



# United States Department of the Interior

OFFICE OF THE SECRETARY  
Washington, D.C. 20240  
May 5, 1999



Honorable Joseph W. Westphal  
Assistant Secretary of the Army (Civil Works)  
Department of the Army  
108 Army Pentagon  
Washington, D.C. 20310-0108

Dear Dr. Westphal:

In accordance with provisions of the Clean Water Act Section 404(q) Memorandum of Agreement between the Department of the Interior and the Department of the Army (33 U.S.C. 1344 *et seq.*; as revised December 21, 1992), we are requesting your review of the U.S. Army Corps of Engineers Baltimore District Engineer's decision to issue a Section 404 permit to the Pennsylvania Department of Transportation to construct the U.S. 220 Transportation Improvements Project located in Blair and Centre Counties, Pennsylvania.

The proposed U.S. 220 project will be a four-lane, limited-access highway built on a new alignment for approximately 18 miles along the Bald Eagle Valley. The proposed project has been divided into three sections. PennDOT has selected, and State and Federal resource agencies have concurred with, the final alignments for Sections 2 and 3. However, the Fish and Wildlife Service disagrees with PennDOT's selection of the RT-G Alignment in Section 1 (i.e., the ridge-top alignment on Bald Eagle Mountain). The RT-G Alignment would directly or indirectly affect 17.44 acres of forested spring-seep wetlands, eliminate or severely fragment 2,895 acres of forest interior habitat, adversely affect 1.6 miles of hillside streams, and directly and indirectly affect 749 acres of State Game Lands.

To compensate for overall project losses, the applicant proposes to implement a variety of measures to create, restore, or preserve offsite wetlands, and enhance and preserve offsite forest and shrub habitats. However, for the most part, these measures would not provide in-kind replacement for the aquatic functions and values affected by project construction in Section 1.

On March 31, 1999, the Fish and Wildlife Service's Northeast Regional Office received a Notice of Intent to issue a permit for the proposed project. After a thorough review of the background information on the project, the Department has determined that this case warrants elevation in accordance with the criteria found in Part IV of the revised Section 404(q) MOA (Elevation of Individual Permit Decisions).

Specifically, the Department has concluded that construction of the RT-G Alignment in Section 1 of the proposed project will have substantial and unacceptable adverse impacts on aquatic resources of national importance. Although the RT-G Alignment appears to traverse mainly forested uplands, the northwest-facing slope of Bald Eagle Mountain between existing

Route 350 and Port Matilda is actually a 9,600-acre system of forest, forested spring-seeps, wetlands, and streams. The highway will be a massive intrusion into a relatively undisturbed landscape, adversely affecting the hydrology and biology of a mosaic of mixed hardwood forest, 192 separate wetlands, and 35 perennial and intermittent streams. The District Engineer's proposed permit decision will allow the filling of irreplaceable forested spring-seeps, the loss of associated wetlands and streams, the adverse alteration of surface and groundwater flows feeding hillside and valley bottom wetlands and streams, and the direct or indirect loss of 2,895 acres of nationally significant habitat for species dependent upon this mix of wetlands, seeps, streams, and forest, including 33 species of neotropical migratory birds. The proposed project would contribute further to a continuing loss of irreplaceable, forested spring-seep wetlands, and forest interior habitat in this region of Pennsylvania.

The Department of the Interior, acting through the Service, is vested with the authority and obligation to protect, conserve, and enhance the Nation's fish and wildlife resources. These matters fall within our jurisdiction under the Fish and Wildlife Coordination Act (48 Stat. 401; 16 U.S.C. 661 *et seq.*), Section 404(m) of the Clean Water Act (62 Stat. 1155; 33 U.S.C. 1251-1376), the Fish and Wildlife Act of 1956 (70 Stat. 1119; 16 U.S.C. 742), and the Migratory Bird Treaty Act (40 Stat. 755; 16 U.S.C. 703-712), as amended, to implement international treaties regarding the conservation of migratory bird populations.

Other indirect impacts to fish and wildlife resources likely to be caused by the RT-G Alignment include potential water quality degradation of down-slope streams and wetlands from salts, hydrocarbons, and metals in the road runoff, alteration of flow regimes, and increased surface water temperatures. The RT-G Alignment would destroy or degrade aquatic habitat and block or impair movement to breeding and/or feeding areas for 26 species of reptiles and amphibians. Thirty-three species of neotropical migratory birds, 18 of which are area-sensitive forest interior species, would be either directly or indirectly affected through increased exposure to predators and parasites or loss of habitat. Three of these forest interior bird species are on the Service's list of management concern because of declining populations and habitat loss or degradation.

The value of this intact ecosystem has been recognized by the National Audubon Society and other conservation organizations. Audubon has designated this section of Bald Eagle Ridge as an Important Bird Area due to the large expanse of unfragmented forest, its value for neotropical migratory birds dependent upon forest interior habitats, and because it is a major flyway for migrating raptors. The counts of golden eagles using the ridge as a migration corridor are some of the highest recorded in eastern North America.

The proposed project would contribute to a continuing loss of irreplaceable, forested spring-seep wetlands, and forest interior habitat in this region of Pennsylvania. The proposed project is part of the Interstate 99 corridor, connecting the Pennsylvania Turnpike to I-80 in central Pennsylvania. Over the past 15 years, the 61 miles of interstate highway that have been

constructed from Bedford to Bald Eagle have directly or indirectly affected nearly 9,000 acres of forest interior habitat, and countless forested spring-seeps, streams, and wetlands, which have been ditched, diverted, culverted, or otherwise eliminated.

The substantial adverse impacts to aquatic resources of national importance and nationally significant fish and wildlife resources that would result from construction of the RT-G Alignment are unacceptable due to the availability of a practicable alternative that would have considerably less adverse impacts on high quality natural resources, and the failure of the mitigation plan to adequately replace lost resource values. An alternative alignment in Section 1, the G1-1b (valley bottom) Alignment, is a practicable alternative that was carried forward in the final Environmental Impact Statement for this project, and is preferred by the Department and State resource agencies. Moreover, at the conclusion of the environmental review process, the Baltimore District stated that either the RT-G or the G1-1b could be authorized.

Unlike the RT-G Alignment, the G1-1b Alignment traverses a disturbed and fragmented landscape consisting of generally marginal farm fields, woodlots, brush rows, abandoned fields, and degraded wetlands. Although this alignment affects more jurisdictional wetlands (30.5 acres versus 17.44 acres), approximately 50 percent of these wetlands are in pasture or cornfields. The remainder have been degraded or isolated by mowing, ditching, filling, or other human activities. Some wetlands have been planted in corn, others are in hay or pastured for livestock, and one is occupied by a junkyard. All agencies, including the Baltimore District, have agreed that adverse impacts to wetlands and streams from the G1-1b Alignment can be readily compensated by the proposed mitigation plan. In contrast, the Baltimore District has previously admitted that the forested spring-seeps and other ridge side wetlands cannot be replaced, and have greatly increased compensatory mitigation requirements for this alignment in their proposed permit. However, regardless of its quantity, the proposed compensation remains out-of-kind.

