



United States Department of the Interior

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August 6, 2008

Mr. Henry Wicker
U. S. Army Corps of Engineers
Wilmington Regulatory Field Office
P. O. Box 1890
Wilmington, North Carolina 28402-1890

Subject: Action ID # SAW-2007-00073, Carolina Cement Company (Titan America),
New Hanover County, North Carolina

Dear Mr. Wicker:

This letter provides the comments of the U. S. Fish and Wildlife Service (Service) on the subject Public Notice (PN), dated June 6, 2008. The applicant, Carolinas Cement Company (a subsidiary of Titan America), has applied for a Department of the Army (DA) permit to construct a cement manufacturing plant and operate a quarry for limestone and marl in an area east of the Town of Castle Hayne along the southern bank of the Northeast Cape Fear River. These comments are submitted in accordance with the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661-667d). Comments related to the FWCA are to be used in your determination of compliance with 404(b)(1) guidelines (40 CFR 230) and in your public interest review (33 CFR 320.4) in relation to the protection of fish and wildlife resources. Additional comments are provided regarding the District Engineer's determination of project impacts pursuant to section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543).

The Service has been involved with early coordination on this project. A Service biologist attended scoping meetings on June 7 and September 26, 2006. A Service biologist participated in the conference call to discuss the assessment of aquatic resources at the Castle Hayne alternative site on July 22, 2008.

Project Area

The only alternative for the proposed quarry and cement plant mentioned in the PN would be located east of Castle Hayne in New Hanover County, North Carolina. The proposed project would be located on an approximately 1,868-acre site on Ideal Cement Road approximately 2.6 miles east of Interstate 40 and north of Holly Shelter Road. This site alternative is bordered to the north by the Northeast Cape Fear River, to the east by Island Creek, and to the south by Holly Shelter Road. The site alternative includes undeveloped forested lands, an existing aggregate quarry pit currently operated by Martin

Marietta Materials, as well as an inactive cement manufacturing plant, formerly operated by Ideal Cement.

The proposed site is bordered on the north by the Northeast Cape Fear River, a blackwater river which is a major tributary to the Cape Fear River. The eastern boundary is formed by Island Creek. The reach of the Northeast Cape Fear River within the proposed project area is classified as "B Sw" water. The North Carolina Division of Water Quality (NCDWQ) defines class "B" as waters suitable for primary recreation, including frequent or organized swimming and any other best used specified by the "C" classification which includes aquatic life propagation and maintenance of biological integrity, wildlife, secondary recreation, and agriculture. "Swamp waters" (Sw) is a supplemental surface water classification for waters classified by the Environmental Management Commission and which are topographically located so as to generally have very low velocities and other characteristics which are different from adjacent streams draining steeper topography. Island Creek is classified as "C Sw".

The Northeast Cape Fear River has been classified as "joint water" which means that fishing activities in this water body are jointly regulated by the North Carolina Marine Fisheries Commission and the North Carolina Wildlife Resources Commission (NCWRC). The Northeast Cape Fear River is designated as a primary nursery area (PNA) in the North Carolina Division of Marine Fisheries (NCDMF) database (Kimley-Horn 2006, p. 6). A PNA is a designated area in an estuarine system where initial post-larval development takes place. These areas are usually located in the uppermost sections of a system where populations are uniformly very early juveniles. According to the National Marine Fisheries Service (NMFS), the Northeast Cape Fear River as well as its associated riverine wetlands would also be regulated as Essential Fish Habitat because it serves as a primary nursery area, (Kimley-Horn 2006, p. 6). The tidally influenced reaches of the Northeast Cape Fear River support estuarine dependent species such as red drum (*Sciaenops ocellatus*), summer flounder (*Paralichthys dentatus*), and various shrimp species (e.g., *Penaeus* spp.) as well as a number of anadromous species such as shad (*Alosa* spp.), blueback herring (*Alosa aestivalis*), striped bass (*Morone saxatilis*), and shortnose sturgeon (*Acipenser brevirostrum*).

Island Creek has been classified as "inland water" which means that fishing activities in this water body are regulated by the NCWRC. Island Creek is not designated as a primary or secondary nursery area (Kimley-Horn 2006, p. 6). However, the creek is recognized as an anadromous fish spawning area.

Four plant communities were identified within the Castle Hayne alternative site based upon limited field review and interpretation of aerial photography (Kimley-Horn 2006, pp. 6-7). These communities include: cypress-gum swamp (blackwater subtype); mesic mixed hardwood forest (Coastal Plain subtype); non-riverine wet hardwood forest; and xeric sandhill scrub. Approximately 294 acres of cypress-gum swamp are situated along the floodplain of the Northeast Cape Fear River and Island Creek (Kimley-Horn 2006, p. 8). This wetland system is dominated by bald cypress (*Taxodium distichum*), water

tupelo (*Nyssa aquatica*), swamp black gum (*Nyssa biflora*), and green ash (*Fraxinus pennsylvanica*).

