15A NCAC 07H .0312 is proposed for adoption as follows:

.0312 TECHNICAL STANDARDS FOR BEACH FILL PROJECTS

Emplacement of sediment along the oceanfront shoreline shall be referred to in this Rule as beach fill. Beach fill projects including beach nourishment, dredged material disposal, habitat restoration, storm protection, and erosion control may be permitted under the following conditions:

(1) A characterization of the recipient beach shall be determined according to the following methodology:

(a) Characterization of the recipient beach shall not be required for the placement of sediment directly from and completely confined to a regularly maintained navigation channel; and

(b) Sediment sampling and analysis designed to acceptable geological and engineering standards shall be used to capture the three-dimensional spatial variability of the sediment characteristics including grain size, sorting and mineralogy within the natural system; and

(c) Shore-perpendicular topographic and bathymetric surveying of the recipient beach shall be conducted to determine the beach profile. Topographic and bathymetric surveying shall occur along a minimum of five (5) shore-perpendicular transects evenly spaced throughout the entire project area. Each transect shall extend from the dune crest seaward to a depth of 20 feet (6.1 meters) below sea level. Transect spacing shall not exceed 5,000 feet (1,524 meters) in the shore-parallel direction. Elevation data for all transects shall be referenced to the North American Vertical Datum of 1988 (NAVD 88) and the North American Datum of 1983 (NAD 83); and

(d) No less than twelve (12) sediment samples shall be taken along each beach profile transect. At least one (1) sample shall be taken from each of the following morphodynamic zones where present: dune, dune toe, mid berm, mean high water (MHW), mid tide (MT), mean low water (MLW), trough, bar crest and at even depth increments from 6 feet (1.8 meters) below sea level to 20 feet (6.1 meters) below sea level. The total number of samples taken landward of MLW shall equal the total number of samples taken seaward of MLW; and

(e) For the purpose of this rule, sediment grain size categories shall be defined as “fine” (<0.0625 mm), “sand” (≥0.0625 mm and <2 mm), “granular” (≥2 mm and <4.76 mm) and “gravel” (≥4.76 mm and <76 mm). Each sediment sample shall report percentage by weight of each of these four (4) grain size categories; and

(f) A composite of the simple arithmetic mean for each of the four (4) grain size categories defined in Part (1)(e) of this Rule shall be calculated for each transect. A grand mean shall be established for each of the four (4) grain size categories by summing the mean for each transect and dividing by the total number of transects. The value that characterizes grain size values for the recipient beach shall be the grand mean of percentage by weight for each grain size category defined in Part (1)(e) of this Rule; and

(g) Percentage by weight calcium carbonate shall be calculated from a composite of all sediment samples along each transect defined in Part (1)(d) of this Rule. The value that characterizes the carbonate content of the recipient beach shall be a grand mean calculated by summing the percentage by weight calcium carbonate for each transect and dividing by the total number of transects; and

(h) The total number of sediments and shell material greater than 3 inches (76 mm) in diameter, observable with the naked eye on the surface of the beach between mean low water (MLW) and the dune toe, shall be calculated for an area of 50,000 square feet (4,645 square meters). This area shall be considered a representative sample of the entire project area and referred to as the "background" value; and

(i) Beaches that have received sediment prior to the effective date of this Rule shall be characterized in a way that is consistent with Parts (1)(a) through (1)(g) of this Rule and shall use data collected from the recipient beach prior to the addition of beach fill. If such data were not collected or are unattainable, a dataset best reflecting the sediment characteristics of the recipient beach prior to beach fill shall be developed in coordination with the Division of Coastal Management.

(2) A characterization of sediment to be placed on the recipient beach shall be determined according to the following methodology:

(a) The characterization of borrow areas including submarine sites, upland sites, and dredged material disposal areas shall be designed to accepted geological and engineering standards to capture the three-dimensional spatial variability of the sediment characteristics including grain size, sorting and mineralogy within the natural system or dredged material disposal area; and

(b) The characterization of borrow sites shall include previously acquired data whenever possible; and

(c) Geophysical imaging of the seafloor at each submarine borrow site shall provide 100% coverage and use survey-grade swath sonar in accordance with current US Army Corps of Engineers standards for navigation and dredging. All final hydrographic data shall be tide- and motion-corrected and referenced to the North American Vertical Datum of 1988 (NAVD 88) and the North American Datum of 1983 (NAD 83) and conform to standards for accuracy, quality control and quality assurance as set forth either by the US Army Corps of Engineers, the National Oceanic and Atmospheric Administration, or the International Hydrographic Organization; and

