

T E N N E S S E E V A L L E Y A U T H O R I T Y



NICKAJACK RESERVOIR
FINAL RESERVOIR LAND MANAGEMENT PLAN

Volume VI

MULTIPLE RESERVOIR LAND MANAGEMENT PLANS
FINAL ENVIRONMENTAL IMPACT STATEMENT

August 2017



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NICKAJACK RESERVOIR

Final Reservoir Land Management Plan

VOLUME VI

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Prepared by
Tennessee Valley Authority

August 2017

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ACRONYMS AND ABBREVIATIONS

APE	Area of Potential Effect
CFR	Code of Federal Regulations
CVLP	Comprehensive Valleywide Land Plan
dBA	A-Weighted Decibel
EIS	Environmental Impact Statement
EO	Executive Order
HPA	Habitat Protection Area
msl	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRP	Natural Resource Plan
PCB	Polychlorinated Biphenyl
RFAI	Reservoir Fish Assemblage Index
RLMP	Reservoir Land Management Plan
ROW	Right-of-Way
RVSMP	Reservoir Vital Signs Monitoring Program
SMI	Shoreline Management Initiative
SMP	Shoreline Management Policy
SWA	Small Wild Areas
TRM	Tennessee River Mile
TVA	Tennessee Valley Authority
TWRA	Tennessee Wildlife Resources Agency
U.S.	United States
USDA	U.S. Department of Agriculture
USDOI	U.S. Department of the Interior
USGS	U.S. Geologic Survey
Valley	Tennessee River Valley Region
WOA	Wildlife Observation Areas

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CHAPTER 1. INTRODUCTION

The Nickajack Reservoir Land Management Plan (RLMP) was approved by the Tennessee Valley Authority (TVA) Board of Directors on August 23, 2017. This Volume serves as the consolidated planning document addressing management of TVA reservoir lands on Nickajack Reservoir for the reference of TVA staff and the public; the allocations under Alternative B – Proposed Land Use Plan are the final land use allocations.

The Nickajack RLMP is a study of the TVA-managed public land surrounding Nickajack Reservoir. It is one of eight RLMPs associated with the eight volume Environmental Impact Statement (EIS) for the Multiple Reservoirs Land Management Plan project. The EIS, Volume I contains information on the scoping process, allocation process, alternatives, comparison of the alternatives, and the analysis of potential impacts. In addition, Volume I contains a summary, an index, and appendices.

Alternatives Evaluated in the EIS, Volume I

In the EIS, TVA considered two alternatives for managing public land under its control around the eight reservoirs. Under Alternative A – No Action Alternative, TVA would continue to use the previous land use plans, if any, which use an older method of land use planning. Under Alternative B – Land Use Plan Alternative, TVA applies the Single Use Parcel Allocation methodology of land use allocation zones that has been used in TVA land plans since 1999.

Volume VI of the EIS addresses TVA's final RLMP for Nickajack Reservoir. This Volume provides background information about TVA land management throughout its history and specifically TVA management of public land surrounding Nickajack Reservoir. It explains the purpose of the final RLMP and describes the process used in its development. The final RLMP includes the planning process, which lists the objectives around which the RLMP was developed, and a summary of the allocation process. The Nickajack Reservoir Regional Overview (Chapter 2) describes the natural and social development of the reservoir and the surrounding area. The Parcel Descriptions (Chapter 4) include total acreage and parcel descriptions documenting land management allocations. The five reservoir maps illustrating the land use allocations are included as Appendix A of this RLMP.

This Volume will guide land use approvals, private water use facility permitting, and resource management decisions on TVA-managed public land around Nickajack Reservoir. Any proposed development or activity on public land will be subject to TVA approval pending the completion of a site-specific environmental review to evaluate the potential environmental effects of the proposal. As necessary, TVA would impose any necessary mitigative measures as conditions of approval for the use of public lands to minimize adverse environmental effects.

1.1 Tennessee Valley Authority History

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 (TVA Act). A link to the TVA Act is available at <https://www.tva.com/About-TVA/Our-History>.

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>.

1.2 Overview of TVA’s Mission and Environmental Policy

1.2.1 TVA’s Mission

TVA has a rich history of improving quality of life and economic prosperity for people and businesses in the TVA service area. TVA was created by Congress in 1933 and charged with a unique mission—to improve the quality of life in the Valley through the integrated management of the region’s resources. For more than eight decades, we have worked tirelessly to carry out that mission and to make life better for the nine million people who live in the Valley today. We serve the people of the Tennessee Valley by focusing on three key areas: energy, environment, and economic development.

1.2.2 Environmental Policy

As stated in TVA’s 2007 Strategic Plan, “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, which 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. The Environmental Policy is available at <http://www.tva.com/environment/policy.htm>.

1.2.3 Land Policy

On behalf of the United States (U.S.), 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 Section 3.1). These TVA-managed lands are frequently referred to as "TVA lands" in this document.

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, TVA maintains the policy of retaining 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 <https://www.tva.gov/Environment/Environmental-Stewardship/Land-Management/TVA-Land-Policy>.

1.2.4 Shoreline Management Policy

In November 1998, TVA completed a Shoreline Management Initiative (SMI) EIS (TVA 1998) analyzing possible alternatives for managing residential shoreline development throughout the Valley. In April 1999, TVA adopted the agency's current Shoreline Management Policy (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. TVA's Section 26a regulations include these standards as well as the approval process and other requirements regarding TVA's Section 26a jurisdiction. The SMI EIS is available at <https://www.tva.com/Environment/Environmental-Stewardship/Environmental-Reviews/Shoreline-Management-Policy> and the Section 26a regulations are available at <https://www.tva.gov/Environment/Shoreline-Construction/TVA-Act-26a-Standards-and-Regulations>.

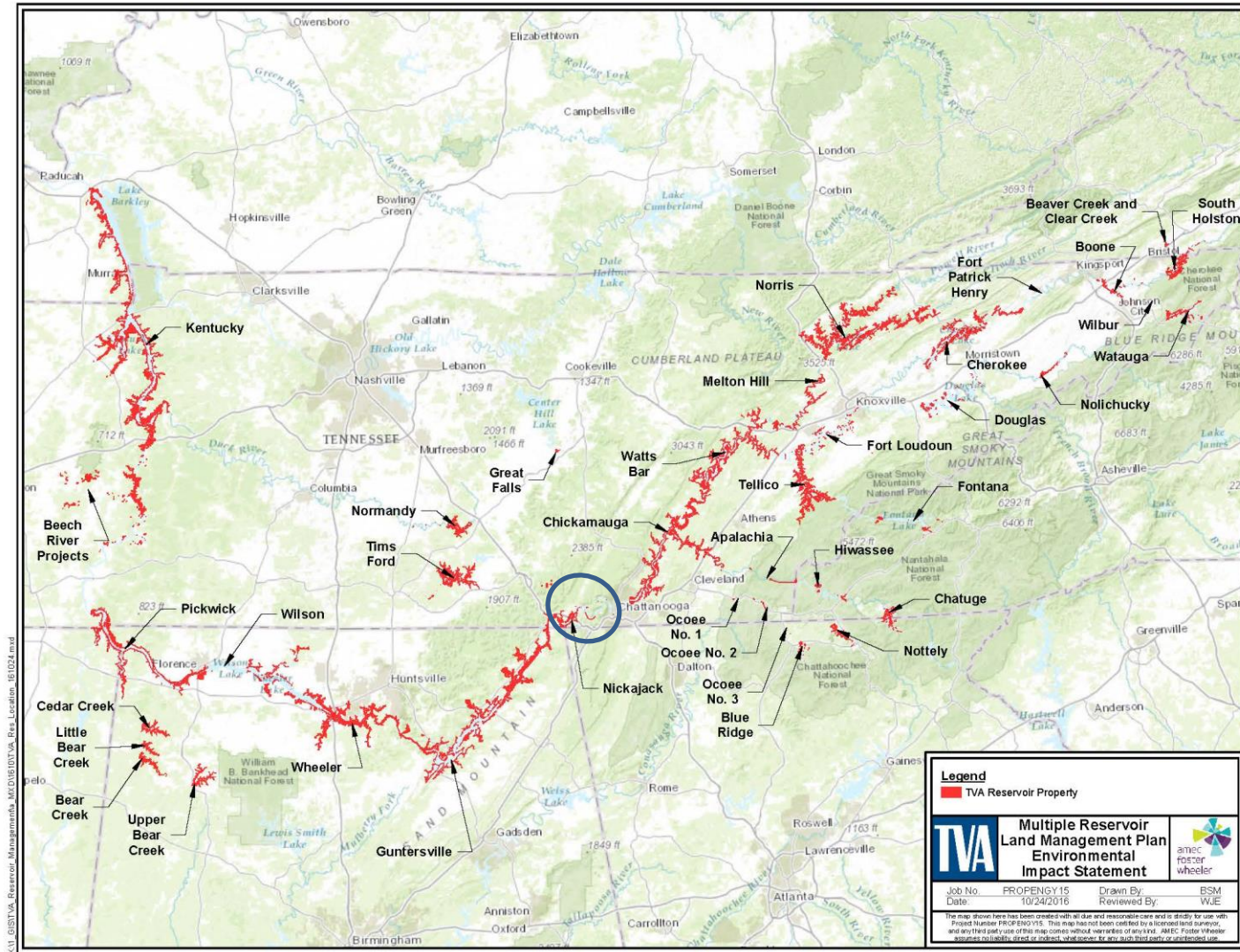


Figure 1-1. TVA Managed Reservoir Land

1.3 The Natural Resource Plan

In 2011, TVA completed a Natural Resource Plan (NRP) (TVA 2011) that strategically guides the management of both renewable and nonrenewable resources, underscoring the importance of protecting those resources that will be lost forever if they are not actively protected or improved today. TVA is one piece of the solution and recognizes the need for a coordinated and collaborative effort to meet the near- and long-term resource needs. As such, the NRP is designed to:

- Integrate the objectives of six resource areas (biological, cultural, recreation, water, public engagement and reservoir lands planning)
- Provide optimum public use benefit
- Balance competing and sometimes conflicting resource uses

The competing demands on the Valley's natural resources, coupled with today's environmental awareness and focus on preserving nonrenewable resources, underscore the necessity for a consistent approach to the management of TVA lands. The NRP represents TVA's high-level strategy for managing its natural resources in the near and long term. Detailed implementation plans, such as this RLMP, are being developed based on the NRP to drive specific implementation efforts. The NRP is available at <https://tva.com/Environment/Environmental-Stewardship/Environmental-Reviews/Natural-Resource-Plan>.

1.4 Purpose of Reservoir Land Planning

As a regional development agency and the nation's largest public power provider, TVA is committed to protecting and sustaining the environmental resources of the Valley for future generations through leadership in clean energy innovation and environmental management. In managing its public lands and resources, TVA seeks to provide efficient resource stewardship that is responsive to stakeholder interests.

TVA intends to manage its public land for an optimum level of multiple uses and benefits that protect and enhance natural, cultural, recreational, and visual resources in a cost-effective manner. Through this approach, TVA ensures that resource stewardship issues and stakeholder interests are considered while optimizing benefits and minimizing conflicts.

control, identifying areas for project operations, sensitive resource management, natural resource conservation, industrial/commercial development, developed recreation, and shoreline access. The reservoir property is divided into parcels, and each parcel is assigned a single land use allocation zone as defined by the Natural Resource Plan (NRP). Land use zones are defined later in Table 3-1.

Zone 1 - Non-TVA Shoreland

Zone 2 - Project Operations

Zone 3 - Sensitive Resource Management

Zone 4 - Natural Resource Conservation

Zone 5 - Industrial

Zone 6 - Developed Recreation

Zone 7 - Shoreline Access

The objectives of the CVLP are designed to implement TVA's mission of serving the Valley through energy, environment, and economic development. Under the CVLP, TVA will develop and update RLMPs, such as this final plan, for a portion of a reservoir, an entire reservoir, or a group of reservoirs. RLMPs are consistent with TVA's policies and programs discussed within this chapter.

The CVLP will be recalibrated as needed (as described under Alternative B in Volume I of this EIS). The CVLP was based, in part, on the anticipation that some parcels of land may be better allocated to different land use zones from those initially identified. For example, field assessments may identify additional areas that warrant the sensitive resource management allocation. In addition, during the creation or update of each individual RLMP, TVA may determine, either for its own management purposes or as a result of public input, that certain parcels of land should be used differently from how they have been used in the past. The preliminary results of the Nickajack Reservoir planning effort have been included in determining the revisions to the CVLP. The final Nickajack RLMP and revisions to the CVLP allocation ranges will be included in the review of the NRP.

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CHAPTER 2. REGIONAL OVERVIEW

The headwaters of the Tennessee River are in eastern Tennessee, in southwestern Virginia, western North Carolina, and in northern Georgia. The Tennessee River is formed by the confluence of the Holston and French Broad rivers just above Knoxville, Tennessee. The river flows in a southwesterly direction through Tennessee, crosses northern Alabama, forms a small portion of the northeastern boundary of Mississippi, and then flows north through western Tennessee and western Kentucky to empty into the Ohio River at Paducah, Kentucky, a distance of about 650 miles. The Tennessee River drains an area of 40,910 square miles, about equal to the area of Ohio. The headwaters are in the Great Smoky Mountains and the Blue Ridge Mountains, which are the highest ranges east of the Rockies. The mountain region is in striking contrast to the relatively flat lands of northern Alabama and to the rolling land of western Kentucky.

The TVA Act was amended August 31, 1935, requiring TVA to report to Congress their recommendations for the unified development of the Tennessee River System. The system would include nine main river, multi-purpose dams, and three or more tributary storage dams. The system would contribute substantially to the control of floods on the Tennessee River, lower Ohio, and lower Mississippi Rivers, establish a formalized navigation channel, and provide many related benefits, including a large supply of electric power. By the end of 1970, the integrated water control system in the Valley was comprised of 32 major dams, nine on the Tennessee River and 23 on tributaries.

2.1 History of Nickajack Dam

The Nickajack project was first presented in September 1963 and was established to provide a solution to the navigational constraints and also to eliminate foundation issues associated with the Hales Bar Dam. It was the eighth dam constructed by TVA along the main Tennessee River. On April 1, 1964, following the approval by the TVA Board in January, the construction of Nickajack Dam began.

Nickajack Dam was constructed along the Tennessee River at river mile 427.7 to replace the old Hales Bar Dam that was located only 6.4 miles upstream. The construction went uninterrupted for 3.5 years and the dismantling of Hales Bar Dam was complete on December 14, 1967. The Nickajack Dam is located in Marion County, Tennessee, 18 miles west of Chattanooga, Tennessee, and about 2 miles northwest of the junction of the Alabama,

Georgia, and Tennessee state lines. The Nickajack Dam is roughly equidistant from four major metropolitan areas: Nashville, Knoxville, Atlanta, and Birmingham.

The dam is a combination of concrete gravity spillways and earth embankment structure with a total length of 3,767 feet and maximum height of 95 feet. Earth embankments account for 2,418.4 feet of the total length. The concrete, overflow-type spillway is located approximately in the middle of the original riverbed with the auxiliary lock on the right side and the trashway on the left side looking downstream. The spillway consists of ten gate openings, 40-foot-wide, separated by 7.5-foot-thick piers. The total length is 482.5 feet which includes the right end pier and the left training wall.

The Nickajack powerhouse and service bay is 372-feet-long with four 24,300-kilowatt units. Provided in the design, Nickajack Dam has two parallel navigation locks, one auxiliary lock that is 110-feet-wide by 600-feet-long, and a partially complete main lock that is 110-feet-wide by 800-feet-long. TVA would complete the main lock when the need arises. Currently, the 110-feet-wide by 600-feet-long lock can lift as many as nine large barges at a time (TVA 1972).

2.2 Nickajack Reservoir and Present Shoreline

Nickajack Reservoir is located in Hamilton and Marion counties in Tennessee. The reservoir has 178.7 miles of shoreline (TVA 1998) and TVA owns approximately 80.7 miles of the reservoir shoreline on Nickajack Reservoir. The water surface area is 10,370 acres and extends 46.3 miles upstream to Chickamauga Dam. After Nickajack Reservoir was filled, portions of old Hales Bar Dam were removed to allow free navigation and to achieve desired streamflows (TVA 1972).

Designed to be a run-of-river project, the Nickajack Reservoir has no flood storage capacity. Nickajack Reservoir is the sixth “step” in the “stairway” of TVA reservoirs and locks that carry barges up and down the Tennessee River and stretches for 46 miles upstream, from the Chickamauga Dam in Marion and Hamilton counties (Figure 2-1).

In preparation of the construction of Nickajack Dam, TVA made contractual agreements with the state of Tennessee, L&N Railroad Company, and impacted utility companies to perform certain related work or to adjust their properties located in the reservoir area. No additional preparation or adjustments were necessary for the Nickajack Dam upstream of the old Hales Bar Dam (TVA 1972).

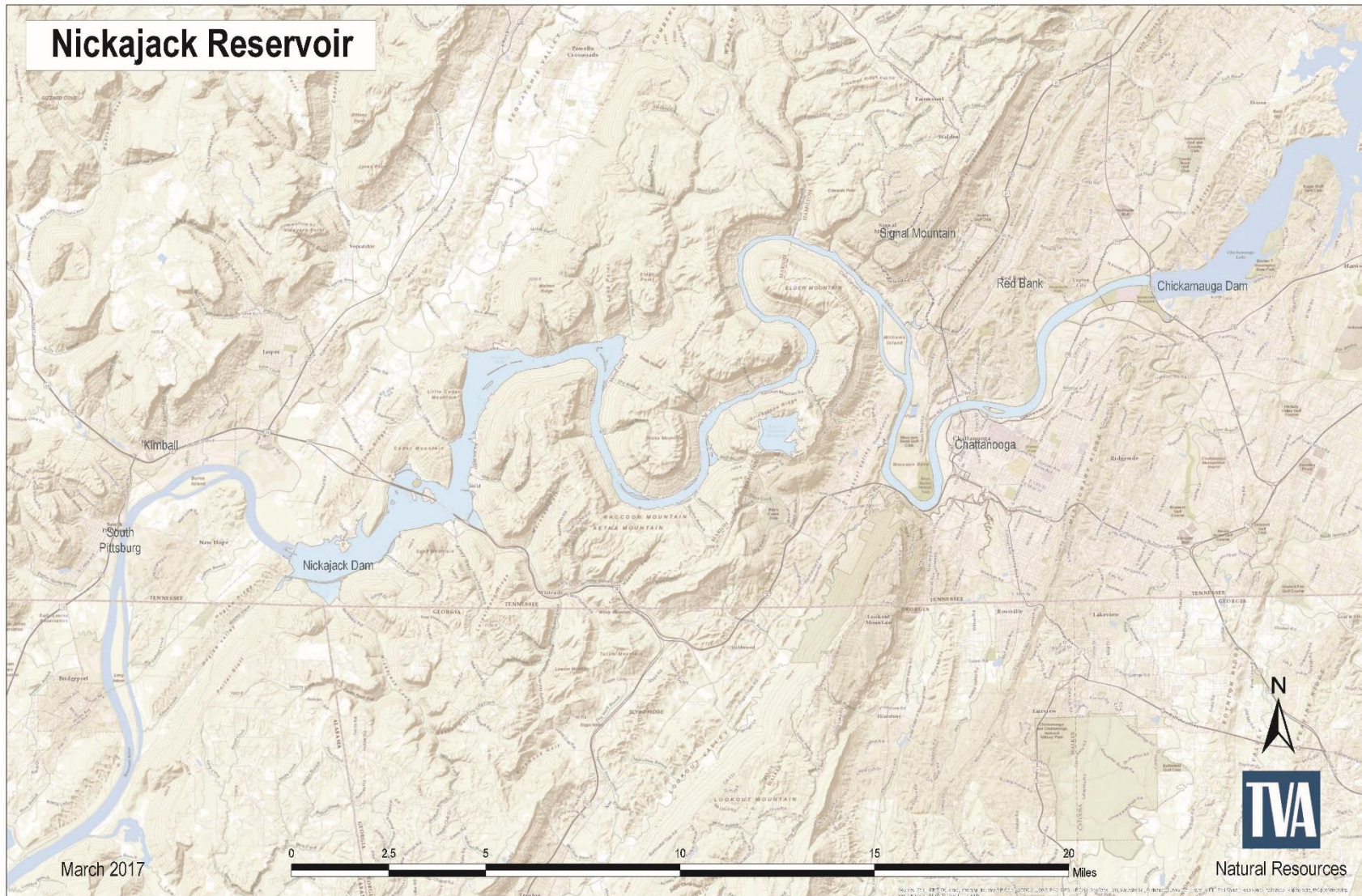


Figure 2-1. Nickajack Reservoir

2.2.1 Land Use and Prime Farmland

TVA originally acquired approximately 6,772 acres of land in fee; approximately 983 acres of flowage easements; and approximately 12 acres of highway easements for Nickajack Reservoir. TVA sold or transferred approximately 928 acres of land from the original acquisition. Approximately 3,305 acres are inundated or flood prone. The remaining approximate 3,604.8 acres are the scope of this RLMP. These lands have been managed by TVA in accordance with allocations made under the Multiple Use Tract Allocation methodology in the Nickajack RLMP completed in 1990 (TVA 1990) .

The area surrounding the reservoir is primarily rural except for the portions of the reservoir that is located in larger cities such as Chattanooga. The shoreline of Nickajack Reservoir is composed of a variety of land uses including forested areas, residential development, suburban areas, parks, farmed areas, recreational and commercial areas and some industrial uses. These uses are generally reflected in the land cover database for the parcels around the reservoir and the surrounding area which identifies land cover in these areas as primarily forested and developed open space. Developed open space includes single family housing units on large lots, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.

According to TVA's 1998 SMI EIS, TVA owns approximately 80.7 miles of the 178.7 miles of shoreline (45 percent) on Nickajack Reservoir (see Volume I, Table 3-1). Approximately 55 percent of the shoreline miles on this reservoir is privately owned, and is available for residential shoreline access development (see Volume I, Table 3-2). In the SMI EIS, TVA estimated that of that 55 percent, approximately 25 percent of this privately owned shoreline is currently developed with residential subdivisions; TVA has flowage easement rights along portions of this private shoreline.

Any structures placed within the 983 acres of flowage easements on Nickajack Reservoir are subject to Section 26a of the TVA Act. Section 26a of the TVA Act requires that TVA's approval be obtained prior to the construction, operation, or maintenance of any dam, appurtenant works, or other obstruction affecting navigation, flood control, or public lands or reservations along or in the Tennessee River or any of its tributaries. For more information on TVA's SMP, see Section 3.4 of this RLMP.

TVA public land on the Nickajack Reservoir contains 739.3 acres of identified prime farmland (Table 2-1). Prime farmland has soil with the best combination of physical and chemical characteristics for producing food and fiber and is protected from conversion to industrial and nonagricultural uses by the United States Department of Agriculture (USDA). It is noted, however, that current soil mapping of prime farmland soils does not account for existing developed uses that may have previously disturbed and potentially converted prime farmland. No land of statewide importance designation occurs around the Nickajack Reservoir.

Table 2-1. Prime Farmland and Farmland of Statewide Importance on Nickajack Reservoir

Zone	Prime Farmland (acres)
Zone 2 – Project Operations	484.4
Zone 3 – Sensitive Resource Management	74.0
Zone 4 – Natural Resource Conservation	116.0
Zone 5 – Industrial	14.8
Zone 6 – Developed Recreation	14.8
Zone 7 – Shoreline Access	0.7
Total	739.3

Source: USDA NRCS 2016

The majority (484.4 acres) of prime farmland occurs in lands allocated to Zone 2 (Project Operations), where major soil disturbance could occur when TVA or other public facilities are constructed. However, most parcels designated for Zone 2 already contain facilities that are not likely to require substantial modification. Only 189.9 acres occurs on land allocated as Zones 3 and 4 (Sensitive Resource Management and Natural Resource Conservation, respectively), which by their function, would have little or no soil disturbance. Of the 49.5 acres of prime farmland included on property allocated to Zone 6 (Developed Recreation), major soil disturbances could occur in specific locations, if recreation facilities are constructed. Conversely, large areas could remain unaffected for more dispersed recreation management. The least amount of prime farmland (0.7 acre) occurs on property allocated to Zone 7 (Shoreline Access).

For more information on land use and prime farmland resources and the potential impacts of the final RLMP, see Volume I, Sections 3.2 and 3.3.

2.2.2 Recreation

TVA provides public lands for developed and dispersed recreational purposes through the reservoir lands planning process. Developed recreation include campgrounds, lodges, marinas, boat-launching ramps, parks, swimming pools and beaches and golf courses. Dispersed recreation activities include picnicking, primitive camping, hiking, bank fishing, hunting, kayaking and canoeing. In 2005, TVA developed a recreation strategic plan aimed at collaboratively enhancing recreational opportunities and addressing unmet recreational needs while managing the resources of the Tennessee River system (TVA 2005). This strategy laid out guiding principles for how to best design and develop recreation opportunities. During this reservoir lands planning effort, tracts of TVA-managed lands around Nickajack Reservoir were categorized based upon a suitable use that is consistent with TVA policy and guidelines and applicable laws and regulations.

On Nickajack Reservoir, developed recreation provides modern facilities and amenities such as campgrounds, developed boat launches/ramps, parks and a myriad of day use facilities (picnic areas, swimming beaches, and fishing piers). These uses primarily occur on TVA lands allocated to Zone 6 (Developed Recreation) and Zone 2 (Project Operations). Under the final RLMP, approximately 3 percent (89.5 acres) of TVA land on Nickajack Reservoir is allocated to Zone 6 and approximately 17 percent (619.8 acres) is allocated to Zone 2 (see Table 3-2 and Figure 3-1).

Nickajack Reservoir is a major outdoor recreation resource that attracts visitors from within and outside the region. Recreation-related attributes of Nickajack Reservoir include wide expanses of water on the lower end of the reservoir and the unique scenery of the upper end as the reservoir passes through the Tennessee River Gorge. A total of 13 parcels contain 24 developed recreation areas on the Nickajack Reservoir including public parks, camping, boat-launching ramps, marinas, fishing piers, trails and a golf course. Many of these recreation areas are located on properties that TVA transferred, leased or licensed for recreation development and use. Several public parks developed on lands made available by TVA include the Marion County Park located on the lower portion of the lake and the City of New Hope's Maple View Public Recreation Area. The 43-acre Marion County Park includes boat-launching ramp, picnic shelter, swimming area and a fishing pier. The 12.4-acre Maple View Public Recreation Area contains a boat-launching ramp, swimming beach, picnic facilities, walking trail and a viewing platform that overlooks the entrance to Nickajack Cave.

