

## **FINDING OF NO SIGNIFICANT IMPACT (FONSI)**

### **BRISTOL FLOOD DAMAGE REDUCTION STUDY AND ENVIRONMENTAL ASSESSMENT (EA)**

#### **REQUEST FOR TVA SECTION 26a AND LAND USE APPROVALS FOR BRISTOL, TENNESSEE AND BRISTOL, VIRGINIA WASHINGTON COUNTY, VIRGINIA AND SULLIVAN COUNTY, TENNESSEE**

#### **Purpose and Need**

Nearly all of the downtown Bristol businesses, as well as some residential neighborhoods and businesses in outlying communities, are affected by flooding that occurs along Beaver Creek and two of its larger tributaries. Although flooding occurs periodically in the area, the two most destructive events occurred in March 1867 and October 1977. As a result and upon request, the U.S. Army Corps of Engineers (USACE), Nashville District prepared an environmental assessment (EA) evaluating various alternative ways to address flood damage reduction along Beaver Creek for the cities of Bristol, Tennessee, and Bristol, Virginia (Twin Cities). The existing conditions and potential impacts of the viable proposed alternatives are presented in this EA (attached). A flood damage reduction study and detailed project report were prepared in accordance with Section 205 of the 1948 Flood Control Act. The accompanying EA was prepared pursuant to the National Environmental Policy Act (NEPA), CEQ regulations (40 CFR, 1500-1517), and the regulations of the USACE and Tennessee Valley Authority (TVA) implementing NEPA.

Construction of obstructions designed to reduce flooding from Beaver Creek, a tributary of the Tennessee River, requires approval from TVA under Section 26a of the TVA Act. Approval under Section 26a has not been requested at this time. However, TVA anticipates getting a Section 26a application(s) from or on behalf of the Twin Cities in the near future. Additionally, to change the current rate of stream flow, TVA is working with USACE on the design of a modified inlet structure to replace the existing one at the Beaver Creek Detention Dam owned by TVA. This action would also have to be approved by TVA. Since TVA would continue to own and operate this new structure, it is unlikely that any permanent land rights would need to be granted to another entity for this project. Once final design plans are developed, agreed upon, and submitted with an application, TVA may be required to issue a temporary land use license, agreement, or other legal instrument to provide Twin Cities (or to others working on their behalf) with necessary land rights to access and use TVA property for construction purposes. If so, the Twin Cities would also be submitting a land use application for construction of the modified structure in the dam in the near future. Anticipated impacts of the proposed actions in these applications, including other structural (channel) improvements to Beaver Creek, have been

evaluated in the final USACE EA and are being addressed at this time in this TVA FONSI. Other actions requiring Section 26a approval include riprap, gabions, retaining walls, construction of new pedestrian bridge, and above ground utility crossings. The project is presently in the detailed plans and specifications development phase. Funding is being secured; however, project implementation is not expected to begin until early in 2007. The necessary approvals, including the Section 26a permit, would be obtained prior to construction.

## **Background**

The flood reduction study included an evaluation of the flood problems occurring in the Twin Cities. It not only concentrated in the downtown business, but also included outlying reaches and three streams: Beaver Creek, Little Creek, and Mumpower Creek. Figure 2 in the attached EA delineates the project study area. Floodplain development in the Twin Cities area has been primarily in the central commercial and business district where moderately dense residential development has also occurred. There is no floodway through the downtown area between Beaver Creek Mile 15.2 and 15.95. The downtown area is fully developed.

Flooding has been periodic for the area. Flood events are not predictable by season or limited to one season of the year. The watershed is subject to flood-producing storms during both spring and winter seasons as a result of general rains and during the summer season as a result of thunderstorms.

Local flood protection measures on Beaver Creek began in 1871 and have included several improvements such as a new channel construction, dikes, and channel widening. Today, the majority of flood damage that occurs in the downtown area is due to the highly developed floodplain. See Section 2.1 in the attached EA. In 1961 TVA recommended building two detention reservoirs above the Twin Cities; Beaver Creek and Clear Creek Detention Dams were completed in 1965. The primary purpose of the structures is flood protection for the Twin Cities. Also, in 1961, work began on the Bristol Bypass and between Beaver Creek Miles 12.3 to 15.0; approximately one mile of the channel was relocated in six separate reaches.

