



# United States Department of the Interior

OFFICE OF THE SECRETARY

Washington, D.C. 20240

November 22, 1994

Dr. John H. Zirschky  
Acting Assistant Secretary (Civil Works)  
Department of the Army  
Washington, D.C. 20310

Dear Dr. Zirschky:

In accordance with the provisions of the December 21, 1992, Clean Water Act Section 404(q) Memorandum of Agreement (MOA) between the Department of the Interior (Department) and the Department of the Army (Army), I am requesting your review of the Huntington District (District) Engineer's decision to issue a Section 404 permit for the project described in Public Notice No. 94-27, Application Number North Fork Hughes River-Fill-057463 (1145b).

This permit would authorize the applicant, Little Kanawha Soil Conservation District, to place 13,000 cubic yards of fill material below the ordinary high water elevation of the North Fork Hughes River near Harrisville, West Virginia, to build a dam for the purposes of providing regional recreation, water supply, and flood control. The proposed dam will impound 305 acres of water at normal pool and result in the direct loss of 8.1 miles of high quality stream habitat (including 6.6 acres of wetlands, other special aquatic sites, and an unquantified amount of riffle/pool complexes), 61 acres of bottomland hardwoods, and 43 acres of upland hardwoods.

Mitigation for the proposed project includes enhancement of fisheries habitat in the resulting reservoir, wetland creation, planting of bottomland hardwoods, stabilizing and revegetating eroding streambanks located downstream of the dam site, monitoring of relocated mussel populations, monitoring of a downstream population of the snuffbox mussel (*Epioblasma triquetra*, a candidate for Federal listing as threatened or endangered), monitoring of water quality, and construction of recreation facilities.

On October 13, 1994, the District Engineer notified the Fish and Wildlife Service (Service) of his intent to proceed with permit issuance. After a thorough review of background information on the project, I have determined that this case warrants your attention in accordance with the criteria found in Part IV of the MOA (Elevation of Individual Permit Decisions). The Department, 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, the Fish and Wildlife

Act of 1956 (70 Stat. 1119; 16 U.S.C. 742), the Migratory Bird Treaty Act (40-Stat. 755, as amended; 16 U.S.C. 703-712), and the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

Specifically, I have concluded that the project, as currently proposed, would have substantial and unacceptable adverse effects on aquatic resources of national importance. These resources include the 8.1 miles of high quality stream and riparian habitats, and the fish and wildlife that occur within these habitats. The Hughes River, including the North Fork, is one of only three rivers of its size still free flowing in West Virginia. The river supports at least 22 species of freshwater mussels within the reach that would be directly affected by the proposed project, and the snuffbox mussel, a candidate for listing, is found downstream of the proposed dam site. Freshwater mussels are the most highly jeopardized taxa in North America, in large part due to projects such as that proposed. In addition, over 80 species of migratory birds breed in the project area, while over 110 species use the area during migration.

The cumulative effects of impoundment, channelization, and acid mine drainage in West Virginia alone have resulted in the loss of thousands of miles of riverine habitat and associated palustrine wetlands, with corresponding declines in the fish and wildlife populations supported by these habitats. Construction of the proposed dam would result in elimination of an additional 8.1 miles of high quality stream and riparian habitats, including a significant net loss of productive mussel habitat, and regionally scarce mature bottomland hardwood habitat used extensively by neotropical migrant birds during breeding and migration. Project-induced habitat losses and the resulting impacts to fish and wildlife would be substantial and unacceptable when considered in the context of cumulative losses which have occurred in West Virginia, the Ohio River watershed, and nationally, and that are likely to occur from foreseeable future development.

While a mitigation plan has been prepared, it would not fully offset anticipated environmental impacts. This high quality riverine and riparian system, and the diversity of plant and animal species supported by the system, would be difficult, if not impossible, to replace. Thus, the proposed project, including mitigation, would result in a significant net loss of riverine habitat to the detriment of species already in decline. Moreover, this project would probably result in the introduction of the exotic zebra mussel into the reservoir, and ultimately the Hughes River drainage. The impacts of this introduction on native mussel populations downstream of the dam also could not be mitigated.