Table 2-2 itemizes developed recreation area lands that are managed by TVA or another public agency for recreation purposes. Table 2-3 summarizes commercial, private, and semi-private developed recreation areas. Tables 2-2 and 2-3 do not itemize recreation areas on non-TVA shorelands (Zone 1) because these areas are beyond the scope of this final RLMP. Nickajack Reservoir parcel descriptions (see Chapter 4) further describe the management entity and management descriptions of recreation facilities on lands managed by either TVA or by a third party under a contractual agreement.

Table 2-2. Developed Public Recreation Areas on TVA Lands on Nickajack Reservoir

Recreation Area	Managing Entity	Parcel Location
Nickajack Dam Reservation	TVA	1
Shellmound Day Use Area	TVA	2
Marion County Park	Marion County	8
Boat-launching Ramp	State of Tennessee	12
Boat-launching Ramp	State of Tennessee	14
Boat-launching Ramp and Fishing Pier	TVA	19
Boat-launching Ramp and Fishing Pier	TVA	20
Boat-launching Ramp	TVA	24
Boat-launching Ramp	TVA	35
Maple View Public Recreation Area	City of New Hope	37

Table 2-3. Developed Commercial, Private and Semi-Private (Camps) Recreation Areas on TVA Lands on the Nickajack Reservoir

Recreation Area	Managing Entity	Parcel Location
Shellmound Campground	Commercial	2
Hales Bar Dam and Marina	Commercial	24
Boat-launching Ramp, Picnic, Fuel Sales, Shipstore	Commercial	29

Some of the TVA lands around Nickajack Reservoir provide excellent opportunities for dispersed or nature-based recreation activities. Dispersed recreation could occur on lands allocated to Zone 2 (Project Operations) and undeveloped areas allocated Zone 6 (Developed Recreation) as well as on land allocated to Zone 3 (Sensitive Resource Management) and Zone 4 (Natural Resource Conservation). For example, on lands allocated to Zone 2 (Project Operations) dispersed recreation activities include hiking, wildlife observation and bank fishing on undeveloped areas while on Zone 4 (Natural Resource Conservation) dispersed recreation activities include hunting, wildlife observation and bank fishing.

For more information on recreation resources and the potential impacts of the final RLMP, see Volume I, Section 3.4.

2.2.3 Terrestrial Ecology

Nickajack Reservoir lies within the Southwestern Appalachians and Ridge and Valley ecoregions (U.S. Environmental Protection Agency 2013). The Southwestern Appalachians ecoregion consists of open low mountains with some areas containing steep slopes. Approximately three-fourths of the ecoregion is covered by forest, primarily mixed oak communities and shortleaf pines. Agricultural lands are found on lower slopes and valley floors. The variety of landforms, soils, climate, and geology across the Southwestern Appalachians ecoregion have allowed for an extremely diverse assemblage of animals, including migratory birds of conservation concern (U.S. Geologic Survey [USGS] 2016). Table 2-4 contains a summary of the land cover within and in the vicinity of Nickajack Reservoir (Homer et al. 2015).

Table 2-4. Land Cover on TVA Owned Parcels and within the Vicinity of Nickajack Reservoir

Land Cover Type	TVA Property		Vicinity (5-Mile Radius)	
	Acres ¹	Cover (%)	Acres ¹	Cover (%)
Barren Land	14.4	0.4	589.4	0.2
Developed		0.0		0.0
Developed, High Intensity	5.1	0.1	6,622.3	2.1
Developed, Medium Intensity	37.4	1.0	11,199.2	3.6
Developed, Low Intensity	165.1	4.6	27,479.4	8.9
Developed, Open Space	317.3	8.8	42,720.7	13.9
Forest		0.0		0.0
Deciduous Forest	1,600.2	44.4	125,395.4	40.7
Evergreen Forest	301.2	8.4	12,022.4	3.9
Mixed Forest	656.9	18.2	21,019.7	6.8
Shrubland		0.0		0.0
Shrub/Scrub	112.1	3.1	7,558.0	2.5
Herbaceous		0.0		0.0
Grassland/Herbaceous	49.3	1.4	4,271.10	1.4
Hay/Pasture	105.1	2.9	24,564.83	8.0
Planted/Cultivated		0.0		0.0
Cultivated Crops	86.3	2.4	4,162.8	1.4
Wetlands/Open Water	0.0	0.0	0.0	0.0
Woody Wetlands	46.5	1.3	3,390.7	1.1
Emergent Herbaceous Wetlands	5.5	0.2	328.5	0.1
Open Water	102.4	2.8	16,833.0	5.5
Total	3,604.8	100.0	308,157.3	100.0

¹ Source: Homer et al. 2015

Oak-hickory deciduous forest is the most abundant forest type in the eastern U.S. and is prevalent in the Nickajack Reservoir region. Some mixed deciduous-evergreen and evergreen forests are also present in this region. Numerous bird species nest in deciduous forests. Typical species include wild turkey, whip-poor-will, ruby-throated hummingbird, red-eyed vireo, black-throated green warbler, black-and-white warbler, ovenbird, hooded warbler, and the scarlet tanager. Several additional migratory bird species of concern utilize these habitats in this area including black-billed cuckoo, cerulean warbler, chuck-will's widow, Kentucky warbler, peregrine falcon, red-headed woodpecker, wood thrush and worm-eating warbler (USFWS 2016a). Common mammal species of deciduous forests include white-tailed deer, red bat, eastern chipmunk, eastern gray and southern flying squirrels, white-footed mouse, woodland voles, short-tailed shrew, gray fox, and bobcat.

Deciduous forests and mixed evergreen-deciduous forests account for 63 percent of the land cover within the Nickajack Reservoir parcels (see Table 2-4). Evergreen forests make up an additional 8 percent of the land cover. Seeps, streams, and temporary ponds in deciduous forests provide habitat for numerous amphibians including American and Fowler's toads, green frog, northern cricket frog, and other frogs, and a range of salamanders including spotted and mole salamanders. Reptiles commonly found in deciduous forests especially near water include eastern fence lizard, ground skink, five-lined skink, eastern box turtle, eastern wormsneak, black racer, and ring-necked snake. The riparian zones along streams within deciduous forests provide nesting habitat for Acadian flycatchers, northern parula, and some migratory species of concern in this area, the Louisiana waterthrush, prothonotary warbler, and willow flycatcher (USFWS 2016a).

Evergreen and mixed evergreen-deciduous forests provide nesting for woodland birds including pine and yellow-throated warblers, great crested flycatcher, and chuck-will's-widow. Several additional migratory bird species of concern utilize these habitats including black-billed cuckoo, brown-headed nuthatch, chuck-will's widow, Kentucky warbler, fox sparrow, and prairie warbler (USFWS 2016a). Portions of this forest type have been damaged by southern pine beetles in recent years. Several stands of dead pines exist on TVA lands, and TVA has performed salvage harvests in some stands. Dead pines provide foraging sites for woodpeckers and roosting sites for little brown and silver-haired bats. Other animals that inhabit evergreen and evergreen-deciduous forests but are not restricted to them include white-tailed deer, wild turkey, black bear, eastern mole, southern bog lemming, eastern kingsnake, smooth earthsnake, eastern

fence lizard, six-lined racerunner, and a variety of salamanders, frogs, and toads, especially near wet areas.

Most of the TVA lands consist of narrow strips or small blocks of forest. Many of these lands are adjacent to larger contiguous forest blocks contributing habitat to area-sensitive species of wildlife that favor interior woodland habitats. Many of these adjacent lands were formerly owned by TVA and transferred to other federal agencies such as the U.S. Forest Service and the National Park Service, and to state agencies. These lands combined with the TVA lands to form large blocks of forested habitat adjacent to the reservoir.

Nonforested herbaceous community types in the Nickajack Reservoir region are dominated by pasturelands and hayfields. Herbaceous habitats, including grasslands, barrens, hayfields, and pastures account for approximately 4 percent of the landcover on the reservoir parcels (Table 2-4). Early successional habitats provide habitat for a variety of bird species including eastern bluebird, eastern meadowlark, American crow, and red-tailed hawk. Several additional migratory bird species of concern utilize these habitats in this area including dickcissel, short-eared owl, and willow flycatcher (USFWS 2016a). Amphibians and reptiles that use these habitats include spring peeper, chorus frog, and common garter snake.

Bird and mammal diversity greatly increases at edge habitats especially those between forested areas bordered by early successional habitats. Birds commonly found at these edge habitats include wild turkey, great crested flycatcher, white-eyed vireo, Carolina wren, blue-gray gnatcatcher, brown thrasher, common yellowthroat, yellow-breasted chat, indigo bunting, eastern towhee, field and song sparrow, and orchard oriole. Several additional migratory bird species of concern utilize these habitats in this area including blue-winged warbler, dickcissel, loggerhead shrike, peregrine falcon, red-headed woodpecker, and willow flycatcher (USFWS 2016a). Mammals typically inhabiting edges include eastern cottontail, red fox, coyote, long-tailed weasel, and striped skunk.

The reservoir parcels provide wetlands, including wooded swamps and open water habitats, and associated riparian zones that are used by a variety of wildlife. Common species include great blue heron, green heron, belted kingfisher, common yellowthroat, and northern parula. Many additional migratory bird species of concern utilize these habitats in this area including bald eagle, Louisiana waterthrush, prothonotary warbler, rusty blackbird, short-eared owl, and willow flycatcher (USFWS 2016a). A total of 10 colonial nesting bird colonies/heronries have

been observed on TVA parcels on Nickajack Reservoir (TVA 2016a). Shallow embayments, especially those with emergent vegetation, provide foraging habitat for waterfowl. Common waterfowl include wood ducks, Canada geese, and mallards. Other waterfowl present include American black duck, gadwall, green-winged teal, ring-necked duck, lesser scaup, common goldeneye, bufflehead, and hooded merganser.

Shorebird use of the Nickajack Reservoir is limited to shallow embayments and exposed mud flats. Species such as spotted sandpiper that forage along the margins of reservoirs and killdeer that are not restricted to foraging on mud flats are commonly observed. Common amphibians found in the riparian zones include green frog, eastern narrowmouth toad, and Fowler's toad. Reptiles include northern water snake, common snapping turtle, and painted turtles. Common mammals include mink, muskrat, raccoon, and American beaver.

A search of the TVA Natural Heritage database in May 2016 indicated that 64 caves are located within 3 miles of Nickajack Reservoir. Seven caves are located on TVA parcels (TVA 2016a).

2.2.3.1 Invasive Nonnative Species

Many of the planned TVA parcels around Nickajack Reservoir contain a substantial amount of invasive nonnative species. Executive Order (EO) 13751 defines an invasive nonnative species as any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem; and whose introduction does or is likely to cause economic or environmental harm or harm to human health.

Based on a data search conducted on the USDA Natural Resources Conservation Service (NRCS) PLANTS Database (USDA NRCS 2016b) hydrilla (*Hydrilla verticillata*) is the only plant included on the Federal Noxious Weed List of 2010 reported from the two counties encompassing Nickajack Reservoir.

In addition, Southeastern Exotic Plant Pest Council provides a list of nonnative invasive species that could pose potential threats to native ecosystems and human health for each southeastern state. In reviewing the Tennessee exotic plant pest list (Tennessee Exotic Plant Pest Council 2009), there were 26 species occurring in Tennessee that pose a severe threat to native ecosystems observed in the Nickajack Reservoir region (Table 2-5).

Table 2-5. Invasive Non-native Plant Species that Pose a Severe Threat Known to Occur in Tennessee

Common Name	Scientific Name
Asian bittersweet	<i>Celastrus orbiculatus</i>
Autumn olive	<i>Elaeagnus umbellata</i> var. <i>parviflora</i>
Cheat grass	<i>Bromus tectorum</i>
Chinese privet	<i>Ligustrum sinense</i>
Chinese yam	<i>Dioscorea oppositifolia</i>
Common privet	<i>Ligustrum vulgare</i>
Common St. John's-wort	<i>Hypericum perforatum</i>
Hydrilla	<i>Hydrilla verticillata</i>
Japanese honeysuckle	<i>Lonicera japonica</i>
Japanese knotweed	<i>Polygonum cuspidatum</i>
Japanese stiltgrass	<i>Microstegium vimineum</i>
Johnson grass	<i>Sorghum halepense</i>
Korean clover	<i>Kummerowia stipulacea</i>
Kudzu	<i>Pueraria montana</i> var. <i>lobata</i>
Mimosa	<i>Albizia julibrissin</i>
Multiflora rose	<i>Rosa multiflora</i>
Princess tree	<i>Paulownia tomentosa</i>
Purple loosestrife	<i>Lythrum salicaria</i>
Sericia lespedeza	<i>Lespedeza cuneata</i>
Shrubby bushclover	<i>Lespedeza bicolor</i>
Tree of heaven	<i>Ailanthus altissima</i>

Source: Tennessee Exotic Plant Pest Council 2009

All of these species have the potential to adversely impact the native plant communities because of their potential to spread rapidly and displace native vegetation. TVA considers all of the species a severe threat to local plant communities.

In addition to invasive or non-native plant species discussed above, there are several exotic, non-native, and/or pest insect species and plant diseases that are known to occur within the counties encompassing Nickajack Reservoir. These insects and diseases can have devastating impacts on native plant communities and human crops/fruits. The insects include: Japanese beetle (*Popillia japonica*), hemlock wooly adelgid (*Adelges tsugae*), emerald ash borer (*Agrilus planipennis*), brown marmorated stink bug (*Halyomorpha halys*), kudzu bug (*Megacopta cribraria*), and southern pine beetle (*Dendroctonus frontalis*) (EDDMapS 2016). These species

all have the potential to pose problems to native vegetation, wildlife, crops, landscaping and gardens, and/or overall ecosystems due to the lack of natural predators or diseases to help control their populations giving them the ability to out-compete native species.

The following plant diseases are also known to occur in the counties containing Nickajack Reservoir: butternut canker (*Sirococcus clavigignenti-juglandacearum*), dogwood anthracnose (*Discula destructiva*), Heterobasidion root rots (*Heterobasidion* spp.), and oak wilt (*Ceratocystis fagacearum*). Most of these diseases target certain plant species or groups of species, and can have serious impacts to local populations of those plants and trees.

There are several exotic, non-native, and/or pest terrestrial wildlife and other insect species that are known to occur within the region. These include: Asian tiger mosquito (*Aedes albopictus*), feral cat (*Felis catus*), and European starling (*Sturnus vulgaris*) (EDDMapS 2016). These species have the potential to pose problems to native wildlife and ecosystems due to their ability to out-compete native species and spread quickly. Some of these species can pose threats to human health and safety. Asian tiger mosquitoes are known to transmit various diseases to humans.

For more information on terrestrial ecology and potential impacts of the final RLMP, see Volume I, Section 3.5.

2.2.4 Aquatic Ecology

Unimpounded rivers of the Ridge and Valley ecoregion typically consist of limestone rubble and bedrock riffles, sandy silty pools, and some extensive sand and gravel shoals (Etnier and Starnes 1993). These conditions exist in upper reaches of reservoirs where free-flowing streams transition into impounded reservoirs as well as in reservoir tailwaters. River-like qualities still exist in the upper reaches of some of the impoundments, including Nickajack, although there are no longer any of the expansive rocky or gravel shoal areas that once abounded in the Tennessee River.

Aquatic ecological conditions in streams and reservoirs are monitored under a number of TVA programs. Aquatic ecological conditions in the larger reservoirs have been monitored using the Reservoir Vital Signs Monitoring Program (RVSMMP), which focuses on (1) physical and chemical characteristics of waters; (2) physical and chemical characteristics of sediments; (3) sampling the benthic macroinvertebrate community; and (4) fish assemblage sampling. The RVSMMP data include annual fish sampling on tributary reservoirs on a two-year rotation

sampling cycle. Ratings are based primarily on fish community structure and function, using an analysis tool known as the Reservoir Fish Assemblage Index (RFAI) (McDonough and Hickman 1999).

Both RFAI and benthic community samples were taken in the forebay area (near the dam) and inflow zone of Nickajack Reservoir (Table 2-6). Nickajack has consistently scored among the highest of all the reservoirs monitored by TVA because it is a small, narrow reservoir with a short retention time. It usually takes only three or four days for water to flow through the reservoir, which helps keep the water mixed and flowing consistently, preventing it from stratifying (separating into layers of different temperatures) during the summer. This allows oxygen in the lower water column to be replenished and limits algal growth, thereby reducing chlorophyll concentrations. Historically, ecological health scores have fluctuated within the good range.

Table 2-6. RFAI and Benthic Community Scores for Nickajack Reservoir (2011-2015)

Year	RFAI Scores		Benthic Community Scores	
	Forebay	Inflow	Forebay	Inflow
2011	Fair	Fair	Fair	Good
2013	Fair	Good	Good	Good
2015	Fair	Good	Good	Good

Source: TVA 2016b

In the most recent samples, the fish community rated fair at the forebay and good at the inflow. Consistent with previous years, fewer fish and fish species were collected at the forebay than expected and a greater proportion of those were more tolerant of poorer water quality conditions. The fish community has rated good at the inflow all years except 2011, when it scored fair. The fish species collected during the RVSMP sampling efforts represent typical species found in large river and lentic habitats (Table 2-7).

Table 2-7. Fish Species in Nickajack Reservoir

Common Name	Scientific Name
Black crappie	<i>Pomoxis nigromaculatus</i>
Black redhorse	<i>Moxostoma duquesnei</i>
Blacktail shiner	<i>Cyprinella venusta</i>
Blue catfish	<i>Ictalurus furcatus</i>
Bluegill	<i>Lepomis macrochirus</i>
Bluntnose minnow	<i>Pimephales notatus</i>
Brook silverside	<i>Labidesthes sicculus</i>

Common Name	Scientific Name
Channel catfish	<i>Ictalurus punctatus</i>
Chestnut lamprey	<i>Ichthyomyzon castaneus</i>
Common carp	<i>Cyprinus carpio</i>
Flathead catfish	<i>Pylodictis olivaris</i>
Freshwater drum	<i>Aplodinotus grunniens</i>
Gizzard shad	<i>Dorosoma cepedianum</i>
Golden redhorse	<i>Moxostoma erythrurum</i>
Golden shiner	<i>Notemigonus crysoleucas</i>
Green sunfish	<i>Lepomis cyanellus</i>
Largemouth bass	<i>Micropterus salmoides</i>
Largescale stoneroller	<i>Campostoma oligolepis</i>
Logperch	<i>Percina caprodes</i>
Longear sunfish	<i>Lepomis megalotis</i>
Longnose gar	<i>Lepisosteus osseus</i>
Mississippi silverside	<i>Menidia audens</i>
Northern hog sucker	<i>Hypentelium nigricans</i>
Redbreast sunfish	<i>Lepomis auritus</i>
Redear sunfish	<i>Lepomis microlophus</i>
Rock bass	<i>Ambloplites rupestris</i>
Sauger	<i>Stizostedion canadense</i>
Skipjack herring	<i>Alosa chrysochloris</i>
Smallmouth bass	<i>Micropterus dolomieu</i>
Smallmouth buffalo	<i>Ictiobus bubalus</i>
Spotfin shiner	<i>Cyprinella spiloptera</i>
Spotted bass	<i>Micropterus punctulatus</i>
Spotted gar	<i>Lepisosteus oculatus</i>
Spotted sucker	<i>Minytrema melanops</i>
Spotted sunfish	<i>Lepomis punctatus</i>
Striped bass	<i>Morone saxatilis</i>
Threadfin shad	<i>Dorosoma petenense</i>
Warmouth	<i>Lepomis gulosus</i>
Western mosquitofish	<i>Gambusia affinis</i>
White bass	<i>Morone chrysops</i>
White crappie	<i>Pomoxis annularis</i>
Yellow bass	<i>Morone mississippiensis</i>
Yellow perch	<i>Perca flavescens</i>

Source: TVA 2016c

As in most previous years, bottom life rated good at both monitoring locations. Typically, a “good” variety of organisms are found, including long-lived and sensitive organisms — such as

snails and mayflies that are indicative of good water quality and conditions that allow for long-term survival.

2.2.4.1 Invasive Nonnative Aquatic Species

Although there are many exotic or introduced aquatic species within the region, there are a few species that are considered more detrimental due to their ability to have broad impacts to overall aquatic systems as well as direct impacts to humans. These include Asian carp, especially bighead carp (*Hypophthalmichthys nobilis*) and silver carp (*Hypophthalmichthys molitrix*) (EDDMapS 2016), and zebra mussels (*Dreissena polymorpha*).

Asian carp cause serious damage to the native fish populations in the lakes and rivers that they infest because they out-compete other fish for food and space. Carp are also thought to lower water quality, which can kill off sensitive organisms like native freshwater mussels. Asian carp have been known to dominate entire streams, effectively pushing out the native species. Asian carp are also known to pose danger to humans due to their habit of jumping out of the water and striking boaters and water skiers and damaging boats and equipment.

Zebra mussels are notorious for their biofouling capabilities by colonizing water supply pipes of hydroelectric and nuclear power plants, public water supply plants, and industrial facilities. They colonize pipes constricting flow, therefore reducing the intake in heat exchangers, condensers, firefighting equipment, and air conditioning and cooling systems. Navigational and recreational boating can be affected by increased drag due to attached mussels. Small mussels can get into engine cooling systems causing overheating and damage. Navigational buoys have been sunk under the weight of attached zebra mussels. Zebra mussels can have profound effects on the ecosystems they invade. They primarily consume phytoplankton, but other suspended material is filtered from the water column including bacteria, protozoans, zebra mussel veligers, other microzooplankton and silt (Benson et al. 2016).

For more information on aquatic ecology and potential impacts of the final RLMP, see Volume I, Section 3.6.

2.2.5 Threatened and Endangered Species

TVA biologists and natural resource specialists used the TVA Natural Heritage database to assess the endangered and threatened species within and around the Nickajack Reservoir. The TVA Natural Heritage database was created to ensure that environmental compliance activities are conducted in a consistent manner across the TVA Region and that these activities meet the

requirements of the National Environmental Policy Act (NEPA) and the Endangered Species Act. Federally and state-listed species identified from the TVA Natural Heritage database searches that are known to occur in the two counties in which Nickajack Reservoir lies within are presented in Table 2-8. For the purpose of this document, state-listed species include those that are being tracked, in need of management, candidates, proposed for listing and of special concern. As noted below, there is one federally listed and nine state-listed plants species known to occur on TVA parcels on Nickajack Reservoir. There are seven listed terrestrial wildlife species known to occur on TVA parcels, however, suitable habitat is present for many of the other listed terrestrial animal species. Two listed aquatic species are known to occur within TVA parcels, and nine are known to occur in the reservoir adjacent to the parcels.

Table 2-8. Federally and State-Listed Species in the Nickajack Reservoir Counties

Common Name	Scientific Name	Status	
		Federal	State
Amphibian			
Barking treefrog	<i>Hyla gratiosa</i>		D (S3)
Four-toed salamander	<i>Hemidactylium scutatum</i>		D(S3)
Hellbender	<i>Cryptobranchus alleganiensis</i>	PS	D (S3)
Tennessee cave salamander	<i>Gyrinophilus palleucus</i>		T (S2)
Birds			
Bachman's sparrow	<i>Peucaea aestivalis</i>	--	E (S1B)
Bald eagle	<i>Haliaeetus leucocephalus</i>	DM	D (S3)
Cerulean warbler	<i>Setophaga cerulean</i>	--	D (S3B)
Common barn-owl	<i>Tyto alba</i>	--	D (S3)
Common raven	<i>Corvus corax</i>	--	T (S2)
Golden-winged warbler	<i>Vermivora chrysoptera</i>	--	D (S3B)
Great egret	<i>Ardea alba</i>	--	D (S2B:S3N)
King rail	<i>Rallus elegans</i>	--	D (S2)
Least bittern	<i>Ixobrychus exilis</i>	--	D (S2B)
Peregrine falcon	<i>Falco peregrinus</i>	PS:LE	E (S1B)
Sharp-shinned hawk	<i>Accipiter striatus</i>	PS	D (S3B:S4N)
Swainson's warbler	<i>Limnithlypis swainsonii</i>	--	D (S3)
Virginia rail	<i>Rallus limicola</i>	--	TRKD (S1B:S3N)
Crustacean			
Chickamauga crayfish	<i>Cambarus extraneus</i>	--	T (S1S2)
Nickajack cave isopod	<i>Caecidotea nickajackensis</i>	--	TRKD (S1)
Nortons cave amphipod	<i>Stygobromus nortoni</i>	--	HIST

Common Name	Scientific Name	Status	
		Federal	State
Fish			
Flame chub	<i>Hemitemia flammea</i>	--	D (S3)
Golden darter	<i>Etheostoma denoncourti</i>	--	D (S2)
Highfin carpsucker	<i>Carpionodes velifer</i>	--	D (S2S3)
Snail darter	<i>Percina tanasi</i>	LT	T (S2S3)
Southern cavefish	<i>Typhlichthys subterraneus</i>	--	D (S3)
Tennessee dace	<i>Chrosomus tennesseensis</i>	--	D (S3)
Gastropod			
Anthony's riversnail	<i>Athearnia anthonyi</i>	LE	E (S1)
Armored rocksnail	<i>Lithasia armigera</i>	--	TRKD (S1S2)
Corpulent hornsnail	<i>Pleurocera corpulenta</i>	--	TRKD (S1)
Ornate rocksnail	<i>Lithasia geniculata</i>	--	TRKD (S2)
Royal marstonia	<i>Pyrgulopsis ogmorhapse</i>	LE	D (S1)
Smooth mudalia	<i>Leptoxis virgata</i>	--	TRKD (S1)
Spiny riversnail	<i>Io fluvialis</i>	--	TRKD (S2)
Warty rocksnail	<i>Lithasia lima</i>	--	TRKD (S2)
Insect			
Blowing cave beetle	<i>Pseudanophthalmus ventus</i>	--	TRKD (S1)
Nickajack cave beetle	<i>Pseudanophthalmus nickajackensis</i>	--	TRKD (S1)
Sequatchie caddisfly	<i>Glyphopsyche sequatchie</i>	C	TRKD (S1)
Mammal			
Allegheny woodrat	<i>Neotoma magister</i>	--	D (S3)
Common shrew	<i>Sorex cinereus</i>	--	D (S4)
Eastern small-footed bat	<i>Myotis leibii</i>	--	D (S2S3)
Gray bat	<i>Myotis grisescens</i>	LE	E (S2)
Indiana bat	<i>Myotis sodalis</i>	LE	E (S1)
Northern long-eared bat	<i>Myotis septentrionalis</i>	LT	-- (S1S2)
Rafinesque's big-eared bat	<i>Corynorhinus rafinesquii</i>	--	D (S3)
Smoky shrew	<i>Sorex fumeus</i>	--	D (S4)
Southeastern shrew	<i>Sorex longirostris</i>	--	D (S4)
Mussel			
Cumberland monkeyface	<i>Quadrula intermedia</i>	LE	E (S1)
Dromedary pearlymussel	<i>Dromus dromas</i>	LE	E (S1)
Fanshell	<i>Cyprogenia stegaria</i>	LE	E (S1)
Orange-foot pimpleback	<i>Plethobasus cooperianus</i>	LE	E (S1)
Pale lilliput	<i>Toxolasma cylindrellus</i>	LE	E (S1)
Pink mucket	<i>Lampsilis abrupta</i>	LE	E (S2)
Rough pigtoe	<i>Pleurobema plenum</i>	LE	E (S1)
Spectaclecase	<i>Cumberlandia monodonta</i>	LE	TRKD (S2S3)
Tubercled blossom pearlymussel	<i>Epioblasma torulosa</i>	LE	EXTI (SX)

