



ENDANGERED AND THREATENED SPECIES
HABITAT EVALUATION AND RARE PLANT
SPECIES/COMMUNITY ASSESSMENT

NETWAY
(±32 ACRES)

LOUDOUN COUNTY, VIRGINIA

Prepared For:

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I. Executive Summary

On February 10, 2006, Wetland Studies and Solutions, Inc. (WSSI) conducted an Endangered and Threatened Species Habitat Evaluation and Rare Plant Species/Community Assessment within the Netway study area. The results of this qualitative field evaluation are described in detail in the following text. Maps and photographs depicting typical characteristics and natural resources of the study area are included as attachments.

In summary, no endangered or threatened species (ETS), rare plant species, or rare plant communities were observed within the study area, and in WSSI's opinion, there is low probability that ETS or other state-rare plant species and natural communities occur within the study area.

No suitable habitat is present within the study area for the wood turtle (*Glyptemys insculpta*), upland sandpiper (*Bartramia longicauda*) or Henslow's sparrow (*Ammodramus henslowii*). There is a very low probability that any of these species occur in the study area.

Bald eagle (*Haliaeetus leucocephalus*) and peregrine falcon (*Falco peregrinus*, including *F.p. tundrius*) may occur in the site vicinity as a rare migrant or transient. However, no suitable breeding, foraging or roosting habitat for these species is present in the study area.

The Virginia Department of Game and Inland Fisheries' (VDGIF) Fish and Wildlife Information Service (FWIS) database does not list any occurrences of the loggerhead shrike (*Lanius ludovicianus*) within the study area. Although marginal foraging habitat is present in the early successional field habitats within the study area, there is a very low probability that the loggerhead shrike occurs on this site due to its current rarity in northern Virginia.

Although several other ETS and non-listed state-rare species and natural communities have been documented within the vicinity of the project site, as described in this report, no appropriate habitat for these species or natural communities is present within the Netway study area. Thus, there is very low probability that these species or communities are present in the study area.

II. Introduction

WSSI has prepared an Endangered and Threatened Species Habitat Evaluation and Rare Plant Species/Community Assessment for the Netway site. This evaluation was prepared in support of the requirements for the Loudoun County Environmental and Cultural Resources Existing Conditions Plat approval process, as specified in Loudoun County's Revised General Plan and Facilities Standards Manual. For the purpose of this evaluation, "endangered and threatened species" are defined as species that are listed as

endangered or threatened on the state or federal level. This evaluation also assesses the site's potential to support non-listed plant species and natural communities that are considered rare and whose occurrences are tracked by Virginia Department of Conservation and Recreation, Division of Natural Heritage (DCR)¹, as well as ETS. The results of this qualitative evaluation are graphically depicted on the Endangered and Threatened Species Habitat Evaluation and Rare Plant Species/Community Assessment Map (Attachment I) and are described in detail below.

The Netway site is situated on approximately 32 acres, in the northwest quadrant of the intersection of Ashburn Village Boulevard and Waxpool Road in Loudoun County, Virginia. This site is bordered to the south by Waxpool Road, to the east by Ashburn Village Boulevard, to the west by an unnamed tributary to Beaverdam Run that flows into a large stormwater management pond, which borders the northern boundary of the site. Exhibit 1 is a vicinity map that depicts the approximate location of the site.

The study area is gently to moderately sloping and drains toward an unnamed tributary of Beaverdam Run. This topography can be seen in the USGS Sterling, Virginia-Maryland 1994 quadrangle map in Exhibit 2, as well as in the background topography on Attachment I. The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (Exhibit 3) depicts the FEMA-mapped floodplain associated with the unnamed tributary of Beaverdam Run, which flows generally northward along the western boundary of the site. As indicated on the Spring 2004 Color Infrared aerial photograph that serves as the base for Attachment I and the Summer 2004 Natural Color aerial photograph (Exhibit 4), the study area consists of early successional fields and a forested riparian corridor along the western and northern boundaries of the study area. Exhibit 5 includes photographs depicting the conditions of the study area.

III. Methodology

Along with our field work, WSSI consulted a number of references to determine which ETS could potentially occur on, or in the immediate vicinity of, the study area boundary (as provided by the client). These references included the following:

- A February 22, 2006 letter from the DCR regarding recorded occurrences of ETS on the Netway site, according to DCR's Biotics Data System. A copy of this letter is included as Exhibit 6.
- The DCR Natural Heritage Resources Map (Exhibit 7), which depicts the proximity of other documented Natural Heritage Resources (NHRs) (from data provided to WSSI by DCR under a license agreement) to the Netway site;
- A February 22, 2006 letter from Virginia Department of Game & Inland Fisheries (VDGIF) confirming the Fish and Wildlife Information Service database search. A copy of this letter is included as Exhibit 8.

¹ Although these species and communities are not formally listed as Endangered or Threatened, DCR may recommend to Loudoun County that the site be surveyed for these species and communities, and that disturbance of these species and communities be avoided. Loudoun County may in turn require such surveys, and ultimately could require avoidance of any rare species or community detected on the site (Revised General Plan, pages 5-21 to 5-23, 7/23/01; Facilities Standards Manual, Section 7.700 A, page 7-42, 7/01/02).

- A list of NHRs documented within Loudoun County obtained from the Virginia Department of Natural Heritage's web page²;
- A list of state and federal ETS known or expected to occur within a 2-mile radius of the site, obtained from the Virginia Fish and Wildlife Information Service (FWIS), an on-line computer database provided by the Virginia Department of Game and Inland Fisheries (VDGIF)³;
- Applicable species accounts contained in the 1991 publication, *Virginia's Endangered Species: Proceedings of a Symposium*⁴;
- Applicable natural community descriptions contained in *The Natural Communities of Virginia: Classification of Ecological Community Groups, Second Approximation*⁵;
- Unpublished recent refinements to the Basic Oak-Hickory Forest community type description (G. Fleming, unpublished).

From these references, a list of ETS that are known to occur, or that could potentially occur, in the vicinity of the study area was compiled. These species, their regulatory statuses and habitat preferences are listed in Table 1, below.

On February 10, 2006, WSSI environmental scientists Lynn S. Taylor, PWS⁶ and Jean M. Tufts, WPIT⁷ traversed the entire study area. The site and all immediately adjacent areas were inspected for suitable habitat for the rare species determined by the literature and database searches to potentially occur in the site vicinity. While conducting the habitat evaluation, WSSI also searched for individuals of these species in appropriate habitat, and any observations of these species were noted. Many of these species, however, are seasonal in occurrence, have limited flowering times, or exhibit levels of behavior and activity that vary with the seasons, and these species may not be readily observable throughout the year. For these reasons, exhaustive searches for these species were not conducted at the time of this habitat evaluation. More intensive surveys of suitable habitat during the appropriate season would be required to maximize the chance for locating individuals of these species.