Finally, I note that the applicant, the Natural Resources Conservation Service (NRCS, formerly the Soil Conservation Service), and the Corps of Engineers (Corps) have not conducted the thorough analysis of alternatives required by the National Environmental Policy Act. By accepting the analysis prepared by the NRCS, and not requiring the applicant to demonstrate that less environmentally damaging practicable alternatives are unavailable, the Corps has also failed to assure compliance with the Section 404(b)(1) Guidelines. The Service and the Department have previously identified concerns regarding alternatives to the

proposed project in comments on the applicant's environmental documents, as well as during the Corps' review of the permit application, and the records of decision indicate that neither the applicant nor the Corps have fully considered these concerns.

Based on the high values of the affected habitats, cumulative losses of riverine habitat in the region, the failure of proposed mitigation to provide for in-kind replacement of these habitats, and the likely existence of less environmentally damaging practicable alternatives, I request that the District be directed to require that NRCS and local project sponsors fully evaluate alternatives for each of the project purposes (i.e., flood control, water supply, and recreation), instead of only considering one multi-purpose project. If a less environmentally damaging alternative is selected, the District should require the applicant to develop, in consultation with the Service, a mitigation plan that compensates for all unavoidable adverse impacts associated with the selected alternative.

Enclosed is additional information addressing these and other issues relating to the proposed permit decision. To avoid unnecessary delay, I request that you complete your review by December 16, 1994. Please do not hesitate to contact me if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert P. Davison", with a long horizontal flourish extending to the right.

Robert P. Davison  
Acting Assistant Secretary for  
Fish and Wildlife and Parks

Enclosure

**ASSISTANT SECRETARY FOR FISH AND WILDLIFE AND PARKS  
EVALUATION AND REQUEST FOR REVIEW****NORTH FORK HUGHES RIVER WATERSHED PROJECT****PROJECT DESCRIPTION**

The applicant, Little Kanawha Soil Conservation District, proposes to construct a dam on the North Fork Hughes River, 22.1 miles above its mouth, near Harrisville, Ritchie County, West Virginia. The project involves the placement of 13,000 cubic yards of fill material below the ordinary high water elevation to create a dam 533 feet in length and 86 feet in height. The dam will impound 305 acres of water at normal pool, inundating 8.1 miles of the river. Wetlands and other special aquatic sites, totaling 6.62 acres, will be eliminated by the project. Sixty-one acres of bottomland hardwood forest, and 43 acres of upland hardwood forest will be inundated by the impoundment of water within the pool area of the project. This is a regional project proposed for recreation, flood control, and water supply.

**AQUATIC RESOURCES OF NATIONAL IMPORTANCE****National and Regional Resources**

**Riverine Habitat.** Free-flowing riverine ecosystems provide a diversity of habitat and support an abundance of organisms. Such systems have declined in number and quality across the country due to dam construction, channelization, and numerous other reasons including chemical pollution such as uncontrolled acid mine drainage. An estimated 2,000,000 dams, of which 68,000 are large dams (2 stories or higher), have been constructed in the United States. These dams have impounded 17 per cent of the Nation's river miles. In addition, 1972 figures show 235,000 river miles have been channelized across the country (American Rivers, undated publ.). In West Virginia alone, there are 191 dams funded or targeted for funding by P.L. 566, 160 of which have already been constructed; hundreds of miles of channelization funded through the Emergency Watershed Protection Program and P.L. 566; and over 2,000 miles of streams affected by acid mine drainage. Other entities, including government agencies and private corporations, have constructed thirteen reservoirs in the State each averaging 1370 acres, converting uncounted miles of riverine habitat and palustrine wetlands to lacustrine habitat. As a result, in West Virginia, only three rivers of the same size as the Hughes River remain relatively free-flowing: the Hughes River (including the North Fork), the Greenbrier River, and Middle Island Creek.

