

CHAPTER 1 - PURPOSE AND NEED FOR ACTION

1.1. Introduction

For more than seven decades, the Tennessee Valley Authority (TVA) has been improving the quality of life in the Tennessee Valley region through its threefold mission of providing affordable and reliable power, promoting sustainable economic development, and acting as a steward of the Valley's natural resources. The lands managed by TVA in the name of the United States of America are some of the most important resources of the region. They have provided the foundation for the dams and reservoirs that reduce flooding and provide the benefits of a navigable waterway and low-cost hydroelectricity. They are also the sites for power generating facilities and arteries for delivering that power. Many of the parks, recreation areas, and wildlife refuges that are so important for the region's quality of life are on lands owned or formerly owned by TVA. TVA's public lands have often been the catalyst for public and private economic development.

In May 2008, the TVA Board of Directors (TVA Board) approved the TVA Environmental Policy. The Environmental Policy sets forth principles to guide TVA in the reduction of the environmental impacts of its operations while continuing to provide reliable and affordable power to the Valley. By establishing the Environmental Policy, TVA committed to a more systematic and integrated approach to managing stewardship. The proposed Natural Resource Plan (NRP) addresses TVA's activities involving Water Resource Protection and Improvement, Sustainable Land Use, and Natural Resource Management. The proposed plan and alternatives to it are addressed in this environmental impact statement (EIS).

1.2. The Tennessee Valley Authority

President Franklin Roosevelt needed creative solutions to lift the nation out of the depths of the Great Depression, and TVA is considered one of his most innovative initiatives. Roosevelt envisioned TVA as an agency different from any other. He asked Congress to create "a corporation clothed with the power of government but possessed of the flexibility and initiative of a private enterprise." On May 18, 1933, Congress passed the Tennessee Valley Authority Act. A copy of the TVA Act is available at http://www.tva.com/abouttva/pdf/TVA_Act.pdf.

From the start, TVA established a unique problem-solving approach to fulfilling its mission: Integrated Resource Management. Each issue TVA faced—whether it was power production, navigation, flood control, malaria prevention, reforestation, or erosion control—was studied in its broadest context. TVA weighed each issue relative to the others. From this beginning, TVA has held fast to its strategy of integrated solutions, even as the issues changed over the years. A short TVA history is available at <http://www.tva.com/abouttva/history.htm>.

1.3. TVA's Stewardship Policies and Programs

1.3.1. Environmental Policy

As stated in TVA's 2007 Strategic Plan (http://www.tva.com/stratplan/tva_strategic_plan.pdf), "TVA will be proactive in addressing environmental concerns, including those related to global climate change." About half of the identified strategic objectives and critical success factors in the Plan relate directly to TVA's environmental activities and policy-making.

Following the release of the 2007 Strategic Plan, the TVA Board asked for the development of an integrated environmental policy to outline objectives and critical success factors across the multiple areas of TVA's activities. In 2008, the TVA Board approved the Environmental Policy, which provides guiding principles for reducing the environmental impacts of TVA operations

while continuing to provide reliable and affordable power to the Valley. In 2010, a biennial review of the Environmental Policy was completed and did not result in major changes or revisions. TVA’s overarching Environmental Policy objective is to provide cleaner, reliable, and affordable energy; support sustainable economic growth in the Valley; and engage in proactive environmental stewardship in a balanced and ecologically sound manner. A copy of the Environmental Policy is available at <http://www.tva.com/environment/policy.htm>.

1.3.2. Land Policy

On behalf of the United States, TVA originally acquired approximately 1.3 million acres of land in the Valley. Creation of the TVA reservoir system inundated approximately 470,000 acres with water. TVA has transferred or sold approximately 508,000 acres, the majority of which was transferred to other federal and state agencies for public uses. TVA currently controls approximately 293,000 acres of reservoir lands, which continue to be managed pursuant to the TVA Act (Figure 1-1). As part of its management of these lands, TVA allocates them to various land use zones (see Sections 1.3.6 and 2.4). These TVA-managed lands are frequently referred to as “TVA lands” in this EIS.

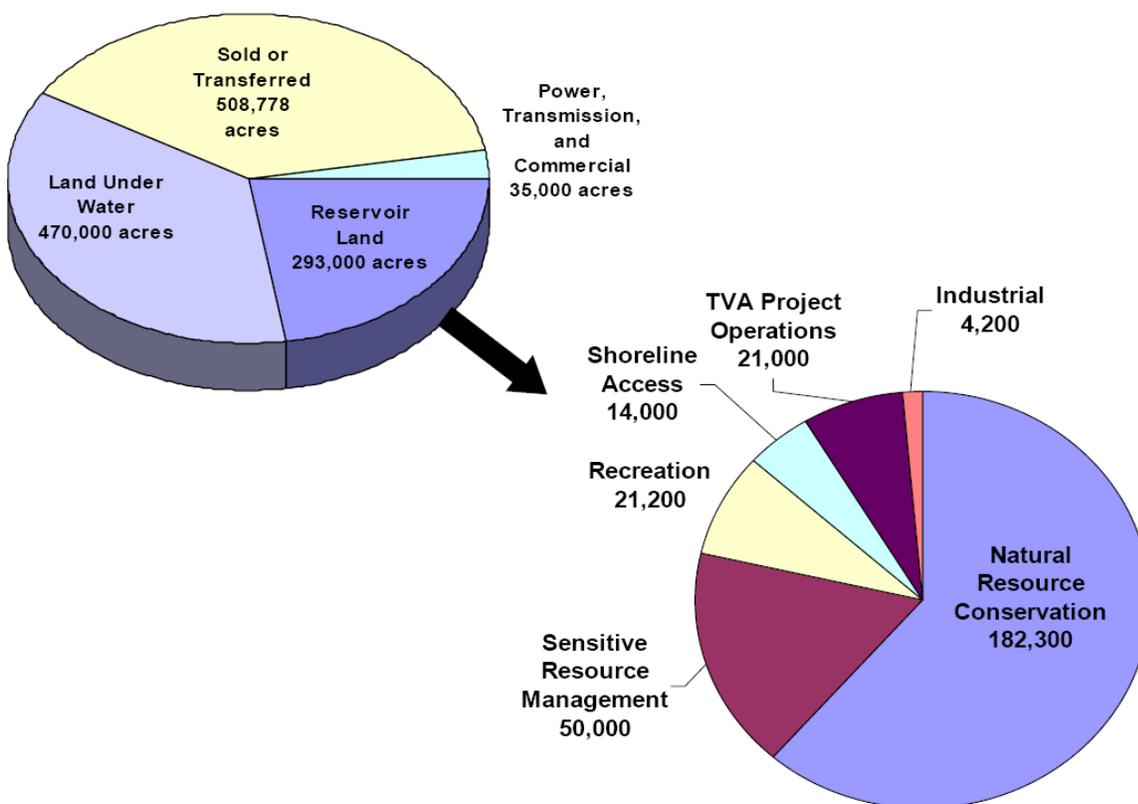


Figure 1-1. TVA-Managed Reservoir Land

In 2006, TVA adopted a Land Policy to guide retention, disposal, and planning of real property. Accordingly, it is TVA’s policy to manage its 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 Valley. Recognizing that historical land transfers have contributed substantially to meeting multipurpose objectives, it is also TVA’s policy to retain in public ownership the reservoir lands under its control except in those rare instances where the benefits to the public will be so significant that transferring lands

to private ownership or another public entity is justified. The Land Policy is available at http://www.tva.gov/river/landandshore/land_policy.htm.