Since its original settlement, the greatest flood of Beaver Creek resulted from a general winter storm in the Twin Cities vicinity on March 7, 1867. Estimated damages were \$1.060 million. The largest flood of record since the closure of Beaver Creek and Clear Creek Dams occurred on October 2, 1977. This flood caused an estimated \$1.364 million in damages and is estimated to have a recurrence interval of 20 years. At least seven (7) other large floods on Beaver Creek have been recorded. Mumpower Creek also experienced a large flood in 1917. It has experienced floods independent of Beaver Creek and of sufficient size to cause damages. The October 1977 flood of record also occurred on Little Creek. Other noted flood events on this tributary include March 1955, April 1972, and December 1972.

## **Alternatives**

Although several varied attempts have been made to reduce damages from flooding, mainly along Beaver Creek, USACE computer modeling of the existing conditions within the study area indicated that an estimated \$3.5 million in expected annual damages would still likely occur. Therefore, the Twin Cities requested that the

USACE assist with a study of potential flood reduction measures to alleviate these existing conditions. The USACE study and EA examined many different ways of attempting to reduce the levels and impacts of flooding and related problems. Alternatives previously considered, but dismissed from further evaluation included opening of Piedmont Street culvert, underground excavation of a high flow diversion tunnel, modification to existing railroad bridge, removal and replacement of Vance Street Bridge, non-structural measures, and various combinations of these alternatives.

Finally, the affects of channel widening near 6<sup>th</sup> Street (Alternative 1); all three components of the proposed work near 8<sup>th</sup> Street (removal of 8<sup>th</sup> Street bridge, removal and replacement of a nearby pedestrian bridge, and channel widening at 8<sup>th</sup> Street bridge) (Alternative 2); and removal of the Sears building (Alternative 3), to reduce Twin Cities' (future applicants) flooding from Beaver Creek were considered viable and more fully evaluated in the USACE EA. As previously mentioned, along with the 2 in-stream structural improvements, the flood reduction project also includes modification of the TVA-owned Beaver Creek Dam (Alternative 4). Alternative 5, Combination of All Previous Alternatives (Preferred), was also evaluated along with a No Action Alternative.

Under the No Action Alternative, no measures to reduce flood damages would be recommended by USACE or likely undertaken by the Twin Cities in the foreseeable future. Water flow in Beaver Creek would continue to be restricted through the existing channel during flood events and greater amounts of damages and monetary loss would likely occur over time. The Twin Cities participate in the Federal Emergency Management Agency National Flood Insurance Program. By doing so, no new construction is allowed in the floodways and buildings within the floodplains must be built one foot above the 100-year flood elevation. Through this regulation, future floodplain encroachments could be regulated; however, damages to existing structures would be expected to continue.

As located and designed, hydraulic modeling showed that the flow increase from the outlet structure in Beaver Creek Dam would not increase the 100-year floodplain. A 48-inch outlet pipe currently passes through the dam and an 8-inch sewer pipe also passes through the outlet pipe, reducing flow capacity. Under normal conditions, the dam is a dry detention facility designed to detain floodwaters during heavy rainfall periods. Under Alternative 4, the existing inlet, a reinforced concrete box structure with trash racks, would be modified or replaced with a new larger reinforced concrete structure. The proposed structure would increase detention times for smaller storm events as well as heavy rainfalls and allow floodwaters below the dam to pass through the Twin Cities before releasing water from the upper Beaver Creek drainage area. The new structure would also accommodate the existing sewer line. To develop a design that best incorporates safety, aesthetics, costs, operation, and maintenance, this inlet structure is presently under review during the USACE plans and specifications phase of the work. Proposed construction would include building concrete base into the creek channel.

In association with the dam modification, a construction access road would be installed through a mowed field around the base of the dam and maintained at near pre-construction conditions. This road would be left in place after completion of the project to provide a means to access the structure and dam for maintenance purposes.

Under Alternative 5, implementation of measures included under Alternatives 1 through 4 would be implemented. This alternative is also the recommended plan and Preferred Alternative. See Section 3.2.1, 3.2.2, and 3.2.2 in the attached EA for a more detailed description of Alternatives 1 through 3.