The impounding and channelization of rivers changes and reduces the habitat diversity and species abundance in these important aquatic systems. Additionally, due to adaptations made for life in a free-flowing environment, most riverine organisms can not survive in the lacustrine environment found after dam construction and river impoundment. As each riverine system is altered, the remaining natural systems become that much more valuable because of their diversity of habitats and species.

In 1982, the Nationwide Rivers Inventory identified streams and river reaches that had high ambient quality and potential for special protection. Of the 3.5 million miles of streams and river-reaches in the United States, only 2 per cent qualified for inclusion in this inventory (Neves, 1993). Eight miles of the North Fork Hughes River, including 3.4 miles in the project area, are included in this inventory.

**Wetlands and Special Aquatic Sites.** Wetlands are a scarce resource in West Virginia, comprising less than 3/4 of 1 per cent of the total land area. Of the 102,000 acres of wetlands in West Virginia, less than 25,000 acres are emergent wetlands (Tiner, 1987). Very few large wetland complexes exist in the State, therefore, increasing the importance of even the smallest wetland sites. Due to the mountainous terrain in West Virginia, many of the wetlands are riparian wetlands, small in size and found along rivers and streams.

The proposed project area also contains two other types of special aquatic sites--riffle/pool complexes and vegetated shallows. Vegetated shallows serve as excellent nursery areas, feeding areas and provide cover for fish and other aquatic life. Riffle/pool complexes contribute to habitat diversity and help oxygenate the water. Impoundments and channelizations in the state and the nation have eliminated many of these sites to the detriment of their ecosystems.

**Freshwater Mussels.** There are 297 known species of native freshwater mussels in the United States; the richest diversity of pearly mussels in the world. These mussels are of unique ecological value as natural biological filters, food for fish and wildlife, and indicators of good water quality. The abundance and variety of freshwater mussels has declined sharply in this century. Dam construction, siltation, water pollution, mining and industrial wastes, and introduction of exotic species seriously threaten their continued existence. At present, 213 species are either extinct, endangered, threatened, or of special concern (Williams, 1993). The Federal endangered species list currently contains 56 species of freshwater mussels listed as either endangered or threatened. An additional 21 species are considered to be extinct. Only 70 species are considered to have stable populations at this time (Williams, 1993). No other widespread biotic populations have been jeopardized to this extent.

The rivers and streams of the eastern half of North America provide habitat for over half of the known river mollusk species of the world (Stansbery, 1973b). The Ohio River Basin once supported 108 mussel species. Thirty-nine percent of these are either extinct or in danger of extinction due to stream alterations (Stansbery, 1973a).

The Fish and Wildlife Service like other Federal agencies is implementing an ecosystem approach to addressing natural resource issues. The North Fork Hughes River is located in the Ohio River Ecosystem Unit which spans at least ten States. The number one priority of the Ohio River Ecosystem Team is to reverse the decline of native aquatic mollusks in the ecosystem unit, particularly federally listed species, candidate species and other species of special concern. The Hughes River (including the North Fork) is one of six

focus areas in West Virginia and ranks fifth in the State in terms of the number of mussel species present (22). The Little Kanawha, into which the Hughes River flows, and the Ohio rank fourth (23) and first (38) respectively (Clayton, pers. comm.). Another ecosystem team priority that is directly linked to the survival of mussels involves analyzing existing and potential threats to riverine habitats and addressing declines in their quantity and quality.