1.3.3. Biological Resources Management

TVA manages biological resources while providing for many types of recreational opportunities. TVA has designated more than 182,000 acres of the lands under its control for natural resource conservation, which includes the enhancement of wildlife habitat and dispersed informal recreation. In addition, TVA has designated 50,000 acres for sensitive resource management, where the major focus is protecting and enhancing significant natural and cultural features. Together, these 232,000 acres of lands provide TVA with distinctive management opportunities in resource conservation and enhancement.

TVA has a long and storied history in the biological resources management arena, especially in the areas of forestry, land reclamation, and wildlife management. The TVA Act recognized the role of forest management in the full development of the region's natural and human resources. The goals of the early forestry programs included optimum forest productivity, economic expansion, watershed protection, and environmental enhancement. Through the years, TVA worked with other agencies and stakeholders to encourage improved forest management, more efficient wood utilization, environmental protection, reforestation, and mine reclamation.

TVA developed the first forest tree nurseries in the Valley and assisted Valley states in developing their own tree production capabilities. Between the 1930s and 1960s, more than 600 million seedlings were produced at TVA's two forest nurseries for distribution across the Valley region. From the 1950s through the 1970s, TVA conducted a Valleywide program to inventory all forested tracts in the region. This program complemented the United States (U.S.) Forest Service's (USFS) national inventory system. Through the 1980s and 1990s, TVA initiated some of the first computerized forestry planning tools in the nation, which were used to complete a systematic inventory of its forested properties. This inventory was used to guide forestry management activities. During the 1990s and 2000s, private land development adjacent to TVA land increased dramatically, putting more pressure on TVA's forests, and led TVA to balance these uses with traditional forest management goals.

Dating back to TVA's earliest days, there has been committed effort to protecting and improving wildlife populations and habitats. With a vast amount of impounded surface water, approximately 293,000 acres of land around the reservoirs, and 11,000 miles of shoreline, this land/water reservoir system represents a significant natural resource base offering numerous opportunities for productive wildlife management. Between the 1930s and 1950s, TVA provided more than 195,000 acres of land to federal and state agencies for the development of waterfowl and upland wildlife management areas and refuges. This effort provided significant benefits to both resident and migratory wildlife. In 1978, TVA initiated a wildlife restoration project aimed at restoring various animal populations. These efforts, conducted in partnership with other federal and state agencies and private organizations, resulted in establishing self-sustaining populations of several species, with reservoir habitat species such as osprey and bald eagles doing especially well. During the 1970s and 1980s, TVA was instrumental in developing techniques to restore productive wildlife habitat to previously disturbed lands. TVA was recognized nationally for its work in reclaiming surface mined lands and developing a wildlife-oriented model reclamation plan for southern Appalachia in cooperation with the U.S. Fish and Wildlife Service (USFWS).

In the 1970s, TVA created a regional Natural Heritage database to collect and store biological data to help guide effective conservation and land planning activities and to assist TVA when complying with the National Environmental Policy Act (NEPA), the Endangered Species Act

(ESA), wetland regulations under the Clean Water Act (CWA), executive orders (EOs), and other applicable federal and state legislation. Today, TVA's Natural Heritage database is the largest in the Valley region. In addition to maintaining the database, TVA developed procedures and collected data to determine the health and status of endangered and threatened plants and animals at approximately 40 sites on TVA lands.

1.3.4. Cultural Resources Management

The earliest TVA-related archaeological surveys began in 1933 with construction of the first TVA dam at Norris, Tennessee. As TVA rapidly began constructing dams across the Valley, archaeological surveys were conducted of the Wheeler, Pickwick, Guntersville, Hiwassee, Chickamauga, and Kentucky reservoir basins. Archaeological surveys conducted on TVA lands from 1940 through 1960 were sporadic until the National Historic Preservation Act (NHPA) was passed in 1966. NHPA requires federal agencies to consider the potential effects of a proposed action on historic properties, which include archaeological resources and historic structures. NHPA also outlines an approach for agencies to consider preservation of cultural resources. Since 1966, TVA has conducted archaeological surveys on 30 of its reservoirs.

Over the last few decades, archaeological survey techniques have improved due to scientific and technological advancements. Because some investigations were conducted prior to the development of modern survey methods, archaeological survey coverage and site documentation on TVA lands vary across the Valley. Of the approximate 293,000 acres of above-pool TVA lands along the reservoirs, about 30 percent (88,000 acres) has been systematically surveyed for cultural resources.

To date, TVA has documented an estimated 11,500 archaeological sites on and adjacent to its reservoir and power properties across the Valley. While the number of resources is quite large, only about 25 percent of these sites have been assessed for eligibility for the National Register of Historic Places (NRHP). The NRHP is maintained by the National Park Service as the official list of the nation's historic places worthy of preservation.

TVA manages a number of significant archaeological sites that have made an important contribution to the understanding of prehistory in the Southeast U.S. These resources include the Seven Mile Island Archaeological District (listed in the NRHP) and Dust Cave in Alabama, Hiwassee Island and Ledbetter sites in Tennessee, the Jonathan Creek site in Kentucky, and Yellow Creek in Mississippi, as well as hundreds of other sites that have been studied since the inception of TVA.

Approximately 5,320 historic structures have been recorded on or near TVA lands. Approximately 233 of these structures are considered either eligible or potentially eligible for listing in the NRHP, 85 historic structures are listed in the NRHP, and nine NRHP historic districts exist on TVA lands.

The majority of the historic structure data came from individual county surveys on file with the State Historic Preservation Officers (SHPOs) and from past TVA surveys, primarily associated with TVA's reservoir lands planning. Many of these surveys are incomplete or out of date. Comprehensive work at South Holston, Douglas, Chatuge, Normandy, and Tims Ford reservoirs and partial coverage at Boone, Fort Patrick Henry, and Norris reservoirs supplemented these surveys.

1.3.5. Recreation Management

From its beginning, TVA has developed recreational facilities on its reservoirs and encouraged others to develop a wide variety of outdoor recreational facilities and opportunities in the Valley.

Some of the construction villages for the early dams were converted to park facilities following the completion of the dams and eventually became state parks or were managed by others under license with TVA. TVA also developed numerous other recreational areas on its reservoirs, some of which have also become state parks. TVA developed and continues to operate 12 campgrounds and 63 day use areas on its reservoirs. TVA has also acquired 81 stream access sites; TVA operates 31 sites and the remainder is operated by others under contractual agreements with TVA.