The Section 404(b)(1) Guidelines specify that compliance evaluation procedures will vary to reflect a project's relative potential for significant adverse impacts. Nevertheless, the Baltimore District has compared acres of wetlands and streams adversely affected by each alignment as if resource quality has no bearing on their permit decision. Although the G1-1b Alignment affects more acres of wetlands, the quality of these wetlands is significantly lower than that of wetlands that would be affected by the RT-G Alignment. By nearly every measure, the impacts on aquatic and terrestrial resource values that would be caused by the RT-G Alignment are substantially greater. The RT-G Alignment:

- would affect more acres of high quality, undisturbed wetlands (17.44 acres versus 3.75 acres);
- would eliminate more linear feet of streams (1.6 miles versus 0.6 mile);
- would affect more acres of forest interior habitat (2,895 acres versus 209 acres);
- would affect more acres of irreplaceable aquatic and terrestrial resources;
- would affect more acres of State Game Lands (direct and indirect impacts of up to 749 acres);

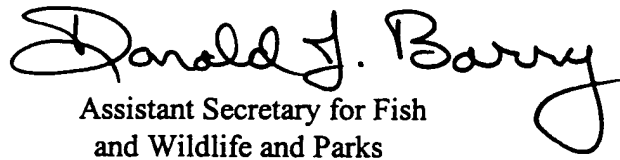
- would have the greatest indirect impacts on off-alignment wetlands, spring-seeps, and streams;
- would have the greatest impacts on migratory birds; and
- would have the greatest impacts on project area biodiversity.

Given the substantial direct and indirect impacts caused by the RT-G Alignment, the irreplaceable nature of these resources, the lack of an adequate mitigation plan, and the availability of a less damaging alternative, PennDOT's preferred alignment and the Baltimore District's proposed permit decision do not appear to be in compliance with the Guidelines.

We look forward to meeting with Department of the Army representatives to discuss the Baltimore District's proposed permit decision. The Department recommends that such a meeting be held in central Pennsylvania, and that the meeting include a visit to the proposed project area.

Enclosed is additional information addressing these and other issues relative to the proposed permit decision. Please do not hesitate to contact me if you have any questions.

Sincerely,

  
Assistant Secretary for Fish  
and Wildlife and Parks

Enclosure

# **U.S. ROUTE 220 TRANSPORTATION IMPROVEMENTS PROJECT**

## **Fish and Wildlife Service Request for Higher Level Review**

### **PROJECT DESCRIPTION**

The Pennsylvania Department of Transportation proposes to construct 17.5 miles of limited-access highway on a new alignment between the Village of Bald Eagle and the State College Bypass in Centre and Blair Counties, Pennsylvania. The proposed U.S. Route 220 Transportation Improvements Project will be part of the I-99 corridor, connecting the Pennsylvania Turnpike to I-80 in central Pennsylvania. Fifty-one miles have already been constructed, extending from the Town of Bedford to the Village of Bald Eagle. The proposed project connects the existing four-lane divided highway in the valley bottom near the Village of Bald Eagle with the State College bypass by criss-crossing the Bald Eagle Valley for more than 15 miles.

The proposed highway has been divided into three sections. PennDOT has selected, and resource agencies have concurred with, the P2-2 Alignment in Section 2 and the P3-2 Alignment in Section 3. For Section 1 at the southwestern terminus of the project, two feasible, practicable alternative alignments were carried forward in the final environmental impact statement: the RT-G Alignment (ridge-top alignment) and the G1-1b Alignment (valley bottom alignment). The Fish and Wildlife Service disagrees with PennDOT's selection of the RT-G Alignment in Section 1, preferring the G1-1b Alignment.

The RT-G Alignment begins at the Town of Bald Eagle, and climbs up the north-facing slope of Bald Eagle Mountain to near the top of the ridge, following this route for about 8 miles before dropping back down to the valley floor, where it crosses existing Route 220. It then goes up the south-facing slope of the Allegheny Front, connecting with Route 322 north of the Town of Port Matilda. Within Section 1, this alignment would affect 17.44 acres of wetlands; adversely affect 1.6 miles of perennial and intermittent streams through culverting; directly or indirectly affect 2,895 acres of forest interior habitat on Bald Eagle Mountain; and directly or indirectly affect up to 749 acres of Section 4(f) (Department of Transportation Act of 1966; 49 U.S.C. 1653(f)) State Game Lands.

The Service's preferred alternative in Section 1, the G1-1b Alignment, also begins at the Town of Bald Eagle, curving north across South Bald Eagle Creek and existing Route 220, then continuing northeast, paralleling Route 220 in the valley bottom for about seven miles. The highway then climbs the slope of the Allegheny Front, where it joins Route 322 north of Port Matilda. This alignment would affect 30.5 acres of wetlands, adversely affect 0.6 mile of streams through culverting, and directly and indirectly affect 209 acres of forest interior habitat in the valley bottom.

## AQUATIC RESOURCES OF NATIONAL IMPORTANCE

### Regional Fish and Wildlife Resource Values

The proposed project area is located within the Bald Eagle Valley, part of the Susquehanna River/Chesapeake Bay watershed. North and South Bald Eagle Creeks originate in the valley, at the base of Bald Eagle Mountain, and flow in opposite directions. Both streams are fed by headwater streams draining the Allegheny Front, and from surface and groundwater discharging from Bald Eagle Mountain. The Pennsylvania Department of Environmental Protection classifies South Bald Eagle Creek as Trout Stocking Fishes, and North Bald Eagle Creek, to its confluence with Laurel Run, as Cold Water Fishes (Chapter 93, Water Quality Standards). The valley and foothill tributaries to the north comprise the eastern edge of the Allegheny Mountain Section of the Allegheny Plateau Province. Existing Route 220, within Sections 1 and 2 of the project, lies in the valley bottom, parallel to the Bald Eagle Mountain ridgeline. In the vicinity of the highway, the landscape is fragmented by generally marginal farm fields, woodlots, brush rows, abandoned fields, back yards, and low to moderate quality wetlands. Several small businesses and homes are scattered along this route; power lines, pipelines, telephone lines, and secondary roads further fragment the valley bottom landscape.

In contrast, the forested slope of Bald Eagle Mountain southeast of Route 220 is undeveloped. This large block of forest habitat is part of a minimally disturbed forest tract that extends some distance to the northeast, broken only by an occasional road or power line. However, to the southwest, this forested ridge system has been adversely affected by construction of earlier sections of I-99 for over 50 miles of its length.

Although the forested flank of Bald Eagle Mountain appears to be primarily terrestrial habitat, the hillside is actually a mosaic of perennial and intermittent streams, spring-seeps, wetlands, and forested uplands. There are over 500 separate spring-seeps and wetlands, and 66 perennial and intermittent streams scattered along this slope of the mountain, between the ridge-top and North and South Bald Eagle Creeks. Over 78 percent of these wetlands are less than 0.1 acre in size (Skelly and Loy, 1997). The streams and spring-seeps, together with groundwater supplied by the mountain, feed North and South Bald Eagle Creeks, and large adjacent wetland complexes at the base of the mountain. One wetland complex found within the State Game Lands down-slope of the proposed RT-G Alignment is an especially diverse system comprised of palustrine forested, scrub-shrub, and emergent wetlands, with a sizeable open-water component. This diverse system is unique in the Bald Eagle Valley, and has significant recreational value for hunting, bird watching, and nature study.