**Neotropical Migrants.** Declines of neotropical migrant birds are occurring across the United States, but have been particularly severe in the northeast region (which includes West Virginia). Declines of some species, such as the cerulean warbler, Kentucky warbler, and prairie warbler, have been shown using 26 years of data from the Service's Breeding Bird Surveys. Other species, such as the wood thrush, have declined dramatically during the 1980's. Many of the species showing decline require unfragmented forests in order to breed (Robbins et al., 1993). Riparian habitats along streams are required or preferred by many of these species because the plant species diversity and structural diversity of these habitats provide excellent food and cover.

The Partners in Flight Program, a partnership of Federal, State, and local agencies, private organizations, and individuals, prioritized neotropical migrant species in each State to determine which have the greatest threat of being extirpated from an area. Of the top ten prioritized species in the Ohio Hills Physiographic Region, nine breed in the North Fork Hughes River drainage; these are the golden-winged warbler, cerulean warbler, worm-eating warbler, Louisiana waterthrush, hooded warbler, black-billed cuckoo, wood thrush, blue-winged warbler, and prairie warbler. Five of these species prefer breeding habitat near or along streams; three other species require lowland/bottomland habitats (Curson et al., 1994; National Geographic Society, 1987).

An additional priority of the Service's Ohio River Ecosystem Team is to reverse the decline of neotropical migrants found in the ecosystem. Species of emphasis were selected for mature forest breeders, shrub habitat breeders, and grassland breeders. The North Fork Hughes River drainage supports eight of the nine mature forest breeders and three of the four shrub habitat breeders. The mature forest breeders in the drainage are cerulean warbler, wood thrush, acadian flycatcher, eastern wood peewee, whip-poor-will, yellow-billed cuckoo, great crested flycatcher, and hooded warbler; the shrub habitat breeders are golden-winged warbler, blue-winged warbler, and prairie warbler.

#### Site-Specific Resources

The 8.1 miles of river in the project area contain excellent riparian habitat, three types of special aquatic sites, and good water quality. These features provide for the extensive mussel habitat, breeding and feeding habitat for neotropical migrant bird species and other migratory birds, and habitat for a warmwater fishery and other species of fish and wildlife that occur in this stretch of the North Fork Hughes River.

A freshwater mussel study conducted for the proposed project revealed a minimum of 22 species of mussels in the study reach, 15 of which were found in the proposed permanent pool area. According to Dr. Richard Neves, a malacologist with the National Biological Survey, "a minimum of 22 mussel species in a river this size is an indication of good species richness, and indicates a healthy assemblage of mussels." The fact that a few species dominated the sites sampled further supports the assertion that a healthy assemblage exists (R. Neves, pers. comm.).

The snuffbox mussel (*Epioblasma triquetra*), a candidate for Federal listing, is found downstream of the proposed dam site, immediately below the existing low head dam in North Bend State Park (Ecological Specialists, Inc., 1993). This species has been recorded in only 11 streams in West Virginia, but the North Fork contains the best population. Many of the records for other sites are either dead shells or one to two live mussels; the North Fork population contains at least 41 live individuals (Clayton, pers. comm.).

Over 80 species of migratory birds protected by international treaties breed in the drainage, including wood duck, woodcock, green-backed heron, and spotted sandpiper. The bottomland and upland hardwood forest habitats attract a variety of warblers and other woodland birds during the breeding season. Over 110 species, including many neotropical migrants use the area during migration. Approximately 23 acres of mature bottomland hardwoods and 38 acres of immature bottomland hardwoods exist in the proposed permanent pool area. Bottomland hardwood habitat is limited in the area due to the mountainous terrain. Bottomland hardwood species found in the watershed include sycamore, yellow poplar, boxelder, black cherry, black walnut, maples, buckeyes, and elms. Many trees in the mature stands are larger than 16" dbh. Approximately 11 acres of mature upland hardwoods and 32 acres of immature upland hardwoods are also found in the proposed permanent pool. All of these valuable bottomland and upland hardwood forest habitats would be lost if the proposed project is implemented.

