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S&EC Project #7185.W5

Polk-Sullivan LLC
Attn: Robbie Swain
PO Box: 5689
Cary, NC 27512

Re: Threatened and Endangered Species Report for The Bluffs
Chatham County, North Carolina

Dear Mr. Swain:

The purpose of this report is to advise you on the existing habitat types and the potential presence of protected plant and animal species on The Bluffs residential development. The site is adjacent to the Haw River, northeast of Rock Rest Road approximately 2000 feet east of its intersection with Old Highway 87. The site is approximately 500 acres in size. Figure 1 shows the location of the site on a USGS topographic quadrangle.

Executive Summary

There are four federally listed in Chatham County, NC, none of which were observed onsite during the field survey. Of the thirty-three state listed species in Chatham County, only *Phacelia covillei* or Buttercup phacelia was observed on the property. All of the observed populations occurred within the floodplain of the Haw River.

Introduction

Under the Endangered Species Act (ESA) (1973), species may be listed as either "endangered" or "threatened." Endangered means a species is in danger of extinction throughout all or a significant portion of its range. Threatened means a species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. All species of plants and animals, except pest insects and non-native species, are eligible for listing as endangered or threatened. For the purposes of the ESA, Congress defined

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species to include subspecies, varieties, and, for vertebrates, distinct population segments.

Section 4 of the ESA specifies that a species must be listed as endangered or threatened solely on the basis of its biological status and threats to its existence. When evaluating a species for listing, five factors are considered: 1) damage to, or destruction of, a species' habitat; 2) overuse of the species for commercial, recreational, scientific, or educational purposes; 3) disease or predation; 4) the inadequacy of existing protection; and 5) other natural or human related threats to the species' survival. When one or more of these factors imperils the survival of a species, the United States Fish and Wildlife Service (FWS) takes action to protect it. To ensure the accuracy of the data, the FWS decides all listings using sound science and peer review.

Section 7 of the ESA requires federal agencies to use their legal authorities to promote the conservation purposes of the law. This section also requires federal agencies to consult with the FWS to ensure that actions they authorize, fund, or carry out will not jeopardize listed species. The consulting agency then receives a "biological opinion" on the proposed action. In the relatively few cases where the FWS or National Marine Fisheries Service (NMFS) determines that the proposed action will January 1998 jeopardize the species, they must offer "reasonable and prudent alternatives" about how the proposed action could be modified to avoid potential impacts to the protected species. It is very rare to withdraw or terminate projects because of jeopardy to a listed species, however conditions to, and modifications of projects are common.

Section 10 of the ESA provides relief to private landowners who want to develop land inhabited by listed species. Landowners can receive a permit for the take of a listed species that may occur incidental to otherwise legal activities, provided they have developed an approved Habitat Conservation Plan (HCP). HCPs include an assessment of the likely impacts on the species from the proposed action, the steps that will be taken to minimize and mitigate those impacts, and the funding available to carry out those steps. When the FWS approves the HCP, the landowner can apply for an "incidental take" permit, which allows them to proceed with the proposed action.

RECORDS REVIEW

The North Carolina Natural Heritage Program (NHP) records occurrences of rare plant and animal species, exemplary natural communities, and special animal habitats known to occur in North Carolina. An updated record check was performed in March 2006. The subject property is located on the Bynum USGS quadrangle. However, the Silk Hope quadrangle was also checked for nearby occurrences.

Chatham County Federally Listed species:

- 1) Bald Eagle (*Haliaeetus leucocephalus*)
- 2) Red-cockaded Woodpecker (*Picoides borealis*)
- 3) Cape Fear Shiner (*Notropis mekistocholes*)
- 4) Harperella (*Ptilimnium nodosum*).

Other state-listed species and/or Federal Species of Concern:

<i>Aimophila aestivalis</i>	Bachman's sparrow	NC-SC	US-FSC
<i>Lanius ludovicianus</i>	Loggerhead shrike	NC-SC	
<i>Phalacrocorax auritus</i>	Double-crested cormorant	NC-SR	
<i>Hemidactylium scutatum</i>	Four-toed salamander	NC-SC	
<i>Etheostoma collis</i> pop.2	Carolina darter	NC-SC	US-FSC
<i>Moxostoma</i> sp 2	Carolina redhorse	NC-SR	US-FSC
<i>Alasmidonta undulata</i>	Triangle floater	NC-T	
<i>Alasmidonta varicosa</i>	Brook floater	NC-E	US-FSC
<i>Fusconaia masoni</i>	Atlantic pigtoe	NC-E	US-FSC
<i>Lampsilis cariosa</i>	Yellow lampmussel	NC-E	US-FSC
<i>Strophitus undulatus</i>	Creeper	NC-T	
<i>Villosa constricta</i>	Notched rainbow	NC-SC	
<i>Villosa delumbis</i>	Eastern creekshell	NC-SR	
<i>Villosa vaughaniana</i>	Carolina creekshell	NC-E	US-FSC
<i>Cambarus davidi</i>	Carolina ladle crayfish	NC-SR	
<i>Choroterpes basalis</i>	a mayfly	NC-SR	
<i>Gomphus abbreviatus</i>	Spine-crowned clubtail	NC-SR	
<i>Gomphus quadricolor</i>	Rapids clubtail	NC-SR	
<i>Gomphus septima</i>	Septima's clubtail	NC-SR	US-FSC
<i>Neurocordulia virginianensis</i>	Cinnamon shadowdragon	NC-SR	
<i>Tricorythodes robacki</i>	a mayfly	NC-SR	
<i>Allium cuthbertii</i>	Striped garlic	NC-SR-T	
<i>Baptisia albescens</i>	Thin-pod White Wild Indigo	NC-SR-P	
<i>Collinsonia tuberosa</i>	Piedmont horsebalm	NC-SR-P	
<i>Dichantherium annulum</i>	a witch grass	NC-SR-P	
<i>Fothergilla major</i>	Large witch-alder	NC-SR-T	
<i>Hexastylis lewisii</i>	Lewis's heartleaf	NC-SR-L	
<i>Isoetes virginica</i>	Virginia quillwort	NC-SR-L	US-FSC
<i>Monotropsis odorata</i>	Sweet pinesap	NC-SR-T	US-FSC
<i>Phacelia covillei</i>	Buttercup phacelia	NC-SR-T	US-FSC
<i>Porteranthus stipulatus</i>	Indian physic	NC-SR-P	
<i>Scutellaria nervosa</i>	Veined skullcap	NC-SR-P	
<i>Thermopsis mollis</i>	Appalachian golden-banner	NC-SR-P	

NC-SC: North Carolina Special concern

NC-SR: North Carolina Significantly Rare

NC-T: North Carolina Threatened

NC-E: North Carolina Endangered

US-FSC: US Special concern

"Endangered Species" (E) means any native species documented by biological research and inventory to be in danger of extirpation throughout all or a significant portion of its range within the state and to have no more than five occurrences in the state, and any species determined to be an "endangered species" pursuant to the federal Endangered Species Act.

"Threatened Species" (T) means any native species documented by biological research and inventory to be likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range within the state and to have no more than nine occurrences in the state, and any species determined to be a "threatened species" pursuant to the federal Endangered Species Act, except for such species determined to be endangered by the Commissioner in accordance with section 4 of this act.

"Species of Special Concern" (SC) means any native plant species or any native nonharvested wildlife species documented by scientific research and inventory to have a naturally restricted range or habitat in the state, to be at a low population level, to be in such high demand by man that its unregulated taking would be detrimental to the conservation of its population or has been extirpated from the state.

"Significantly Rare" (SR) Species which are very rare in North Carolina, generally with 1-20 populations in the state, generally substantially reduced in numbers by habitat destruction (and sometimes also by direct exploitation or disease). These species are generally more common somewhere else in their ranges, occurring in North Carolina peripherally to their main ranges, mostly in habitats which are unusual in North Carolina. Also included are some species with 20-100 populations in North Carolina, if they also have only 50-100 populations rangewide and are declining.

Identified Priority Areas

The Haw River borders the eastern portion of the property. The Haw River Aquatic Habitat is a NHP Identified Priority Area (IPA), that occurs +/- 500 feet downstream of the site. In addition, another locally designated IPA, Terrell's Creek Galax Bluffs, occurs along Terrell's Creek approximately one mile northwest of the site.

Local Elemental Occurrences

The closest protected elemental occurrence of a federally listed and / or endangered species is the Cape Fear Shiner (*Notropis mekistocholas*). The Cape Fear shiner, currently federally listed as "endangered", was documented approximately 3 miles southeast of the site, within the Haw River.