In the mid-Atlantic region, there has been a growing recognition of the value of large blocks of intact forest in preserving biodiversity, and providing important habitat for wetland-dependent wildlife, and forest interior neotropical migratory birds. The National Audubon Society has designated this section of Bald Eagle Ridge as an Important Bird Area due to its large expanse of unfragmented forest, its value for forest interior-dependent neotropical migratory birds, and because it is a major flyway for migrating raptors. The counts of golden eagles (*Aquila*

*chrysaetos*) using the ridge as a migration corridor are some of the highest recorded in eastern North America. This IBA is linked to another IBA located about 25 miles to the northeast by this ridge system. In recognition of these values, Audubon is attempting to protect and link these large blocks of unbroken habitat because they represent the best opportunity to protect biodiversity and breeding habitat for migratory birds.

#### Site-Specific Fish and Wildlife Resources

The Service has evaluated aquatic and terrestrial resource values within the 9,600-acre forest tract that extends along the northwest-facing slope of Bald Eagle Mountain between Route 350 at the southwestern end of Section 1, Port Matilda to the northeast, and from North and South Bald Eagle Creeks in the valley, up-slope to the top of the ridge. Within this area lies a mosaic of mixed hardwood forest; spring-seep, stream-side, and depressional wetlands; and perennial, intermittent, and ephemeral streams. The Service has determined that this forest system, whose aquatic resource values are functionally integrated and inseparable from its terrestrial component, represents an aquatic resource of national importance.

The principal ecological value of the forested slope of Bald Eagle Mountain stems from its relatively undisturbed uplands, wetlands, spring-seeps, and streams. Except for a power line crossing, some old logging roads, and scattered logging, the ridge has been only minimally disturbed. The terrestrial and aquatic species dominating this landscape tend to be habitat specialists typical of unimpaired environments; that is, those animals requiring large blocks of undisturbed aquatic and terrestrial habitats.

The groundwater-fed streams, wetlands, and forested spring-seeps draining the ridge have excellent water quality. They supply clean, cold water to North and South Bald Eagle Creeks; meet the life requisites of 26 species of reptiles and amphibians and numerous wetland-dependent mammals and birds; and support abundant and diverse macroinvertebrate populations. Service biologists collected 28 genera of aquatic invertebrates in hillside streams, including several species of mayflies (*Ephemeroptera spp.*) and stoneflies (*Plecoptera spp.*), indicating water quality is excellent (USFWS, 1997b). All of these perennial and intermittent streams feed larger wetland complexes in the valley bottom, which are also fed by groundwater. In addition, a population of the State-designated threatened matted spike rush (*Eleocharis intermedia*) is found in a large wetland complex at the base of the ridge, along South Bald Eagle Creek. This species is highly dependent on stable water conditions.

Based on observations (USFWS, 1997a), range maps, and habitat requirements (Shaffer, 1991; Pflingsten and Downs, 1989), 26 species of reptiles and amphibians inhabit, or are likely to inhabit the northwest-facing slope of Bald Eagle Mountain. Eighty-eight percent (23 of 26) of these are wetland-dependent or typically found in or along rocky-bottom, cold-water streams. Most of these also forage in and/or inhabit terrestrial habitat during some portion of their life cycle. One reptile (the eastern hognose snake (*Heterodon platyrhinos*)) is listed by the Pennsylvania Biological Survey as a Species of Special Concern. Another special concern reptile species, the wood turtle (*Clemmys insculpta*), is a wetland-dependent species that uses deciduous forests

interchangeably with wetlands and streams, and is commonly found on the ridge. The wood turtle is declining throughout most of its range, with many isolated populations considered reproductively "dead," since they are composed only of long-lived, non-breeding adults (Klemens, 1993). Except for Pennsylvania, all States have listed the wood turtle as a species of special concern due to declining numbers and threats from development.

The ridge-side is also excellent habitat for neotropical migratory birds. The final environmental impact statement for this project lists 53 species of neotropical migratory birds potentially occurring within the study area, 27 of which are area-sensitive forest interior nesters and foragers. Eight of these species are of special concern to the Service's Office of Migratory Bird Management. Studies conducted during 1998 counted over 2,000 individuals representing 79 bird species along the ridge and in bottomland wetlands (Cupper *et al.*, 1998). Of these 79 species, 70 percent are considered wetland-dependent (USEPA, 1994). The Service also conducted a breeding bird survey on the ridge and confirmed that nine area-sensitive forest interior species were breeding and 5 more species were likely to be breeding (USFWS, 1997c). At the Bald Eagle Mountain Fire Tower, fifteen raptor species have been recorded annually during fall migration. Counts of golden eagles using the ridge as a migration corridor are some of the highest recorded in eastern North America.

Upland game birds such as woodcock (*Scolopax minor*) and wild turkey (*Meleagris gallopavo*) are other wetland-dependent species found on the ridge. Woodcock use ridge-side seeps and wetlands during periods when the valley dries out, while wild turkey and ruffed grouse (*Bonasa umbellus*) congregate around the seeps and wetlands during the winter. Studies in West Virginia (Healy and Pack, 1983) have shown that over 50 percent of all winter turkey feeding activity occurs in spring seeps.

## SUBSTANTIAL AND UNACCEPTABLE ADVERSE IMPACTS

### Direct and Indirect Aquatic Habitat Loss

The RT-G Alignment will be a massive intrusion into a minimally disturbed landscape on the northwest facing slope of Bald Eagle Mountain. In some places, the highway will cut a 700-foot wide swath through the forest. In addition to direct aquatic resource losses, headwater spring-seeps, wetlands, and streams are especially vulnerable to suspended particulates and increased turbidity from construction, as well as from highway operation and maintenance. Wetlands along the ridge exhibit none of the signs of disturbance typically seen in many Pennsylvania wetlands (e.g., dominance by habitat generalists, poor water quality, encroachment). The value of such habitats would be degraded by sedimentation and loss of the forest canopy, and the resulting increase in surface and water temperatures. Surface and groundwater circulation and flow patterns will be altered, thereby modifying the frequency, duration, and timing of water delivery to down-slope streams and wetlands. These physical and chemical changes in aquatic conditions will in turn have adverse effects on the diversity and abundance of aquatic invertebrates, and ultimately on amphibians and fish in on-site and down-slope aquatic habitats.



Specifically, the RT-G Alignment will adversely affect 12.79 acres of irreplaceable forested spring-seeps and 4.65 acres of other high quality wetlands (Figure 1). These wetlands are scattered along the path of the proposed highway, and are an integral component of this forested ecosystem. It will not be possible to affect the forest without also adversely affecting wetland-dependent wildlife that use the forest and wetlands interchangeably. For example, 88 percent of the reptiles and amphibians (USFWS, 1997a) and 70 percent of birds observed by Cupper *et al.* (1998) are wetland-dependent species that use forest and aquatic habitats interchangeably.

