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FINAL ENVIRONMENTAL IMPACT STATEMENT

NORTHEASTERN TRIBUTARY RESERVOIRS LAND MANAGEMENT PLAN

**Beaver Creek, Clear Creek, Boone, Fort Patrick Henry,
South Holston, Watauga, and Wilbur Reservoirs**

**Carter, Johnson, Sullivan, and Washington Counties, Tennessee, and
Washington County, Virginia**

VOLUME I

**PREPARED BY:
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Proposed project: Northeastern Tributary Reservoirs Land Management Plan
Beaver Creek, Clear Creek, Boone, Fort Patrick Henry, South
Holston, Watauga, and Wilbur reservoirs
Carter, Johnson, Sullivan, and Washington counties,
Tennessee; Washington County, Virginia

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Abstract: The Tennessee Valley Authority (TVA) proposes to develop a Northeastern Tributary Reservoirs (NTRs) Land Management Plan to guide land use decisions on TVA reservoir lands located along seven tributary reservoirs in the northeast Valley region (approximately 5,000 acres): Beaver Creek, Clear Creek, Boone, Fort Patrick Henry, South Holston, Watauga, and Wilbur reservoirs. The goal of the reservoir land planning effort is to provide a clear vision of how TVA will manage its public lands and identify lands for specific uses. This process relies heavily on public input regarding land uses and on how these lands should be managed for future uses.

This land plan considers three alternatives and incorporates TVA's 2006 Land Policy. The alternatives include a No Action Alternative (Alternative A) to continue use of the 1965 Forecast System designations on Fort Patrick Henry, South Holston, Watauga, and Wilbur reservoirs and use of the 1999 Boone Reservoir Land Management Plan. Under the No Action Alternative, Beaver Creek and Clear Creek reservoirs, which were never subject to the Forecast System or more recent land planning procedures, would remain unplanned. The other alternatives considered are a Proposed Land Use Alternative (Alternative B) and a Modified Proposed Land Use Alternative (Alternative C). TVA's preferred alternative is Alternative C.

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SUMMARY

PURPOSE OF AND NEED FOR ACTION

The Tennessee Valley Authority (TVA) manages its public lands to protect the integrated operation of the TVA reservoir and power systems, to provide for appropriate public use and enjoyment of the reservoir system, and to provide for continuing economic growth in the Tennessee Valley. TVA proposes to develop a reservoir land management plan (RLMP) for seven northeastern tributary reservoirs (NTRs) located in northeast Tennessee and southwest Virginia. The Northeastern Tributary Reservoirs Land Management Plan (NTRLMP) would include all public lands under TVA stewardship around Beaver Creek, Clear Creek, Boone, Fort Patrick Henry, South Holston, Watauga, and Wilbur reservoirs, which total about 4,933 acres.

The NTRLMP would be designed to guide land use approvals, private water use facility permitting, and resource management decisions. The TVA Holston-Cherokee-Douglas Watershed Team would use the NTRLMP along with TVA policies and guidelines to manage resources and to respond to requests for the use of TVA public land on these reservoirs. Under proposed NTRLMP alternatives, land would be allocated into broad categories or “zones” including Project Operations, Sensitive Resource Management, Natural Resource Conservation, Industrial, Developed Recreation, and Shoreline Access. Land use allocations would be determined with consideration of the social, economic, and environmental conditions around the reservoirs.

The NTRLMP consists of six volumes. Volume I is the environmental impact statement, which addresses the environmental impacts of implementing the NTRLMP. The seven reservoirs are described in five RLMPs, which are found in Volumes II-VI. The RLMPs contain detailed descriptions of the environment around each reservoir, as well as descriptions of each parcel of land addressed in the plans.

ALTERNATIVES INCLUDING THE PROPOSED ACTION

TVA is considering three alternatives for managing public land under its control around the seven NTRs. Under the No Action Alternative, TVA would continue to use the previous land use plans, if any, for the NTRs, some of which use an older method of land use planning. Under the two action alternatives, TVA would apply a system of allocation zones that was used in more recent TVA land plans and is consistent with current TVA policies. Alternatives were developed using information from multidisciplinary TVA technical and advisory teams, as well as comments from the public obtained during the scoping process described in Volume I, Chapter 2.