Haw River Species

In addition to the Cape Fear Shiner, other listed species that occur within the Haw River downstream of the site near Bynum, North Carolina include the state-listed Endangered Yellow Lampmussel (*Lampsilis cariosa*), and a state-listed Significantly Rare Septima's Clubtail Dragonfly (*Gomphus septima*). An occurrence of the Buttercup Phacelia (*Phacelia ranunculacea*) is recorded approximately 0.6 miles northwest of the site along the floodplain of the Haw River. A list of the occurrences within the Bynum and Silk Hope USGS quadrangles are listed below:

Bynum USGS

IPAs: Terrell's Creek Galax Bluffs (local)
Duke Forest/Haw River Slopes & Levees
Haw River Aquatic Habitat

Plants:	<i>Phacelia ranunculacea</i> Syn. <i>Phacelia covillei</i> (Buttercup Phacelia) NC-SR-T; FSC
Animals:	<i>Notropis mekistocholas</i> (Cape Fear Shiner) NC-E; US-E (2 dots on map; found 1992, 1993, and 2000) <i>Gomphus septima</i> (Septima's clubtail) NC-SR; US-FSC <i>Lampsilis cariosa</i> (Yellow Lampmussel) NC-E; US-FSC

FIELD SURVEY

Natural communities are recurring assemblages of plants and animals found in particular physical environments. Each type of natural community has a unique set of environmental conditions that support certain species that have adapted to those conditions. By examining natural community types a majority of species can be accurately located by eliminating unsuitable habitat for survey. Species-specific action was focused on rare species that occur in only a fraction of the community type that are their habitat. Known populations of listed species were observed for visual references and intense surveys of suitable habitat were conducted.

RESULTS

Habitat Types

Streams consist of ephemeral channels that begin in the upland areas on property, grading into intermittent and perennial streams flowing into the Haw River (Figures 3, 4, and 5). Wetlands are scattered throughout the floodplain of the Haw River and along the margins of some streams. There is one isolated wetland in an upland area on property.

Piedmont alluvial forests (Schafale and Weakley 1990) occur in the river and stream floodplains throughout the property (Figures 6 and 7). These are seasonally or intermittently flooded forest systems. Field surveys revealed these forests consist of open to dense understory or shrub layer and sparse to dense, diverse herb layer. The canopy consists of a mixture of bottomland and mesophytic trees including *Betula nigra*, *Plantanus occidentalis*, *Fraxinus spp.*, *Liquidambar styraciflua*, *Liriodendron tulipifera*, *Ulmus americana*, *Celtis laevigata*, *Carya ovata*, *Quercus imbricaria*, and *Acer rubrum*. Shrubs include *Lindera benzoin*, *Aesculus sylvatica*, *Leucothoe recurva*, and *Cornus amomum*. The herb layer is generally lush and diverse. Species include: *Claytonia virginica*, *Uvularia sessilifolia*, *Impatiens capensis*, *Nemophylla aphylla*, *Toxicodendron radicans*, *Lamium purpureum*, *Hexastylis spp.*, *Stellaria pubera*, *Galium spp.*, *Arundinaria spp.*, and *Parthenocissus virginiana*. Many areas of these forests on property are heavily invaded by invasive *Lonicera japonica* and *Microstegium vimineum* at the expense of native herbs.

The Piedmont alluvial forest borders the River Channel of the Haw River. Rocky Bar and Shore communities and Sand and Mud Bar communities also occur along the

property's border with the Haw River. These communities are distinguished by the combination of location, substrate, and lack of tree canopy.

The Piedmont alluvial forests grade into Dry Upland Forests at higher elevations of the ridge on property. Field surveys revealed that these forests are dominated by a mixture of oaks, hickories, and other hardwoods. A large portion of the dry upland forests have recently (+/- 10 years) been cut over and harvested for timber.

Protected Species

North Carolina Natural Heritage Program has documented 54 occurrences of State or Federally listed assemblages, communities, and species in Chatham County, NC. In Chatham County there are 14 Invertebrate Animals, 18 Natural Communities, 12 Vascular Plants, and 9 Vertebrate Animals, and 1 Animal Assemblage listed within the database. State and Federally listed species without obvious suitable habitat on property were omitted from the survey. The property boundaries were surveyed for suitable habitat of the following NHP documented species occurring within a 10 mile radius of the property:

Cape Fear Shiner

As mentioned above, the closest documented element occurrence of a federally listed and / or endangered species is of the Cape Fear Shiner (*Notropis mekistocholas*) (NC-E; US-E), which was documented approximately 0.4 miles southwest of the site, within the Haw River. The Cape Fear Shiner inhabits sandy and rocky pools and runs of small to medium rivers. This type of habitat is found along the northeastern border of the property. Habitat for the Cape Fear Shiner does not occur on the property and no individuals of the species were observed. The Cape Fear Shiner was not surveyed for within the Haw River adjacent to the property. Intense surveys within the Haw River are required in order to effectively determine the presence of the species, however the project does not propose impacts to the Haw River.