TVA has made approximately 485,300 acres of land available for recreational development by other entities (see Table 1-1). Much of this land has been transferred to local, state, and federal agencies for recreational use. In many cases, such as for lands transferred to the National Park Service, USFS, and state fish and wildlife agencies, recreation is one of several uses of the land. In other instances, lands were sold for recreational purposes through auctions and/or other conveyances. TVA also has allowed third parties to manage its land for recreational purposes through land use agreements such as easements, leases, and licenses. Maps of TVA recreation areas are located in Appendix A, and a detailed chronology of TVA's recreation history is provided in Appendix B.

Table 1-1. Land Conveyed by TVA for Recreation Development

Type of Recreation Area	Number of Areas	Acres*
Public Parks	213	40,826
State Parks	77	33,276
County	61	3,910
Municipal	74	3,451
Fair Association	1	189
Public Access Areas and Roadside Parks	178	1,110
Federal (USFS)	17	42
State	116	988
Local	45	80
Wildlife Refuges	30	202,002
National Wildlife Refuges	2	115,872
State Management Areas and Refuges	28	86,130
National Parks and Forests	6	232,423
National Forests	4	61,992
National Park	1	170,000
National Parkway	1	431
Other	332	8,974
Group Camps and Clubs	32	3,473
Commercial Recreation Areas	300	5,501
Total Recreation Areas	759	485,335

*All acreage figures are approximate.

As recreational demands continued to increase, TVA developed a recreational program to address the development and management of future recreation projects across the Valley. The goal of this program is to add value by working in partnership with other agencies to enhance recreational opportunities and address unmet recreational needs while managing recreation areas on and along the Tennessee River system. The objectives of this program are to:

1. Support diverse recreational activities through management of river flows.

2. Provide recreational opportunities on TVA-managed lands.
3. Provide diverse recreational opportunities through collaborations and partnerships.
4. Plan, collect, and manage TVA recreational information.
5. Integrate operational activities and partnerships that support outdoor recreational opportunities to manage TVA's lands more effectively.

TVA continues to provide lands for recreational purposes through the reservoir lands planning process (see below and Section 2.4). Throughout the years, TVA has allocated approximately 21,200 acres for developed recreational purposes. Approximately 90 percent of these lands are currently committed under existing contractual agreements. TVA continues to entertain requests for the development of commercial or public recreation facilities on the remaining lands.

When the TVA Board approved the Land Policy in 2006, it also directed staff to review TVA land designated for recreational development purposes to verify their suitability for this use. This review evaluated needs for public boat access, commercial marinas, campgrounds, recreational visitor lodging, developed land-based day use facilities, and dispersed land-based opportunities. The results indicate increasing needs for public boat access, land-based day use facilities, and informal or undeveloped land-based recreation opportunities. The report is available at <http://www.tva.gov/environment/land/assessment/recreation.htm>.

1.3.6. Reservoir Lands Planning

Throughout its history, TVA has managed the public lands in its custody to meet a wide range of regional and local resource development needs and to improve the quality of life, both within specific reservoir areas and throughout the Valley. TVA lands, together with adjoining private lands, have been used for public parks, industrial development, commercial recreation, residential development, tourism development, and forest and wildlife areas, as well as to meet a variety of other needs of local communities and government agencies.

Shortly after its creation in 1933, TVA began a massive dam and reservoir construction program that required the purchase of land for creation of 46 reservoirs. As noted above, today, TVA manages approximately 293,000 acres of land along these reservoirs for support of TVA operations and the benefit of the public. An increasing demand for and use of these remaining lands sometimes results in conflicting public opinions regarding their most appropriate uses. These competing interests and development pressures, coupled with today's environmental awareness, underscore the necessity for a planned approach to the management of TVA's reservoir lands and related resources.

TVA began comprehensive reservoir land management planning in 1979. Since that time, TVA has developed reservoir land management plans (RLMPs) for 34 of its reservoirs using various methodologies. RLMPs allocate TVA lands to one of six broad land use zones, and a seventh zone reflects areas of private ownership where TVA has certain other land rights and/or regulatory responsibilities. A special study of the Muscle Shoals/Wilson Dam reservations and a recreation study for Fort Loudoun Reservoir have also been completed. Twelve of TVA's reservoirs do not have current RLMPs. More detailed information on the status of reservoir land plans is given in Section 2.4.

1.3.7. Water Resources Management

TVA operates the Tennessee River and its tributaries as an integrated system for the purposes of navigation, flood control, and power production, consistent with these purposes for other goals and public benefits such as water quality, as set forth in the *Reservoir Operations Study*

(ROS) EIS (TVA 2004). TVA has been involved with water resources and system integration since soon after the agency was created in 1933. Programs to study and manage suspended sediment (TVA 1968); limnology; water quality in reservoirs, rivers, and tailwaters (Churchill 1957); reservoir fisheries (Eschmeyer and Jones 1941); stream biology (Charles Saylor, TVA, personal communication, April 15, 2010); and the hydrology and water quality impacts of different land uses (TVA 1951) all began before 1940. This work was associated with construction of new dams and reservoirs and the broader stewardship mission of TVA.

These programs evolved with the needs of TVA and the Valley, and TVA scientists were often leaders in advancing the state of the art of water resources and watershed management. Along the way, TVA assessed water quality throughout the Valley (Scott and Jones 1945; TVA 1952; TVA 1973) and completed a series of biological and river habitat studies (e.g., TVA 1970). Reservoir conditions were explored across the Valley (Placke 1983), and river-basin-specific (e.g., Brown and Meinert 1976) and reservoir-specific (e.g., Cox 1986) water resource studies were conducted. TVA used advances in computer technology to help develop the ability to model watersheds (Betson et al. 1980) and reservoirs (Bender et al. 1990). TVA biologists began developing biological water quality assessment tools for the Valley and exploring applications of this new tool (Saylor and Scott 1987). TVA combined remote sensing and computer capabilities to develop aerial-photography-based land use inventories (Carroll and Sagona 1993) to locate pollution sources and later incorporated geographic information systems (GIS) and watershed modeling into this process (TVA 2002a).

Several stewardship programs took shape in the 1990s. These programs can be grouped by the ultimate outcomes for which the programs are designed. The goal of the first group, referred to as public outreach programs, is to encourage and demonstrate good stewardship of water resources. Current programs in this group include the Quality Growth Program (QGP) and the Tennessee Valley Clean Marina Initiative (TVCMI).

The programs in the second group, water resources improvement, are designed to create measurable water quality improvement in Valley watersheds. These programs, originally known as the Clean Water Initiative, are currently implemented through the Targeted Watershed Initiatives (TWI).

The last group consists of programs that collect, maintain, and distribute information about water resource conditions. The Stream and Tailwater Monitoring (STM) Program started in 1986, with the first TVA application of the Index of Biotic Integrity (IBI) (Saylor and Scott 1987) to measure the condition of stream fish communities. STM grew into the primary data source for the TWI Program, providing data to target projects, track project progress, and define the outcome for watershed work. Other monitoring programs are the Vital Signs Monitoring Program (see Section 4.5) and the Sport Fishing Index which assess water quality and aquatic community parameters in reservoirs. The data produced by these programs guide TWI efforts and are critical to several other programs and initiatives by TVA and other agencies and organizations.