Under all of the alternatives, the following conditions would apply:

- TVA would continue to conduct environmental reviews to address site-specific issues prior to the approval of any proposed development or activity on public land.
- Future activities and land uses will be guided by the TVA Land Policy.
- TVA land use allocations are not intended to supersede deeded land rights or land ownership.

- Parcels allocated to Industrial (Zone 5) and Shoreline Access (Zone 7) uses remain the same.

Alternative A - No Action Alternative. Under the No Action Alternative, TVA would not prepare the NTRLMP and would continue current land plans or systems if they exist. For Fort Patrick Henry, South Holston, Watauga, and Wilbur reservoirs, TVA would continue using the Forecast System developed for those reservoirs in 1965, which allocated parcels to 13 land use categories. For Boone Reservoir, TVA would continue to use the RLMP developed in 1999. Beaver Creek and Clear Creek reservoirs would remain unplanned.

Approximately 254 acres around the NTRs are uncommitted parcels (i.e., parcels having no easement, lease, or other land use agreement) that would not be planned but would be managed in accordance with the TVA Land Policy, the Shoreline Management Policy, and other administrative considerations. About 42 percent of NTR lands would remain allocated to the equivalent of Project Operations and about 36 percent to the equivalent of Natural Resource Conservation or Sensitive Resource Management (Table S-1). The only parcels actually allocated to Sensitive Resource Management would be on Boone Reservoir.

Table S-1. Total Number of Acres Proposed in Each Allocation Zone Under Alternatives A, B, and C¹

Zone	Alternative					
	A		B		C	
	Acres	%	Acres	%	Acres	%
2 (Project Operations)	2,077	42.1	1,550	31.4	1,550	31.4
3 (Sensitive Resource Management)	335	6.8	284	5.8	278	5.6
4 (Natural Resource Conservation)	1,409	28.5	2,073	42.0	2,044	41.4
5 (Industrial)	125	2.5	125	2.5	125	2.5
6 (Developed Recreation)	939	19.0	854	17.3	888	18.0
7 (Shoreline Access)	48	1.0	48	1.0	48	1.0
Total	4,933	100	4,933	100	4,933	100

Alternative B - Proposed Land Use Alternative. Under Alternative B, TVA would prepare an RLMP addressing the seven NTRs. To develop proposed parcel allocations, TVA reviewed existing and newly collected field data on the lands being planned. The physical capability of each parcel for supporting potential suitable uses was assessed. TVA also reviewed deeds of selected tracts previously sold to private entities to identify existing shoreline access rights. The planning team honored all existing commitments (i.e., existing leases, licenses, and easements).

Under Alternative B, the 4,679 acres previously committed to a specific use would be allocated to land use zones consistent with that specific land use. The remaining uncommitted 254 acres (34 parcels) are proposed to be allocated to Zone 4 (Natural Resource Conservation) or Zone 6 (Developed Recreation). Overall, about 48 percent of

¹Areas in the table and associated text are rounded to the nearest acre, which may result in slight discrepancies in calculated totals.

NTR land would be allocated to Natural Resource Conservation (Zone 4) or Sensitive Resource Management (Zone 3). About 31 percent of NTR land would be allocated to Project Operations (Zone 2), and the remainder would be allocated to Developed Recreation (Zone 6), Shoreline Access (Zone 7), or Industrial (Zone 5) uses.

Alternative C - Modified Proposed Land Use Alternative. Under Alternative C, TVA would prepare an RLMP for the seven NTRs. To develop proposed parcel allocations, TVA implemented the planning process described above under Alternative B and incorporated public comments and other information obtained during the scoping process. Under Alternative C, the 4,679 acres of committed lands would be allocated to land use zones consistent with the existing land use. The remaining uncommitted 254 acres (34 parcels) are proposed to be allocated to Zones 3, 4, or 6. Alternative C, as compared to Alternative B, represents changes in land use zones for 19 parcels. Because the total acreage of those 19 parcels is relatively small (238 acres), the percentage of land allocated to Zones 3, 4, and 6 is nearly the same under both action alternatives. While adoption of Alternative C would result in a slightly smaller proportion of NTR lands allocated to natural resource conservation (Zone 4) and sensitive resource management (Zone 3), a greater number of parcels would be designated to protect existing sensitive resources. Under Alternative C, parcels on Fort Patrick Henry, South Holston, and Watauga reservoirs that contain plant species that are state-listed as threatened or endangered, rare plant communities, cultural resources, and high-quality wetlands would be allocated to Zone 3, which is most protective of sensitive resources. Those parcels would be allocated to Zone 4 under Alternative B. Additionally, six parcels on South Holston and Watauga reservoirs would be allocated to Zone 6 under Alternative C rather than Zone 4 under Alternative B, which would provide additional opportunities for recreation.