Amphibians and invertebrates are inconspicuous but important food chain components. Studies have shown that amphibians are especially important in maintaining energy flow and nutrient cycling in forested ecosystems (Burton and Likens, 1975; USEPA, 1994). Because salamanders are able to convert prey too small for birds and mammals into biomass, they are, qualitatively and quantitatively, integral components of the energy flow of most forest ecosystems (Pough *et al.*, 1987). Highway construction on the slope of Bald Eagle Mountain will directly eliminate habitat, interrupt migration corridors, and isolate their populations. Populations of more free-ranging reptiles, such as the box and wood turtle, will also be substantially reduced for similar reasons.

At present, water originating in hillside spring-seeps, wetlands, and streams is of the highest quality. During construction, headwater streams, wetlands, and spring-seeps will be adversely affected by the inevitable failure of erosion and sedimentation controls that occur on nearly every major highway construction project. Once the highway becomes operational, we expect sedimentation from winter salting and sanding, and periodic inputs of heavy metals (e.g., lead, cadmium, zinc) and oil and grease to contaminate these waterways. Direct highway runoff and discharges from proposed highway detention basins would also add significant amounts of warm water to these cold-water streams. Increased water temperatures will likely reduce dissolved oxygen levels, thereby degrading a presently unimpaired aquatic system. According to the final environmental impact statement for this project, the topographic position of the proposed highway will require additional maintenance, including discharges of substantially more road salt.

In addition to significant impacts on the water quality of springs and wetlands, the RT-G Alignment would adversely affect 21 headwater streams, totaling 1.6 miles in length, through culverting, altering flow patterns, and removal of forest canopy cover (Figure 1). These streams supply cold water to North and South Bald Eagle Creeks, and nourish emergent wetlands at the base of the ridge. Virtually all wetland-dependent wildlife residing on the hillside use these streams; therefore, their loss or degradation will further reduce food, cover, and breeding sites for these species.

### Habitat Fragmentation

Of the environmental impacts associated with the RT-G Alignment, habitat fragmentation is among the most severe and difficult to mitigate. The RT-G Alignment will eliminate or fragment 2,895 acres (Figure 2) of forest and forest interior habitat essential to the continued existence of a number of species of neotropical migratory birds, upland game birds, reptiles, amphibians, and mammals in this area. Fragmentation prevents animals from moving to adjacent habitats; reduces

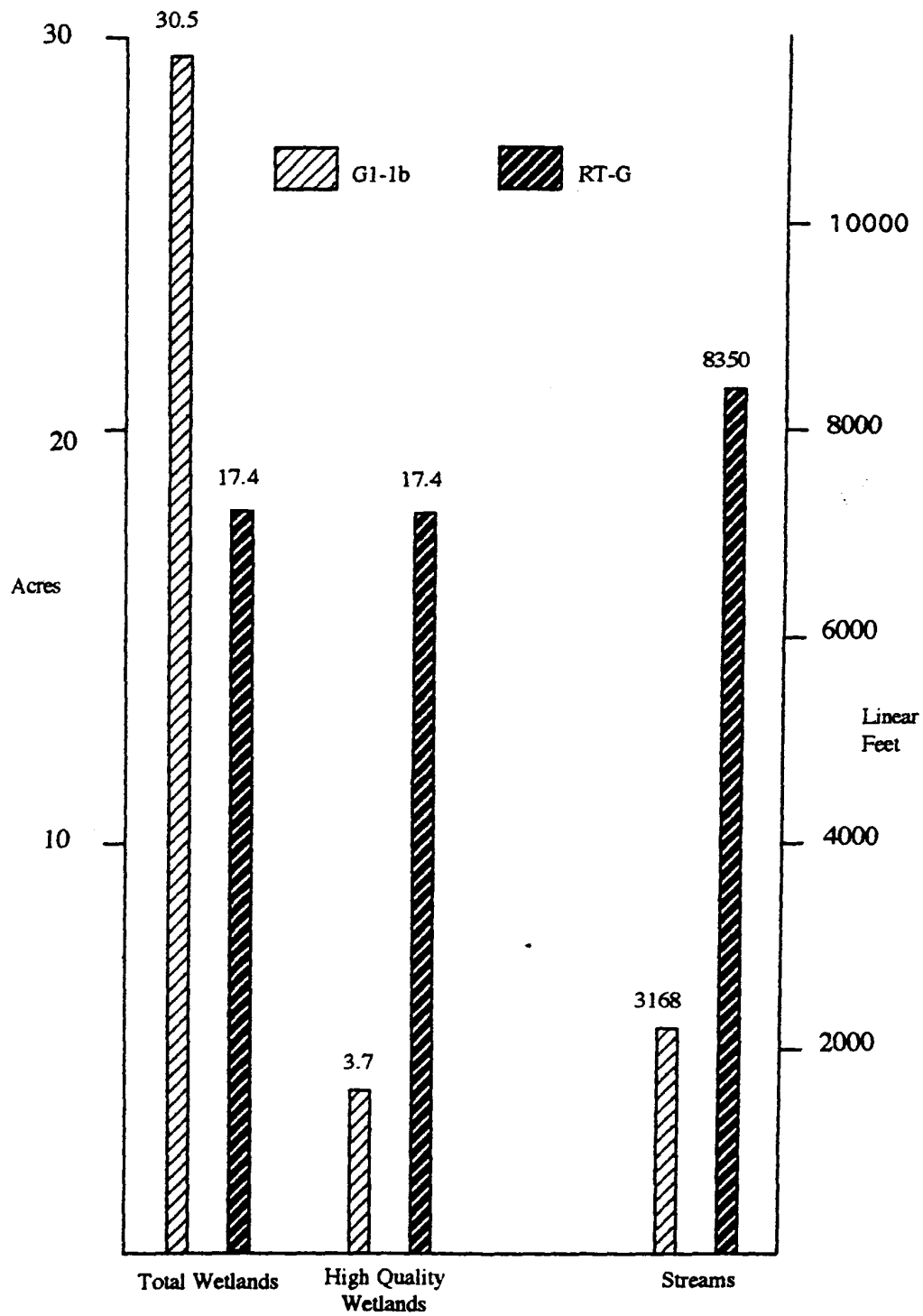


Figure 1. A comparison of stream (for streams supporting aquatic life) and wetland impacts from the G1-1b and RT-G Alignments (Source: Corps of Engineers; Final Environmental Impact Statement). Wetland quality as determined by the Fish and Wildlife Service.