The riparian habitat along the entire 8.1 miles of river is in excellent condition. Streambanks are vegetated and stable. Although pasture and hayland are common, a beneficial riparian corridor exists in most places. The riparian vegetation provides habitat for migratory birds; improved fish habitat, erosion control, nutrient absorption, and sediment and pesticide traps.

Nine wetland sites of up to 0.5 acres in size totalling 1.2 acres would be inundated by the proposed normal pool. Eleven additional sites totalling 4.2 acres would be affected by the proposed flood pool. The wetlands in the normal pool area are primarily palustrine emergent. Some open water wetlands (farm ponds) are also present.

The vegetated shallows in the project area are primarily water willow (*Justicia americana*) beds. An inventory of these areas revealed that 102 beds totalling 3.4 acres occur in the proposed permanent pool. The proposed flood pool area was not inventoried, but willow beds are extensive in that stretch of river also. The remaining areas (2.0 acres) included in the 6.6 acres of

wetlands and special aquatic sites identified in the public notice are channel islands and channel overflow areas. The third type of special aquatic site, riffle/pool complexes, have not been quantified but contribute significantly to the quality of the stream.

The North Fork Hughes River is classified as a High Quality Stream by West Virginia's Department of Natural Resources. The High Quality Streams List was prepared in cooperation with Natural Resources Conservation Service (NRCS) personnel and other Federal and State agencies. The State has classified only 947 of West Virginia's 8000 streams as "high quality". The North Fork meets the criteria for inclusion on this list because it is a warmwater stream over five miles in length with desirable fish populations and public utilization thereof (WVDNR, 1986).

The warmwater fishery in the North Fork Hughes River supports 27 species of fish (WVDNR, 1992). Sport fish caught in the river during the 1992 survey include smallmouth, largemouth, spotted, and rock basses, green and longear sunfishes, and bluegills. Warmwater fishing opportunities are available throughout most of the river including the stretch of river to be impounded by the proposed project.

#### SUBSTANTIAL AND UNACCEPTABLE IMPACTS

The proposed project will result in substantial and unacceptable adverse impacts to aquatic resources of national importance and their associated fish and wildlife resources. The aquatic resources of national importance are the 8.1 miles of riverine habitat including wetlands, vegetated shallows, pool/riffle complexes, channel islands and overflow areas, and the associated bottomland hardwood forests in the riparian corridor. The impounding of 8.1 miles of the North Fork Hughes River will change the present diverse riverine habitat into lacustrine habitat. The associated loss of wetlands, extensive aquatic beds, riffle/pool complexes, and high quality riparian habitat including 61 acres of bottomland hardwoods, will destroy the habitat of many species of fish and wildlife. Of greatest concern is the loss of numerous mussel and neotropical migrant birds, two species groups known to be declining nationally. After consideration of the proposed compensation, it is clear that the project would result in a net loss of aquatic resources of national importance.

#### Direct Impacts

The mussel study conducted for the project suggested that as many as four of the 22 species found in the area may survive in the post-project lacustrine habitat. The North Fork Hughes River Watershed Project Work Plan/Environmental Impact Statement (EIS) predicted that only two of the 22 species could live in the impounded/inundated section of river. The remaining species can not survive in lake habitat. The two primary reasons for this lack of mussel survival are 1) the slower moving water does not provide sufficient nutrients nor does it effectively eliminate wastes, and 2) a change in fish species that serve as hosts in the glochidia phase of the mussel life cycle will result. This loss of existing mussel populations and habitat is a significant and unacceptable impact of the proposed project; attempts to



create mussel habitat or to artificially colonize areas not previously colonized have been unsuccessful.

