

February 5, 2003

Colonel Charles R. Alexander, Jr.
District Engineer, Wilmington District
U. S. Army Corps of Engineers
Post Office Box 1890
Wilmington, North Carolina 28402-1890

Attention: Hugh Heine, Environmental Resources Section, Seven Springs Study

Dear Colonel Alexander:

In accordance with our Scope of Work for FY 2003 the U. S. Fish and Wildlife Service is pleased to provide this Planning Aid Letter (PAL) for the Seven Springs Flood Damage Reduction Feasibility Study. This study is being carried out by the U. S. Army Corps of Engineers (Corps) pursuant to Section 205 of the 1948 Flood Control Act (PL 80-858) for the purpose of developing and evaluating alternatives for implementing solutions to reduce flood damage in the Town of Seven Springs, Wayne County, North Carolina. This letter contains early scoping comments and does not constitute the report of the Department of the Interior as required by Section 2(b) of the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661-667d).

The Town of Seven Springs, population approximately 940, lies on the southern bank of the Neuse River which has its headwaters in north-central North Carolina and a total drainage area of 6,235 square miles. The part of the town with the greatest risk of flooding lies within the floodplain of the river. Flooding occurred in 1996 in association with Hurricane Fran and again with several storms in 1999, including Hurricane Floyd. According to the U. S. Census Bureau, 24 of the 67 residences in the town were unoccupied in 2000. Local officials have requested a dike of approximately 4,000 feet to protect structures within the floodplain.

Broad, flat areas adjacent to the Neuse River represent a major alluvial floodplain that, unless altered by man, is invariably forested (Kellison et al. 1998), and are referred to as bottomland hardwoods (BLH) (Kellison et al. 1998, p. 300). While the project area has been developed, it is likely that the area, once contained, could be restored to BLH. Excellent reviews of the physical and biological characteristics of BLH are available (Wharton et al. 1982, Harris et al. 1984, Sharitz and Mitsch 1993, Kellison et al. 1998). Boaters on the Neuse River report (Powell 1999) an "amazing amount of wildlife" such as wood ducks (*Aix sponsa*) and other waterfowl, blue heron (*Ardea herodias*), belted kingfisher (*Megaceryle alcyon*), deer (*Odocoileus virginianus*), wild turkeys (*Meleagris gallopavo*), muskrats (*Ondatra zibethicus*), and beaver (*Castor*

canadensis). Red shouldered hawks (*Buteo lineatus*) nest in the bottomland forests along the Neuse.

Forested alluvial floodplains 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 BLH are nurseries for many fish species. The web page of the North Carolina Division of Parks and Recreation (<http://ils.unc.edu/parkproject/visit/clne>) notes that the Cliffs of the Neuse State Park, just upstream of the Town, has 420 plant species, an abundant and diverse animal life, and wetland and aquatic habitat for reptiles and amphibians.

The federally endangered red-cockaded woodpecker (*Picoides borealis*) is the only federally listed species known to occur in Wayne County. This species lives in mature, upland pine forests and is not likely to be adversely affected by work in the Neuse River floodplain. Several species with a formal state status have been reported from Wayne County and could occur in the project area. These include the Mississippi kite (*Ictinia mississippiensis*), a significantly rare (SR) bird of prey; the Neuse River water dog (*Necturus lewisi*), a special concern (SC) amphibian; Carolina madtom (*Noturus furiosus*), a SC fish; Atlantic pigtoe (*Fusconaia masoni*), a state endangered mussel and Federal species of concern (FSC); and pondspice (*Litsea aestivalis*), a SR vascular plant and Federal FSC found in low, wet woodlands. The complete list of special status specials for Wayne County is available at the web sites of the North Carolina Natural Heritage Program (<http://ncparks.net/nhp/elements2.fm>).

The major resource concern that should be addressed by the Corps is the choice between a structural or nonstructural approach to reducing flood damage. The structural approach, such as a dike, breaks the important link between the river and its floodplain. The nonstructural approach, such as elevating or relocating houses and businesses, retains this link. Harris et al. (1984, p. 14) note that when a BLH forest is drained, channelized, dike, and cleared, it can no longer perform the same functions in the landscape. Important functions of an interconnected river-floodplain ecosystem include water control and purification, groundwater recharge, soil enrichment, erosion control, and support for downstream fishing industries (Harris et al. 1984, p. 14).