### **Affected Environment and Anticipated Impacts**

Much of Beaver Creek through the downtown area has been heavily altered by past adjacent land use. Beaver Creek in both Tennessee and Virginia is listed on their respective state's 303(d) list for impaired waters. Virginia Department of Environmental Quality (VDEQ) lists fecal coliform violations, urban runoff and agricultural non-point sources as contributors for the listed status. Tennessee Department of Environment and Conservation (TDEC) list urban runoff and fecal coliform contamination as causes of stream impairments along with siltation and channel alterations. TDEC has also issued bacteriological advisories for Beaver Creek from the state line to Boone Reservoir and declared the stream as unsuitable for human contact. Although reduced in species diversity and population numbers compared with other streams in the region, the fish community in Beaver Creek is a warm water assemblage. Studies conducted downstream at Beaver Creek Mile 17.6 in Washington County, Virginia, by TVA for fish species have shown results similar to the benthic environment. According to these studies, the benthic community is dominated by pollutant-tolerant species; growth rates and condition factors are depressed. The Index for Biotic Integrity rating was poor to very poor. These studies also found a relative abundance of some minnow and small fish populations such as central stonerollers and banded sculpins. Downstream in Sullivan County, Tennessee and below the Twin Cities at Mile 8.2 (1997), the common species include greenside darters, central stonerollers, and whitetail shiners. Very few game or pan fish were found. For a variety of reasons, including a history of stream pollution, stream bank disturbance, and stream alteration, even fewer species would be expected within the immediate Twin Cities area (see attached EA).

Construction activities associated with the channel widening and improvements under Alternatives 1 and 2, (including the bridge removal projects) as well as Alternative 4 would cause localized, minor, and temporary negative impacts to the water quality of Beaver Creek. Sound construction and engineering best management practices (BMPs) would be rigorously implemented to control erosion and sedimentation resulting from streambed and stream bank disturbance. Vegetation removal and back-sloping would only occur along one side of the creek at both the 6<sup>th</sup> and 8<sup>th</sup> Street sites. Riprap would be placed and vegetation planted on the new bank slopes to further control erosion. A temporary elevation of water temperatures and sedimentation would occur where disturbance of existing vegetation is required; however, because of their relatively low numbers, this is not expected to have a long-term impact on benthos, fish, and other aquatic life. Some fish species would be

temporarily displaced to other areas of Beaver Creek. Even these minor temporary effects on aquatic life are expected to be mitigated once favorable streambed habitat returns and newly planted shoreline vegetation becomes established. Stream temperature would moderate only slightly because velocities of normal flow would not allow water to stagnate in these stream reaches and vegetation along the south bank, which provides most of the shading to the stream, would not be disturbed. Additional plantings along the opposite bank of 8<sup>th</sup> Street would further reduce impacts and provide shade and temperature relief. Similarly, removal of concrete substrate and replacement with grass and riprap would provide more favorable streambank and stream bottom substrates. BMPs would be implemented in accordance with Virginia and Tennessee regulations to minimize impacts from construction activities. Because sufficient water would remain in the streambed, changes to the aquatic resources with the increased flow detention behind Beaver Creek Dam would be insignificant when compared to the existing conditions. Even under Alternative 5, implementation of all flood reduction projects (including removal of the Sears building) use of BMPs is expected to reduce sedimentation and would not worsen the existing water quality conditions of Beaver Creek. With the installed erosion control and replanting of trees, water quality conditions would likely be improved over the long term.

Sugar Hollow Park, upstream of Beaver Creek Dam, is managed by the city of Bristol, Virginia. The 400-acre park includes soccer and softball fields, golf area, walking trail, campground, picnic facilities, pavilion, and swimming pool. Because there is limited recreation occurring in associated with Beaver Creek, implementation of Alternatives 1, 2, and 3 would not impact recreational use in the impact areas of these projects. However, under Alternatives 4 and 5, the increased elevations and detention time of flood waters behind Beaver Creek Dam would have a minor impact on the recreational use upstream in the adjacent Sugar Hollow Park, specifically access to the campground. Table 1, in the attached EA, indicates the increased length of time the access road would be inundated under certain flood intervals. Although flooding could occur at any time of year, there is a greater likelihood that flooding would occur during the late fall, wintertime, or early spring when recreational use of the park would typically be lower. Given the length of the more typical recreation season in this area, the impact of the projected recreation days lost (9) due to water over the campground road (elevation 1829.6) would be minor even under the worst scenario of a 500-year flood. This is only projected to occur during a 500-year interval (frequency event) or the lowest probability flood event. Measures to provide alternate access would be included in the final design plans.