AFFECTED ENVIRONMENT

The seven NTRs are located in the northeast corner of Tennessee and southwest corner of Virginia. Boone, Fort Patrick Henry, and South Holston dams are located along the South Fork Holston River. Watauga and Wilbur dams are located along the Watauga River. Boone Dam is located approximately 1.4 miles downstream of the confluence of the two river systems, such that one arm of Boone Reservoir extends up the South Fork Holston River, and the other arm extends up the Watauga River. Clear Creek and Beaver Creek dams comprise the Bristol Flood Control Project, in Washington County, Virginia. These creeks are within the Beaver Creek watershed and drain into the South Fork Holston arm of Boone Reservoir. TVA originally acquired about 10,953 acres of land on the seven NTRs (Table 1-1). About 55 percent (6,020 acres) of this land has been sold for private use or transferred to other federal and state agencies for public use. TVA presently manages a total of approximately 4,933 acres of land on these reservoirs, which are the subject of this NTRLMP. The 451 miles of shoreline on Boone, Fort Patrick Henry, South Holston, Watauga, and Wilbur reservoirs are managed by TVA either as flowage easement (208 miles) or shoreline access land (244 miles).

Existing land uses around the NTRs include TVA project operations, recreation, residential, and undeveloped areas. Thirty-nine high-quality developed recreation facilities are provided on TVA-managed land, including a public campground, day use areas, visitor/observation buildings, a swimming beach, and developed river access sites. TVA-managed lands around the NTRs also offer abundant opportunity for dispersed recreation.

The amount of developed residential shoreline ranges from greater than 60 percent of the shoreline on Boone Reservoir to less than 1 percent on Wilbur Reservoir. No residential

development surrounds Beaver Creek and Clear Creek reservoirs, which are developed for public recreation. In total, around Boone, Fort Patrick Henry, South Holston, and Watauga reservoirs, 46 percent of the combined shoreline (about 217 shoreline miles) is available for residential development. Development has already occurred on about 43 percent of the shoreline available for residential development (about 94 shoreline miles) on those reservoirs.

Development around the four major reservoirs over the last 15 years has been steady, as many farms have been turned into residential developments, primarily single-family homes. In recent years, multifamily developments have become more prevalent. Under the TVA Land Policy, TVA can no longer consider new residential land use requests on TVA-managed land. Therefore, the amount of shoreline available for residential use will not change as a result of the land planning process. The character of the NTRs remains primarily rural and natural. No parcels are allocated to industrial development adjacent to the reservoir; the single industrial parcel is about 1 mile from South Holston Reservoir.

Many of the TVA-managed parcels on the NTRs have existing land use agreements that commit a parcel to a specific use. The majority of such agreements are for utilities, highways, and other public infrastructure, which affect narrow linear tracts with small acreages. A total of approximately 916 acres is designated for public or commercial recreation or fronts national forest land. A large proportion of the public recreation agreements are for campgrounds, day use areas, and city parks that are operated by local, county, and state government agencies. Commercial recreation agreements include docks, marinas, and campgrounds on several of the reservoirs.

Deciduous forests and woodlands cover approximately 35 percent of the landscape in the South Fork Holston River and Watauga River watersheds. About 15 percent of the land cover is evergreen forests and woodlands. Wetlands are few, comprising less than 0.3 percent of land cover in both watersheds. Wetlands on and near the NTRs are primarily forested wetlands located in floodplains and small emergent/scrub-shrub wetlands associated with shorelines and coves. Field surveys conducted on selected parcels around the NTRs indicated the presence of moderate and high-quality wetlands on Fort Patrick Henry, South Holston, and Watauga reservoirs.

