



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

NORTHERN VIRGINIA STREAM RESTORATION BANK

THE GLADE – REACH 1 and 1A

FAIRFAX COUNTY, VIRGINIA

Prepared For:

Northern Virginia Stream Restoration, L.C.
c/o Wetland Studies and Solutions, Inc.
5300 Wellington Branch Drive, Suite 100
Gainesville, Virginia 20155

WSSI Project #20030

JANUARY 12, 2009

L:\20000s\20030\Admin\Wildlife Inventory\ETS\Reach 1 and 1A\COVER.DOC

Endangered and Threatened Species Habitat Evaluation and Rare Species / Community Assessment

The Glade – Reach 1 and 1A
Fairfax County, Virginia
WSSI #20030

January 12, 2009

Executive Summary

On December 8 and December 15, 2008, Wetland Studies and Solutions, Inc. (WSSI) conducted an Endangered and Threatened Species Habitat Evaluation and Rare Species/Community Assessment within The Glade-Reach 1 and 1A study area. This study was conducted to determine if federally or state-listed endangered or threatened species (ETS), state-rare species, or rare plant communities are present or likely to occur within the study area.

In summary, no ETS, rare species, or rare plant communities were observed within the study area, and due to the lack of potential habitat, it is WSSI's opinion that there is low probability that these resources occur within the study area.

Introduction

WSSI has prepared an Endangered and Threatened Species Habitat Evaluation and Rare Species/Community Assessment for The Glade – Reach 1 and 1A. This evaluation assesses the potential for federally listed and state-listed ETS, non-listed state-rare species and rare natural communities whose occurrences are tracked by the Virginia Department of Conservation and Recreation, Division of Natural Heritage (DCR)¹ to occur within the study area, which includes The Glade – Reach 1 and 1A study area. The results of this qualitative evaluation are graphically depicted on the Endangered and Threatened Species Habitat Evaluation and Rare Species/Community Assessment Map (Attachment I) and are described in detail below.

The study area includes approximately 1,940 linear feet of stream along Reach 1 and 1A of The Glade, as well as the adjacent riparian corridor. The study area is located between the Hunters Woods Pool and Colt's Neck Road. Exhibit 1 is a vicinity map that depicts the approximate location of the study area and its general location.

The study area is covered mostly by mixed-deciduous forest, as depicted in the February 23, 2004 Natural Color Imagery aerial photograph from Air Survey (Exhibit 2), as well as in the background topography on Attachment I. The unnamed tributaries of The Glade flow in a southeasterly direction through the central portion of the study area. Both an asphalt recreational trail and an unpaved horse trail, which cross The Glade multiple times, are located parallel to the stream. The study area is gently to moderately sloping. The topography can be seen in the excerpt from the Vienna, Virginia-Maryland 1994 USGS topographical quadrangle map included as Exhibit 3. The Federal

¹ Although these species and communities are not formally listed as endangered or threatened at either the federal or state-level, DCR considers these resources to be of conservation concern and tracks their status and location in Virginia.

Emergency Management Agency (FEMA) Flood Insurance Rate Map (Exhibit 4) depicts the FEMA-mapped floodplain associated with The Glade. The Fairfax County floodplain is depicted on Attachment I.

The boundaries of jurisdictional wetlands and other waters of the U.S. located within the study area were delineated and survey-located by WSSI as described in The Glade delineation report, dated October 9, 2008.

Exhibit 5 includes ground-level photographs depicting existing conditions on the site. The approximate locations of photographs are depicted on Attachment I.

Methodology

Prior to conducting field work, WSSI consulted a number of references to determine what ETS could potentially occur on, or in the immediate vicinity of, the study area. These references included the following:

- A letter, dated September 30, 2008, from the DCR regarding recorded occurrences of the wood turtle (*Glyptemys insculpta*) downstream of The Glade study area, 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 documented Natural Heritage Resources (NHRs) to the study area (from data provided to WSSI by DCR under a license agreement);
- A Search Report containing 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) on-line computer database provided by the Virginia Department of Game and Inland Fisheries (VDGIF). This report indicates that nine state-listed special concern species², including the winter wren (*Troglodytes troglodytes*), northern harrier (*Circus cyaneus*), barn owl (*Tyto alba*), brown creeper (*Certhia americana*), purple finch (*Carpodacus purpureus*), golden-crowned kinglet (*Regulus satrapa*), red-breasted nuthatch (*Sitta canadensis*), hermit thrush (*Catharus guttatus*), and yellow-bellied sapsucker (*Sphyrapicus varius*) have been documented within a 2-mile radius of the site. A copy of the Search Report is included as Exhibit 8; and;
- A letter, dated November 6, 2008, from the VDGIF regarding recorded concurrences of the wood turtle downstream of the study area. A copy of this letter is included as Exhibit 9.

From these references, WSSI compiled a list of ETS that are known to occur, or that could potentially occur, in the vicinity of the study area. These species, their regulatory statuses and habitat preferences are listed in Table 1 of this report and include the wood turtle, winter wren, northern harrier, barn owl, brown creeper, purple finch, golden-crowned kinglet, red-breasted nuthatch, hermit thrush, and yellow-bellied sapsucker. The references listed above did not indicate the presence or likelihood of

² The special concern status is not an official legal status, and therefore the designated birds under this status are not formally protected by state or federal endangered species laws.

occurrence of other ETS, state-rare species, or rare plant communities that occur in Northern Virginia such as the small whorled pogonia (*Isotria medeoloides*), American ginseng (*Panax quinquefolium*), bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus*, including *F.p. tundrius*), upland sandpiper (*Bartramia longicauda*), loggerhead shrike (*Lanius ludovicianus ludovicianus*, *L.l. migrans*), and Henslow's Sparrow (*Ammodramus henslowii*), state-rare diabase plants, upland depression swamps, and northern hardpan basic oak-hickory forests. Thus, these species are not addressed in detail in this report; furthermore, WSSI's field studies confirmed the lack of habitat for or presence of any of these other species.

On December 8 and December 15, 2008, WSSI biologist Roy Van Houten, AWB, CWCP³, WSSI environmental scientists Sean D. Sipple, AE, PWS, PWD, CT⁴ and Eric Calladine⁵, WPIT⁶, Nicki Foremsky⁷, Claudia Thompson-Deahl⁸, and ecologist William S. Sipple⁹ traversed the entire study area. The study area was inspected for suitable habitat for the ETS determined by the literature and database searches to potentially occur in the vicinity of the study area. While conducting the habitat evaluation, WSSI also searched for individuals of these species in appropriate habitat, if present, and any observations of these species were noted. Many of these species, however, are seasonal in occurrence or exhibit levels of behavior and activity that vary with the seasons, and therefore, these species may not be readily observable throughout the year. For these reasons, all species considered by this report may not have been present at the time of this investigation, and 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.

Results

Table 1 below summarizes the ETS that are known to occur or could potentially occur within the study area based on the literature and database searches. The potential for each of the ETS to occur within the study area is discussed in more detail in the following text.

³ Associate Wildlife Biologist through The Wildlife Society; Certified Wildlife Control Professional through National Wildlife Control Operators Association.

⁴ Associate Ecologist, Ecological Society of America; VA Certified Professional Wetland Delineator #3402-000096; North American Benthological Society (NABS) Certified Level 1 Taxonomist: All Phyla; NABS Certified Level 2 Taxonomist: EPT Taxa (Ephemeroptera, Plecoptera, Trichoptera); Professional Wetland Scientist #1730, Society of Wetlands Scientists Certification Program, Inc.

⁵ International Society of Arboriculture (ISA) Certified Arborist(MA-4872A)

⁶ Wetland Professional In-Training, Society of Wetlands Scientists Certification Program, Inc.

⁷ Reston Association- Watershed Manager

⁸ Reston Association-Environmental Resource Manager

⁹ Ecologist and principal of William S. Sipple Wetland and Environmental Training and Consulting.

Table 1. Listed Endangered, Threatened, and Rare Species Summary Table, The Glade - Reach 1 and 1A, Fairfax County, VA.

NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE ON SITE
Wood Turtle (<i>Glyptemys insculpta</i>)	ST	Clear perennial streams in forested floodplains and nearby fields, wet meadows, and farmlands.	Habitat is not present within the study area due to the lack of perennial streams for over-wintering.
Winter Wren (<i>Troglodytes troglodytes</i>)	SS	In Virginia, nests primarily in conifer and mixed hardwood-conifer forests at higher elevations in the mountains.	Not known to nest in Fairfax County and Fairfax County is outside the normal breeding distribution of this species. Uncommon transient and winter visitor throughout Virginia. May occur as a migrant or winter visitor in forested habitats within the study area.
Northern Harrier (<i>Circus cyaneus</i>)	SS	Nests in a variety of open habitats, including marshy meadows; wet, lightly grazed pastures, old fields, freshwater and brackish marshes, and upland grasslands. No breeding records are known from Virginia away from the Eastern Shore or marshes of the Chesapeake Bay. Forages in large open fields, oldfield communities and marshes.	Fairfax County is outside the normal breeding distribution of the species. May occur in the study area during migration or winter, but not expected to occur regularly.
Barn Owl (<i>Tyto alba</i>)	SS	Nests in silos, barns, and abandoned buildings, or large natural tree cavities. Forages in open fields and grasslands.	Suitable habitat not present within study area. Presumed absent.
Brown Creeper (<i>Certhia americana</i>)	SS	In Virginia, nests primarily in old-growth coniferous and mixed hardwood coniferous forests in the extreme north and at higher elevations of the mountains. Recorded breeding at Huntley Meadows, Fairfax County from 1984 to the early 1990s, but no breeding season records there since the 1990s.	Only known to nest in Fairfax County at Huntley Meadows Park from 1984 to 1990, but no breeding season records have been there since the early 1990s. Uncommon to common transient and winter visitor throughout Virginia. May occur as a migrant or winter visitor in forested habitats within the study area.
Purple Finch (<i>Carpodacus purpureus</i>)	SS	In Virginia, known to nest only in high elevation coniferous and mixed forests in northwest Highland County and the Mount Rogers area. In non-breeding season uses a wide range of forested habitats as well as orchards. Common visitor to suburban bird feeders.	Fairfax County is outside the known breeding distribution of this species in Virginia. Common transient and winter resident in Virginia Piedmont and Coastal Plain. May occur within study area in appropriate season.