Common Name	Scientific Name	Status	
		Federal	State
Reptile			
Eastern slender glass lizard	<i>Ophisaurus attenuatus longicaudus</i>	--	D (S3)
Northern pine snake	<i>Pituophis melanoleucus</i>	--	T (S3)
Plant			
A liverwort	<i>Pellia appalachiana</i>	--	SPCO (S2)
American chestnut	<i>Castanea dentata</i>	--	SPCO (S2S3)
American ginseng	<i>Panax quinquefolius</i>	--	S-CE (S3S4)
American hart's-tongue fern	<i>Asplenium scolopendrium</i> var. <i>americanum</i>	LT	E (S1)
American smoke-tree	<i>Cotinus obovatus</i>	--	SPCO (S2)
Beakrush	<i>Rhynchospora perplexa</i>	--	T (S2)
Blomquist leafy liverwort	<i>Lejeunea blomquistii</i>	--	SPCO (S1S2)
Bog oat-grass	<i>Danthonia epilis</i>	--	SPCO (S1S2)
Butternut	<i>Juglans cinerea</i>	--	T (S3)
Compass-plant	<i>Silphium laciniatum</i>	--	T (S2)
Creekgrass	<i>Potamogeton epihydrus</i>	--	SPCO (S1S2)
Creeping St. John's-wort	<i>Hypericum adpressum</i>	--	E (S1)
Cumberland rosinweed	<i>Silphium brachiatum</i>	--	E (S3)
Eggert's sunflower	<i>Helianthus eggertii</i>	--	SPCO (S3)
Fame-flower	<i>PheMERANTHUS mengesii</i>	--	T (S2)
Featherfoil	<i>Hottonia inflata</i>	--	SPCO (S2)
Florida hedge-hyssop	<i>Gratiola floridana</i>	--	E (S1)
Fragrant bedstraw	<i>Galium uniflorum</i>	--	SPCO (S1)
Fraser loosestrife	<i>Lysimachia fraseri</i>	--	E (S2)
Gibbous panic-grass	<i>Sacciolepis striata</i>	--	SPCO (S1)
Granite gooseberry	<i>Ribes curvatum</i>	--	T (S1)
Great plains ladies'-tresses	<i>Spiranthes magnicamporum</i>	--	E (S1)
Hairy false gromwell	<i>Onosmodium hispidissimum</i>	--	E (S1)
John Beck's leafcup	<i>Polymnia johnbeckii</i>	--	E (S1)
Lance-leaf trillium	<i>Trillium lancifolium</i>	--	E (S1)
Large-flowered skullcap	<i>Scutellaria montana</i>	LT	T (S4)
Late goldenrod	<i>Solidago tarda</i>	--	SPCO (SH)
Leather-flower	<i>Clematis glaucophylla</i>	--	E (S1)
Limestone fame-flower	<i>PheMERANTHUS calcaricus</i>	--	SPCO (S3)
Liverwort	<i>Metzgeria uncigera</i>	--	SPCO (S1)
Manna-grass	<i>Glyceria acutiflora</i>	--	SPCO (S2)
Mountain bittercress	<i>Cardamine clematitidis</i>	--	T (S2)
Mountain bush-honeysuckle	<i>Diervilla sessilifolia</i> var. <i>rivularis</i>	--	T (S2)
Mountain honeysuckle	<i>Lonicera dioica</i>	--	SPCO (S2)
Naked-stem sunflower	<i>Helianthus occidentalis</i>	--	SPCO (S2)
Nestronia	<i>Nestronia umbellula</i>	--	E (S1)

Common Name	Scientific Name	Status	
		Federal	State
Nevius' stonecrop	<i>Sedum nevii</i>	--	E (S1)
Northern bush-honeysuckle	<i>Diervilla lonicera</i>	--	T (S2)
Ovate catchfly	<i>Silene ovata</i>	--	E (S2)
Ovate-leaved arrowhead	<i>Sagittaria platyphylla</i>	--	SPCO (S2S3)
Palamocladium	<i>Palamocladium leskeoides</i>	--	T (S1)
Pale corydalis	<i>Corydalis sempervirens</i>	--	E (S1S2)
Prairie-dock	<i>Silphium pinnatifidum</i>	--	T (S2)
Price's potato-bean	<i>Apios priceana</i>	LT	E (S3)
Rose-gentian	<i>Sabatia capitata</i>	--	E (S2)
Roundleaf fameflower	<i>Phemeranthus teretifolius</i>	--	T (S2)
Roundleaf serviceberry	<i>Amelanchier sanguinea</i>	--	T (S2)
Sharp's lejeunea	<i>Lejeunea sharpii</i>	--	E (S1S2)
Silverling	<i>Paronychia argyrocoma</i>	--	T (S1S2)
Slender blazing-star	<i>Liatris cylindracea</i>	--	T (S2)
Small whorled pogonia	<i>Isotria medeoloides</i>	LT	E (S1)
Small's stonecrop	<i>Diamorpha smallii</i>	--	E (S1S2)
Soft-haired thermopsis	<i>Thermopsis mollis</i>	--	SPCO (S2S3)
Southern nodding trillium	<i>Trillium rugelii</i>	--	E (S2)
Southern morning-glory	<i>Stylisma humistrata</i>	--	T (S1)
Spreading false-foxglove	<i>Aureolaria patula</i>	--	SPCO (S3)
Spreading rockcress	<i>Arabis patens</i>	--	E (S1)
Virginia chainfern	<i>Woodwardia virginica</i>	--	SPCO (S2)
Virginia spiraea	<i>Spiraea virginiana</i>	LT	E (S2)
White fringeless orchid	<i>Platanthera integrilabia</i>	THR	E (S2S3)
Witch-alder	<i>Fothergilla major</i>	--	T (S2)
Wood lily	<i>Lilium philadelphicum</i>	--	E (S1)
Yellow honeysuckle	<i>Lonicera flava</i>	--	T (S1)
Yellow jessamine	<i>Gelsemium sempervirens</i>	--	SPCO (S1S2)

***Federal status abbreviations:** LE = Listed endangered, LT = Listed threatened; PS = Partial status; C = Candidate; DM = Recovered, delisted, and being monitored

State status abbreviations: E = Endangered; T = Threatened; D = In need of management; NOST = No status; PROT= Protected; SPCO= Special concern; TRKD = Tracked by state natural heritage program; S-CE = Special Concern - Commercially Exploited

State rank abbreviations: S1 = Critically imperiled, often with five or fewer occurrences, S2 =Imperiled, often with <20 occurrences; S3 = Rare or uncommon, often with <80 occurrences; S4 = Widespread, abundant, and apparently secure within the state, but with cause for long-term concern; SX = Believed to be extirpated from the state; SH = Of historical occurrence in Tennessee, e.g. formally part of the established biota, with the expectation that it may be rediscovered; S#S# = Denotes a range of ranks because the exact rarity of the element is uncertain (e.g., S1S2); S? = Unranked at this time or rank uncertain; B = Breeds in Tennessee; N = Non-breeding population in Tennessee

Source: TVA 2016a

In order to determine which of the species listed in each county are known to occur in the general vicinity of the reservoir, a more refined database search was conducted. Database searches are based on the following criteria: (1) distance, (2) element occurrence rank values, and (3) species or type of element present. Accordingly, plants are assessed within a 5-mile radius, aquatic species within 10-mile radius, and terrestrial species within a 3-mile radius.

2.2.5.1 Plants

Reviews of the TVA Natural Heritage database indicated within the two counties surrounding Nickajack, there are five federally listed threatened species, one proposed threatened species, and one delisted species. Of these species, four species, large-flowered skullcap, small whorled pogonia, Virginia spiraea, and white fringeless orchid, are known to occur within 5 miles of Nickajack Reservoir; however, only the large-flowered skullcap is known to occur on any TVA parcels. There are 58 state-listed species within the surrounding counties. Of these plants, 49 exist within 5 miles of the reservoir and nine have been recorded on TVA parcels. These species and their habitat requirements are discussed in Table 2-9. Of the species known to occur on TVA parcels, the majority occur on parcels allocated to Zone 3 (Sensitive Resource Management) under the final RLMP (Alternative B). The large-flowered skullcap, hairy false gromwell, and creeping St. John's wort have also been recorded on parcels allocated to Zone 2 (Project Operations) under the final RLMP (Alternative B).

Table 2-9. Habitat Requirements for Plant Species of Conservation Concern Within 5 Miles of Nickajack Reservoir

Common Name	Habitat Requirements	Suitable Habitat Present
American ginseng	Rich moist hardwood dominated woods under a closed canopy ¹	Yes
American smoke-tree	Dry, circumneutral soil ²	Yes, Recorded on a TVA Zone 3 Parcel
Bastard toad-flax	Rich prairies, sand prairies, hill prairies, rocky open woodlands, sandy savannahs, barren areas with scrubby vegetation ³	Limited habitat
Bog oat-grass	Acidic seeps ²	Limited habitat
Butternut	Rich woods and hollows ²	Likely
Compass-plant	Barrens ²	Likely
Creekgrass	Lakes and streams ²	Yes
Creeping St. John's-wort	Edges of ponds and lakes ²	Yes, Recorded on a TVA Zone 2 Parcel
Fame-flower	Dry rock ledges ²	Likely
Featherfoil	Wet sloughs and ditches - aquatic ²	Likely
Florida hedge-hyssop	Wooded swamps ²	Likely
Fragrant bedstraw	Dry woods ²	Likely
Fraser loosestrife	Dry open woods ²	Likely
Glade cress	Limestone cedar glades ¹	Somewhat likely

Common Name	Habitat Requirements	Suitable Habitat Present
Great plains ladies'-tresses	Glades ²	Yes, Recorded on a TVA Zone 3 Parcel
Great yellow wood-sorrel	Woods ²	Likely
Greek valerian	Moist soils in deciduous woodlands ³	Likely
Hairy false gromwell	Well drained open areas including fallow fields and pastures ¹	Yes, Recorded on TVA Zone 2 3 parcels
John Beck's leafcup	Limestone outcrops ²	Yes, Recorded on a TVA Zone 3 parcel
Lance-leaf trillium	Alluvial woods and moist ravines ²	Likely
Large whorled pogonia	Acidic soils in dry/mesic forests, seeps, and sphagnum bogs ⁴	Somewhat likely
Large-flowered skullcap	Escarpments, dry woods ²	Yes, Recorded on a TVA Zone 2 parcel
Leather-flower	Wooded stream banks ²	Likely
Limestone fame-flower	Glades ²	Likely
Manna-grass	Swamps, ponds ²	Likely
Mohr's rosin-weed	Parries, clearings, fence rows, sandy soils ²	Somewhat likely
Mountain bittercress	High elevation seeps ²	Somewhat likely
Mountain bush-honeysuckle	Dry cliffs and bluffs ²	Likely
Nevius' stonecrop	Rocky bluffs and cliffs ²	Yes, Recorded on a TVA Zone 3 parcel
Northern bush-honeysuckle	Rocky woodlands and bluffs ²	Likely
Rose-gentian	Dry open woods, powerlines ²	Likely
Roundleaf catchfly	Exposed rocky cliffs and banks ¹	Likely
Roundleaf fameflower	Dry sandy rock outcrops ²	Likely
Roundleaf serviceberry	Rocky slopes and riverbanks ²	Likely
Slender blazing-star	Barrens ²	Yes, Recorded on a TVA Zone 3 parcel
Small whorled pogonia	Mid-elevation dry woods ²	Somewhat likely
Small's stonecrop	Sandstone outcrops ²	Likely
Southern nodding trillium	Rich mountain woods ²	Somewhat likely
Southern morning-glory	Dry piney woods ²	Somewhat likely
Spreading false-foxglove	Limestone bluffs shaded by oaks - oak root parasite ¹	Likely
Spreading rockcress	Moist rocky woods, limestone outcrops, shady riverbanks ²	Yes, Recorded on a TVA Zone 3 parcel
Svenson's wild-rye	Rocky bluffs ²	Yes, Recorded on a TVA Zone 3 parcel
Tall blue wild indigo	Open areas ⁵	Likely
Virginia spiraea	Creek edges, gravel bars, rubble and boulders ¹	Likely
White fringeless orchid	Wet areas in acidic muck or sand - at the head of streams or seepage slopes ¹	Somewhat likely
Witch-alder	Rocky slopes and riverbanks ²	Likely
Wood lily	Dry openings, powerlines ²	Likely
Yellow honeysuckle	Rocky woods and thickets ²	Likely
Yellow jessamine	Dry openings ²	Likely

¹ Source: NatureServe 2016

² Source: TDEC 2014

³ Source: Hilty 2015

⁴ Source: Flora of North America 1993

⁵ Source: Lady Bird Johnson Wildflower Center 2013

2.2.5.2 Terrestrial Wildlife

Reviews of the TVA Natural Heritage database indicate that there are seven federally listed and 24 state-listed terrestrial animal species in the two Nickajack Reservoir counties (see Table 2-8). Within 3 miles of the reservoir, there are records of three federally listed species and an additional 17 state-listed species (Table 2-10). Seven of these species have been recorded on TVA parcels. All records of listed terrestrial species on TVA parcels occur on parcels allocated as either Zone 3 (Sensitive Resource Management) or Zone 4 (Natural Resource Conservation) under the final RLMP (Alternative B). These species and their habitat requirements are described in Table 2-10.

Table 2-10. Habitat Requirements for Terrestrial Wildlife Species of Conservation Concern within 3 Miles of Nickajack Reservoir

Common Name	Habitat Requirements	Suitable Habitat Present
Amphibians		
Barking treefrog	Bottoms, sloughs and swamps along rivers and large creeks ¹	Likely
Green salamander	Damp crevices in shaded rock outcrops, beneath loose bark of dead trees, sometimes under logs ²	Likely
Hellbender	Creeks and Rivers ²	Likely
Tennessee cave salamander	Aquatic, cave obligate ²	Yes Recorded on a TVA Zone 3 parcel
Birds		
Bachman's sparrow	Dry open mature pine forest with grass understory, found clear cuts, fallow fields ²	Likely
Bald eagle	Forested areas near open water ⁴ . In TN, overwintering on reservoirs and large rivers ¹	Yes Recorded on a TVA Zone 2 parcel and within 660 feet of a Zone 3 parcel
Cerulean warbler	Mature forest, forested wetlands, and riparian areas ²	Likely
Common barn-owl	Nesting: cliffs, hollow trees, buildings, open forests Foraging: dense grass fields including marshes ²	Likely
King rail	Wetlands ²	Likely
Least bittern	Wetlands ²	Likely
Peregrine falcon	Nesting: Ledges and opening of cliffs, bluffs, buildings, and occasionally trees. Foraging: Variety of open habitats including wetlands, fields, and lakeshores ²	Likely
Swainson's warbler	Mature, rich, damp, deciduous floodplain and swamp forests ³	Likely
Virginia rail	Wetlands ²	Likely
Insects		
Nickajack cave beetle	Terrestrial cave obligate ³	Yes Record on a TVA Zone 3 parcel
Mammals		

Common Name	Habitat Requirements	Suitable Habitat Present
Allegheny woodrat	Rocky outcrops, cliffs. Usually at higher elevations ²	Yes Recorded on a TVA Zone 3 parcel
Common shrew	Forests, woodlands, open areas ²	Somewhat likely
Eastern small-footed bat	Hibernates in caves. Summer roosts include caves, trees, buildings, and other man-made structures ²	Yes Recorded on a TVA Zone 3 parcel
Gray bat	Caves ²	Yes Recorded on a TVA Zone 3 parcel
Indiana bat	In winter, hibernacula are found in caves. During summer, roosts are found in wooded or semi wooded areas that have suitable trees with loose bark ²	Yes Historical record in a TVA Zone 3 parcel
Northern long-eared bat	In winter, hibernacula are found in caves. During summer, roosts are found in wooded or semi wooded areas that have suitable trees with loose bark ²	Likely

¹ Source: Tennessee Wildlife Resources Agency (TWRA) 2016

² Source: NatureServe 2016

³ Source: TDEC 2014

⁴ Source: Kennedy et al. 2013

2.2.5.2.1 Amphibians

There are four species of federally or state-listed amphibians within 3 miles of Nickajack Reservoir (see Table 2-10). The Tennessee cave salamander has been recorded within a parcel allocated to Zone 3 (Sensitive Resource Management). Barking treefrog and green salamander have no known records on TVA parcels, however suitable habitat is likely to be found within the parcels. Records of hellbender in the mainstem of the Tennessee River are unlikely since Nickajack Dam was created, however, habitat for this species in tributaries of the Tennessee River is likely.

2.2.5.2.2 Birds

Nine species of listed birds have been recorded within 3 miles of Nickajack Reservoir (see Table 2-10). The only records from within TVA parcels on Nickajack Reservoir are of a nesting pair of bald eagles on a parcel allocated to Zone 2 (Project Operations). This pair and another pair of bald eagles have created many nests around the Nickajack Dam Reservation and one nest was on the reservation property, but the nest fell out of the tree in 2007. New nests were created nearby on private property in later years. Another active nest is known within 660 feet of

a TVA parcel allocated as Zone 3 (Sensitive Resource Management). This nest is along a TVA transmission line right-of-way (ROW).

Habitat for Bachman's sparrow, cerulean warbler, common barn-owl, king rail, least bittern, peregrine falcon, Swainson's warbler and Virginia rail is likely present in TVA parcels with mature tracts of forest, cliff, bluffs, or wetlands. However, there are no records of sightings within the TVA Natural Heritage database for these species on TVA parcels.

2.2.5.2.3 Insects

The Nickajack cave beetle has been recorded in a cave which is on a parcel allocated as Zone 3 (Sensitive Resource Management). This species may still be present at this location but a survey would be required for confirmation.

2.2.5.2.4 Mammals

Six species of federally or state-listed mammals have been recorded within 3 miles of the reservoir. All of these species, except the common shrew, have been observed within caves. Gray bat and Allegheny woodrat have been recorded in recent years on TVA parcels. Nickajack Cave is a Priority 3 Cave in the Gray Bat Recovery Plan. Nickajack Cave is a large maternity hibernacula and bat populations have been surveyed by TVA since 1976 and surveys have recorded a population of over 100,000 bats in recent years. Records of Indiana bat and eastern small-footed bat in Nickajack Cave are historical. Northern long-eared bat has been documented in a cave 0.25 mile from Nickajack Reservoir. There are 64 caves within 3 miles of the reservoir. Seven of these caves are on TVA parcels and two of these caves have records of bats and other listed wildlife.

2.2.5.3 Aquatic Species

In the two Nickajack Reservoir counties, there are 12 federally listed aquatic animal species and an additional 16 state-listed species (see Table 2-8). Within 10 miles of the reservoir, there are 54 listed species, 17 of which are federally-listed species (Table 2-11). There are two listed species recorded in the reservoir adjacent to TVA parcels and nine listed species that have been recorded within Nickajack Reservoir. In parcels adjacent to where listed aquatic species have been recorded, TVA has allocated the parcels as Zone 3 (Sensitive Resource Management) or Zone 4 (Natural Resource Conservation).

Table 2-11. Habitat Requirements for Aquatic Species of Conservation Concern within 10 Miles of Nickajack Reservoir

Common Name	Habitat Requirement	Suitable Habitat Present
Crustaceans		
Chickamauga crayfish	Small to large rocky streams among leaf litter ¹	Likely
Nickajack cave isopod	Aquatic cave obligate; Nickajack Cave (historically); probably extirpated by impoundment ²	Unlikely, records historic
Nortons cave amphipod	Small cave pools. Cave obligate ¹	Unlikely, records historic
Fish		
Ashy darter	Medium rivers, slow moving pools with gravel substrates ¹	Likely
Banded darter	Rocky riffles of creeks and rivers	Likely
Bigeye chub	Small to medium tributaries with gravel substrate. Does not tolerate siltation ¹	Likely
Dusky darter	Fast runs and riffles of creeks and small/medium rivers ¹	Likely
Flame chub	Springs and spring fed streams ¹	Likely, Recorded on a TVA Zone 4 parcel
Freshwater drum	Open water of rivers or lakes with mud bottoms ¹	Likely
Golden darter	Medium to large rivers in shallow riffle areas of pea gravel; Tennessee River system ²	Likely
Greenside darter	Medium to large creeks and small to medium rivers. Riffles with gravel substrate, bedrock pools, quiet lakeshores ¹	Likely
Highfin carpsucker	Pools and backwaters of creeks and rivers with gravel or sandy bottoms ¹	Likely
Logperch	Creeks to rivers to lakes. Often associated with bottom debris ¹	Likely
Popeye shiner	Large creeks to medium rivers with warm, clear water and gravel substrate ¹	Likely
Rainbow darter	Gravel/rubble riffles of small-medium rivers ¹	Likely
Redline darter	Riffles of clear creeks and small to medium rivers ¹	Likely
River chub	Small to medium rivers in flowing pools and swift currents ¹	Likely
Rock bass	Small cool vegetated lakes, littoral regions of streams. Always with silt free substrate and permanent flow ¹	Somewhat likely
Snail darter ³	Medium sized rivers in gravel and sandy runs ¹	Likely
Snubnose darter	Rocky pools and riffles of medium rivers ¹	Likely
Southern cavefish	Aquatic cave obligate; cave streams, karst waters, and water supply wells; reported from all karst regions excluding River Valley and Blue Ridge ²	Likely, Recorded on a TVA Zone 3 parcel
Spotfin shiner	Large creeks-small rivers with permanent flow, usually in riffles and raceways ¹	Likely
Stargazing minnow	Creeks and small to medium rivers in rocky/gravel runs and riffles. Requires warm clear water ¹	Somewhat likely
Striped shiner	Creeks and small to medium rivers with swift current, gravel substrate and pools and riffles. ¹	Likely
Tennessee dace	Pools of spring fed headwaters ¹	Unlikely

Common Name	Habitat Requirement	Suitable Habitat Present
Whitetail shiner	Riffles and pools in headwaters, creeks and small rivers with clear water and gravel substrate ¹	Somewhat likely
Yellowfin madtom	Slow pools of medium to large creeks and small rivers that are relatively unsilted ¹	Likely
Gastropods		
Anthony's river snail	Cobble rubble substrate of large rivers ¹	Likely
Armored rocksnail	Partially buried logs, gravel, and preferably submerged rock outcrops; lower Cumberland River and larger tributaries; Obey River ²	Likely
Corpulent hornsnail	Extremely limited distribution in Tennessee River from Battle Creek at Ketchall (Kimball), Marion County, Tennessee, downstream ²	Unlikely
Ornate rocksnail	Freshwater, does not adapt to dam tail water situations ¹	Unlikely
Royal marstonia	Known from shallow littoral zone of two cave spring runs, on mixed substrate of mud, sand, & detritus; lower Seq. R.; Marion County ²	Unlikely
Smooth mudalia	Medium to large rivers, on shoals; portions of upper TN River and some larger tributaries; Hiwassee River ²	Somewhat likely
Spiny riversnail ³	Shallow shoals with a fast current ¹	Likely
Varicose rocksnail	Rocky shoals and riffles on medium-big rivers with moderate current ¹	Likely
Warty rocksnail	Rocky substrates in riffle systems; Elk River and larger tributaries (Tennessee River watershed) ²	Likely
Mussels		
Cumberland monkeyface ³	Riffle and shoal areas of headwater streams and big rivers. Requires clean fast flowing water ¹	Likely
Dromedary pearlymussel ³	Riffles at sand and gravel shoals of moderate current rivers. In Tennessee, it is also found in deeper slower moving water ¹	Likely
Fanshell	Medium to large streams, sometimes found in rivers with gravel substrate and strong current ¹	Likely
Hickorynut	Sand/gravel substrate in deep water ¹	Likely
Kidneyshell	Small to medium rivers, sometimes in shallow areas of impoundments with moving water ¹	likely
Mountain creekshell ³	Most often encountered in small headwater creeks and streams in gravel and sand substrate ¹	Unlikely
Orange-foot pimpleback ³	Riffles and shoals in medium to large rivers ²	Likely
Pale lilliput	Small tributary rivers and streams, in firm rubble, gravel, and sand substrates in shallow riffles and shoals; lower Tenn. River system ²	Somewhat likely
Pink mucket*	Large river species associated with swift currents. May be able to reproduce in impoundments with flowing water ¹	Likely
Pocketbook	Generalized habitat, adapts to both deep impoundments and shallow rivers ¹	Likely
Ring pink	Gravel and sandbars of large rivers ¹	Likely
Rough pigtoe ³	Medium to large rivers in sand/gravel/cobble shoals. Occasionally found in flats and muddy sand ¹	Likely
Slabside pearlymussel	Large creeks to medium sized rivers, in riffles/shoals of sand, fine gravel, and cobble	Likely

Common Name	Habitat Requirement	Suitable Habitat Present
	substrates with mod current; Tennessee River watershed ²	
Smooth rabbitsfoot	Small to medium rivers with moderate to swift current ¹	Likely
Snuffbox	Riffles of medium-large rivers with stony or sandy bottoms, in swift currents, usually deeply buried; Tennessee and Cumberland river systems ²	Likely
Spectaclecase	In sheltered areas of large rivers ¹	Likely
Tennessee heelsplitter	Spring runs, creeks, and small rivers, in substrate of sand and mud; upper Tennessee River and Conasauga River watersheds; Blue Ridge and Ridge Valley ²	Somewhat likely
Tubercled blossom pearlymussel*	Shallow riffles and shoals with sand/gravel substrate in creeks and medium rivers ¹	Likely

¹ Source: NatureServe 2016

² Source: TDEC 2014

³ Records within Nickajack Reservoir

For more information on threatened and endangered species and the potential impacts of the final RLMP, see Volume I, Section 3.7.

2.2.6 Water Quality

Nickajack Reservoir is categorized by TVA as a run-of-river reservoir with an average depth is 23.3 feet. It usually takes only three or four days for water to flow through the reservoir, which helps keep the water mixed, preventing it from stratifying (separating into layers of different temperatures) during the summer. This allows oxygen in the lower water column to be replenished and limits algal growth, thereby reducing chlorophyll concentrations.