Approximately 115 acres of non-riverine wet hardwood forest occur throughout the site associated with intermittent drainages and on poorly drained interstream flats, not flooded by the Northeast Cape Fear River or Island Creek. This community is generally located topographically upgradient from the cypress-gum swamps and often connects with the swamp systems in the lower topographic areas of the site. This wetland system is dominated by loblolly pine (*Pinus taeda*), sweetgum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), swamp chestnut oak (*Quercus michauxii*), cherrybark oak (*Quercus pagoda*), and scattered yellow poplar (*Liriodendron tulipifera*).

Proposed Actions and Anticipated Impacts

The PN states that purpose of the proposed project is to establish a quarry from which the applicant can extract marl and limestone that will support manufacturing Portland cement to supply the eastern North Carolina market in an economically viable fashion. To be economically viable, the resource to be mined must be within a three mile radius of the manufacturing facility and must provide for a long-term (at least 30 years) marl and limestone resource of sufficient quality that can be recovered in a systematic and cost-effective manner. Based on the economies of scale and the projected market demand, the proposed plant will have a capacity of 2.3 million short tons per year of finished Portland cement. Furthermore, the manufacturing facility must be accessible to suitable modes of transportation. Titan America's Roanoke Cement Company facility currently moves 50% of the Portland cement it produces by rail in the mid-Atlantic region.

The PN states that it is important to locate a Portland cement operation where quarrying, manufacturing, and transportation costs and logistics allow for long-term production in an economical and efficient manner. The magnitude of the necessary investment in property and personnel requires the Portland cement industry to develop production plans based on long-term horizons. Since 1950, no manufacturing facility of the size proposed has commenced operations without 40 to 50 years of reserves, and currently operating Portland cement plants have been operating an average of 44 years. Based on this, the applicant requires at least a 30-year resource reserve to construct the proposed facility.

The subject PN considers only a single alternative for the mine and cement plant. However, because the Castle Hayne alternative site requires approvals from federal and state agencies under both the National Environmental Policy Act (NEPA) and the State Environmental Policy Act (SEPA), a joint Federal and State Environmental Impact Statement (EIS) will be prepared. The U.S. Army Corps of Engineers will serve as the lead agency for the process. The EIS will be the NEPA document for the DA permit evaluated by the Wilmington District, U. S. Army Corps of Engineers (Corps) and the SEPA document for the State of North Carolina (CAMA permit). Based on the size, complexity, and potential impacts associated with the Castle Hayne alternative site, the PN states that the applicant has been advised by the Corps to identify and disclose the environmental impacts of the proposed project in an Environmental Impact Statement

(EIS). Within the EIS, the applicant will conduct a thorough environmental review, including an evaluation of a reasonable number of alternatives.

Wetland Impacts - The PN states that proposed quarrying action at the Castle Hayne alternative would impact approximately 493 acres of wetlands. This total includes approximately 214 acres of wetlands located within areas under the jurisdiction of the State's Coastal Area Management Act (CAMA) of 1974. While the nature of the impacts is not specified in the PN, it is likely that the existing vegetation of the site would be eliminated.

Air Quality Impacts - The operation of the quarry and manufacturing facility would produce emissions into the air. The impacts on air quality of the various alternatives will be considered in the Corps' EIS.

Water Quality Impacts - The operation of a quarry and manufacturing facility is likely to impact both surface water and ground water. The impacts of ground water withdrawals and surface water runoff at the Castle Hayne alternative site are not discussed in the PN, but are listed as topics for the EIS.

Compensatory Wetland Mitigation - The PN does not present a plan for compensatory wetland mitigation for the Castle Hayne alternative site. However, as part of the EIS, the applicant will develop a compensatory mitigation plan for this site along with the other alternative locations. Each plan would provide a detailed discussion of the methodology and approach to compensate for unavoidable impacts to waters of the United States including wetlands.

Federally protected species - The early scoping report on the Castle Hayne alternative site provided the federally-listed species known to occur in New Hanover and Pender Counties (Kimley-Horn 2006, pp. 8-9). The lists include coastal species such as sea turtles and seabeach amaranth (*Amaranthus pumilus*) would not occur in the project area. The current PN does not address potential adverse impact to federally protected species, but notes habitat evaluations and field surveys are ongoing. A technical report detailing the methodologies and results of the protected species study will be included as an appendix to the EIS. Such data should be supplied for each alternative site.

Service Concerns and Recommendation for Environmental Impact Statement

Need, Purpose, and Development of Alternatives - As discussed by Kimley-Horn (2006, p. 2), there is a need for Portland cement in North Carolina. The current need is being met by production in South Carolina, Tennessee, Virginia, and foreign imports arriving at Wilmington. The primary market for the proposed Castle Hayne facility would be within a 120-mile radius of the site, an area including Wilmington, Raleigh, and Myrtle Beach, South Carolina.

Within the EIS, there should be a single section that discusses the alternatives that would address the stated project purpose. Planning should consider sites within the entire

market area of the proposed plant, both primary and potential markets of less importance. This section should be completely free of any evaluation of the alternatives and no alternative should be eliminated for reasons other than failure to address the project purpose. Start up costs should not be used as justification for eliminating an alternative unless such costs render the effort unfeasible. If a certain alternative, other than the required consideration of the no action alternative, would not address the stated project purpose, it should not be introduced. There is no point in discussing an alternative that does not address the project purpose. Once the geographic area of market is defined and potential sites identified, the environmental impacts of each site should be evaluated. While start up costs will vary among feasible locations for the mine/plant, the Corps should carefully scrutinize any determination by the applicant that there is only a single suitable site within the entire market area to be served by the facility.