WSSI also examined the site for six state-rare plant species (none of which are listed as endangered or threatened) and natural communities that are considered rare by DCR, and for which DCR has recommended surveys and/or expressed concern in northern Virginia. The observers looked fairly carefully for the six diabase-associated species during the habitat evaluation, although (1) an exhaustive search of the site was not conducted and

² <http://www.dcr.state.va.us/dnh/nhrinfo.htm>

³ http://www.dgif.virginia.gov/wildlife/info_map/index.html

⁴ K. Terwilliger, (Coordinator). 1991. *Virginia's Endangered Species: Proceedings of a Symposium*. The McDonald and Woodward Publishing Co., Blacksburg, VA. 672 pages.

⁵ Fleming, G.P., P.P. Coulling, K.D. Patterson, and K.M. McCoy. 2004. The natural communities of Virginia: classification of ecological community groups. Second approximation. Virginia Department of Conservation and Recreation, Division of Natural Heritage, Richmond, VA.

⁶ <http://www.dcr.virginia.gov/dnh/ncintro.htm>

⁷ Professional Wetland Scientist #1491, Society of Wetlands Scientists Certification Program, Inc.

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(2) identification of these plants during the timing of this investigation during the non-growing season is generally not possible. WSSI also evaluated plant communities on the site to determine if any of the communities meet the description of Northern Hardpan Basic Oak-Hickory Forest or Upland Depression Swamp, both of which are of conservation concern to DCR.

Exhibit 8a is a Soils Map and Exhibit 8b is a Diabase Soils Map derived from Loudoun County Digital Data. According to the Loudoun County Soil Survey, the Haymarket-Jackland complex (soil series 67B) soil series occurring on the Netway site is derived from diabase parent material. As shown on Attachment I, the area mapped as having diabase-derived soils in the western portion of the site consists of an early successional field.

IV. Results

The February 22, 2006 letter from DCR (Exhibit 6) indicates that natural heritage resources have been documented in the project area. However, due to the scope of the activity and the distance to the resources, no adverse impacts to these natural heritage resources are anticipated.

Table 1 below summarizes the ETS that are known to occur, or could potentially occur in southeastern Loudoun County based on the literature and database searches. The potential for each of the ETS to occur within the study area is summarized in Table 1 and discussed in more detail in the following text. The state-rare diabase-associated plant species and natural communities are also discussed below.

NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE ON SITE
American Ginseng (<i>Panax quinquefolium</i>)	ST	Rich deciduous forests.	No suitable habitat in the study area based on the lack of deciduous forest; believed absent.
Wood Turtle (<i>Glyptemys insculpta</i>)	ST	Clear streams in forested floodplains and nearby fields, wet meadows, and farmlands.	No suitable wintering habitat is present along the unnamed tributary to Beaverdam Run and its floodplain. This stream along the western boundary of the study area is marginally suitable for terrestrial habitat. However, due to the lack of a known population within the watershed, this species is likely absent.
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	FT, ST	Nests in large trees; forages primarily along rivers and coastlines, and at large lakes.	May occur in the site vicinity as a rare migrant or transient. However, no suitable breeding, foraging or roosting habitat in the study area.
Peregrine Falcon (<i>Falco peregrinus</i> , including <i>F.p. tundrius</i>)	ST	Nests on cliffs, and occasionally on tall bridges and buildings, and forages on birds in a variety of open habitats.	May potentially occur in the site vicinity (rarely) during migration, but not known to nest in Loudoun County. There is no suitable breeding habitat in the study area.

Table 1. Listed Endangered and Threatened Species Summary Table, Netway, Loudoun County, VA.			
NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE ON SITE
Upland Sandpiper (<i>Bartramia longicauda</i>)	ST	Grassy pastures, hayfields, and early-stage old fields with medium to tall herbaceous vegetation.	No suitable habitat is present in the study area. Given the species' current range and extremely low populations in northern Virginia, there is a low probability that this species occurs on the site.
Loggerhead Shrike (<i>Lanius ludovicianus ludovicianus</i> , <i>L.l. migrans</i>)	ST	Open habitats, such as fields, pastures, and early-stage old fields, with scattered trees and shrubs for nesting.	Marginally suitable foraging habitat is present in early successional fields on-site. However, given the species' current range and extremely low populations in northern Virginia, there is a low probability that this species occurs on the site.
Henslow's Sparrow (<i>Ammodramus henslowii</i>)	ST	Moist meadows and abandoned fields in early regeneration stages. Occupied habitat usually has a high percentage of grasses, some standing dead vegetation, a well-developed layer of dead herbaceous plant litter, and few shrubs.	No suitable habitat is present in study area. In addition, given the species' current range and extremely low populations in northern Virginia, there is a low probability that this species occurs on the site.

FT = Federally listed Threatened
SE = State listed Endangered
ST = State listed Threatened

A. American Ginseng

American ginseng (*Panax quinquefolium*), a state-threatened plant species, occurs in deeply shaded rich deciduous forests on north- or east-facing slopes. Rich forests typically have fertile soils with high base cation levels (particularly calcium, magnesium and manganese). The pH range of soils in rich forest communities may range from moderately acidic to moderately alkaline⁸. In northern Virginia, American ginseng is typically associated with large populations of Christmas fern (*Polystichum acrostichoides*), northern maiden hair fern (*Adiantum pedatum*) and false solomon's seal (*Smilacina racemosa*), under a canopy of white oak (*Quercus alba*) and tulip poplar (*Liriodendron tulipifera*). Other associates of American ginseng include black snakeroot (*Cimicifuga racemosa*), bloodroot (*Sanguinaria canadensis*), and wild ginger (*Asarum canadensis*).

⁸ Fleming, G.P., P.P. Coulling, K.D. Patterson, and K.M. McCoy. 2004. The natural communities of Virginia: classification of ecological community groups. Second approximation. Virginia Department of Conservation and Recreation, Division of Natural Heritage, Richmond, VA.
<http://www.dcr.virginia.gov/dnh/ncintro.htm>

These conditions are not found on the Netway site. Deciduous forests are absent in the study area. Only a narrow, young, forested corridor is present along the western and northern property boundary.

B. Wood Turtle

Suitable wintering habitat for the wood turtle (*Glyptemys insculpta*) is not present along the unnamed tributary to Beaverdam Run (Photo #1). From fall into spring, the wood turtle generally occurs along clear, fast-moving streams (often within deciduous forests) where it hibernates in undercut stream banks, under root masses, and in leaf packs. In summer, it is primarily terrestrial, and many individuals over-summer in the floodplains of their wintering streams, though some disperse further overland during the summer. The wood turtle occasionally occurs in forested wetlands and marshy fields along the stream systems it inhabits, and individuals may spend considerable time in upland areas⁹. Although it is terrestrial, it requires moisture year-round. Due to the paucity of undercut banks, deposition of debris and flow obstructions, and reduced flow volume, the intermittent tributary to Beaverdam Run does not provide suitable habitat for the wood turtle (Photo #1). It is very unlikely that a viable population of wood turtle could exist in these intermittent streams due to their disturbed condition. Additional aquatic habitat could be present in the pond that borders the site to the north (Photo #2). However, the lentic water conditions of these habitats are not preferred by the wood turtle.

