

## 6.0 MITIGATION AND MONITORING

### 6.1 PIPING PLOVERS, SHOREBIRDS, AND COLONIAL WATERBIRDS BIRD MONITORING PROGRAM

#### 6.1.1 Purpose and Goals

The following monitoring plan has been developed in support of the Environmental Impact Statement for the Bogue Inlet Channel Erosion Response Project. This monitoring plan is intended to address the need for observational data of piping plovers (*Charadrius melodus*), other shorebirds, and colonial waterbirds collected prior to, during and after construction.

The monitoring plan will provide information on indigenous and migratory bird species found nesting, roosting, foraging, and wintering in the vicinity of the project area. Survey areas will include the proposed channel location on the mid-tidal shoal and along the tidal habitats of the existing inlet. This plan is in response to the concerns expressed by the U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service, North Carolina Department of Environment and Natural Resources, and the North Carolina Wildlife Resource Commission (NCWRC).

#### 6.1.2 Monitoring Schedule

Monitoring of bird species began in April 2003 and will continue for one year prior to construction, during the construction period, and for three years post-construction. Prior to construction, monitoring of bird species will be conducted on a monthly basis until the start of the piping plover spring migratory season in March. Monitoring will be conducted approximately every 10 days during the spring migration (March 1<sup>st</sup> to April 30<sup>th</sup>); approximately every 15 days during the breeding season (May 1<sup>st</sup> to July 13<sup>th</sup>); and approximately every 10 days during the fall migration (July 14<sup>th</sup> to November 30<sup>th</sup>). Monitoring will return to the monthly schedule during the months of December thru February.

Upon commencement of construction activities, a weekly bird monitoring schedule will begin. At the end of construction, monitoring of bird species will return to the pre-construction schedule and continue for three years. (i.e., monthly monitoring from December through February; semi-monthly monitoring from April through November).

The proposed project will be constructed between November 16<sup>th</sup> and March 31<sup>st</sup> to limit construction activities during the critical life stages of birds and fish, the turtle nesting and hatching season, the migratory passage of marine mammals, and the flowering stages of plants.

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### 6.1.3 Biological Monitoring Parameters

#### Piping Plovers, Shorebirds, and Colonial Waterbirds Monitoring

Bird monitoring will occur along four transect areas: 1) the south side of Dudley Island, 2) the western extent of Emerald Isle along the existing channel, 3) along Island No. 2 and the mid-inlet shoal and 4) for 500 meters along the ocean shoreline of Bear Island. The bird monitoring program will focus on State and Federally listed species including the piping plover and gull-billed tern, but will include the activities of all shorebirds and colonial waterbirds observed along the transect locations.

#### Transect Locations

Four transect areas have been chosen to observe bird activities in the vicinity of the proposed project. Transect Area No. 1 will begin along the northern edge of the west end of Bogue Banks, following the shoreline south to a location near The Pointe Subdivision. Transect No. 2 will encompass Island No. 2 and a portion of the eastern perimeter of the mid-inlet shoal. Transect Area No. 3 will encompass the potential project impact area along the beach of the south side of Dudley Island. Transect No. 4 will begin at the eastern extent of Bear Island proceeding west for 500 meters along the ocean shoreline of Bear Island. Monitoring areas will include accreting areas at inlets; bayside, sand and mud flats; and recently disturbed areas such as washovers. Bird monitoring of these four transects began on April 2, 2003.

A site visit was held on June 30, 2003 that included Sue Cameron (NCWRC), Mickey Sugg (USACE), Erin Haight (CPE), and CZR representatives, Sam Cooper and Dawn Carroll. During the site visit, the NCWRC determined that there was a need to add two new areas to the bird monitoring plan. The two areas were added to Transect Area No. 2, on the south side of Island No. 1 and the west side of Island No. 2. The bird species observed at the two additional sites are recorded under Transect Area No. 2, but kept as a separate subset from the already established monitoring sites to ensure an unbiased data collection. The monitoring of the areas was implemented in July 2003 and will apply to all future monitoring events. All data recorded, including the additional subset data, will still be reported in both monthly and annual reports. Figure 6.1 provides the location of the revised bird monitoring transect sites.

#### Observations

Bird monitoring observations will include the use of a spotting scope to identify nesting, roosting, foraging, territory establishment, courtship, and copulation activities. In addition to nesting pair counts and productivity data, monitoring of breeding sites will include other information important to evaluate species use and dependence. Data collection may also include:

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- Dates when monitoring begins and ends;
- Detailed weather and tide data (i.e., approximate wind speed, direction and cloud coverage);
- Nesting chronology (dates when birds are first observed in the study area, nest establishment dates, dates when unfledged chicks are present on site);
- Locations of nests and brood foraging territories;
- Known and suspected causes of nest and chick loss;
- Indices of predator abundance (e.g., tracks, sitings);
- Locations of commonly used foraging areas during each stage of the breeding cycle;
- Use by post breeding or migrating waterbirds; and
- Identify band combinations on piping plovers, if possible.

An effort was made to survey all transect areas during the same low tide event to account for all birds in the area. Observations along Transect Areas 1 and 3 may be conducted during either low or high tide events, however observations along Transect Area Nos. 2 and 4 should be collected during low tide events to account for habitat usage along the mid-inlet shoal.

Due to accessibility and safety issues, bird monitoring along the mid-inlet shoal of Transect Area No. 2 will be conducted from a boat with the use of binoculars. Bird monitoring surveys will not be conducted during inclement weather (i.e., heavy rain) or when winds speeds are excessive.

Based on previous observations made by the NCWRC, they suggest that the north side of Transect Area No. 1 and Island No. 2 are focused on during bird monitoring events, since these areas have historically been frequented by piping plovers and other shorebirds.

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Figure 6.1. Approximate Transect Locations of Piping Plover, Shorebird and Colonial Waterbird