Two rare plant communities (Carolina Hemlock [Eastern Hemlock]/Great Laurel Forest and Northern White Cedar Limestone Seepage Woodland) occur on six parcels along Watauga Reservoir. No plant species that are federally listed threatened or endangered, or critical habitat designated for plants, have been recorded within 5 miles of the NTRs. Two federally listed species are known from the surrounding counties, but neither individuals of those species nor habitat suitable for those species were observed during field surveys. Thirty plant species listed by the State of Tennessee are known to occur within 5 miles of the NTRs, including three state-listed species identified on Watauga and Fort Patrick Henry parcels during field surveys.

The variety of land forms, soils, climate, and geology across the Ridge and Valley and Southern Blue Ridge ecoregions support an extremely diverse assemblage of terrestrial animals. The reservoirs provide abundant open water habitats and associated riparian (shoreline) zones that are used by a variety of wildlife including shorebirds, wading birds, waterfowl, amphibians, reptiles, and mammals. Although six federally listed terrestrial animal species are known from the NTRs area, there are no known occurrences of those species on NTRs parcels. The gray bat, a species federally listed as endangered,

potentially forages over all seven of the NTRs, but no roost habitat (caves) suitable for the gray bat is known on NTRs parcels. Twenty terrestrial animal species listed by the states of Tennessee, Virginia, or North Carolina occur within 3 miles of the NTRs. The only state-listed species identified during field surveys was the southern bog lemming, a species deemed in need of management in Tennessee, which was observed along the South Holston Reservoir.

Two federally listed mussels and two mussels that are candidates for federal listing occur within the NTRs watersheds. There are historic records of another federally listed mussel and a federally listed fish. In addition to the federally listed species, 20 state-listed aquatic species, including fish, mussels, and a snail, have been recorded within the watersheds forming the NTRs. Ten of those state-listed species occur near uncommitted parcels on the NTRs.

Although the entirety of TVA-managed land surrounding the NTRs has not been completely surveyed, many archaeological sites have been identified on each of the NTRs. Some of the identified archaeological sites are located below the normal summer pool elevation. Certain sites are eligible or potentially eligible for listing on the National Register of Historic Places. Similarly, while a complete survey for historic structures has not been conducted throughout all NTRs parcels, important historic structures over 50 years old occur on or near TVA-managed land in the area. Results of field surveys indicated no historic structures are located on uncommitted NTRs parcels.

No natural areas managed by the TVA Natural Areas Program are located on any of the seven NTRs. One Nationwide Rivers Inventory stream and ten natural areas either managed by other entities or recognized as ecologically significant sites are on or within Boone, South Holston, Wilbur, and Watauga reservoirs. Several natural areas, including U.S. Forest Service (USFS) lands (Cherokee National Forest), city and state parks, and the Appalachian Trail, are adjacent to five of the NTRs. TVA-managed parcels adjacent to these natural areas are considered committed, and land use designations are consistent with the management objectives of the back-lying public lands.

In terms of visual resources, the NTRs include islands, floodplains, secluded coves, and wetlands that are framed by high wooded ridges. Most shorelines upstream of the dams appear natural. Among the scenic resources of each of the reservoirs, the bodies of water are the most distinct and outstanding aesthetic features. Islands, secluded coves, and steep, wooded ridges are other important features.

Water quality in the NTRs is typical of impoundments, which convert typical riverine environments into lakelike conditions with respect to water temperature, dissolved oxygen (DO), nutrient dynamics, algal productivity, and aquatic life. The average retention time in the reservoirs ranges from less than one day on Beaver Creek reservoir (a detention basin with no permanent pool) to an average of 325 days on Watauga Reservoir. Reservoir ecological health ratings for Boone, Fort Patrick Henry, and South Holston typically are "poor," primarily due to low DO concentrations, elevated chlorophyll concentrations, and a bottom-dwelling community comprised mostly of organisms indicative of poor water quality conditions. Watauga Reservoir usually scores "good" or at the high end of the "fair" range of ratings, likely due to less development around the reservoir and the natural geological characteristics of the area. Reservoir ecological health measurements are not collected in smaller reservoirs such as Beaver Creek, Clear Creek, and Wilbur reservoirs.