Northern Virginia is at the southern boundary of the wood turtle North American range. It occurs in nine counties almost exclusively within the upper Potomac and Shenandoah watersheds. It is most common in mountain tributaries of the Shenandoah River from Rockingham County north, becoming less common and more sparsely dispersed downstream along the Potomac River and its tributaries into northern Loudoun and northern and eastern Fairfax Counties. The wood turtle is now considered secure in only Frederick, Shenandoah and Rockingham Counties. East of the Blue Ridge, wood turtle population centers are associated with the Potomac River and its tributaries in northern Fairfax and Loudoun Counties, and in northwestern Fairfax within Sugarland Run, Nichols Run, and Difficult Run. Other reliable Fairfax County wood turtle records are known from Cub Run in the Occoquan River watershed (southwest of Chantilly) and from Fort Belvoir.

There are no state agency records for wood turtle in the vicinity of Ashburn, Virginia. Wood turtles are not documented in Loudoun County from Goose Creek, Broad Run, or Beaverdam Run. The closest known wood turtle population center lies approximately 7.9 miles east of the project area in Fairfax County at Algonkian Regional Park (in the Sugarland Run watershed). A single September 1998 wood turtle record is also attributed to Cabin Branch, a tributary of Broad Run, near Sterling, in Loudoun County.

If present on the site, wood turtles are likely to confine their activities primarily to stream corridors in spring and fall, where they may be able to utilize the riparian habitat present. It is possible that wood turtles could use the streams, wetlands, and upland areas on the site, particularly during dispersal or for foraging within its established home range during the summer. Due to the wandering behavior of the wood turtle during its terrestrial phase, there is always the possibility of stray wood turtles to occur anywhere outside of

⁹ Ernst, C.H. and J. F. McBreen. 1991. Wood Turtle. Pages 455-457 In: Virginia's Endangered Species, op.cit.

an established population center or colony through flood transport, intentional releases, or even old adults from a declining, relict, or biologically extinct population that may live a long time unnoticed by humans. However, the likelihood that wood turtles could form a colony or population under these conditions is very remote.

Given the largely unsuitable habitat conditions on-site and absence of known occurrences in the project vicinity, WSSI concludes there is a very low probability that this species is present on the site.

C. Bald Eagle

No suitable foraging or nesting habitats or any high-quality roost sites for the bald eagle (*Haliaeetus leucocephalus*) are present within the Netway study area, and no bald eagles are currently known to nest in the vicinity of the site. Bald eagles typically nest in large trees along the shores of large rivers and other water bodies or near the edges of large forested areas adjacent to marshes. Bald eagles may nest in other open areas or in logged over areas where scattered seed trees remain. Most bald eagle nests are within 1.6 kilometers (km) of foraging sites, though some nests may be placed as far as 3.2 km from feeding areas¹⁰. Bald eagles forage at Beaverdam Reservoir and other large bodies of water in Loudoun County, and WSSI is aware of two bald eagle nests within Loudoun County (northeast of Lucketts and near Oatlands Plantation) in recent years. Trees sufficiently tall, and with high branches sufficiently large and sturdy to support a bald eagle nest are absent within the study area and thus, it is unlikely that the bald eagle would nest within the project site.

Typical foraging habitat includes coasts, rivers, and large lakes.¹¹ Foraging habitat quality along the site's streams is absent due to the small size and intermittent nature of the streams (Photo #1). Foraging habitat around the pond is less than ideal (Photo #2) due to its small size and lack of perching sites. Although bald eagles may occasionally fly over the study area during migration or on trips between foraging areas, this species is not expected to regularly occur within the Netway study area.

D. Peregrine Falcon

Small numbers of peregrine falcons (*Falco peregrinus*) may be expected to forage on or near the site during migration, although such migrants are expected to occur fairly rarely. Peregrine falcons nest on cliffs and occasionally tall buildings and bridges. No such habitat is present on the site, and this species is not known to nest anywhere in Loudoun County.

E. Upland Sandpiper

Upland sandpipers (*Bartramia longicauda*) nest in extensive grassy fields and pastures with moderately tall herbaceous vegetation but may also forage in fields with shorter

¹⁰ Mitchell A. Byrd. 1991. Bald Eagle. Pages 497-499 in K. Terwilliger (editor). Virginia's Endangered Species. Nongame and Endangered Species Program, Virginia Department of Game and Inland Fisheries. The McDonald and Woodward Publishing Co., Blacksburg, VA. 672 pp.

¹¹ Mitchell A. Byrd. 1991. Bald Eagle. Pages 497-499 in K. Terwilliger (editor). Virginia's Endangered Species. Nongame and Endangered Species Program, Virginia Department of Game and Inland Fisheries. The McDonald and Woodward Publishing Co., Blacksburg, VA. 672 pp.

grassy vegetation. Upland sandpipers prefer habitats that combine areas of short grass for foraging and courtship interspersed with taller grasses for nesting. Nests are most often located in moderately to lightly grazed pastures or grassy fields such as those found at airports. Upland sandpipers may successfully nest in hayfields, providing the fields are not mowed during the breeding season. Breeding territories often contain telephone poles, fence posts or a few scattered small trees or shrubs, which are used as perches.

Suitable nesting habitat for the upland sandpiper is not present within the study area, due to the height and density of the vegetation. The early successional communities on the site (Photos #3 and #4) support too many trees and shrubs to provide suitable foraging or nesting.

Breeding populations of the upland sandpiper have declined precipitously in Virginia, and this species is now a very rare and irregular breeder in the state. Even if suitable nesting habitat is present within the vicinity of the study area, the species is no longer expected to breed regularly even in areas where it historically occurred. Therefore, there is a very low probability that the upland sandpiper occurs on the Netway site.

F. Loggerhead Shrike

Habitats used by loggerhead shrikes (*Lanius ludovicianus*), a state threatened species, are typically characterized by well-spaced, often spiny, shrubs and low trees, usually interspersed with short grasses, forbs and bare ground. Fencerows of shrubs and trees between fields are often used for nesting, perching and roosting. Loggerhead shrikes favor fence lines and utility lines and poles as perches from which to hunt, so they are frequently found along roadways. However, throughout its range, the loggerhead shrike may be found in a wide variety of habitats, including pastures, abandoned orchards, mowed roadsides, cemeteries, golf courses, agricultural fields, riparian areas, and open woodlands. In Virginia, eastern red cedar (*Juniperus virginiana*) is used most frequently for nesting, though the degree of cover provided by the nest site is probably more important than the particular tree or shrub species. In addition, the highest quality breeding habitat consists of areas of short grasses, particularly active pastures, with many perches.

Marginally suitable foraging habitat for the loggerhead shrike is present in the early successional fields (Photos #3-#6) within the study area. However, due to precipitous declines in loggerhead shrike populations throughout much of North America¹², and in Virginia specifically, this species no longer occurs as a regular breeder in the vicinity of the site and very few pairs nest anywhere in Loudoun County. The species is no longer expected to breed regularly even in areas where it historically occurred. Therefore, there is a very low probability that the loggerhead shrike occurs within the study area.

