

APPENDIX 1  
PROPOSED AMENDMENTS FOR NORTH CAROLINA'S  
TECHNICAL STANDARDS FOR BEACH FILL  
PROJECTS – 15A NCAC 07H .0312

1 15A NCAC 07H .0312 is proposed for amendment as follows:

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3 **15A NCAC 07H .0312 TECHNICAL STANDARDS FOR BEACH FILL PROJECTS**

4 Placement of sediment along the oceanfront shoreline is referred to in this Rule as "beach fill." Sediment used solely  
5 to establish or strengthen dunes ~~or shall conform to the standards contained in 15A NCAC 07H .0308(b).~~ Sediment  
6 used to re-establish state-maintained transportation corridors across a barrier island breach in a disaster area as  
7 declared by the Governor is not considered a beach fill project under this Rule. Beach fill projects including beach  
8 nourishment, dredged material disposal, habitat restoration, storm protection, and erosion control may be permitted  
9 under the following conditions:

10 (1) The applicant shall characterize the recipient beach according to the following ~~methodology:~~  
11 methodology. Initial characterizations of the recipient beach shall serve as the baseline for  
12 subsequent beach fill projects:

13 (a) Characterization of the recipient beach is not required for the placement of sediment  
14 directly from and completely confined to a cape shoal system, or maintained navigation  
15 channel or associated sediment basins within the active nearshore, beach or inlet shoal  
16 ~~system; system.~~ For purposes of this Rule, "cape shoal systems" include Frying Pan Shoals  
17 at Cape Fear, Lookout Shoals at Cape Lookout, and Diamond Shoals at Cape Hatteras;

18 (b) Sediment sampling and analysis shall be used to capture the ~~three-dimensional~~ spatial  
19 variability of the sediment characteristics including grain size, sorting and mineralogy  
20 within the natural system;

21 (c) Shore-perpendicular transects shall be established for topographic and bathymetric  
22 surveying of the recipient ~~beach shall be conducted to determine the beach profile.~~  
23 beach. Topographic and bathymetric surveying shall occur along a minimum of five shore-  
24 perpendicular transects evenly spaced throughout the entire project ~~area.~~ area with spacing  
25 not to exceed 5,000 feet (1,524 meters) in the shore-parallel direction. Each transect shall  
26 extend from the frontal dune crest seaward to a depth of 20 feet (6.1 meters) or to the shore-  
27 perpendicular distance 2,400 feet (732 meters) seaward of mean low water, whichever is  
28 in a more landward position. ~~Transect spacing shall not exceed 5,000 feet (1,524 meters)~~  
29 ~~in the shore-parallel direction.~~ Elevation data for all transects shall be ~~referenced to the~~  
30 ~~North American Vertical Datum of 1988 (NAVD 88) and the North American Datum of~~  
31 ~~1983 (NAD 83);~~ compliant with Chapter 56 (21 NCAC 56.1600) of the N.C. General  
32 Statutes;

33 (d) ~~No fewer than 13 sediment samples shall be taken along each beach profile transect. At~~  
34 Along each transect, at least one sample shall be taken from each of the following  
35 morphodynamic zones where present: frontal dune, frontal dune toe, mid berm, mean high  
36 water (MHW), mid tide (MT), mean low water (MLW), trough, bar crest and at even depth  
37 increments from 6 feet (1.8 meters) to 20 feet (6.1 meters) or to a shore-perpendicular

1 distance 2,400 feet (732 meters) seaward of mean low water, whichever is in a more  
2 landward position. The total number of samples taken landward of MLW shall equal the  
3 total number of samples taken seaward of MLW;

4 (e) For the purpose of this Rule, "sediment grain size categories" are defined as "fine" (less  
5 than 0.0625 millimeters), "sand" (greater than or equal to 0.0625 millimeters and less than  
6 2 millimeters), "granular" (greater than or equal to 2 millimeters and less than 4.76  
7 millimeters) and "gravel" (greater than or equal to 4.76 millimeters and less than 76  
8 millimeters). Each sediment sample shall report percentage by weight of each of these four  
9 grain size categories;

10 (f) A composite of the simple arithmetic mean for each of the four grain size categories defined  
11 in Sub-Item (1)(e) of this Rule shall be calculated for each transect. A grand mean shall  
12 be established for each of the four grain size categories by summing the mean for each  
13 transect and dividing by the total number of transects. The value that characterizes grain  
14 size values for the recipient beach is the grand mean of percentage by weight for each grain  
15 size category defined in Sub-Item (1)(e) of this Rule;