According to the U.S. Fish and Wildlife Service (USFWS), the federally endangered gray bat (*Myotis grisescens*) is known to occur in the area and a maternity colony seasonally inhabits the Piedmont Street culvert. Virginia Department of Conservation and Recreation (VDCR) records indicate gray bat present in the study area and the Piedmont Street culvert is declared as a conservation site. Virginia Department of Game and Inland Fisheries (VDGIF) indicated that a state-listed fish, the Tennessee dace (*Phoxinus tennesseensis*) inhabits Beaver Creek and may occur within the project study area. Activities proposed under Alternative 1, 2, 3, and 4 would not

affect endangered species. There is a maternity colony of gray bats in the Piedmont Street culvert but no activity is proposed at this location. By letter dated October 23, 2003, including the Final Fish and Wildlife Coordination Act Report, USFWS agreed with the USACE no effect finding on federally-listed endangered species. According to the VDGIF, the state-listed Tennessee dace has been found in Steele Creek, a tributary of Beaver Creek. BMPs to control erosion and sediment, including planting vegetation and other measures, would be implemented to minimize impacts to this species.

The National Register of Historic Places (NRHP) lists eight (8) historic properties in Bristol, Washington County, Virginia. Nine (9) historic properties are listed on the NRHP in Bristol, Tennessee, and the Tennessee Historical Commission is reviewing nominations for several more structures and sites in the area. USACE conducted on-site archeological and architectural assessments for the proposed project alternatives to determine the potential need for additional, more detailed, identification studies. Based on these assessments, no additional archeological studies were deemed necessary to assess the potential affects of the project. Alternatives 1, 2, 3, and 4 consist of seven separate flood reduction measures that are considered individually and collectively under Alternative 5. Relocation of utilities, including gas, water, sewer, and electrical lines, to implement the project has the potential to affect the audible and visual context of historic properties, in particular historic above ground structures; however, the affect would be temporary and not adverse. In response to review of the USACE draft EA, the Virginia State Historic Preservation Officer (VA SHPO), by letter dated August 27, 2003, concurs that the proposed undertaking will have no effect to architectural resources listed or eligible for the NRHP in Virginia. However, the Virginia SHPO also recommended USACE conduct additional archival work to identify unlisted resources or archeological sites. Given that only a single project alternative, modification of Beaver Creek Dam (Alternative 4), is located within Virginia, and the VA SHPO concurs in the finding that the dam is not eligible, no additional studies were deemed necessary. A response letter stating USACE's opinion, dated October 1, 2004, was prepared and sent to the Virginia SHPO. By letter dated November 2, 2004, the Virginia SHPO concurred in USACE's findings, stating that the project will have no adverse effect on historic properties listed in or eligible for the NRHP. By letter dated August 8, 2003, the Tennessee State Historic Preservation Officer concurred with USACE's finding that the project will not adversely affect historic properties in Tennessee.

Project activities such as channel widening, pedestrian bridge replacement, and dam inlet structure modification will be undertaken in the 100-year floodplain. By their very nature, such activities are functionally dependent on the floodplain for their effectiveness, making other alternatives that may avoid location in the floodplain not practicable. Further, since the purpose of the project is to reduce flooding impacts in the Twin Cities, the federal action will restore and preserve the natural and beneficial values served by floodplains. Accordingly, the project is fully consistent with the requirements of Executive Order 11988 (Floodplain Management).

### **Public Review**

USACE released a scoping letter on November 9, 2001. The letter was sent to interested members of the public and to local, state, and federal governmental

agencies with jurisdiction or special expertise. This draft EA was also circulated to scoping respondents and to local, state, and federal governmental agencies for a 30-day review and comment period. There were six responses to the scoping letter; the scoping comments and USACE responses are summarized in Section 8.0 in the attached EA. Also see Appendix 3 in the attached EA where scoping responses are included in their entirety.

