

## CHAPTER 3 - ALTERNATIVES

The purpose of this EIS is to analyze, in a programmatic manner, the environmental impacts anticipated to result from the implementation of the NRP and the alternatives to it. This chapter describes the four alternatives considered in detail in this EIS, as well as the process used to develop the alternatives. The alternatives encompass a variety of approaches for managing biological, cultural, recreation, and water resources, and for conducting reservoir lands planning.

### 3.1. Development of Alternatives

#### 3.1.1. Development of Program Options

The purpose of the NRP is to develop a plan to guide TVA's responsible management of natural resources over the next 20 years in a cost-effective manner while upholding TVA's mission. In order to establish a reasonable range of the natural resource management programs and activities that would meet this purpose and make up the NRP, TVA staff reviewed various aspects of biological resource management, cultural resources management, terrestrial GHG management, recreation management, reservoir lands planning, and water resource management. They first considered the major issues affecting the natural resources in TVA's custody. They then documented existing and proposed programs, tools, and activities that could be used to manage these resources. Next, they reviewed the comments submitted during public scoping, recommendations from the RRSC, and results of discussions with other federal and state natural resource agencies. They then defined new programs and revised existing programs, as described in Chapter 2. Finally, they grouped the programs to develop options for TVA's future management of natural resources.

Four program options were developed for the management of biological, cultural, and water resources and for recreation (Table 3-1). Three program options were developed for reservoir lands planning (Table 3-2). These program options were developed to provide a range of possible future activities for each resource area. They were defined based on the current condition of the resources TVA is proposing to manage through the NRP, the professional opinion of TVA staff, and comments and recommendations from the public, the RRSC, and other natural resource management agencies. The Custodial, Enhanced, and Flagship options are displayed graphically in Figure 3-1. TVA's current management options are generally grouped around the Custodial level or in the Custodial to Enhanced range.

**Table 3-1. Program Options for Management of Biological, Cultural, and Water Resources and Recreation**

<b>Program Option</b>	<b>Descriptions</b>
Current Management	There would be no NRP for future guidance. TVA would continue to operate in much the same way it does currently with varying levels of resource programs that include those addressing legal and policy requirements.
Custodial Management	TVA would operate in compliance with legal and policy requirements. This program option includes the essential functions for biological, cultural, recreation, and water resource management as outlined in the Environmental Policy.
Enhanced Management	TVA would operate in compliance with legal and policy requirements. This program option recommends a limited number of projects that begin to elevate TVA's stewardship programs.

Program Option	Descriptions
Flagship Management	TVA would operate in compliance with legal and policy requirements. This program option recommends Valleywide opportunities that elevate TVA’s stewardship programs to the “gold standard.”

**Table 3-2. Reservoir Lands Planning Program Options**

Program Option	Descriptions
Current Management	There would be no NRP for future guidance. TVA would continue to plan reservoir lands primarily on a reservoir-by-reservoir basis.
Programmatic Planning	TVA would continue to plan reservoir lands in much the same way it does currently. However, TVA would apply slightly different land use zone definitions than those used in recent RLMPs. Future reservoir lands plans would tier from this EIS, and TVA would prepare reservoir-specific environmental reviews for the plans.
Comprehensive Valleywide Planning	TVA would create a Comprehensive Valleywide Land Plan (CVLP), which would set threshold ranges for each allocation zone to guide the creation of future RLMPs. As TVA continues to plan its reservoir lands, it would revise the baseline allocations created by existing RLMPs and the RLA methodology.



**Figure 3-1. Range of Program Options Developed for the NRP**

Once the program options were developed, costs were estimated using historical cost data and best professional judgment for:

- Full-time employees (FTEs)
- Program costs (in addition to FTEs)
- Capital expenditures and/or one-time costs (if applicable).

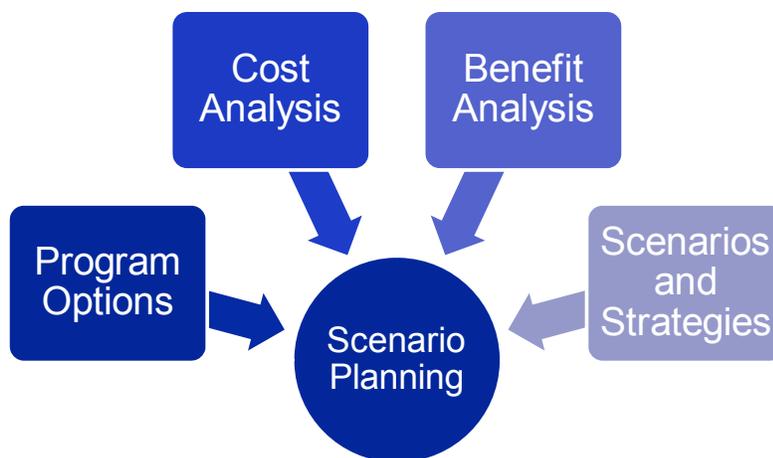
**3.1.2. Natural Resource Plan Program Analysis Framework**

The NRP analysis framework was developed to evaluate each program option based on a wide range of inputs to provide an accurate comparison of potential levels of implementation effort. Inputs to this framework included the results of scenario planning, input from external stakeholders, and other strategic considerations. The external stakeholder input at this stage included additional input from the RRSC, as well as the continued consideration of the scoping results, public comments on the draft, and discussions with other natural resource agencies.

**3.1.2.1. Scenario Planning Analysis**

A scenario is a set of uncertainties that describes a plausible future “world” or condition. Scenario planning provides an understanding of how near- and long-term decisions are

influenced and can respond to varying economic and regulatory conditions or circumstances that are outside of TVA's control. Comparing the performance of a range of plans across a number of potential scenarios provided an important data point when selecting a preferred alternative that is flexible and easily adapted to changing future conditions. Scenario planning aided in assessing the relevant risks, uncertainties, and challenges surrounding the various NRP alternatives. This framework integrates various inputs that are independently developed, ensuring objectivity while reducing bias from the results. Inputs to this process are shown in Figure 3-2.



**Figure 3-2. Various Scenario Planning Analysis Inputs**

Costs of each program option were weighed against a benefit analysis that evaluated each program option based on the benefits it provides to the public, to TVA, and to the resource. To develop this benefit analysis, TVA retained a third-party natural resource economist to provide an independent evaluation of the expected benefits of each program option. This analysis (Cardno ENTRIX 2011) incorporated the varying nature of both qualitative and quantitative program benefits to the public and TVA.

Each program option was then ranked based on its benefit per dollar and assessed across four scenarios. The scenarios used in this analysis were adapted from those used in TVA's recently completed Integrated Resource Plan (TVA 2011; [www.tva.gov/irp](http://www.tva.gov/irp)), and included those scenarios that were most strongly related to NRP programs and activities.

The results of scenario planning were used to analyze three potential strategies for the NRP, and there was limited variation across the resulting program mixes. Therefore, TVA selected a blended alternative for further analysis in the draft NRP; this alternative included components from each of the current, custodial, flagship, and enhanced program options.

#### **3.1.2.2. Other Strategic Considerations**

Once the initial NRP program mix was identified using the scenario planning process described above, TVA identified strategic or high-priority programs integral to the successful implementation of the NRP. These strategic considerations provided a third data point, along with scenario planning and stakeholder input, used in identifying the final program mix for the NRP and the preferred alternative in the EIS.

Any programs identified as a strategic consideration align with TVA's commitment to manage lands under its control to meet the desired land conditions for their defined purpose. Several of the programs establish infrastructure or provide essential assessments of resource conditions necessary to successfully implement other programs. Examples of these programs include the various databases and the biological, dispersed recreation, cultural, and water resource monitoring and assessment programs. Prioritizing certain programs helps to focus implementation efforts as partnerships and other resources become available. Criteria for selecting these high-priority programs included (but were not limited to) needs of nonrenewable resources, breadth of beneficial impact, partnership potential, and economic development.

### **3.1.2.3. The NRP Program Mix**

The above analyses were used to define the programs and their level of implementation included in the draft NRP. The draft NRP identified three priority levels for implementation - Custodial, Blended, and Advanced. These levels were comprised of different levels of program options. The Custodial priority level included all custodial program options for each resource area and aligns with Alternative B in the EIS. The Blended priority level included the enhanced or flagship program options from each resource area that were identified as being strategic or high-priority and integral to the successful implementation of the NRP. These Blended priority level program options, as well as the Custodial program options for non-strategic and low-priority activities represent Alternative D (the preferred alternative) in the EIS. The Advanced priority level consisted of all remaining enhanced or flagship program options for each resource areas that were not identified as strategic or high-priority; these program options are included in Alternative C in the EIS. Programs in the Advanced priority level could be considered for implementation depending upon available resources and partnerships, and only to the extent that their implementation does not undermine implementation efforts of the program options identified in the Custodial and Blended priority levels.

### **3.1.3. Reservoir Lands Planning Analysis Framework**

The Land Policy indicates that TVA will maintain a regular cycle and approach for RLMPs. Currently, TVA maintains a schedule for planning reservoirs. However, the time and resources required to plan reservoir lands and complete the associated reviews are significant and restrict TVA from revising land plans in a more timely fashion. In response, TVA seeks to streamline the reservoir lands planning process and update RLMPs in a more efficient manner. The expected result is for TVA to:

- Simplify the assessment process for future planning efforts
- Determine a consistent methodology for all future planning efforts
- Increase flexibility in future planning efforts.

The analysis framework for reservoir lands planning is as follows:

- Complete a current state assessment of the RLMPs
- Review the past methodologies used in developing RLMPs
- Identify gaps in RLMPs and methodologies
- Present future recommendations
- Select an NRP approach toward reservoir lands planning efforts.

### **3.1.4. Alternatives Development**

The mix of programs identified for implementation in the draft NRP formed the basis for Alternative D, Blended Management. In addition to the No Action Alternative, two additional

action alternatives, Custodial Management and Flagship Management, were developed that spanned the range of program options. These alternatives are described in more detail below.

### **3.1.5. Revisions Following Public Review of Draft NRP and EIS**

The program mix included in the draft NRP and the basis for Alternative D was refined in response to comments on the draft NRP and EIS, additional input from the RRSC, and additional discussions with other natural resource agencies. Some programs were eliminated from some alternatives and replaced with new programs. The implementation levels were changed for other programs. A frequent comment was that the discussion of the various program options, priority levels, and alternatives was confusing. As a result, their presentation was simplified and both the final NRP and the alternatives descriptions in the final EIS were revised to better define the goals and/or quantities associated with many programs. The major change to the reservoir lands planning alternatives was to narrow the range of the proportion of land that would be allocated to each of the zones under the Comprehensive Valleywide Land Plan.

## **3.2. Alternatives Evaluated in Detail**

TVA evaluated the components of the No Action and Action Alternatives through the NRP analysis framework. The outcome of the analysis does not recommend one specific strategy going forward, but instead lays out an immediate course of action and a road map of options for TVA to use when evaluating future strategic decisions. The options resulting from the analysis are bounded by the No Action and Action Alternatives described below.

Under all alternatives, TVA would implement the programs and activities that address safety, TVA's mission and relevant laws, regulations, EOs, and policies. As laws, regulations, and policies are created or amended, implementation activities would be revised to reflect the changes and ensure continued compliance. In those areas in which TVA could discontinue programs or projects, existing contractual agreements relating to those programs or projects would be honored.