G. Henslow's Sparrow

Suitable nesting and foraging habitat for the Henslow's sparrow (*Ammodramus henslowii*) is not present in the study area. Henslow's sparrows nest in moist meadows and abandoned fields in early successional stages. Occupied habitats usually have a high

¹² Sauer, J. R., J. E. Hines, I. Thomas, J. Fallon and G. Gough. 2000. *The North American Breeding Bird Survey, Results and Analysis 1966-1999*. Version 98.1, USGS Patuxent Wildlife Research Center, Laurel, MD.

percentage of grasses, some standing dead vegetation, a well-developed layer of dead herbaceous plant litter, and few shrubs. The early successional communities in the study area (Photos #3-6) support either too many trees and shrubs or tall, dense herbaceous vegetation to provide suitable foraging or nesting habitats for the Henslow's sparrow.

In Virginia, the Henslow's sparrow was historically much more abundant than it is currently. In 1987, Kain¹³ indicated that declines had occurred statewide since the 1940s and considered the species rare everywhere in the state except Loudoun County, where it was considered locally uncommon. Even in Loudoun County, the species' occurrence has been very local in recent decades; on a county-wide Breeding Bird Foray in 1978, Henslow's sparrows were found at only one location, Dulles International Airport¹⁴. Over the past two decades, a few breeding-season records from Prince William, Fairfax, and Loudoun counties suggest that local breeding by a small numbers of birds may have occurred in these areas¹⁵. However, the Henslow's sparrow is no longer recorded annually in northern Virginia during the breeding season, suggesting that this species is, at best, a very rare and sporadic breeder in this part of the state.

H. State-Rare Diabase-Associated Plants

Although the February 22, 2006 letter from the DCR indicated that no anticipated impacts to NHRs in the vicinity of the site (Exhibit 6), previous Impact Review letters from DCR have mentioned the possible occurrence of six "rare" diabase-associated plant species on sites that have suitable habitat and diabase soils. These six plants include earleaf foxglove (*Agalinis auriculata*), blue-hearts (*Buchnera americana*), downy phlox (*Phlox pilosa*), purple milkweed (*Asclepias purpurascens*), stiff goldenrod (*Oligoneuron rigidum* var. *rigidum*), and marsh hedgenettle (*Stachys pilosa* var. *arenicola*). None of these species are listed as endangered or threatened at either the state or Federal level. Nevertheless, Loudoun County may require surveys for these species, and could require avoidance of any rare species detected on the site, according to the Revised General Plan (pp. 5-32 and 5-33) and Facilities Standards Manual (Section 7.700 A) requirements.

These "rare" plant species of concern to DCR generally occur in grassy, semi-open diabase glades or prairie-like plant communities, usually dominated by the grasses little bluestem (*Schizachyrium scoparium*) and Indian grass (*Sorghastrum nutans*)^{16, 17} and not otherwise heavily dominated by non-native plants.

Because most of the rare diabase-associated species flower in the late spring or later in the summer or early fall, it is unlikely that some of these species would have been detected at the time of this Rare Species Habitat Evaluation, even if they were present.

¹³ Kain, T. 1987. *Virginia's Birdlife: An Annotated Checklist*. Virginia Society of Ornithology, Virginia Avifauna Number 3.

¹⁴ Scott, F. R. 1980. The Loudoun County Foray of June 1978. *Raven* 51:43-52.

¹⁵ Virginia Society of Ornithology. 1989. *Virginia's Breeding Birds: An Atlas Workbook*. William Byrd Press, Richmond, Virginia.

¹⁶ Fleming, G.P., P.P. Coulling, K.D. Patterson, and K.M. McCoy. 2004. The natural communities of Virginia: classification of ecological community groups. Second approximation. Virginia Department of Conservation and Recreation, Division of Natural Heritage, Richmond, VA.
<http://www.dcr.virginia.gov/dnh/ncintro.htm>.

¹⁷ Nancy E. Van Alstine (Field Botanist for DCR's Division of Natural Heritage), personal communication to WSSI senior environmental scientist Steve Rottenborn, Ph.D., September 5, 2001.

Mapped diabase soils are present in the western portion of the study area (Exhibit 8b). However, this portion of the site consists of evergreen shrubs and herbaceous vegetation not typically associated with "rare" diabase species (Photo #7). For this reason, it is WSSI's opinion that high-quality habitat for diabase-associated plants is not present within the Netway study area.

I. Northern Hardpan Basic Oak – Hickory Forest

As defined in *The Natural Communities of Virginia: Classification of Ecological Community Groups, Second Approximation*¹⁸ and in other materials provided to WSSI by Gary Fleming of DCR, Northern Hardpan Basic Oak-Hickory Forests are mixed hardwood forests of submesic to subxeric upland habitats underlain by basic rocks such as diabase, gabbro, amphibolite, and metabasalt. Soils in these communities range from moderately acidic to circumneutral with high levels of base saturation. The largest patches of this vegetation type occur in the Piedmont Triassic basins (the largest of which occurs in northern Virginia), on the more extensive intrusions of mafic (magnesium-rich) and ultramafic formations elsewhere in the Piedmont, and on soils derived from greenstone in the Blue Ridge and foothills. The composition of overstory trees varies regionally, but is generally characterized by mixtures of white oak (*Quercus alba*), northern red oak (*Quercus rubra*), black oak (*Quercus velutina*), chestnut oak (*Quercus montana*), post oak (*Quercus stellata*), pignut hickory (*Carya glabra*), red hickory (*Carya ovalis*), shagbark hickory (*Carya ovata*), mockernut hickory (*Carya alba*), and white ash (*Fraxinus americana*). Hickories are especially abundant and may dominate some stands. Northern Hardpan Basic Oak-Hickory Forests often have more hickories than oak-hickory forests growing on more acidic soils.¹⁹

Eastern redbud (*Cercis canadensis* var. *canadensis*), eastern red cedar (*Juniperus virginiana*), slippery elm (*Ulmus rubra*), hackberry (*Celtis occidentalis*), eastern hophornbeam (*Ostrya virginiana*), and flowering dogwood (*Cornus florida*) are common understory species in Northern Hardpan Basic Oak-Hickory Forests. This community also differs from acidic oak-hickory forests in having few ericaceous shrubs such as blueberries (*Vaccinium* spp.) and huckleberries (*Gaylussacia* spp.). The herbaceous layers of the Northern Hardpan Basic Oak-Hickory Forest are generally species rich, and often contain species that are confined to basic or calcareous soils. Examples of such species include Bosc's panic grass (*Dichanthelium boscii*), whorled milkweed (*Asclepias quadrifolia*), cliff muhly (*Muhlenbergia sobolifera*), elm-leaved goldenrod (*Solidago ulmifolia*), dwarf skullcap (*Scutellaria parvula* var. *leonardii*), bottlebrush grass (*Hystrix patula*), and curly-heads (*Clematis ochroleuca*).²⁰

No oak-hickory forests are located within the Netway study area.

¹⁸ Fleming, G.P., P.P. Coulling, K.D. Patterson, and K.M. McCoy. 2004. The natural communities of Virginia: classification of ecological community groups. Second approximation. Virginia Department of Conservation and Recreation, Division of Natural Heritage, Richmond, VA.
<http://www.dcr.virginia.gov/dnh/ncintro.htm>

¹⁹ Source: Letter report written to Mr. Noel Kaplan, Fairfax County Department of Planning and Zoning, from Gary Fleming, Vegetation Ecologist, Virginia Department of Conservation and recreation, Division of Natural Heritage, summarizing results of site visit to basic oak-hickory forest at "The Hacor Site", dated November 4, 1999

²⁰ Fleming et al. 2001. *Op cit*.