The most recent ratings for dissolved oxygen, chlorophyll, and sediment for Nickajack Reservoir from TVA's Reservoir Ecological Health Ratings program are presented in Table 2-12. TVA has found dissolved oxygen conditions in Nickajack Reservoir to generally be consistently good, even at the forebay. The relatively short residence time of three days contributes to maintenance of healthy levels of dissolved oxygen. The chlorophyll rating in the reservoir has been good in most years, but has been found to be poor at times during low streamflow. Sediment quality has been rated fair due to low levels of polychlorinated biphenyls in some samples and chlordane was detected in 1993.

Table 2-12. Ecological Health Indicators at Nickajack Reservoir – 2012

Monitoring Location	Dissolved Oxygen	Chlorophyll	Sediment
Forebay	Good	Poor	Fair

Source: TVA 2016b

TDEC establishes water quality standards for individual waterbodies by identifying the most stringent criteria for each assigned use and considering the antidegradation status. The seven designated uses for the waterways of the state are defined in TDEC's regulations and include: domestic water supply, industrial supply, fish and aquatic life, trout stream, naturally reproducing trout stream, livestock watering and wildlife, and irrigation. Waterbodies in Tennessee that do not fully support their designated uses based on a review of water quality data and information are considered to be impaired and included in the 303(d) list.

The entire length of Nickajack Reservoir has been listed as impaired by TDEC due to sediment contamination by polychlorinated biphenyls (PCBs) and dioxin (TDEC 2016). TDEC also listed several direct tributaries to the reservoir as not supporting, including Shoal Creek (on-site septic systems, sanitary sewer overflows, and municipal separate storm sewer system discharges), Mountain Creek (municipal separate storm sewer system discharges and site clearance/land development), Chattanooga Creek (PCBs, dioxin, combined sewer overflows, municipal storm sewer system discharges), and South Chickamauga Creek (siltation).

While water supply intakes and waste water discharges are regulated by the states under the National Pollutant Discharge Elimination System, TVA permits the actual intake and outfall structures under Section 26a of the TVA Act. The most recent state permit/water withdrawal registration data for water supply withdrawals and waste water discharges directly from or to the reservoirs is provided in Table 2-13. This information does not include withdrawals or discharges in the watersheds.

Table 2-13. Direct Reservoir Average Daily Water Supply Withdrawals and Wastewater Discharges – 2016

2010 Water Withdrawal Volume (MGD)			2010 Wastewater Discharge Volume (MGD)		
Municipal	Industrial	Thermo-electric	Municipal	Industrial	Thermo-electric
40.78	5.93	0	48.43	7.76	0

Source: TVA 2016b.

For more information on water quality and potential impacts of the final RLMP, see Volume I, Section 3.8.

2.2.7 Wetlands

Wetlands are transitional ecosystems between terrestrial and aquatic communities, where saturation with water is the dominant factor in determining the types of plants and animals present. Wetlands are ecologically important because of their beneficial effect on water quality, their moderation of flow regimes by retaining and gradually releasing water, their value as wildlife habitat, and as areas of botanical diversity. Wetlands exist within and adjacent to TVA reservoirs and are influenced by surface water and groundwater connections to the water levels in these reservoirs. The presence of wetlands immediately on or adjacent to TVA reservoirs is related to the land use characteristics and development status of the shoreline. Lands supporting more intense shoreline development are typically noted as having a decrease in wetland features.

Emergent wetlands typically occur in a narrow elevation zone centered on the summer pool elevation and contain water for much of the growing season. Vegetation typically includes cattail, bulrush, arrowhead, and water plantain. Scrub-shrub wetlands are typically associated with reservoir shorelines and coves and are often transition zones between emergent and forested wetlands. The vegetation can include hardwood trees less than 15 feet tall, but are dominated by shrubs such as silky dogwood, red osier dogwood, buttonbush, alder, willow, and elderberry. Forested wetlands occur on lower-lying, undisturbed areas and along tributary streams on power generation sites. These areas are dominated by flood tolerant hardwood species such as oaks, maples, and ash.

Vegetated wetlands occur with greater frequency and size along the mainstem reservoirs and tailwaters, such as Nickajack, than along the tributary reservoirs and tailwaters. This is due in part to the larger-sized watersheds of mainstem reservoirs resulting in a greater volume of water; greater predictability of the annual hydrologic regime; shoreline and drawdown zone topography (wider and flatter floodplains, riparian zones, and drawdown zones and large areas of shallow water); and larger sections of relatively still, shallow-water areas. Wetlands tend to be smaller and do not occur as frequently on tributary reservoirs because of the relatively steep drawdown zones, the rolling to steep topography of adjacent lands, shoreline disturbance caused by wave action, and the lower predictability and shorter duration of summer pool levels. Within mainstem reservoirs, wetlands occur on flats between summer and winter pool

elevations, on islands, along reservoir shorelines, in dewatering areas, in floodplains, on river terraces, along connecting rivers and streams, around springs and seeps, in natural depressions, in areas dammed by beaver, in and around constructed reservoirs and ponds (diked and/or excavated), and in additional areas that are isolated from other surface waters.

The information presented in this document is derived from the National Wetland Inventory database (USFWS 2016b). The only types of wetlands mapped on the TVA-managed lands on Nickajack Reservoir are forested, scrub-shrub, and aquatic bed (Table 2-14).

Table 2-14. Wetland Types within the Nickajack Reservoir

Wetland Type	Acres
Scrub Shrub	3
Forested	24
Aquatic Bed	34
Total	61

Some of the wetland areas on the reservoir lands are present in local, state, and federally managed areas—including wildlife refuges, wildlife management areas, national forests, parks, and recreation areas—and TVA-designated sites, including small wild areas, habitat protection areas, and ecological study areas (Section 2.2.11).

For more information on wetlands and the potential impacts of the final RLMP, see Volume I, Section 3.9.

2.2.8 Floodplains

The area encompassed by the final RLMP extends from Nickajack Dam at Tennessee River mile (TRM) 424.7, upstream to TRM 471.0 at Chickamauga Dam. The 100-year floodplain is the area that would be inundated by the 100-year flood (base flood).

In Nickajack Reservoir, the 100-year flood elevations for the Tennessee River vary from 635.0-feet msl at Nickajack Dam at Tennessee RM 424.7 to elevation 659.9-feet msl at TRM 471.0 just below Chickamauga Dam. The TVA Flood Risk Profile elevations vary from 639.0-feet msl at TRM 424.7 to 666.3-feet msl at TRM 471.0.

Tabulations of the 100-year and TVA Flood Risk Profile elevations are included in Volume I, Appendix E.

For more information on floodplains and the potential impacts of the final RLMP, see Volume I, Section 3.10.

2.2.9 Air Quality

In accordance with the Clean Air Act Amendments of 1990, all counties that include parts of the Nickajack Reservoir are designated with respect to compliance, or degree of noncompliance, with the National Ambient Air Quality Standards (NAAQS). The NAAQS have been established to protect the public health and welfare with respect to six pollutants: particulate matter, sulfur dioxide, carbon monoxide, ozone, nitrogen dioxide, and lead. An area with air quality better than the NAAQS is designated as “attainment;” while an area with air quality worse than the NAAQS is designated as “non-attainment.” Hamilton and Marion counties in Tennessee are considered in attainment for all NAAQS. No wilderness areas or parks designated Prevention of Significant Deterioration Class I air quality area occur near the Nickajack Reservoir. General information about air emissions and climate change are identified in Volume I.

Sources of air emissions within lands along the Nickajack Reservoir include industrial development, public works projects, developed recreation sites, motorized watercraft (motor boats, jet skis), and other vehicle traffic. Lands allocated to Zone 5 (Industrial) have the greatest potential to support uses that produce higher levels of air emissions. Major sources of air emissions within Zone 5 properties include industrial and light manufacturing facilities, barges, trucks and personal vehicles, and barge terminals and operations.

Air emissions generated from land uses on the Nickajack Reservoir vary with type of activity/development. Currently, air emissions from uses on TVA lands on the Nickajack Reservoir are low. Future projects that have the potential to affect ambient air quality would be planned in detail to minimize air emission impacts and would comply with Clean Air Act regulations.

For more information on air quality and the potential impacts of the final RLMP, see Volume I, Section 3.11.

2.2.10 Cultural and Historic Resources

Cultural resources include prehistoric and historic archaeological sites, districts, buildings, structures, and objects, as well as locations of important historic events that lack material evidence of those events. Cultural resources that are listed, or considered eligible for listing, on

the National Register of Historic Places (NRHP) are called historic properties. To be considered an historic property, a cultural resource must possess both integrity and significance. A historic property's integrity is based on its location, design, setting, materials, workmanship, feeling, and association. The significance is established when historic properties meet at least one of the following criteria: (a) are associated with important historical events or are associated with the lives of significant historic persons; (b) embody distinctive characteristics of a type, period, or method of construction; (c) represent the work of a master, or have high artistic value; or (d) have yielded or may yield information important in history or prehistory (36 Code of Federal Regulations [CFR] Part 60.4).

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to consider the effects of their proposed undertakings on historic properties and provide the Advisory Council on Historic Preservation an opportunity to comment on those effects. TVA determined that the final RLMP (Alternative B) is an "undertaking" as defined by the regulations under NHPA. Once an action is determined to be an undertaking, the regulations require agencies to consider whether the proposed activity has the potential to impact historic properties. If the undertaking is such an activity, then the agency must follow the following steps: (1) involve the appropriate consulting parties; (2) define the area of potential effects (APE); (3) identify historic properties in the APE; (4) evaluate possible effects of the undertaking on historic properties in the APE; and (5) resolve adverse effects (36 CFR § 800.4 through 800.13). An APE is defined as the "geographic area or areas within which the undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist" (36 CFR § 800.16). Concerning cultural resources, the APE is taken as the affected environment for purposes of this RLMP. TVA defined the APE to be the approximately 428.3-acres (Appendix B, Table 3) of TVA-managed land that is not committed where TVA is proposing in its final RLMP (Alternative B) to change the current land use zone allocations (Alternative A).

Section 106 of the NHPA requires federal agencies to consult with the respective State Historic Preservation Officer and Indian tribes when proposed federal actions could affect historic and cultural resources, including archaeological resources, which are also protected under the Archaeological Resources Protection Act, and the Native American Graves Protection and Repatriation Act, in addition to the NHPA. Agency correspondences are included in Volume I as Appendix B.

2.2.10.1 Historical Overview of the Nickajack Region

Nickajack Reservoir occupies a 46-mile section of the Tennessee River that stretches from the city of Chattanooga, Tennessee, to the mouth of the Sequatchie Valley. Archaeological studies indicate that man has occupied this area for several thousand years, culminating with the historic Creek and Cherokee Indians. Hernando de Soto and his expedition were most likely the first white people to see this land; they came through the area in the summer of 1540 enroute to the Mississippi River. Native Americans remained the primary inhabitants of the reservoir area until settlers began to enter the new frontier in the early 1800s.

The Cherokee claimed the land in the reservoir area. While early treaties enabled settlers to inhabit some parts of the Sequatchie Valley, the Jackson and McMinn Treaty of 1817 allowed settlement of Marion County, Tennessee, by transferring land from the Cherokee to the U.S. Government. From this land, the State of Tennessee created Marion County on November 20, 1817.

In 1824, there were 384 recorded land claims by settlers; by 1842, there were more than 2,000 claims. As demands for more settlement land grew so did demands for Cherokee removal. In 1836 the U.S. Senate ratified the Treaty of New Echota and in 1838 removal, known as the "Trail of Tears," began which removed approximately 2,500 Cherokees from the lower valley of east Tennessee (McDonald et al. 1986). Other Native Americans in the region, including Creeks, Chickasaws, and Choctaws, were removed as well. The land component of the Trail of Tears may cross the Tennessee River near Parcel 16 on Nickajack Reservoir.

For the area that surrounds Nickajack Reservoir, there is a definite turning point in its social history: the Civil War. The Civil War had brought tremendous damage throughout the area. Both private and public property was ruined; however, in the reservoir area, Chattanooga was by far the hardest hit. With an 1860 population of 2,545, Chattanooga was almost completely destroyed by the competing armies. The Civil War ended, and Tennessee was readmitted to the Union in 1867. Chattanooga was faced with the prospect of rebuilding their town completely from scratch, but no one doubted that the town would be rebuilt and that it would become one of the important cities of the New South.

2.2.10.2 Archaeological Resources

The Nickajack Reservoir region has been an area of human occupation for the last 13,500 years. This includes five broad cultural periods: Paleo-Indian (older than 9200 BC), Archaic (9200-1000 BC), Woodland (1000 BC-AD 900), Mississippian (AD 900-1500), and

Historic (AD 1500-present). These divisions are based on stylistic changes in artifact types and technological and cultural adaptations. Prehistoric land use and settlement patterns vary during each period, but short- and long-term habitation sites are generally located on flood plains and alluvial terraces along rivers and tributaries. The Sequatchie Valley contains a number of large prehistoric ceremonial centers and village sites, as well as numerous upland caves and rock shelters. By 1700 AD, several historic Indian tribes traversed the area.

Early European settlement came by way of the valley from Virginia and through the Cumberland Gap. After the American Revolution, the upper Tennessee Valley was opened for settlement, with Knoxville becoming a major town by the 1790s. The Cherokee came to occupy the lower region, including southeastern Tennessee, north Georgia, and north Alabama, to the exclusion of the other historic period groups by the mid-18th century. The region is home to the lower Cherokee Towns including Nickajack Town. While early treaties enabled settlers to inhabit some parts of the Sequatchie Valley, the Jackson and McMinn Treaty of 1817 allowed settlement of Marion County, Tennessee, by transferring land from the Cherokee to the U.S. Government. From this land, the State of Tennessee created Marion County on November 20, 1817.

The Civil War had brought tremendous damage throughout the area. Both private and public property was ruined; however, in the reservoir area, Chattanooga was by far the hardest hit. With an 1860 population of 2,545, Chattanooga was almost completely destroyed by the competing armies. The Civil War ended, and Tennessee was readmitted to the Union in 1867. Chattanooga was faced with the prospect of rebuilding their town completely.

Clarence B. Moore (1915) investigated mounds and villages throughout the area including what are now Nickajack Reservoir and neighboring Chickamauga and Guntersville Reservoirs in the early part of the twentieth century. During the 1960s, TVA's proposal to construct Nickajack Dam and Reservoir resulted in excavations within the region by the University of Tennessee (Faulkner and Graham 1965, 1966a, 1966b, Bachman 1966). During the 1964-65 field season, the Westmoreland-Barber (40MI11) site and the Pittman-Alder (40MI5) site were investigated. In recent decades, TVA fee-owned land has been subject to both systematic and opportunistic archaeological surveys for TVA undertakings and land planning actions. The largest of these archaeological investigations in the Nickajack Reservoir was approximately 3,150 acres (Driskell and Mistovich 1990). However, only 15 percent of Nickajack TVA fee-owned land has been subject to systematic archaeological survey. Thus, archaeological surveys have not been conducted on all of the lands involved in this land planning process. Moreover, many of the

previously reported archaeological sites have not been assessed for their NRHP eligibility. Within the 428.3 acres of uncommitted lands that TVA proposes to change the land use allocations (Appendix B, Table 3) under the final RLMP (Alternative B), these limited archaeological surveys resulted in the identification of 13 archaeological sites.

2.2.10.3 Historic Structures

The acquisition of land for Nickajack Reservoir resulted in the removal of many structures and other man-made features. The few structures that remain represent all historical periods including individual farmsteads or larger scale plantations, civic or religious sites such as churches, cemeteries or schools, and industrial sites such as mills. In addition, structures associated with the inception of TVA may have historic significance such as the NRHP-eligible Nickajack Dam. TVA has conducted a survey of all of the major hydroelectric facilities that TVA built and is currently in the process of nominating Nickajack Dam and its associated facilities to the NRHP. Furthermore, many historic structures remain on adjacent non-TVA land that may be indirectly impacted by activities on TVA land. All projects occurring on TVA land receive project-specific reviews as part of compliance with NEPA and Section 106 of the NHPA.

For more information on cultural resources and the potential impacts of the final RLMP, see Volume I, Section 3.12.

2.2.11 Natural Areas and Ecologically Significant Sites

Natural areas include managed areas, ecologically significant sites, and Nationwide Rivers Inventory (NRI) streams and lands designated for a particular resource management objective, and lands that contain sensitive biological, cultural, or scenic resources. Managed areas include lands held in public ownership that are managed by an entity (e.g., TVA, TWRA, State of Tennessee, Marion or Hamilton counties) to protect and maintain certain ecological and/or recreational features. A management plan or similar document defines what types of activities are compatible with the intended use of the managed area. Ecologically significant sites are tracts of privately owned land either that are recognized by resource biologists as having significant environmental resources or identified tracts on TVA lands that are ecologically significant, but not specifically managed by TVA's Natural Areas Program. NRI streams are free-flowing segments of rivers recognized by the National Park Service as possessing outstanding natural or cultural values that may potentially qualify them as part of the National Wild and Scenic Rivers System.

The TVA Natural Heritage database indicates that there are 20 natural areas on or within TVA parcels along Nickajack Reservoir. The TVA Natural Areas Program manages 7 of the 20 natural areas (Table 2-15). An additional 55 natural areas lie within 3 miles of Nickajack Reservoir. The natural areas along Nickajack Reservoir include TVA and TWRA managed lands, city parks, and state parks.

Table 2-15. TVA Natural Areas Along Nickajack Reservoir

Natural Area	Type	Acres
Huff Branch	Habitat Protection Area	20.4
Little Cedar Mountain	Habitat Protection Area and Small Wild Area	320.0
Marion Bridge	Habitat Protection Area	103.0
Nickajack Cave	Habitat Protection Area, Small Wild Areas, and Wildlife Observation Area	254.5
Nickajack Oak Wetland	Habitat Protection Area	110.3
Raccoon Mountain Pump Storage	Wildlife Observation Area	528.0
Shellmound Road Bluff	Habitat Protection Area	102.8

TVA natural areas on Nickajack Reservoir are categorized as small wild areas (SWAs), ecological study areas, habitat protection areas (HPAs), and wildlife observation areas (WOAs). SWAs are sites with exceptional natural, scenic, or aesthetic qualities that are suitable for low-impact public use, such as foot trails and backcountry campsites. Ecological study areas are sites suitable for ecological research or environmental education. These study areas contain plant or animal populations of scientific interest and/or are located near an educational institution that would utilize and manage the area. HPAs are established to protect rare plants, animals, exemplary biological communities, or unique geological features. WOAs are sites that support concentrations of viewable wildlife such as shorebirds, songbirds, and waterfowl (TVA 2011).

For more information on managed areas and sensitive ecological sites, see Volume I of the EIS, Section 3.13 and Appendix E.

2.2.12 Aesthetics and Visual Resources

Nickajack Reservoir's visual resources vary from the riverine tailwater below Chickamauga Dam through downtown Chattanooga and the Tennessee River Gorge to an open lake expanse above Nickajack Dam. Over two-thirds of the reservoir is riverine in appearance. As the

Tennessee River passes through downtown Chattanooga, numerous industries, barge terminals, utility crossings and outfall pipes are the dominant visual features. Views of the waterway are of greater value to the land-based observer than are views of the shoreline economic development activities as seen by the passing boater.

Lookout Mountain on the left bank and Signal Mountain on the right bank mark a notable change in scenic resources passing downstream from Chattanooga. The steep and wooded left bank of the reservoir is countered on the right bank by a 5- to 6-mile stretch of shoreline dotted with primary and secondary residences, shacks, condominium developments, junk cars, and occasional commercial operations.

Moving downstream, the gorge's high bluff-like walls tower upward more than 1,000 feet from the shoreline, affording spectacular views from overlooks on Raccoon Mountain and various points in Prentice Cooper State Forest. Two cove-like embayments, Cummings Lake and Mullins Cove, are adjacent to the riverway as it passes through the gorge. The scenic, pastoral settings adjacent to these embayments are visible to passing boaters. The gorge provides many scenic vistas from adjacent overlooks and roadside pulloffs along the riverway and provides the Nickajack Reservoir area and the entire Tennessee River Valley with a unique scenic resource.

Moving downstream from the gorge past Bennett Lake with its massive quarrying operation, the reservoir takes on an industrial commercial tone. The old Hales Bar Dam powerhouse protrudes into the reservoir from the left bank and is the location of a commercial marina and campground. Across the reservoir on the right bank is a coal barge loading terminal. Immediately downstream of Hales Bar Marina on the left bank is a barge servicing facility that occupies a fleeting area over half the width of the reservoir. These four operations are the predominant visual features in the landscape as seen by motorists looking upstream from U.S. Highways (US) 41, 64, and 72 bridge and those crossing the reservoir on Interstate (I) 24.

Views downstream from the I-24 crossing and rest area have a higher aesthetic quality. The reservoir widens at this point, taking on a more lake-like appearance. The left bank landscape is mountainous in nature, while the northern shoreline has a ridge-like character. Portions of Sand Mountain forming the reservoir's southern shoreline are interrupted with numerous powerline cuts, railroad cuts and fills, and a varied assortment of developments along State Highway 156. Of greatest scenic value in this area of the reservoir is Nickajack Cave. Little Cedar Mountain, located on the right bank of the reservoir, is a composite of landscapes ranging from relatively

level agricultural fields skirting much of the shoreline to one dominant ridge area with a scenic bluff dropping into the lake at its southernmost tip.

For more information on aesthetic and visual resources and the potential impacts of the final RLMP, see Volume I, Section 3.14.

2.2.13 Noise

Sources of noise within lands along the Nickajack Reservoir include those associated with industrial development, developed recreation sites, and project operations. Characteristics of noise emissions associated with common land uses are identified in Volume I of the EIS.

Lands allocated to Zone 5 (Industrial) have the greatest potential to support uses that produce higher levels of noise. The most common measurement of sound and environmental noise is the A-weighted decibel scale (dBA). This is a logarithmic scale that ranges from 0 dBA to about 140 dBA and approximates the range of human hearing. Common sources of noise within Zone 5 properties include: heavy trucks; rail and barge operations; and industrial workplaces. Noise emission levels for these sources can range from 85 dBA to 100 dBA (U.S. Department of the Interior [USDOI] 2008). Lands allocated to Zone 2 (Project Operations) also have the potential to generate noise, but typically to a lesser degree than land developed for industrial uses. The primary source of noise from land allocated to Zone 2 is the Nickajack Dam Reservation, including the dam, navigation lock and associated barge operations, access roads; and boat-launching ramp. Noise emission levels for these sources can range from 70 A-weighted decibels (dBA) to 90 dBA (USDOI 2008). Lands allocated to Zone 6 (Developed Recreation) also have the potential to generate noise, but typically to a lesser degree than industrial development. The magnitude of the noise level depends on the location of the facilities and the type and intensity of recreational use. Common sources of noise within developed Zone 6 parcels typically include motorized watercraft (motor boats, jet skis) and road traffic. Noise emission levels for Zone 6 uses can range from 40 dBA (very quiet) to 90 dBA (jet ski). Noise levels for motor boats and jet skis may also exhibit short elevated bursts of noise as a result of speed of the watercraft and other operational factors.

Lands allocated to Zone 3 (Sensitive Resource Management), Zone 4 (Natural Resource Conservation) and Zone 7 (Shoreline Access) account for approximately 60 percent of land uses at Nickajack Reservoir. Land uses on property allocated as Zone 3, Zone 4, and Zone 7

generally do not create noise emissions that would have an effect on the ambient noise environment and reflect a general environment consisting of low noise levels.

Under the final RLMP (Alternative B), approximately 40 percent of land along the reservoir is allocated to zones that would support land uses with the potential for noise emissions (Zones 2, 5 and 6).

Noise from land uses varies with the type of development and will attenuate with distance from the source and as such, the noise level around the reservoir is relatively low. However, because 40 percent of the TVA-managed land is allocated to Zones 2 (Project Operations), 5 (Industrial) or 6 (Developed Recreation), the noise level could be marginally higher in certain locations depending on the type and location of the development. Any future projects on parcels that have the potential to affect noise emissions would be planned in detail and may be expected to consist of both water-dependent facilities and other common actions as well as new developments as allowed per each land use zone.

For more information on noise and the potential impacts of the final RLMP see Section 3.15 of Volume I of the EIS.

2.2.14 Socioeconomics

2.2.14.1 Population and Economy

The population of the Nickajack Reservoir area is described in Table 2-16. Both counties within the area, exhibit vastly different population characteristics in terms of size and growth. Hamilton County, which contains the city of Chattanooga, has the highest population with 354,098 which represents an increase of 5.2 percent since 2015. In contrast, the population of Marion County is 33,845. Although Marion County is much smaller than Hamilton County, it is projected to grow 18.8 percent from 2015 to 2020 compared to Hamilton County's projected 2.6 percent decline in population. Marion County is 77 percent rural, more than double the state average of 33.6 percent. Hamilton County is on the other end of the spectrum containing a 10 percent rural population. One third of the population of the state of Tennessee is located in rural areas.

As presented in Table 2-17, from 2010 to 2014, an average of 5 percent of the population in the Nickajack Reservoir area was unemployed. The state of Tennessee had an unemployment rate of 6 percent during that same period. The largest sector for employment within both counties is Management, Business Science, and Arts at 27 percent and 37 percent, respectively. The

median household income for Marion County from 2010 to 2014 was \$40,998. Median household income in Hamilton County during this period was \$47,880. For comparison, the median household income in the state of Tennessee was \$44,621.

Table 2-16. Population and Percent Growth – Nickajack Reservoir

Population	County		State
	Marion	Hamilton	Tennessee
Population (2020 - Projection)	33,845	344,951	7,195,375
Population (2015 - Estimate)	28,487	354,098	6,600,299
Population (2014 - Estimate)	28,261	344,772	6,451,365
Population (2010)	28,237	336,463	6,346,105
Projected Growth (2015-2020)	18.8%	-2.6%	8.3%
Percent Change (2010-2015)	0.9%	5.2%	3.9%
Percent Change (2010-2014)	0.1%	2.5%	1.6%
Percent Rural (2010)	77.0%	10.0%	33.6%

Sources: USCB 2015 and USCB 2010a

Table 2-17. Employment and Income, 2010-2014 – Nickajack Reservoir

Employment and Income	County		State
	Marion	Hamilton	Tennessee
Civilian Employed Population 16 Years and Over	11,505	161,007	2,835,895
Management and Business Science and Arts	27%	37%	34%
Service Occupations	13%	17%	17%
Sales and Office	25%	25%	25%
Natural Resources, Construction, and Maintenance	13%	8%	9%
Production, Transportation and Material Moving	23%	13%	15%
Percent of Population > 16 years Unemployed	4%	6%	6%
Median Household Income	\$40,998	\$47,880	\$44,621

Source: Source: USCB 2010b

2.2.14.2 Environmental Justice

EO 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” formally requires Federal agencies to incorporate Environmental Justice as part of NEPA. Specifically, it directs them to address, as appropriate, any disproportionately high and adverse human health or environmental effects of their actions, programs, or policies on minority and low-income. Although EO 12898 does not apply to TVA’s activities, TVA routinely considers environmental justice in its planning processes.