Though TVA programs address water resource issues, TVA does not have the authority to regulate water pollution. The U.S. Environmental Protection Agency (USEPA) and each of the Valley states that share the river develop pollution regulations and grant permits for discharges to the Tennessee River and its tributaries. TVA facilities that have the potential to discharge pollutants into waters of the U.S., such as hydroelectric or steam electric generating plants, obtain the appropriate permits for routine facility discharges in accordance with these regulations.

1.4. Purpose and Need

Historically, TVA has taken various approaches to managing biological, cultural, recreation, and water resources and to planning the use of reservoir lands. In its Environmental Policy, TVA committed to a more systematic and integrated approach to natural resource stewardship. The purpose of the NRP is to develop a plan to guide TVA's responsible management of natural resources over the next 20 years in a cost-effective manner while upholding TVA's mission.

The following objectives and critical success factors in the Environmental Policy bear on this:

Water Resource Protection and Improvement Objective: TVA will improve reservoir and stream water quality, reduce the impact of its operations, and leverage alliances with local and regional stakeholders to promote water conservation.

Critical Success Factors:

- *Integrate the impacts of water quality and quantity into the long-range planning and decision-making process.*
- *Promote the integration of energy efficiency and water conservation into community planning and building construction.*
- *Collaborate in community outreach and partnerships through voluntary demonstrations of the efficient use of water resources and protection of water quality.*

Sustainable Land Use Objective: TVA will strive to maintain the lands under its management in good environmental health, balancing their multiple uses, and will improve its land transaction processes to support sustainable development.

Critical Success Factors:

- *Actively manage TVA lands to meet the desired conditions for their purpose as defined in the RLMPs.*
- *Improve reservoir shoreline conditions through collaborative partnership initiatives and balance the multiple uses of the reservoirs in accordance with TVA's Land Policy and Shoreline Management Policy (SMP).*
- *Manage TVA lands, mineral rights, and shoreline access to better achieve environmental commitments while meeting the needs for recreation, residential access, and economic development.*

Natural Resource Management Objective: TVA will be a leader in natural resource management through the implementation of sustainable practices in dispersed recreation while balancing the protection of cultural, heritage, and ecological resources.

Critical Success Factors:

- *Allow for properly managed, ecologically friendly dispersed recreation while balancing the protection of biological, cultural, and heritage resources.*
- *Promote ecological diversity and wildlife habitats on TVA lands through partnerships and voluntary initiatives.*
- *Increase the level of environmental quality and management consistency among TVA-managed and -leased recreation facilities.*

This EIS evaluates the alternative approaches to TVA's management of biological, cultural, and water resources; recreation; reservoir lands planning; and public engagement. The general goal of the NRP is to integrate the objectives of these resource areas, provide for the optimum public benefit, and balance competing and sometimes conflicting resource uses. These competing interests and development pressures, coupled with today's environmental

awareness, underscore the necessity for a consistent approach to the management of TVA's lands. The specific goals of the NRP include:

1. Aligning TVA's stewardship programs and plans with the Environmental Policy
2. Providing a strategic plan that
 - Guides TVA's resource management decisions and actions
 - Integrates stewardship objectives for optimum public benefits while increasing efficiencies in natural resources management
 - Strikes a balance between the competing and sometimes conflicting resource uses on TVA-managed lands
3. Increasing the efficiency of the planning and review of specific implementing actions
4. Providing TVA staff with a "reference manual" to guide implementation activities
5. Providing clarity and transparency to the public

1.5. Scope of the Natural Resource Plan

The content of the NRP addresses biological, cultural, recreation, and water resources management; reservoir lands planning; and public engagement. During the development of this plan, TVA is continuing to implement activities consistent with its current resource management strategies and programs.

The geographical scope for biological and cultural resources management and recreation management components of the NRP focus on the approximately 293,000 acres of reservoir lands and approximately 9,100 acres of power plant properties. These include active and former fossil and nuclear properties, Raccoon Mountain Pumped Storage Plant, and Buffalo Mountain Wind Power Project site, (Figure 1-2 and http://www.tva.gov/sites/sites_ie.htm). The NRP would be implemented on TVA's fossil and nuclear properties and at Raccoon Mountain and Buffalo Mountain as interim and/or secondary management activities, as appropriate; these properties will remain power assets, and primary management will remain as power generation. It would be at TVA's discretion to determine the appropriate programs and activities within the NRP for implementation on these power properties. For example, the NRP could be applied to the portion of the nuclear properties located outside the secured area of each site to ensure that plant security requirements and needs are not affected. This geographical area is referred to below as TVA lands.

Recreation management focuses on those recreation facilities and programs managed by TVA. While many of these facilities are on TVA reservoirs and power plant reservations, they also include stream access sites located on rivers and streams in the Tennessee River watershed.

The reservoir lands planning component of the NRP addresses the approximately 293,000 acres of TVA-managed reservoir lands. The geographical scope for the water resource management component of the NRP includes the entire Tennessee River watershed (Figure 1-2) because of the programs associated with improving watershed water quality. The water resource management focus is on those discretionary programs and activities implemented by TVA to proactively improve reservoir and watershed water quality. The Tennessee River watershed and TVA's power service area (PSA) are collectively referred to below as the TVA region.