The reservoir tailwaters below Fort Patrick Henry and South Holston dams and Boone, South Holston, and Watauga reservoirs are designated by the respective states as impaired waters. Reasons for the impaired designation in these tailwaters include flow alteration, low DO concentrations, and/or thermal modification, with the source being the upstream impoundments. In the reservoirs, water quality impairment is due to accumulated polychlorinated biphenyls and chlordane or mercury in fish tissue. Fish consumption advisories have been issued for Boone, South Holston, and Watauga reservoirs. There are no state advisories against swimming in any of the NTRs.

Aquatic monitoring in Beaver Creek and Clear Creek reservoirs indicates ecological conditions are typically fair, but have ranged from poor to good. Results of TVA's Reservoir Vital Signs Monitoring Program in the larger reservoirs indicate fair ecological conditions on Boone, fair to poor conditions on Fort Patrick Henry, and fair to good conditions on South Holston and Watauga reservoirs. Sport fishing indexes typically indicate poor to moderate ratings on Boone, Fort Patrick Henry, South Holston, and Watauga reservoirs. Sport fishing indexes are not calculated for smaller reservoirs such as Beaver Creek, Clear Creek, and Wilbur reservoirs.

All of the counties containing the NTRs are currently in attainment of each of the National Ambient Air Quality Standards. Under ozone standards expected to be updated in March 2010, some of the NTRs counties are likely to be designated nonattainment for ozone. There are four Class I areas within 100 kilometers (62 miles) of the NTRs, including the Great Smoky Mountains National Park, Shining Rock Wilderness, Joyce Kilmer/Slickrock Wilderness, and Linville Gorge, which is closest to the NTRs (approximately 30 miles southeast of Watauga Reservoir).

The 2000 census population of the five counties containing the NTRs is estimated to be about 421,000. In every county, the population grew more slowly than in the nation and the respective state between 1980 and 2008. The independent city of Bristol, Virginia, lost population during that period. Projections and current trends suggest the population of this area will grow more slowly than the nation. Overall, the rural population share in the area is about the same as the Tennessee and Virginia averages, which are somewhat higher than the national average. The population is predominantly non-Hispanic white, with a low average minority population compared to the state and national averages.

The NTRs are located in a relatively low-income area. Overall, poverty levels are slightly higher than the State of Tennessee average and well above the Virginia and national averages. The majority of employment in the area is primarily in farming and manufacturing. In 2008, the unemployment rate in the area was slightly lower than the national and Tennessee rates, although notably higher than the Virginia rate.

ENVIRONMENTAL CONSEQUENCES

Under any of the alternatives, potential impacts to sensitive resources such as federally listed species, cultural resources, and wetlands would be identified during project-specific evaluations.

None of the three alternatives involve changes in existing land use commitments (e.g., easements, leases). Because only 5 percent of NTR lands are uncommitted, changes in land use would be minor, and none of the alternatives would significantly affect land use. Under any alternative, most categories of land uses would remain available in approximately the same proportions as currently established. In terms of land use, the

primary difference between the No Action Alternative and Action Alternatives B and C is the reduction of lands allocated to Zone 2 (Project Operations) and the increase in lands allocated to Zone 4 (Natural Resource Conservation). These changes reflect application of a land use zone that is more consistent with current uses. The primary impact of the No Action Alternative is the absence of a comprehensive plan to guide consideration of land use requests. Under Alternative A, NTRs parcels would not be allocated to a current land use zone; therefore, complete alignment with current TVA policies would not occur. Over the long term, absence of comprehensive reservoir-wide land management plans may result in land uses that do not fully optimize the goals of multiple use and stewardship to which TVA strives.

Among all three alternatives, the variation in the amount of land available for developed and dispersed recreation opportunities is small. Although the No Action Alternative (Alternative A) includes the greatest amount of land designated for developed recreation, the action alternatives provide more land for dispersed recreation. Adoption of Alternative A would result in minor negative effects to dispersed recreation relative to Alternatives B or C. Selection of Alternative B or C would not affect developed recreation facilities, but would result in minor effects due to lost opportunity for future development of recreational facilities.