VDEQ mentioned that Beaver Creek is listed on the state's 303(d) list for fecal coliform violations and also for benthic impairments. TDEC also mentioned that Beaver Creek is on the state's 303(d) list of streams that are water quality limited or are expected to exceed water quality standards in the next two years. A bacteriological advisory had been issued from the state line to Boone Reservoir due to nonpoint sources in Bristol, Tennessee, and Virginia (see Anticipated Impacts section above). VDEQ indicated that the watershed may be subject to Total Maximum Daily Load study in a few years and strict adherence to best construction practices should be maintained.

VDGIF advised that the federally endangered gray bat had been documented within the project site; therefore, coordination with the agency concerning flow modifications through Piedmont Street culvert was recommended. The fish community in Beaver Creek is a warm water assemblage and may contain the state endangered Tennessee dace; the agency recommends coordination concerning potential adverse impacts (see Anticipated Impacts section above).

Tennessee Historical Commission concurred that a detailed archeological survey report on the area of potential effect was needed to complete its review. An architectural and archeological assessment was conducted and USACE determined the need for additional and detailed archeological survey was not necessary (see Anticipated Impacts section above).

TVA believes comments received from the public and government and non-government organizations are adequately addressed in the USACE environmental analysis document. Based on meeting attendance and discussions with agencies, TVA also believes that the EA adequately addresses all previously expressed concerns about potentially adverse resources impacts. TVA was a cooperating agency in the EA.

### **Mitigation**

Selection of Alternative 5, the Preferred Alternative, will result in individual projects evaluated under Alternatives 1, 2, 3, and 4 being implemented. USACE will ensure that the Twin Cities rigorously implement sound engineering and construction BMP throughout the project. This will include clearing vegetation only from one side of the stream bank, use of silt screen, staked hay bales, water bars, check dams and temporary sediment basins, and other measures as appropriate, to filter sediment from stormwater prior to it leaving the site. All disturbed areas will be seeded, mulched, and maintained until adequately revegetated. Some trees will be replanted. Construction will be accomplished in accordance with the Tennessee and Virginia

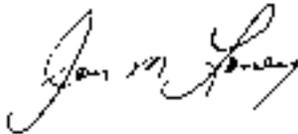
Erosion and Sediment Control regulations. Twin Cities will also strictly adhere to all conditions and requirements to protect water quality included in any eventual VMRC, VDEQ, and TDEC permits or authorizations. Activities will comply with state air quality regulations regarding fugitive dust control and open burning. Land clearing debris shall be disposed of in an approved manner. To minimize impacts on recreational use of Sugar Hollow campground when the road becomes inundated, Twin Cities will provide alternate access in the final design plans.

Consistent with a USACE Biological Assessment (BA), USFWS agreed with a no effect finding on endangered species. Construction of all the individual flood control projects will avoid disturbance to the Piedmont Street culvert, known to be used by a maternity colony of federally endangered gray bat. All access road construction, equipment staging, material lay down, and temporary parking and storage areas will avoid impacting the mitigation wetland area upstream of Beaver Creek Dam. Furthermore, modification or replacement of the inlet through Beaver Creek Dam (Alternative 4) will insignificantly benefit this area of wetland upstream of the dam.

### **Conclusion and Findings**

TVA has critically and independently reviewed the USACE EA. We concur that the scope, alternatives considered, and contents of the EA are adequate and the impacts on the environment have been adequately addressed. Consistent with a USACE BA, USFWS agreed with a no effect finding on federally-listed species. Construction of all the individual flood control projects will avoid disturbance to the Bristol (Piedmont Street) Culvert, known to be used by a maternity colony of federally endangered gray bat. The Virginia and Tennessee SHPOs agree with the federal agency finding that the project will have no adverse effect on historic properties listed in or eligible for the NRHP. The project will be designed to avoid a known area of mitigation wetlands and be fully consistent with the requirements of Executive Order 11988. Furthermore, with planned modification (Alternative 4) this wetland would be insignificantly beneficially affected by the likely increased frequency and duration of upstream floodwater detention from Beaver Creek Dam.

Based on the analysis in the attached USACE EA and the mitigation measures included in that environmental document and this FONSI, TVA concludes that approval of Beaver Creek stream obstructions and modification or replacement of the Beaver Creek Dam inlet structure would not be a major federal action significantly affecting the quality of the environment. Accordingly, an environmental impact statement is not required.



**March 8, 2006**

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Date Signed