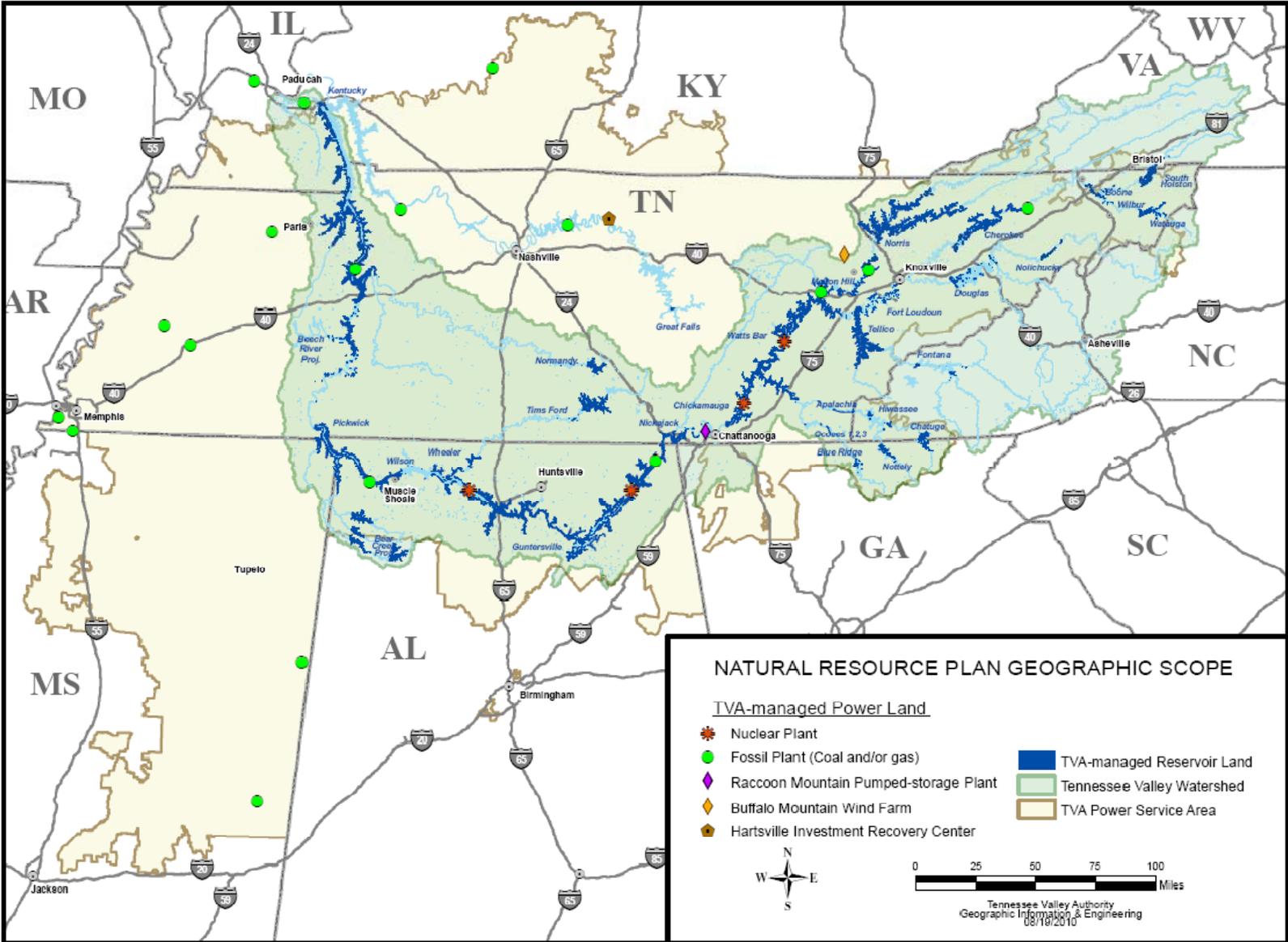


Figure 1-2. Natural Resource Plan Geographic Scope

Stewardship activities associated with TVA's Aquatic Plant Management, Mosquito Management, or Reservoir Releases Improvements Programs are not within the scope of the NRP. Similarly, this plan does not address reservoir operations or river flows, shoreline permitting activities, or the amount of shoreline open for residential development. These specific activities have been addressed in other comprehensive planning processes and their associated environmental reviews (see Section 1.8). It is TVA's intent to develop a mineral rights policy at a later date. Therefore, actions relating to TVA's mineral rights holdings or development of a mineral rights policy have been excluded from the scope of the NRP.

1.6. The Decision

The TVA Board of Directors will decide whether to adopt the final NRP developed by TVA staff, to adopt one of the other alternatives analyzed in this EIS, or to take no action.

1.7. Scoping and Public Involvement

Public involvement in the development of the NRP and associated EIS began with the public scoping process in the summer of 2009 and continued with the issuance of the Draft NRP and EIS for public review and comment in the spring of 2011.

TVA also used the Regional Resource Stewardship Council (RRSC) throughout the development of the NRP as an advisory and review group. TVA established the RRSC in 1999 to advise TVA on its stewardship activities and the priorities among competing objectives and values. The RRSC was established and operates under the Federal Advisory Committee Act. Its meetings are open to the public, and its proceedings are published on TVA's Web site at <http://www.tva.gov/rrsc/>. Agendas, presentations, and minutes of the RRSC meetings where the NRP was discussed are available at <http://www.tva.gov/rrsc/readingroom5/index.htm> and <http://www.tva.gov/rrsc/readingroom6/index.htm>.

1.7.1. Scoping

Scoping, which is integral to the process for preparing EISs under NEPA, is a procedure that solicits public input to the NEPA process to ensure that: (1) issues are identified early and properly studied; (2) issues of little significance do not consume substantial time and effort; (3) the EIS is thorough and balanced; and (4) delays possibly caused by an inadequate review are avoided. TVA's NEPA procedures require that the scoping process commence soon after a decision has been reached to prepare an EIS in order to provide an early and open process for determining the scope and for identifying the significant issues related to a proposed action.

On June 15, 2009, TVA published a notice of intent (NOI) (TVA 2009a) to prepare an EIS and to conduct a comprehensive study of its future energy and environmental stewardship needs, known as the Integrated Resource Plan (IRP). The IRP had two major objectives—to develop a plan for meeting the energy needs of the TVA region over the next 20 years and to develop implementation plans for achieving the objectives of the Environmental Policy including those focusing on management of natural resources.

The 60-day public scoping period for the project began on June 15, 2009. TVA issued press releases about the project and advertised it on its website (<http://www.tva.gov/environment/reports/irp/index.htm>). The IRP website materials included background information, a form for submitting scoping comments, a scoping questionnaire,

addresses for submitting comments by mail, by e-mail, or by fax, and information on public scoping meetings. Letters requesting comments on the scope of the IRP were mailed to 80 federal and state agency offices and the representatives of 21 federally recognized Native American tribes.

TVA held seven public meetings at different locations across the TVA region between July 20 and August 6, 2009. The meetings were advertised in local newspapers, by press releases, and on the project Web site. About 180 people attended these meetings; attendees included members of the public and representatives from state agencies and local governments, TVA power distributors, nongovernmental organizations, and other special interest groups. Exhibits, fact sheets, and other materials were available at each public meeting to provide information about the study and the EIS.

At each of these meetings, attendees were invited to submit oral and written comments. In addition to the public meetings, TVA invited the public to submit comments through its website and by e-mail, letter, and fax. The IRP questionnaire included three questions pertaining to stewardship activities. The responses to those questions have been organized by issue categories and quantified in figures and tables in Appendix C. At the close of the IRP public scoping period on August 14, 2009, 609 total comments pertaining to stewardship had been submitted.

Shortly after the public scoping period began, TVA decided it would be better to address environmental stewardship activities in a separate process and therefore decided to separate the IRP and NRP. The IRP would focus on TVA's future energy needs, and the NRP would focus on TVA's future environmental stewardship needs. Consequently, TVA announced an additional 30-day public comment period for the NRP beginning October 2, 2009. TVA staff mailed approximately 130 letters to federal, state, and regional agencies in the seven Valley states notifying them of the separation and requesting comments specifically on the NRP (Appendix C). During this comment period, information about the NRP, including an interactive comment form, was available on the project Web site, <http://www.tva.gov/environment/reports/nrp/index.htm>.