Under any of the alternatives, potential future ground disturbance and development has potential for impacts to floodplain values, wetlands, water quality, and prime farmland. Alternative A involves the greatest potential for future ground disturbance and development. Because both action alternatives involve allocation of substantially more land to conservation than Alternative A, there is lower potential for ground disturbance under the action alternatives. However, regardless of the alternative selected, any development proposed in the 100-year floodplain would be subject to the requirements of Executive Order (EO) 11988 (Floodplain Management), and impacts to floodplain values would be minor. Adverse effects to wetlands from ground disturbance would be mitigated under EO 11990 (Protection of Wetlands) and would be minor. Likewise, proposed actions involving the transfer of land for development would require project-specific evaluation of impacts to prime farmland. Under any of the alternatives, adverse impacts to prime farmland would be minor.

Because the potential for ground disturbance is greatest under Alternative A, the potential for adverse impacts to archaeological sites and historic structures is greatest under that alternative. Because the amount of land allocated to Natural Resource Conservation would be greatest under Alternative B, the potential for impacts to archaeological sites and historic structures is slightly lower under this alternative than under Alternative C. Under all three alternatives, parcels containing known cultural resources would be allocated to Zone 3, which is most protective of sensitive resources. Prior to implementing any future projects on NTR lands, TVA will comply with established procedures for identifying, evaluating, and avoiding or mitigating impacts to archaeological resources and historic structures. Specific procedures for addressing potential impacts to these cultural resources in Tennessee are described in the programmatic agreement (PA) between the Tennessee State Historic Preservation Officer, TVA, and the Advisory Council on Historic Preservation. In Virginia, until a similar PA is executed, procedures required by Section 106 of the *National Historic Preservation Act* and associated implementing regulations will be applied.

Under all three alternatives, TVA identifies lands for Natural Resource Conservation and will implement measures to identify impacts to the environment when specific projects are

proposed. Given the substantial amount of deciduous and evergreen forest around the NTRs, none of the three alternatives would result in significant impacts to common terrestrial vegetation or common terrestrial wildlife. Under both action alternatives, the amount of NTR lands allocated to Zones 3 and 4 is greater than under the No Action Alternative, which would promote conservation of terrestrial plants and wildlife. Over the long term, allocation of lands to Zones 3 and 4, which limits ground disturbance, vegetation removal, and other development, is likely to benefit terrestrial wildlife communities in the South Fork Holston River and Watauga River watersheds. None of the alternatives would result in significant adverse impacts to the two rare plant communities near Watauga Reservoir. Parcels on Watauga Reservoir that contain rare plant communities would be allocated to Zone 3 under Alternative C, which would afford more protection than the allocation to Zone 4 under Alternative A or B. Therefore, selection of Alternative C would be more protective of rare plant communities. Similarly, all parcels containing state-listed threatened or endangered plants would be allocated to Zone 3 under Alternative C, whereas a portion of those parcels would be allocated to Zone 4 or 2 under Alternatives A and B. Therefore, the potential for impacts to state-listed threatened or endangered plants known on Watauga and Fort Patrick Henry parcels is greatest under Alternative A and lowest under Alternative C. No significant adverse impacts to state-listed threatened or endangered plants are expected to result from any of the alternatives.

No terrestrial plants federally listed as threatened or endangered, terrestrial wildlife, or aquatic animal species have been identified on or near uncommitted NTRs parcels where future activities would be likely to occur. None of the three alternatives result in adverse impacts to the southern bog lemming, the only state-listed threatened or endangered species known to occur on NTRs parcels. In addition, project-specific environmental reviews on any parcel would be conducted, and mitigation would be implemented when warranted. Effects to listed species would be insignificant under any of the alternatives.

The major source of potential adverse impacts to water quality and aquatic life, including listed species, is ground disturbance and associated erosion, clearing of shoreline vegetation, and runoff. Based upon land use allocations, adoption of the No Action Alternative would result in the greatest potential for future development and associated ground disturbance. Conversely, under both action alternatives, a greater amount of NTR land is allocated to Sensitive Resource Management and Natural Resource Conservation uses, which have relatively low potential for ground disturbance. Consequently, the potential for impacts to water quality and aquatic life is greatest under Alternative A. The extent of impacts would depend on the specifics of future development. New facilities with permitted discharges would be required to meet permit limits specifically designed to protect water quality. Further, any proposed land use would be required to protect water quality through either restricted development or the commitment to use best management practices. Therefore, impacts to water quality, aquatic life, and listed aquatic species under any of the alternatives are expected to be minor.