The No Action Alternative, Alternative A, represents the continuation of TVA's current natural resource management programs and activities. This alternative represents the baseline necessary to evaluate the action alternatives, both in terms of their environmental impacts and their effectiveness in meeting the needs of the various natural resources TVA manages. It emphasizes regulatory and technical requirements, assessments of TVA resources and partnerships, and projects associated with TVA recreational facilities. TVA would manage and support stewardship activities on its lands through existing prioritization methods that consider recreational and other resource needs, public safety, and public health while complying with all existing and future laws and regulations.

The Action Alternatives represent a range of effort and resources committed to minimal, primarily reactive natural resource management (Alternative B - Custodial Management) to aggressive proactive management (Alternative C - Flagship Management. Alternative D - Blended Management is TVA's preferred alternative and incorporates varied levels of effort and commitment of resources. The components of the four alternatives, other than those associated with reservoir lands planning, are listed in Tables 3-3 through 3-7. They are organized by resource area, program category, program, and activity. The programs and activities are described in Chapter 2. The unique characteristics of the four alternatives, including the different quantities associated with many activities (e.g., number of areas, acres, miles of

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shoreline) and the different reservoir lands planning approaches, are described in more detail below.

**Table 3-3. Biological Resources Management Components of Alternatives A - D**

Program Category	Program	Goal / Activity	Alternative			
			A - Current Management (No Action)	B - Custodial Management	C - Flagship Management	D - Blended Management
Sensitive Biological Resources Management	Threatened and Endangered Species Program	Continue to comply with the requirements of the Endangered Species Act and implementation of biological opinion requirements.	•	•	•	•
Sensitive Biological Resources Management	Threatened and Endangered Species Program	Continue monitoring of select species populations.	•	•	•	•
Sensitive Biological Resources Management	Threatened and Endangered Species Program	Create monitoring plans, develop and implement management actions, seek partnerships and catalog select species where management opportunities and/or emergent issues exist within the region.			•	•
Sensitive Biological Resources Management	Threatened and Endangered Species Program	Continue cave protection activities.	•	•	•	•
Sensitive Biological Resources Management	Wetland Management	Continue implementation of current TVA wetland management and protection practices on TVA-managed lands.	•	•	•	•
Sensitive Biological Resources Management	Wetland Management	Investigate opportunity and potential establishment of a partnership with TDEC to develop a proactive program to identify high-quality reservoir wetlands on TVA-managed lands as a "Blue Ribbon" or "Reference Site" Reservoir Wetland Pilot Project.			•	
Sensitive Biological Resources Management	Sensitive Resources Data Management	Continue current management of TVA Natural Heritage and wetlands databases.	•	•	•	•

Program Category	Program	Goal / Activity	Alternative			
			A - Current Management (No Action)	B - Custodial Management	C - Flagship Management	D - Blended Management
Sensitive Biological Resources Management	Sensitive Resources Data Management	Honor data sharing agreements among TVA and other state and federal resource agencies.	•	•	•	•
Sensitive Biological Resources Management	Sensitive Resources Data Management	Expand information gathering efforts for identification of sensitive resources through partnerships. Incorporate wetlands identified during these surveys into the database.			•	
Sensitive Biological Resources Management	Sensitive Resources Data Management	Develop predictive models for federally and state-listed species.			•	
Sensitive Biological Resources Management	Sensitive Resources Data Management	Add new data users for environmental review and planning purposes.			•	•
Sensitive Biological Resources Management	Natural Areas Management	Monitor and assess TVA's natural areas to develop a prioritized list of maintenance or improvement needs (approx. 1/3 of natural areas assessed annually).	•	•	•	•
Sensitive Biological Resources Management	Natural Areas Management	Designate or remove natural areas via the reservoir lands planning process.	•			
Sensitive Biological Resources Management	Natural Areas Management	Develop and implement comprehensive natural area management plans (approx. ___ natural areas annually).			33	15
Sensitive Biological Resources Management	Natural Areas Management	Establish criteria for a natural areas planning process to designate new and/or remove existing natural areas on TVA-managed lands.			•	•
Sensitive Biological Resources Management	Conservation Planning	Continue to be advisers/participants in planning organizations.	•	•	•	•

Program Category	Program	Goal / Activity	Alternative			
			A - Current Management (No Action)	B - Custodial Management	C - Flagship Management	D - Blended Management
Sensitive Biological Resources Management	Conservation Planning	Partner with regulatory and resource management agencies in state, local, and regional conservation planning efforts.		•		•
Sensitive Biological Resources Management	Conservation Planning	Expand role in large-scale planning efforts across the region via partnerships.			•	
Sensitive Biological Resources Management	Migratory Birds Management	Comply with Executive Order 13186.	•	•	•	•
Sensitive Biological Resources Management	Migratory Birds Management	Support and participate in national and regional migratory bird management planning efforts.		•	•	•
Sensitive Biological Resources Management	Migratory Birds Management	Continue leadership role in Tennessee River Valley Shorebird Working Group.	•	•	•	•
Sensitive Biological Resources Management	Migratory Birds Management	Partner with other agencies and NGOs to implement conservation projects and to manage migratory bird populations on TVA reservoirs.			•	•
Terrestrial Habitat Management	Grasslands and Agricultural Lands Management	Continue to manage agricultural licenses and cooperative Federal and State Agency agreements on over 10,000 acres of TVA-managed lands.	•	•		•
Terrestrial Habitat Management	Grasslands and Agricultural Lands Management	Partner with Federal and State Agencies and NGOs in efforts to manage and enhance TVA grasslands and agricultural lands.	•	•	•	•
Terrestrial Habitat Management	Grasslands and Agricultural Lands Management	Increase efforts to reestablish and manage native grassland plant communities in a prioritized manner on TVA lands.			•	

Program Category	Program	Goal / Activity	Alternative			
			A - Current Management (No Action)	B - Custodial Management	C - Flagship Management	D - Blended Management
Terrestrial Habitat Management	Dewatering Projects Management	Continue management of current projects (includes maintaining or upgrading existing contractual agreements).	•	•		
Terrestrial Habitat Management	Dewatering Projects Management	Refurbish dewatering areas based on dewatering unit engineering and hydrologic reviews.			•	•
Terrestrial Habitat Management	Dewatering Projects Management	Operate, manage, and maintain dewatering area projects at upgraded conditions.			•	•
Terrestrial Habitat Management	Dewatering Projects Management	Work with local and regional partners to incorporate nature-based tourism into management of dewatering areas projects.			•	•
Terrestrial Habitat Management	Forest Resource Management	Manage tree hazards and tree cutting/vegetation damage encroachments.	•	•	•	•
Terrestrial Habitat Management	Forest Resource Management	Continue small-scale vegetation (tree removal) operations associated with storm or insect damages and forest wildlife habitat enhancements.	•	•	•	•
Terrestrial Habitat Management	Forest Resource Management	Monitor broad forest trends on TVA-managed lands and conduct basic forest protection activities.		•	•	•
Terrestrial Habitat Management	Forest Resource Management	Provide support to state forestry assessment plans.	•		•	•
Terrestrial Habitat Management	Forest Resource Management	Develop and maintain a qualified fire management crew for local responses and to protect TVA assets.			•	•
Terrestrial Habitat Management	Forest Resource Management	Develop a formal forest resource program to guide future inventory efforts.			•	

Program Category	Program	Goal / Activity	Alternative			
			A - Current Management (No Action)	B - Custodial Management	C - Flagship Management	D - Blended Management
Terrestrial Habitat Management	Nonnative Invasive Plant Management	Control nonnative invasive plant management on __ acres of TVA-managed lands per year.	600	1,000	40,000	1,000
Terrestrial Habitat Management	Nonnative Invasive Plant Management	Develop a prioritized plan to control nonnative invasive plants on areas with sensitive resources, habitat enhancements, and/or high public use, emphasizing areas with high partnership potential.		•	•	•
Terrestrial Habitat Management	Nonnative Invasive Plant Management	Actively participate in state exotic pest plant councils along with regional early detection and rapid response initiatives.	•		•	
Terrestrial Habitat Management	Nuisance Animal Control	Resolve animal damage conflicts via existing contractual agreement with USDA-WS.	•	•	•	•
Terrestrial Habitat Management	Nuisance Animal Control	Develop and implement proactive strategies to manage feral animals on TVA-managed lands.		•	•	•
Terrestrial Habitat Management	Nuisance Animal Control	Develop programmatic TVA guidelines for addressing nuisance animals, establishing memoranda of agreement with agencies responsible for regulating wildlife, and developing and sharing BMPs with partners.			•	
Terrestrial Habitat Management	Terrestrial Greenhouse Gas Sequestration Management	Develop and implement a terrestrial GHG management plan that identifies a range of voluntary and carbon compliance-assistance opportunities.			•	

Program Category	Program	Goal / Activity	Alternative			
			A - Current Management (No Action)	B - Custodial Management	C - Flagship Management	D - Blended Management
Terrestrial Habitat Management	Terrestrial Greenhouse Gas Sequestration Management	Conduct research projects on ___ acres focusing on issues related to terrestrial greenhouse gas management.	41	41	500	41
Terrestrial Habitat Management	Terrestrial Greenhouse Gas Sequestration Management	Continue existing or expand involvement in ___ third-party consortiums focusing on issues related to terrestrial GHG management practices.	2	2	8	2
Terrestrial Habitat Management	Terrestrial Greenhouse Gas Sequestration Management	Maintain existing or conduct new demonstration projects (___#) focusing on issues related to terrestrial greenhouse gas management practices.	2	2	6	2
Terrestrial Habitat Management	Wildlife Habitat Council – Third Party Certifications	Continue management of current certified projects.	•	•	•	•
Terrestrial Habitat Management	Wildlife Habitat Council – Third Party Certifications	Apply for Wildlife Habitat Council certification of TVA Natural Resource Plan.		•	•	•
Terrestrial Habitat Management	Wildlife Habitat Council – Third Party Certifications	Initiate 5 Wildlife Habitat Council certified projects at 5 new locations on TVA-managed lands.			•	
Terrestrial Habitat Management	Wildlife Habitat Council – Third Party Certifications	Establish a third-party review and certification process for wildlife management activities on 10 percent of appropriate TVA-managed lands annually.			•	
Terrestrial Habitat Management	Wildlife Habitat Enhancement Partnerships	Improve habitat on ___ acres of TVA-managed lands per year through partnership efforts (only).	500	750	20,000	750

Program Category	Program	Goal / Activity	Alternative			
			A - Current Management (No Action)	B - Custodial Management	C - Flagship Management	D - Blended Management
Terrestrial Habitat Management	Wildlife Habitat Enhancement Partnerships	Engage existing partners and seek opportunities to partner in the management of licensed lands on TVA property (target of 20,000 acres per year - specific to TVA-managed lands).			•	
Terrestrial Habitat Management	Wildlife Habitat Enhancement Partnerships	Develop cooperative agreements for use with resource management partners.			•	
TVA Land Management and Stewardship Programs	Boundary Maintenance	Conduct boundary maintenance at the reservoir level.	•	•	•	•
TVA Land Management and Stewardship Programs	Boundary Maintenance	Develop a regional prioritization process for determining boundary maintenance needs at the reservoir level.		•	•	•
TVA Land Management and Stewardship Programs	Boundary Maintenance	Address all regional boundary maintenance needs on a __-year cycle while incorporating the latest and future survey technologies to assist in the process.			5	10
TVA Land Management and Stewardship Programs	Land Condition Assessment and Land Stewardship Maintenance	Assess __ acres of TVA-managed lands annually. Execute a comprehensive approach for assessing all TVA-reservoir properties in an effort to eventually replace the past rapid land condition assessments with a comprehensive land assessment.	5,000	20,000	50,000	35,000
TVA Land Management and Stewardship Programs	Land Condition Assessment and Land Stewardship Maintenance	Implement prioritized stewardship activities addressing public health and safety, asset preservation, and resource management needs based on land assessments.		•	•	•