During the NRP and IRP scoping periods, written comments were received from seven federal agencies, 16 state and regional agencies, and eight organizations or community groups. The additional NRP scoping period concluded with 76 additional comments on the NRP for a total of 685 comments. Summaries of the public scoping comments are located in Appendix C.

In addition to the general public participation opportunities, TVA directly solicited input from 11 federal and state agencies in October and November, 2010. The agencies included the U.S. Army Corps of Engineers, USFS, and National Park Service and state natural resource agencies in each of the seven TVA region states. TVA staff independently met with each agency and discussed the programs associated with biological resource management, cultural resource management, recreation management, reservoir lands planning, and water resource management. Feedback from the agencies was taken into consideration in finalizing the alternatives as well as developing future partnership opportunities.

1.7.1.1. Scoping Response

The majority of public responses to the scoping notices focused on the use of public lands for recreational purposes. Many of the recreational comments addressed the accessibility

and management of public lands for dispersed and water-based types of recreation. Many stakeholders commented that public lands should be managed for multipurpose benefits such as recreation, natural resources, and wildlife habitat conservation. Several stakeholders voiced opposition to development and referred to the amount of existing recreational boat traffic. Specifically, stakeholders commented about the amount of recreational boat traffic on Pickwick Reservoir. Additional comments were received expressing concerns about the fiscal impacts associated with implementing the NRP.

Tennessee Department of Agriculture, North Carolina Division of Inland Fisheries, and USFWS commented on the need to revise TVA's existing forest management strategies. Tennessee Citizens for Wilderness Protection and USFWS commented on the need to address invasive plants. Tennessee Environmental Coalition and USFWS commented on the need to develop water conservation activities and to continue water quality improvement efforts. The USFWS commented on the need to partner with private landowners for enhanced habitat management, to increase programs for endangered species' protection and monitoring, and to begin plant and animal genetics studies. The comments received during the public scoping period are summarized in the *Summary of Public Participation* section attached to the scoping document issued in August 2010 (<http://www.tva.gov/environment/reports/nrp/index.htm>) and in Appendix C.

1.7.1.2. Issue and Resource Identification

Based on an analysis of the scoping activities, TVA has identified the following resources and issues that could be affected by implementing the activities associated with the NRP. The potential direct and indirect effects of each alternative are analyzed and disclosed for each resource. Other activities (existing and proposed) that may affect resources of concern for biological, cultural, recreation, and water resources management, and reservoir lands planning are also identified, and the potential effects of these activities on the NRP resources and trends in the resources are assessed. The major resource categories considered in the EIS are listed below.

Recreation – Current recreation facilities available to meet public recreation needs are identified, as well as those activities that are important for developed and dispersed recreation. The effects of adopting and implementing each alternative on recreation opportunities on TVA lands and reservoirs are evaluated.

Managed Areas and Sensitive Ecological Sites – These are special and unique natural areas on or in the vicinity of reservoirs set aside for a particular management objective or lands that are known to contain sensitive biological, cultural, or scenic resources.

Terrestrial Ecology – This resource includes the plants and animals comprising the terrestrial ecosystems and natural community types found on TVA and adjacent lands. Issues include the identification and protection of significant natural features, rare species' habitat, important wildlife habitat, and locally uncommon natural community types. Consistent with EOs 13186 and 13112, TVA also has programs addressing migratory birds and invasive species.

Wetlands – Wetlands found on TVA land and along the reservoir shoreline are reviewed with respect to the proposed activities under each alternative. TVA will comply with EO 11990 on wetlands and the CWA.

Water Quality – Water quality conditions affect the overall ecological conditions of the reservoir system. Water quality is influenced by activities that cause shoreline erosion, various land use practices, pollution, litter, and other factors.

Aquatic Ecology – Aquatic ecology includes the plants, animals, and fisheries found in the waters of the Tennessee River and its tributaries. Issues include the identification and protection of rare species' habitat, important aquatic habitat, and locally uncommon aquatic community types.

Endangered and Threatened Species – Federally or state-listed as threatened and endangered plant and animals and their habitats occurring on and near TVA lands and in adjacent waters are identified. TVA will comply with the ESA and considers similar state laws.

Cultural and Historic Resources – Archaeological sites, historic structures, and cultural landscapes and properties on or near TVA lands including sites eligible for or listed in the NRHP are reviewed with respect to the proposed activities under each alternative. TVA will comply with the NHPA and related laws.

Land Use – Existing land use patterns along the shoreline and adjacent back-lying land have been largely determined by TVA land acquisition, disposals, and land use agreements. Many TVA lands are committed to existing land uses with little to no potential for change. Proposed activities on TVA lands are evaluated using the goals of TVA policies and applicable laws and regulations.

Prime Farmland – Prime farmland is land with the best combination of characteristics to produce agricultural and silvicultural products. An important issue is the conversion of prime farmland to urban or industrial developments. TVA will comply with the Farmland Protection Policy Act (FPPA).

Visual Resources – The aesthetic setting of TVA lands is characterized and scenic and distinctive areas frequently seen by the public are identified. The effect of each alternative on the natural beauty of TVA lands and adjacent areas is evaluated.

Floodplains – Floodplain management is important with respect to flood control and water quality issues, and these areas are productive natural areas. TVA will comply with EO 11988 on floodplains.

Socioeconomics – The current population, labor force, employment statistics, income, and property values of the region are reviewed in respect to proposed activities of each alternative. A subset of these issues is environmental justice, the potential for disproportionate impacts to minority and low-income communities.

Navigation – The navigation of commercial and recreational watercraft is an important resource on the Valley reservoirs. Potential issues include recreational boat traffic as well as commercial navigation.

Air Quality and Climate – Air quality relates to public health and welfare. Attaining and maintaining the National Ambient Air Quality Standards (NAAQS),

established by USEPA to protect public health and welfare, is an important issue that is identified and discussed. This EIS also addresses climate change issues.

1.7.2. Public Review of the Draft NRP and EIS

TVA issued the Draft NRP and EIS to the public on March 25, 2011. The EPA published the notice of their availability on April 1, 2011, initiating a 46-day comment period that ended on May 16, 2011. TVA sent notices of the availability of the drafts to those on the project contact list and mailed printed or CD-ROM copies to agencies, federally recognized tribes, and others who requested them. The drafts were also posted on TVA's website.

TVA held three public meetings in April, 2011 to explain the NRP, answer questions, and receive comments on the drafts. The meetings were held in Knoxville, Tennessee, Benton, Kentucky, and Muscle Shoals, Alabama. Approximately 45 people attended the public meetings.

TVA accepted comments on the Draft NRP and EIS by mail and e-mail, through a form on the project website, and by written and oral comments at the public meetings. About 150 people, agencies, and organization submitted comments. About 40 percent of the comments were received via the project website, 27 percent by mail, 24 percent by e-mail, and the remainder was oral comments at meetings. TVA staff carefully reviewed the comment submissions and categorized them into 225 individual comments. These comments and TVA's responses to them are provided in Appendix N of this Final EIS. As a result of the comments, TVA made several changes to the Final NRP and EIS. TVA also considered the comments during the revisions to the Alternative D - Blended Alternative that appears in the Final NRP and this Final EIS.