J. Upland Depression Swamp

Upland Depression Swamp communities generally occur on nearly level Piedmont uplands with clay hardpans or shallow bedrock, from northern Virginia to South Carolina. In Virginia, these wetlands are scattered throughout the eastern and central Piedmont. They are most numerous in Mesozoic basins and areas underlain by mafic rock or acidic slates. Habitats include shallow, seasonally flooded upland basins, as well as elongate bottoms along small streams. Because of low relief, headwater drainages in parts of the Piedmont are diffuse, with sluggish, usually intermittent flows and little or no active alluvial deposition. These communities experience shallow seasonal flooding induced by perched water tables during the winter and spring months.

According to DCR, canopy cover within Upland Depression Swamps ranges from complete to very open. In northern Virginia, pin oak (*Quercus palustris*), swamp white oak (*Q. bicolor*), green ash (*Fraxinus pennsylvanica*), red maple (*Acer rubrum*), and to a lesser extent, willow oak (*Q. phellos*) and American elm (*Ulmus americana*) are characteristic. Shrub composition is variable but usually includes climbing common greenbrier (*Smilax rotundifolia*) and blackhaw (*Viburnum prunifolium*). The herb layer is usually open and consists of diverse graminoids. Locally common species include meadow sedge (*Carex granularis*), woolly sedge (*Carex pellita*), squarrose sedge (*Carex squarrosa*), slender spikerush (*Eleocharis tenuis* var. *tenuis*), fowl manna-grass (*Glyceria striata*), Virginia cut-grass (*Leersia virginica*), and green bulrush (*Scirpus atrovirens*). Jack-in-the-pulpit (*Arisaema triphyllum*) and spotted jewelweed (*Impatiens capensis*) are often the most abundant forbs and may dominate some areas. Other minor but characteristic herbs include slender sedge (*Carex gracilescens*), fox sedge (*Carex vulpinoidea*), tapered panic grass (*Dichanthelium acuminatum* var. *lindheimeri*), bluntleaf bedstraw (*Galium obtusum*), narrow-leaved mountain-mint (*Pycnanthemum tenuifolium*), and reddish bulrush (*Scirpus pendulus*). Sphagnum mosses (*Sphagnum* spp.) frequently form large patches on slightly raised hummocks.

Wetlands are found on the site, but are associated with riparian corridors and pond edges, and do not meet DCR's criteria for the Upland Depression Swamp community. Based on our field observations, WSSI concludes that this community is not present within the Netway study area.

V. Limitations

This study is based on examination of the conditions on the study site at the time of our review and does not address conditions in the future. Such conditions change over time. Therefore, our conclusions may vary from future observations. Our ETS Habitat Evaluation and Rare Species/Community Assessment and report have been prepared in accordance with generally accepted guidelines for the conduct of such evaluations. We make no other warranties, either expressed or implied, and our report is not a recommendation to buy, sell or develop the property.

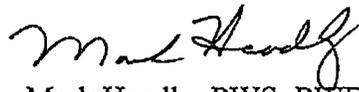
We offer no opinion and do not purport to opine on the possible application of various building codes, zoning ordinances, other land use or platting regulations, environmental or health laws and other similar statutes, laws, ordinances, code and regulations affecting the possible use and occupancy of the Property for the purpose for which it is being used,

except as specifically provided above. The opinions set forth herein are rendered only and exclusively for the benefit of the addressees and no other parties, successors or assigns. The foregoing opinions are based on applicable laws, ordinances, and regulations in effect as of the date hereof and should not be construed to be an opinion as to the matters set out herein should such laws, ordinances or regulations be modified, repealed or amended.

This document is solely for your benefit and is not to be quoted in whole or in part or otherwise referred to in any statement or document (except for purposes of identification) nor is it to be filed with any governmental agency or other person (except with respect to the proposed rezoning), without the prior written consent of this firm, unless required by law. If you have any questions regarding this report, please call our office at (703) 679-5600.

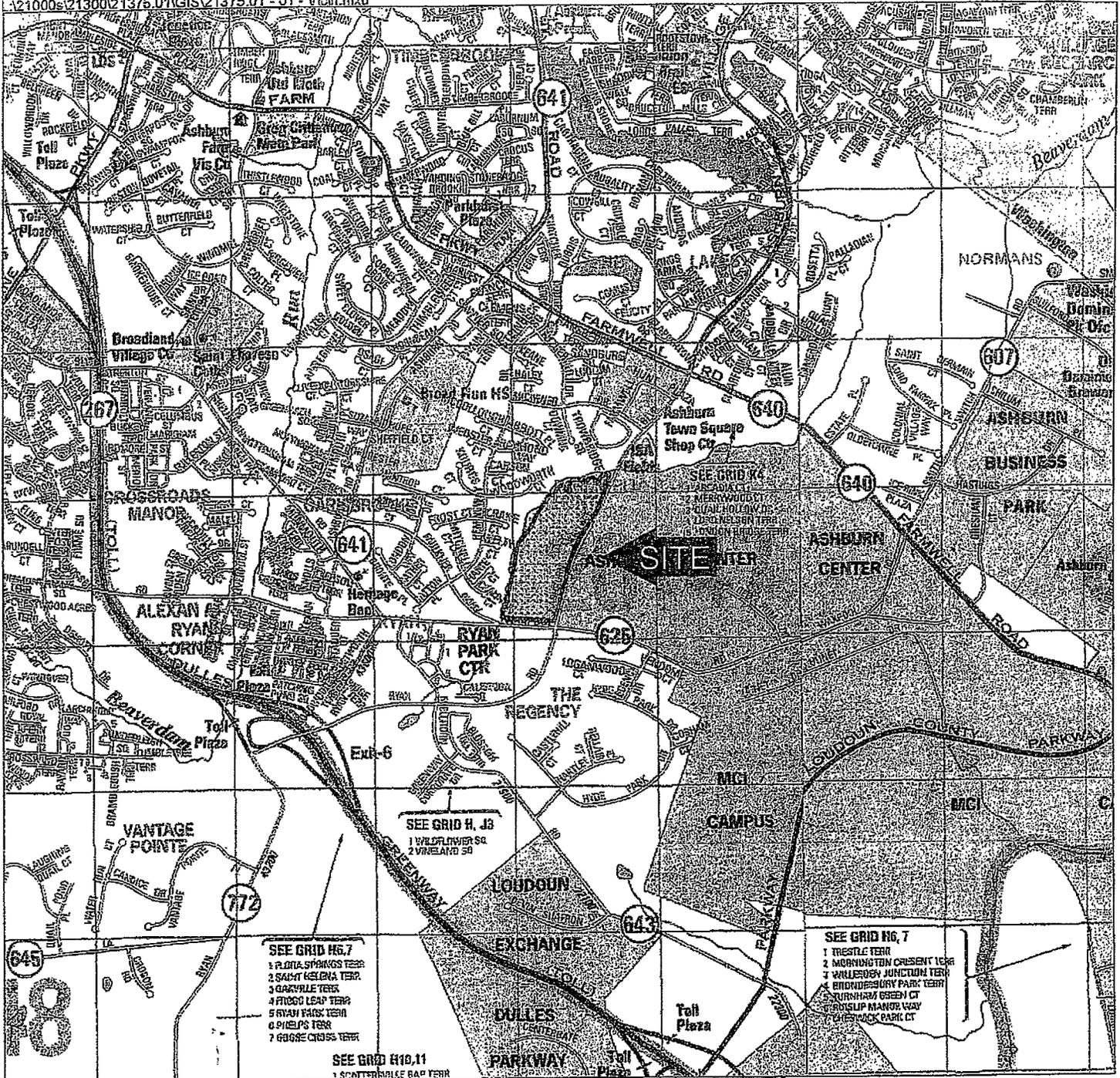
WETLAND STUDIES AND SOLUTIONS, INC.