Program Category	Program	Goal / Activity	Alternative			
			A - Current Management (No Action)	B - Custodial Management	C - Flagship Management	D - Blended Management
TVA Land Management and Stewardship Programs	Land Condition Assessment and Land Stewardship Maintenance	Transition from the unit plan implementation methodology to the RLCA/LCA task prioritization methodology.	•	•	•	•
Public Outreach (Biological)	Resource Stewardship Campaigns	Develop and implement this new program to promote natural resources improvements and protection; deliver 25 stakeholder products annually.			•	
Dispersed Recreation Management	Dispersed Recreation Management	Evaluate 70 dispersed recreation areas annually.	•			
Dispersed Recreation Management	Dispersed Recreation Management	Collect data on dispersed recreation sites identified during lands condition assessment.	•	•	•	•
Dispersed Recreation Management	Dispersed Recreation Management	Repair __ heavily impacted dispersed recreation sites annually.	1	5	25	15
Dispersed Recreation Management	Dispersed Recreation Management	Implement __ key projects annually.	1	5	20	10
Dispersed Recreation Management	Dispersed Recreation Management	Distribute 600 dispersed recreation user surveys annually.			•	
Dispersed Recreation Management	Dispersed Recreation Management	Conduct 100 outdoor clinics annually.			•	
Dispersed Recreation Management	Dispersed Recreation Management	Implement web based educational campaign to promote ecofriendly dispersed recreation.		•	•	•
Dispersed Recreation Management	Dispersed Recreation Management	Develop and implement multiyear dispersed recreation plans.			•	•

Program Category	Program	Goal / Activity	Alternative			
			A - Current Management (No Action)	B - Custodial Management	C - Flagship Management	D - Blended Management
Dispersed Recreation Management	Dispersed Recreation Management	Issue regulations on dispersed recreation facilities to enhance enforcement capabilities.			•	•
Dispersed Recreation Management	Leave No Trace	Continue to participate in Leave No Trace program.	•	•	•	•
Dispersed Recreation Management	Leave No Trace	Promote the Leave No Trace program throughout the Valley by providing educational information to users at recreation facilities/sites, local businesses, and on the web.			•	•
Dispersed Recreation Management	Trails Management	Proactively manage existing trail systems to include a systematic inventory and management/maintenance plan.	•	•		•
Dispersed Recreation Management	Trails Management	Develop and implement a Valleywide trails establishment and maintenance program.			•	
Dispersed Recreation Management	Trails Management	Add 20 trail miles per year in accordance with Dispersed Recreation multiyear plans.			•	

**Table 3-4. Cultural Resources Management Components of Alternatives A - D**

Program Category	Program	Goal / Activity	Alternative			
			A - Current Management	B - Custodial Management	C - Flagship Management	D - Blended Management
Cultural Resource Management	Archaeological Monitoring and Protection	Protect archaeological sites of ___ tributary shoreline miles or ___ mainstem shoreline miles per year.	mitigation projects only	0.3 - 0.4 / 0.4 - 0.6	1.1 - 1.3 / 1.9 - 2.1	0.4 - 0.6 / 0.9 - 1.1
Cultural Resource Management	Archaeological Monitoring and Protection	Monitor archaeological sites along ___ miles of shoreline per year.	mitigation projects only	150	500	250
Cultural Resource Management	Archaeological Resources Protection Act	Conduct Archaeological Resources Protection Act inspections with ___ security checks per year.	1,000	1,000	5,000	1,000
Cultural Resource Management	Archaeological Resources Protection Act	Train and outfit new officers and train Archaeological Resources Protection Act specialist.			•	
Cultural Resource Management	Archaeological Resources Protection Act	Issue regulations to supplement investigative authority.			•	
Cultural Resource Management	Native American Consultation	Coordinate and conduct consultation with federally recognized Indian tribes.	•	•	•	•
Cultural Resource Management	Native American Consultation	Conduct formal consultation workshops with federally recognized tribes every ___ years.	5	5	2	5
Cultural Resource Management	Native American Grave Protection and Repatriation Act	Comply with Native American Grave Protection and Repatriation Act.	•	•	•	•
Cultural Resource Management	National Historic Preservation Act Section 106	Manage existing mitigation obligations.	•	•	•	•
Cultural Resource Management	National Historic Preservation Act Section 106	Conduct reviews required by National Historic Preservation Act Section 106.	•	•	•	•
Cultural Resource Management	National Historic Preservation Act Section 106	Establish database for managing mitigation obligations.		•	•	•

Program Category	Program	Goal / Activity	Alternative			
			A - Current Management	B - Custodial Management	C - Flagship Management	D - Blended Management
Cultural Resource Management	National Historic Preservation Act Section 106	Develop and implement programmatic agreements with individual states regarding compliance for repetitive actions.			•	
Cultural Resource Management	National Historic Preservation Act Section 106	Develop emergency procedures for requirements under National Historic Preservation Act Section 106.			•	
Cultural Resource Management	Preservation Program	Conduct archaeological surveys of ___ acres of TVA-managed lands per year.	2,000	1,000	5,000	3,000
Cultural Resource Management	Preservation Program	Maintain historic photo collection, cemetery database, and TVA's historic agency information.	•	•	•	•
Cultural Resource Management	Preservation Program	Maintain the current database or develop a comprehensive database to unify TVA's cultural resource data sources in one location for improved resource management	•	•	•	•
Cultural Resource Management	Preservation Program	Improve curation and management of TVA Historic Collection.		•	•	•
Cultural Resource Management	Preservation Program	Conduct identification surveys of historic structures on TVA-managed lands.		•	•	•
Cultural Resource Management	Preservation Program	Annually evaluate and nominate ___ sites to the National Register of Historic Places.		2	6	2 - 4
Cultural Resource Management	Preservation Program	Improve the preservation program through development of implementation procedures.		•	•	•
Cultural Resource Management	Preservation Program	Partner with stakeholders to identify traditional cultural properties.			•	
Cultural Resource Management	Preservation Program	Develop an online interactive cemetery database for public use.			•	
Cultural Resource Management	Preserve America	Conduct adaptive reuse studies of TVA historic buildings.	•	•	•	•

Program Category	Program	Goal / Activity	Alternative			
			A - Current Management	B - Custodial Management	C - Flagship Management	D - Blended Management
Cultural Resource Management	Preserve America	Submit National Historic Preservation Act Section 3 report on Section 110 progress every three years.		•	•	•
Cultural Resource Management	Preserve America	Develop and implement a plan for TVA-owned historic properties suitable for heritage tourism.		•	•	•
Cultural Resource Management	Preserve America	Develop 3-5 new partnerships per year to promote heritage tourism and historic properties.			•	
Cultural Resource Partnerships	Cultural Resource Partnerships	Provide 1 - 2 grant opportunities for archaeological and/or historical research for both academic and nonacademic publications.			•	
Cultural Resource Partnerships	Cultural Resource Partnerships	Provide support for 1 - 2 archaeological field schools.			•	
Public Outreach (Cultural)	Archaeological Outreach (Thousand Eyes)	Conduct __ events each year involving ___ partners.	2 - 3 events	3 - 5	10 - 15 events involving 5 - 10 partners	5 - 10 events involving 3 - 5 partners
Public Outreach (Cultural)	Corporate History Program	Develop a formal TVA corporate history program and provide regular updates to the TVA Timeline.			•	•
Public Outreach (Cultural)	Corporate History Program	Develop an oral history program.			•	•
Public Outreach (Cultural)	Corporate History Program	Develop an annual history public outreach component with 3-5 events and associated Web site.			•	website only
Public Outreach (Cultural)	Corporate History Program	Develop a history and archaeology museum.			•	

**Table 3-5. Recreation Management Components of Alternatives A - D**

Program Category	Program	Goal / Activity	Alternative			
			A - Current Management (No Action)	B - Custodial Management	C - Flagship Management	D - Blended Management
Campground Management	Management of Campgrounds on Dam or Power Plant Reservation	Manage 8 campgrounds.	•	•	•	•
Campground Management	Management of Campgrounds on Dam or Power Plant Reservation	Make proactive upgrades to ___ campgrounds consistent with ADA accessibility guidelines and provide new or upgraded fixed assets with best tested sustainable technologies.	2	1	8	8
Campground Management	Management of Campgrounds on Dam or Power Plant Reservation	Establish and maintain one flagship campground for installation and testing of emerging technologies with innovative design and efficiency measures.	•		•	•
Campground Management	Management of Campgrounds off Dam and Power Plant Reservations	See third-party management agreements for ___ campgrounds and consider closure of at least one if third-party agreement is unavailable.	4	3	4	4
Campground Management	Management of Campgrounds off Dam and Power Plant Reservations	Proactively upgrade up to ___ campgrounds consistent with ADA accessibility guidelines and provide new or upgraded fixed assets with best tested sustainable technologies.			4	3
Campground Management	Management of Campgrounds off Dam and Power Plant Reservations	Seek and implement contractual agreements to manage campgrounds located on other reservoir properties.	•	•	•	•
Day-Use Area Management	Day Use Areas on Dam Reservations	Continue to operate and manage 30 day use areas located on dam reservations.	•	•	•	•

Program Category	Program	Goal / Activity	Alternative			
			A - Current Management (No Action)	B - Custodial Management	C - Flagship Management	D - Blended Management
Day-Use Area Management	Day Use Areas on Dam Reservations	Implement ___ best-tested sustainable initiatives per year and upgrades to meet the ADA accessibility guidelines.	1		4	2
Day-Use Area Management	Day Use Areas off Dam Reservations	Continue to operate and manage 33 day use areas .	•		•	•
Day-Use Area Management	Day Use Areas off Dam Reservations	Proactively upgrade up to ___ day use areas per year consistent with ADA accessibility guidelines.	1		4	2
Day-Use Area Management	Day Use Areas off Dam Reservations	Seek, develop, and implement contractual agreements to manage up to 33 areas or review the areas for closure.	•	•	•	•
Day-Use Area Management	Greenways	Assist with development of 20 greenway miles per year.			•	
Day-Use Area Management	Stream Access Sites	Manage 31 stream access sites and investigate blueways partnerships on TVA land.	•	•		•
Day-Use Area Management	Stream Access Sites	Manage fee ownership of 81 stream access sites.	•	•	•	•
Day-Use Area Management	Stream Access Sites	Develop and implement 81 improved stream access sites on TVA managed lands.			•	
Day-Use Area Management	Stream Access Sites	Continue to manage and/or seek, develop, and implement additional third party agreements for up to ___ stream access sites. Includes option to close sites.	50	81	81	81
Day-Use Area Management	Stream Access Sites	Assist partners with acquisition and development of 6 stream access sites per year.			•	
Day-Use Area Management	Stream Access Sites	Develop ___ sites per year to increase length of blueways.	1		4	