1.8. Other Pertinent Environmental Reviews or Documentation

TVA's RLMPs and associated EISs and environmental assessments (EAs) are briefly described in this section, as are other environmental reviews and studies relevant to the resources under consideration in the NRP and this EIS. A listing of TVA's EISs and EAs completed during the last decade is provided on TVA's Web site, <http://www.tva.gov/environment/reports/index.htm>.

Reservoir Operations Study Final Programmatic Environmental Impact Statement (TVA 2004)

This study and EIS evaluated alternative ways to operate the TVA reservoir system to produce greater overall public value. The recommended changes in the operation of the reservoirs were implemented in 2004.

Shoreline Management Initiative: An Assessment of Residential Shoreline Development Impacts in the Tennessee Valley Final Environmental Impact Statement (TVA 1998)

In November 1998, TVA completed an EIS analyzing possible alternatives for managing residential shoreline development throughout the Tennessee River Valley. The alternative selected determined TVA's current SMP, which incorporates a strategy of managing public shoreline through an integrated approach that conserves, protects, and enhances shoreline resources and public use opportunities while providing for reasonable and compatible use of the shoreline by adjacent residents. The SMP defines the standards for vegetation management, docks, shoreline stabilization, and other residential shoreline alterations. The Shoreline Management Initiative (SMI) EIS is available at

http://www.tva.gov/river/landandshore/landuse_shore.htm. Key elements of the SMP are provided at <http://www.tva.gov/river/landandshore/pdfs/shorelnk.pdf>.

Clean Water Initiative Final Environmental Assessment (TVA 1997)

In May 1997, TVA issued a finding of no significant impact (FONSI) regarding its implementation activities associated with the Clean Water Initiative (CWI). The CWI activities included the implementation of agricultural best management practices (BMPs), stream bank and streambed restoration through bioengineering and structure placement; planting of native woody and herbaceous plants on stream banks and reservoir shorelines; and solid waste cleanup and disposal.

Lake Improvement Plan Final Environmental Impact Statement (TVA 1990)

This study includes an analysis of impacts of the Reservoir Releases Improvement Program.

Reservoir Land Management Plans

Since 2000, TVA has prepared the following RLMPs and associated EISs or EAs. These plans allocate TVA-managed reservoir lands into broad categories or “zones” that include Project Operations, Sensitive Resource Management, Natural Resource Conservation, Industrial, Developed Recreation, and Shoreline Access. These plans are available at http://www.tva.com/environment/land/land_mgmt_plans.htm.

- *Northeastern Tributary Reservoirs Land Management Plan Final Environmental Impact Statement (TVA 2010a)* – This plan addresses 5,000 acres on Beaver Creek, Clear Creek, Boone, Fort Patrick Henry, South Holston, Watauga, and Wilbur reservoirs in Tennessee and Virginia.
- *Douglas and Nolichucky Tributary Reservoirs Land Management Plan Final Environmental Impact Statement (TVA 2010b)* – This plan addresses 3,191 acres on Douglas and Nolichucky reservoirs in Tennessee.
- *Mountain Reservoirs Land Management Plan Final Environmental Impact Statement (TVA 2009b)* – This plan addresses 6,273 acres on Chatuge; Hiwassee; Blue Ridge; Nottely; Ocoees No. 1, No. 2, and No. 3; Apalachia; and Fontana reservoirs in Georgia, North Carolina, and Tennessee.
- *Watts Bar Reservoir Land Management Plan Final Environmental Impact Statement (TVA 2009c)* – This plan addresses 16,036 acres on Watts Bar Reservoir in Loudon, Meigs, Rhea, and Roane counties, Tennessee.
- *Pickwick Reservoir Final Environmental Impact Statement and Land Management Plan (TVA 2002c)* – This plan addresses 19,238 acres on Pickwick Reservoir in Colbert and Lauderdale counties, Alabama; Tishomingo County, Mississippi; and Hardin County, Tennessee.
- *Bear Creek Reservoirs Land Management Plan Environmental Assessment (TVA 2001a)* – This plan addresses 9,178 acres on the Bear Creek Reservoirs in Franklin, Marion, and Winston counties, Alabama.
- *Cherokee Reservoir Environmental Assessment and Land Management Plan (TVA 2001b)* – This plan addresses 8,187 acres on Cherokee Reservoir in Grainger, Hamblen, Hawkins, and Jefferson counties, Tennessee.
- *Guntersville Reservoir Final Environmental Impact Statement and Land Management Plan (TVA 2001c)* – This plan addresses 40,236 acres on Guntersville

Reservoir in Jackson and Marshall counties, Alabama, and Marion County, Tennessee.

- *Norris Reservoir Land Management Plan Environmental Assessment (TVA 2001d)* – This plan addresses 27,927 acres on Norris Reservoir in Anderson, Campbell, Claiborne, Grainger, and Union counties, Tennessee.
- *Tellico Reservoir Land Management Plan Final Environmental Impact Statement (TVA 2000a)* – This plan addresses 12,643 acres on Tellico Reservoir in Blount, Loudon, and Monroe counties, Tennessee.
- *Tims Ford Reservoir Land Management and Disposition Plan Final Environmental Impact Statement (TVA 2000b)* – This plan addresses 1,854 acres of TVA lands and 4,599 acres owned and managed by the Tennessee Department of Environment and Conservation (TDEC) on Tims Ford Reservoir in Franklin and Moore counties, Tennessee.

Resource Management Unit Plans Plans

Between 1998 and 2001, TVA developed 10 plans and associated EAs that prescribe natural resource management activities on discrete areas of reservoir lands. An example is *Boone Management Unit — Boone Reservoir Resource Management Plan and Environmental Assessment (TVA 2002b)* that addresses 566 acres on Boone Reservoir in Sullivan and Washington counties, Tennessee.

1.9. Statutory Overview and Necessary Federal Permits or Licenses

1.9.1. Statutory Overview

A number of federal statutes and EOs are relevant to the formulation and evaluation of the NRP alternatives. Some of the programs and activities under consideration in the NRP are required by laws such as ESA and NHPA. The implementation of other programs and activities can be influenced by requirements for compliance with these and other laws and regulations. Chapter 4, Affected Environment, and Chapter 5, Environmental Consequences, describe the regulatory setting for each resource and discuss applicable laws and their relevance to this analysis. The key laws and regulations that relate to this EIS are summarized below.

Tennessee Valley Authority Act

Congress charged TVA in 1933 with fostering the social and economic well being of the residents of the TVA region through the wise use and conservation of the region's natural resources. It was given broad authority to manage the Tennessee River system and to conduct activities to achieve this congressional mission.