Septima's Clubtail

A rare invertebrate species, Septima's clubtail (*Gomphus septima*) (NC-SR; US-FSC) was documented as an elemental occurrence approximately 1000 feet southwest of the property, upstream within the Haw River. *Gomphus septima* was documented perching on rocks protruding from the Haw River. Typical habitat for *G. septima* includes rivers with numerous rapids and exposed rocks. This type of habitat is found within the portion of the Haw River adjacent to the property. No suitable habitat occurs on the property and no individuals were observed.

Yellow Lampmussel

The yellow lampmussel (*Lampsilis cariosa*), (NC-E; US-FSC) can be found in gravel bars, margins of the flowing portions of waterbodies and cracks in bedrock in both large rivers and small streams. The yellow lampmussel has been documented within the Haw River Aquatic Habitat. The type of habitat required for this species was found along the border of the property with the Haw River. However, because no impacts are proposed

for this area the Haw River was not surveyed. No suitable habitat occurs within the property boundaries and no individuals were observed.

Bald Eagle

The Bald Eagle (*Haliaeetus leucocephalus*) (NC-T; US-T) lives near large bodies of open water such as lakes, marshes, coasts, and rivers, where there are plenty of fish to eat and tall trees for nesting and roosting. Known populations occur downstream of the site in closer proximity to Lake Jordan. Trees of suitable nesting quality occur along the floodplain of the Haw River on property, however no nest sites were located on property and no individuals were observed.

Red-cockaded Woodpecker

The Red-cockaded Woodpecker (RCW) (*Picoides borealis*) (NC-E; US-E), is a habitat specialist, requiring mature growth of pine forest with a grassland component underneath. For nesting/roosting habitat, open stands of pine containing trees 60 years old and older. Red-cockaded woodpeckers need live, large older pines in which to excavate their cavities. Longleaf pines (*Pinus palustris*) are most commonly used, but other species of southern pine are also acceptable. Dense stands (stands that are primarily hardwoods, or that have a dense hardwood understory) are avoided. Foraging habitat is provided in pine and pine hardwood stands 30 years old or older with foraging preference for pine trees 10 inches or larger in diameter. In good, moderately stocked, pine habitat, sufficient foraging substrate can be provided on 80 to 125 acres. Suitable habitat for the RCW was not found, no nest sites were discovered on property. The Red-cockaded woodpecker has only a historical documentation in Chatham County

Harperella

Harperella (*Ptilimnium nodosum*) (NC-E; US-E) typically occurs in two habitat types: (1) rocky or gravel shoals and margins of clear, swift-flowing stream sections; and (2) edges of intermittent pineland ponds in the coastal plain. This plant tolerates and may actually require a very specific and unusual water regime, which includes moderately intensive spring floods that may reduce or eliminate competing vegetation. Harperella is readily eliminated from its habitat by alterations of the water regime which result from impoundments, water withdrawal, and drainage or deepening of ponds. Other factors such as siltation, pollution, and shoreline development also threaten Harperella populations. Riverine populations flower beginning in late June or July and continue until frost. Although no populations of Harperella were found on property, suitable habitat does exist in areas along the margin of the Haw River, however no impacts are proposed in this area.

Buttercup Phacelia

Phacelia ranunculacea (NC-SR-T; US-FSC) (syn. *Phacelia covillei*) (Figures 8 and 9) is documented as an element occurrence adjacent the property near the bridge over the Haw River on Chicken Bridge Road (SR 1545). Typical habitat for this species occurs within the fine textured soils of Piedmont alluvial forests and floodplains. *Phacelia ranunculacea* is documented only in Alamance, Chatham, Lee, and Harnett counties in

North Carolina. Based on recent site observations, populations of buttercup phacelia may be negatively affected by outcompetition by invasive exotic plant species (e.g. *Microstegium*, etc.) and a recent increased abundance of native wildlife such as white-tailed deer. *Phacelia ranunculacea* co-occurs with *Nemophylla aphylla*, these two species are very similar in overall appearance and phenology, flower and fruit characteristics are used to distinguish them from one another, which emphasizes the importance of conducting the field survey during the flowering and/or fruiting stages of its life cycle. This woodland herb species typically flowers in April to May and was apparent during the time of the survey. *Phacelia ranunculacea* can be differentiated from *P. dubia* in the field. Specifically, the leaves of *P. ranunculacea* are all petioleate and the stamens are included within the corolla tube. In contrast, *P. dubia* cauline leaves are sessile and the stamens are weakly exerted from the corolla tube. The survey of the property and examination of the plant and animal communities revealed the presence of the buttercup phacelia in multiple population clusters on property, all contained within the Haw River floodplain in close proximity to the river. No other populations were observed.