Program Category	Program	Goal / Activity	Alternative			
			A - Current Management (No Action)	B - Custodial Management	C - Flagship Management	D - Blended Management
Public Outreach (Recreation)	Annual Tours	Conduct up to ___ annual tours that feature emerging green technologies on recreation areas.			6	4
Public Outreach (Recreation)	Recreation Information Management	Maintain and strive to enhance existing internet presence in support of the Environmental Information Center, partners and stakeholders.	•	•		•
Public Outreach (Recreation)	Recreation Information Management	Enhance current management to provide self-service and automated support for the Environmental Information Center.			•	
Public Outreach (Recreation)	Recreation Information Management	Develop interactive dispersed recreation land maps.			•	
Public Outreach (Recreation)	Recreation Management Regulations	Issue regulations on use of TVA recreational facilities to enhance enforcement capabilities.			•	
Public Outreach (Recreation)	Recreation Management Regulations	Develop and implement a Resource Rangers program to support enforcement of regulations.			•	
Public Outreach (Recreation)	Tennessee Valley Camp-Right Campground Program	Establish certification program to promote environmentally responsible campgrounds and camping practices.			•	•
Public Outreach (Recreation)	Tennessee Valley Camp-Right Campground Program	Certify 1 to 2 campgrounds per year.			•	•
Recreation Assessment and Design Tools	Boating Density Assessments	Conduct assessments as needed to support evaluation of permit requests and land use proposals.	•	•	•	•
Recreation Assessment and Design Tools	Boating Density Assessments	Partner with state boating law administrators to complete 2 comprehensive boating capacity studies per year.			•	

Program Category	Program	Goal / Activity	Alternative			
			A - Current Management (No Action)	B - Custodial Management	C - Flagship Management	D - Blended Management
Recreation Assessment and Design Tools	Reservoir Lands Recreation Inventory Management	Update recreation inventory for ___ TVA-managed reservoirs per year.	15		46	23
Recreation Assessment and Design Tools	Reservoir Lands Recreation Inventory Management	Conduct user surveys, field reconnaissance, and assessments to ensure ongoing compliance with regulations.	•	•	•	•
Recreation Assessment and Design Tools	Recreation Design Principles	Implement standard construction designs that promote compliance with the ADA accessibility guidelines, principles of universal design, or other accredited design standards.	•	•	•	•
Recreation Assessment and Design Tools	Recreation Planning, Assistance, and Technical Support	Utilize regional recreation data to guide potential expansion of new campgrounds on TVA-managed lands allocated for developed recreation use.	•	•	•	•
Recreation Assessment and Design Tools	Recreation Planning, Assistance, and Technical Support	Utilize TVA technical staff, existing and emerging standards, and plan library to support Valley recreation plans and projects requested by local, state, and federal agencies on a fee basis.	•	•	•	•
Recreation Assessment and Design Tools	Recreation Planning, Assistance, and Technical Support	Provide technical support to other agencies and stakeholders and share recreation information.	•		•	

**Table 3-6. Water Resources Management Components of Alternatives A - D**

Program Category	Program	Goal / Activity	Alternatives			
			A - Current Management (No Action)	B - Custodial Management	C - Flagship Management	D - Blended Management
Aquatic Monitoring and Management	Aquatic Ecology Management	Partner and actively participate in maintaining and enhancing aquatic biological communities.		•	•	•
Aquatic Monitoring and Management	Aquatic Ecology Management	Join and support collaborative partnerships to identify and implement protection needs, foster partnerships, and conduct outreach efforts in up to ___ healthy watersheds (Clinch, Powell, and Duck watersheds).		1	3	3
Aquatic Monitoring and Management	Stream and Tailwater Monitoring	Conduct ___ stream assessments per year.	110	110	150	125
Aquatic Monitoring and Management	Stream and Tailwater Monitoring	Share stream and reservoir data.	as requested	as requested	online interactive data	online
Aquatic Monitoring and Management	Climate Change Sentinel Monitoring	Monitor ___ watershed(s) per year in each of the five predominant ecoregions in the Tennessee Valley (long-term trending analysis).		1	2	2
Aquatic Monitoring and Management	Climate Change Sentinel Monitoring	Monitor ___ sentinel locations per watershed.		2	3	2
Aquatic Monitoring and Management	Climate Change Sentinel Monitoring	Manage data, conduct trending analysis, and report findings on a 5-year cycle.		•	•	•
Partnership Programs (Water)	Case Study / Research Initiative Program	Conduct 3 water improvement case studies/research projects per year and share results to increase partner awareness and education.			•	
Partnership Programs (Water)	Strategic Partnership Planning	Maintain existing relationships and partnerships for water quality protection and improvement efforts.	•	•	•	•

Program Category	Program	Goal / Activity	Alternatives			
			A - Current Management (No Action)	B - Custodial Management	C - Flagship Management	D - Blended Management
Partnership Programs (Water)	Strategic Partnership Planning	Develop new or enhance existing strategic relationships and partnerships focused on regional water resource planning efforts.			•	•
Public Outreach (Water)	Tennessee Valley Clean Marina Program	Collaborate with marina owners to maintain their clean marina certifications.	•	•	•	•
Public Outreach (Water)	Tennessee Valley Clean Marina Program	Develop and provide marina owners/operators with outreach materials and training on existing obligations and best management practices to protect water quality			•	•
Public Outreach (Water)	Tennessee Valley Clean Marina Program	Certify ___ new marina(s) per year			2	1
Public Outreach (Water)	Water Efficiency Program (Current Only)	Deliver 10 educational workshops per year	•			
Public Outreach (Water)	Water Resource Outreach Campaign	Evaluate, develop, and execute public outreach activities to raise awareness of water resource protection and improvement efforts.		•	•	•
Public Outreach (Water)	Quality Growth Program (Current Only)	Deliver 25 communication products including workshops, new training products, various awards, and/or conferences per year	•			
Water Resource Improvement Programs	Reservoir Shoreline Stabilization / Riparian Management	Stabilize ___ miles of critically eroding shoreline per year.			8	3
Water Resource Improvement Programs	Targeted Watershed Initiative Program (Current Only)	Reduce suspended sediment reaching streams by 234 tons per year.	•			

Program Category	Program	Goal / Activity	Alternatives			
			A - Current Management (No Action)	B - Custodial Management	C - Flagship Management	D - Blended Management
Water Resource Improvement Programs	Targeted Watershed Initiative Program (Current Only)	Reduce phosphorus reaching streams by 350 pounds per year	•			
Water Resource Improvement Programs	Targeted Watershed Initiative Program (Current Only)	Improve 1 hydrologic units in 5 years	•			
Water Resource Improvement Programs	Targeted Watershed Initiative Program (Current Only)	Deliver 50 stakeholder products per year	•			
Water Resource Improvement Programs	Water Resource Grant Program	Develop and implement evaluation, management and implementation processes to establish a grant program.			•	
Water Resource Improvement Programs	Nutrient Source - Watershed Identification and Improvement	Conduct current targeted TVA Vital Signs and Fixed Station water chemistry monitoring programs		•	•	•
Water Resource Improvement Programs	Nutrient Source - Watershed Identification and Improvement	Use existing and new nutrient data combined with flow data to determine and quantify the top three reservoirs receiving the greatest phosphorus and nitrogen loadings.		•	•	•
Water Resource Improvement Programs	Nutrient Source - Watershed Identification and Improvement	Develop a reservoir-specific improvement plan for ___ of the top three reservoirs over the life of the NRP.		1	3	2
Water Resource Improvement Programs	Nutrient Source - Watershed Identification and Improvement	Implement plan to reduce point-source phosphorus reaching ___ reservoir(s) by 5,000 pounds per reservoir.			3	1

Program Category	Program	Goal / Activity	Alternatives			
			A - Current Management (No Action)	B - Custodial Management	C - Flagship Management	D - Blended Management
Water Resource Improvement Programs	Nutrient Source - Watershed Identification and Improvement	Implement plan to reduce 720 - 1,080 tons per reservoir of suspended sediment transported from watershed streams into ___ of the top three reservoirs.		1	3	2
Water Resource Improvement Programs	Nutrient Source - Watershed Identification and Improvement	Implement plan to reduce 1,100 - 1,650 pounds per reservoir of phosphorus transported from watershed streams into ___ of the top three reservoirs.		1	3	2
National Water Resource Recovery Programs	Northern Gulf of Mexico / Mississippi River Basin Nutrient Load Reductions	Obtain, consolidate, and evaluate existing data from lower Tennessee River reservoirs and watersheds and select one reservoir as the focus for nutrient source loading and delivery modeling.			•	•
National Water Resource Recovery Programs	Northern Gulf of Mexico / Mississippi River Basin Nutrient Load Reductions	Monitor selected reservoir for one year in order to support model development.			•	•
National Water Resource Recovery Programs	Northern Gulf of Mexico / Mississippi River Basin Nutrient Load Reductions	Develop a strategy and long-term action plan with partners that supports the strategy of nutrient load reduction to the Mississippi River Basin and Gulf of Mexico.			•	•
National Water Resource Recovery Programs	Northern Gulf of Mexico / Mississippi River Basin Nutrient Load Reductions	Test strategy by implementing practices in a small watershed (reservoir embayment or tributary reservoir) to demonstrate nutrient yield reduction and validate the model.			•	

Program Category	Program	Goal / Activity	Alternatives			
			A - Current Management (No Action)	B - Custodial Management	C - Flagship Management	D - Blended Management
National Water Resource Recovery Programs	Northern Gulf of Mexico / Mississippi River Basin Nutrient Load Reductions	Work with partners to implement modeled effective strategies to reduce nutrient discharge (yield) from the Tennessee River to the Mississippi River Basin and Northern Gulf of Mexico hypoxic zone.			•	

**Table 3-7. Public Engagement Components of Alternatives A - D**

Program Category	Program	Goal / Activity	Alternative			
			A - Current Management (No Action)	B - Custodial Management	C- Flagship Management	D- Blended Management
Public Outreach (Overarching)	Environmental Education	Develop and implement a comprehensive and coordinated Environmental Education Program.			•	•
Public Outreach (Overarching)	Volunteer Program	Establish and implement a formal volunteer program.		•	•	•
Public Outreach (Overarching)	Foundation and Trust Fund	Establish an independent "Foundation and Trust Fund" or form ties with an existing conservation focused foundation/trust fund (or equivalent) to solicit private donations to support conservation and natural resource related projects and programs.			•	•

### **3.2.1. Alternative A – Current Management - No Action**

Under the Alternative A, TVA would continue its current natural resource management efforts by implementing the existing stewardship programs and tools aligning with existing policies and strategies and continuing to apply the existing methodology when planning lands along TVA reservoirs. This alternative emphasizes regulatory and technical requirements, assessments of TVA resources and partnerships, and projects associated with TVA recreational facilities. TVA would manage and support stewardship activities on its lands through existing prioritization methods that consider recreational and other resource needs, public safety, and public health while complying with all existing and future laws and regulations. Tables 3-3 through 3-6 list the programs and activities comprising Alternative A for biological resources, cultural resources, recreation, and water resources, respectively. The programs and activities are described in Chapter 2. There are no cross-media public engagement programs and activities (Table 3-7) associated with Alternative A.