Table 1. Listed Endangered, Threatened, and Rare Species Summary Table, The Glade - Reach 1 and 1A, Fairfax County, VA.

NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE ON SITE
Golden-crowned Kinglet (<i>Regulus satrapa</i>)	SS	In Virginia, known to nest only in coniferous woodlands dominated by spruce, fir and hemlock at high elevations in the mountains.	Fairfax County is outside the normal breeding distribution of this species. Common transient and winter visitor throughout Virginia. May only occur as a migrant or winter visitor in forested habitats within the study area.
Red-breasted Nuthatch (<i>Sitta canadensis</i>)	SS	In Virginia, nests in coniferous and mixed hardwood and coniferous forests in high elevation in the mountains.	Not known to nest in Fairfax County. Uncommon and irruptive transient and winter visitor in the Piedmont and Coastal Plain of Virginia. May occur irregularly as a migrant or winter visitor within the study area.
Hermit Thrush (<i>Catharus guttatus</i>)	SS	In Virginia, known to nest only in coniferous woodlands at high elevations in the mountains.	Fairfax County is outside the normal breeding distribution of this species. Common transient and winter visitor throughout Virginia. May only occur as a migrant or winter visitor in forested habitats within the study area.
Yellow-bellied Sapsucker (<i>Sphyrapicus varius</i>)	SS	In Virginia, known to nest only in mixed hardwood and coniferous forests in high elevations in the mountains.	Fairfax County is outside the normal breeding distribution of this species. Common transient and winter visitor throughout Virginia. May only occur as a migrant or winter visitor in forested habitats within the study area.

ST = State-listed Threatened
 SS = State-listed Special Concern

Wood Turtle

Northern Virginia is at the southern boundary of the wood turtle's range, and according to Tom Akre (2002), the wood turtle occurs in Virginia almost exclusively in the upper Potomac and Shenandoah River watersheds, where it was known historically from nine counties. 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 into northeastern Loudoun and northern/eastern Fairfax Counties. Due to its rarity, the wood turtle is listed as Threatened by the State of Virginia. The wood turtle is now considered secure from near-term local extirpation in only three counties in Virginia, all located west of the Blue Ridge Mountains (i.e., Frederick, Shenandoah and Rockingham).

Habitat Requirements

Wood turtle habitat requirements include a relatively undisturbed floodplain, a free-flowing perennial stream, and adequate nesting and basking areas. Long-term persistence of wood turtles is dependent upon a clean aquatic environment, forested floodplains and associated habitats, and protection from humans (Mitchell et al., 2004). Aquatic habitats are required for mating, feeding, and hibernation, while terrestrial habitats are used for egg laying, thermoregulation, and foraging. The wood turtle is also known to occupy forested wetlands and marshy fields along the stream systems it inhabits, and some individuals may spend considerable time in upland areas, including

successional fields, pastures, and agricultural areas (Ernst et al., 1994). However, these habitats must be moist enough not to create desiccation or dehydration stress (Mitchell, 1994).

From fall into spring, the wood turtle generally occurs along clear, moderate to fast-moving perennial streams (often within deciduous forests) where it hibernates in undercut stream banks, in burrows, under root masses, in thick leaf packs, occasionally in debris piles near water, or lying on the bottom. Aquatic habitat with pockets of deeper, but flowing water with overhanging banks and snags suitable for overwintering are features necessary for the wood turtle to survive the aquatic winter-phase of its life cycle. Wood turtles do not generally occur in lentic water bodies, and in winter, are almost exclusively found in and around clear, well oxygenated streams with short or no freeze-over periods (Akre, 2002).

In Virginia, wood turtles emerge from their overwintering stream hibernacula in March, when water temperatures reach 15°C (59°F). Upon emergence, they begin to forage, mate, and search for nesting sites. Their nesting season is from late May through early July. Wood turtles strongly prefer to nest in areas that are generally very sandy, bare, well exposed to solar radiation, and close to water, but elevated (Akre, 2002). The turtles remain active from April to October, even in cold weather, and return to streams to hibernate during late fall when stream temperature remains below 6°C (43°F). In summer, it is primarily terrestrial, and many individuals oversummer in the floodplains of their wintering streams, though some disperse much further overland and sometimes wander across different watersheds.

Potential Occurrence within the Study Area

Due to the lack of a free-flowing perennial stream, suitable aquatic wood turtle habitat is not present within the study area. The streams within the study area (i.e., unnamed tributaries to The Glade within Reaches 1 and 1A) are non-perennial and thus do not contain enough water during the over-wintering period to provide winter-phase habitat for wood turtles (Photos #1-3). Therefore, a systematic search for the presence of wood turtles was not conducted during this study. Although wood turtles may potentially use the study area for foraging, the probability that the study area supports a population of wood turtles is low; and for the present, there is no conclusive evidence of wood turtles within the watershed of the streams in the study area.

Winter Wren

Historically, in Virginia and throughout much of the eastern U.S., the winter wren (*Troglodytes troglodytes*) has been a declining breeding species. However current broadscale population trends indicate stable or increasing populations (Hejl, et al. 2002a). Although widespread throughout its winter range, the winter wren is a rare resident during the breeding season in the coastal plain and piedmont regions of Virginia. Typically known to breed at high elevations in the mountain and valley regions of the state, the winter wren is rare to uncommon at elevations below 3,500 feet in elevation (VDGIF, 2008a). The winter wren was listed as state species of special concern in Virginia in January 1992 (VDGIF, 2008a). The special concern status is not an official legal status, and thus, the winter wren is not formally protected by state or federal endangered species laws.

Habitat Requirements

Throughout its range, the winter wren may be found in a wide variety of habitats, including deciduous riparian hardwood forests and mixed-conifer hardwood forests. In Virginia, however, high-quality breeding habitat is restricted to high elevations of the mountain and valley regions, particularly in spruce-fir forests near streams with dense undergrowth of thickets, uprooted trees, piles of slash, and dead logs from which they use as singing perches. Wintering habitats include a wider variety of habitat than that of nesting habitat. During winter, the winter wren has been found to inhabit younger-aged coniferous forests that include areas with clearcuts, tangles, fallen logs, uprooted trees, or along stream banks that provide cover (VDGIF, 2008a).

Potential Occurrence within the Study Area

Based on the DGIF computerized Fish and Wildlife Information System (FWIS), the last confirmed nesting site (Collection #63959) was recorded during 1998 in the southeastern portion of Fairfax County near Fort Washington National Park (VDGIF, 2008a). Given that Fairfax County is typically outside of the normal breeding distribution for this species and that the study area lacks high-quality habitat, it is WSSI's opinion that this species is not likely to nest within the study area. Although, given its wide distribution throughout its wintering range, it is probable that the winter wren is likely to occur as a migrant or winter visitor in forested habitats within the study area. Due to the lack of high-quality nesting habitat, it is WSSI's opinion that the stream restoration efforts within the study area will have no direct effect on this species during the breeding season or wintering months as these birds are uncommon to the coastal plain and piedmont regions of Virginia.

Northern Harrier

Throughout its range, the northern harrier (*Circus cyaneus*) is widespread, but uncommon to rare, local resident along the eastern shore of Virginia. Because only 5 to 10 pairs are believed to breed annually within the state, the northern harrier is thought by many to be considered a state endangered species. Although rare, the northern harrier has been listed as a state species of special concern since 1992 (VDGIF, 2008b). Despite its designation as a state species of special concern, the northern harrier is protected under the Migratory Bird Treaty Act and is therefore formally protected by state or federal endangered species laws.

Habitat Requirements

Northern harrier habitat can be generally characterized as open wetlands, both freshwater and brackish marshes, including wet meadows, lightly grazed pastures, old fields, and riparian woodlands. Successful breeding populations in the northeastern portion of the U.S. are associated with large tracts of undisturbed wetland habitats with thick vegetative growth (Macwhirter and Bildstein, 1996). In Virginia, the northern harrier inhabits non-forested land for nesting and foraging including marshes, prairies and grasslands (VDGIFb, 2008).

Potential Occurrence within the Study Area

Breeding populations are rare in Virginia, and uncommon in preferred habitats along the eastern shore of the state. Based on the DGIF computerized Fish and Wildlife Information System (FWIS), the database indicates that no known nesting northern harriers have been documented within 15 miles of the study area. Due to the lack of habitat (*i.e.*, the entire study area is forested), it is WSSI's opinion that this species is not expected to nest within the study area. Furthermore, it is WSSI's opinion that the stream restoration efforts within the study area will have no direct effect on this species during breeding season or wintering months as these birds are uncommon to rare in forested habitats and are typically restricted to large, undisturbed, open wetland habitats along the eastern shore of the state (VSO, 2007).

Barn Owl

The barn owl (*Tyto alba*) is an uncommon to rare resident throughout Virginia. Between 1976 and 1985, there were 111 known barn owl nest sites in Virginia, but in 1986, only 43 of those nest sites supported active breeding pairs. For this reason, it was recommended to list the barn owl as threatened in Virginia (Watts and Whalen, 2004). An artificial nest box program in the state resulted in an increase in known barn owl nest sites, and in January 1993, this species was designated a state special concern species (VDGIF, 2008c). The special concern status is not an official legal status, and thus, the barn owl is not formally protected by state or federal endangered species laws.