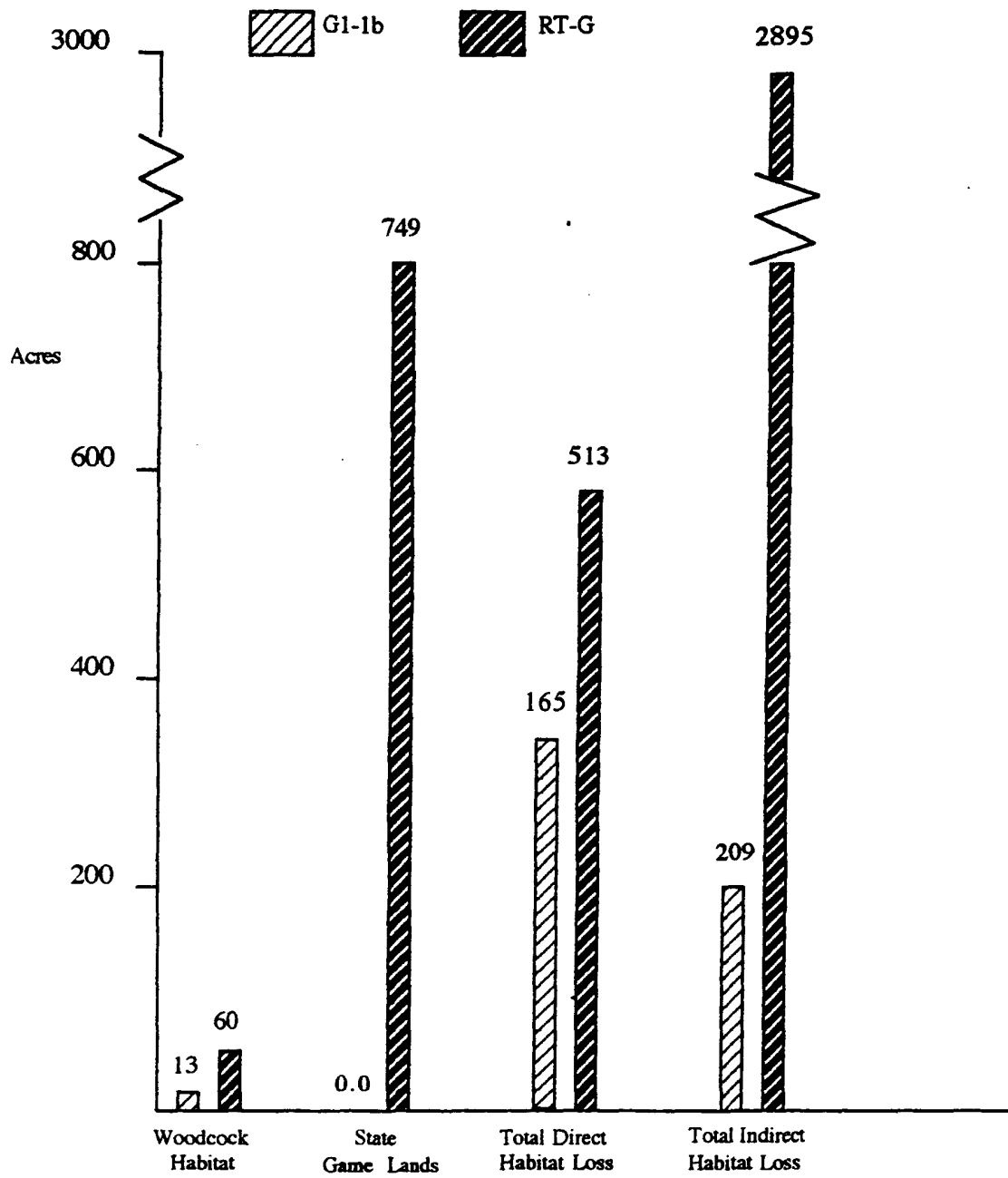


Figure 2. A comparison of other direct and indirect environmental impacts from the G1-1b and RT-G Alignments (Source: Final Environmental Impact Statement, Corps of Engineers).

the value of adjacent habitat for species having specialized habitat requirements; facilitates the movement and effects of invasive exotic and parasitic species; shifts species diversity and composition to a smaller number of habitat generalists; increases competition for food, cover, and breeding sites in adjacent habitats that are already at optimum carrying capacity; and increases predation.

In particular, highway-related forest fragmentation has been shown to cause significant declines in forest interior neotropical migratory birds (Van Dep Zande, *et. al.* 1980; Wilcove, 1984). The RT-G Alignment would increase edge habitat and reduce block size in a forest that has been minimally disturbed. Enhanced access is provided for common nest predators and habitat generalists such as crows (*Corvus brachyrhynchos*), grackles (*Quiscalus spp.*), blue jays (*Cyanocitta cristata*), English sparrows (*Passer domesticus*), raccoons (*Procyon lotor*), striped skunks (*Mephitis mephitis*), and opossums (*Didelphis marsupialis*), which prey on eggs and young of forest interior breeding birds, and out-compete habitat specialists that currently dominate this forest type. In addition, the RT-G Alignment would impede the daily and seasonal movement of animals between various community types, favoring the intrusion of generalist, opportunistic fauna and flora at the expense of native, intolerant species. At nine miles long, the highway would present a formidable barrier for less mobile wildlife, especially smaller and slower-moving animals such as turtles, snakes, frogs, salamanders, and small mammals.

The RT-G Alignment would not only affect a substantially larger number of species of neotropical migratory birds, it would also have a disproportionate effect on neotropical migrants dependent on forest interior habitat. For example, Table 1 shows the RT-G Alignment would adversely affect 33 species of neotropical migratory birds observed on the ridge, compared to 21 species potentially affected by G1-1b. More important, however, is the fact that 54 percent of the species affected by the RT-G Alignment are forest interior nesters and foragers that would be all but eliminated from much of the ridge-side forest due to a combination of direct habitat loss and fragmentation. Five of these species are of management concern to the Service due to their small and/or declining populations resulting from continuing habitat losses.

#### Hydrologic Modification

The upper portion of the ridge is characterized as a groundwater recharge zone, the middle slope as neutral, and the base of the ridge as a groundwater discharge zone (Skelly and Loy, 1997). The recharge zone provides water to down-slope spring-seeps, other wetland types, and streams. To construct the RT-G Alignment, PennDOT proposes two cuts, totaling 18,300 feet long (maximum depth of cut is 60 feet) in the recharge zone of the ridge. PennDOT has asserted that cuts and fills for the highway will not significantly affect groundwater flows, and that the RT-G Alignment will have only minor indirect impacts on wetlands, seeps, and streams, up-slope, and down-slope of the highway. The U.S. Army Corps of Engineers disagreed, stating: "*Removing the cut-intercepted water and reducing the recharge area could cause the water table in the ridge to decline, . . .*" and that "*. . . the conclusion that the RT-G Alignment will only have impacts on wetlands situated directly (i.e., within 200 feet) down-slope of the highway is not valid.*" (Yanchik, 1997).

Table 1. Comparison of neotropical migratory bird species observed within the study area for the U.S. Route 220 Traffic Improvements Project that will be adversely affected by the two alignments in Section 1 (Sources: DEIS; FWS 1997; Cupper, *et al.* 1998).