Lynn S. Taylor, PWS
Environmental Scientist


Mark Headly, PWS, PWD²¹
Vice President

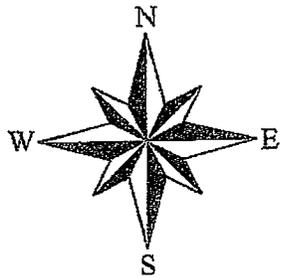
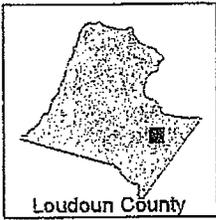
L:\21375.01\ETS\021406ETSreport.doc

²¹ *Professional Wetland Scientist #000462, Society of Wetlands Scientists Certification Program, Inc., Professional Wetland Delineator, Virginia Board for Professional Soil Scientists and Wetland Professionals #3402000031*



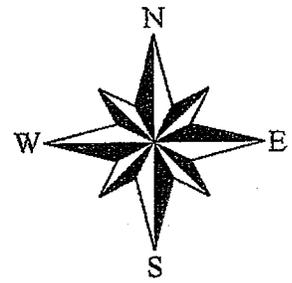
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Vicinity Map
Netway
WSSI #21375.01
Scale: 1" = 2000'





FEMA Flood Insurance Rate Map
Panel 51107C0263D Revised 7/5/2001
Netway
WSSI #21375.01
Scale: 1" = 1000'





Summer 2004 Natural Color Imagery
Netway
WSSI #21375.01
Scale: 1" = 300'

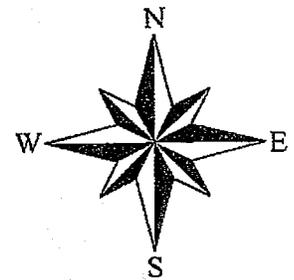


Photo Source: Aerials Express

**EXHIBIT 5
SITE PHOTOGRAPHS
NETWAY
WSSI #21375.01**



1. **Looking upstream at the unnamed tributary to Beaverdam Run that flows north along the western boundary of the study area.**



2. **Looking northeast across the stormwater management pond that borders the northern portion of the study area.**

**EXHIBIT 5
SITE PHOTOGRAPHS
NETWAY
WSSI #21375.01**



3. Looking northeast at the early successional field in the northern portion of the study area.



4. Looking northeast across the early successional field in the eastern portion of the study area.

**EXHIBIT 5
SITE PHOTOGRAPHS
NETWAY
WSSI #21375.01**



5. Looking northeast at the early successional field and evergreen forest community in the northeastern portion of the site.



6. Looking southeast at the early successional field in the southern portion of the site.

**EXHIBIT 5
SITE PHOTOGRAPHS
NETWAY
WSSI #21375.01**



7. **Looking north across the portion of the site that is mapped as having diabase soils.**

L. Preston Bryant, Jr.
Secretary of Natural Resources



Joseph H. Mason
Director

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

217 Governor Street
Richmond, Virginia 23219-2010
(804) 786-7931 FAX (804) 371-2674

February 22, 2006

Jean Tufts
Wetland Studies and Solutions, Inc.
5300 Wellington Branch Dr., Suite 100
Gainesville, VA 20155

Re: #21375.01: Netway Residential Development and Associated Infrastructure

Dear Ms. Tufts:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

Biotics documents the presence of natural heritage resources in the project areas. However, due to the scope of the activity and the distance to the resources, we do not anticipate that this project will adversely impact these natural heritage resources.

In addition, our files do not indicate the presence of any State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is utilized.

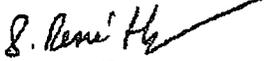
A fee of \$260.00 has been assessed for the service of providing this information. Please find enclosed an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, Department of Conservation and Recreation, 203 Governor Street, Suite 414, Richmond, VA 23219, ATTN: Cashier. Payment is due within thirty days of the invoice date.

The Virginia Department of Game and Inland Fisheries maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters, that may contain information not documented in this letter. Their database may be accessed from www.dgif.virginia.gov/wildlife/info_map/index.html, or contact Shirl Dressler at (804) 367-6913.

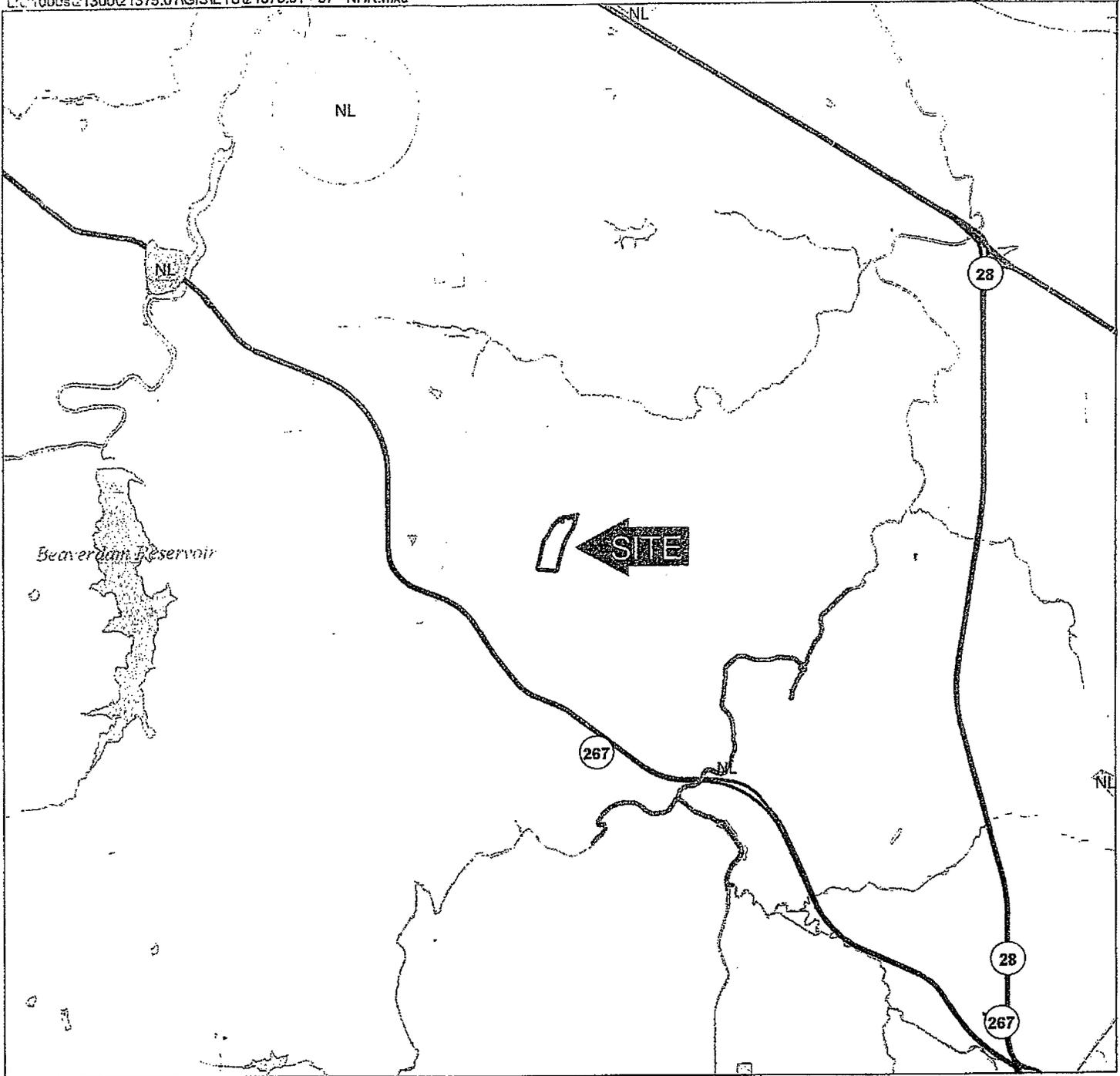
*State Parks • Soil and Water Conservation • Natural Heritage • Outdoor Recreation Planning
Chesapeake Bay Local Assistance • Dam Safety and Floodplain Management • Land Conservation*