Under Alternative A, TVA would continue to apply the Single Use Parcel Allocation methodology described in Section 2.4.1 and current land use zone definitions (Appendix F) when planning lands along TVA reservoirs, and an appropriate level of environmental review would be completed for each reservoir or group of reservoirs. Table 2-8 lists the nine reservoirs that are unplanned, use the Forecast System, or have Multiple Use Tract Allocations and for which Single Use Parcel Allocation plans have not yet been prepared. These reservoirs have a total of 143,000 acres of land to be planned.

### **3.2.2. Alternative B – Custodial Management**

Under Alternative B, TVA would implement projects to meet the intent of the Environmental Policy including maintaining the character of TVA lands and recreational facilities and watershed water quality. TVA would develop and implement public outreach and improvement opportunities across the Valley and in associated communities. In addition, TVA would focus on transitioning the management of certain recreational facilities to other parties through contractual agreements or would close the facilities. Those specific programs that address safety and compliance with TVA's mission and relevant laws, regulations, EOs, and other policies would be implemented. As laws, regulations, and policies are created or amended, implementation activities would be revised to reflect the changes and ensure compliance. In those areas in which TVA would discontinue programs or projects, existing contractual agreements relating to those programs or projects would be honored per the terms of the agreement(s). Tables 3-3 through 3-7 list the programs and activities comprising Alternative B for biological resources, cultural resources, recreation, water resources, and public engagement, respectively. The programs and activities are described in Chapter 2. Characteristics of programs and activities specific to Alternative B are described below.

#### **3.2.2.1. Biological Resources Management**

Under this alternative, TVA would continue the current activities (as described for Alternative A) necessary to meet the requirements of laws, regulations, and policies relating to the management and protection of biological resources. A few activities not considered necessary would be eliminated and a few would be implemented at higher levels.

#### **Sensitive Biological Resources Management**

Natural Areas Management — TVA would no longer designate or remove natural areas through the reservoir lands planning process.

### **Terrestrial Habitat Management**

Nonnative Invasive Plant Management — Under this alternative, TVA would increase its invasive plant control activities from about 600 to 1,000 acres per year. This increased acreage is based on existing commitments to manage invasive species (primarily Oriental bittersweet on the Fontana Dam Reservation) and the annual treatment of 5 percent of the 17,000 acres of TVA natural areas. TVA would also develop a new prioritized plan for controlling invasive species on areas with sensitive resources. TVA would cease participating in state exotic pest plant councils and regional early detection and rapid response initiatives.

Wildlife Habitat Enhancement Partnerships — The area of annual habitat improvements through partnership efforts would be increased from 500 to 750 acres. This increased area is based largely on the professional judgment of TVA wildlife biologists and their knowledge of the interests and available resources of existing and potential partners.

### **Land Management and Stewardship Programs**

Land Conditions Assessment and Land Stewardship Maintenance — TVA would increase the area assessed annually from 5,000 to 20,000 acres. This increase is based on a schedule that would result in all Zone 3 and Zone 4 lands being assessed on about a 10-year cycle. Prioritized stewardship activities addressing public safety, asset preservation, and resource management needs would be implemented based on the land assessment results.

### **Dispersed Recreation Management**

Dispersed Recreation Assessments — Under this alternative, TVA would stop the current annual evaluation of 70 dispersed recreation areas and replace them with the expanded land conditions assessments.

Dispersed Recreation Management — TVA would increase the number of heavily impacted sites annually repaired from 1 to 5; this represents about 10 percent of the known heavily impacted sites. This would provide for all of the heavily impacted sites to be repaired within 10 years, and is considered the minimum level to properly manage dispersed recreation as stated in the Environmental Policy. The number of key projects annually implemented would also increase from 1 to 5 based on the goal of dispersing a minimum number of projects across the reservoir system.

#### **3.2.2.2. Cultural Resources Management**

Under this alternative, TVA would continue and in some cases increase the current activities (as described for Alternative A) necessary to meet the requirements of laws, regulations, and policies relating to the management and protection of cultural resources. A few activities not considered to be essential custodial management would be eliminated and a few would be implemented at higher levels.

### **Cultural Resources Management**

Archaeological Monitoring and Protection — Under this alternative, TVA would increase its efforts for protecting shoreline archaeological sites from the current amount required by project-specific mitigation to between 0.3 and 0.4 tributary shoreline miles or between 0.4 and 0.6 mainstem shoreline miles per year. This is considered to be a minimal level of effort focused on the most vulnerable shoreline sites. The length of shoreline annually monitored would similarly increase from the current mitigation-only basis to 150 miles. This

too is considered to be a minimal level of effort focused on identifying and monitoring the shoreline most threatened by erosion and looting.

Preservation Program — TVA would reduce its annual archaeological survey effort from the current 2,000 acres to about 1,000 acres; surveying this reduced area would allow TVA to meet its cultural resource responsibilities. TVA would initiate surveys to identify historic structures on its lands and set a goal of annually evaluating and nominating 2 sites to the National Register of Historic Places. This goal is based on a minimal level to better understand, raise awareness, and promote the preservation of these historic properties.

### **Public Outreach Programs**

Archaeological Outreach (Thousand Eyes) — TVA would increase the annual number of events from 2-3 to 3-5 to better meet the minimal educational needs for archaeological resource protection and requirements for agencies to provide public outreach on this topic.

### **3.2.2.3. Recreation Management**

In addition to the programs and activities listed below, TVA would continue to allocate lands for developed recreation purposes through the reservoir lands planning process. Approximately 21,200 acres of land have been recommended for future consideration for recreational development. Of the total, approximately 19,100 acres are currently committed under existing contractual agreements, leaving approximately 2,100 acres available for development. TVA would continue to entertain proposals for the development of commercial or public recreation facilities on these remaining lands and manage existing contractual agreements.

### **Campground Management**

Management of Campgrounds on Dam or Power Plant Reservations — TVA would reduce its efforts to make proactive upgrades consistent with ADAAG and to provide more sustainable technologies from two to one campgrounds per year. While these upgrades are not otherwise defined as custodial, continuing one upgrade per year would maintain at least one area as a test and demonstration site. TVA would cease establishing and maintaining flagship campgrounds for the installation of emerging technologies and efficiency measures.

Management of Campgrounds off Dam and Power Plant Reservations — Under this alternative, TVA would either transfer one campground (Foster Falls) to third-party management or close it. TVA would continue to manage the other 3 campgrounds with annual positive cash flow.

### **Day Use Areas Management**

Under Alternative B, TVA would reduce its operation of day use areas by transferring the 33 day use areas located off dam reservation properties to local, state, or federal agencies or closing them. As such, some picnic areas, picnic pavilions, swimming beaches, boat ramps, and other day use amenities may no longer be available to the public. Other amenities may be available to the public for a fee charged by the new manager. TVA would require all operators to meet relevant health, safety, and environmental protection standards and make proactive upgrades consistent with ADAAG. In the circumstance where a contractual agreement could not be reached, TVA would close that particular day use area. Unlike the other alternatives, TVA would not upgrade the off-dam reservation day use areas to meet ADA guidelines.

Stream Access Sites — TVA would close any of the 50 stream access sites currently managed under contractual agreements if the contracts cannot be renewed or new contractors found. TVA would stop its efforts to develop blueway sites.

### **Recreation Assessment and Design Tools**

Reservoir Lands Recreation Inventory Management — TVA would stop updating the reservoir recreation inventory.

Recreation Planning, Assistance, and Technical Support — TVA would stop providing technical support and sharing recreational information with other agencies and stakeholders.

#### **3.2.2.4. Reservoir Lands Planning**

Under Alternative B, TVA would apply the Single Use Parcel Allocation methodology when planning reservoirs or groups of reservoirs. However, TVA would apply land use zone definitions (Appendix F) that vary slightly in terminology from those used for Alternative A. Table 3-8 lists the nine reservoirs for which Single Use Parcel Allocation plans have not yet been prepared. These reservoirs have a total of 143,000 acres of land to be planned.

For the purpose of this EIS, potential impacts associated with these programmatic approaches would be from a Valleywide perspective. Therefore, future environmental reviews for reservoir lands planning would tier from this EIS, and the level of NEPA review would be determined by each planning effort. All future planning efforts would be subject to TVA's NEPA procedures located at

[http://www.tva.gov/environment/reports/pdf/tvanepa\\_procedures.pdf](http://www.tva.gov/environment/reports/pdf/tvanepa_procedures.pdf).

TVA estimates that implementing Alternative B would reduce the duration of each planning effort. The nine reservoirs that have not been planned using the Single Use Parcel Allocation methodology are the Beech River Project<sup>1</sup>, Chickamauga, Fort Loudoun, Great Falls, Kentucky, Nickajack, Normandy, Wilson, and Wheeler reservoirs.

The land use zone definitions used for Alternative B are for the most part similar to those used for Alternative A. The few changes in the definitions have been captured under Zones 4, 5, and 6. In Zone 4, the proposed definition includes all islands without sensitive resources or existing development. In Zone 5, "light industrial" has been replaced with the less restrictive "industry" that includes manufacturing, fabrication, and distribution, processing, and assembly for a variety of industrial sectors including chemical, electronics, metalworking, plastics, telecommunications, and transportation. Finally, the Zone 6 definition has been revised to focus on the two types of recreation (public and commercial) described in the TVA Land Policy and to better categorize "water access" as a component of "public recreation."

As mentioned in Chapter 2, a step in the Single Use Parcel Allocation methodology includes gathering existing reservoir data. In future land planning efforts, the RLA methodology would be used as the existing reservoir data or as a baseline to compare regional trends. Table 3-7 shows the preliminary RLA allocations for those reservoirs to be planned using the Single Use Parcel Allocation methodology. Maps showing the RLA data

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<sup>1</sup> Cedar, Dogwood, Lost Creek, Pin Oak, Pine, Redbud, and Sycamore reservoirs are considered by TVA to be the Beech River Project reservoirs and have been combined for comparison purposes.

can be found on TVA's Web site at <http://www.tva.com/environment/land/assessment/index.htm>.

**Table 3-8. Rapid Lands Assessment Data for Reservoirs**

Reservoir	Percentage of Land Area by Single Use Allocation Designation					
	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7
Beech River Project	6	0	51	0	43	0
Chickamauga	9	34	40	1	7	10
Fort Loudoun	33	3	18	0	2	44
Great Falls	100	0	0	0	0	0
Kentucky	1	2	84	2	5	6
Nickajack	20	25	51	3	2	0
Normandy	13	15	67	0	4	<1
Wheeler	4	24	62	2	8	<1
Wilson	0	0	7	0	63	30
Average Percentage	4	12	70	2	7	5

Note: Zone 1 – Non-TVA Shoreland is not represented because the parcels are private land (on which TVA owns flowage rights) and will not change as a result of the land planning process. The figures in this table are an estimate based on the RLA and are subject to change pending additional verification.

### 3.2.2.5. Water Resource Management

TVA would measure the success of the programs implemented under this alternative by tracking products delivered to stakeholders and quantifying reductions in pollutant loads. The success of the Nutrient Source-Watershed Identification and Improvement program would be measured by the reduction in sediment and phosphorus reaching streams and reservoirs. TVA's methodology for measuring reductions in pollutant loads is presented in Appendix H.