Common Name	Scientific Name	Interior Forest	RT-G Alignment	G1-1b Alignment
Sharp-shinned hawk	<i>Accipiter striatus</i>	X	X	
Broad-winged hawk	<i>Buteo platypterus</i>	X	X	
Red-tailed hawk	<i>Buteo jamaicensis</i>		X	X
American kestrel	<i>Falco sparverius</i>			X
Killdeer	<i>Charadrius vociferus</i>			NS
Mourning dove	<i>Zenaida macroura</i>			NS
Yellow-billed cuckoo	<i>Coccyzus americanus</i>		X	X
Black-billed cuckoo	<i>Coccyzus erythrophthalmus</i>	X	X	
Chimney swift	<i>Chaetura pelagica</i>		X	
Eastern wood-pewee	<i>Contopus virens</i>	X	X	
Acadian flycatcher	<i>Empidonax virescens</i>		X	
Least flycatcher	<i>Empidonax minimus</i>		X	X
Eastern phoebe	<i>Sayornis phoebe</i>		X	
Great crested flycatcher	<i>Myiarchus crinitus</i>	X	X	
Rough-winged swallow	<i>Stelgidopteryx serripennis</i>			X
House wren	<i>Troglodytes aedon</i>			X
Blue-gray gnatcatcher	<i>Poliopitila caerulea</i>	X	X	
Veery *	<i>Catharus fuscescens</i>	X	X	
Wood thrush *	<i>Hylocichla mustelina</i>	X	X	
American robin	<i>Turdus migratorius</i>		X	X
Gray catbird	<i>Dumetella carolinensis</i>		X	X
Cedar waxwing	<i>Bombycilla cedrorum</i>		X	X
Red-eyed vireo	<i>Vireo olivaceus</i>	X	X	
Blue-headed vireo	<i>Vireo solitarius</i>	X	X	
Yellow warbler	<i>Dendroica petechia</i>			X

Table 1. (continued)

Common Name	Scientific Name	Interior Forest	RT-G Alignment	G1-1b Alignment
Worm-eating warbler *	<i>Helmitheros vermivorus</i>	X	X	
Chestnut-sided warbler *	<i>Dendroica pennsylvanica</i>		X	X
Blue-winged warbler *	<i>Vermivora pinus</i>			X
Black-throated blue warbler	<i>Dendroica caerulescens</i>	X	X	
Black-throated green warbler	<i>Dendroica virens</i>	X	X	
Blackburnian warbler	<i>Dendroica fusca</i>	X	X	
Pine warbler	<i>Dendroica pinus</i>		X	
Black-and-white warbler	<i>Mniotilta varia</i>	X	X	
Ovenbird	<i>Seiurus aurocapillus</i>	X	X	
Northern waterthrush	<i>Seiurus noveboracensis</i>		X	
Common yellowthroat	<i>Geothlypis trichas</i>			X
American redstart	<i>Septophaga ruticilla</i>		X	X
Hooded warbler	<i>Wilsonia citrina</i>	X	X	
Yellow-breasted chat	<i>Icteria virens</i>			X
Scarlet tanager	<i>Piranga olivacea</i>	X	X	
Rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>		X	
Indigo bunting	<i>Passerina cyanea</i>			X
Eastern towhee	<i>Pipilo erythrophthalmus</i>			X
Chipping sparrow	<i>Spizella passerina</i>			X
Field sparrow *	<i>Spizella pusilla</i>			X
Savannah sparrow	<i>Passerculus sandwichensis</i>			NS
Grasshopper sparrow *	<i>Ammodramus savannarum</i>			NS
Bobolink *	<i>Dolichonyx oryzivorus</i>			NS
Eastern meadowlark *	<i>Sturnella magna</i>			NS
Baltimore oriole	<i>Icterus galbula</i>		X	X
American goldfinch	<i>Carduelis tristis</i>			X
	TOTAL	18	33	21

\* Species of management concern to the Fish and Wildlife Service

NS No significant adverse effects expected due to low habitat quality (not included in total)

In response to the Corps' and resource agency's concerns, PennDOT's consultants initially proposed to construct a reinfiltration trench 8,000 feet long and 10 feet deep, with a top width of 50 feet, to reintroduce intercepted groundwater. PennDOT rejected that design, proposing instead to construct a 3-foot thick rock blanket beneath the highway to convey intercepted groundwater under the highway and back into the groundwater.

There is substantial uncertainty with this proposal. The Corps has stated further that "*Given the complexities of the subsurface and groundwater regimes of the project area, there is great uncertainty as to the extent of secondary wetland and stream impacts associated with the project.*" (emphasis added) (Baltimore District MFR, 1999). Blasting to remove 10 million cubic yards of rock is likely to open new fractures in the rock, further draining water from the recharge zone. In some areas, the reinfiltration plan will convey intercepted groundwater away from where it was intercepted, and attempt to reintroduce it in areas where there is minimal groundwater being discharged at the surface. Moreover, there are numerous forested spring-seeps and wetlands down-slope of the areas PennDOT intends to convey the intercepted groundwater away from, and it is likely these seeps and wetlands will be adversely affected. Based on the latest reinfiltration scheme, it appears that: 1) the RT-G Alignment could have substantial impacts on waters of the United States, with as yet unknown consequences for spring-seeps, wetlands, and streams; 2) the ability to reintroduce intercepted groundwater remains uncertain; and 3) if the infiltration scheme fails, substantial indirect impacts to down-slope wetlands are possible.

#### Existence of a Less Environmentally Damaging Alternative

Unlike the proposed RT-G Alignment in Section 1, the alternative G1-1b (valley bottom) Alignment would traverse a fragmented landscape consisting of generally marginal farm fields, woodlots, brush rows, abandoned fields, back yards, and low quality wetlands. Existing Route 220, small businesses, homes, power lines, pipelines, telephone lines, and secondary roads along this alternative alignment further fragment the valley bottom landscape. The G1-1b Alignment would be located in a topographic position similar to existing Route 220, generally no more than 1,000 feet away, and in many cases within 200 feet of the existing highway.

Most wetlands affected by this alignment are of low to moderate quality, except for those wetlands along South Bald Eagle Creek and Bell Hollow Run. Of the 30.5 acres of wetlands affected, the Service considers only 3.75 acres to be of high quality, and 3.0 acres of these will be spanned by high bridges. Of the remaining 26.74 acres of wetlands, 15.18 acres (57 percent) are planted in corn; mowed for hay; pastured with cattle, horses, or goats; or occupied by a junkyard. The final environmental impact statement characterizes the remaining 15.31 acres as undisturbed. However, these wetlands lie in a highly fragmented landscape, degraded by past and present human activities. Aquatic and terrestrial wildlife in these remaining habitats tend to be pollution tolerant or habitat generalists.

The G1-1b Alignment will bridge 11 of 12 valley bottom streams, most of which have degraded water quality in the vicinity of the bridge crossings. Although four of these perennial streams have flows and drainage areas similar to the streams crossing the proposed RT-G Alignment, only one species of salamander and 21 species of aquatic invertebrates were collected in the valley bottom,

compared to 8 and 28 taxa, respectively, for the ridge (USFWS, 1997b). Ten of these 12 valley streams have been degraded by agricultural runoff and cattle grazing upstream of the proposed bridge crossings, and most receive major influxes of sediment during storms. For example, during a five-year frequency storm, two trout streams that would be bridged by this alignment (California Hollow Run and Bell Hollow Run) receive 1,531 and 4,287 tons of sediment, respectively, as compared to only 115 tons for Blue Springs Hollow Run on the proposed RT-G Alignment. The Pennsylvania Fish and Boat Commission also considers streams in the valley bottom to be of low quality "*when compared to similar resources potentially impacted by the RT-G Alignment.*" (Arway, 1995). Therefore, even though the operation and maintenance of G1-1b may degrade water quality, the change from existing conditions will not be as significant, since the highway will be located in a developed landscape, where the streams and wetlands have already been adversely affected by poor land use practices.