National Environmental Policy Act

NEPA established a process by which federal agencies must study the effects of actions on the environment. Whenever a federal agency proposes an action, grants a permit, or agrees to fund or authorize an action that could affect the natural or human environment, the agency must consider the potential adverse and beneficial effects of the action. NEPA requires that an EIS be prepared for major federal actions, including the adoption of plans and policies that have potential for significant impacts. This process must include public involvement and analysis of a reasonable range of alternatives. TVA prepared this draft EIS to comply with the requirements of NEPA and to provide a structured process for public input.

Protection of Water Quality

The CWA was passed in 1972 to protect and improve the nation's water quality. The CWA is the primary law for regulating discharges of pollutants into the waters of the U.S. by enforcing water quality standards that are defined in Section 301 of the act. Two categories of pollutants enter streams, rivers, and lakes or reservoirs: nonpoint sources (runoff from the landscape) and point sources (direct discharge via a pipe or ditch into the water).

The issuance of federal permits for actions that result in discharges into waters of the U.S., including approvals under Section 26a of the TVA Act, is coordinated with the applicable states to receive water quality certification under Section 401 of the CWA. This certification is received by showing that the permitted activity is consistent with CWA requirements and will not adversely affect the water quality of the receiving stream, as defined by its designated uses. The designated use is determined by the primary uses of the water, such as recreation, water supply, and aquatic life. The states and USEPA have direct responsibility for protecting water quality, including that of the Tennessee River system.

Protection of Wetlands and Floodplains

Disturbance of wetlands or any other waters of the U.S. by the discharge of any dredge or fill material requires a permit from the U.S. Army Corps of Engineers (USACE) under Section 404 of the CWA. Under EO 11990 (Protection of Wetlands), federal agencies are required to avoid construction in wetlands to the extent practicable and to mitigate potential impacts as appropriate. State programs for protection of wetlands also exist. For example, the Tennessee Aquatic Resources Alteration Permit Program controls alteration of streams and wetlands for actions within the state of Tennessee.

Under EO 11988 (Floodplain Management), federal agency actions must, to the extent practicable, avoid siting projects in floodplain zones in order to reduce the risk of flood loss; minimize impacts of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values of floodplains. The Federal Emergency Management Agency has identified where floodplains occur, and many local governments have adopted regulations to control the development of these defined floodplains.

Protection of Air Quality

Under the Clean Air Act, proposed new air pollutant sources must have permits and demonstrate that they will not violate the NAAQS. State implementation plans are developed by each state; these plans outline how the state will protect air quality. They are based on the NAAQS, which are set by the USEPA for pollutants such as sulfur- and nitrogen-based air emissions, with margins of safety to protect human health and welfare. Sources of air emissions are controlled based on the quantity of the emission, its location, and the type of pollutant.

Protection of Endangered and Threatened Species

Under the ESA, federal agencies must conserve endangered and threatened species and ensure that their actions will not jeopardize the existence of these species or adversely affect their critical habitats. Under Section 7(a)(2) of the ESA, a federal agency that permits, licenses, funds, or otherwise authorizes activities must consult with the USFWS as appropriate to ensure that its actions will not jeopardize the continued existence of any listed species. In addition, Section 9 makes it unlawful to take or harm any listed species. The states within the Valley also have programs that protect state-listed species.

Protection of Cultural Resources

The NHPA and Archaeological Resources Protection Act (ARPA) were enacted to protect cultural and archaeological resources. NHPA requires agencies to consult the SHPO on undertakings that may affect historic properties. In some circumstances, the Advisory Council on Historic Preservation, a federal agency, must also be consulted. ARPA prohibits the removal, damage, defacement, or excavation of artifacts from archaeological sites on public land, including lands under TVA's control. The Valley states have additional requirements for protection of excavation of the remains of Native Americans on lands under state or local control. Some of these lands border TVA reservoirs and TVA actively works with the states to protect these resources.

Protection of Farmland

Under FPPA, federal agencies are required to identify and consider the potential adverse effects of a proposed action on prime farmland. The FPPA ensures, to the maximum extent practicable, that federal programs are administered in a manner compatible with state and local government and private programs to protect farmland. In addition, the State of Tennessee has enacted the Agricultural District and Farmland Preservation Act, which provides limited protection of farmlands that have been specially designated under the act.

Environmental Justice

EO 12898 (Environmental Justice) requires federal agencies to identify and address the adverse human health or environmental effects of federal programs, policies, and activities that may be disproportionately greater for minority and low-income populations. Federal agencies must ensure that federal programs or activities do not directly or indirectly result in disparate impacts on minorities or low-income populations. Federal agencies must provide opportunities for input into the NEPA process by affected communities and must evaluate the potentially significant and adverse environmental effects of proposed actions on minority and low-income communities during preparation of environmental documents. TVA is not subject to this EO, but evaluates environmental justice impacts as a matter of policy.

Other Regulations and Executive Orders

Other statutes and EOs may be relevant, depending on the type of specific projects that occur as a consequence of this EIS, including:

- EO 13112 (Invasive Species)
- EO 13514 (Federal Leadership in Environmental, Energy, and Economic Performance)
- Section 10 of the Rivers and Harbors Act
- Migratory Bird Treaty Act
- Bald and Golden Eagle Protection Act
- EO 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds)
- The Safe Drinking Water Act and state drinking water regulations
- The Toxic Substances Control Act
- The Federal Insecticide, Fungicide, and Rodenticide Act
- The Resource Conservation and Recovery Act and other solid waste disposal regulations
- The Comprehensive Environmental Response, Compensation, and Liability Act.

1.9.2. Necessary Federal Permits or Licenses

No federal permits are required to develop the NRP. Site-specific information on reservoir resources has been characterized in this EIS to the extent possible, and potential impacts on these resources were considered when making recommendations. However, TVA would conduct appropriate site-specific environmental reviews, including compliance with ESA and NHPA, when implementing the NRP. The preceding section generally describes permits or approvals that may be required for future projects.

1.10. Environmental Impact Statement Overview

This EIS has been developed to address the environmental impacts of implementing the NRP and alternatives to it. The EIS includes two volumes as outlined below.

Volume 1:

- Chapter 1 describes the purpose and need for the NRP EIS, scope of the NRP, decision to be made, history of TVA and its stewardship programs and policies, NRP scoping process, public review and agency consultation requirements, relationship to other NEPA reviews, and EIS overview.
- Chapter 2 describes TVA's existing and proposed stewardship programs, tools, and activities.
- Chapter 3 includes a description of the process of developing and evaluating the NRP alternatives, a listing of the components of each alternative, and a summary of the environmental consequences of the alternatives considered. This chapter also identifies TVA's Preferred Alternative.
- Chapter 4 discusses the environmental resources and attributes potentially affected by the alternative actions.
- Chapter 5 describes the environmental consequences of each proposed alternative on the affected environment. This chapter also includes a discussion about cumulative impacts, irreversible and irretrievable commitments of resources, and a summary of TVA commitments and proposed mitigation measures.
- Chapters 6, 7, and 8 contain a list of preparers, a Final EIS distribution list, and other supporting information, respectively.
- Glossary
- Index

Volume 2:

- Appendices, including comments received on the Draft EIS and NRP and responses to those comments.