Habitat Requirements

The barn owl nests in areas of open country where it hunts for rodents and other small prey in densely grassed fields such as coastal marshes, lightly grazed pastures, and hay fields. Cultivated fields, with the exception of small grain fields, do not provide suitable foraging habitat due to low prey populations and dense protective cover. Barn owls require secure nest sites in close proximity to extensive complexes of such open habitats. Studies in coastal Virginia and New Jersey have shown that barn owls occupy home ranges encompassing several hundred hectares that contain nearly 250 acres (100 hectares) or grassland foraging habitat (Watts and Whalen, 2004). A 1986 study of nesting barn owls in the Richmond area determined that the home range of barn owls may vary from 1,025 to 2,100 acres (414 to 851 hectares) (VDGIF, 2007). The species is often closely associated with human activities, often nesting in barns and silos, wooden water tanks, duck blinds, abandoned buildings, nest boxes, church steeples, and other artificial sites. Barn owls may nest in densely populated metropolitan areas (*e.g.*, they have been known to nest in the New York Yankees baseball stadium), providing they support sufficient populations of prey species such as rats and mice (Marti et al., 2005).

Potential Occurrence within the Study Area

Based on the DGIF computerized Fish and Wildlife Information System (FWIS), the database indicates that no known nesting barn owls have been documented within 10 miles of the study area. Due to minimal secure nesting sites and the lack of extensive open foraging habitat, it is WSSI's opinion that barn owls are not likely to regularly occur within the study area. In addition, barn owls are uncommon to rare permanent residents in the coastal plain and piedmont regions (VSO, 2007). Therefore, it is WSSI's opinion that the stream restoration efforts within the study area will have no direct effect on this

species due to the lack of nesting habitat within the study area and that no known nesting barn owls have been documented in the study area. In addition, WSSI staff found no potential nesting cavities large enough for barn owls within or adjacent to the project area during the wildlife habitat search. The wildlife habitat search is described in WSSI's January 12, 2009 report entitled "Wildlife Habitat Feature Inventory, The Glade, Reach 1 and 1A".

Brown Creeper

Although the brown creeper (*Certhia americana*) is widespread throughout its range, it is one of the most inconspicuous songbirds and is the only treecreeper in North America (Hejl et al. 2002b). Records indicate that brown creepers are rare within their breeding range of Virginia, and are common to uncommon transients and winter residents in coastal plain and piedmont areas. The brown creeper was listed as a state species of special concern on January 1, 1993 (VDGIF, 2008d). The special concern status is not an official legal status, and thus, the brown creeper is not formally protected by state or federal endangered species laws.

Habitat Requirements

Brown creeper nesting habitat can be generally characterized as coniferous forests and mixed-coniferous forests that include numerous large snags and live trees with high canopy cover. Wintering habitat is similar to that of breeding, with the exception that brown creepers are found in a variety of wooded habitats such as forested suburban and urban areas and orchards (Hejl et al., 2002b). Typically associated with higher elevations in the mountain and valley region of Virginia, the brown creeper has been known to nest in middle-aged to mature dense coniferous forests, deciduous or mixed woodlands, and wooded swamps with standing dead trees with loose bark (VDGIFd, 2008). Wintering habitat in Virginia includes pole-sized stands of loblolly and short-leaf pines (*Pinus taeda* and *Pinus echinata*, respectively).

Potential Occurrence within the Study Area

Based on the DGIF fish and wildlife database search, the brown creeper was known to nest at Huntley Meadows Park, Fairfax County from 1984 to the early 1990s, but no breeding season records have been there since the early 1990s (VSO, 2007). Due to the lack of high-quality habitat (*i.e.*, coniferous forests) within the study area, and based on the absence of any recent records from DGIF fish and wildlife database search, it is WSSI's opinion that the brown creeper is unlikely to nest within the study area. Given its wide distribution throughout its winter range, it is probable that the brown creeper may occur as a migrant or winter visitor in forested habitats within the study area.

It is WSSI's opinion that the stream restoration efforts within the study area will have no direct effect on this species during the breeding season due to the lack of nesting habitat. The brown creeper is an uncommon transient and winter resident of coastal plain and piedmont regions; however, in the event that this species overwinters in the study area, it is WSSI's opinion that these birds will be capable of seeking refuge and foraging habitat within adjacent forested areas.

Purple Finch

The purple finch (*Carpodacus purpureus*) is widespread, but a rare to uncommon summer resident within its known nesting locations of higher elevations, atop Mt. Rogers, and in Highland County, Virginia. Within its wintering range the purple finch is a common transient of the piedmont and an uncommon transient in the coastal plain regions of the state. Due to limited habitat and a low number of breeding birds in the state, this species was given the designation as a state species of special concern (VDGIF, 2008e).

Habitat Requirements

Typical nesting habitat for the purple finch can be generally characterized as moist or cool coniferous forests. They are frequently found breeding in mixed coniferous-deciduous forests, along edges of bogs, and within riparian corridors (Wootton, 1996). Within Virginia, this species has been found to breed along edges of coniferous forests, in ornamental conifers of residential areas, and in parks and open mixed woodlands (VDGIF, 2008e). Wintering habitats are likely dictated by the availability of food, where in Virginia purple finches prefer large tracts of deciduous woodlands with trees that provide winter fruits and buds (VDGIF, 2008e).

Potential Occurrence within the Study Area

Based on the DGIF computerized Fish and Wildlife Information System (FWIS), the database indicates that no known nesting purple finches have been documented within 10 miles of the study area. In addition, Fairfax County is outside the known breeding distribution of this species. Given its wide distribution throughout its wintering range, it is probable that the purple finch may occur as a migrant or winter visitor in forested habitats within the study area.

Due to the absence of high-quality nesting habitat within the study area, and based on the absence of any recent records from DGIF, it is WSSI's opinion that the purple finch is unlikely to nest within the study area. Furthermore, it is WSSI's opinion that the stream restoration efforts within the study area will have no direct effect on this species during the breeding season due to the lack of nesting habitat. Although bird count data indicate a decline in winter abundance of purple finches in Virginia (VSO, 2007), in the event that purple finches overwinter in the study area, it is WSSI's opinion that these birds will be capable of seeking refuge and foraging habitat within adjacent forested areas.

Golden-Crowned Kinglet

The golden-crowned kinglet (*Regulus satrapa*) thought to formerly breed almost exclusively in remote boreal forests of North America, is expanding its breeding range southward. (Ingold and Galati, 1997). Widespread throughout its wintering range, the golden-crowned kinglet is a common transient and winter resident in the coastal plain and piedmont regions of Virginia. Although an uncommon winter resident in the mountain and valley regions, the golden-crowned kinglet is considered a locally common summer resident and is known to breed in coniferous areas of Mount Rogers area and in Highland County, Virginia (VDGIF, 2008f). Golden-crowned kinglets are thought to be locally

uncommon to rare elsewhere during the summer, mostly in high elevation areas, but are increasing and expanding their breeding range in Virginia (VSO, 2007). Due to limited habitat and its preferred breeding range in restricted and localized regions of high elevation, the golden-crowned kinglet was given the designation as a state species of special concern. The special concern status is not an official legal status, and thus, the golden-crowned kinglet is not formally protected by state or federal endangered species laws.

Habitat Requirements

Within their breeding range, the golden-crowned kinglet generally inhabits remote boreal and subalpine spruce-fir forests of high elevation areas. With an expanding breeding range, golden-crowned kinglets have been found to inhabit coniferous-deciduous forests, pine plantations, and deciduous forests. Both closed and open canopy forests as well as edges of clearings promote favorable conditions for nesting. In Virginia, the golden-crowned kinglet is only known to nest in coniferous woodlands dominated by spruce, fir and hemlock at high elevations in the mountains (VDGIF, 2008f). In West Virginia, nests were found in mixed spruce-northern hardwood forests and pine plantations (Ingold and Galati, 1997).

Potential Occurrence within the Study Area

Based on the DGIF fish and wildlife database search, a single nesting record (Collection #65581) was confirmed greater than 5 miles from the study area in Fairfax County, within the Accotink Creek watershed, in 1999 (VDGIF, 2008f). No recent breeding season records have been documented there since 1999. Due to the lack of high-quality habitat within the study area, and given Fairfax County is outside the normal breeding distribution of this species and the absence of any recent records indicated from DGIF, it is WSSI's opinion that the golden-crowned kinglet is unlikely to nest within the study area. Given its wide distribution throughout its wintering range, it is probable that the golden-crowned kinglet may occur as a migrant or winter visitor in forested habitats within the study area. It is WSSI's opinion that the stream restoration efforts within the study area will have no direct effect on this species during the breeding season as the study area lacks the preferred breeding habitat. Furthermore, in the event that golden-crowned kinglets overwinter in the study area, it is WSSI's opinion that these birds will be capable of seeking refuge and foraging habitat within adjacent forested areas.

Red-Breasted Nuthatch

The red-breasted nuthatch (*Sitta canadensis*) is widespread and considered a locally common transient and winter visitor within its known nesting locations of high elevation areas. With the exception of Mount Rogers area and in Highland County, Virginia, the red-breasted nuthatch is locally uncommon to rare, summer resident, of high elevation areas within the state. Within its wintering range the red-breasted nuthatch is uncommon and highly irregular transient of the coastal plain and uncommon to locally common and highly irregular transient in the piedmont regions of the state (VSO, 2007). Due to limited habitat and its breeding range restricted to local high elevation areas of the mountains and valley region of Virginia, this species was given the designation as a state species of special concern on January 1, 1992 (VDGIF, 2008g).

Habitat Requirements

Typical nesting habitat for the red-breasted nuthatch includes mature and diverse coniferous forests dominated by spruce, fir, pine, hemlock, larch (*Larix* spp.), and cedar (*Thuja* spp.). Breeding populations within the eastern portion of the continent are more tolerant of mixed-forest habitats and occur over wide ranges of forest types, including pure coniferous stands to mixed stands that are significantly deciduous (Ghalambor and Martin, 1999). Preferred nesting habitats are in high elevation areas of Virginia, and include coniferous forests and occasionally mixed-woodlands. Although uncommon to locally common winter resident within the piedmont region and highly irregular transient, the red-breasted nuthatch favors mature conifers found in residential areas (VDGIF, 2008g).