After the potential sites are established, the various environmental impacts of each site can be developed and used to determine the least environmentally damaging practicable alternative. Some of the major environmental issues that require consideration are discussed in the following paragraphs.

General Habitats of the Sites – The habitat values of the various alternatives should be carefully considered. The one site addressed in the PN is a forested alluvial floodplain. These wetlands in the mid-Atlantic region are important to many birds as breeding, wintering, and migrating stop-over habitat (Kellison et al. 1998, p. 314). These forests provide food and cover for wildlife throughout the year. Seasonal flooding produces shallow, warm water areas where many kinds of water life spawn and feed (Harris et al. 1984, p. 7). Flooded bottomland hardwood forests are nurseries for many fish species. Many of these species are dependent on the resources of the river, its tributaries, and its floodplain during all or part of their life cycle or seasonal cycle.

The alternative identified near Castle Hayne contains tidal, freshwater, forested wetlands, a unique subset of alluvial wetlands. This wetland type occurs along rivers where flooding is influenced by lunar or wind tides (North Carolina Wildlife Resources Commission [hereafter NCWRC] 2005, p. 260) and included both forested areas and marshes with dense herbaceous vegetation. The basic characteristics of tidal cypress-gum swamp in North Carolina are discussed by Schafale and Weakley (1990, pp. 253-255). These forests are regularly to irregularly flooded with freshwater lunar or wind tides and there is little or no salinity in the water. Tidal flooding brings seawater-derived nutrients and varying amounts of sediment into the community which probably makes the tidal forests more productive than the non-tidal blackwater subtype of cypress-gum swamp (Schafale and Weakley 1990, p. 254).

The North Carolina Wildlife Action Plan identifies the Northeast Cape Fear River as a priority area for habitat protection (NCWRC 2005, p. 369). This designation is based in part on information from Smith et al. (2002), the North Carolina Natural Heritage Program (NCNHP) and the NCWRC. Priority areas have high species diversity, rare species, and endemic species. These areas are also considered to be critical to the

survival of certain species by providing, for example, spawning area, and/or contain diverse biological communities.

The EIS for the proposed mine/plant should carefully consider the general habitat value of each site alternative. Sites in North Carolina that have a high priority for habitat protection and or contain rare or endemic species should be avoided if at all possible.

Migratory Birds – Any site for a 50-year mining and cement manufacturing facility is likely to impact migratory birds. While other sites should be developed and evaluated in the EIS, the Castle Hayne site is the only one identified in the current PN. This site includes a portion of the alluvial floodplain of the Northeast Cape Fear River. In alluvial floodplains of the southern United States, many birds are found across the hydrologic gradient and show no particular affinity for cover type of hydrologic regime (Wigley and Lancia 1998, p. 218 and references therein). Wigley and Lancia (1998, p. 219-222) provide a table with selected birds associated with southern forested wetlands, including alluvial floodplains and flatwood/wetland mosaics that may be impacted by the Castle Hayne alternative site.

The Service has adopted a “focal species strategy” which uses selected species of birds to direct conservation actions aimed at returning these species, and others occupying the same habitat, to healthy and sustainable levels. Based on this strategy, the Service’s Southeastern Region has developed specific resource priorities and focal species. Focal species of the Service are those that: (1) demonstrate high conservation needs; (2) represent a broader group of species sharing the same or similar conservation needs; (3) receive a high level of the Migratory Bird Program efforts; and, (4) have a great likelihood that factors affecting their status can realistically be addressed.

Swainson’s warbler (*Limnothlypis swainsonii*) is a Service focal species on the South Atlantic Coastal Plain. The species is considered to be an interior forest breeding bird. This migratory species overwinters in Cuba and Mexico and breeds in the southeastern United States. It is present in the coastal plain and mountains of North Carolina from early April through late September (Potter et al. 1980, p. 300). Throughout most of its breeding range the species occupies floodplain forests with a dense understory but little ground cover, such as natural gaps in older forests (Wells 2007, p. 341). The species is included as one of the 100 “at risk birds” in North America (Wells 2007, pp. 341-343) due to the loss of breeding areas as large tracts of bottomland forest were cleared. The loss or fragmentation of breeding and wintering habitats currently supporting Swainson’s warbler continues in many parts of the species’ range (Wells 2007, p. 342). It is likely that this species breeds in the floodplain forests of the Castle Hayne site and would be adversely impacted by the selection of this site.

The prothonotary warbler (*Protonotaria citra*) is another interior forest breeding bird of the South Atlantic Coastal Plain that is a focal species of the Service. In North Carolina, the species is a common summer resident along the coast and throughout the coastal plain from early April through late September (Potter et al. 1980, p. 299). Breeding habitat consists of natural cavities in a tree, stump, or wooden structure (Potter et al. 1980, p.