(d) Geophysical imaging of the subsurface shall be used to characterize each borrow site and shall use survey grids with a line spacing not to exceed 1,000 feet (305 meters). Survey grids shall incorporate at least one (1) tie point per survey line. Subsurface geophysical imaging shall not be required for regularly maintained navigation channels. All final subsurface

geophysical data shall use accurate sediment velocity models for time-depth conversions, be tide- and motion-corrected, and be referenced to the North American Vertical Datum of 1988 (NAVD 88) and the North American Datum of 1983 (NAD 83); and

(e) Sediment sampling of borrow sites shall use a vertical sampling device no less than 3 inches (76 mm) in diameter. Characterization of each borrow site shall use no less than 10 evenly spaced cores or one (1) core per 10 acres (grid spacing of 1,000 feet or 305 meters), whichever is greater. Characterization of borrow sites completely confined to regularly maintained navigation channels shall use no less than five (5) evenly spaced vertical samples per channel or sample spacing of no more than 5,000 linear feet (1,524 m), whichever is greater, and penetrate to a depth equal to or greater than permitted dredge depth. All sediment samples shall be integrated with geophysical data to constrain the horizontal and vertical extent of lithologic units and determine excavation volumes of compatible sediment as defined in Part 3 of this Rule; and

(f) Grain size distributions shall be reported for all sub-samples taken within each vertical sample for each of the four (4) grain size categories defined in Part (1)(e) of this Rule. Weighted averages for each core shall be calculated based on the total number of samples and the thickness of each sampled interval. A simple arithmetic mean of the weighted averages for each grain size category shall be calculated to represent the average grain size values for each borrow site. Vertical samples shall be geo-referenced and digitally imaged using scaled, color-calibrated photography; and

(g) Percentage by weight of calcium carbonate shall be calculated from a composite sample of each core. A weighted average of calcium carbonate percentage by weight shall be calculated for each borrow site based on the composite sample thickness of each core.

(3) Sediment compatibility shall be determined according to the following criteria:

(a) Sediment completely confined to the permitted dredge depth of a regularly maintained navigation channel shall be considered compatible if the average percentage by weight of fine-grained (<0.0625 mm) sediment is less than 10%; and

b) Sediment used solely to establish or strengthen dunes shall not be considered a beach fill project under this Rule; and

c) Sediment used solely to re-establish State-maintained transportation corridors across a barrier island breach in a disaster area as declared by the Governor shall not be considered a beach fill project under this Rule; and

d) Material other than natural sediment and shell material shall not be considered compatible; and

e) The average percentage by weight of fine-grained sediment (<0.0625 mm) in a borrow site shall not exceed the average percentage by weight of fine-grained sediment of the recipient beach characterization plus 5%; and

f) The average percentage by weight of granular sediment (≥2 mm and <4.76 mm) in a borrow site shall not exceed the average percentage by weight of coarse-sand sediment of the recipient beach characterization plus 5%; and

g) The average percentage by weight of gravel (≥4.76 mm) in a borrow site shall not exceed the average percentage by weight of gravel-sized sediment for the recipient beach characterization plus 5%; and

h) The average percentage by weight of calcium carbonate in a borrow site shall not exceed the average percentage by weight of calcium carbonate of the recipient beach characterization plus 15%; and

i) Proposed techniques that are able to use innovative technology to take incompatible sediment within a borrow site or combination of sites and make it compatible with that of the recipient beach characterization shall be considered experimental and evaluated on a case-by-case basis by the Division of Coastal Management.

(4) Excavation and placement of sediment shall conform to the following criteria:

(a) Sediment excavation depth from a regularly maintained navigation channel shall not exceed the permitted dredge depth of the channel; and

(b) Sediment excavation depths for all borrow sites shall not exceed the maximum depth of recovered core at each coring location; and

(c) In order to minimize impacts on biological activity within the project area, no work shall occur without the prior approval of the Division of Coastal Management in consultation with other State and Federal agencies; and,

(d) Sediment and shell material with a diameter greater than 3 inches (76 mm) shall be considered incompatible if it has been placed on the beach during the beach fill project, is observed with the naked eye between mean low water and the dune toe, and is in excess of twice the background value of material of the same size along any 50,000-square-foot (4,645 square meter) section of beach.

History Note: ***Authority***

Eff.