#### **Aquatic Monitoring and Management**

Aquatic Ecology Management — TVA would initiate a new activity to join and support collaborative partnerships for enhancing one highly diverse watershed (the Clinch, Powell, or Duck watershed). The goal of working in one of these watersheds is based on professional judgment and meeting the goals of TVA's Environmental Policy.

Climate Change Sentinel Monitoring — This new program would be implemented by monitoring one watershed per year in each of the five predominant ecoregions. Within each watershed, two sentinel sites including headwater streams would be monitored. These are considered the minimum numbers necessary to establish a baseline to detect change.

#### **Public Outreach (Water)**

Under this alternative and Alternatives C and D, the Quality Growth and Water Efficiency Programs would be eliminated and replaced, in part, with the Water Resource Outreach Campaign.

#### **Water Resource Improvement Programs**

Nutrient Source - Watershed Identification and Improvement — This program, a component of Alternatives B, C, and D, would replace the Targeted Watershed Initiative Program of Alternative A. Under Alternative B, TVA would develop a reservoir-specific improvement

plan for one reservoir. TVA would then implement the plan to reduce suspended sediment transported into the reservoir by 720 - 1,080 tons per year and phosphorus transported into the reservoir by 1,100 - 1,650 pounds per year. The target of one reservoir is based on the intent of meeting TVA's Environmental Policy with a minimal level of invested resources. The sediment and phosphorus reduction targets are based on best professional judgment. These reductions would be achieved through partnership projects that over time will result in noticeable water quality improvements.

### **3.2.3. Alternative C – Flagship Management**

Under Alternative C, TVA would aggressively implement existing and new programs and activities to increase its resource stewardship to the “gold standard.” TVA's proactive management of biological, cultural, and water resources would be greatly increased. Recreation management activities would emphasize enhancements of existing facilities and use of sustainable technologies; development of trails, greenways, and access areas; and repair of heavily impacted areas. This alternative takes into account the interconnectivity of the various programs and activities described in Chapter 2. Tables 3-3 through 3-7 list the programs and activities comprising Alternative C for biological resources, cultural resources, recreation, water resources, and public engagement, respectively. The programs and activities are described in Chapter 2. Characteristics of programs and activities specific to Alternative C are described below.

#### **3.2.3.1. Biological Resources Management**

Under this alternative, TVA would continue the current activities (as described for Alternative A) necessary to meet the requirements of laws, regulations, and policies relating to the management and protection of biological resources. Many other programs and other activities would be implemented at higher levels than under Alternatives A and B.

#### **Sensitive Biological Resources Management**

Wetland Management — TVA would initiate a new pilot project to identify and characterize high quality “reference site” wetlands on TVA lands.

Sensitive Resources Data Management — TVA would increase its information gathering efforts and develop predictive models for endangered and threatened species.

Natural Areas Management — TVA would continue to maintain the current 154 ecologically and visually sensitive areas while monitoring a third of them annually. TVA would more proactively manage the natural areas by annually developing and implementing management plans for 33 areas until all areas are operating under a comprehensive management plan. The goal of 33 plans per year is based on having management plans developed for all current natural areas within 5 years.

Conservation Planning — TVA would increase its involvement in large-scale conservation planning by partnerships with planning efforts across the region.

#### **Terrestrial Habitat Management**

Grasslands and Agricultural Lands Management — TVA would transition from the agricultural licenses and cooperative agreements under Alternatives A, B, and D to increased efforts to reestablish and manage native grasslands in cooperation with partners.

Dewatering Projects Management — Under both this alternative and Alternative D, TVA would more proactively manage dewatering projects by refurbishing them based on the

results of engineering and hydraulic reviews, upgrade their operation, and work closely with partners to better incorporate public use into their management.

Nonnative Invasive Plant Management — TVA would increase the scale of its invasive plant control activities to 40,000 acres per year. This would annually address a large proportion of the Zone 3 and Zone 4 lands infested with invasive species. It would also allow for the necessary repeated treatments of areas to eliminate stump sprouts and seedlings expected to be present after the initial treatment.

Nuisance Animal Control — TVA would more comprehensively address nuisance animal problems by developing programmatic guidelines on their control, establishing memoranda of agreement with agencies responsible for regulating wildlife, and developing and sharing best management practices for their control.

Terrestrial Greenhouse Gas Sequestration Management — Under this alternative, TVA develop a terrestrial GHG management plan and pursue carbon offset projects on 500 acres of TVA lands for research purposes to build institutional knowledge of terrestrial carbon sequestration programs. This goal is based on best professional judgment of the land area needed for a robust research program while taking advantage of economies of scale and limiting the amount of land committed for the multi-decade span of the research program. TVA would also have a goal of entering into eight consortiums focusing on issues related to terrestrial GHG management and conducting up to six terrestrial GHG management demonstrations. These numbers are based on TVA assuming a leadership role in this research area to aggressively achieve GHG reductions.

Wildlife Habitat Council/Third-Party Certifications — TVA would initiate five new projects for WHC certification at five new locations on TVA lands. These target numbers are based on TVA's history with WHC certifications and professional judgment on the practicality of certifying facilities across the TVA region. TVA is a corporate sponsor of the WHC certification program and through this goal would show leadership in this area. TVA would also establish a third-party review and certification process for wildlife management activities on 10 percent of appropriate TVA lands annually. This annual goal is based on what TVA considers to be a sustainable level of effort on an approximate 10-year cycle to meet WHC certification criteria.

Wildlife Habitat Enhancement Partnerships — Through cooperative partnerships, TVA would improve wildlife habitat on 20,000 acres per year. This goal is in addition to existing Unit Plan implementation commitments. It is based on TVA becoming a leader in habitat enhancement partnerships on its lands under existing agreements with state and other federal agencies and through the creation of additional habitat enhancement partnerships with other organizations.

### **Land Management and Stewardship**

Boundary Maintenance — TVA would set the goal of addressing all regional boundary maintenance needs on a 5-year cycle while incorporating new survey technologies. The 5-year goal is based on best professional judgment of the life expectancy of painted boundary markers and boundary signs and would result in all markings and signs being continuously visible and legible.

Land Conditions Assessments and Land Stewardship Maintenance — Approximately 50,000 acres would be assessed per year. This goal would result in all lands being

assessed in an approximately 5-year cycle to promote a more timely overview of their conditions and more responsive management activities.

### **Public Outreach (Biological)**

Resource Stewardship Campaigns — In implementing this new program, TVA would deliver 25 stakeholder products annually. This number is based on the goal of addressing a variety of issues at multiple locations across the region.

### **Dispersed Recreation Management**

Under this alternative, TVA would adjust the current systematic method of data collection and collect information only on those areas identified from the LCA. Independent dispersed recreational assessments would occur only as needed. To aid in planning, needs, and program evaluation efforts, TVA would distribute user surveys to 600 recreationists annually. This number is based on the minimum sample size needed for a statistically valid sample stratified by activity and region.

TVA would repair 25 heavily impacted dispersed recreational areas annually. This number represents about a quarter of the heavily impacted sites and would result in all of these sites being repaired within the 5-year cycle to review and update the NRP. TVA would implement 20 key dispersed recreational opportunities consistent with TVA's intent to provide ecofriendly dispersed recreation.

In an effort to break skill barriers to the full enjoyment of TVA dispersed lands, TVA would conduct approximately 100 outdoor clinics to teach members of the public how to responsibly enjoy dispersed recreation. This number is based on the plan to hold one clinic in most of the 125 counties in the Tennessee River watershed each year.

Trails Management — TVA would develop and implement a system-wide trails establishment and maintenance plan to more proactively and systematically address trail system needs. The target of adding 20 trail miles per year, while potentially exceeding the rate of increase in the popularity of day hiking (Cordell et al. 2004), would allow more trails designated for particular uses, reduce the potential for overuse of trails, and increase the feeling of solitude for trail users.

### **3.2.3.2. Cultural Resources Management**

Under Alternative C, TVA would greatly increase its cultural resources management efforts to proactively survey for, monitor, and protect archaeological sites; improve relationships with federally recognized tribes; nominate TVA historic properties to the National Register of Historic Places (NRHP); promote heritage tourism; support archaeological research; and increase its public outreach efforts.

Archaeological Site Monitoring and Protection — TVA would monitor approximately 500 shoreline miles per year and establish targets to protect between 1.1 and 1.3 tributary shoreline miles or between 1.9 and 2.1 mainstem shoreline miles per year. These goals are based on the desirability of more proactive approaches to monitoring and protecting critically eroding or looted shoreline sites. Even at these greatly increased levels, about 4 percent of the total reservoir shoreline would be monitored each year and less than 0.1 percent of critically eroding sites on TVA land would be protected each year.

Archaeological Resources Protection Act Program — TVA would greatly increase its ARPA inspections by training and outfitting new officers to achieve a target of 5,000 security

checks per year. This level would help ensure adequate monitoring of archaeological sites and provide an increased police presence on TVA lands and waters. TVA would also issue regulations to supplement its investigative authority.

National Historic Preservation Act Section 106 — TVA would develop procedures for compliance with Section 106 under emergency situations. TVA would also pursue a programmatic agreement (PA) with individual states regarding compliance for repetitive actions such as routine requests for land use agreements and approvals under Section 26a of the TVA Act.

Native American Tribal Consultation — TVA would hold more frequent tribal consultation workshops (every two years) to improve relationships and partnerships on the management of archaeological resources on TVA lands.

Preservation Program — TVA would expand its archaeological identification surveys to cover 5,000 acres each year. This level is based on a significant increase in the resources dedicated to this activity to accelerate the completion of this inventory to about the year 2050. TVA would increase the number of nominations of TVA historic properties to the NRHP to six per year. This number is based on best professional judgment of an aggressive approach to better understand, raise awareness, and promote the preservation of these historic properties. TVA would also partner with stakeholders to identify traditional cultural properties on TVA land and develop an online interactive cemetery database for public use.

Preserve America — TVA would develop 3-5 new partnerships per year to promote heritage tourism and historic properties in a manner that benefits both the resource and the public. This range of numbers is based on best professional judgment of the interest in heritage tourism and potentially available staff resources to manage the partnerships.

Cultural Resources Partnerships — TVA would provide 1-2 grant opportunities for research leading to both academic and nonacademic publications. This number is based on the assumed availability of \$100,000 to support the research; the exact number would depend on the proposals received from applicants. TVA would also provide support for 1-2 archaeological field schools per year hosted by universities at TVA sites. The number of field schools is based on available funding and academic interest in archaeological sites on TVA land.

Archaeological Outreach (Thousand Eyes) — TVA would continue this public outreach effort to sponsor 10 - 15 outreach programs per year involving 5 - 10 partners. These numbers are based on TVA proactively seeking partners to support educational activities throughout the region. By supporting 10-15 events per year, TVA would be able to reach audiences across the valley to promote widespread support for archaeological resource protection.

Corporate History Program — TVA would greatly increase its corporate history program activities including the development of a public outreach component with 3 - 5 events per year. This number is based on TVA providing opportunities across the TVA region to promote awareness of TVA's significant history. The number of events would ensure appropriate representation across the region for special events. TVA would also develop a history and archaeology museum.

### **3.2.3.3. Recreation Management**

As described above, TVA would continue to allocate lands for developed recreation purposes through the reservoir lands planning process and would continue to entertain commercial or public recreation requests for development of lands already zoned for developed recreation and manage existing contractual agreements.

