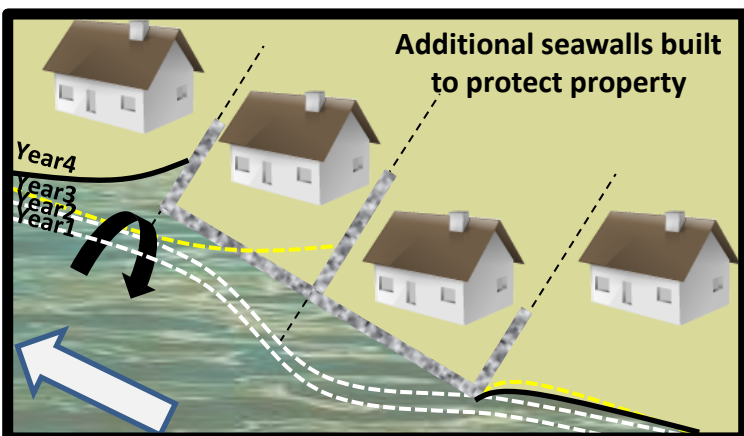
3



3. A hard structure built in front of one house can have several effects:

- Sand accumulates upcurrent of seawall;
- Dry beach scoured away in front of seawall;
- Longshore current deposition of sand downdrift is obstructed;
- Intensification of wave energy and erosion downdrift end of structure (terminal scour);
- Beach in front of downdrift neighbor's house is deprived of sand.

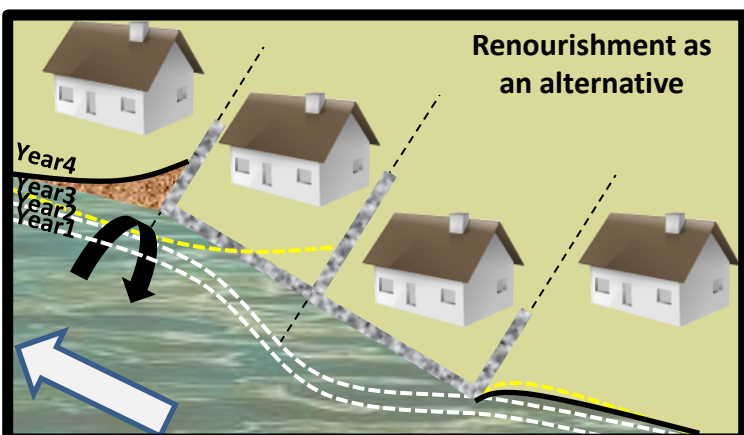
4



4. Adjacent downdrift property builds a seawall due to the sand depletion and scouring of beach. Hard structures are not typically designed to bypass sufficient sand to prevent starving downdrift beaches.

Steps 1-4 typically repeat...or see step 5.

5



5. An alternative to subsequent seawall construction could be continual sediment renourishment, providing sediment to downdrift beaches that can no longer be supplied by updrift erosion and longshore transport. Permitting may require some structures to be used in conjunction with a beach nourishment project after the effect of these structures on the sediment budget is analyzed.