The minority population in the Nickajack Reservoir area ranges from 7.5 percent for Marion County to 28.6 percent for Hamilton County (Table 2-18). Hamilton County, the larger of the two within the area, has a higher percent minority population than the 25.4 percent minority within the state of Tennessee. From 2010 to 2014, 20.3 percent of the population within Marion County was below the poverty level, whereas only 16.0 percent was below the poverty level in Hamilton County. Poverty level for the state of Tennessee during this period was 17.8 percent.

Table 2-18. Minority Population and Poverty, 2010-2014 – Nickajack Reservoir

Minority Population and Poverty	County		State
	Marion	Hamilton	Tennessee
Total Population	28,261	344,772	6,451,365
White Alone ¹	26,432	258,373	5,029,109
Black or African American Alone ¹	458	68,961	1,082,001
American Indian and Alaska Native Alone ¹	49	639	17,656
Asian Alone ¹	70	6,617	98,441
Native Hawaiian and Other Pacific Islander Alone ¹	0	151	3,256
Two or More Races	1,142	5,838	122,662
Hispanic or Latino ²	417	16,439	309,828
Percent Minority	7.5%	28.6%	25.4%
Percent of Population Below Poverty Level	20.3%	16.0%	17.8%

¹Includes persons reporting only one race

²Hispanics may be of any race, so also are included in applicable race categories.

Source: USCB 2010b

For more information on socioeconomics and the potential impacts of the final RLMP, see Volume I, Section 3.15.

2.3 Major Features of Nickajack Reservoir

2.3.1 Raccoon Mountain

The Raccoon Mountain Pumped-Storage project is TVA’s only pumped-storage facility and its largest hydroelectric facility. The facility is adjacent to the Nickajack Reservoir at TRM 444.6. During periods of low electricity demand, water is pumped from Nickajack Reservoir at the base of Raccoon Mountain to the reservoir built at the top. Then, the stored water is used to generate electricity when additional power is needed in the TVA system. During high power demand, water is released via a tunnel drilled through the center of the mountain to drive generators in the mountain’s underground power plant.

Construction at Raccoon Mountain began in 1970 and was completed in 1978. The upper reservoir has 528 acres of water surface, and the associated dam is 230 feet high and 8,500 feet long. There are four generating units with a net dependable capacity of 1,652 megawatts. Net dependable capacity is the amount of power a plant can produce on an average day, minus the electricity used by the plant itself.

The 2,536-acre reservation associated with this power plant includes several recreation related features and attractions. A visitor center located on the top of Raccoon Mountain includes exhibits and provides expansive views of the Tennessee River gorge. Nearby Laura Point recreation area provides picnic facilities and restrooms. Recreation facilities including fishing berms, a boat-launching ramp, picnic tables, and restrooms have also been developed on the portion of the reservation bordering the shoreline of Nickajack Reservoir.

Under a cooperative agreement with the Southern Off-Road Bicycle Association, a 19-mile system of trails for hiking, biking, and running have also been developed on the reservation property. This trail system attracts users from within and outside the region and special events such as trail races occur frequently. Additional information concerning Raccoon Mountain can be found on TVA's website, <https://www.tva.gov/Energy/Our-Power-System/Hydroelectric>.

2.3.2 Hales Bar Dam

The History of Hales Bar Dam

The Hales Bar Dam was one of the first major multiple-purpose dams in this country. The construction of Hales Bar Dam began in October 1905 and continued until November 4, 1913. It was originally intended as a navigation dam to flood the treacherous shoals and rapids of the Tennessee River gorge below Chattanooga. However, the power potential of this steep section of the river influenced the formation of the Chattanooga and Tennessee River Power Company.

TVA acquired Hales Bar Dam in 1939 as a part of holdings of the Tennessee Electric Power Company, and several deficiencies had to be corrected to assimilate the project into the TVA system. Not the least among these was the persistent foundation leakage dating back to the original construction period. Leakage through the foundation was noted soon after the dam was completed, and several attempts to stop the flow prior to TVA's acquisition were attempted with only temporary success. TVA carried out an extensive foundation treatment program for Hales Bar Dam from 1940 to 1943 which seemed effective, but several years later, boils began to

reappear in the river below the dam. Investigations in 1960 indicated that leakage had increased to nearly 2,000 cubic feet per second.

In 1962, TVA again tried to remedy the foundation, but with less than satisfactory results. In addition to the leakage difficulties, inadequate lock facilities presented a navigational problem. A large increase in the traffic volume on the Tennessee River prompted studies for new and larger navigation locks at several mainstream dams including Hales Bar. These studies indicated that construction of a watertight cofferdam for the addition of a new lock at Hales Bar would be expensive if not impractical due to the poor foundation conditions. Also, the uncertainty that foundation repairs could ensure the safety of the present and future structures on a long-term basis left some doubt about the advisability of attempting major additions at Hales Bar.

After further studies and investigations, including consultations with foundation experts, the decision was made to build a new dam, locks, and powerhouse at the Nickajack site, where sound geologic conditions were known to exist, rather than to invest additional funds in an uncertain solution at Hales Bar. In September 1963, a planning report, "The Nickajack Project" was issued to establish the scope of the major features of the project (TVA 1972).

The Removal of Hales Bar Dam

The spillway and non-overflow section on Hales Bar Dam were removed to provide adequate flow capacity and navigational clearance. The removal had to be accomplished without lowering the reservoir and with minimum interruptions to navigation. This was the largest undertaking of this kind ever attempted by TVA.

TVA sought removal of the dam by contractual agreements, with the exception of the spillway gates, gate hoists, and bridge deck sections which would be removed by TVA. All blasting operation was to be performed after the impoundment of Nickajack Reservoir. On June 27, 1967, Bi-Co Pavers, Inc. of Dallas, Texas (contractor) was awarded the contract for the removal of Hales Bar Dam.

The contractor began work on July 19, 1967, and began drilling on August 8. The spillway weirs were drilled from a special drill barge located downstream, and the non-overflow sections and spillway piers were drilled from deck level. All drilling was completed by September 25, 1967, except for three holes in each pier near the downstream face. Drilling of these holes would likely cut some of the "hairpin" reinforcing bars around the spillway gates trunnions which transfer the water load on the gates to the structure. The contractor began drilling these holes one week

before the Nickajack Reservoir impoundment was complete when the consequences of the risk were lessened.

Blasting for removal began in the non-overflow sections adjacent to the spillways on January 23, 1968, and progresses towards the locks. TVA completely removed the spillway gates and decks on January 20 and 21, 1968. The first charge loaded by divers was detonated February 12, 1968. Blasting and removal of debris with a clamshell were continued until September 1968. An estimated 24,420 feet of 3½ inch holes were drilled for blasting, and some 26,800 pounds of explosives were used in drilled holes plus several thousand pounds detonated as underwater adobe shots (TVA 1972).

2.3.3 Trail of Tears National Historic Trail

Trail of Tears National Historic Trail was designated by the National Park Service (NPS) to commemorate the 1838 historic passage of thousands of removed Indians from their homelands in the Southeast to Indian Territory in the West to what is now Oklahoma. Many Native Americans perished during this journey. There are land and water components of the trail crossing through Tennessee in Marion County. The Trail's overland portion was reconstructed from historical research and some field verification; therefore TVA may not know the exact locations of overland portions. The water component used to canoe spans the length of the Tennessee River from Chickamauga Dam Reservation to Nickajack Dam Reservation. The land component of the trail may cross the Tennessee River near Parcel 16 on Nickajack Reservoir.

2.4 The Future Management of Reservoir Lands

Varying types of land management or conservation techniques coupled with development could occur along Nickajack Reservoir. The implementation of the NRP would drive the types of programs conducted on TVA lands set aside due to natural or sensitive resources. Business opportunity, overall economy, local incentives, and community planning practices are factors that could contribute to the types of industry locating or expanding along the reservoir.

Recreation demand is driven by population levels, recreation participation rates, changing preferences for different types of recreation, and innovations in recreation equipment. Lands set aside for residential shoreline access are based on the types of property rights conveyed by TVA upon sale of the property. The TVA lands managed by other federal, state, or local agencies would most likely continue to do so in a similar manner.

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CHAPTER 3. LAND PLANNING PROCESS

3.1 Process for Planning Land

The reservoir land management planning process involves allocation of TVA fee-owned land to seven defined land use zones. The term “land use zone” refers to a descriptive set of criteria given to distinct areas of land based on location, features, and characteristics. The land use zone definitions listed in Table 3-1 are identical to those listed in the NRP. The definition of a land use zone provides a clear statement of how TVA will manage public land, and allocation of a parcel to a particular land use zone identifies that land for specific uses. Implementation of an RLMP minimizes conflicting land uses and makes it easier to handle requests for use of public land.

This final RLMP was developed by a team of land managers and technical experts from TVA, knowledgeable about the reservoir and its resources. The planning team proposed land use decisions by integrating public needs, environmental conditions, economic benefits, state and federal policies, and the original congressional intent of the Nickajack Reservoir project. The process includes information from resource data, computer analysis, the public, other agencies, and knowledgeable TVA staff. This final RLMP is consistent with the strategic direction of the NRP and the objections of the CVLP. Furthermore, the categorization and management of TVA-owned shoreline access land along Nickajack Reservoir tiers from the SMI EIS (TVA 1998).

The planning process is completed once TVA conducts an environmental review of the final RLMP as well as reasonable alternatives, in compliance with NEPA. This process allows the public and intergovernmental partners to review TVA’s allocations and provide input.

Prior to proposing parcel allocations, the TVA planning team reviewed the characteristics of each parcel (i.e., location and existing conditions). TVA also reviewed deeds of selected tracts previously sold to private entities to identify existing shoreline access rights. In addition, the planning team honored all existing commitments—that is, existing leases, licenses, and easements. No sensitive resources surveys were conducted on committed land. The need for field reviews for uncommitted parcels was determined based on data from the TVA Natural Heritage database. Land with identified sensitive resources was allocated to Zone 3 (Sensitive Resource Management). The remaining parcels were allocated based on reservoir planning objectives and public input. Proposed management of each parcel was made by consensus

among the TVA planning team. When developing the final RLMPs, the planning team identifies proposed allocations of reservoir parcels to one of seven planning zones using the zone definitions listed below in Table 3-1.

Table 3-1. Land Use Zone Definitions

Zone	Definition
<p>Zone 1 Non-TVA Shoreland</p>	<p>Shoreland that TVA does not own in fee. This land may be privately owned or owned by a governmental entity other than TVA. Uses of this non-TVA land may include residential, industrial, commercial, and/or agricultural. In many instances, TVA may have purchased the right to flood and/or limit structures on this non-TVA land (i.e., flowage easement). TVA’s permitting authority under Section 26a of the TVA Act applies to construction of structures on non-TVA shoreland.</p> <p>Non-TVA shoreland allocations are based on deeded rights and, therefore, will not change as a result of the lands planning process. This category is provided to assist in comprehensive evaluation of potential environmental impacts of TVA’s allocation decision.</p>
<p>Zone 2 Project Operations</p>	<p>Land currently used, or planned for future use, for TVA operations and public works projects, including:</p> <ul style="list-style-type: none"> • Land adjacent to established navigation operations — Locks, lock operations and maintenance facilities, and the navigation work boat dock and bases. • Land used for TVA power projects operations — Generation facilities, switchyards, and transmission facilities and rights-of-way. • Dam reservation land — Areas acquired and managed for the primary purpose of supporting the operation and maintenance of TVA dams and associated infrastructure; secondary uses may also include developed and dispersed recreation, maintenance facilities, miscellaneous TVA field offices, research areas, and visitor centers. • Navigation safety harbors/landings — Areas used for tying off commercial barge tows and recreational boats during adverse weather conditions or equipment malfunctions. • Navigation dayboards and beacons — Areas with structures placed on the shoreline to facilitate navigation. • Public works projects — Includes rights-of-way for public utility infrastructure, such as sewer lines, water lines, transmission lines, and major highway projects.
<p>Zone 3 Sensitive Resource Management</p>	<p>Land managed for protection and enhancement of sensitive resources. Sensitive resources, as defined by TVA, include resources protected by state or federal law or other land features/natural resources TVA considers important to the area viewscape or natural environment.</p> <p>Recreational natural resource activities, such as hunting, wildlife observation, and camping on undeveloped sites, may occur in this zone, but the overriding focus is protecting and enhancing the sensitive resource the site supports. Areas included are:</p> <ul style="list-style-type: none"> • TVA-designated sites with potentially significant archaeological resources. • TVA public land with sites/structures listed in or eligible for listing in the National Register of Historic Places. • Wetlands — Aquatic bed, emergent, forested, and scrub-shrub wetlands as defined by TVA.

Zone	Definition
	<ul style="list-style-type: none"> • TVA public land under easement, lease, or license to other agencies/individuals for resource protection purposes. • TVA public land fronting land owned by other agencies/individuals for resource protection purposes. • Habitat protection areas — These TVA natural areas are managed to protect populations of species identified as threatened or endangered by the U.S. Fish and Wildlife Service, state-listed species, and any unusual or exemplary biological communities/geological features. • Ecological study areas — These TVA natural areas are designated as suitable for ecological research and environmental education by a recognized authority or agency. They typically contain plant or animal populations of scientific interest or are of interest to an educational institution that would utilize the area. • Small wild areas — These TVA natural areas are managed by TVA or in cooperation with other public agencies or private conservation organizations to protect exceptional natural, scenic, or aesthetic qualities that can also support dispersed, low-impact types of outdoor recreation. • River corridor with sensitive resources present — A river corridor is a segment of a river and the adjacent land along the banks. River corridors often consist of a linear green space of TVA land serving as a buffer to tributary rivers entering a reservoir. These areas will be included in Zone 3 when identified sensitive resources are present. • Significant scenic areas — Areas designated for visual protection because of their unique vistas or particularly scenic qualities. • Champion tree site — Areas designated by TVA as sites that contain the largest known individual tree of its species in that state. The state forestry agency “Champion Tree Program” designates the tree, while TVA designates the area of the sites for those located on TVA public land. • Other sensitive ecological areas — Examples of these areas include heron rookeries, uncommon plant and animal communities, and unique cave or karst formations.
<p style="text-align: center;">Zone 4 Natural Resource Conservation</p>	<p>Land managed for the enhancement of natural resources for human use and appreciation. Management of resources is the primary focus of this zone. Appropriate activities in this zone include hunting, timber management to promote forest health, wildlife observation, and camping on undeveloped sites. Areas included are:</p> <ul style="list-style-type: none"> • TVA public land managed for wildlife or forest management projects. • TVA public land under easement, lease, or license to other agencies for wildlife or forest management purposes. • TVA public land fronting land owned by other agencies for wildlife or forest management purposes. • Dispersed recreation areas maintained for passive, dispersed recreation activities, such as hunting, hiking, bird watching, photography, primitive camping, bank fishing, and picnicking. • Shoreline conservation areas — Narrow riparian strips of vegetation between the water’s edge and TVA’s back-lying property that are managed for wildlife, water quality, or visual qualities. • Wildlife observation areas — TVA natural areas with unique concentrations of easily observed wildlife that are managed as public wildlife observation areas.

Zone	Definition
	<ul style="list-style-type: none"> • River corridor without sensitive resources known to be present — A river corridor is a linear green space along both stream banks of selected tributaries entering a reservoir managed for light boat access at specific sites, riverside trails, and interpretive activities. River corridors will be included in Zone 4 unless sensitive resources are present (see Zone 3). • Islands where sensitive resources are not known to be present or which support existing development.
<p>Zone 5 Industrial</p>	<p>Land currently used, or planned for future use, for economic development, including businesses in distribution/processing/assembly and manufacturing. Preference will be given for businesses requiring water access. There are two primary types of uses for TVA land allocated for Industrial: (1) access for water supply or structures associated with navigation such as barge terminals, mooring cells, etc., or (2) land-based development potential.</p> <p>Areas included are:</p> <ul style="list-style-type: none"> • TVA public land under easement, lease, or license to other agencies/individuals/ entities for industrial purposes. • TVA public land fronting land owned by other agencies/individuals/entities for industrial purposes. <p>In some cases, TVA land allocated to industrial use would be declared surplus and sold at public auction.</p> <p>Types of development that can occur on this land are:</p> <ul style="list-style-type: none"> • Industry — Manufacturing, fabrication, and distribution/processing/assembly involving chemical, electronics, metalworking, plastics, telecommunications, transportation, and other industries. Industry does not include retail or service-based businesses. • Industrial access — Access to the waterfront by back-lying property owners across TVA property for water intakes, wastewater discharge, or conveyance of commodities (i.e., pipelines, rail, or road). Barge terminals are associated with industrial access corridors. • Barge terminal sites — Public or private facilities used for the transfer, loading, and unloading of commodities between barges and trucks, trains, storage areas, or industrial plants. • Fleeting areas — Sites used by the towing industry to switch barges between tows or barge terminals that have both offshore and onshore facilities. • Minor commercial landing — A temporary or intermittent activity that takes place without permanent improvements to the property. These sites can be used for transferring pulpwood, sand, gravel, and other natural resource commodities between barges and trucks.
<p>Zone 6 Developed Recreation</p>	<p>Land currently used, or planned for future use, for concentrated, active recreational activities that require capital improvement and maintenance of developed infrastructure, including:</p> <ul style="list-style-type: none"> • TVA public land developed for recreational purposes, such as campgrounds, day use areas, etc. • TVA public land under easement, lease, or license to other agencies/individuals/entities for developed recreational purposes. • TVA public land fronting land owned by other agencies/individuals/entities for developed recreational purposes.

Zone	Definition
	<p>Residential use, long-term accommodations, and/or individually owned units are not permitted on land allocated for developed recreation. Types of development that can occur on this land are:</p> <ul style="list-style-type: none"> • Public recreation — Recreation amenities developed and owned by a public agency that are open to the public. Public recreation areas may have varying levels of development, ranging from a water access site (e.g., launching ramp) to a marina facility. Facilities at public recreation areas could include playgrounds/play structures, picnic facilities, tennis courts, horseshoe areas, play courts, recreation centers, trails, greenways, natural areas, amphitheaters, food concessions (vending, snack bar), access to water for fishing and boating, swimming areas and swimming pools, launching ramps, courtesy piers, canoe access, marina facilities owned by the public entity, parking, and campgrounds. Cabins or other overnight accommodations (other than campgrounds) are only permitted if the public recreation area is operated by a state or state agency as a component of a state park system. • Public recreation areas and facilities are typically owned and operated by the federal, state, county, or local government. However, private entities may operate recreation facilities on public recreation land as concessionaires under agreement with the public entity controlling the property. The use of the facilities may be offered free or for a fee. Time-forward, public-private partnerships where facilities are owned by private investors will not be approved on public recreation land. All structures and facilities should be owned by the public entity. • Commercial recreation — Recreation amenities that are provided for a fee to the public intending to produce a profit for the private owner/operator. These primarily water-based facilities typically include marinas and affiliated support facilities such as stores, restaurants, campgrounds, and cabins and lodges. Where applicable, TVA will require appropriate compensation for the commercial use of the property.
<p>Zone 7 Shoreline Access</p>	<p>TVA-owned land where Section 26a applications and other land use approvals for residential shoreline alterations are considered in accordance with TVA’s Shoreline Management Policy. Types of development/management that may be permitted on this land are:</p> <ul style="list-style-type: none"> • Residential water use facilities, e.g., docks, piers, launching ramps/driveways, marine railways, boathouses, enclosed storage space, and nonpotable water intakes. • Shoreline access corridors, e.g., pathways, wooden steps, walkways, or mulched paths that can include portable picnic tables and utility lines. • Shoreline stabilization, e.g., bioengineering, riprap, gabions, and retaining walls. • Shoreline vegetation management.

In developing final RLMPs, TVA allocated lands currently committed to a specific use to a zone compatible with that use unless there was an overriding need to change the use. Land currently committed to a specific use was allocated to a zone compatible with that use unless there was an overriding need to change the use. Some committed land uses are determined by the

covenants and provisions of easements, leases, licenses, and sale and transfer agreements. Committed lands include the following: properties where TVA has granted landrights (easements, leases, etc.) for specific uses, properties where TVA has previously identified resources in need of protection, Project Operations lands (transmission lines, dam reservations, public infrastructure, etc.), and lands fronting wildlife management areas. Possible reasons to change a committed land use would be to prevent or remedy ongoing adverse impacts resulting from the actions of a license or easement holder.

Approximately 1,424 acres (39.5 percent) of the TVA land surrounding Nickajack Reservoir are committed due to existing agreements, TVA operations, or other public infrastructure projects. Agricultural licenses are not considered as committed uses because they are an interim use of TVA land.

Approximately 2,180 acres (60.5 percent) of the TVA land surrounding Nickajack Reservoir are uncommitted. Technical specialists collected field data on many uncommitted parcels to identify areas containing known sensitive resources. Representatives from various TVA organizations met to propose how these uncommitted lands should be allocated into the seven planning zones. The location of known and potentially sensitive resources was used in determining the capability and suitability of potential uses for each parcel of land.

For more information on the land planning process and development of Alternative B – Proposed Land Use Plan Alternative, see Volume I, Sections 1.5 and 2.4 of the EIS.

3.2 Nickajack Reservoir Goals and Objectives

The NRP established long-term land planning goals and objectives. While these goals and objectives were established to guide planning decisions across the Valley, these same goals and objectives can be applied when planning specific reservoirs.

Goal

TVA will strive to continue to balance shoreline development, recreational use, sensitive and natural resource management, industrial use and other land uses in a way that maintains the quality of life and other important values across the region.

Objectives

Apply a systematic method of evaluating and identifying the most suitable uses of TVA public lands using resource data, stakeholder input, suitability and capability analyses, and TVA staff input.

- Identify land use zone allocations to optimize public benefit and balance competing demands for the use of public lands.
- Identify land use zone allocations to support TVA’s broad regional resource development mission. TVA reservoir properties are managed to provide multiple public benefits, including recreation, conservation, and economic development.
- Provide a clear process by which TVA will respond to requests for use of TVA public land.
- Comply with applicable federal regulations and EOs.
- Enhance the protection of significant resources, including threatened and endangered species, cultural resources, wetlands, unique habitats, natural areas, water quality, and the visual character of the reservoir.
- Provide a mechanism that allows local, state, and federal infrastructure projects when the use is compatible with the zone allocation.

3.3 Parcel Allocations

TVA’s land planning process (Section 3.1) along with the goals and objectives specific to Nickajack Reservoir (Section 3.2) were used to develop this final RLMP. Through this process, TVA proposes allocations for each reservoir parcel to one of the seven planning zones as indicated in Table 3-2.

Table 3-2. Summary of Proposed Land Use Allocations for Nickajack Reservoir Land Management Plan

Allocation Designation		Number of Parcels	Acres
Zone 2	Project Operations	7	1,187.4
Zone 3	Sensitive Resource Management	6	1,356.7
Zone 4	Natural Resource Conservation	9	822.4
Zone 5	Industrial	5	85.5
Zone 6	Developed Recreation	12	152.1
Zone 7	Shoreline Access	2	0.7
Total		41	3,604.8

Figure 3-1 represents the percent of TVA-managed acreage on Nickajack Reservoir allocated to each land use zone under the final RLMP. The location of TVA allocated land on the Nickajack Reservoir is shown on Figure 3-2 and in Appendix A.