#### **Campground Management**

TVA Campgrounds on Dam and Power Plant Reservations — TVA would continue to operate and manage the eight campgrounds and would proactively upgrade all of them.

TVA Campgrounds off Dam and Power Plant Reservations — TVA would continue to operate and manage the four campgrounds and would proactively upgrade all of them.

#### **Day Use Areas Management**

TVA would continue to operate and manage the 63 day use areas located across the Valley. TVA would proactively upgrade four day use areas on dam reservations per year and four day use areas off dam reservations per year. These targets are based on the need to complete accessibility upgrades to all areas during the first 7-10 years of the 20-year planning period.

Greenways — TVA would assist with the development of 20 greenway miles per year; this goal is based on TVA's ability to provide the land rights to support partnerships for the greenway expansions.

Stream Access Sites — Of the 81 stream access sites owned by TVA, approximately 50 sites are managed under contractual agreements. TVA would maintain these agreements or seek new agreements for their operation. TVA would continue to operate the remaining 31 stream access sites. TVA also proposes to implement improvements at all 81 sites. TVA would assist partners with the acquisition and development of six stream access sites per year and develop four sites per year to increase the length of blueways. These goals are based on the anticipated availability of more funding, partnership opportunities, and meeting the increasing demand for stream access for paddle sports and fishing access.

#### **Public Outreach (Recreation)**

Annual Tours — TVA would host six annual media and technology transfer tours of campgrounds and day use recreational areas where emerging technologies would be featured and showcased. This goal is based on gaining maximum exposure of TVA's efforts in this area.

Recreation Information Management — TVA would greatly increase its efforts to make recreation information more available to the public by developing online interactive maps highlighting dispersed recreation opportunities and adding more self-service features to TVA's website and other media.

Tennessee Valley Camp-Right Campground Program — Under both this alternative and Alternative D, TVA would establish a program to certify one to two environmentally responsible commercial campgrounds per year.

### **Recreational Assessment and Design Tools**

Boating Capacity Studies — TVA would partner with state boating law administrators to complete two studies per year. This number is based on the perceived willingness of partners to manage these studies and TVA's ability to provide funding assistance.

Reservoir Lands Recreation Inventory Management — TVA would maintain and annually update its inventory of recreation facilities at all 46 of its reservoirs. This goal of a complete annual update is based on the need to provide 100 percent accurate information on reservoir recreation opportunities.

#### **3.2.3.4. Reservoir Lands Planning**

Under Alternative C, TVA would adopt the Comprehensive Valleywide Land Plan (CVLP) described in Section 2.4.1. RLMPs would subsequently be developed and updated for a portion of a reservoir, an entire reservoir, or a group of reservoirs using the Single Use Parcel Allocation methodology. The sequence of reservoirs to be planned would be based on a prioritized list, and the highest priority reservoirs are likely to be Kentucky, Nickajack, and Wheeler. The planning process would validate and revise, as appropriate, the allocation baseline created by the existing RLMPs and the RLA methodology. At a minimum, the reservoir lands planning process would consist of the following steps:

- Collaboration with other federal and state agencies to share information and data pertaining to developed recreation, natural resource management, and water resources.
- Identification of existing conditions by assimilating existing resource data, conducting capability and suitability analysis (as appropriate), and predicting future public needs for specific allocations.
- Creation of draft plans either for a portion of a reservoir, entire reservoir, or a group of reservoirs. The draft plans would include an overview of the new lands planning process, detailed parcel descriptions, and a set of detailed maps.
- Consideration of proposals for alternative uses of TVA lands.
- Seeking and incorporation of input from the public on the draft plans.
- Issuance of a final plan, which would include an overview of the lands planning process, parcel allocations, and a set of detailed maps.
- Inclusion of the outcomes of each planning effort in future updates of the NRP. TVA would track allocation changes to assure that they continued to fall within the CVLP total allocation percentages.

TVA would also adopt the proposed changes in the land use zone definitions (Appendix F). As described above for Alternative B, the largest change in definition is the removal of the restriction to "light industrial" development on Zone 5 lands.

In summary, Alternative C includes the key components of the new lands planning implementation strategy and target ranges for Valleywide land use allocations (Table 2-11). In addition, any specific development proposal on TVA land would be subject to a site-specific environmental review.

#### **3.2.3.5. Water Resource Management**

Under Alternative C, TVA would implement programs and activities to foster increased stakeholder awareness of water resource issues and participation in water resource management. The increased emphasis would focus efforts on improvement opportunities

for watersheds and/or communities having identified water quality problems, stakeholder interest, and leveraged funding sources. An increased emphasis on shoreline stabilization and water resource improvements would be intended to enhance the characteristics of stewardship and improve the health of streams and reservoirs within the Valley. TVA would measure the success of the programs implemented under this alternative by tracking products delivered to stakeholders, quantifying reductions in pollutant loads, and counting the miles of shoreline stabilized. TVA's methodology for measuring reductions in pollutant loads is described in Appendix H.

### **Aquatic Monitoring and Management**

Aquatic Ecology Management — Under this alternative, TVA would join and support collaborative partnerships for enhancing the three highly diverse Clinch, Powell, and Duck watersheds. The inclusion of all three watersheds is based on best professional judgment of a flagship level of commitment and meeting the goals of TVA's Environmental Policy by enhancing the most biodiverse major watersheds in the Tennessee River drainage.

Stream and Tailwater Monitoring — Under this alternative, TVA would conduct 150 stream assessments per year; this target is a 37 percent increase over the current/custodial level and would result in better coverage of large sub-watersheds not sufficiently covered by the current single samples, additional sampling for quality assurance in areas exhibiting large changes in results, and increased ability to take advantage of new cooperative monitoring opportunities. All streams would continue to be sampled on a least a fixed, five-year rotation.

Climate Change Sentinel Monitoring— This new program would be implemented by monitoring two watersheds per year in each of the five predominant ecoregions. Three sentinel sites (an increase of one site) would be monitored to include headwater streams within each watershed. These targets would provide a more robust data set than the Alternative B and D targets with a moderate expenditure of resources. Because climate change impacts are unlikely to occur equally across the entire Tennessee River watershed, or among watersheds in the major ecoregions, the flagship number of waterbodies and sites provide the more sensitive level of sentinel monitoring to detect onset of climate change impacts.

### **Partnership Programs**

Case Studies and Research Initiatives — TVA would undertake three case studies or research projects annually. The goal of three annual studies would expose stakeholders across the Valley to information that would help them protect and improve water resources.

### **Public Outreach Programs**

Tennessee Valley Clean Marina Program — This program would aim to certify two new marinas per year. This goal is based on best professional judgment of the interests of marina owners and outreach materials and incentives available to them.

### **Water Resource Improvement Programs**

Reservoir Shoreline Stabilization / Riparian Management — The goal of this program would be to stabilize eight miles of critically eroding shoreline per year and would result in a total of 160 miles of shoreline stabilized during the 20-year NRP planning period. This goal is based on the upper end of the range of past annual shoreline stabilization efforts.

Nutrient Source Watershed Identification and Improvement — Under Alternative C, TVA would develop and implement reservoir-specific improvement plans for three reservoirs. This target is based on best professional judgment and the intent of meeting TVA's Environmental Policy with a higher level of invested resources. The suspended sediment and phosphorus transport goals described for Alternative B would be increased from one to three reservoirs and there would be the additional goal of reducing point-source phosphorus reaching three reservoirs by 5,000 pounds per reservoir per year. These goals are based on best professional judgment of the achievable reductions by project partners and the amount of reduction necessary to noticeably improve reservoir water quality.

### **National Water Resource Recovery Programs**

Northern Gulf of Mexico / Mississippi River Basin Nutrient Load Reductions — Under both Alternatives C and D, TVA would establish this program focusing on modeling nutrient source loading and delivery and developing a strategy and action plan to reduce nutrient loading. Under Alternative C, TVA would extend the program by testing and implementing nutrient reduction measures.

#### **3.2.4. Alternative D – Blended Management**

Under Alternative D, TVA has identified key programs that are integral toward enhancing future implementation efforts while maintaining activities and projects that address safety, meet the intent of the Environmental Policy, and comply with TVA's mission and relevant laws, regulations, EOs, and policies. This alternative takes into account the interconnectivity of the various programs described in Chapter 2, helping to establish a foundation by which TVA may implement greater levels of programs in the future. Tables 3-3 through 3-7 list the programs and activities comprising Alternative D for biological resources, cultural resources, recreation, water resources, and public engagement, respectively. The programs and activities are described in Chapter 2. Many programs and activities would be implemented at levels between those of alternatives A or B and C. Characteristics of programs and activities specific to Alternative D are described below.

##### **3.2.4.1. Biological Resources Management**

Under this alternative, TVA would continue to meet the minimum requirements of laws, regulations, and EOs relating to the management and protection of biological resources.

### **Sensitive Biological Resources Management**

Natural Areas Program — TVA would continue to maintain the current 154 ecologically and visually sensitive areas while monitoring a third of them annually. TVA would more proactively manage the natural areas by annually developing and implementing management plan for 15 areas until all areas are operating under a comprehensive management plan. The goal of 15 plans per year is based on having management plans developed for all current natural areas within 10 years.

### **Terrestrial Habitat Management**

Nonnative Invasive Plant Management — TVA would control invasive plants on 1,000 acres per year, as under Alternative B. This goal is based on existing commitments to manage invasive species (primarily Oriental bittersweet on the Fontana Dam Reservation) and the annual treatment of 5 percent of the 17,000 acres of TVA natural areas.

Wildlife Habitat Enhancement Partnerships — Through cooperative partnerships, TVA would improve wildlife habitat on 750 acres per year. This goal is based on professional

judgment of TVA wildlife biologists and their knowledge of the interests and available resources of existing and potential partners.

### **Land Management and Stewardship**

Boundary Maintenance — TVA would set the goal of addressing all regional boundary maintenance needs on a 10-year cycle while incorporating new survey technologies. The 10-year goal is based on best professional judgment of the cycle necessary to maintain adequately marked boundaries.

Land Conditions Assessments and Land Stewardship Maintenance — Approximately 35,000 acres would be assessed per year. This goal is based on what TVA considers to be a sustainable level of effort to holistically address needs on Zone 3 and Zone 4 lands to meet the spirit of the Environmental Policy.

### **Dispersed Recreation Management**

Under this alternative, TVA would repair 15 heavily impacted dispersed recreational areas annually. This number represents about 15 percent of the heavily impacted sites and was selected as an intermediate level between the numeric goals of the other alternatives. TVA would implement 10 key dispersed recreational opportunities; this goal also represents an intermediate level between the goals of the other alternatives.

#### **3.2.4.2. Cultural Resources Management**

Under Alternative D, TVA would increase several of its cultural resources management efforts to more proactively survey for, monitor, and protect archaeological sites; nominate TVA historic properties to the National Register of Historic Places (NRHP); and increase its public outreach efforts.

Archaeological Site Monitoring and Protection — TVA would monitor approximately 250 shoreline miles per year and establish targets to protect between 0.4 and 0.6 tributary shoreline miles or between 0.9 and 1.1 mainstem shoreline miles per year. These goals are based on an intermediate level of effort between Alternatives B and C. They would likely result in the stabilization of the two to four sites annually, 0.05 percent of critically eroding sites.