There are resource opportunities in the Seven Springs study. These include: (1) opportunities to restore valuable fish and wildlife habitat by ensuring a permanent connection between the Neuse River and its historic floodplain; (2) the development of a local land use plan to control development within the floodplain and local building codes to minimize flood damage. As noted by Tibbetts (1999) local governments can reduce disaster risk by purchasing wetlands and open spaces along waterways, improving stormwater drainage systems, enacting special building standards for flood hazards, and steering public facilities and infrastructure outside of hazard areas. In developing the range of alternatives, the Corps should consider the excellent discussion of human adjustment to floods by Dunne and Leopold (1978, pp. 398-414). These authors note

(Dunne and Leopold 1978, p. 411) that “structural solutions to flood control often do not reduce flood losses.” The study may also provide an opportunity to fulfill Executive Order 11988 (Floodplain Management), as amended, that mandates federal agencies to avoid direct or indirect support of floodplain development and “to restore and preserve the natural and beneficial values served by floodplains.”

The Service supports the project objective of reducing flood damage. However, the use of a structural approach may significantly impact the natural characteristics of the river and its floodplain. Alteration of floodplains changes the hydroperiod within BLH and “may permanently alter the ecology and functioning of the floodplain (Wharton et al 1982, p. 3). The Federal Interagency Stream Corridor Restoration Working Group (FISRWG 1998, Table 3.3) identified 51 potential effects, either direct or indirect, that could result from levee construction or reduction of floodplains. While the magnitude of these effects resulting from dike construction at Seven Spring would require more investigation, most are likely to occur to some degree. These impacts include: (1) loss of riparian vegetation; (2) reduced invertebrate population in waterway; (3) loss of wetland functions such as water storage, sediment trapping, and groundwater recharge; (4) reduced instream oxygen concentration; and (5) reduced species diversity and biomass. Harris et al. (1984, p. 14) also state that BLH depend on the pulsing water cycle and the ebb and flow of overflow waters through the forest. The BLH are as much a part of the flow-through system as the river itself. If the flow of water through the forest is diverted and the pulsing water cycle is stopped, the whole system suffers.

There are two major fish and wildlife issues associated with the Seven Springs study. First, past development on the Neuse River floodplain has impaired both the hydrological and biological functioning of the integrated river-floodplain ecosystem and opportunities now exist to implement a nonstructural flood damage reduction plan that would help restore these functions. Second, the implementation of a structural plan would further degrade the natural functions of the ecosystem and the values that it provides to society.

If this work proceeds to the feasibility stage, the Service will provide a more comprehensive FWCA report. This report would focus on a more detailed discussion of the fish and wildlife resources likely to occur in the project area and their habitat requirements. These habitat requirements would be considered in light of the various alternatives under consideration by the Corps. The 51 potential effects of levee construction and floodplain reduction (FISRWG 1998, Table 3.3) would be considered in light of these species, their habitat requirements, and abilities to persist after implementation of each alternative. The report of the Service would provide recommendations deemed appropriate to preserve, mitigate, compensate, or enhance fish and wildlife resources.

At this time, the Service recommends that planning objectives include: (1) evaluation of both structural and nonstructural alternatives for flood damage reduction; (2) plans for the restoration of natural vegetative communities on those areas which have been purchased with hazard mitigation grant funds and must remain undeveloped in perpetuity; and, (3) encouraging local

official to develop a comprehensive land use plan, revised building codes, and zoning regulations to prohibit new development in hazardous area as discussed by (Tibbetts, 1999, p. 10).

The Service appreciates the opportunity to provide these comments early in your planning effort. Please continue to advise us on your planning efforts for this project. If you have questions regarding this PAL, please contact Howard Hall at 919-856-4520 (Ext. 27) or by e-mail at howard_hall@fws.gov.

Sincerely,

Garland B. Pardue, Ph.D.
Ecological Services Supervisor

Literature Cited:

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