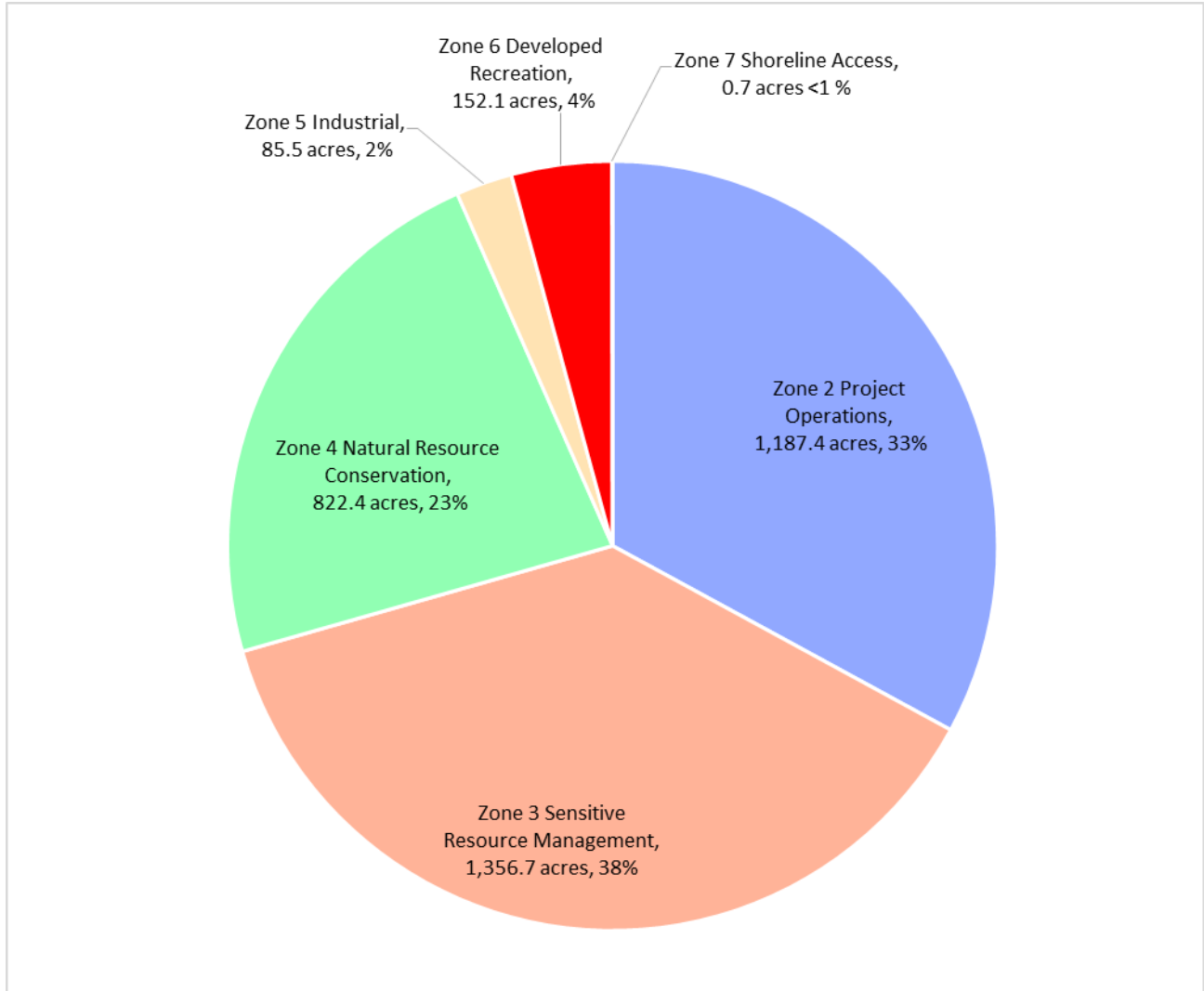


Figure 3-1. Percent of Nickajack Reservoir Acreage Allocated by Zone

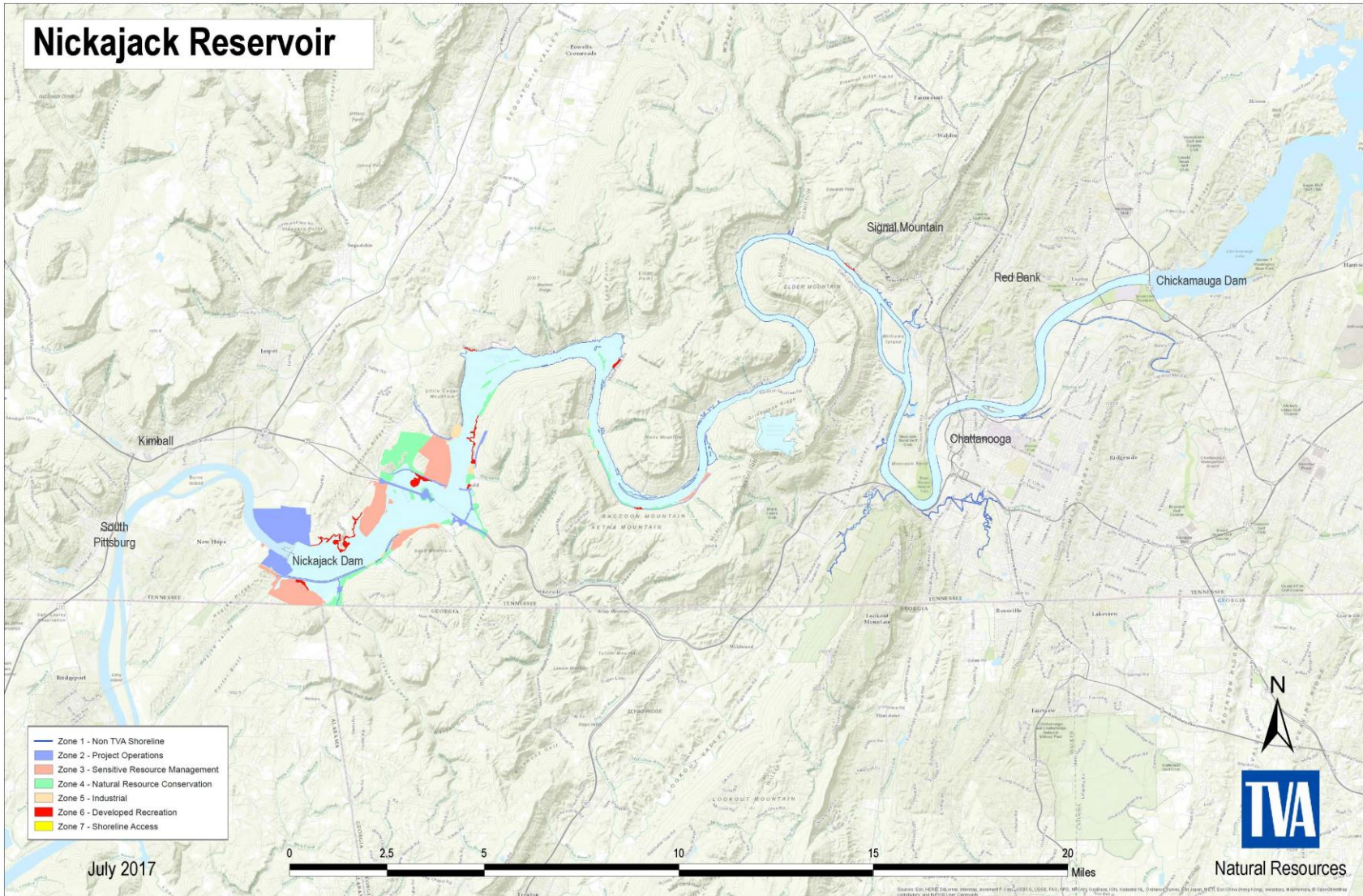


Figure 3-2. TVA Allocated Land on Nickajack Reservoir

A detailed description of each zone and the identification of the land zoned by each category is presented below.

- Zone 2 (Project Operations). Lands allocated to Zone 2 are used for TVA operations and public works projects. Under the final RLMP, there are 1,187.4 acres allocated to Zone 2 (Project Operations). The largest parcel allocated to Zone 2 is the Nickajack Dam Reservation. Existing development includes the dam powerhouse and associated access roads, transmission lines and substations; navigation lock and associated access roads and mooring cells; roads; boat-launching ramp; and a campground. The southern bank portion of this parcel consists of a day use recreation area with a boat-launching ramp, and the northern portion of this parcel contains another boat-launching ramp and a picnic area.
- Zone 3 (Sensitive Resource Management). Zone 3 lands are managed for protection and enhancement of sensitive resources. Sensitive resources, as defined by TVA, include resources protected by state or federal law or executive order and other land features/natural resources TVA considers important to the area viewscape or natural environment. Under the final RLMP, approximately 38 percent (1,356.6 acres) of the TVA land on Nickajack Reservoir is allocated to Zone 3. The parcels included the Zone 3 allocation represent areas where high-quality wetland habitat, wildlife habitat, scenic buffers, or cultural and historic resources are present. The largest parcels allocated to Zone 3 are Parcels 9 and 36. Parcel 9 is known as Cedar Mountain and consists in part of the Marion Bridge Habitat Protection Area. Parcel 36 is the Nickajack Cave Habitat Protection Area.
- Zone 4 (Natural Resource Conservation). Lands allocated to Zone 4 are managed for the enhancement of natural resources for human use and appreciation. Management of resources is the primary focus of this zone. Appropriate activities in this zone include hunting, timber management to promote forest health, wildlife observation, bank fishing, and camping on undeveloped sites. Under the final RLMP, approximately 23 percent (822.4 acres) of the TVA managed land on Nickajack Reservoir is allocated to Zone 4. The largest parcel allocated as Zone 4 is Parcel 7, which is located adjacent to the Marion Memorial Bridge Habitat Protection Area and the road ROW for US-41. This parcel provides a unique habitat for plants and animals, however, no sensitive species are known to be present.

- Zone 5 (Industrial). Lands allocated to Zone 5 are managed for economic development including businesses in distribution/processing/assembly and light manufacturing. Lands allocated to this zone reflect existing industrial uses. Under the final RLMP, approximately 2 percent (85.5 acres) of the TVA managed land on Nickajack Reservoir is allocated to Zone 5.
- Zone 6 (Developed Recreation). Land allocated to Zone 6 includes lands currently used or planned for commercial or public recreational purposes, such as boat-launching ramps, campgrounds, marinas, and parks. Under the final RLMP, approximately 4 percent (152.1 acres) of TVA-owned land around Nickajack Reservoir is allocated to Zone 6. For example, Parcel 6 comprises 43 acres that are managed by Marion County under a permanent public recreation easement. Parcel 2 is located adjacent to former TVA property that was sold for residential and recreational development and is adjacent to an existing developed recreational area (the Shellmound Campground and Shellmound Day Use Area). Parcel 3 is located adjacent to Parcel 2 and was also sold for residential and recreational development. However, under a Zone 6 allocation, back-lying property owners do not have the necessary access rights to request individual private water use facilities. Given the location of this parcel, the land use would be suitable for developed recreation, therefore future requests for facilities supporting developed recreation would be considered.
- Zone 7 (Shoreline Access). Under the final RLMP there are two parcels allocated to Zone 7, and Zone 7 lands account for less than 1 percent of TVA managed land on Nickajack Reservoir. The two parcels have the necessary shoreline access rights to request individual private water use facilities.

When the CVLP was developed in 2011, TVA anticipated that some parcels of land may be better allocated to different land use zones than those initially identified. As discussed in Volume I of the EIS, TVA proposes to update the target allocation ranges of the CVLP based on the eight final RLMPs (Alternative B) and to recalibrate the CVLP with the periodic updates to the NRP. The results of the Nickajack Reservoir land planning effort are included in the proposed changes to the CVLP. Table 3-3 compares the results of this land planning effort (Alternative B) and the 2011 CVLP estimates for Nickajack Reservoir.

Under the final RLMP (Alternative B), TVA allocated a greater number of lands to all land use zones except Zone 4 (Natural Resource Conservation) and Zone 5 (Industrial). Fewer areas were allocated to Zone 4 (Natural Resource Conservation) and Zone 5 (Industrial) than estimated by TVA when completing its CVLP in 2011. These lands have been placed into more appropriate designations, as discussed below.

Table 3-3. Final Nickajack Reservoir Land Management Plan and 2011 CVLP Estimates for Nickajack Reservoir Comparison

Allocation Designation		Final Nickajack Reservoir Land Management Plan	2011 CVLP Estimates for Nickajack Reservoir
Zone 2	Project Operations	33%	20%
Zone 3	Sensitive Resource Management	38%	25%
Zone 4	Natural Resource Conservation	23%	51%
Zone 5	Industrial	2%	3%
Zone 6	Developed Recreation	4%	3%
Zone 7	Shoreline Access	<1%	0%

Zone 2 (Project Operations)

TVA has a number of transmission lines that cross reservoir property surrounding Nickajack Reservoir. In addition, there are large number of highways and local roads located on TVA lands with easements to the appropriate managing agency. Because the 2011 CVLP underestimated the amount of lands encumbered with roadways, TVA increased the lands allocated to Zone 2 in the final RLMP to include this public infrastructure.

Zone 3 (Sensitive Resource Management)

A large change from the 2011 CVLP and this final RLMP occurs within the Zone 3 designation, in part because TVA obtained additional information on federally and state-listed species and significant cultural resources during this planning effort. The majority of the change came from the expansion of the Marion Memorial Bridge Habitat Protection Area to include the adjacent tract on Cedar Mountain that was once allocated for Zone 4 (Natural Resource Conservation). Likewise, TVA allocated more lands to Zone 3 to protect cultural resources identified when additional cultural resources surveys and historical data were gathered for the planning effort.

Zone 4 (Natural Resource Conservation)

The greatest change from the 2011 CVLP and this final RLMP occurs within the Zone 4 designation. TVA has allocated TVA property adjacent to the Marion Memorial Bridge Habitat Protection Area on Cedar Mountain to Zone 3 rather than Zone 4, thereby reducing

the overall percent of property allocated to Zone 4 by almost 50 percent and increasing the amount of land allocated to Zone 3.

Zone 5 (Industrial)

After reviewing the availability of public infrastructure and the presence of known sensitive resources, no additional large tracts of land were placed in the Zone 5 category. However, because this RLMP adjusts the Zone 2 lands to more accurately reflect the lands encumbered by road easements, the amount of land allocated to Zone 5 in the 2011 CVLP was correspondingly decreased.

Zone 6 (Developed Recreation)

The 2011 CVLP underestimated the amount of land designated for Zone 6. The planning team reviewed recreational trends and the possibility of expanding current recreation sites and slightly increased the amount of land allocated to Zone 6.

Zone 7 (Shoreline Access)

The 2011 CVLP underestimated the amount of former TVA property encumbered with shoreline access rights and a comprehensive survey of deeded access rights determined that there are two parcels to allocate two parcels to Zone 7 in the final RLMP.

Under the final RLMP (Alternative B), of the 3,604.8 acres on Nickajack Reservoir, there are no allocation changes to 2,503.7 acres (69 percent); all allocation changes involve 1,101.1 acres (31 percent). Of the 1,101.1 acres, TVA would allocate 672.8 acres (61.1 percent) to reflect existing land use agreements or commitments. The remaining 428.3 acres (38.9 percent) involve parcel allocations that are not based on existing land use agreements or commitments. See Appendix B for parcel allocation description tables.

3.4 Property Administration

As stewards of public land, TVA uses the RLMP, along with TVA policies and guidelines, to manage resources and to respond to requests for the use of TVA land. Pursuant to the TVA Land Policy, TVA would consider changing a land use designation outside of the normal planning process only for the purpose of water access for industrial or commercial recreational operations on privately owned back-lying land or to implement TVA's SMP.

Additionally, there are a small number of TVA parcels in the Valley that have deeded access rights for shoreline access that are currently utilized for other uses such as commercial recreation and industrial. Should the private back-lying land become residential, a request for a

change of allocation of the parcel to Zone 7 (Shoreline Access) would be subject, with the appropriate environmental review, to action by the TVA Board or its designee or to Board-approved policy.

Consistent with the TVA Land Policy, those parcels or portions of parcels that have become fragmented from the reservoir may be declared surplus and sold at public auction. Public works/utility projects, such as easements for pipelines, power or communication wires, roads, or other public infrastructure, proposed on TVA land that would not substantially change the zoned land use or adversely impact sensitive resources would not require an allocation change as long as such projects would be compatible with the use of the allocated zone. Proposed public works/utility projects would be subject to a project-specific environmental review. Any other requests involving a departure from the planned uses would require appropriate approval. Proposals consistent with TVA's policies and the allocated use, and otherwise acceptable to TVA, will be reviewed in accordance with NEPA and must conform to the requirements of other applicable environmental regulations and other legal authorities.

CHAPTER 4. PARCEL DESCRIPTIONS

This chapter describes the use determined to be most suitable for each parcel of TVA land as shown on the land plan maps (Appendix A, Panels 1 through 4). The parcel descriptions include the land use zone allocations and relevant data regarding the land use are provided for each parcel. Parcel descriptions include existing land uses, physical characteristics of the land, presence of existing private water use facilities, and any special considerations related to the future use. Some parcel descriptions also provide information regarding known dispersed recreation opportunities. Please note, all existing private water use facilities with TVA permits are grandfathered, provided they are constructed in accordance with the plans approved by TVA.

All uses of TVA public lands are subject to federal, state and local laws, rules and regulations. If there is a conflict between federal rules/laws and other laws, federal rules/laws prevail. Failure to comply may result in immediate removal from the property and other actions deemed appropriate by TVA and/or law enforcement officials. Land use zone definitions and a description of allowable uses for each land use zone are provided in Table 3-1.

In addition to those allowable uses and the requirements of TVA's policies and regulations described in Section 1.2, TVA has published rules for the use of public land. Specific rules for the use of developed and undeveloped TVA public lands are available at www.tva.com/publiclandrules. Examples of uses that are not allowable on all TVA public lands include leaving trash or litter, and land-disturbing activities such as, construction of temporary or permanent structures and vegetation cutting or removal, without TVA approval. Recreational use of motorized vehicles such as all-terrain vehicles (ATVs) is prohibited on undeveloped TVA public lands—including within reservoir drawdown areas.

Inquiries about or requests for the use of TVA land can be made to the TVA Public Land Information Center at 800-TVA-LAND or 800-882-5263 between 8 a.m. and 6 p.m. Eastern time Monday through Friday.

Note, the land use allocations and acreages for Parcel 5 and Parcel 31 has been revised from since the Draft RLMP was released in December 2016. A description of the changes and a comparative mapping illustration of the revised parcels is included as Appendix C.

Parcel 1 – (895.5 acres)

RLMP Allocation: Zone 2, Project Operations

This parcel is the Nickajack Dam Reservation and receives heavy public use. Existing facility development includes the dam powerhouse and associated access roads, transmission lines and substations; navigation lock and associated access roads, mooring cells, roadways, boat-launching ramp, and campground.

Apart from serving Nickajack Dam, this parcel provides an excellent public use opportunity. The southern bank portion of this parcel consists of a day use recreation area with a boat-launching ramp. On the northern portion of this parcel, there is another boat-launching ramp and a picnic area. Bald eagles previously had a nest within this parcel, but it is no longer active. However, bald eagle pairs still nest in the area and have created multiple nests within 660 feet of this parcel throughout the last several decades. This parcel has a medium probability for the presence of cultural resources, but it has not been adequately surveyed. Requests for private water use facilities would not be considered.

Table 4-1. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	100–SW, 100–SE, 101–NW, and 101–NE
TVA D-Stage Map Numbers	1 and 2
Stream Mile and Bank	TRMs 423 to 425B
Land Use/Land Cover	Mixture of deciduous forest, maintained lawns, road ROW, and water control structures
Known Dispersed Recreation Opportunities	Hiking, camping, and bank fishing
Current Agreements/Commitments	Revocable license to the Shellmound Campground for public recreation
Potential Projects	None identified
Potential Partners	Shellmound Campground

Parcel 2 – (3.3 acres)

RLMP Allocation: Zone 6, Developed Recreation

This shoreline parcel is adjacent to former TVA property (XNJR-21) that was sold for residential and recreational development. The downstream section of the parcel fronts two developed

recreation areas: Shellmound Campground and Shellmound Day Use Area. Both of these areas were initially developed by TVA in the 1970s. The amenities at Shellmound Campground include 33 campsites, play fields, and play equipment. The Shellmound Campground is currently operated under a commercial recreation license agreement.

The Shellmound Day use area is currently operated by TVA. Facilities include a swimming beach, picnic area with pavilions and individual picnic tables, a boat-launching ramp, two fishing piers, walking trail, and play equipment. This area attracts a high level of use during the recreation season and is also used for special events such as the annual Fall Color Cruise. These two areas are located south of Interstate (I) 24 on TVA Road. This parcel has a low probability for the presence of cultural resources. Requests for use of TVA lands and associated water-based structures to support developed recreation purposes would be considered.

Table 4-2. Parcel Information

Location Component	Parcel Specific Information
County, Stage	Marion, Tennessee
TVA D-Stage Map Numbers	1
Stream Mile and Bank	TRM 425.5R

Parcel 2a – (5.6 acres)

RLMP Allocation: Zone 6, Developed Recreation

This narrow parcel is located adjacent to a former TVA property (XNJR-21) that was sold for residential and recreational development. TVA placed certain development requirements along this portion of the former TVA property. If these development requirements are not met within a certain grace period, TVA retains the right to re-enter this portion of the property. At the time of the final RLMP, the grace period was ongoing.

Pursuant to the development requirements, the back-lying property owners do not have the necessary access rights to request individual private water use facilities. However, requests for facilities supporting developed recreation would be considered.

Table 4-2a. Parcel Information

Location Component	Parcel Specific Information
County, Stage	Marion, Tennessee
TVA D-Stage Map Numbers	1
Stream Mile and Bank	TRM 425.8R

Parcel 3 – (46.0 acres)

RLMP Allocation: Zone 6, Developed Recreation

This narrow parcel is located adjacent to former TVA property (XNJR-21) that was sold for residential and recreational development. At the time of the final RLMP, only three residential homes had been constructed on the former TVA property. These back-lying property owners do not have the necessary access rights to request individual private water use facilities. However, requests for facilities supporting developed recreation would be considered.

Table 4-3. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	100–SE
TVA D-Stage Map Numbers	1 and 3
Stream Mile and Bank	TRMs 426 to 427R
Land Use/Land Cover	Mixture of deciduous forest and maintained lawns
Known Dispersed Recreation Opportunities	None identified
Current Agreements/Commitments	Revocable license to a private individual for a small game habitat
Potential Projects	None identified
Potential Partners	None identified

Parcel 4 – (335.3 acres)

RLMP Allocation: Zone 3, Sensitive Resource Management

This parcel consists of Little Cedar Mountain proper and two small natural areas. The main parcel consists of the Little Cedar Mountain Trail, Little Cedar Mountain SMA, and HPA. The Little Cedar Mountain Trail is named for the prominence of red cedar in the forest which the trail traverses and features a 4-mile long loop along the steep limestone outcroppings and bluffs of Nickajack Reservoir, winding through the Little Cedar Mountain SWA and HPA.

The parcel contains significant cultural resources, including a unique early rural roadway with stone retaining walls and stone paving. This historic area is further enhanced by stone fence lines, cedar hedge rows and a pair of large cedar trees marking a lane entrance off the road.

This predominantly forested parcel contains two distinctive “glade-like” openings providing good wildlife habitat. Grays Bluff, overlooking the reservoir, provides a major geological feature. This parcel contains numerous rare plants, rare animals, and three cave systems. Gray bats,

Allegheny woodrat, Nevius' stonecrop, Svenson's wild rye, Great Plains ladies tresses, hairy false gromwell, spreading rock cress, cylindrical blazing star, and John Becks leaf cup can be found on this parcel. The Little Cedar Mountain Cave has been used by gray bats in the past, though recent surveys have not documented use of this cave by gray bats.

This parcel consists of a mixture of upland hardwoods, pines, and red cedar. This parcel has a high probability for the presence of cultural resources, but it has not been surveyed. Requests for private water use facilities would not be considered.

Table 4-4. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	100-SE
TVA D-Stage Map Numbers	3
Stream Mile and Bank	TRMs 427 to 429R
Land Use/Land Cover	Mature upland hardwoods, pine, and red cedar
Known Dispersed Recreation Opportunities	Hiking
Current Agreements/Commitments	Revocable license to a private individual for a small game habitat
Potential Projects	<ul style="list-style-type: none"> • Placement of TVA property and public lands signs along the parcel boundary and shoreline • Refresh the existing paint denoting TVA's property Boundary • Systematic survey for historic properties
Potential Partners	None identified

Parcel 5 – (182.9 acres)

RLMP Allocation: Zone 2, Project Operations

This parcel encompasses four noncontiguous tracts of land and contains portions of the ROW for I-24, State Route (SR) 134, SR-156, and U.S. Highway (US) 41. This parcel also provides a ROW for a transmission line crossing over I-24, SR-156, and SR-134, and a small electrical substation. On the largest island that I-24 passes through, the State of Tennessee has constructed a visitor center and rest area. Creeping St. John's wort, a state-listed endangered species, has been recorded here. This parcel has a low probability for the presence of cultural resources. Although not part of this parcel, there is one known historic cemetery near the parcel.

The intent of this parcel is to support the road and transmission line ROWs. In locations where the ROWs and wildlife management or public recreation are complementary, requests to

support the adjacent land use would be considered. However, requests for private water use facilities would not be considered.

Table 4-5. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	100–SE
TVA D-Stage Map Numbers	3, 5, 6, and 6–1
Stream Mile and Bank	TRMs 429 to 429.8B
Land Use/Land Cover	Mixture of deciduous forest, road ROW, and transmission ROW
Known Dispersed Recreation Opportunities	Wildlife observation and bank fishing
Current Agreements/Commitments	Permanent easement to the State of Tennessee for a bridge and roadway
Potential Projects	None identified
Potential Partners	State of Tennessee

Parcel 6 – (66.5 acres)

RLMP Allocation: Zone 4, Natural Resource Management

This parcel consists of six noncontiguous tracts of land and is adjacent to road ROWs. The northwest portion of this parcel receives heavy informal recreation, aquatic bed wetland are located along the shoreline. Parcel 5 bisects the two largest islands. The largest island provides a great opportunity for wildlife observation and bank fishing.

The northwest portion of this parcel has a high probability for the presence of cultural resources. The central three islands have a medium probability for the presence of cultural resources. A heronry has been recorded on the smallest island. The portion of the property associated with Parcel 5 has a low probability for the presence of cultural resources. No existing shoreline improvements are currently present, and requests for private water use facilities would not be considered.

Table 4-6. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	100-SE
TVA D-Stage Map Numbers	3 and 6
Stream Mile and Bank	TRMs 428 to 429.2R
Land Use/Land Cover	Upland hardwoods and wetlands
Known Dispersed Recreation Opportunities	Wildlife observation and bank fishing
Current Agreements/Commitments	None identified
Potential Projects	<ul style="list-style-type: none"> • Placement of TVA property and public lands signs along the parcel boundary and shoreline • Refresh the existing paint denoting TVA's property Boundary • Systematic survey for historic properties
Potential Partners	None identified

Parcel 7 – (406.3 acres)

RLMP Allocation: Zone 4, Natural Resource Management

This large parcel is located along the right descending bank of the Tennessee River. Parcel 7 is adjacent to the Marion Memorial Bridge HPA and the ROW for US-41. Residential development surrounds this parcel on three sides. The parcel contains some original TVA acreage in addition to a tract of land that was acquired through the Nickajack Shores Development exchange in 2005. The mature upland hardwoods on this parcel provides high-quality habitat for a variety of forest-dependent wildlife. The terrain of the parcel consists of steep areas and a large ridgetop with some areas of gentle slope. This parcel provides a unique habitat for plants and animals. Walk-in access is via one road on the north side of the tract off of Lock and Dam Road. This parcel has a series of old logging roads which facilitates hiking and hunting access throughout this parcel. This parcel has a high probability for the presence of cultural resources, but it has not been surveyed. No existing shoreline improvements are currently present, and requests for private water use facilities would not be considered.

Table 4-7. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	100-SE
TVA D-Stage Map Numbers	1-A, 3, and 5
Stream Mile and Bank	TRMs 429.2 to 431R
Land Use/Land Cover	Upland hardwood
Known Dispersed Recreation Opportunities	Hiking, hunting, and primitive camping
Current Agreements/Commitments	<ul style="list-style-type: none"> • Permanent easement to a private individual for a roadway • Permanent easement to Marion County, Tennessee for a school facility
Potential Projects	<ul style="list-style-type: none"> • Placement of TVA property and public lands signs along the parcel boundary and shoreline • Refresh the existing paint denoting TVA's property Boundary • Systematic survey for historic properties
Potential Partners	Marion County, Tennessee

Parcel 8 – (43 acres)

RLMP Allocation: Zone 6, Developed Recreation

This parcel is managed by Marion County, Tennessee, under a permanent recreation easement (XTNJR-14RE). Amenities include two boat-launching ramps, campground, picnic facilities, and a fishing pier. The parcel is accessible via US-41. This parcel has a low to medium probability for the presence of cultural resources. Requests for use of TVA lands and associated water-based structures to support developed recreation purposes would be considered.