Existing natural areas and ecologically significant sites were considered during the parcel allocation process. Except for a single parcel that would be allocated to Zone 4 (Natural Resource Conservation) under Alternatives A and B, but to Zone 6 (Developed Recreation) under Alternative C, no changes to the size, location, or character of natural areas would result under any alternative. The proposed allocation of that single parcel to Zone 6 under Alternative C would be consistent with U.S. Forest Service management of the adjacent back-lying land and would not adversely affect the natural area. Therefore, no adverse direct or indirect impacts to natural areas are expected under any of the alternatives. Under

all three alternatives, preservation of natural areas on TVA-managed lands would beneficially contribute to the cumulative regional efforts to conserve natural habitats for the long term.

Adoption of Alternative A would likely result in some long-term negative impacts to visual resources and scenic integrity, which include gradual losses of visual resources, scenic attractiveness, and undeveloped areas, as well as negative changes in the aesthetic sense of place. Implementation of Alternative B or C would protect scenic areas and would preserve natural areas as development expands on non-TVA lands around the reservoirs. Under both action alternatives, impacts to visual resources would be minor.

The greatest potential for effects to air quality is associated with the Industrial land use zone. The number of acres allocated to industrial use is the same under all three alternatives. Certain activities that may occur on parcels allocated to Project Operations also have potential to affect air quality. Because the No Action Alternative includes the greatest amount of land forecast or planned for Project Operations, the potential for effects to air quality are greatest under Alternative A. However, under any of the alternatives, an appropriate level of environmental review would be required to document the extent of expected air quality impacts from projects proposed in the future. Future projects would be subject to federal, state, and local air quality regulations. Therefore, adoption of any of the three alternatives would not result in significant impacts to air quality.

Based on the small proportion of TVA public land available for development relative to the entire shoreline of the NTRs, there would be an insignificant increase in the potential for noise impacts under all three alternatives, with the lowest potential for noise expected under Alternative B.

Because land use allocations would be very similar under all three alternatives, none of the alternatives would be likely to have any noticeable effect on the local economy or on economic development opportunities in the area. Zone 5 (Industrial) would be allocated the same (one 125-acre tract) in all cases. As stated above, variation among alternatives was small because commitments that exist on 95 percent of NTR parcels were honored during the allocation process. Additionally, no demand for industrial lands on TVA-owned property around the NTRs was identified during the allocation process or public involvement in this EIS. Opportunities for economic development exist on parcels allocated to developed recreation uses. Zone 6 (Developed Recreation) allocations would be very similar, ranging from 939 acres under Alternative A to 854 acres under Alternative B. Under each alternative, there are currently undeveloped parcels allocated to Zone 6, which provides an opportunity for future development. Additionally, the Watershed Team will evaluate on a project-specific basis other opportunities to support economic development near NTR parcels, such as road and utility easements. No disproportionate impacts to disadvantaged populations are expected to occur under any of the alternatives.

Implementing any of the three alternatives would have few, if any, unavoidable adverse environmental effects. The potential to negatively affect long-term productivity of the land, as well as potential irretrievable commitments of resources, would be greater under the No Action Alternative than under either of the action alternatives. Each of the three alternatives involves use of minor amounts of energy to maintain Project Operations and Developed Recreation lands. Although the total amount of energy consumed by any proposed activities would be small and unlikely to influence regional energy demand, the potential to

consume energy is slightly greater under Alternative A compared to the two action alternatives. TVA would implement energy conservation efforts under all three alternatives.

SUMMARY OF IMPACTS

Under the No Action Alternative, the total number of acres of NTR land designated to Industrial, Developed Recreation, and Project Operations uses is greater than under either of the action alternatives. Under the No Action Alternative, the smallest number of acres is allocated to Sensitive Resource Management; only one of the seven reservoirs has parcels allocated to Sensitive Resource Management.