Potential Occurrence within the Study Area

Based on the DGIF computerized Fish and Wildlife Information System (FWIS), the database indicates that no known nesting red-breasted nuthatches have been confirmed within 15 miles of the study area. In addition, Fairfax County is outside the known breeding distribution of this species. Records indicate that nesting habitat is localized in high elevation areas near Mount Rogers area and in Highland County, Virginia (VDGIF, 2008g). Given its wide distribution throughout its wintering range, it is probable that the red-breasted nuthatch may occur as a migrant or winter visitor in forested habitats within the study area.

Due to the absence of high-quality nesting habitat within the study area, and based on the absence of any recent records from DGIF, it is WSSI's opinion that the red-breasted nuthatch is unlikely to nest within the study area. Furthermore, it is WSSI's opinion that the stream restoration efforts within the study area will have no direct effect on this species during the breeding season or wintering months as these birds are highly irregular transients and winter residents to piedmont and coastal plain regions of Virginia.

Hermit Thrush

Of the thrushes, the hermit thrush (*Catharus guttatus*) is one of the most widely distributed forest-nesting migratory birds in North America (Jones and Donovan, 1996). In the coastal plains and piedmont regions of Virginia, it is a widespread, but rare, resident during the breeding season. Considered a common transient and winter resident statewide, the thrush is listed as a state species of special concern (VDGIF, 2008h). The special concern status is not an official legal status, and thus, the hermit thrush is not formally protected by state or federal endangered species laws.

Habitat Requirements

Described as an interior forest bird that favors internal forest edges, its typical foraging habitat includes small clearings within wooded areas created by disturbances such as logging, and along margins of ponds and meadows within forested areas (Jones and Donovan, 1996). The hermit thrush frequently inhabits woodland edges, brushy pastures and cool north facing slopes in mountainous regions. In Virginia, the highest quality breeding habitat occurs in conifer and mixed hardwood-conifer forests in the mountain and valley regions at higher elevations greater than 4,000 feet (VDGIF, 2008h). The hermit thrush prefers to winter in wooded swamps, where it can seek shelter in areas with

thick hummocks and well stocked feeding areas consisting of shrubs and vines with persistent fruit (VDGIF, 2008h).

Potential Occurrence within the Study Area

Although widespread and considered a casual breeder in the coastal plain and piedmont regions of Virginia, the study area lacks optimal nesting habitat associated with this species. Based on the DGIF computerized Fish and Wildlife Information System (FWIS), the last known nesting record was (Collection #65587) within the Difficult Run watershed, Fairfax County from 1999, but no breeding season records have been there since that time. Due to the lack of high-quality habitat within the study area, and based on the absence of any recent records from DGIF fish and wildlife database search, it is WSSI's opinion that the hermit thrush is unlikely to nest within the study area.

Additionally, it is WSSI's opinion that the stream restoration efforts within the study area will have no direct effect on this species during the breeding season. Given its wide distribution throughout its wintering range, it is probable that the hermit thrush may occur as a migrant or winter visitor in forested habitats within the study area. In the event that this species overwinters in the study area, it is WSSI's opinion that these birds will be capable of seeking refuge and foraging habitat within adjacent forested areas.

Yellow-Bellied Sapsucker

The yellow-bellied sapsucker (*Sphyrapicus varius*) is widespread, common to uncommon transient and winter resident statewide and considered a rare local summer resident in high elevations above 3,500 feet (VDGIF, 2008i). Known breeding areas are all from the mountain and valley region of Virginia and include Amherst, Augusta, Bath, Giles, Grayson, Highland, and Madison counties (VSO, 2007). The yellow-bellied sapsucker is listed as a state species of special concern, however the special concern status is not an official legal status, and thus, the yellow-bellied sapsucker is not formally protected by state or federal endangered species laws.

Habitat Requirements

Yellow-bellied sapsucker habitat can be generally characterized by mixed hardwood-coniferous forests, especially near water and small clearings, and occasionally orchards and woodlots (VDGIF, 2008i). Typically yellow-bellied sapsuckers favor early-successional tree species, including birch (*Betula* sp.), aspen (*Populus* sp.), and maple (*Acer* sp.) for both nesting and feeding (Walters et al. 2002). In Virginia, the yellow-bellied sapsucker is known to winter in floodplain forests and mature conifer stands, and commonly along forest edges and semi-open habitats. It is uncommon to find them in deep, dense wooded areas during the winter (VDGIF, 2008i).

Potential Occurrence within the Study Area

Although widespread throughout its winter distribution, the yellow-bellied sapsucker is only known to breed in Virginia within high elevations of the mountain and valley region. Based on the DGIF computerized Fish and Wildlife Information System (FWIS), the last known nesting record was (Collection #50216) near Fountainhead Regional Park, Fairfax County from 1996, but no breeding season records have been there since that time. Due to the lack of high-quality habitat within the study area, and

based on the absence of any recent records from DGIF fish and wildlife database search, it is WSSI's opinion that the yellow-bellied sapsucker is unlikely to nest within the study area.

Additionally, it is WSSI's opinion that the stream restoration efforts within the study area will have no direct effect on this species during the breeding season. Given its wide distribution throughout its wintering range, it is probable that the yellow-bellied sapsucker may occur as a migrant or winter visitor in along forest edges habitats within the study area. In the event that this species overwinters in the study area, it is WSSI's opinion that these birds will be capable of seeking refuge and foraging habitat within adjacent forested areas.

Conclusions

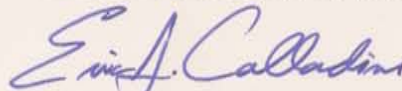
In summary, no ETS, rare species, or rare plant communities were observed within the study area, and due to the lack of potential habitat, it is WSSI's opinion that there is low probability that these resources occur within the study area.

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, that other wildlife species will not be observed in the project site during future Endangered and Threatened Species Habitat Evaluation and Rare Species / Community Assessment wildlife surveys.

If you have any questions regarding this report, please contact me at (703) 679-5681 or ecalladine@wetlandstudies.com.

WETLAND STUDIES AND SOLUTIONS, INC.



Eric J. Calladine, WPIT
Environmental Scientist



Roy Van Houten, AWB, CWCP
Wildlife Biologist

REFERENCES

- Akre, T. 2002. Growth, Maturity, and Reproduction of the Wood Turtle, *Clemmys insculpta* (LeConte, 1930) in Virginia. Unpublished Ph.D. Dissertation, George Mason University, Fairfax, VA.
- Ernst, C.H. and J. F. McBreen. 1991. Wood Turtle. *in* K. Terwilliger Virginia's Endangered Species. Pp. 455-457
- Ghalambor, Cameron K. and Thomas E. Martin. 1999. Red-breasted Nuthatch (*Sitta canadensis*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/459>
- Hejl, Sallie J., Jennifer A. Holmes and Donald E. Kroodsmas. 2002. Winter Wren (*Troglodytes troglodytes*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/623>
- Hejl, S. J., K. R. Newlon, M. E. Mcfadzen, J. S. Young and C. K. Ghalambor. 2002. Brown Creeper (*Certhia americana*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/669>
- Ingold, James L. and Robert Galati. 1997. Golden-crowned Kinglet (*Regulus satrapa*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/301>
- Jones, Peter W. and Therese M. Donovan. 1996. Hermit Thrush (*Catharus guttatus*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/261>
- Macwhirter, R. Bruce and Keith L. Bildstein. 1996. Northern Harrier (*Circus cyaneus*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/210>
- Marti, C.D., A.F. Poole and L.R. Bevier (2005). Barn Owl (*Tyto alba*). The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Laboratory of Ornithology; Retrieved from The Birds of North America Online database: http://bna.birds.cornell.edu/BNA/account?Barn_Owl/.
- Mitchell, J. C. 1994. The Reptiles of Virginia. Smithsonian Institution Press, Washington, DC and London.

- Mitchell, J., C. Ernst, J. McBreen, M. Pinder, S. Roble, and D. Schwab. 2004. *Clemmys insculpta*, Wood Turtle, Recovery Plan (Draft). Virginia Department of Game and Inland Fisheries, Wildlife Diversity Division, Richmond, Virginia. 32 pages.
- Virginia Department of Game and Inland Fisheries. Biota of Virginia (BOVA) Booklet Chapters for wren, winter (040266) (*Troglodytes troglodytes*). Retrieved December 11, 2008, from the Virginia Fish and Wildlife Information Service Web site: http://www.dgif.state.va.us/wildlife/info_map/index.html
- Virginia Department of Game and Inland Fisheries. Biota of Virginia (BOVA) Booklet Chapters for harrier, northern (040094) (*Circus cyaneus*). December 11, 2008, from the Virginia Fish and Wildlife Information Service Web site: http://www.dgif.state.va.us/wildlife/info_map/index.html
- Virginia Department of Game and Inland Fisheries. Biota of Virginia (BOVA) Booklet Chapters for owl, barn (040204) (*Tyto alba*). December 11, 2008, from the Virginia Fish and Wildlife Information Service Web site: http://www.dgif.state.va.us/wildlife/info_map/index.html
- Virginia Department of Game and Inland Fisheries. Biota of Virginia (BOVA) Booklet Chapters for creeper, brown (040264) (*Certhia americana*). December 11, 2008, from the Virginia Fish and Wildlife Information Service Web site: http://www.dgif.state.va.us/wildlife/info_map/index.html
- Virginia Department of Game and Inland Fisheries. Biota of Virginia (BOVA) Booklet Chapters for finch, purple (040366) (*Carpodacus purpureus*). December 12, 2008, from the Virginia Fish and Wildlife Information Service Web site: http://www.dgif.state.va.us/wildlife/info_map/index.html
- Virginia Department of Game and Inland Fisheries. Biota of Virginia (BOVA) Booklet Chapters for kinglet, golden-crowned (040285) (*Regulus satrapa*). December 11, 2008, from the Virginia Fish and Wildlife Information Service Web site: http://www.dgif.state.va.us/wildlife/info_map/index.html
- Virginia Department of Game and Inland Fisheries. Biota of Virginia (BOVA) Booklet Chapters for nuthatch, red-breasted (040262) (*Sitta canadensis*). December 12, 2008, from the Virginia Fish and Wildlife Information Service Web site: http://www.dgif.state.va.us/wildlife/info_map/index.html
- Virginia Department of Game and Inland Fisheries. Biota of Virginia (BOVA) Booklet Chapters for thrush, hermit (040278) (*Catharus guttatus*). December 11, 2008, from the Virginia Fish and Wildlife Information Service Web site: http://www.dgif.state.va.us/wildlife/info_map/index.html
- Virginia Department of Game and Inland Fisheries. Biota of Virginia (BOVA) Booklet Chapters for sapsucker, yellow-bellied (040225) (*Sphyrapicus varius*). December 13, 2008, from the Virginia Fish and Wildlife Information Service Web site: http://www.dgif.state.va.us/wildlife/info_map/index.html