Table 4-8. Parcel Information

Location Component	Parcel Specific Information
County, State	Marion, Tennessee
TVA D-Stage Map Numbers	5
Stream Mile and Bank	TRM 429.5R

Parcel 9 – (458.0 acres)

RLMP Allocation: Zone 3, Sensitive Resource Management

This large parcel is known as Cedar Mountain. It consists of the Marion Bridge HPA and a tract of land that was acquired through the Nickajack Shores Development exchange in 2005. The mature upland hardwoods on this parcel provide high-quality habitat for a variety of forest-

dependent wildlife. The steep shoreline (bluff) on the eastern portion of the parcel provides a unique habitat for plants and animals. Walk-in access is via two roads on the northeast side of the parcel off of Lock and Dam Road. This parcel has a series of old logging roads which facilitates hiking and hunting access throughout this parcel.

Several species of state-listed plants have been recorded on this parcel such as American smoke-tree and creeping St. John’s wort and there is suitable habitat for John Becks leafcup. Two caves are located within this parcel, however, no threatened and endangered species are known to occur in these caves. This parcel has a high probability for the presence of cultural resources, but it has not been surveyed. No existing authorized shoreline improvements are currently present, and requests for private water use facilities would not be considered.

Table 4-9. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	100–SE
TVA D-Stage Map Numbers	1–A and 5
Stream Mile and Bank	TRMs 429.5 to 431R
Land Use/Land Cover	Mature upland hardwoods
Known Dispersed Recreation Opportunities	Hunting and hiking
Current Agreements/Commitments	None identified
Potential Projects	<ul style="list-style-type: none"> • Placement of TVA property and public lands signs along the parcel boundary and shoreline • Refresh the existing paint denoting TVA’s property Boundary • Systematic survey for historic properties
Potential Partners	None identified

Parcel 10 – (48.2 acres)

RLMP Allocation: Zone 5, Industrial

This parcel is located along the right descending bank of the Tennessee River. This entire parcel is under easement to the Tennessee Consolidated Coal Company. This industrial site includes the remainder of the old Hales Bar Lock. This parcel has not been surveyed for cultural resources. It has a medium to high probability for the presence of cultural resources. Requests for use of TVA lands and associated water-based structures to support industrial purposes would be considered.

Table 4-10. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	100–SE
TVA D-Stage Map Numbers	1 and 1–A
Stream Mile and Bank	TRM 430.9 to 431.4R
Land Use/Land Cover	Upland hardwood
Known Dispersed Recreation Opportunities	None identified
Current Agreements/Commitments	Permanent easement to Tennessee Consolidated Coal Company

Parcel 11 – (25.3 acres)

RLMP Allocation: Zone 2, Project Operations

This narrow linear parcel provides the ROW for the old Hales Bar Lock and Dam Road. This parcel will continue to be maintained to protect the historical integrity of the roadway. One population of the state-listed plant hairy false gromwell was recorded on this parcel in the early 1990s. This parcel has a medium probability for the presence of cultural resources. Requests for private water use facilities would not be considered.

Table 4-11. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	100–SE
TVA D-Stage Map Numbers	1 and 1–A
Stream Mile and Bank	TRM 430.9R
Land Use/Land Cover	Mixture of deciduous forest and road ROW
Known Dispersed Recreation Opportunities	None identified
Current Agreements/Commitments	None identified
Potential Projects	None identified
Potential Partners	None identified

Parcel 12 – (3.5 acres)

RLMP Allocation: Zone 6, Developed Recreation

This parcel fronts former TVA property (XTHBA-1) transferred to the State of Tennessee for public recreation. Amenities include a boat-launching ramp. The parcel is accessible via SR-27 and Bennetts Lake Road. This parcel has a medium probability for the presence of cultural

resources, but it has not been surveyed. Requests for use of TVA lands and associated water-based structures to support developed recreation purposes would be considered.

Table 4-12. Parcel Information

Location Component	Parcel Specific Information
County, State	Marion, Tennessee
TVA D-Stage Map Numbers	2
Stream Mile and Bank	TRM 432.5R

Parcel 13 – (8.2 acres)

RLMP Allocation: Zone 6, Developed Recreation

This parcel is located along the right descending bank of the Tennessee River and fronts former TVA property (XTHBA-2) transferred to the State of Tennessee for public recreation. This parcel has a medium probability for the presence of cultural resources, but it has not been adequately surveyed. Requests for use of TVA lands and associated water-based structures to support developed recreation purposes would be considered.

Table 4-13. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	105-SW
TVA D-Stage Map Numbers	3
Stream Mile and Bank	TRM 435.7R
Land Use/Land Cover	Upland hardwoods
Known Dispersed Recreation Opportunities	Wildlife observation
Current Agreements/Commitments	Revocable license the State of Tennessee for vegetation management
Potential Projects	<ul style="list-style-type: none"> • Placement of TVA property and public lands signs along the parcel boundary and shoreline • Refresh the existing paint denoting TVA's property Boundary • Systematic survey for historic properties
Potential Partners	State of Tennessee

Parcel 14 – (2.2 acres)

RLMP Allocation: Zone 6, Developed Recreation

This parcel adjoins former TVA property (XTHBA-3) transferred to the State of Tennessee for public recreation. Amenities include a boat-launching ramp. Suck Creek Road provides access to this area. The undeveloped portions of this parcel have a medium probability for the presence of cultural resources, but it has not been surveyed. Requests for use of TVA lands and associated water-based structures to support developed recreation purposes would be considered.

Table 4-14. Parcel Information

Location Component	Parcel Specific Information
County, State	Hamilton, Tennessee
TVA D-Stage Map Numbers	11
Stream Mile and Bank	TRM 453.5R

Parcel 15 – (1.2 acres)

RLMP Allocation: Zone 5, Industrial

This narrow parcel is located along the left descending bank of the Tennessee River near Chattanooga Industrial Park. This industrial parcel currently has approved water use facilities located along the shoreline. This parcel has a low probability for the presence of cultural resources, but it has not been surveyed. Requests for use of TVA lands and associated water-based structures to support industrial purposes would be considered.

Table 4-15. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Hamilton, Tennessee
Topographic Map (Sheet No. and Quadrant)	105–SE
TVA D-Stage Map Numbers	14 and 17
Stream Mile and Bank	TRM 462.1L
Land Use/Land Cover	Upland hardwoods and open shoreline
Known Dispersed Recreation Opportunities	None identified
Current Agreements/Commitments	Approved water use facilities

Parcel 16 – (38.3 acres)

RLMP Allocation: Zone 3, Sensitive Resource Management

This parcel is the Huff Branch HPA. The land cover consists of mixed hardwoods and scattered pines. Populations of the state-listed ginseng and the federally listed large-flowered skullcap are known to occur on this parcel. This is one of two parcels where the large-flowered skullcap has been recorded on Nickajack Reservoir.

This parcel has a high probability for the presence of cultural resources, but has not been adequately surveyed. No existing shoreline improvements are currently present, and requests for private water use facilities would not be considered.

Table 4-16. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	105-SW
TVA D-Stage Map Numbers	5 and 6
Stream Mile and Bank	TRMs 440.7 to 441.9L
Land Use/Land Cover	Mixed hardwoods and scattered pines
Known Dispersed Recreation Opportunities	Wildlife observation
Current Agreements/Commitments	None identified
Potential Projects	<ul style="list-style-type: none"> • Placement of TVA property and public lands signs along the parcel boundary and shoreline • Refresh the existing paint denoting TVA's property Boundary • Systematic survey for historic properties
Potential Partners	None identified

Parcel 17 – (12.7 acres)

RLMP Allocation: Zone 2, Project Operations

This parcel contains a portion of the ROW for US-41. While portions of the parcel are adjacent to TVA property allocated for other purposes, the intent of this parcel is support the road ROWs. This parcel has a low probability for the presence of cultural resources, but it is adjacent to parcels with medium and high probability for cultural resources. Large-flowered skullcap, a federally listed plant species, was recorded on this parcel in 1987. Requests for private water use facilities would not be considered.

Table 4-17. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	105-SW
TVA D-Stage Map Numbers	4, 5, and 6
Stream Mile and Bank	TRM 430.9R
Land Use/Land Cover	Mixture of deciduous forest and road ROW
Known Dispersed Recreation Opportunities	None identified
Current Agreements/Commitments	Permanent easement to the State of Tennessee for a roadway
Potential Projects	None identified
Potential Partners	State of Tennessee

Parcel 18 – (73.9 acres)

RLMP Allocation: Zone 4, Natural Resource Management

The entire parcel is located within the Tennessee River Gorge and consists of eight noncontiguous tracts of land: four shoreline tracts and four adjacent islands. Mullin’s Cove Riverfront Estates is along the back-lying property of the northern most portion of this parcel. However, the property owners do not have the necessary deeded access rights for private water use facilities and requests for such facilities would not be considered.

The current land cover is upland hardwoods with areas of open shoreline. Further, aquatic wetlands, scrub-shrub, and emergent wetlands can be found along the shoreline of this parcel. This parcel contains numerous informal access areas to the shoreline. This parcel has a medium probability for the presence of cultural resources, but it has not been surveyed.

Table 4-18. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	105–SW
TVA D-Stage Map Numbers	4 and 5
Stream Mile and Bank	TRMs 437.2 to 441L
Land Use/Land Cover	Upland hardwoods, open shoreline, aquatic beds, and emergent wetlands
Known Dispersed Recreation Opportunities	Bank fishing
Current Agreements/Commitments	None identified
Potential Projects	<ul style="list-style-type: none"> • Placement of TVA property and public lands signs along the parcel boundary and shoreline • Refresh the existing paint denoting TVA's property Boundary • Systematic survey for historic properties
Potential Partners	None identified

Parcel 18a – (0.4 acre)

RLMP Allocation: Zone 7, Shoreline Access

This parcel consists of one contiguous tract of land located along the left descending bank of the Tennessee River and lies entirely below the 640-foot msl contour. The current land cover is primarily deciduous forest with maintained lawns. This parcel has a medium probability for the presence of cultural resource, but it has not been surveyed. Water use facilities have been permitted along the shoreline, and future requests for water-use facilities would be considered.

Table 4-18a. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	105–SW
TVA D-Stage Map Numbers	4
Stream Mile and Bank	TRM 437.3R
Land Use/Land Cover	Deciduous forest and maintained lawns
Fronts Former TVA Tract (s)	None
Structure Profile	None
Current Agreements/Commitments	Approved water use facilities

Parcel 19 – (4.2 acres)

RLMP Allocation: Zone 6, Developed Recreation

This parcel was developed by TVA during the 1970s for public recreation. Amenities include a boat-launching ramp and courtesy pier. The parcel is accessible via US-41. The undeveloped portion of this parcel has a medium probability for the presence of cultural resources, but it has not been adequately surveyed for cultural resources. Requests for use of TVA lands and associated water-based structures to support developed recreation purposes would be considered.

Table 4-19. Parcel Information

Location Component	Parcel Specific Information
County, State	Marion, Tennessee
TVA D-Stage Map Numbers	5
Stream Mile and Bank	TRM 439.8L

Parcel 20 – (0.2 acre)

RLMP Allocation: Zone 6, Developed Recreation

This shoreline parcel was formerly licensed to Walker Marina, and this commercial recreation facility is not currently in operation. Amenities include a boat-launching ramp and fishing pier. A commercial recreation operation could be reestablished in the future, therefore this parcel is retained for recreation development. Access to the area is via US-41. This parcel has a low to medium probability for the presence of cultural resources, but it has not been surveyed. Requests for use of TVA lands and associated water-based structures to support developed recreation purposes would be considered.

Table 4-20. Parcel Information

Location Component	Parcel Specific Information
County, State	Marion, Tennessee
TVA D-Stage Map Numbers	4
Stream Mile and Bank	TRM 438.1L

Parcel 21 – (0.3 acre)*RLMP Allocation: Zone 7, Shoreline Access*

This parcel consists of one contiguous tract of land located along the left descending bank of the Tennessee River. This parcel lies entirely below the 640-foot msl contour. The current land cover is primarily mixed pine and hardwood trees with maintained lawns. This parcel has a medium probability for the presence of cultural resource, but it has not been surveyed. Water use facilities have been permitted along the shoreline, and future requests for water-use facilities would be considered.

Table 4-21. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	105–SW
TVA D-Stage Map Numbers	4
Stream Mile and Bank	TRM 438L
Land Use/Land Cover	Mixed pine and hardwood trees with maintained lawns
Fronts Former TVA Tract (s)	XHBA–3
Structure Profile	645-foot msl contour
Current Agreements/Commitments	Approved water use facilities

Parcel 22 – (30.7 acres)*RLMP Allocation: Zone 4, Natural Resource Management*

This parcel includes a 5-mile string of islands along both descending banks of the Tennessee River. Much of the parcel is fronted by aquatic bed, emergent and scrub-shrub wetlands, but the primary land cover for this parcel is mixed upland hardwoods and bottomland hardwoods. Three heronries have been documented on these islands. This parcel has a medium to high probability for the presence of cultural resources, but it has not been adequately surveyed. No existing permitted shoreline improvements are currently present, and requests for private water use facilities would not be considered.

Table 4-22. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	100–SE and 105–SW
TVA D-Stage Map Numbers	1, 2, and 3
Stream Mile and Bank	TRMs 431.2 to 436L
Land Use/Land Cover	Upland hardwoods, bottomland hardwoods, and emergent wetlands
Known Dispersed Recreation Opportunities	Hunting and fishing
Current Agreements/Commitments	None identified
Potential Projects	<ul style="list-style-type: none"> • Placement of TVA property and public lands signs along the parcel boundary and shoreline • Systematic survey for historic properties
Potential Partners	None identified

Parcel 23 – (37.6 acres)

RLMP Allocation: Zone 4, Natural Resource Management

This parcel is located along the left descending bank of the Tennessee River. The primary land cover of the parcel is upland hardwoods with aquatic beds and emergent wetlands along the shoreline. This parcel has a medium probability for the presence of cultural resources, but it has not been surveyed. No existing permitted shoreline improvements are currently present, and requests for private water use facilities would not be considered.

Table 4-23. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	100–SE
TVA D-Stage Map Numbers	1
Stream Mile and Bank	TRM 432.2L
Land Use/Land Cover	Upland hardwoods and emergent wetlands
Known Dispersed Recreation Opportunities	None identified
Current Agreements/Commitments	None identified
Potential Projects	<ul style="list-style-type: none"> • Placement of TVA property and public lands signs along the parcel boundary and shoreline • Refresh the existing paint denoting TVA’s property Boundary • Systematic survey for historic properties
Potential Partners	None identified

Parcel 24 – (19.8 acres)

RLMP Allocation: Zone 6, Developed Recreation

This parcel is the old Hales Bar Dam. This parcel is also adjacent to former TVA property (XNJR-8) sold for commercial recreation, and the sale included the old Hales Bar Dam powerhouse facility. Currently, the recreation facilities include a boat-launching ramp, fishing piers, picnic facilities, full service campground, boat storage, and marina services. This area is accessible via Hales Bar Road.

The downstream portion of this parcel includes a TVA developed and maintained boat-launching ramp. The facility includes a paved parking lot with 40 parking spaces, 30-foot-wide boat-launching ramp, and courtesy pier.

The developed portions of this parcel have a low probability for the presence of archaeological resources. The undeveloped portions, particularly at the extreme north and southern ends, have a medium probability for the presence of archaeological resources. The remnants of the old Hales Bar Dam have significant historical importance. Requests for use of TVA lands and associated water-based structures to support developed recreation purposes would be considered.

Table 4-24. Parcel Information

Location Component	Parcel Specific Information
County, State	Marion, Tennessee
TVA D-Stage Map Numbers	1 and 5
Stream Mile and Bank	TRM 431L

Parcel 25 – (25.6 acres)

RLMP Allocation: Zone 2, Project Operations

This parcel contains a portion of the ROW for US-41 locally known as Dixie Highway West. The intent of this parcel is support the road ROWs. The road itself has a low probability for the presence of cultural resources. Areas adjacent to the road, however, have a medium probability for the presence of cultural resources and have not been surveyed. In locations where the road ROWs and developed recreation are complementary, requests to support the back-lying recreation area would be considered. Requests for private water use facilities would not be considered.

Table 4-25. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	100–SE
TVA D-Stage Map Numbers	1 and 5
Stream Mile and Bank	TRMs 430.5 to 431.4L
Land Use/Land Cover	Mixture of deciduous forest and ROW -way
Known Dispersed Recreation Opportunities	None identified
Current Agreements/Commitments	Permanent easement to the State of Tennessee for roadway
Potential Projects	None identified
Potential Partners	State of Tennessee

Parcel 26 – (19.9 acres)

RLMP Allocation: Zone 5, Industrial

This parcel is located along the left descending bank of the Tennessee River. This parcel has a permanent easement to Serodino, Inc. for an industrial site and barge terminals have been constructed along the shoreline. Most of this parcel has been disturbed by industrial activity. Areas of this parcel that have not been disturbed have a medium probability for the presence of cultural resources. Requests for use of TVA lands and associated water-based structures to support industrial purposes would be considered.

Table 4-26. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	100–SE
TVA D-Stage Map Numbers	5
Stream Mile and Bank	TRM 430.1 to 430.4L
Land Use/Land Cover	Upland hardwood
Known Dispersed Recreation Opportunities	None identified
Current Agreements/Commitments	Permanent easement to Serodino for an industrial site

Parcel 27 – (22.3 acres)

RLMP Allocation: Zone 4, Natural Resource Management

This parcel is located along the left descending bank of the Tennessee River near the community of Haletown. The primary land cover is upland hardwoods with aquatic beds along the shoreline. This parcel has a high probability for the presence of cultural resources, but it has not been adequately surveyed. No existing permitted shoreline improvements are currently present, and requests for private water use facilities would not be considered.

Table 4-27. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	100–SE
TVA D-Stage Map Numbers	5 and 6–1
Stream Mile and Bank	TRM 430L
Land Use/Land Cover	Upland hardwoods
Known Dispersed Recreation Opportunities	Bank fishing
Current Agreements/Commitments	Agricultural license for crop production
Potential Projects	<ul style="list-style-type: none"> • Placement of TVA property and public lands signs along the parcel boundary and shoreline • Refresh the existing paint denoting TVA’s property Boundary • Systematic survey for historic properties
Potential Partners	None identified

Parcel 28 – (0.7 acre)

RLMP Allocation: Zone 2, Project Operations

This parcel is located along the left descending bank of the Tennessee River in the Guild and Haletown community. This parcel supports the Marion County fire station. The undisturbed portion of this parcel has a medium to high probability for the presence of cultural resources. Requests for private water use facilities would not be considered.

Table 4-28. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	100-SE
TVA D-Stage Map Numbers	5
Stream Mile and Bank	TRM 430L
Land Use/Land Cover	Deciduous hardwoods, maintained lawns, and a fire station
Known Dispersed Recreation Opportunities	None identified
Current Agreements/Commitments	Permanent easement to Marion County, Tennessee for a fire station
Potential Projects	None identified
Potential Partners	Marion County, Tennessee

Parcel 29 – (3.6 acres)

RLMP Allocation: Zone 6, Developed Recreation

This parcel is adjacent to Anchor Inn Bait and Tackle, and is the recreation facility is operated under a revocable recreation license. Facilities and services at this recreation area include a boat-launching ramp, picnic facilities, marine fuel sales, and shipstore. This parcel is adjacent to US-41. This parcel has a low probability for the presence of cultural resources, but it has not been adequately surveyed. Requests for use of TVA lands and associated water-based structures to support developed recreation purposes would be considered.

Table 4-29. Parcel Information

Location Component	Parcel Specific Information
County, State	Marion, Tennessee
TVA D-Stage Map Numbers	5
Stream Mile and Bank	TRM 429.7L

Parcel 30 – (46.9 acres)

RLMP Allocation: Zone 4, Natural Resource Management

This parcel consists of eight noncontiguous tracts of land along the left descending bank of the Tennessee River. This parcel is mainly narrow strips of land located along I-24, US-41, and SR-134. The portion of the parcel near Running Water Creek is predominantly emergent wetland. These types of wetland areas are limited on Nickajack Reservoir and provide excellent habitat for wading birds and migratory waterfowl. This parcel provides good wildlife observation opportunities. This parcel has a medium to high probability for the presence of cultural

resources, but it has not been adequately surveyed. Requests for private water use facilities would not be considered.

Table 4-30. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	100-SE
TVA D-Stage Map Numbers	1, 6, and 6-1
Stream Mile and Bank	TRMs 429 to 429.7L
Land Use/Land Cover	Upland hardwoods and emergent wetlands
Known Dispersed Recreation Opportunities	Wildlife observation
Current Agreements/Commitments	None identified
Potential Projects	<ul style="list-style-type: none"> • Placement of TVA property and public lands signs along the parcel boundary and shoreline • Refresh the existing paint denoting TVA's property Boundary • Systematic survey for historic properties
Potential Partners	None identified

Parcel 31 – (15.0 acres)

RLMP Allocation: Zone 4, Natural Resource Management

This parcel is located on the left descending bank of the Tennessee River near the Ladds Community. The primary land cover is hay pasture and upland hardwoods with aquatic beds along the shoreline. This parcel has a medium to high probability for the presence of cultural resources, but it has not been surveyed. Although not part of this parcel, there is one known historic cemetery near the parcel. No permitted shoreline improvements are currently present, and requests for private water use facilities would not be considered.

Table 4-31. Parcel Information

Location Component	Parcel Specific Information
County, State	Marion, Tennessee
TVA D-Stage Map Numbers	6
Stream Mile and Bank	TRM 429L
Land Use/Land Cover	Hay pasture and upland hardwoods
Known Dispersed Recreation Opportunities	None identified
Current Agreements/Commitments	None identified
Potential Projects	<ul style="list-style-type: none"> • Placement of TVA property and public lands signs along the parcel boundary and shoreline • Systematic survey for historic properties
Potential Partners	None identified

Parcel 32 – (15.2 acres)

RLMP Allocation: Zone 5, Industrial

This parcel consists of three noncontiguous tracts of land along the left descending bank of the Tennessee River. The parcel supports a railroad ROW. The primary land cover is sparse deciduous hardwoods with emergent wetlands along the shoreline. The railroad bed itself has a low probability for the presence of cultural resources. There are, however some portions of this parcel that have a medium probability for the presence of cultural resources. Requests for use of TVA lands and associated water-based structures to support industrial purposes would be considered.

Table 4-32. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	100–SE and 101–NE
TVA D-Stage Map Numbers	4 and 6
Stream Mile and Bank	TRMs 426.5 to 428.9L
Land Use/Land Cover	Deciduous forest
Known Dispersed Recreation Opportunities	None identified
Current Agreements/Commitments	Permanent easement to L&N Railroad

Parcel 33 – (110.3 acres)

RLMP Allocation: Zone 3, Sensitive Resource Management

The Shellmound Road Bluff HPA is on Parcel 33. The parcel contains a forested steep slope and bluffs which supports a mature stand of the state-listed American smoke-tree. The land cover type is mature upland hardwoods with scattered pines, and small stands of pine.

A gravel road entering from the south bisects the northwest side of the parcel and provides public access. Bank fishing, hunting, and camping are the primary uses of this parcel. An active bald eagle nest is known within 660 feet of this parcel along a TVA transmission line ROW. This parcel has a medium to high probability for the presence of cultural resources, but it has not been surveyed. There is at least one known cemetery present. No existing authorized shoreline improvements are currently present, and requests for private water use facilities would not be considered.

Table 4-33. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	100–SE
TVA D-Stage Map Numbers	4 and 6
Stream Mile and Bank	TRMs 427 to 429L
Land Use/Land Cover	Upland hardwoods and pined
Known Dispersed Recreation Opportunities	Hunting, bank fishing, camping
Current Agreements/Commitments	<ul style="list-style-type: none"> • Revocable license to CSX Transportation, Inc. for vegetation management and stabilization • Permanent easement to Marion County for roadway
Potential Projects	<ul style="list-style-type: none"> • Placement of TVA property and public lands signs along the parcel boundary and shoreline • Refresh the existing paint denoting TVA's property Boundary • Systematic survey for historic properties
Potential Partners	<ul style="list-style-type: none"> • Marion County, Tennessee • CSX Transportation, Inc.

Parcel 34 – (123.2 acres)

RLMP Allocation: Zone 4, Natural Resource Management

This parcel consists of four noncontiguous tracts of land located along the left descending bank of the Tennessee River. The upstream portion of this parcel is fronted by the railroad and SR-156. The southern portion of this parcel is adjacent to the Nickajack Cave HPA and is also at the head of Cole City Creek embayment. Aquatic bed wetlands are located along the shoreline and the primary land cover of this parcel is upland hardwoods. This entire parcel provides good habitat for forest-dependent wildlife and also for migratory waterfowl. This parcel has a medium to high probability for the presence of cultural resources, but it has not been adequately surveyed. This parcel either includes or is immediately adjacent to multiple cemeteries. Requests for private water use facilities would not be considered.

Table 4-34. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	100–SE and 101–NE
TVA D-Stage Map Numbers	2 and 4
Stream Mile and Bank	TRMs 425.5 to 427.1L
Land Use/Land Cover	Upland hardwoods and aquatic bed wetlands
Known Dispersed Recreation Opportunities	Bank fishing and wildlife observation
Current Agreements/Commitments	Permanent easement to a private individual for a driveway
Potential Projects	<ul style="list-style-type: none"> • Placement of TVA property and public lands signs along the parcel boundary and shoreline • Refresh the existing paint denoting TVA’s property boundary • Systematic survey for historic properties
Potential Partners	None identified

Parcel 35 – (44.6 acres)

RLMP Allocation: Zone 2, Project Operations

This parcel contains a portion of the ROWs for SR-156, locally known as Old Ladds Road, and a transmission line. This parcel also includes the TVA developed Cole City Creek boat-launching ramp. The road has a low probability for the presence of cultural resources. The transmission line ROW has a medium probability for the presence of cultural resources. In locations where the road or transmission line ROWs and public recreation are complementary, requests to support the back-lying public recreation area would be considered. Requests for private water use facilities would not be considered.

Table 4-35. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	101-NE and 101-NW
TVA D-Stage Map Numbers	2 and 4
Stream Mile and Bank	TRMs 424.5 to 426.5L
Land Use/Land Cover	Deciduous hardwoods and maintained lawns
Known Dispersed Recreation Opportunities	Bank fishing and boat-launching ramp
Current Agreements/Commitments	<ul style="list-style-type: none"> • Placement of TVA property and public lands signs along the parcel boundary and shoreline • Refresh the existing paint denoting TVA's property Boundary • Systematic survey for historic properties
Potential Projects	None identified
Potential Partners	State of Tennessee

Parcel 36 – (411.7 acres)

RLMP Allocation: Zone 3, Sensitive Resource Management

The Nickajack Cave HPA is on a portion of this parcel. This large tract consists of a mixed pine-hardwood forest and provides a wooded buffer for Nickajack Cave. The Nickajack Cave supports a maternity colony of the federally listed gray bat and this cave is listed as a Priority 3 cave in the Gray Bat Recovery Plan. Within the cave there are historic records of the listed species southern cave fish, Tennessee cave salamander, Allegheny woodrat, the Nickajack cave beetle, Indiana bat, and eastern small-footed bat. One other cave occurs on this parcel but no federally or state-listed species have been recorded within it.