The "worst case analysis" presented in the final environmental impact statement equates the disturbance of bridging streams and wetlands along the G1-1b Alignment with the elimination of spring-seeps and streams by the RT-G Alignment, thereby overstating the impacts of the G1-1b Alignment. All G1-1b bridges would span the stream; no footers or abutments will be located within the channel. Resource agencies have agreed that bridging streams would minimize the impacts of this alignment, and would be willing to accept the minor and temporary impacts that would result if adequate erosion and sedimentation controls are implemented.

The G1-1b Alignment would not have the same potential adverse effects or future uncertainties related to potential impacts on groundwater and down-slope surface water resources, since it is located in the groundwater discharge zone in the valley bottom.

#### Adequacy of Proposed Mitigation

**Wetlands.** PennDOT proposes to create or restore 50 acres of wetlands at 11 locations along 13 miles of existing Route 220. Most wetlands will be created through excavation and construction of small berms to retain water. However, these compensation wetlands will not provide in-kind habitat replacement for the wetland-dependent species that the RT-G Alignment would adversely affect. The mitigation plan would primarily benefit aquatic and terrestrial species commonly found in the valley (as the mitigation report proposes), or species that would be adversely affected only by the G1-1b Alignment.

PennDOT's mitigation plan purportedly compensates for resource losses, regardless of the alignment selected. However, as the mitigation report states: "*Design of the wetlands will provide biotic and abiotic functions similar to those of the natural wetlands in the valley.*" (emphasis added) (Skelly and Loy, 1998). This proposed mitigation plan would replace a mosaic of forested spring-seeps and wetlands within a forested ecosystem with physically and functionally dissimilar wetlands.

The wetlands PennDOT proposes to construct to compensate for project-induced losses provide comparable functions, and are located in a similar topographic position, to wetlands PennDOT created in 1993 as replacement for forested spring-seep wetlands eliminated by previously



constructed sections of I-99. A recent independent evaluation of these wetlands states that “[t]he sites may have achieved regulatory compliance (and success in that sense) but we believe that none of the wetlands created as Route 220 mitigation has yet to achieve ecological success.” (Cole et al., 1998). As this study points out, not only are the created wetlands functionally different from the wetlands that were eliminated, they are not even functionally similar to the floodplain wetlands they are designed to mimic. This study goes on to conclude:

*We believe that there are certain types of wetlands that, for all intents and purposes, we cannot successfully create. For example, groundwater seep wetlands form where there are certain geologic and geomorphic conditions which cannot be replicated with any certainty whatsoever. As such, we recommend that impacts to wetlands dominated by seepage of groundwater be avoided if at all possible.*

The applicant’s compensation plan also proposes to “enhance” 40 acres and preserve 70 acres of wetlands. Coincidentally, the wetlands proposed for enhancement are primarily a type that the G1-1b Alignment would adversely affect. Although such enhancement would add structural diversity to these wetlands, it would not compensate for the loss of forested spring-seep wetlands and the diversity of aquatic and terrestrial species that use them. Moreover, preservation of existing wetlands not under demonstrable threat of development will not offset the impacts of any alignment.

We have evaluated the spring-seeps and wetlands along both alignments and have classified the spring-seeps adversely affected by the RT-G Alignment as Resource Category 2, in accordance with the Service’s Mitigation Policy (46 FR 7644). These spring-seeps are of high value to the evaluation species (northern spring salamander, woodcock, and wild turkey), and are scarce in this ecoregion section. Therefore, our mitigation goal is no net loss of in-kind habitat value. Because the proposed mitigation plan will not replace the lost habitat value of these seeps on the ridge, the mitigation goal will not be met, and there will be a substantial net loss of in-kind habitat value.

**Streams.** To compensate for adversely affecting 1.6 miles of headwater streams, PennDOT proposes planting riparian vegetation and fencing along 2,670 feet of streams (buffer width will depend on landowner agreement). Bank stabilization, channel restoration, and habitat structures would be used on 7,000 feet of these streams. Again, this would improve habitat for fish and aquatic and terrestrial species typically found in and along valley bottom streams, but it would not replace the 1.6 miles of first order streams located in a forested, undisturbed ecosystem, that will be obliterated by culverts and fills along the RT-G Alignment.

**Forest.** To compensate for direct or indirect adverse impacts to 2,895 acres of habitat for forest interior neotropical migratory birds, reptiles, amphibians, and mammals, PennDOT proposes to preserve and enhance at least 200 acres of existing forest habitat, and contribute \$200,000 to a conservation group. This compensation proposal will not fully offset forest habitat losses, since

it includes insufficient acreage and relies on the preservation of existing forest. Furthermore, it ignores the critical functional relationship between hillside forest cover, wetlands, and spring-seeps that characterizes the lands affected by the RT-G Alignment.

The 2,895 acres of forest affected by the RT-G Alignment include 192 separate wetlands and 23 perennial and intermittent streams. The interrelationships and interdependence of the biota and their habitats would have to be addressed in a compensation plan for the combined losses of forest and aquatic resources to be adequately compensated. The proposed mitigation plan does not, and probably cannot, include such measures.

The above-stated concerns with the proposed mitigation plan relate only to habitat losses associated with the proposed RT-G Alignment. All resource agencies, including the Corps, have agreed that aquatic and terrestrial habitat impacts from the G1-1b Alignment can be fully compensated by measures contained in the proposed mitigation plan.

## RELATED CONCERNS

### Compliance With 404(b)(1) Guidelines

At 40 CFR 230.10(c), the Clean Water Act Section 404(b)(1) Guidelines state that no discharge of dredged or fill material shall be permitted if it will cause or contribute to significant degradation of the waters of the United States. To determine whether the proposed project would cause or contribute to significant degradation of the waters of the United States, the following four factors, individually and collectively, were used:

**Section 230.10(c)(1).** The proposed project (with the RT-G Alignment in Section 1) would result in permanent adverse impacts on fish, wildlife, and special aquatic sites. It would eliminate 12.79 acres of irreplaceable spring seeps and 4.65 acres of other high quality wetlands; obliterate 1.6 miles of stream channels, including riffle and pool complexes; severely fragment 2,895 acres of high value and functionally connected forest habitat; and substantially and irreparably degrade the overall productivity of the aquatic ecosystem at the landscape level.

**Section 230.10(c)(2).** The proposed project would result in severe and permanent adverse effects on life stages of aquatic life and other wildlife dependent on aquatic ecosystems, including dozens of species of macroinvertebrates, amphibians, reptiles, birds, and mammals. The RT-G Alignment would eliminate outright a number of wetland-dependent species and, over the long-term, would lead to even greater secondary losses of aquatic and wetland-dependent wildlife species.