299). While breeding habitat is probably most abundant in cypress swamps, nests may be found in other types of swamps and heavily wooded borders of lakes and streams. Wells (2007, pp. 333-334) states that this species breeds in flooded forests and along water edges of lakes, ponds, and slow moving rivers. The birds generally prefer mature forests larger than 250 acres with little understory and permanent water. Wells include this species as one of the 100 "at risk" birds in North America and notes that the clearing of large tracts of bottomland hardwood forest declines in the population of this warbler. One of several conservation measures for the species is an increase in the acreage of bottomland hardwood forests that are managed to attain beneficial conditions prothonotary warblers (Wells 2007, p. 335). It is likely that this species breeds in the floodplain forests of the Castle Hayne site and would be adversely impacted by the selection of this site.

The rusty blackbird (*Euphagus carolinus*) is a Service focal species on the South Atlantic Coastal Plain. This migratory species breeds in the boreal forests of Canada and Alaska and spends the winter in the southeastern United States. Wintering areas include wet forests and swamps such as bottomland hardwood forests and cypress swamps. In North Carolina, this species is mostly a spring and fall transient, but it winters erratically throughout the state and is sometimes locally abundant, particularly in the eastern counties (Potter et al. 1980, p. 347). The species has one of the steepest population declines of any North American bird (Wells 2007, p. 381) and is recognized as an "at risk" species (Wells 2007, pp. 381-384). In addition to habitat losses in breeding areas, wintering habitat in the United States has been greatly reduced (Wells 2007, p. 382). Twenty-five percent of forested wetland habitat in the southeastern United States was lost between the 1950s and 1980s (Wells 2007, p. 382). It is possible that this species overwinters in the floodplain forests of the Castle Hayne site and would be adversely impacted by the selection of this site.

The Corps should compare impacts to migratory birds, especially the focal species designated by the Service, at the Castle Hayne site alternative with other possible locations for the quarry and plant site. This comparison should recognize the high value and diversity of the habitat within the floodplain wetlands at the Castle Hayne site. For birds which require large areas of mature forested wetlands, such as interior forest breeding birds, there may be no unoccupied alternatives to the habitats on the site. For these species small fragments of habitat would not provide adequate habitat and the "at risk" birds discussed above may experience further population declines. The large, forested wetland tract at the Castle Hayne site represents a very valuable resource that may be irreplaceable within the landscape of southeastern North Carolina.

Fisheries Issues - The Cape Fear River and its major Northeast Cape Fear River tributary are the only major river systems in North Carolina flowing directly into the Atlantic Ocean (Street et al. 2005, page 40). They are therefore hydrologically unique among North Carolina estuaries. The flushing rate for the lower estuary is approximately 14 days, the most rapid turnover among major estuaries in North Carolina (Street et al. 2005, page 40). They are also the only river systems in North Carolina to possess diurnal tidal freshwater riverine, stream, marsh and forested wetlands ecosystems (Leonard and Davis

1981, Schafale and Weakley 1990), a further unique hydrological feature. Finally, they are among the few southeastern river systems that possess a full complement of native diadromous (species that travel between salt and fresh water) fish species such as alewife (*Alosa pseudoharengus*); American eel (*Anguilla rostrata*); American shad (*Alosa sapidissima*); Atlantic sturgeon (*Acipenser oxyrinchus*); blueback herring; hickory shad (*Alosa mediocris*); sea lamprey (*Petromyzon marinus*); shortnose sturgeon, and striped bass (Schwartz et al. 1982, Mallin et al. 2001).

Because of their migratory nature and the unique ecological roles they perform, these diadromous species have been made a high priority for restoration and conservation by all federal and state fishery management agencies. In particular, the NCWRC has made the Atlantic and shortnose sturgeons, and the sea lamprey, priority aquatic species in the Cape Fear River basin (NCWRC 2005, p. 366). Habitat areas for these species within the Cape Fear and Northeast Cape Fear estuaries may qualify as Strategic Habitat Areas (SHA's) which are currently undergoing designation by the North Carolina Marine Fisheries Commission, Coastal Resources Commission, and Environmental Management Commission (Street et al. 2005, page 481 ff.).

One of the highest priorities of the Service in the Southeastern United States is the conservation of interjurisdictional fish. These are non-listed fish that because of the scope of their geographic distributions or migrations are managed by two or more states, nations, and/or tribal governments. The focal, interjurisdictional species of the Service that may occur at the Castle Hayne alternative site include the Atlantic sturgeon, striped bass, American eel, and American shad. The Service strongly recommends that the site selected for the mine and cement plant not create any direct, indirect, or cumulative adverse impacts on these focal species and not result in any loss or degradation of their habitats.

Because of the juxtaposition of oceanic saline, mesohaline, and oligohaline conditions coupled with the highest diurnal tidal range of any North Carolina estuary, the Cape Fear River estuary, including the tidal portion of the Northeast Cape Fear River, has a high fish species diversity, with in excess of 250 species documented, from 88 families (Schwartz et al. 1982) More recent data is available in reports of the Lower Cape Fear River Program located at < <http://www.uncwil.edu/cmsr/aquaticecology/LCFRP/reports.htm> > and the reports by Hackney et al. (2008) regarding monitoring of potential increased tidal ranges in the Cape Fear River ecosystem due to Wilmington Harbor deepening, available at < <http://www.saw.usace.army.mil/wilmington-harbor/main.htm> >. An ecosystem with so many distinct ecological features merits the highest level of conservation measures to ensure its future sustainability.