Preservation Program — TVA would expand its archaeological identification surveys to cover 3,000 acres each year. This represents an intermediate level between level between Alternatives A, B, and C and would result in the inventory being completed in about year 2070. TVA would evaluate and nominate two to four TVA historic properties to the NRHP per year. This number is based on an intermediate level of effort to promote more sites each year when funding is available.

Archaeological Outreach (Thousand Eyes) — TVA would continue this public outreach effort to sponsor 5 - 10 outreach programs per year involving 3 - 5 partners. These numbers are based on providing a more proactive intermediate level of support of public outreach across the valley. Because TVA covers such a broad geographic area, the events would to be distributed across the valley. By seeking 3-5 partners per year, TVA would solicit support from other groups, agencies or academic institution to reach a broader audience and offset the costs for public outreach activities.

### 3.2.4.3. Recreation Management

As described above, TVA would continue to allocate lands for developed recreation purposes through the reservoir lands planning process and would continue to entertain commercial or public recreation requests for development of lands already zoned for developed recreation and manage existing contractual agreements.

#### **Campground Management**

TVA Campgrounds on Dam and Power Plant Reservations — TVA would continue to operate and manage the eight campgrounds and would proactively upgrade all of them.

TVA Campgrounds off Dam and Power Plant Reservations — TVA would continue to operate and manage the four campgrounds and would proactively upgrade the three with annual positive cash flow. Foster Falls campground would not be upgraded.

#### **Day Use Areas Management**

TVA would continue operate and manage the 63 day use areas located across the Valley. TVA would proactively upgrade two day use areas on dam reservations per year and two day use areas off dam reservations per year. These targets are based on the need to complete accessibility upgrades to all areas during the 20-year planning period.

#### **Public Outreach Programs**

Annual Tours — TVA would host four annual media and technology transfer tours of upgraded campgrounds and day use recreational areas, likely two each in the spring and fall.

#### **Recreational Assessment and Design Tools**

Reservoir Lands Recreation Inventory Management — TVA would maintain and annually update its inventory of recreation facilities on half of its reservoirs. This goal of a complete update on a two-year cycle is based on the need to provide reasonably accurate information on reservoir recreation opportunities.

### 3.2.4.4. Reservoir Lands Planning

Under Alternative D, TVA would adopt and implement the same reservoir lands planning strategies, land use zone definitions (including the “light industrial” restriction), and ranges in allocations as described in Alternative C (Section 3.2.3.4), including the Comprehensive Valleywide Land Plan (CVLP) described in Section 2.4.1.

### 3.2.4.5. Water Resource Management

Under Alternative D, TVA would implement most of the programs and activities associated with Alternative C but at a somewhat lower level of effort.

#### **Aquatic Monitoring and Management**

Aquatic Ecology Management — Under this alternative, TVA would join and support collaborative partnerships for enhancing the three highly diverse Clinch, Powell, and Duck watersheds as in Alternative C. This target is based on best professional judgment of a flagship level of commitment and meeting the goals of TVA’s Environmental Policy with a moderate investment of resources.

Stream and Tailwater Monitoring — Under this alternative, TVA would conduct 125 stream assessments per year; this target is based on an intermediate level of effort between those

of Alternatives A and B and Alternative C. All streams would continue to be sampled on a least a fixed, five-year rotation.

Climate Change Sentinel Monitoring— This new program would be implemented by monitoring two watersheds per year in each of the five predominant ecoregions. Two sentinel sites would be monitored in headwater streams within each watershed. These targets would provide a more robust data set than the Alternative B targets and would collect the minimal amount of data needed for trending analysis.

### **Public Outreach Programs**

Tennessee Valley Clean Marina Program — This program would aim to certify one new marinas per year. This goal is based on best professional judgment and a minimal increase in program funding.

### **Water Resource Improvement Programs**

Reservoir Shoreline Stabilization / Riparian Management — The goal of this program would be to stabilize three miles of critically eroding shoreline per year, resulting in a total of 60 miles of shoreline stabilized during the 20-year NRP planning period. This goal is based on the lower end of the range of past annual shoreline stabilization efforts.

Nutrient Source Watershed Identification and Improvement — Under Alternative C, TVA would develop reservoir-specific improvement plans for two reservoirs. This target is based on best professional judgment and the intent of meeting TVA's Environmental Policy with a moderate level of invested resources. The plans would be implemented to reduce point source phosphorus entering one reservoir and reduce suspended sediment and phosphorus inputs into two reservoirs. The numbers of reservoirs are again based on a moderate level of invested resources. The goals for nutrient reductions in terms of pounds and tons per reservoir per year are the same as those for Alternatives B and C.

## **3.3. Other Program Options Considered**

This section describes program options and approaches that were considered but eliminated from detailed evaluation in this EIS because they either do not align with TVA's Environmental Policy or did not otherwise fulfill the NRP purpose and need.

### **3.3.1. Biological Program Options**

#### **Forest and Terrestrial Greenhouse Gas Management Focus**

TVA would only conduct those programs and activities associated with forest management while seeking opportunities for increased terrestrial GHG sequestration. In addition, TVA would continue to implement those programs and activities to maintain or improve the health of TVA lands. The TVA lands allocated for Natural Resource Conservation and Sensitive Resource Management via the reservoir lands planning process would be utilized to implement this option. TVA would only conduct the programs relating to biological and cultural resources management that are required by laws and regulations, and the programs associated with recreation and water resource management would not be implemented.

#### **Dispersed Recreation and Wildlife Habitat Management Focus**

TVA would only implement those programs and activities associated with sustainable practices in dispersed recreation and promotion of ecological diversity and wildlife habitats on TVA lands while balancing the protection of cultural and ecological resources. In

addition, TVA would continue to implement those programs and activities to maintain or improve the health of its lands. The lands allocated for Natural Resource Conservation and Sensitive Resource Management via the reservoir lands planning process would be utilized to implement this option. TVA would only conduct the programs relating to biological and cultural resources management that are required by laws and regulations, and the programs associated with recreation and water resource management would not be implemented.

### **3.3.2. Recreation Program Options**

#### **Terminate Management of Recreation Facilities**

Under this program option, TVA would terminate all of the programs and activities related to recreation facility management described in Section 2.3. Those contractual agreements relating to recreation management would be honored per the terms of the agreements. The recreation facilities managed by TVA would be closed, and the programs would be terminated.

#### **Transition TVA-Managed Recreational Facilities**

Under this option, TVA would transfer or seek contractual agreements for all recreational facilities and programs as described in Section 2.3. In the circumstance where a transfer or contractual agreement could not be reached, TVA would close the facility and/or conclude the program.

### **3.3.3. Water Resource Program Option**

#### **Terminate Water Resource Improvements**

The scope of the Water Resource Management portion of this EIS has been limited to those discretionary programs or activities implemented by TVA to improve reservoir and watershed water quality proactively. Under this option, TVA would terminate all of the water resource management programs described in Section 2.5. Those contractual agreements relating to water resource improvements would be honored per the terms of the agreements.

## **3.4. Comparison of Alternatives**

Regardless of the alternative selected, some resources would not be directly affected, either adversely or beneficially, while other resources would likely be directly or indirectly affected to a small to moderate degree across the range of alternatives. The relative impacts for each resource area are shown in figures throughout Chapter 5. The potential impacts to floodplains, navigation, air quality, and climate would be relatively similar under all alternatives.

Alternative C would create the greatest potential beneficial impacts for the following resource areas: recreation, natural areas, vegetation, wildlife, wetlands, water quality, endangered and threatened species, cultural resources, land use, prime farmland, visual resources, socioeconomics, and environmental justice. Alternative A would create the least potential beneficial impacts for the following resource areas: natural areas, vegetation, wildlife, wetlands, endangered and threatened species, cultural resources, land use, prime farmland, and visual resources. Alternative B would create the least potential beneficial impacts for environmental justice, socioeconomics, water quality, and recreation. Table 3-9 provides a comparison of resources and explains how each alternative would

affect the resource. Relative beneficial impacts to the resource are shown in figures in Chapter 5.

**Table 3-9. Summary of Potential Effects by Alternative**

<b>Resource</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Custodial Management)</b>	<b>Alternative C (Flagship Management)</b>	<b>Alternative D (Blended Management)</b>
Developed Recreation	Beneficial impacts but insufficient effort meet recreation demand	Growing gap in meeting recreation demand	Increase in the quality and quantity of recreation opportunities	Increase in the quality of recreation opportunities but little change in quantity
Dispersed Recreation	Negative impact due to increased pressure on natural resources	Beneficial impact in meeting recreation demand and managing impacts	Provides the most beneficial impact in meeting recreation demand and managing impacts	More beneficial than Alternative B but less than Alternative C
Natural Areas	Slightly adverse impacts due to lack of active management	Less adverse than Alternative A	Beneficial impacts due to proactive management	Less beneficial than Alternative C
Vegetation	Negative Impacts anticipated due to spread of invasive plants	Beneficial impact due to increase in invasive plant management	Provides the greatest beneficial impact due to increase in invasive plant management	Less beneficial than Alternative C
Wildlife	No adverse impacts			
Wetlands	No materially different impacts		Beneficial impacts due to identification, protection, and restoration efforts	Provides the greatest beneficial impacts
Water Quality	Beneficial impacts due to the Water Resource Management programs	Adverse impacts due to the reduction in Water Resource Management programs	Provides the greatest beneficial impacts	More beneficial than Alternative B but less than Alternative C
Aquatic Ecology	Beneficial impacts due to ongoing stewardship management	No materially different impacts	More beneficial than Alternatives A and B	Provides the greatest beneficial impacts
Endangered and Threatened Species	No impacts to listed aquatic species and terrestrial animal species; impacts to listed plant species due to the spread of invasive plants			
Cultural Resources	Potential negative impacts to historic properties with the exception of programs	Less negative impacts than Alternative A	Greatest beneficial impacts due to proactively promoting protection and	More beneficial than Alternatives A and B but less than Alternative

<b>Resource</b>	<b>Alternative A (No Action)</b>	<b>Alternative B (Custodial Management)</b>	<b>Alternative C (Flagship Management)</b>	<b>Alternative D (Blended Management)</b>
	associated with Archaeological Resources Protection Act		preservation of resources	C
Land Use	Slightly adverse impacts due to lost opportunities for recreation and natural resource protection	Greatest potential for adverse impacts	Provides the least potential for adverse impacts	Similar to Alternative C
Prime Farmland	Beneficial impacts due to biological and cultural resources programs	Greater beneficial impacts than Alternative A	Greatest beneficial impacts	More beneficial than Alternatives A and B but less than Alternative C
Visual Resources	Reduction in the scenic attraction of TVA lands	Increasingly beneficial impact in the scenic attraction of TVA lands	Most beneficial impact in the scenic attraction of TVA lands	Similar to Alternative C
Floodplains	Negligible loss of flood control and power storage, minimal effect on floodplain values			
Socioeconomics and Environmental Justice	No impacts	Small negative impacts to the economy and quality of life	Positive impacts to the economy and quality of life	Less beneficial than Alternative C
Navigation	Minimal impacts to commercial navigation			
Air Quality	No adverse impacts			
Climate	Minimal adverse impacts			

### 3.5. The Preferred Alternative

TVA's Preferred Alternative for the NRP is Alternative D. The programs described in tier one of Alternative D would result in overall beneficial impacts to the environment while providing TVA with a concise focus for implementing stewardship programs and activities over the next 20 years.