While the pine and hardwood forest provide protections for Nickajack Cave, the parcel also provides excellent habitat for forest-dependent wildlife. This parcel has a high probability for the presence of cultural resources, but it has not been adequately surveyed. No existing permitted shoreline improvements are currently present, and requests for private water use facilities would not be considered.

Table 4-36. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	101-NE and 101-NW
TVA D-Stage Map Numbers	2
Stream Mile and Bank	TRMs 424.1 to 425.7L
Land Use/Land Cover	Mixed upland hardwoods and pines
Known Dispersed Recreation Opportunities	Hiking and wildlife observation
Current Agreements/Commitments	None identified
Potential Projects	<ul style="list-style-type: none"> • Placement of TVA property and public lands signs along the parcel boundary and shoreline • Refresh the existing paint denoting TVA's property boundary • Systematic survey for historic properties
Potential Partners	None identified

Parcel 37 – (12.4 acres)

RLMP Allocation: Zone 6, Developed Recreation

This parcel has the Maple View Public Recreation Area that was initially developed by TVA. The recreation area is currently operated by the City of New Hope under a revocable license agreement. The recreation area includes a boat-launching ramp, swimming beach, picnic facilities, walking trail and a viewing platform that overlooks the entrance to Nickajack Cave. The area is accessible via SR-156.

The undeveloped portion of this parcel has a high probability for the presence of cultural resources. This parcel has not been adequately surveyed for cultural resources. Requests for use of TVA lands and associated water-based structures to support developed recreation purposes would be considered.

Table 4-37. Parcel Information

Location Component	Parcel Specific Information
County, State	Marion, Tennessee
TVA D-Stage Map Numbers	2
Stream Mile and Bank	TRM 425.5L

Parcel 38 – (1.0 acre)*RLMP Allocation: Zone 5, Industrial*

Nickajack Port is located along the left descending bank of the Tennessee River on this parcel. This parcel has a permanent industrial easement to the Nickajack Port Authority and also fronts former TVA property (XNJR-19). Requests for use of TVA lands and associated water-based structures to support industrial purposes would be considered.

Table 4-38. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion, Tennessee
Topographic Map (Sheet No. and Quadrant)	100–SW
TVA D-Stage Map Numbers	2
Stream Mile and Bank	TRM 424L
Land Use/Land Cover	Deciduous forest
Known Dispersed Recreation Opportunities	None identified
Current Agreements/Commitments	Permanent easement to the Nickajack Port Authority for a barge terminal

Parcel 39 – (3.1 acres)*RLMP Allocation: Zone 3, Sensitive Resource Management*

This parcel is located along the left descending bank of the Tennessee River and is adjacent to the Nickajack Port. The primary land cover is upland hardwoods. This parcel has a high probability for the presence of cultural resources. No existing permitted shoreline improvements are present, and requests for private water use facilities would not be considered.

Table 4-39. Parcel Information

Location Component and Public Involvement Opportunities	Parcel Specific Information
County, State	Marion County, Tennessee
Topographic Map (Sheet No. and Quadrant)	100–SW
TVA D-Stage Map Numbers	2
Stream Mile and Bank	TRM 423.9L
Land Use/Land Cover	Upland hardwoods
Known Dispersed Recreation Opportunities	None identified
Current Agreements/Commitments	None identified
Potential Projects	Placement of TVA property and public lands signs along the parcel boundary and shoreline
Potential Partners	None identified

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CHAPTER 5. PLANNING TEAM

Kelly R. Baxter

Position: Senior Specialist, Reservoir Lands Planning
Education: M.S., Plant Science and Landscape Systems and B.S., Botany
Experience: 14 years in NEPA Compliance, Land Management, and Environmental Impacts Evaluation
Involvement: Project Manager

Benjamin J. Bean

Position: Program Manager, Reservoir Land Use and Permitting
Education: M.S., Environmental Policy and Management; B.A., Biology
Experience: 10 years in Public Land Management and Permitting, 4 years in water quality, 2 years in environmental compliance monitoring
Involvement: Planning Team and Deed interpretation

Chellye L. Campbell

Position: Senior Specialist, Land Policy
Education: B.S., Biology
Experience: 15 years in Planning and Managing Land
Involvement: Deed interpretation and Land Policy guidance

Jerry G. Fouse

Position: Recreation Specialist
Education: M.B.A., B.S., Forestry and Wildlife
Experience: 39 years in Natural Resources – Recreation Planning and Economic Development
Involvement: Planning Team and Recreation Management

Martin B. High

Position: Program Manager, Natural Resource Management
Education: B.S., Forest Management
Experience: 27 years in Natural Resource Management, Land Management, and Permitting
Involvement: Planning Team and Natural Resource Management

Thomas O. Maher

Position: Senior Archaeologist
Education: Ph.D., Anthropology
Experience: 33 years in the field of Archaeology
Involvement: Planning Team and Cultural Resource Management

Leonard L. McCurdy, Jr.

Position: Senior Specialist, Reservoir Land Use and Permitting
Education: J.D., Law; B.S., Environmental Studies - Chemistry
Experience: 26 years in the field of Law including 19 years in TVA real property rights
Involvement: Deed interpretation and Land Policy guidance

Heather L. Montgomery

Position: Senior Program Manager, Reservoir Land Planning
Education: B.S., Environmental Biology
Experience: 14 years in Planning and Managing Land and Environmental Impacts Evaluation
Involvement: Program Manager

Mark T. Morrissey

Position: Geographic Analyst
Education: B.S., Geography
Experience: 2 years in Planning and Managing Land; 5 years in Industrial Safety and Compliance
Involvement: Document Preparation; Planning Team; and Preparation of Geographic information Systems

Karen E. Rylant

Position: Senior Specialist, Section 26a Policy and Process
Education: Ph.D., Agronomy (Soil Chemistry); M.S., Soil Fertility; B.A., Chemistry, B.A., Geology
Experience: 8 years in Environmental Research; 4 years in Land and Shoreline Management
Involvement: Deed interpretation and Section 26a guidance

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GLOSSARY

acre	A unit measure of land area equal to 43,560 square feet
agricultural licensing	Some parcels or portions of parcels designated for other purposes or uses may also be suitable for interim agricultural licensing. These parcels have been identified using the criteria contained in TVA's agriculture instruction. Normal tenure for a TVA agricultural license is five years. Land with extreme erosion potential may not be licensed for agricultural use unless erosion and sediment controls, including the use of best management practices, can be successfully implemented. Further investigation and/or mitigation of adverse impacts to natural or cultural resources may be required prior to approval of license agreements.
Comprehensive Valleywide Land Plan	The Comprehensive Valleywide Land Plan was set forth in the 2011 Natural Resource Plan to guide resource management and administration decisions on the approximately 293,000 acres of TVA-managed lands around 46 reservoirs. It established the allocation ranges of land available for each land use allocation zone (Project Operations, Sensitive Resource Management, Natural Resource Conservation, Industrial, Developed Recreation, and Shoreline Access).
cultural resources	Archaeological, historic, and architectural resources
dam reservation	Lands generally maintained in a park-like setting by TVA to protect the integrity of the dam structure, hydroelectric facilities, and navigation locks. The reservation also provides for public visitor access to the TVA dam facilities and recreation opportunities, such as public boat access, bank fishing, camping, picnicking, etc. Hunting is not typically allowed on dam reservations.
deciduous	Vegetation that sheds leaves in autumn and produces new leaves in the spring.
dispersed recreation	Recreation of an informal nature such as hunting, hiking, biking, bird watching, photography, primitive camping, bank fishing, and picnicking, etc. that occur on TVA land. These activities are not associated with developed facilities although some improvements may occur for access, health and safety, or to protect the environment.
embayment	A bay or arm of the reservoir
emergent wetland	Wetlands dominated by erect, rooted herbaceous plants, such as cattails and bulrushes.
endangered species	A species in danger of extinction throughout all or a significant part of its range. Endangered species recognized by the Endangered Species Act or similar state legislation have special legal status for their protection and recovery.
Environmental Policy	A TVA Board-approved policy that communicates guiding principles to lead TVA successfully in the reduction of its environmental impact while continuing to provide reliable and competitively priced power to the Valley

floodplain	Any land area susceptible to inundation by water from any source by a flood of selected frequency. For purposes of the National Flood Insurance Program, the floodplain, as a minimum, is that area subject to one percent or greater chance of flooding (100-year flood) in any given year.
flood risk profile	The elevation of the 500-year flood that has been adjusted for surcharge at the dam. Surcharge is the ability to raise the water level behind the dam above the top-of-gates elevation.
forest	Vegetation having tree crowns overlapping, generally forming 60 to 100 percent cover.
Land Policy	A TVA Board-approved policy that guides retention, disposal, and planning interests in real property
mitigation	An action that either will result in avoidance or an effect or cause the results of an activity to be minor in significance
multiple use tract allocation methodology	Land allocations under this previous planning method assigned one or more land uses from multiple categories including: Wildlife Management, Forest Management, Recreation, Cultural Resources Management, Agriculture, Navigation, Visual Protection, Open Space, and Industrial. Further, land plans under this methodology did not allocate lands committed to a long-term or permanent use (easements, leases, marginal strip, etc.)
natural areas	Ecologically significant sites, lands set aside for particular management objectives, and lands that contain sensitive biological, cultural or scenic resources. The TVA natural area program includes small wild areas, habitat protection areas, wildlife observation areas, and ecological study areas.
plan tract	A numbered parcel of TVA fee-owned land that has been assigned, through the reservoir land planning process, an allocation to guide future land use decisions.
prime farmland	Generally regarded as the best land for farming, these areas are flat or gently rolling and are usually susceptible to little or no soil erosion. Prime farmland produces the most food, feed, fiber, forage, and oil seed crops with the least amount of fuel, fertilizer, and labor. It combines favorable soil quality, growing season, and moisture supply and, under careful management, can be farmed continuously and at a high level of productivity without degrading either the environment or the resource base. Prime farmland does not include land already in or committed to urban development, roads, or water storage.
riparian	Related to or located on the banks of a river or stream
scrub-shrub	Woody vegetation less than about 20 feet tall. Species include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions.
shoreland	The surface of land lying between the minimum pool elevation of a TVA reservoir and the maximum shoreline contour or TVA back-lying property (whichever is further).
shoreline	The line where the water of a TVA reservoir meets the shore when the water level is at the normal summer pool elevation.

shoreline access rights	TVA land encumbered with deeded or implied rights held by adjacent property owners. The deeded or implied rights allow individuals to construct water use facilities upon receipt of TVA's written approval of plans.
single use parcel allocation methodology	This current planning methodology allocates land into broad categories or "zones" including Zone 1 (Non-TVA Shoreland), Zone 2 (Project Operations), Zone 3 (Sensitive Resource Management), Zone 4 (Natural Resource Conservation), Zone 5 (Industrial), Zone 6 (Developed Recreation) and Zone 7 (Shoreline Access).
threatened species	A species threatened with extinction throughout all or a significant portion of its range or territory. Threatened species recognized by the Endangered Species Act or similar state legislation have special legal status for their protection and recovery.
wetlands	As defined in TVA Environmental Review Procedures, "Wetlands are those areas inundated by surface or groundwater with a frequency sufficient to support and under normal circumstances do or would support a prevalence of vegetation or aquatic life that requires saturated or seasonably saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, mud flats, and natural ponds.
wildlife management area	Land and/or water areas designated by state wildlife agencies, such as the Tennessee Wildlife Resources Agency, for the protection and management of wildlife. These areas typically have specific hunting and trapping regulations as well as rules regarding appropriate uses of these areas by the public.

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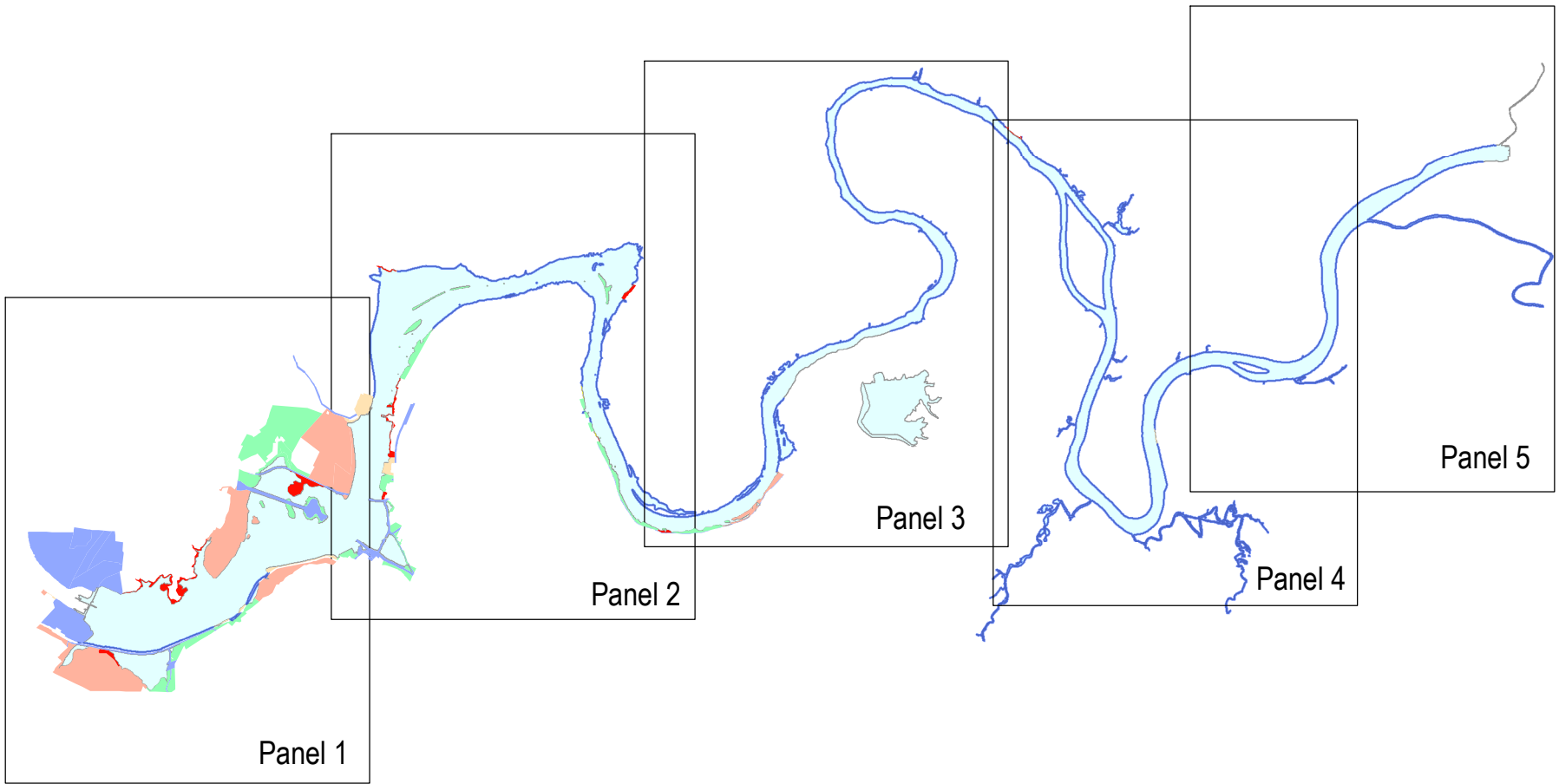
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Appendix A –Land Management Plan Maps – Panels 1 through)

Nickajack Reservoir



[Click Panel to View PDF Map](#)

APPENDIX A

Table A-1. Nickajack Reservoir Parcel Directory for Map Panels

Nickajack Panel 1					
Parcel	Zone	Acreage	Parcel	Zone	Acreage
1	2	895.5	11	2	25.3
2a	6	5.6	31	6	23.0
2	6	3.3	32	5	15.2
3	6	46.0	33	3	110.3
4	3	335.3	34	4	123.2
5	2	174.9	35	2	44.6
6	4	66.5	36	3	411.7
7	4	406.3	37	6	12.4
8	6	43.0	38	5	1.0
9	3	458.0	39	3	3.1
10	5	48.2			
Nickajack Panel 2					
Parcel	Zone	Acreage	Parcel	Zone	Acreage
5	2	174.9	21	7	0.3
9	3	458.0	22	4	30.7
10	5	48.2	23	4	37.6
11	2	25.3	24	6	19.8
12	6	3.5	25	2	25.6
13	6	8.2	26	5	19.9
17	2	12.7	27	4	22.3
18a	7	0.4	28	2	0.7
18	4	73.9	29	6	3.6
19	6	4.2	30	4	46.9
20	6	0.2	31	6	23.0
Nickajack Panel 3					
Parcel	Zone	Acreage	Parcel	Zone	Acreage
16	3	38.4	18	4	73.9
17	2	12.7	19	6	4.2
Nickajack Panel 4					
Parcel	Zone	Acreage	Parcel	Zone	Acreage
14	6	2.2	15	5	1.2

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Appendix B – Comparison of Parcel Allocations by Alternative

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APPENDIX B

Comparison of Parcel Allocations by Alternative

NICKAJACK RESERVOIR

Under Alternative A – No Action Alternative, TVA would continue to use the previous land use plans, if any, which use an older method of land use planning. In the case of Nickajack Reservoir, the Nickajack RLMP (TVA 1990) completed in 1990 was prepared under the Multiple Use Tract Allocation methodology. This methodology was retired and replaced with the Single Use Parcel Allocation methodology in 1999. Under Alternative B – Land Use Plan Alternative, TVA applies the Single Use Parcel Allocation methodology.

Because of the differences with past and present land planning methodologies, to facilitate the comparison of Alternatives A and B, the existing land use designations from the 1990 Nickajack RLMP and the committed land that was not assigned a land use designation in the 1990 RLMP have been converted to the equivalent designation of one of the seven land use zones to represent Alternative A – No Action Alternative.

Of the 3,604.8 acres on Nickajack Reservoir, there are no proposed allocation changes to 2,503.7 acres (69 percent); all allocation changes involve 1,106.1 acres (31 percent). Of the 1,106.1 acres, TVA would allocate 672.8 acres (61.1 percent) to reflect existing land use agreements or commitments. The remaining 428.3 acres (38.9 percent) involve proposed parcel allocations that are not based on existing land use agreements or commitments.

¹Some parcels are separated into smaller portions to show comprehensive consideration of some parcels. Portions of parcels are in bold text with a footnote.

See Tables below:

Table 1 = No Allocation Changes;

Table 2 = Changes Based on Existing Agreements or Commitments;

Table 3 = Changes NOT based on Existing Agreements or Commitments

Table 1. No Allocation Changes			
Number of Parcels Per Zone Allocation			
Zone 2	6	Zone 5	4
Zone 3	6	Zone 6	9
Zone 4	9	Zone 7	0

Parcel	No Action Allocation (Alternative A)	Proposed Allocation (Alternative B)	Acres per Allocation
1¹	2	2	404.4
4¹	3	3	329.0

Parcel	No Action Allocation (Alternative A)	Proposed Allocation (Alternative B)	Acres per Allocation
5¹	2	2	131.5
6¹	4	4	66.5
7¹	4	4	382.1
8	6	6	43.0
9	3	3	85.2
10	5	5	48.2
11	2	2	25.3
12	6	6	3.5
13	6	6	8.2
14	6	6	2.2
15	5	5	1.2
16¹	3	3	18.8
18¹	4	4	73.9
19	6	6	4.2
20	6	6	0.2
22	4	4	30.7
23	4	4	37.6
24¹	6	6	11.8
25¹	2	2	22.6
26	5	5	19.9
27	4	4	22.3
28	2	2	0.7
29¹	6	6	1.0
30¹	4	4	44.1
31	4	4	15.0
33	3	3	110.3
34	4	4	123.2
35¹	2	2	9.0
36	3	3	411.7
37	6	6	12.4
38	5	5	1.0
39	3	3	3.1
Total = 34 Parcels or Portions of a Parcel	Total = 2,503.7 Acres		

¹Denotes a portion of the parcel

Table 2. Changes Based on Existing Agreements or Commitments			
	No Action ¹ Parcels	Proposed Allocation Parcels	
Zone 2	1	11	<i>18.7 Percent of Nickajack Lands</i>
Zone 3	4	0	
Zone 4	9	0	
Zone 5	2	2	20 Parcels 672.8 Acres
Zone 6	3	5	
Zone 7	0	2	

Parcel	No Action Allocation (Alternative A)	Proposed Allocation (Alternative B)	Acres per Allocation
1 ¹	3	2	49.9
1 ¹	4	2	441.3
2	4	6	3.3
2a	4	6	5.6
3	4	6	46.0
5 ¹	3	2	5.7
5 ¹	4	2	45.7
17 ¹	3	2	1.7
17 ¹	4	2	10.3
17 ¹	6	2	0.7
18a	4	7	0.4
21	6	7	0.3
24 ¹	2	6	2.1
24 ¹	5	6	5.9
25 ¹	5	2	3.0
32 ¹	Unplanned	5	4.1
32 ¹	4	5	11.1
35 ¹	3	2	7.1
35 ¹	4	2	26.8
35 ¹	6	2	1.8
Total = 20 Parcels or Portions of a Parcel		Total = 672.8 Acres	

¹Denotes a portion of the parcel

Table 3. Changes NOT Based on Existing Agreements or Commitments			
	No Action Parcels	Proposed Allocation Parcels	
Zone 2	1	0	<i>11.8 Percent of Nickajack Lands</i>
Zone 3	1	3	
Zone 4	5	3	
Zone 5	0	0	7 Parcels
Zone 6	1	1	428.3 Acres
Zone 7	0	0	
Parcel	No Action Allocation (Alternative A)	Proposed Allocation (Alternative B)	Acres per Allocation
4¹	4	3	6.3
7¹	2	4	24.2
9	4	3	372.8
16¹	4	3	19.5
18¹	6	4	0.1
29¹	4	6	2.6
30¹	3	4	2.8
Total – 7 Parcels or Portions of a Parcel		Total = 428.3 Acres	

¹Denotes a portion of the parcel

Appendix C – Nickajack Final RLMP Allocation and Acreage Changes







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Nickajack Final RLMP

Acreeage and Allocation Changes

Parcels 5 and 31

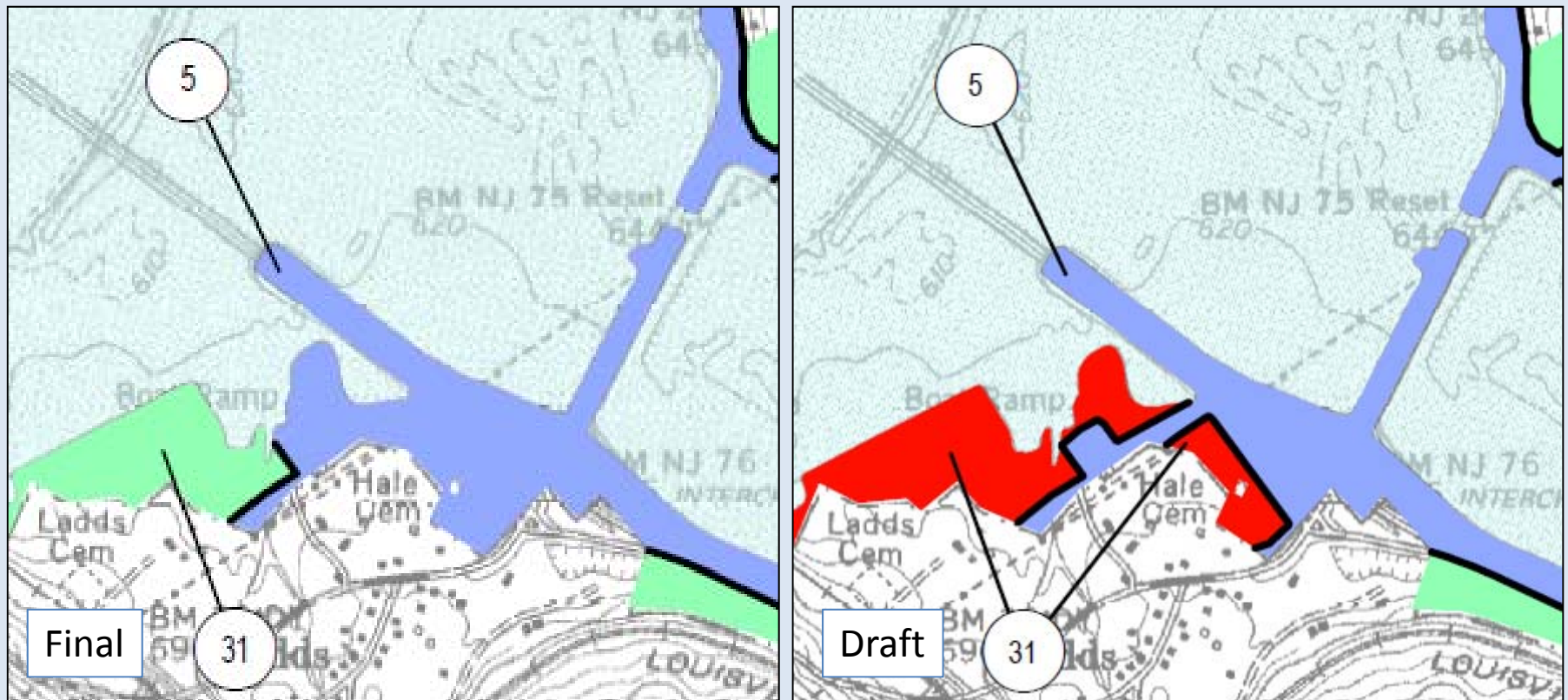
Land Plan Zone Allocations

-  Zone 1 – Non-TVA Shoreland
-  Zone 2 – Project Operations
-  Zone 3 – Sensitive Resource Management
-  Zone 4 – Natural Resource Conservation
-  Zone 5 – Industrial
-  Zone 6 – Developed Recreation
-  Zone 7 – Shoreline Access

PARCEL 31 – Zone 4 (15 acres); Parcel 5 – Zone 2 (182.9 acres)

Location: Panel 2; Marion Co.; TRM 429L

- Revision: 1) Reallocated 15 acres of Parcel 31 from Zone 6 to Zone 4;
2) Reallocated 8 acres of Parcel 31 to Zone 2 and added this acreage to Parcel 5.



- Reallocated 15.0 acres of Parcel 31 from Zone 6 to Zone 4
- Moved remaining 8.0-acre portion of Parcel 31 to Zone 2 (Parcel 5)
 - Revised Parcel 5 (Zone 2) from 174.9 to 182.9 acres