Although the impact of the dam on downstream mussel populations was not investigated, it cannot be concluded that there will be no effect on mussels or other aquatic species. Fish species using the area downstream of a dam can easily change, thus, possibly leaving a mussel population without an appropriate host for the glochidia stage. In addition, nutrients frequently drop out in the sediment in the impoundment pool as a result of the slower moving water. This leaves fewer nutrients in the water for downstream filter feeders such as mussels to utilize (Stansbery, 1973a). Sedimentation and streambank erosion during construction can be minimized, but not eliminated. The extent of this impact remains to be seen and will depend on how much and where the sediment settles out. The first five mussel sampling sites downstream of the proposed dam site are within two miles of the construction area. Each of these sites has 12-16 mussel species and all have at least one individual of the Federal candidate species, the snuffbox mussel. Habitats where this species occurs need to be protected from further degradation in order to help prevent future listing of the species.

In addition to the destruction of habitat caused by inundation, the potential for zebra mussel invasion becomes a reality by the creation of a reservoir open to boating. Zebra mussels have been in the Ohio River since at least 1992, and most likely will be introduced into reservoirs via boats. Considerable evidence exists to support this in the upper midwest. One example is the infestation of 25 land-locked lakes in Michigan by the zebra mussel. Experts in the field know of no cases where rivers without navigational traffic or recreational boating have zebra mussels in them - unless there is a reservoir with boating upstream. Once in the reservoir, there is a continuous supply of zebra mussels to affect downstream reaches of the river. It is estimated that zebra mussels can infest a river up to 60 miles downstream of a dam (R. Neves, pers. comm.).

The effect of zebra mussel invasion on native mussel populations alone is devastating. In the Illinois River, the mortality of native mussels increased two years after zebra mussels were known to be present. Mortalities attributable to zebra mussel introduction range from 12% to 90% depending on the species. Current evidence shows that without the reservoir, the North Fork Hughes River is unlikely to become infested with zebra mussels. However, with the reservoir, infestation is likely and will be accompanied by subsequent mussel depredation downstream.

One of the major reasons for declines of neotropical migrants in the east is loss or fragmentation of mature bottomland and upland forests. The creation of the permanent pool will directly destroy 23 acres of mature bottomland hardwoods and 11 acres of mature upland hardwoods. An additional 70 acres of immature hardwoods will also be destroyed for a total loss of 104 acres of hardwood forest.

In addition to the direct loss due to inundation, fragmentation will effectively eliminate otherwise productive breeding habitat. Habitat fragmentation will result from impounding a river which is currently 55 feet

in width and creating a permanent pool that will be approximately 310 feet wide. Creation of more "edge" habitat attracts wildlife species previously absent from the forest interior that prey on the eggs and young of forest interior nesting birds, parasitize nests, and increase competition for breeding habitat. This factor has the potential to eliminate even more neotropical migrant breeding habitat than just that lost to inundation.

### **Cumulative Impacts**

The adverse impacts of the proposed project must also be considered in the context of past development-related wetland losses and reasonably foreseeable future losses. Neither the District's decision document nor the National Environmental Policy Act (NEPA) documentation prepared by NRCS address the cumulative effects of dam and impoundment construction in the watershed, region or within the state. Two NRCS water resources progress reports indicate that 191 dam projects have been planned for the State of West Virginia. Of these, 160 have been built and four are currently under construction. The 191 planned dams include 176 small structures (ranging in size from farm-pond-size on intermittent streams, to small impoundments up to six acres on perennial streams), single-purpose flood control dams and 15 multi-purpose dams ranging in size from five to 300 acres. The North Fork project is one of the bigger NRCS projects; however, there are other existing projects in the 220-275 acre range. These numbers do not include dams authorized, constructed, or funded through other government or private entities. Thirteen large reservoirs (each averaging 1370 acres) exist in West Virginia. In addition, the Ohio, Kanawha, and Monongahela Rivers have been dammed for navigation.

It is evident that the proposed project would contribute to the already significant cumulative loss of riverine habitat that has occurred, and that will likely continue to occur due to dam construction. The loss of another 8.1 miles of riverine habitat will contribute to the continuing decline of available habitat for, and cumulative impacts on, declining species of freshwater mussels and migratory birds that are found in the project area as well as other species of fish and wildlife.