The NMFS representative participating in the conference call of July 22, 2008, indicated that the area of the Castle Hayne alternative is considered Essential Fish Habitat (EFH) because it is designated as Primary Nursery Area by the State of North Carolina. The applicant and the Corps should undertake a thorough assessment of the threats to EFH that would result from the selection of the Castle Hayne alternative site. Furthermore,

there should be a thorough evaluation of the cumulative impact of other existing and future proposed threats to EFH in coastal North Carolina. In this regard, the applicant and Corps may find it useful to review and reference Collins et al. (2000).

The draft Aquatic Resource Characterization submitted on behalf of the applicant is inadequate as presently designed for either characterizing the fishery and benthic macroinvertebrate resources present, or for establishing a baseline against which any impacts of the Castle Hayne alternative site could be assessed if it is ultimately selected. The study should be redesigned to consider the recommendations made by fishery management agencies during the July 22, 2008, conference call hosted by the Corps, between the applicant, their consultants, and agency representatives. Specific recommendations are provided below for refining the study. The applicant is encouraged to analyze and use existing data from the above-referenced University of North Carolina-Wilmington extensive monitoring programs to supplement any data collected specifically for this project.

Assessment of Aquatic Resources – As noted, the conference call of July 22, 2008, discussed the plan for assessing aquatic resources at the site of the Castle Hayne alternative site. The stated purpose of the plan is to “...evaluate aquatic resources in the vicinity of the Castle Hayne Project.” The resources include fish and benthic macroinvertebrates. The objectives include the characterization of: (1) the existing species composition and relative abundance of fish and macroinvertebrates; (2) water quality; (3) sediment quality; (4) habitat conditions adjacent to the project site; and, (5) the relative quality or condition of aquatic resource and water/sediment. The goal of the assessment is to provide a basis for the aquatic resources sections of the existing environment section of the EIS, as well as providing information for assessment of potential impacts to aquatic resources.

The proposed sampling regime as further described in the characterization contains significant deficiencies and will not attain these objectives. The proposed three synoptic sampling events are simply inadequate for either aquatic resource characterization, or impact assessment. As recommended by agency representatives during the July 22, 2008, conference call, sampling should be conducted at a minimum on a monthly basis, at all eleven specified sites (or relocated sites as discussed during the call). Further, there should be targeted sampling for anadromous and catadromous fish species during the spring spawning (for anadromous species) and immigration (for American eel) periods, and during fall out-migration periods, on a weekly or biweekly basis. Sampling should encompass at a minimum an entire calendar year so that all combinations of seasonal flows and temperatures are adequately addressed. Sampling station locations should be adjusted per the discussion during the conference call of July 22, 2008.

The proposed water quality and sediment sampling parameters and techniques, as they related to fisheries resources, should be reviewed by staff of the North Carolina Division of Water Quality, U.S. Environmental Protection Agency, and the Service's Contaminants Program staff. Any identified inadequacies should be submitted for addressing to the applicant. Fishery management agency staff indicated to the applicant's

consultants that the lower Cape Fear River ecosystem, including the Northeast Cape Fear River, is a very dynamic system, therefore grab samples spaced widely temporally would not be sufficient to characterize the habitats present. The proposed sampling regime should be supplemented to include minimum monthly sampling, for a minimum twelve-month period, with intensive periods in which continuous monitoring is conducted to determine the daily cycles of such parameters as dissolved oxygen, temperature and depth changes associated with lunar tides.

The proposed methods for assessing aquatic invertebrates may be satisfactory, pending review by the other state and federal agencies as above noted. However, the proposed frequency is inadequate for characterization and assessment, and should be increased to cover at least twelve months. Macroinvertebrate sampling of the tidal freshwater swamps also should be conducted to characterize benthos which may be seasonally or tidally available to foraging fish species.

The comments provided above regarding frequency of sampling and temporal coverage also apply to fisheries resources. In addition, per the recommendation of the North Carolina Division of Marine Fisheries, gill nets should be added as a sampling device at least at all the open water stations. The applicant should consult the referenced reports from sampling programs conducted by the University of North Carolina-Wilmington with a view toward using the data in them to supplement and further characterize the affected aquatic ecosystems.

Water Quality Issues - Pollution is one of the American public's greatest environmental concerns, and the Service expects that the EIS for this project will rigorously evaluate pollutant loads to air and water from the facility and potential for impacts to important natural resources of the Northeast Cape Fear River.

Gerard (1999) discusses water quality issues in the Cape Fear River. He notes that the river is a system and that activities, such as clear cutting stream banks upstream, directly affects the quality of water downstream. Scientists are recommending riparian buffers, green spaces abutting stream banks, to filter out sediment and toxins. Dr. Michael Mallin of the University of North Carolina at Wilmington notes (Gerard 1999) that the Cape Fear is "not in bad condition, compared to the Neuse and the Pamlico, but it's right on the edge. Continuing watershed development and the removal of wetlands will push it over the edge. The wetlands are what really is saving the Cape Fear."