16 (g) Percentage by weight calcium carbonate shall be calculated from a composite of all  
17 sediment ~~samples along each transect defined in Sub-Item (1)(d) of this Rule.~~ samples.  
18 The value that characterizes the carbonate content of the recipient beach is a grand mean  
19 calculated by summing the average percentage by weight calcium carbonate for each  
20 transect and dividing by the total number of transects. ~~For beaches on which fill activities~~  
21 ~~have taken place prior to the effective date of this Rule, the Division of Coastal~~  
22 ~~Management shall consider visual estimates of shell content as a proxy for carbonate~~  
23 ~~weight percent;~~

24 (h) The ~~total~~ number of sediments greater than or equal to one inch (25.4 millimeters) in  
25 diameter, and shell material greater than or equal to three inches (76 millimeters) in  
26 diameter, ~~observable on the surface of the beach between mean low water (MLW) and the~~  
27 ~~frontal dune toe, shall be calculated for an area of 50,000 square feet (4,645 square meters)~~  
28 ~~within the beach fill project boundaries. This area is considered a representative sample of~~  
29 ~~the entire project area and referred to as the "background" value; diameter shall be~~  
30 differentiated and calculated through visual observation of an area of 10,000 square feet  
31 centered on each transect, and between mean tide level (MTL) and the frontal dune toe  
32 within the beach fill project boundaries. A simple arithmetic mean shall be calculated for  
33 both sediments and shell by summing the totals for each across all transects and dividing  
34 by the total number of transects, and these values shall be considered representative of the  
35 entire project area, and referred to as the "background" values for large sediment and large  
36 shell material;

- 1 (i) Beaches that received sediment prior to the effective date of this Rule shall be characterized  
2 in a way that is consistent with Sub-Items (1)(a) through (1)(h) of this Rule and ~~shall~~ may  
3 use data collected from the recipient beach prior to the addition of beach fill. ~~If such data~~  
4 ~~were not collected or are unavailable, a dataset best reflecting the sediment characteristics~~  
5 ~~of the recipient beach prior to beach fill shall be developed in coordination with the~~  
6 ~~Division of Coastal Management; and~~ fill where data are available, and in coordination  
7 with the Division of Coastal Management; and
- 8 (j) All data used to characterize the recipient beach shall be provided in digital and hardcopy  
9 format to the Division of Coastal Management upon request.
- 10 (2) Characterization of borrow areas is not required if completely confined to a cape shoal system. For  
11 the purposes of this Rule, “cape shoal systems” include the Frying Pan Shoals at Cape Fear, Lookout  
12 Shoals at Cape Lookout, and Diamond Shoals at Cape Hatteras. The applicant shall characterize the  
13 sediment to be placed on the recipient beach according to the following methodology:
- 14 (a) The characterization of borrow areas including submarine sites, upland sites, and dredged  
15 material disposal areas shall be designed to capture the ~~three-dimensional~~ spatial variability  
16 of the sediment characteristics including grain size, sorting and mineralogy within the  
17 natural system or dredged material disposal area;
- 18 (b) The characterization of borrow sites ~~shall~~ may include ~~sediment characterization data~~  
19 ~~provided by the Division of Coastal Management where available. These data can be found~~  
20 ~~in individual project reports and studies, and shall be provided by the Division of Coastal~~  
21 ~~Management upon request and where available;~~ historical sediment characterization data  
22 where available and collected using methods consistent with Sub-Items (2)(c) through  
23 (2)(g) of this Rule, and in coordination with the Division of Coastal Management.
- 24 (c) Seafloor surveys shall measure elevation and capture acoustic imagery of the seafloor.  
25 Measurement of seafloor elevation shall cover 100 ~~percent~~ percent, or the maximum extent  
26 practicable, of each submarine borrow site and use survey-grade swath sonar (*e.g.*  
27 multibeam or similar ~~technologies~~) ~~in accordance with current US Army Corps of~~  
28 ~~Engineers standards for navigation and dredging. technologies). Seafloor imaging without~~  
29 ~~an elevation component (e.g. sidescan sonar or similar technologies) shall also cover 100~~  
30 ~~percent~~ percent, or the maximum extent practicable, of each ~~borrow site and be performed~~  
31 ~~in accordance with US Army Corps of Engineers standards for navigation and dredging.~~  
32 site. Because shallow submarine areas can provide technical challenges and physical  
33 limitations for acoustic measurements, seafloor imaging without an elevation component  
34 may not be required for water depths less than 10 feet (3 meters). Alternative elevation  
35 surveying methods for water depths less than 10 feet (3 meters) may be evaluated on a  
36 case-by-case basis by the Division of Coastal Management. Elevation data shall be tide-  
37 and motion-corrected and ~~referenced to NAVD 88 and NAD 83.~~ Compliant with Chapter