- Virginia Society of Ornithology. 2007. Virginia's Birdlife, An Annotated Checklist. Fourth Edition. Stephen C. Rottenborn and Edward S. Brinkley, Editors.
- Virginia Department of Game and Inland Fisheries. Biota of Virginia (BOVA) Booklet Chapters for Owl, barn (040204) *Tyto alba*. Retrieved April 10, 2007, from the Virginia Fish and Wildlife Information Service Web site:
http://www.dgif.state.va.us/wildlife/info_map/index.html
- Walters, Eric L., Edward H. Miller and Peter E. Lowther. 2002. Yellow-bellied Sapsucker (*Sphyrapicus varius*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/662>
- Watts, B.D. and D.M. Whalen. 2004. An Evaluation of Nest Box Use by Common Barn Owls in Virginia. *The Raven*. Vol. 72(2), pp 71-77.
- Wootton, J. Timothy. 1996. Purple Finch (*Carpodacus purpureus*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online:
<http://bna.birds.cornell.edu/bna/species/208>



Copyright ADC The Map People
Permitted Use Number 20711184

Vicinity Map
Glade Reach 1 and 1A
WSSI #20030
Scale: 1" = 2000'

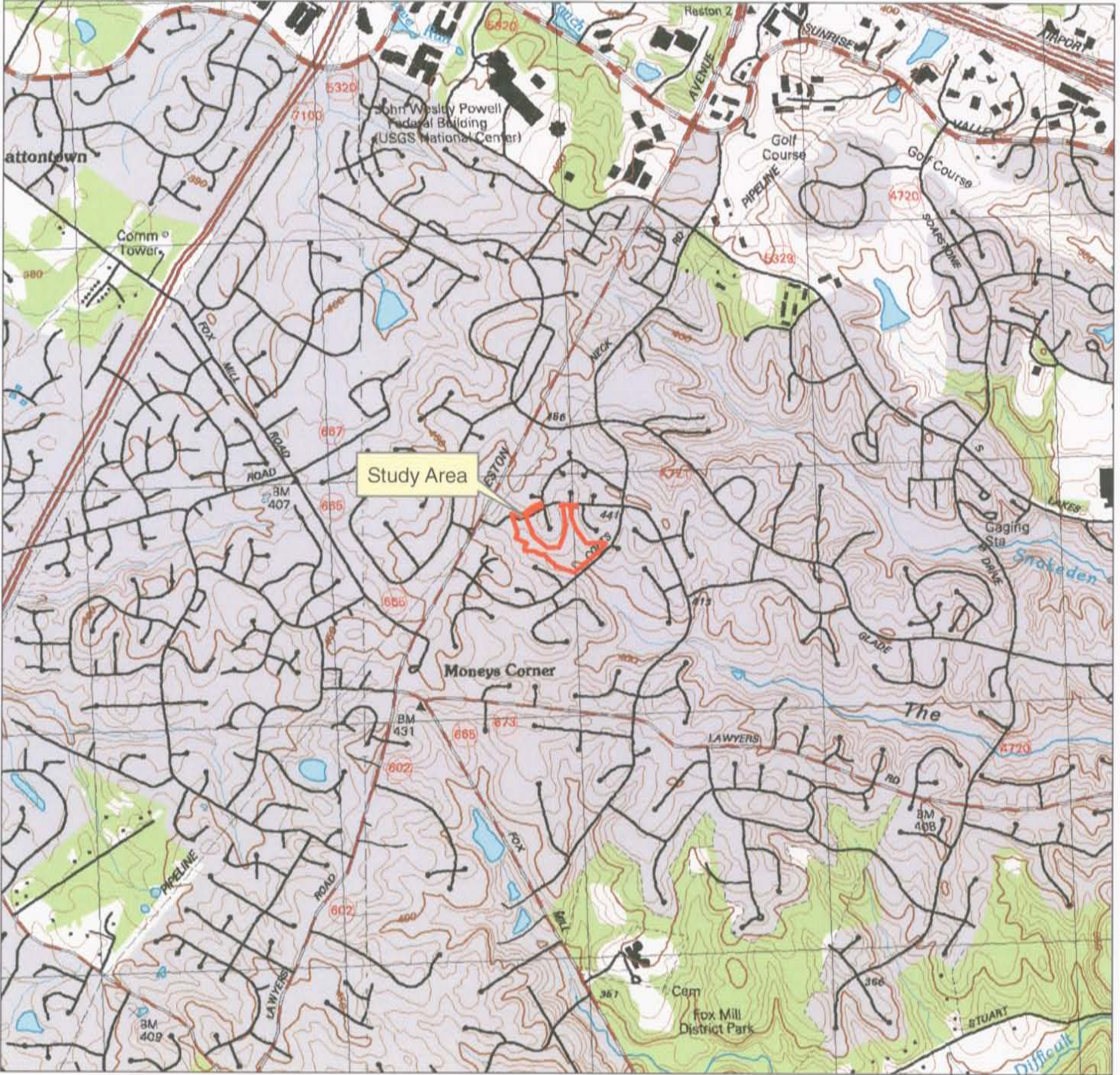




February 2004 Natural Color Imagery
Glade Reach 1 and 1A
WSSI #20030
Scale: 1" = 200'



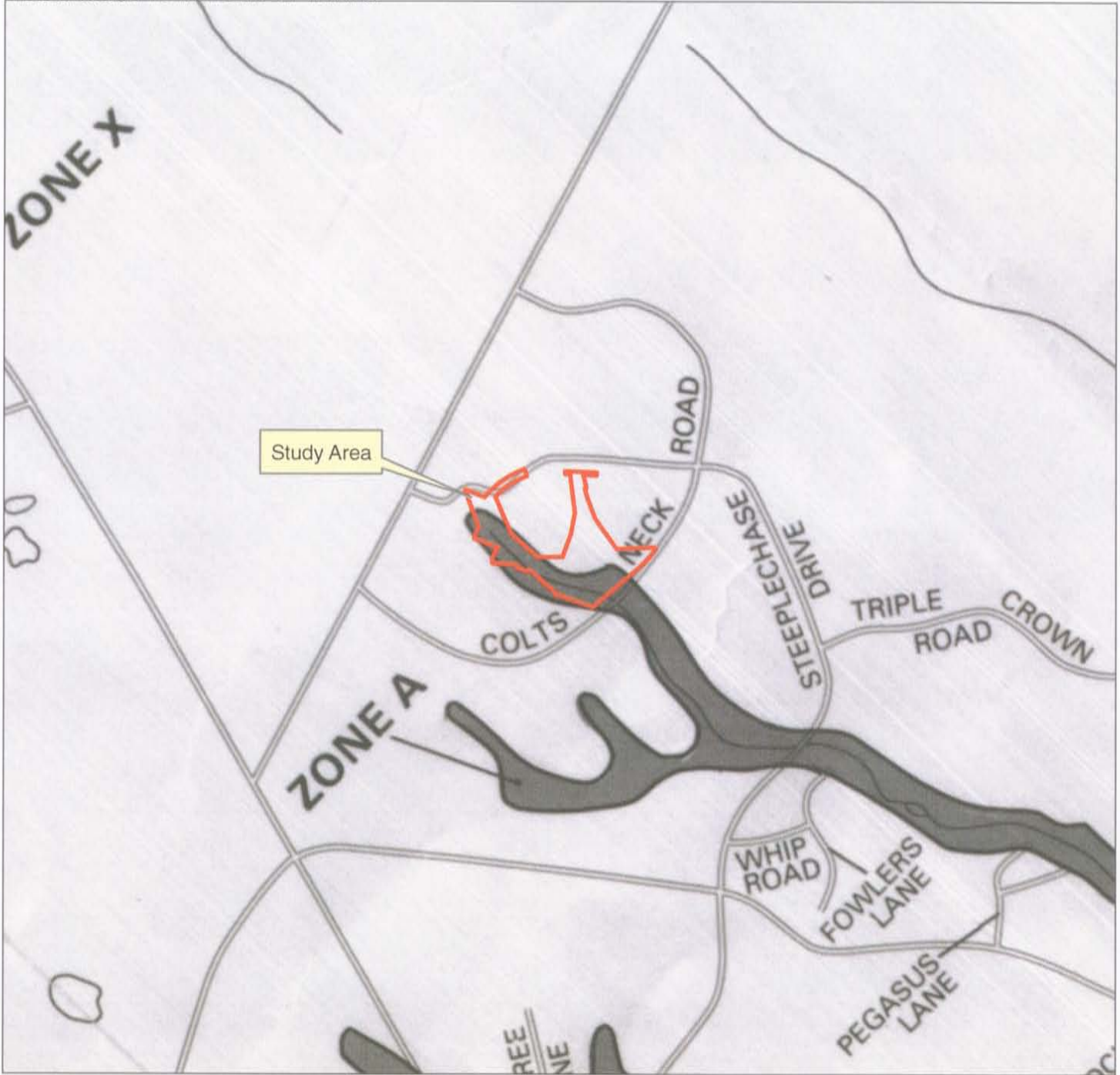
Photo Source: Air Survey



**USGS Quad Map
Vienna, VA-MD 1994
Glade Reach 1 and 1A
WSSI #20030
Scale: 1" = 2000'**



Latitude: 38°55'49" N
Longitude: 77°21'56" W
Hydrologic Unit Code (HUC): 020700081004
Stream Class: III
Name of Watershed: The Glade



FEMA Flood Insurance Rate Map
Panel 515525 0050D Revised 3/5/1990
Glade Reach 1 and 1A
WSSI #20030
Scale: 1" = 1000'



**EXHIBIT 5
SITE PHOTOGRAPHS
THE GLADE – REACH 1 AND 1A
WSSI #20030**



1. Looking downstream at an unnamed non-perennial tributary to The Glade on the eastern portion of the study area. This reach did not contain flowing water during the time of our December 15, 2008 fieldwork. Due to the lack of flowing water during the over-wintering period for the wood turtle (*Glyptemys insculpta*), this stream does not provide suitable winter-phase habitat to support a population of wood turtles.



