

Environmentally Critical Aspects:

- **The replenishment project should be one component of an overall waterfront landscape design plan. It should include**
 - **management of runoff, shoreline plantings on the sides of a beach, etc.**
 - **Measured slopes from several feet deep at winter level to several feet higher elevation on land at summer level. Estimate run-up distance, above which sand alone is fine as long as runoff is diverted around it.**
- **Grain size- Coarse or medium/coarse sand, in some cases subject to more significant wave action with rounded pea stone mix- especially at winter water level elevations (still pleasant to walk on barefoot into the water but much less erodible). Above run-up distance can be just Coarse or medium/coarse sand (e.g. washed masonry sand).**
- **Divert upland runoff away from the beach (preferably into a rain garden or other management feature)**

Grain Size Compatibility- Sediment grain size is the single most important borrow material characteristic (Gravens et al. 2008). The grain size will affect the shape of the nourished beach, the rate at which fill material is eroded from the project, and the biological habitat. Coarse sediments will provide greater resistance to erosion, but may reduce recreational value to users of the beach or impact biological habitat, such as sea turtle nesting ability. The goal for nourishment is to choose sediment that best matches the native material of the beach to help reduce any unintended consequences that could result from modification.

Table 1. U.S. standard sieve sizes. Information from King and Galvin (2002).

U.S. Standard Sieve Opening (mm) Unified Soil Classification System

3 in. to 12 in. 75 to 300 Cobble

¾ in. to 3 in. 19 to 75 Coarse Gravel

#4 to ¾ in. 4.75 to 19 Fine Gravel

#10 to #4 2 to 4.75 Coarse Sand

#40 to # 10 0.425 to 2 Medium Sand 2-3 mm probably best compromise for recreational use and reducing erosion and habitat loss. Where subject to wave run-up during summer and winter water level, a mix with round pea stone reduces erosion and littoral drift.

#200 to # 40 0.075 to 0.425 Fine Sand

#230 to # 200 0.0625 to 0.075 Fine-Grained Soil