In evaluating the Castle Hayne alternative site, priority and conventional pollutant discharges to air and water should be quantified. In addition to comparing increased loading to air and water quality standards, it would be helpful to estimate the impacts on current ambient air and water quality conditions. Impacts to sensitive resources should receive special attention. Among North Carolina's threatened and endangered fishes, the shortnose sturgeon appears the most sensitive to pollutants (Dwyer et al. 2005) and sturgeon may occupy the receiving waters. The potential for heavy metal accumulation in the region's sediments and biota warrants special attention. As in many areas of the eastern United States, mercury is a problem parameter in eastern North Carolina with fish

consumption advisories in place in the State due to excessive mercury loadings. The southeastern part of North Carolina is a regional hotspot, so additional loadings will be a concern. The EIS should discuss the emissions of mercury and the deposition fate of any airborne mercury loads.

Federally Protected Species and State Special Status Species - The Service has reviewed available information on federally-threatened or endangered species known to occur in both New Hanover and Pender Counties. We have also reviewed information from the NCNHP database. Occurrence records in the NCNHP database can be accessed by topographic quadrangle (quad) of the U. S. Geological Survey (USGS). Data from USGS quads provide the most project-specific information on species which should be considered in permitting this project. The project area is mostly in the Mooretown quad, but includes a smaller area of the Scotts Hill quad. The occurrence data of special status species within these quads can be obtained on the internet at < <http://www.ncnhp.org/Pages/heritagedata.html> > and conducting a database search.

Another useful resource at the NCNHP web page is the virtual workroom. This resource is available to the public and allows the user to determine the species which have been reported (called an element occurrence) within two miles of a selected point. The summary data provides the status of the species at various geopolitical levels (state, federal, and global) and brief comments on the habitat of the species. The virtual workroom help guide should be used for terms and acronyms in the information provided. On July 28, 2008, a query of the area around the Castle Hayne alternative yielded 14 species. The Corps and the applicant should use this resource or similar data on rare species in evaluating the alternatives.

The potential impacts to the federally endangered shortnose sturgeon should be fully evaluated. While the Service indicated during the call of July 22, 2008, that Moser and Ross (1995) had tracked shortnose sturgeon into the Northeast Cape Fear River, a cursory review of their published literature did not reveal such movements. The applicants should contact Drs. Moser or Ross to determine if shortnose sturgeon were tracked in the vicinity of the proposed project.

As noted during the July 22, 2008, conference call, the applicant should consult with the NMFS regarding the necessity for conducting section 7 consultations for Atlantic and shortnose sturgeons. Potential impacts to these species will be considered by the Protected Resources Division of the NMFS which is concerned about the restoration of the shortnose sturgeon in the Cape Fear River. Impacts to this species should be carefully considered in the evaluation of site alternatives.

The federally-endangered the West Indian manatee (*Trichechus manatus*) has been reported in the vicinity of the project area. The species is known to occur in New Hanover and Pender Counties and there is a current occurrence record in the Mooretown quad. The Northeast Cape Fear River and some its larger tributaries may provide suitable habitat for manatees that move along the Atlantic Coast and into inland waters during summer months and are seasonal transients in North Carolina, primarily from June

through October. Manatees may travel in water as shallow as one to two meters (3.3 -6.6 feet) deep. The species moves extensively when in North Carolina waters and past occurrence records cannot be used to precisely determine the likelihood that it will be present at a particular construction site.

While manatee occurrences are rare in North Carolina, project planning and the selection of the actual site should consider potential impacts to this species. The Service has developed "Guidelines for Avoiding Impacts to the West Indian Manatee - Precautionary Measures for Construction Activities in North Carolina Waters." These guidelines are available on our web site at < http://nc-es.fws.gov/mammal/manatee_guidelines.pdf>. The potential for employing a barge system at the Castle Hayne alternative creates greater risk to this species. Other sites which would only use rail or trucks for the transportation network would eliminate the threat to this species. The risk to manatees created by a barge transport system should be considered in the evaluation of alternative sites.

The protected species provided in the early scoping report lists the American alligator (*Alligator mississippiensis*) as a threatened species (Kimley-Horn 2006, p. 8). From a federal perspective, the alligator is not a listed species in North Carolina. It is listed as threatened due to similarity of appearance (T/SA) with the American crocodile (*Crocodylus acutus*) which only occurs in southern Florida. Taxa listed as T(S/A) are not biologically endangered or threatened and are not subject to section 7 consultation. However, the species is considered threatened by the State and should be considered in site selection.

In addition to those species that are currently protected by the ESA, site selection and project planning should also consider federal species of concern (FSC). A FSC is under consideration for listing, but current information is insufficient to support listing at this time. These species may or may not be listed in the future. Every effort should be made to avoid adverse impacts to any FSC in order to prevent the need for formal listing in the future.

The evaluation of special status species should consider several species of bats. Bats in the United States feed almost exclusively on insects and are extremely beneficial (Harvey 1992, p. 4). The southeastern myotis (*Myotis austroriparius*) is a FSC with occurrence records in both New Hanover and Pender Counties. There is a current record in the NCNHP database for the species in the Mooretown quad. The species roosts in hollow trees near water. The northern myotis (*Myotis septentrionalis*) occurs in the NCNHP virtual workroom data near the Castle Hayne alternative site and is on the State "watch list" indicating that the species is thought to be rare and of conservation concern in the State, but not warranting active monitoring at this time. Rafinesque's big-eared bat (Coastal Plains subspecies) (*Corynorhinus rafinesquii macrotis*) is a FSC and has been reported in both Pender and New Hanover Counties. The species occurs in the NCNHP virtual workroom data near the Castle Hayne alternative site. This species roosts in hollow trees near water.