2. Looking upstream at an unnamed non-perennial tributary to The Glade on the eastern portion of the study area. This reach did not contain flowing water during the time of our December 15, 2008 fieldwork. Due to the lack of flowing water during the over-wintering period for the wood turtle (*Glyptemys insculpta*), this stream does not provide suitable winter-phase habitat to support a population of wood turtles.

**EXHIBIT 5
SITE PHOTOGRAPHS
THE GLADE – REACH 1 AND 1A
WSSI #20030**



2. Looking upstream at an unnamed non-perennial tributary to The Glade on the eastern portion of the study area. This reach did not contain flowing water during the time of our December 15, 2008 fieldwork. Due to the lack of flowing water during the over-wintering period for the wood turtle (*Glyptemys insculpta*), this stream does not provide suitable winter-phase habitat to support a population of wood turtles.



4. Looking upstream at the mixed-deciduous hardwood forest associated within the Reach 1 and 1A study area of The Glade. Areas such as this lack the preferred nesting habitat for all bird species listed in [Table 1](#). Given the widespread distribution of these species, it is probable that many of the birds may occur as migrants or winter visitors in forested habitats. In the event that these birds overwinter in the study area, it is WSSI's opinion that they will be capable of seeking refuge and foraging habitat within adjacent forested areas. This photo was taken during the June 2008 field work.

**EXHIBIT 5
SITE PHOTOGRAPHS
THE GLADE – REACH 1 AND 1A
WSSI #20030**



5. Looking northwest at a representative of the early successional shrub habitat within the Reach 1 and 1A study area of The Glade. It is WSSI's opinion that the stream restoration efforts will have no direct effect on any special concern species of bird listed by VDGIF (Exhibit 8) within the project vicinity. Areas such as this lack preferred nesting habitat (i.e., large open wet meadows for the northern harrier and coniferous forests for the brown creeper) during the breeding season. Given the widespread distribution of these species, it is probable that these birds may occur as migrants or winter visitors within the study area. However, in the event that these birds overwinter in the study area, it is WSSI's opinion that they will be capable of seeking refuge and foraging habitat within adjacent forested areas. This photo was taken during the November 2007 through March 2008 field work.

L. Preston Bryant, Jr.
Secretary of Natural Resources



Joseph H. Maroon
Director

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

217 Governor Street
Richmond, Virginia 23219-2010
(804) 786-7951 FAX (804) 371-2674

September 30, 2008

Sean Sipple
Wetland Studies and Solutions, Inc.
5300 Wellington Branch Drive
Gainesville, VA 20155

Re: #20030, The Glade

Dear Mr. Sipple:

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 area. 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.

However, downstream from the project site Difficult Run has been designated by the VDGIF as being "Threatened and Endangered Species Waters". The species associated with this T & E waters is the wood turtle (*Glyptemys insculpta*, G4/S2/NL/LT).

Due to the legal status of the wood turtle, DCR recommends coordination with the VDGIF to ensure compliance with protected species legislation. Also, to minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations.

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.

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

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 \$90.00 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, **DCR - Division of Natural Heritage, 217 Governor Street Richmond, VA 23219**. Payment is due within thirty days of the invoice date. Please note the change of address for remittance of payment as of July 1, 2008. Late payment may result in the suspension of project review service for future projects.

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, which may contain information not documented in this letter. Their database may be accessed from http://www.dgif.virginia.gov/wildlife/info_map/index.html , or contact Shirl Dressler at (804) 367-6913.

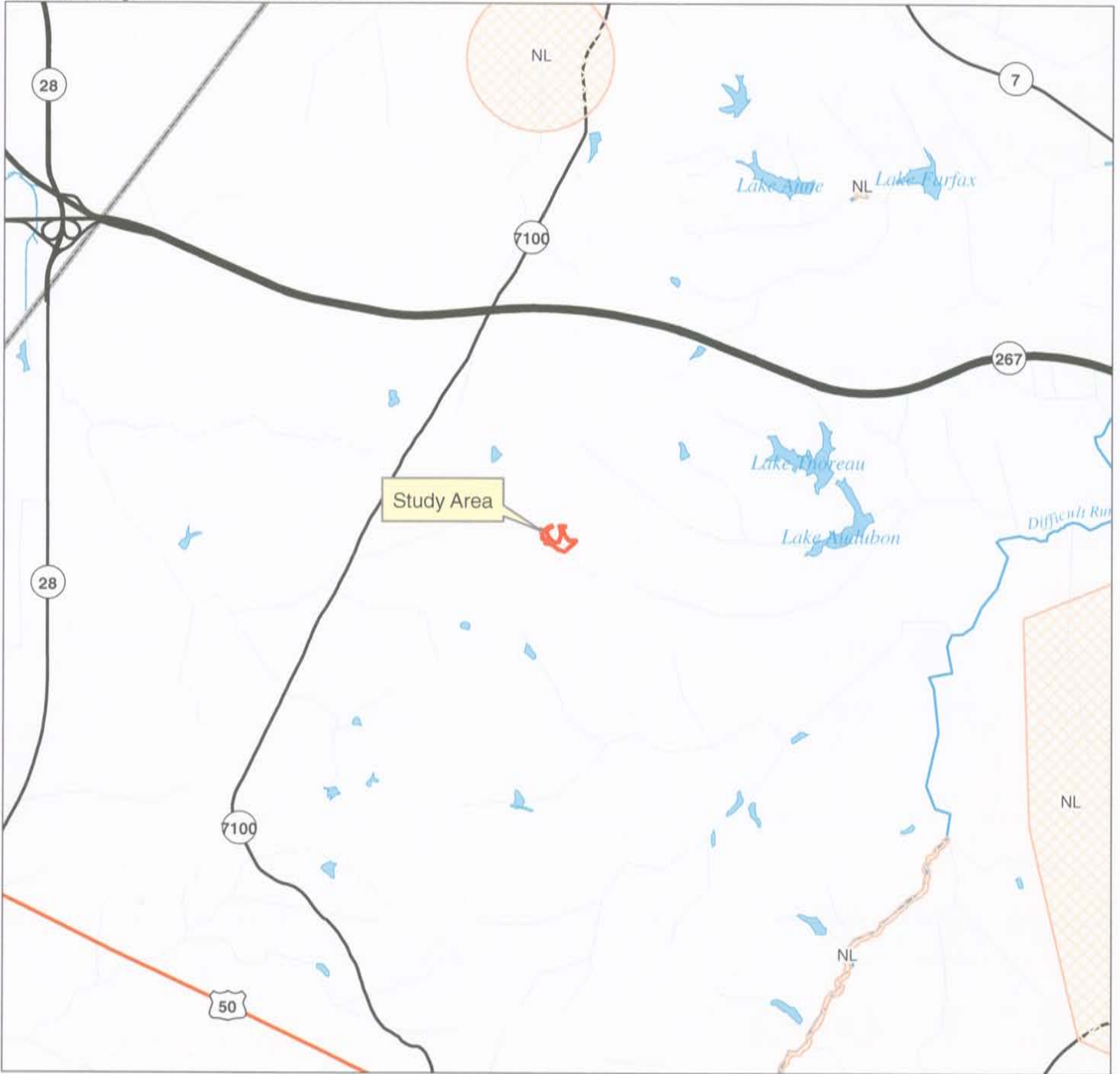
Should you have any questions or concerns, feel free to contact me at (804) 692-0984. Thank you for the opportunity to comment on this project.