**Section 230.10(c)(3).** The proposed project would result in substantial permanent adverse effects on aquatic ecosystem diversity, productivity, and stability. The diversity of habitat types and associated flora and fauna on Bald Eagle Mountain can only be found in large expanses of unfragmented forest. Constructing and operating the highway in this setting would lead to a steady decline in the abundance and diversity of aquatic and terrestrial species, and permanently lower the ecological integrity of these and adjacent forest, wetland, and stream systems.

**Section 230.10(c)(4).** The proposed alignment would significantly affect aesthetic and recreational values. Locating the highway high on the ridge will create a permanent scar on the landscape, visible for miles. Recreational activities that Bald Eagle Mountain presently supports, such as cross-country skiing, bird-watching, and hunting, will be substantially reduced. In addition, the RT-G Alignment will directly or indirectly affect 749 acres of State Game Lands; lands that are owned by the Pennsylvania Game Commission for use by hunters.

To determine if the impacts would “cause or contribute to significant degradation of the waters of the United States,” we used the Section 404 (b)(1) Guidelines instructions to consider the “adverse effects of the discharge of pollutants on life stages of aquatic life and other wildlife dependent on aquatic ecosystems” (40 CFR, 230.10(c)(2) - emphasis added). The Guidelines explain that this consideration must include “[wildlife associated with aquatic ecosystems [that] are resident and transient mammals, birds, reptiles, and amphibians” (Section 230.32(a) - emphasis added). Since the Guidelines require a broad consideration of wetland-dependent wildlife, we include in that definition, *wetland species*, *wetland-dependent upland species*, and *facultative species* (USEPA, 1998).

To comply with the Guidelines, permit applicants must take all appropriate and practicable steps to compensate for unavoidable losses. Where, as here, the adverse effects are significant, the mitigation plan must also prevent, or offset, environmental damage to the extent sufficient to comply with Section 230.10(c) (i.e., the impacts must no longer be significant) (USEPA, 1998). Whether a mitigation plan succeeds in effectively reducing significant impacts normally depends upon the extent to which proposed compensation replaces or offsets the unavoidable harm the project causes to the aquatic environment. In this case, aquatic habitats most severely affected are forested spring-seep wetlands, headwater streams, and aquatic riffles and pools. It is technically difficult to restore or create these habitats successfully, let alone replicate the unusual juxtaposition of habitats that results in the high biodiversity of Bald Eagle Mountain. There have not been many, fully successful, persistent, forest/wetland creation projects in the northeastern United States; consequently, all agencies, including the Corps, have agreed that forested spring-seeps are irreplaceable.

For example, when PennDOT’s consultants questioned why mitigation ratios were set so high (4:1) for the RT-G Alignment, and if the ratio was intended to be punitive, the Baltimore District “*stressed that the areas are irreplaceable and that was the reason for the high ratio.*” (Minutes of October 30, 1995 mitigation planning meeting). Even if the proposed compensatory mitigation package were fully successful in creating wetlands typically found in the valley, it would not replace on a one-to-one basis the ecological functions of the hillside wetlands, forested spring-seeps, and streams that would be filled, disturbed, or otherwise adversely affected from the construction and operation of the RT-G Alignment.

The Guidelines further prohibit the discharge of dredged or fill material where there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences (40 CFR 230.10(a)). The fundamental requirement here is that a permit may only be issued for the “least environmentally damaging practicable alternative” (LEDPA).

Based on our analysis and the administrative record, it is our conclusion that the LEDPA has not been selected for Section 1 of the proposed project. By every measure, the RT-G Alignment would have substantially greater, unmitigable adverse impacts to aquatic and terrestrial resources than the equally practicable G1-1b Alignment.

In their comments on the draft environmental impact statement, the Corps stated that *“we have determined that either alternative could be permitted if appropriate and successful mitigation measures were implemented”* and that *“as much as 134.49 acres of Palustrine wetlands could be required to compensate for the impacts associated with the RT-G alternative; or 33.16 acres of Palustrine wetlands could be required to compensate for the impacts associated with the G1-1b alternative.”* (Spencer, 1995). At the time of these comments, PennDOT calculated that the RT-G Alignment would directly or indirectly affect 29.16 acres of wetlands, while the G1-1b Alignment would affect 24.32 acres (FHWA, 1994). Based on the wetland impacts of either alignment, and the compensatory mitigation required, the Corps apparently recognized that the RT-G Alignment would have far greater impacts on aquatic habitat values than the G1-1b Alignment, since the mitigation ratio was set at 4.61:1 for the RT-G, versus 1.36:1 for the G1-1b. In the Baltimore District’s March 30, 1999, Section 404(b)(1) analysis documentation, the disparity in mitigation ratios between the two alignments remained roughly the same, 3.3:1 for the RT-G versus 1.3:1 for the G1-1b. It appears that the Corps has arrived at a decision that the RT-G Alignment is the LEDPA by using compensatory mitigation to equalize the differences in environmental impacts between the two alignments.

This process is not only contrary to the Guidelines’ mandate to determine the LEDPA before compensatory mitigation is considered, but it is also contrary to the 1990 Memorandum of Agreement (MOA) between the Corps and the Environmental Protection Agency concerning the determination of mitigation under the Guidelines. The MOA states that *“Compensatory mitigation may not be used as a method to reduce environmental impacts in the evaluation of the least environmentally damaging practicable alternatives for the purposes of requirements under Section 230.10(a).”*

## CONCLUSIONS AND RECOMMENDATIONS

The Section 404(b)(1) Guidelines specify that compliance evaluation procedures will vary to reflect the potential for significant adverse impacts. In other words, resource quality is an important consideration (40 CFR 230.10). Although the G1-1b Alignment would affect more acres of wetlands, the quality of these wetlands has been exaggerated, and the greater ease of their replacement has been ignored. The acres of wetlands and streams that would be adversely affected by each alignment have been compared as if resource quality is irrelevant. When such values and their replaceability are taken into account, by nearly every measure, the impacts on aquatic and terrestrial resources from the RT-G Alignment would be substantially greater than those associated with the G1-1b Alignment in Section 1. The RT-G Alignment:

- would affect more acres of high quality, undisturbed wetlands (17.44 acres versus 3.75 acres);
- would eliminate more linear feet of streams (1.6 miles versus 0.6 mile);
- would affect more acres of forest interior habitat (2,895 acres versus 209 acres);

- would affect more acres of State Game Lands (direct or indirect impacts of up to 749 acres);
- would eliminate more acres of forest habitat, woodcock habitat, and critical and unique habitat;
- would have the greatest indirect impacts on off-alignment wetlands, spring-seeps, and streams;
- would have the greatest impacts on migratory birds; and
- would have the greatest impacts on project area biodiversity.

Based on the above conclusions, the Service recommends that the Baltimore Districts' proposed permit be amended to authorize the G1-1b Alignment, not the RT-G Alignment, in Section 1 of PennDOT's proposed project. We concur with the proposed alignments in Sections 2 and 3.

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