Hollow trees, and other standing, dead trees (snags), provide important habitat not only to bats mentioned above, but also to a host of vertebrate and invertebrate species. Since such snags are often not tolerated in residential and other developed area, they are often limited to large tracts of undeveloped land such as the wetlands of the Castle Hayne alternative site. The environmental analysis of the various alternatives should consider the impacts on this important, but often unappreciative, habitat feature.

The bald eagle (*Haliaeetus leucocephalus*) has been reported in Pender County, but not within the two USGS quads surrounding the Castle Hayne alternative site. In the July 9, 2007 Federal Register(72:37346-37372), the bald eagle was declared recovered, and removed (de-listed) from the Federal List of Threatened and Endangered wildlife. This delisting took effect August 8, 2007. After delisting, the Bald and Golden Eagle Protection Act (Eagle Act) (16 U.S.C. 668-668d) becomes the primary law protecting bald eagles. The Eagle Act prohibits take of bald and golden eagles and provides a statutory definition of "take" that includes "disturb". The Service developed National Bald Eagle Management Guidelines to provide guidance to land managers, landowners, and others as to how to avoid disturbing bald eagles. For more information, visit < <http://www.fws.gov/migratorybirds/baldeagle.htm> >.

Bald eagles usually nest within a few miles of a sizable body of water such as a river, bay, or lake. Project planning should ensure that all potential sites near such water bodies, including the Castle Hayne alternative site, do not have bald eagle nests.

Project planning and site selection should compare the wide range of State protected and priority species at the Castle Hayne alternative site with other potential sites. Data from the NCNHP quad reports, the NCNHP virtual workroom, and the NC Wildlife Action Plan (NCWRC 2005, pp. 366-367) should be used. A few selected species suggest the biological diversity that may occur on the Castle Hayne alternative site. The nutmeg hickory (*Carya myristiciformis*), is a tree that can grow to 100 feet high; occurs along the banks of rivers and swamps in rich moist soil; has only been reported from Pender County in North Carolina, and is considered endangered by the State. The Cape Fear spike (*Elliptio marupiobesa*) is a mussel endemic to North Carolina, is reported in the NCNHP virtual workroom data near the Castle Haynes alternative, is a priority aquatic species (NCWRC 2005, p. 367) in the Cape Fear River Basin, and has a State status of special concern. Swamp jessamine (*Gelsemium rankinii*) is reported in the NCNHP virtual workroom data near the Castle Haynes alternative site, occurs in the floodplain of blackwater rivers and streams, and has a State status of significantly rare (on the periphery of its range).

Compensatory Wetland Mitigation – The ability to provide adequate wetland compensatory mitigation should be critical factor in the selection of the site. While the Service prefers that an adequate supply of cement be provide at a site that does not require significant wetland losses, the single site presented in the PN would require a major commitment by the applicant for compensatory mitigation. Given the uniqueness

of the fish and wildlife resources at the Castle Hayne site, it is likely that careful analysis will reveal that these anticipated impacts are unmitigable.

As part of the EIS, a detailed plan for mitigating wetland losses should be provided for each alternative. For the Castle Hayne alternative, several major issues must be addressed. First, the loss of mature, forested wetland would require restoration at a ratio of at least two-to-one. This ratio is necessary to compensate for the several decades required before a mature forest habitat would be available. Simple preservation as compensation would result in a net loss of valuable habitat and should only be considered as a part of an overall mitigation plan after the required restoration has been implemented.

Several other aspects of compensating for wetland losses at the Castle Hayne alternative site should be provided in the EIS. These include:

1. Restoration of the tidal cypress-gum swamp must occur in the same position of the river relative to tidal upstream flows and freshwater downstream flows. That is, the hydrology should be palustrine with regular to irregular flooding with freshwater lunar or wind tides and little or no salinity in the water as noted in Schafale and Weakley (1990, p. 253). Such positioning would maintain the high productivity associated with the inflow of seawater derived nutrients and sediment into the restored forest;
2. The soil type(s) at the restoration site should be a close match of those associated with tidal cypress-gum swamp. These soils are generally organic soils such as Dorovan and Hobonny, or occasionally mineral soils such as Masontown (Schafale and Weakly 1990, p. 253);
3. The restoration wetlands must be able to maintain the spawning and nursery habitat for diadromous fish that currently use the wetlands on the Castle Hayne alternative site; and,
4. The restoration wetlands must be large enough to support interior forest nesting migratory birds such as Swainson's and Prothonotary warblers as well as the overwintering habitat of the rusty blackbird. Since the prothonotary warbler generally nests in mature forest greater than 250 acres in size, a number of small, disjunct restoration sites would not compensate for the existing forested wetlands at the Castle Hayne alternative site.

The EIS should contain specific information on the location of compensatory mitigation. The discussion should not simply present several options that under consideration. Information should be included on the degree to which the specifically identified restoration site meets the four important criteria mentioned above.