Sincerely,







Kristal McKelvey
Coastal Zone Locality Liaison

cc: Amy Ewing, VDGIF



DCR - Natural Heritage Resources Map
Glade Reach 1 and 1A
WSSI #20030
Scale: 1" = 1 mile

-  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





Virginia Department of Game and Inland Fisheries

12/13/2008 12:53:29 PM

Fish and Wildlife Information Service

VaFWIS Search Report Compiled on 12/13/2008, 12:53:29 PM

[Help](#)

Known or likely to occur within a **2 mile radius of 38,55,50. - 77,20,51.**
 in **059 Fairfax County, VA**

570 Known or Likely Species ordered by Status Concern for Conservation
 (displaying first 40) (40 species with Status* or Tier I**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
060006	SE	II	<u>Floater, brook</u>	Alasmidonta varicosa		BOVA
030062	ST	I	<u>Turtle, wood</u>	Glyptemys insculpta		BOVA
040129	ST	I	<u>Sandpiper, upland</u>	Bartramia longicauda		BOVA
040293	ST	I	<u>Shrike, loggerhead</u>	Lanius ludovicianus		BOVA
040379	ST	I	<u>Sparrow, Henslow's</u>	Ammodramus henslowii		BOVA
100155	FSST	I	<u>Skipper, Appalachian grizzled</u>	Pyrgus wyandot		BOVA
040093	FSST	II	<u>Eagle, bald</u>	Haliaeetus leucocephalus		BOVA
040292	ST		<u>Shrike, migrant loggerhead</u>	Lanius ludovicianus migrans		BOVA
100248	FS	I	<u>Fritillary, regal</u>	Speyeria idalia idalia		BOVA
100154	FS	II	<u>Butterfly, Persius duskywing</u>	Erynnis persius persius		BOVA
060029	FSSS	III	<u>Lance, yellow</u>	Elliptio lanceolata		BOVA
040372	SS	I	<u>Crossbill, red</u>	Loxia curvirostra		BOVA
040306	SS	I	<u>Warbler, golden-winged</u>	Vermivora chrysoptera		BOVA
010032	SS	II	<u>Sturgeon, Atlantic</u>	Acipenser oxyrinchus		BOVA
040029	SS	II	<u>Heron, little blue</u>	Egretta caerulea caerulea		BOVA
040213	SS	II	<u>Owl, northern saw-whet</u>	Aegolius acadicus		BOVA
040304	SS	II	<u>Warbler, Swainson's</u>	Limnothlypis swainsonii		BOVA

040266	SS	II	<u>Wren, winter</u>	Troglodytes troglodytes	<u>Yes</u>	CBC,BOVA
030063	CC	III	<u>Turtle, spotted</u>	Clemmys guttata		BOVA
040094	SS	III	<u>Harrier, northern</u>	Circus cyaneus	<u>Yes</u>	CBC,BOVA
040036	SS	III	<u>Night-heron, yellow-crowned</u>	Nyctanassa violacea violacea		BOVA
040204	SS	III	<u>Owl, barn</u>	Tyto alba pratincola	<u>Yes</u>	BBA,CBC,BOVA
060071	SS	III	<u>Lampmussel, yellow</u>	Lampsilis cariosa		BOVA
030012	CC	IV	<u>Rattlesnake, timber</u>	Crotalus horridus		BOVA
040264	SS	IV	<u>Creeper, brown</u>	Certhia americana	<u>Yes</u>	CBC,BOVA
040180	SS	IV	<u>Tern, Forster's</u>	Sterna forsteri		BOVA
040364	SS		<u>Dickcissel</u>	Spiza americana		BOVA
040032	SS		<u>Egret, great</u>	Ardea alba egretta		BOVA
040366	SS		<u>Finch, purple</u>	Carpodacus purpureus	<u>Yes</u>	CBC,BOVA
040285	SS		<u>Kinglet, golden-crowned</u>	Regulus satrapa	<u>Yes</u>	CBC,BOVA
040112	SS		<u>Moorhen, common</u>	Gallinula chloropus cachinnans		BOVA
040262	SS		<u>Nuthatch, red-breasted</u>	Sitta canadensis	<u>Yes</u>	CBC,BOVA
040189	SS		<u>Tern, Caspian</u>	Sterna caspia		BOVA
040278	SS		<u>Thrush, hermit</u>	Catharus guttatus	<u>Yes</u>	CBC,BOVA
040314	SS		<u>Warbler, magnolia</u>	Dendroica magnolia		BOVA
040335	SS		<u>Warbler, mourning</u>	Oporornis philadelphia		BOVA
050045	SS		<u>Otter, northern river</u>	Lontra canadensis lataxina		BOVA
060076	SS		<u>Lampmussel, eastern</u>	Lampsilis radiata radiata		BOVA
040225		I	<u>Sapsucker, yellow-bellied</u>	Sphyrapicus varius	<u>Yes</u>	CBC,BOVA
040319		I	<u>Warbler, black-throated green</u>	Dendroica virens		BOVA

To view **All 570 species** [View 570](#)

* FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; FS=Federal Species of Concern; SC=State Candidate; CC=Collection Concern; SS=State Special Concern

** I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier

IV - Moderate Conservation Need

[View Map of All Query Results from All Observation Tables](#)

Anadromous Fish Use Streams

N/A

Fish Impediments (3 records)

[View Map of All Fish Impediments](#)

ID	Name	River	View Map
1172	LAKE AUDUBON DAM	SNAKEDEN BRANCH	Yes
1166	LAKE THOREAU DAM	TR-SNAKEDEN BRANCH	Yes
1169	TIMBERLAKE DAM	SOUTH FORK RUN	Yes

Colonial Water Bird Survey

N/A

Threatened and Endangered Waters (1 records)

[View Map of All Threatened and Endangered Waters](#)

Record ID	Stream Name	Designation ¹	T&E Waters Species			View Map
			Different Species	Highest TE [*]	Highest Tier ^{**}	
TE-51	Difficult Run	S	1	ST	I	Yes

¹ S = State Listed species present; F/S = Federal and State listed species present

Cold Water Stream Survey (Trout Streams) Summary of Recent Observations (2 records) (Click on Stream Name to view complete reach history)

[View Map of All Cold Water Stream Surveys](#)

Reach ID	Stream Name	Class	Brook Trout	Brown Trout	Rainbow Trout	View Map
07LID-01	Little Difficult Run	Stockable				Yes
07SOL-01	Difficult Run, SF	Stockable				Yes

Scientific Collections (24 records - displaying first 20

[View Map of All Query Results Scientific Collections](#)

Collection	Date Collected	Collector	Collection Species			View Map
			Different Species	Highest * TE	Highest ** Tier	
319482	Oct 5 2007	William Kirkpatrick	6		IV	Yes
319481	Oct 4 2007	William Kirkpatrick	3			Yes
319437	Aug 28 2007	David Wong / Brenda Morgan	9			Yes
316601	Sep 21 2006	Chad Grupe	15		IV	Yes
316602	Aug 8 2006	Chad Grupe	11		IV	Yes
316623	Mar 28 2006	Chad Grupe	0			Yes
307436	Jul 15 2004	Pete Marra	2			Yes
307439	May 26 2004	Pete Marra	1			Yes
303628	Aug 5 2002	Matt Handy	14		IV	Yes
304244	Jul 3 2002	Peter Marra	2			Yes
304243	May 24 2002	Peter Marra	1			Yes
304242	Jun 22 2001	Peter Marra	2			Yes
304241	Jun 20 2001	Peter Marra	4			Yes
304240	Jun 17 2000	Peter Marra	5			Yes
59678	Jul 29 1999	MS. AMY MAHER, COUNTY OF FAIRFAX, DEPT. OF PUBLIC WORKS	9		IV	Yes
59684	Jul 26 1999	MS. AMY MAHER, COUNTY OF FAIRFAX, DEPT. OF PUBLIC WORKS	15		IV	Yes
59685	Jul 26 1999	MS. AMY MAHER, COUNTY OF FAIRFAX, DEPT. OF PUBLIC WORKS	7		IV	Yes
59686	Jul 6 1999	MS. AMY MAHER, COUNTY OF FAIRFAX, DEPT. OF PUBLIC WORKS	12		IV	Yes
7688	Jun 30 1995	WAYNE C. STARNES	9		IV	Yes

33917	Jan 1 1975	TSS- TROUT STREAM SURV.	10		IV	Yes
-----------------------	------------	-------------------------	----	--	----	---------------------

To view [All 24 Collections](#) [View 24](#)

Biologist Observations

N/A

Virginia Breeding Bird Atlas Blocks (6 records)

[View Map of All Query Results Virginia Breeding Bird Atlas Blocks](#)

BBA ID	Atlas Quadrangle Block Name	Breeding Bird Atlas Species			View Map
		Different Species	Highest TE *	Highest Tier **	
51204	Herndon, CE	59	SS	III	Yes
51206	Herndon, SE	54		IV	Yes
52204	Vienna, CE	50		IV	Yes
52203	Vienna, CW	50		IV	Yes
52201	Vienna, NW	58		IV	Yes
52205	Vienna, SW	53		IV	Yes

USFWS Breeding Bird Survey Routes

N/A

Christmas Bird Count Survey (1 records)

[View Map of All Query Results Christmas Bird Count Survey](#)

CBC ID	Survey Name	Christmas Bird Count Species			View Map
		Different Species	Highest TE *	Highest Tier **	
880062	Manassas-Bull Run	97	SS	I	Yes

Public Holdings:

N/A

USGS 7.5' Quadrangles:

Vienna

Va. NRCS Watersheds:

- POTOMAC RIVER/BROAD RUN
- SUGARLAND RUN
- POTOMAC RIVER/DIFFICULT RUN

audit no. 214775 12/13/2008 12:53:30 PM Virginia Fish and Wildlife Information Service
© 1998-2008 Commonwealth of Virginia Department of Game and Inland Fisheries



NOV 08 2008

COMMONWEALTH of VIRGINIA

L. Preston Bryant, Jr.
Secretary of Natural Resources

Department of Game and Inland Fisheries

Robert W. Duncan
Executive Director

November 6, 2008

Jennifer D. Feese
Environmental Scientist
Wetland Studies and Solutions, Inc.
5300 Wellington Branch Drive, Suite 100
Gainesville, Virginia 20155

RE: ESSLOG #25732, The Glade (\pm 125 acres), WSSI #20030, Reston, Fairfax County, VA—
subscriber confirmation.

Dear Ms. Feese:

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. However, this project area is within Glade Run, which is a tributary to a portion of Difficult Run that is designated a Threatened and Endangered Species’ Water. This designation is due to documented occurrences of the *state threatened wood turtle (Glyptemys insculpta)*. Therefore, the applicant should coordinate with the VDGIF Environmental Services Section (804-367-6913) concerning potential impacts to this resource.

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

Jennifer D. Feese
ESSLog #25732
11/6/2008
Page 2

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.