1 56 (21 NCAC 56 .1600) of the N.C. General Statutes. Seafloor imaging data without an  
2 elevation component shall ~~be referenced to the NAD 83. All final seafloor survey data shall~~  
3 ~~conform to standards for accuracy, quality control and quality assurance as set forth by the~~  
4 ~~US Army Corps of Engineers (USACE). The current surveying standards for navigation~~  
5 ~~and dredging can be obtained from the Wilmington District of the USACE. Also be~~  
6 compliant with Chapter 56 (21 NCAC 56 .1600) of the N.C. General Statutes. For offshore  
7 dredged material disposal sites, only one set of imagery without elevation is required.  
8 Sonar imaging of the seafloor without elevation is also not required for borrow sites  
9 completely confined to maintained navigation channels, and for sediment deposition basins  
10 within the active nearshore, beach or inlet shoal system;

11 (d) Geophysical imaging of the seafloor subsurface shall be used to characterize each borrow  
12 site ~~and shall use survey grids with a line spacing not to exceed 1,000 feet (305 meters).~~  
13 ~~Offshore dredged material disposal sites shall use a survey grid not to exceed 2,000 feet~~  
14 ~~(610 meters) and only one set of geophysical imaging of the seafloor subsurface is required.~~  
15 ~~Survey grids shall incorporate at least one tie point per survey line. site.~~ Because shallow  
16 submarine areas can pose technical challenges and physical limitations for geophysical  
17 techniques, subsurface data may not be required in water depths less than 10 feet (3 meters),  
18 and the Division of Coastal Management shall evaluate these areas on a case-by-case basis.  
19 Subsurface geophysical imaging shall not be required for borrow sites completely confined  
20 to maintained navigation channels, and for sediment deposition basins within the active  
21 nearshore, beach or inlet shoal system, or upland sites. All final subsurface geophysical  
22 data shall use accurate sediment velocity models for time-depth conversions and be  
23 ~~referenced to NAD 83;~~ compliant with Chapter 56 (21 NCAC 56 .1600) of the N.C. General  
24 Statutes;

25 (e) ~~Sediment~~ With the exception of upland borrow sites, sediment sampling of all borrow sites  
26 shall use a vertical sampling device no less than 3 inches (76 millimeters) in diameter.  
27 Characterization of each borrow site shall use no fewer than five evenly spaced cores or  
28 one core per 23 acres (grid spacing of 1,000 feet or 305 meters), whichever is greater.  
29 Characterization of borrow sites completely confined to maintained navigation channels or  
30 sediment deposition basins within the active nearshore, beach or inlet shoal system shall  
31 use no fewer than five evenly spaced vertical samples per channel or sediment basin, or  
32 sample spacing of no more than 5,000 linear feet (1,524 meters), whichever is greater. Two  
33 sets of sampling data (with at least one dredging event in between) from maintained  
34 navigation channels or sediment deposition basins within the active nearshore, beach or  
35 inlet shoal ~~system~~ system, or offshore dredged material disposal site (ODMDS) may be  
36 used to characterize material for subsequent nourishment events from those areas if the  
37 sampling results are found to be compatible with Sub-Item (3)(a) of this Rule. ~~In submarine~~

1 ~~borrow sites other than maintained navigation channels or associated sediment deposition~~  
2 ~~basins within the active nearshore, beach or inlet shoal system where water depths are no~~  
3 ~~greater than 10 feet (3 meters), geophysical data of and below the seafloor are not required,~~  
4 ~~and sediment sample spacing shall be no less than one core per six acres (grid spacing of~~  
5 ~~500 feet or 152 meters). Vertical sampling shall penetrate to a depth equal to or greater~~  
6 ~~than permitted dredge or excavation depth or expected dredge or excavation depths for~~  
7 ~~pending permit applications. All sediment samples shall be integrated with geophysical~~  
8 ~~data to constrain the surficial, horizontal and vertical extent of lithologic units and~~  
9 ~~determine excavation volumes of compatible sediment as defined in Item (3) of this Rule;~~  
10 Because shallow submarine areas completely confined to a maintained navigation channel  
11 or associated sediment basins within the active nearshore, beach or inlet shoal system can  
12 pose technical challenges and physical limitations for vertical sampling techniques,  
13 geophysical data of and below the seafloor may not be required in water depths less than  
14 10 feet (3 meters), and shall be evaluated by the Division of Coastal Management on a  
15 case-by-case basis;