The mitigation plan must include details on the formal preservation and stewardship of the compensatory wetlands. Considering that the mitigation area for the Castle Hayne alternative site would be large, a state or private conservation organization should be designated to protect and manage the mitigation area. If the Castle Hayne alternative is

selected, an endowment should be provided to the group that will manage the compensatory area in perpetuity.

Adequate wetland compensation for the Castle Hayne alternative is likely to be expensive. Initial restoration efforts may fail and other attempts may be necessary to restore the appropriate wetlands. The costs of land acquisition, restoration, and an endowment for perpetual stewardship should be fully considered in the cost comparison with other alternatives that may not require the restoration of almost 1,000 acres of forested wetlands in the relative narrow tidal freshwater reach of a coastal plain river.

Water Dependency of the Proposed Action - The Corps should determine whether the actions proposed by the applicant are water dependent. The EPA 404(b)(1) Guidelines state that fill material will not be placed in aquatic ecosystems if there is a practicable alternative which would have less impact on aquatic ecosystems. Those guidelines further specify that for non-water dependent activities proposed for special aquatic sites (e.g., wetlands, mud flats, and vegetated shallows), practical upland alternatives are presumed to exist unless clearly demonstrated otherwise.

The early scoping report showed the areas of eastern North Carolina where marl and fine-grained sediments may exceed 30 percent of the total limestone aquifer (Kimley-Horn 2006, p. 3, Figure 3). This area extends in a band from eastern Brunswick County inland to portions of Pender, Duplin, Onslow, and Jones Counties. This report also notes that "rail would be the primary means of product distribution" (Kimley-Horn 2006, p. 4). While moving the product by barge may be an "advantageous distribution option," the requirement for barge access may not be necessary for the economic viability of the operation. Therefore, the project may not be water dependent and more inland sites, in less environmentally sensitive areas, may provide practical upland alternative.

Cumulative Impacts - The PN states that the Corps will consider the cumulative environmental impacts of the proposed action. Cumulative impacts result from the incremental impact of the proposed action when added to past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes these actions. Geographic information system (GIS) data and mapping will be used to evaluate and quantify secondary and cumulative impacts of the proposed project with particular emphasis given to wetlands and surface/groundwater resources. For this aspect of the Corps' public interest review, the Service recommends that the Corps:

1. Consider the historic extent of tidal freshwater, forested wetland and compare this area with the area that this community occupies today. If there have been significant losses of this unique and ecologically value biological community, the Corps should consider whether additional losses should be permitted; and,
2. Consider the historic extent of regularly flooded riparian forests that served as spawning and nursery areas for anadromous fish. Using the best available data, the Corps should determine the percentage of these anadromous fish habitats (both spawning and

nursery areas) that have been permanently lost up to the present time and whether the remaining habitats can support sustainable fish stocks.

Compliance with Executive Order (EO) No. 11988 (Floodplain Management - The Corps' public interest review should determine whether the proposed action complies with Executive Order (EO) 11988 (Floodplain Management) of 1978. This EO directs the executive branch to avoid, to the extent possible, the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. The EO is directed at federal activities and program affecting land use, such as the Corps' wetland regulatory program.

The Castle Hayne alternative site is clearly subject to flooding by the Northeast Cape Fear River. Hurricanes of the magnitude of Fran in 1996 and Floyd in 1999 are very likely to sweep over the mine site and carry wastewater and material on the site downstream. Any harmful substances on the site could be carried downstream to Wilmington, Southport, and into the Atlantic Ocean. Furthermore, the existing forested floodplain helps to attenuate downstream flooding by intercepting storm runoff and storing storm water (Mitsch and Gosselink 1993, p. 519). Wetlands can change sharp runoff peaks to slower discharges over longer periods of time and thereby effectively reduce the danger of flooding (Mitsch and Gosselink 1993, and references therein, p. 519).

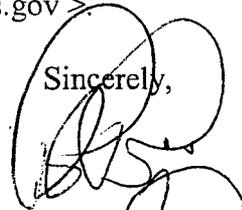
Therefore, as part of the alternative analyses there should be a comparison of the degree to which each alternative achieves the goals of this EO. The statement by President Carter accompanying the EO notes that unwise use and development of riverine floodplains not only destroys many of the special qualities of these areas but pose "a severe threat to human life, health, and property." The degree to which the conversion of the forested wetlands on the site to a surface mining site creates an increased risk of flooding for Wilmington and other downstream development should be considered.

Summary

Overall, the Service is concerned about the adverse impacts on priority resources of the Service, primarily anadromous fish and migratory birds, which would occur with the use of the Castle Hayne alternative site. The elimination of approximately 500 acres of the uniquely positioned tidal freshwater wetlands along the Northeast Cape Fear River would remove important habitat for birds that migrate over many states and fish that also occur along the coast of several states. In this regard, we believe the forested wetlands that would be impacted over the course of plant operation at the Castle Hayne site may represent an aquatic resource of national importance (ARNI). Adverse impacts to these resources may be unmitigable. As such, we request that the planning process develop alternatives with less environmental impact.

We appreciate the opportunity to provide these early scoping comments on this project. If you have questions regarding these comments, please contact Howard Hall at 919-856-4520, ext. 27 or by e-mail at <howard_hall@fws.gov>.

Sincerely,



Pete Benjamin
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