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

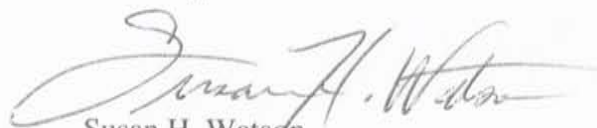
Please note that this response does not constitute consultation or management recommendations regarding endangered or threatened wildlife, or any other environmental concerns. These issues are analyzed by our Environmental Services Section, in conjunction with interagency review of applications for state 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.

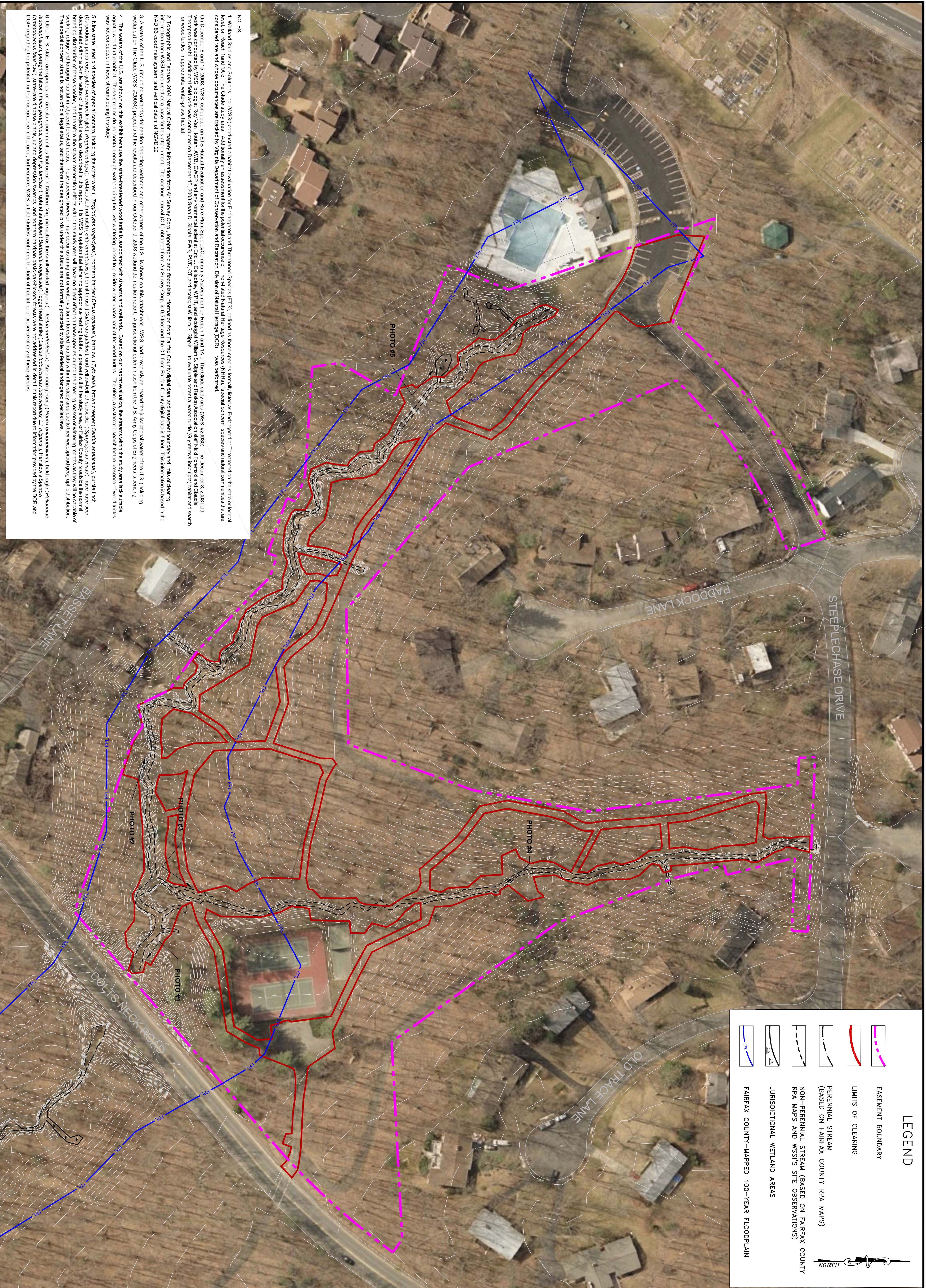
Thank you for your interest in the wildlife resources of Virginia.

Sincerely,



Susan H. Watson
Information Specialist

cc: R.T. Fernald, VDGIF
R. Hypes, VDCR-NH



NOTES:

1. Wetland Studies and Solutions, Inc. (WSSI) conducted a habitat evaluation for Endangered and Threatened Species (ETS), defined as those species formally listed as Endangered or Threatened on the state or federal level, on Reach 1 and 1A of The Glade study area. Additionally, an assessment for the potential occurrence of non-listed Natural Heritage Resources (NHRs), "special concern" 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) was performed.
2. On December 8 and 15, 2008, WSSI conducted an ETS Habitat Evaluation and Rare Plant Species/Community Assessment on Reach 1 and 1A of The Glade study area (WSSI #20030). The December 8, 2008 field work was conducted by WSSI biologist Roy Van Houten, AMS, CWCP and environmental scientist Eric J. Callahan, WFTT, and ecologist William S. Stippel, FWS, PWD, CI, and ecologist William S. Stippel, FWS, PWD, CI, and ecologist William S. Stippel, FWS, PWD, CI, to evaluate potential wood turtle (*Desmognathus fuscescens*) habitat and search for wood turtles in appropriate watersheds.
3. Topographic and February 2004 Natural Color Imagery information from Air Survey Corp., topographic and floodplain information from Fairfax County digital data, and assessment boundary and limits of clearing information from WSSI were used as a base for this attachment. The contour interval (C.I.) obtained from Air Survey Corp. is 0.5 feet and the C.I. from Fairfax County digital data is 5 feet. This information is based in the NAD 83 coordinate system, and vertical datum of NGVD 29.
4. A waters of the U.S. (including wetlands) delineation depicting wetlands and other waters of the U.S., is shown on this attachment. WSSI had previously delineated the jurisdictional waters of the U.S. (including wetlands) on The Glade (WSSI #20030) project and the results are described in our October 9, 2008 wetland delineation report. A jurisdictional determination from the U.S. Army Corps of Engineers is pending.
5. The waters of the U.S. are shown on this exhibit because the state-threatened wood turtle is associated with streams and wetlands. Based on our habitat evaluation, the streams within the study area lack suitable habitat to provide minimum enough water during the overwintering period to provide minimum habitat for wood turtles. Therefore, a systematic search for the presence of wood turtles was not conducted in these streams during the study.
6. Nine state listed bird species of special concern, including the winter wren (*Troglodytes hiogobryes*), northern harrier (*Circus cyaneus*), barn owl (*Tyto alba*), brown creeper (*Certhia americana*), purple finch (*Carpodacus purpureus*), golden-crowned kinglet (*Regulus satrapa*), red-breasted nuthatch (*Sitta canadensis*), hermit thrush (*Catharus guttatus*), and yellow-bellied sapsucker (*Sphyrapicus varius*), have been documented within a 2-mile radius of the project area, as described in this report. It is WSSI's opinion that either no appropriate nesting habitat is present within the study area, or Fairfax County is outside the normal breeding distribution of these species, and therefore the stream restoration efforts within the study area will have no direct effect on these species during the breeding season or winter months as they will be capable of seeking refuge and foraging habitat in adjacent forested areas. These species however, may occur as a migrant or transient habitat within the study area due to their widespread geographic distribution. The special concern status is not an official legal status, and therefore the designations under this status are not formally protected by state or federal endangered species laws.
7. Other ETS, state-rare species, or rare plant communities that occur in Northern Virginia such as the small wooded poplar (*Populus melanocarpa*), American ginseng (*Panax quinquefolium*), bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus*), including *F. tinnunculus*, and sandpiper (*Bartramia longicauda*), long-eared owl (*Lanius ludovicianus ludovicianus*), Henslow's sparrow (*Ammodramus melanotos*), state-rare disease plants, upland depression swamps, and northern hardwood basic oak-hickory forests were not addressed in detail in this report due to information provided by the DCR and DGI regarding the potential for their occurrence in the area. Furthermore, WSSI's field studies confirmed the lack of habitat for or presence of any of these species.

LEGEND

- EASEMENT BOUNDARY
- LIMITS OF CLEARING
- PERENNIAL STREAM (BASED ON FAIRFAX COUNTY RPA MAPS)
- NON-PERENNIAL STREAM (BASED ON FAIRFAX COUNTY RPA MAPS AND WSSI'S SITE OBSERVATIONS)
- JURISDICTIONAL WETLAND AREAS
- FAIRFAX COUNTY-MAPPED 100-YEAR FLOODPLAIN

NORTH

Attachment I:
Endangered and Threatened Species Habitat Evaluation and Rare Plant Species/Community Assessment Map
 Prepared For: Northern Virginia Stream Restoration, L.C.

The Glade - Reach 1 and 1A
 Fairfax County, Virginia

Copyright © 2009 Wetland Studies and Solutions, Inc.

5300 Wellington Branch Drive • Suite 100
 Gainesville, Virginia 20155
 Phone: 703-679-5600 • Fax: 703-679-5601
 www.wetlandstudies.com

REVISIONS				
No.	Date	Description	Rev. By	App. By

Horizontal Datum: VCS NAD83
 Vertical Datum: NGVD 29
 Boundary and Topo Source: Fairfax County Digital Data

Design	Draft	Approved
S/S	S/S	MSR

Computer File Name: L:\WORK\2009\04\ENV\REACH1_ATTACH1.DWG

Sheet # 1 of 1

DATE: January 2009 SCALE: 1" = 50'