Carolina Ladle Crayfish

The Carolina Ladle Crayfish (*Cambarus davidi*) (NC-SR) is documented from a single individual captured about 6 miles due south in a tributary on Roberson Creek at US 64, Pittsboro (NHP EO ID 3066). *Cambarus davidi* is apparently limited to the upper Neuse and Cape Fear river basins in the eastern Piedmont Plateau of North Carolina (Cooper 2000). Suitable habitat for this species occurs in streams (under larger rocks) and burrows. Suitable habitat for *C. davidi* occurs on property, but no individuals were observed during the stream survey.

Four-toed Salamander

The four-toed salamander (*Hemidactylium scutatum*) (NC-SC) is documented from an egg mass observed under sphagnum in the Lessler Montmorillonite Forest 5.5 miles southeast of the property (NHP EO ID 9662). *Hemidactylium scutatum* is a small, slender salamander is orange to grayish brown above, sometimes with small black and bluish speckles on the sides. The tail is constricted (narrows) at its base, and there are only four toes on each hind foot (most salamanders have five toes). Adults are 2 to 4 inches (5 to 10 cm) long. Suitable habitat is found throughout much of the state, but only where boggy ponds or spring fed creeks are available in or near damp wooded habitat. When not breeding, they take refuge under rotting logs and leaf litter. They eat insects and insect larvae, spiders, worms, and other small invertebrates. Suitable habitat for *H. scutatum* occurs on property, but no individuals were encountered in the field survey.


CONCLUSION / RECOMMENDATIONS


Of the species surveyed for only Buttercup Phacelia, *Phacelia ranunculacea* (NC-SR-T; US-FSC) was found on property. All of the observed individuals are located within the Haw River floodplain. The project's site plan does not propose any grading or other potentially adverse activities in the areas containing the *Phacelia ranunculacea*. It is unlikely that this project will directly have a significant negative effect on this population.

Because the plant is an annual it most likely does not make any sense to relocate the population however, a conservative collection of seeds to be used for further dispersal of the plant, may be appropriate. No other state or federally listed species were found on property.

If you have any questions or need additional services please call us.

Respectively,


James R. Graham Jr.
Biologist / Environmental scientist


David Gainey
Wetland Specialist/ Project
Manager

Attachments:

Figure 1: USGS Vicinity Map



Figure 4. Perennial channel at The Bluffs, Chatham County, NC.

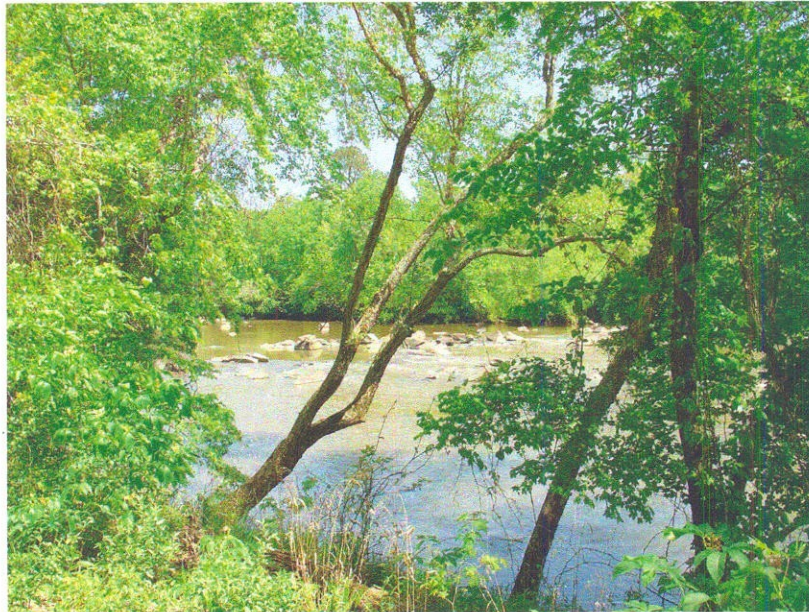


Figure 5. Haw River and edge of Piedmont alluvial forest in Chatham County, North Carolina.



Figure 6. Piedmont alluvial forest along the Haw River floodplain in Chatham County, North Carolina.



Figure 7. *Phacelia ranunculacea* (NC-SR-T; US-FSC) (syn. *Phacelia covillei*) at The Bluffs in Chatham County, NC.



Figure 8. *Phacelia ranunculacea* (NC-SR-T; US-FSC)
(syn. *Phacelia covillei*) at The Bluffs in Chatham County, NC.



Figure 9. Ephemeral channel at The Bluffs, Chatham County, NC.