Should you have any questions or concerns, feel free to contact me at 804-371-2708. Thank you for the opportunity to comment on this project.

Sincerely,



S. Rene' Hypes
Project Review Coordinator

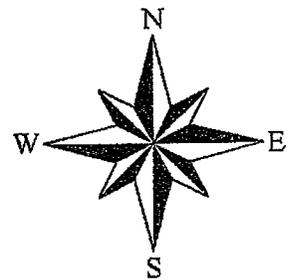


**DCR - Natural Heritage Resources Map
Netway**

WSSI #21375.01

Scale: 1" = 5280'

-  Conservation Site
-  General Location of Natural Heritage Resource
-  Karst Feature
-  Stream Conservation Unit (SCU)
- NL No state/federally listed species present
- SL State listed species present
- FL Federally listed species present





COMMONWEALTH of VIRGINIA

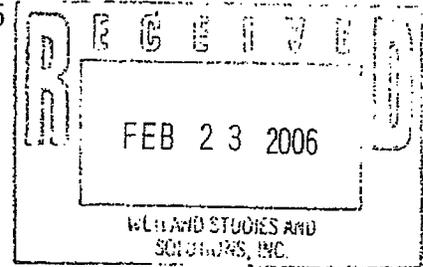
W. Tayloe Murphy, Jr.
Secretary of Natural Resources

Department of Game and Inland Fisheries

Colonel W. Gerald Massengill
Interim Director

February 22, 2006

Jean M Tufts, WPIT
Environmental Scientist
Wetland Studies and Solutions, Inc.
5300 Wellington Branch Drive, Suite 100
Gainesville, Virginia 20155



RE: ESSLOG #22023, Netway (\pm 32 acres), WSSI #21375.01, Loudoun County, VA— subscriber confirmation.

Dear Ms. Tufts:

This letter is in response to your request for information related to the presence of threatened or endangered species in the vicinity of the above referenced project.

I concur with your findings from the Virginia Fish and Wildlife Information Service. Though there are a number of species listed as "likely to occur" on the Project Review Reports, there are currently no known documentations of threatened or endangered species in the project area that require any coordination with the applicant. Though, a block survey of an area encompassing the project site documented the *state special concern* barn owl (*Tyto alba*) during the breeding season. However, the classification of *state special concern* is not a legal designation and does not require further coordination.

Information about fish and wildlife species was generated from our agency's computerized Fish and Wildlife Information System, which describes animals that are known or may occur in a particular geographic area. Field surveys may be necessary to determine the presence or absence of some of these species on or near the proposed area. Also, additional sensitive animal species may be present, but their presence has not been documented in our information system.

Endangered plants and insects are under the jurisdiction of the Virginia Department of Agriculture and Consumer Services, Bureau of Plant Protection. Questions concerning sensitive plant and insect species occurring at the project site should be directed to Keith Tignor at (804) 786-3515.

The Virginia Department of Conservation and Recreation, Natural Heritage Program, maintains a database of natural heritage resources, including the habitat of rare, threatened, or endangered plant and animal species, unique exemplary natural communities, and significant geologic formations, that may contain information not documented in this letter. Their database may be accessed from <http://www.dcr.state.va.us/dnh/nhrinfo.htm>, or by contacting S. Rene Hypes at (804) 371-2708.

Jean M Tufts, WPIT
ESSLog #22023
2/22/2006
Page 2

This letter summarizes the likelihood of the occurrence of endangered or threatened animal species at the project site. If you have additional questions in this regard, please contact me at (804) 367-1185.

Please note that this response does not constitute consultation or management recommendations regarding endangered or threatened wildlife, or any other environmental concerns. These issues are analyzed by our Environmental Services Section, in conjunction with interagency review of applications for state and federal permits. If you have any questions in this regard, please contact the Environmental Services Section at (804) 367-6913.

Please note that the data used to develop this response are continually updated. Therefore, if significant changes are made to your project or if the project has not begun within 6 months of receiving this letter, then the applicant should request a new review of our data.

The Fish and Wildlife Information Service, the system of databases used to provide the information in this letter, can now be accessed via the Internet! The Service currently provides access to current and comprehensive information about all of Virginia's fish and wildlife resources, including those listed as threatened, endangered, or special concern; colonial birds; waterfowl; trout streams; and all wildlife. Users can choose a geographic location and generate a report of species known or likely to occur around that point. From our main web page at www.dgif.virginia.gov, choose the hyperlink to "Virginia Fish and Wildlife Information Service." For more information about the service, please contact Shirl Dressler at (804) 367-6913.

Thank you for your interest in the wildlife resources of Virginia.

Sincerely,



Susan H. Watson
Research Specialist Senior

cc: R.T. Fernald, VDGIF



I
Project Review Report

List of threatened and endangered species and wildlife resources known or likely to occur within a mile radius of (point 804392 4324363) in 107 Loudoun, Va. This report is compiled 2/14/2006,2:46:22 PM

Threatened and Endangered Species Occurrences.