16 ~~(f)~~ ~~For offshore dredged material disposal sites, the grid spacing shall not exceed 2,000 feet~~  
17 ~~(610 meters). Characterization of material deposited at offshore dredged material disposal~~  
18 ~~sites after the initial characterization are not required if all of the material deposited~~  
19 ~~complies with Sub-Item (3)(a) of this Rule as demonstrated by at least two sets of sampling~~  
20 ~~data with at least one dredging event in between;~~

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

28 ~~(h)~~ (g) Percentage by weight of calcium carbonate shall be calculated from a composite sample of  
29 each core. A weighted average of calcium carbonate percentage by weight shall be  
30 calculated for each borrow site based on the composite sample thickness of each core.  
31 Carbonate analysis is not required for sediment confined to maintained navigation channels  
32 or associated sediment deposition basins within the active nearshore, beach or inlet shoal  
33 system; and

34 ~~(i)~~ (h) All data used to characterize the borrow site shall be provided in digital and hardcopy  
35 format to the Division of Coastal Management upon request.

1 (3) ~~The Division of Coastal Management shall determine sediment~~ Compliance with these sediment  
2 standards shall be certified by an individual licensed pursuant to Chapter 89C or 89E of the N.C.  
3 General Statutes. Sediment compatibility is determined according to the following criteria:

- 4 (a) Sediment completely confined to the permitted dredge depth of a maintained navigation  
5 channel or associated sediment deposition basins within the active nearshore, beach or inlet  
6 shoal system is considered compatible if the average percentage by weight of fine-grained  
7 (less than 0.0625 millimeters) sediment is less than 10 percent;
- 8 (b) The average percentage by weight of fine-grained sediment (less than 0.0625 millimeters)  
9 in each borrow site shall not exceed the average percentage by weight of fine-grained  
10 sediment of the recipient beach characterization plus five percent;
- 11 (c) The average percentage by weight of granular sediment (greater than or equal to 2  
12 millimeters and less than 4.76 millimeters) in a borrow site shall not exceed the average  
13 percentage by weight of coarse-sand sediment of the recipient beach characterization plus  
14 10 percent;
- 15 (d) The average percentage by weight of gravel (greater than or equal to 4.76 millimeters and  
16 less than 76 millimeters) in a borrow site shall not exceed the average percentage by weight  
17 of gravel-sized sediment for the recipient beach characterization plus five percent;
- 18 (e) The average percentage by weight of calcium carbonate in a borrow site shall not exceed  
19 the average percentage by weight of calcium carbonate of the recipient beach  
20 characterization plus 15 percent; and
- 21 (f) Techniques that take incompatible sediment within a borrow site or combination of sites  
22 and make it compatible with that of the recipient beach characterization shall be evaluated  
23 on a case-by-case basis by the Division of Coastal Management.

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

- 25 ~~(a) Sediment excavation depths for all borrow sites shall not exceed the maximum depth of~~  
26 ~~recovered core at each coring location;~~
- 27 ~~(b)~~ (a) In order to protect threatened and endangered species, and to minimize impacts to fish,  
28 shellfish and wildlife resources, no excavation or placement of sediment shall occur within  
29 the project area during ~~times~~ any seasonal environmental moratoria designated by the  
30 Division of Coastal Management in consultation with other State and Federal ~~agencies.~~  
31 Agencies, unless specifically approved by the Division of Coastal Management in  
32 consultation with other State and Federal agencies. The time limitations shall be established  
33 during the permitting process and shall be made known prior to permit issuance; and
- 34 ~~(c)~~ (b) ~~Sediment~~ The total sediments with a diameter greater than or equal to one inch (25.4  
35 millimeters), and shell material with a diameter greater than or equal to three inches (76  
36 millimeters) is considered incompatible if it has been placed on the beach during the beach  
37 fill project, is observed between MLW MTL and the frontal dune toe, and is in excess of

1 twice the background value of material of the same size along any ~~50,000 square foot~~  
2 ~~(4,645 square meter)~~ 10,000 square feet section of ~~beach~~ beach within the beach fill project  
3 boundaries. In the event that more than twice the background value of incompatible  
4 material is placed on the beach, it shall be the permittee's responsibility to remove the  
5 incompatible material in coordination with the Division of Coastal Management and other  
6 State and Federal resource agencies.

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8 *History Note: Authority G.S. 113-229; 113A-102(b)(1); 113A-103(5)(a); 113A-107(a); 113A-113(b)(5) and (6);*  
9 *113A-118; 113A-124;*  
10 *Eff. February 1, 2007;*  
11 *Amended Eff. April 1, 2021; August 1, 2014; September 1, 2013; April 1, 2008.*