In comparison, under the action alternatives, fewer total acres are allocated to developed uses (Project Operations, Industrial, and Developed Recreation) and a greater number of acres are allocated to Natural Resource Conservation and Sensitive Resource Management. Generally, implementation of the No Action Alternative has greater potential for environmental impacts than either of the action alternatives. Because it contains slightly more land allocated to Developed Recreation, implementation of Alternative C has slightly greater potential for impacts to some resources than Alternative B. Although there are minor differences between the two action alternatives in acreage allocated to each zone, Alternatives B and C are distinguished by allocations of specific parcels. Compared to Alternative B, implementation of Alternative C would provide a greater number of developed recreation opportunities, including support of U.S. Forest Service recreation objectives. Because it contains slightly more land allocated to Zone 6 (Developed Recreation), Alternative C would have slightly greater potential for ground disturbance and overall impacts than Alternative B. However, under Alternative C, all 25 of the parcels that contain sensitive resources would be allocated to Zone 3 (Sensitive Resource Management), which is the most protective of sensitive resources. Under Alternative B, 14 of those parcels would be allocated to Zone 3, and 11 would be allocated to Zone 4.

No significant direct, indirect, or cumulative effects are expected to occur to any resource under any of the alternatives.

PREFERRED ALTERNATIVE

The preferred alternative is Alternative C, the Modified Proposed Land Use Alternative, which provides suitable opportunities for developed recreation, conservation of natural resources, and management of sensitive resources. Under Alternative C, all parcels with identified sensitive resources would be allocated to the most protective land use zone; only some of those parcels would be zoned for sensitive resource management under Alternative A or B. Compared to Alternative B, implementation of Alternative C would provide more of the recreational opportunities in which the public expressed interest during scoping.

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ACRONYMS, ABBREVIATIONS, AND SYMBOLS

§	Section
APE	Area of Potential Effects
ARPA	<i>Archaeological Resources Protection Act</i>
BCTF	Beaver Creek Task Force
BMPs	Best Management Practices
CFR	Code of Federal Regulations
CNF	Cherokee National Forest
CWA	<i>Clean Water Act</i>
DEIS	Draft Environmental Impact Statement
DO	Dissolved Oxygen
DOI	Department of the Interior
EA	Environmental Assessment
EO(s)	Executive Order(s)
EIS	Environmental Impact Statement
EPT	Ephemeroptera, Plecoptera, Trichoptera (Aquatic Ecology Index)
ESA	<i>Endangered Species Act</i>
FEA	Final Environmental Assessment
FEIS	Final Environmental Impact Statement
FONSI	Finding of No Significant Impact
FPPA	<i>Farmland Protection Policy Act</i>
IBI	Index of Biotic Integrity
MGD	Millions of Gallons per Day
MOA	Memorandum of Agreement
MSC	Maximum Shoreline Contour
msl	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NAGPRA	<i>Native American Graves Protection and Repatriation Act</i>
NEPA	<i>National Environmental Policy Act</i>
NHPA	<i>National Historic Preservation Act</i>
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
NRI	Nationwide Rivers Inventory
NTR(s)	Northeastern Tributary Reservoir(s)
NTRLMP	Northeastern Tributary Reservoirs Land Management Plan
PA	Programmatic Agreement
PCB(s)	Polychlorinated Biphenyl(s)
ppm	Parts per Million
PSD	Prevention of Significant Deterioration
RFAI	Reservoir Fish Assemblage Index
RLMP(s)	Reservoir Land Management Plan(s)
RM	River Mile
RVSMP	Reservoir Vital Signs Monitoring Program
SBRE	Southern Blue Ridge Ecosystem
SFI	Sport Fishing Index
SHPO	State Historic Preservation Officer
SMI	Shoreline Management Initiative
SMP	Shoreline Management Policy
TDEC	Tennessee Department of Environment and Conservation
TMDL	Total Maximum Daily Load
TN-EPPC	Tennessee Exotic Plant Pest Council
TWRA	Tennessee Wildlife Resources Agency

Northeastern Tributary Reservoirs Land Management Plan

TVA	Tennessee Valley Authority
TVARAM	TVA Rapid Assessment Method
USA	United States of America
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
VDCR	Virginia Department of Conservation and Recreation
VDGIF	Virginia Department of Game and Inland Fisheries
WRRWA	Watauga River Regional Water Authority