Bova Code	Status*	Common Name	Scientific Name	Confirmed	Database(s)
040093	FTST	Eagle, bald	Haliaeetus leucocephalus	No	BOVA
030062	ST	Turtle, wood	Clemmys (=Glyptemys) insculpta	No	BOVA
040129	ST	Sandpiper, upland	Bartramia longicauda	No	BOVA
040292	FSST	Shrike, migrant loggerhead	Lanius ludovicianus migrans	No	BOVA
040293	ST	Shrike, loggerhead	Lanius ludovicianus	No	BOVA
040379	FSST	Sparrow, Henslows	Ammodramus henslowii	Yes	BBA
010363	FS	Darter, Appalachia	Percina gymnocephala	No	BOVA
040320	FS	Warbler, cerulean	Dendroica cerulea	No	BOVA
060081	FSSS	Floater, green	Lasmigona subviridis	No	BOVA
100166	FS	Skipper, Dotted	Hesperia attalus slossonae	No	BOVA
100248	FS	Fritillary, regal	Speyeria idalia idalia	No	BOVA
040036	SS	Night-heron, yellow-crowned	Nyctanassa violacea violacea	No	BOVA
040094	SS	Harrier, northern	Circus cyaneus	No	BOVA
040112	SS	Moorhen, common	Gallinula chloropus cachinnans	No	BOVA
040189	SS	Tern, Caspian	Sterna caspia	No	BOVA
040204	SS	Owl, barn	Tyto alba pratincola	Yes	BBA
040210	SS	Owl, long-eared	Asio otus	No	BOVA
040213	SS	Owl, northern saw-whet	Aegolius acadicus	No	BOVA
040262	SS	Nuthatch, red-breasted	Sitta canadensis	No	BOVA
040264	SS	Creeper, brown	Certhia americana	No	BOVA
040266	SS	Wren, winter	Troglodytes troglodytes	No	BOVA
040278	SS	Thrush, hermit	Catharus guttatus	No	BOVA

040285	SS	Kinglet, golden-crowned	Regulus satrapa	No	BOVA
040306	SS	Warbler, golden-winged	Vermivora chrysoptera	No	BOVA
040314	SS	Warbler, magnolia	Dendroica magnolia	No	BOVA
040364	SS	Dickcissel	Spiza americana	No	BOVA
040366	SS	Finch, purple	Carpodacus purpureus	No	BOVA
040372	SS	Crossbill, red	Loxia curvirostra	No	BOVA
050045	SS	Otter, northern river	Lontra canadensis lataxina	No	BOVA

*FE=Federal Endangered; FT=Federal Threatened; FC=Federal Candidate; FS=Federal Species of Concern (not a legal status; list maintained by USFWS Virginia Field Office); SE=State Endangered; ST=State Threatened; SS=State Special Concern (not a legal status).

Anadromous Fish Use Reaches Records - No Records found.

Colonial WaterBird (CWB) Survey Records - No Records found.

Threatened and Endangered Species Waters - No Records found.

Cold Water Stream Survey (CWSS) Reaches - No Records found.

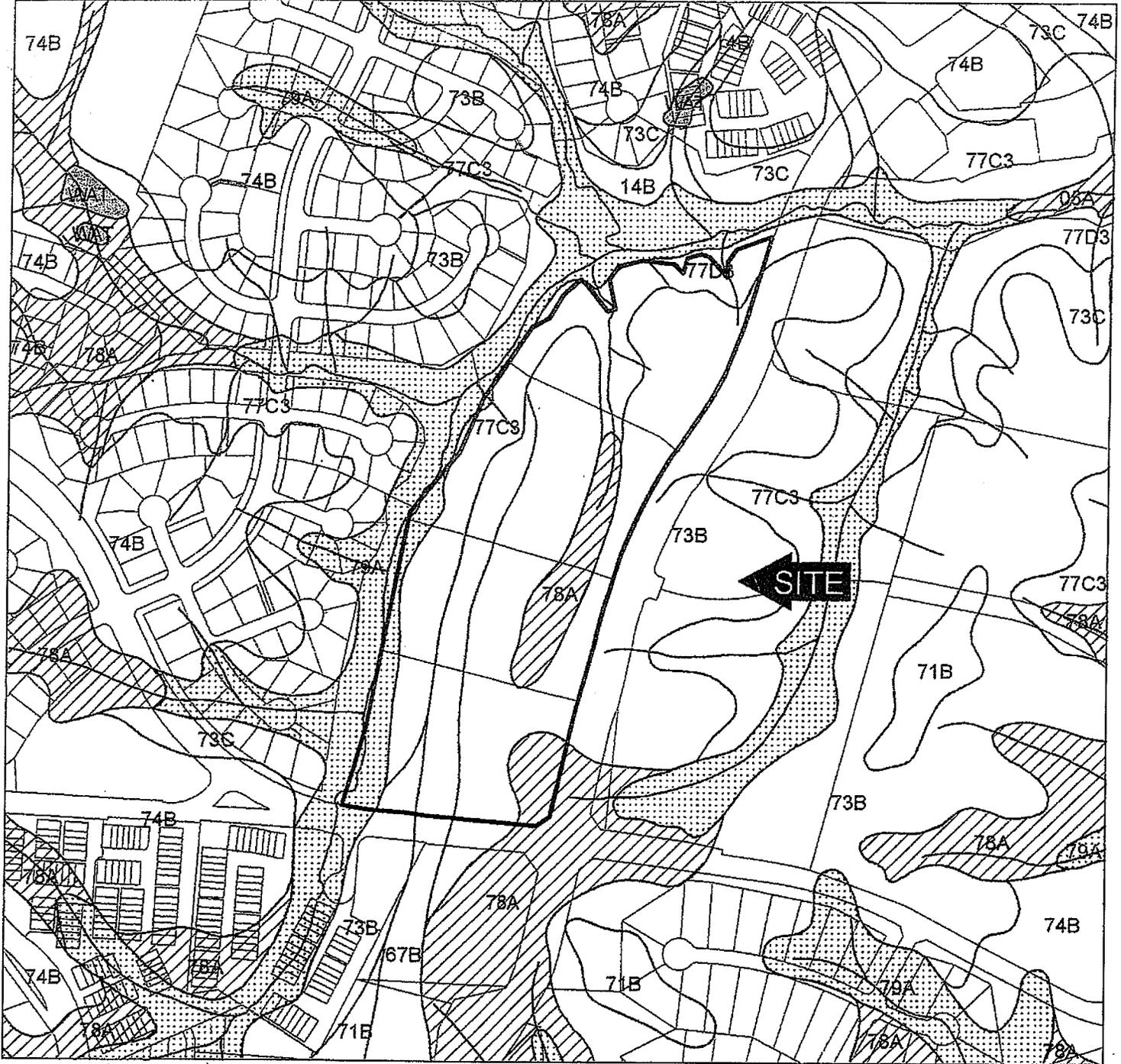
Commonwealth of Virginia Land Holdings

No records found for the search area.

USGS 7.5' Quadrangles: Arcola

- Leesburg
- Herndon
- Sterling

© 1998-2003 Commonwealth of Virginia, Department of Game and Inland Fisheries
 Compiled 2/14/2006 Institution 76484



**Soils Map
Loudoun County Digital Data
Netway**

WSSI #21375.01

Scale: 1" = 500'

-  Hydric Soils
-  Soils with Hydric Inclusions
-  Non-hydric Soils