### **Adequacy of Proposed Mitigation**

Compensatory mitigation for the proposed project involves creating a 0.25-acre wetland in a natural/education area; planting wetland vegetation in 25 acres of the permanent pool which is 18 inches or less in depth; constructing a 2.7-acre marsh on the disposal area; allowing natural succession on almost 20 acres of pasture; planting woody vegetation on the disposal area; planting bottomland hardwood species on two 3-acre areas; conducting an educational campaign for land users; enhancing fish habitat within the proposed lake by retaining 103.3 acres of standing timber that will be submerged in the lake, placing rock on both sides of an elevated road to act as an underwater reef, placing rock around the shoreline of an island and placing random boulders in the lake and downstream of the dam for fish cover; providing a minimum flow release of one cubic foot per second below the dam; stabilizing and revegetating approximately 150 yards of eroding streambank downstream of the proposed dam site; and properly abandoning or flood-proofing oil and gas wells

in the proposed permanent and flood pool areas prior to impoundment. Additional mitigation required as part of the West Virginia Division of Environmental Protection's Water Quality Certification includes preparing and implementing a plan to study the snuffbox mussel; relocating mussels upstream of the dam and monitoring the populations for six years; monitoring water quality within the proposed lake; properly treating wastewater from restroom facilities; implementing a conservation program on 16 miles of free-flowing streams within the river basin; and constructing two boat ramps, three fishing piers and a new shooting range.

The Department does not concur with the District's determination that mitigation adequately compensates for the lost habitats. The proposed compensatory mitigation will not offset the loss of 8.1 miles of high quality riverine and riparian habitat. Mitigation measures such as fisheries habitat enhancement, purchase of land around the impounded river, and promotion of a voluntary streambank stabilization program do not compensate for the loss of riverine habitat. As there are presently mussel populations found upstream of the proposed pool area, relocation of mussel populations from the reach of river to be impounded to the upstream location, will not replace lost habitat, nor will mussel populations be maintained at current levels. Loss of 61 acres of bottomland forests and fragmentation of the forested habitat along the river cannot be replaced by planting six acres of bottomland hardwoods and allowing natural succession on 20 acres of pasture.

#### ALTERNATIVES TO THE PROPOSED PROJECT

In addition to our concerns regarding impacts to nationally important aquatic resources, the Department cannot concur with the District's determination that all practicable and reasonable alternatives that might avoid impacts to these resources have been analyzed. The only alternatives thoroughly evaluated in the EIS were the multi-purpose dam alternative and the no action alternative. No other alternatives were given detailed consideration. Since this is a regional project, different combinations of proposals that would satisfy the multiple project purposes of recreation, flood control and water supply need to be evaluated throughout the region. The 1991 NRCS Preapplication Report states that on a national economic level the proposed dam project is infeasible for any level of development. Funding through the Appalachian Regional Commission allowed the inclusion of regional benefits into the calculations and resulted in a favorable cost/benefit ratio. A similar inclusion of regional benefits in an alternatives analysis that considers separate proposals for meeting the purposes of flood control, water supply, and recreation (or some other form of economic stimulus) is likely to lead to selection of a feasible and less environmentally damaging project.

## RECOMMENDATIONS

The Department recommends the following actions:

1. The District be directed to deny the permit, as currently proposed, based on the project's substantial and unacceptable adverse impacts to aquatic resources of national importance.
2. The District be directed to evaluate additional alternatives for each of the project purposes - flood control, water supply, and recreation (or some other form of economic stimulus). Feasibility and practicability of each should be determined in a similar manner as the single multi-purpose dam (i.e., funding through Appalachian Regional Commission and thus inclusion of regional benefits).
3. The selection of the least environmentally damaging project proposal (or proposals) should include a detailed compensatory mitigation plan developed in consultation with the Service and other resource agencies to compensate for all unavoidable project impacts.

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