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FINAL ENVIRONMENTAL ASSESSMENT

**LOWE'S FERRY SUBDIVISION  
PROPOSED FLOWAGE EASEMENT ABANDONMENT AND  
WATER USE FACILITIES  
Fort Loudoun Reservoir  
Blount County, Tennessee**

PREPARED BY:  
TENNESSEE VALLEY AUTHORITY

COOPERATING AGENCY:  
U.S. ARMY CORPS OF ENGINEERS

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## ACRONYMS, ABBREVIATIONS, AND SYMBOLS

<b>AADT</b>	Average Annual Daily Traffic
<b>APE</b>	Area of Potential Effect
<b>BMPs</b>	Best Management Practices
<b>Board</b>	TVA Board of Directors
<b>CFR</b>	Code of Federal Regulations
<b>CNO</b>	Choctaw Nation of Oklahoma
<b>CWA</b>	Clean Water Act
<b>DA</b>	Department of the Army
<b>DDT</b>	Dichlorodiphenyltrichloroethane
<b>EA</b>	Environmental Assessment
<b>FEIS</b>	Final Environmental Impact Statement
<b>FRP</b>	Flood Risk Profile
<b>HCM</b>	Highway Capacity Manual
<b>JBCI</b>	Jena Band of Choctaw Indians
<b>I-140</b>	Interstate 140
<b>L</b>	Left-Descending Bank
<b>LOS</b>	Level of Service
<b>Lowe's Ferry</b>	Lowe's Ferry Subdivision
<b>McKeough</b>	McKeough Land Company Inc.
<b>mph</b>	Miles per Hour
<b>msl</b>	Mean Sea Level
<b>NEPA</b>	National Environmental Policy Act
<b>NHPA</b>	National Historic Preservation Act
<b>NPDES</b>	National Pollutant Discharge Elimination System
<b>NRCS</b>	Natural Resources Conservation Service
<b>NRHP</b>	National Register of Historic Places
<b>PAH</b>	Polycyclic Aromatic Hydrocarbons
<b>PCBs</b>	Polychlorinated Biphenyls
<b>RHA</b>	Rivers and Harbors Act of 1899
<b>ROD</b>	Record of Decision
<b>SFI</b>	Sport Fishing Index
<b>SHPO</b>	State Historic Preservation Officer
<b>SMI</b>	Shoreline Management Initiative
<b>SMP</b>	Shoreline Management Policy
<b>TDEC</b>	Tennessee Department of Environment and Conservation
<b>TDOT</b>	Tennessee Department of Transportation
<b>TN</b>	Tennessee State Route
<b>TRM(s)</b>	Tennessee River Mile(s)
<b>TVA</b>	Tennessee Valley Authority
<b>UCC</b>	Utility Capacity Corporation
<b>UKBIO</b>	United Keetoowah Band of Cherokee Indians in Oklahoma
<b>USACE</b>	U.S. Army Corps of Engineers
<b>WROS</b>	Water Reservoir Opportunity Spectrum

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## CHAPTER 1

### 1.0 PURPOSE OF AND NEED FOR ACTION

McKeough Land Company Inc. (McKeough) is currently developing over 300 acres of private land on Fort Loudoun Reservoir in Blount County, Tennessee, for a residential community called Lowe's Ferry Subdivision. This property lies between Tennessee River Miles (TRMs) 621.6 and 623.1 along the left-descending bank (L). In April 2006, McKeough requested that the Tennessee Valley Authority (TVA) and U.S. Army Corps of Engineers (USACE) approve community boat slips, dredges, and fill. A joint public notice, PN07-16, was published on February 16, 2007. In November 2006, McKeough requested that TVA abandon flowage easement rights on a portion of its property to allow the construction of houses and roads (see Appendix A). A TVA public notice of this request was issued on January 22, 2007.

In 1942, TVA purchased the rights to flood two tracts of land, both below the 820-foot mean sea level (msl) contour, totaling 142 acres that are now part of the McKeough property. These flowage rights over privately owned reservoir land generally allow TVA to flood the land, remove obstructions that interfere with navigation or flood control, and erect navigation aids. McKeough owns approximately 11,000 feet of Fort Loudoun shoreline and requests that TVA abandon its flowage easement rights at five locations totaling 1.45 acres. This abandonment would allow the construction of nine homes and a road. The TVA Land Policy (TVA 2006) allows TVA to continue to consider the release or modification of flowage rights no longer necessary for TVA to operate its reservoir system.

In addition to McKeough's request for community boat slips, dredges, and fill, 45 waterfront lots located within the development have deeded rights to request TVA and USACE approval for individual water use facilities and shoreline stabilization.

#### 1.1 The Decision

TVA is considering a request for abandonment of flowage easement on approximately 1.45 acres of TVA flowage easement at five locations on the Tennessee River in Blount County, Tennessee (see Figure 1-1). In addition, TVA is considering a request by McKeough for approval under Section 26a of the TVA Act for five community boat docks, excavation, and fill. This proposal is consistent with TVA's Land Policy. The applicant proposes to create a private residential development, Lowe's Ferry Subdivision. The development would include shoreline amenities such as community boat slips and associated access walkways, dredges, and fill. The requested flowage easement abandonment would allow houses and a road to be built in five otherwise prohibited areas. The development would also include shoreline stabilization, and 45 waterfront lots eligible for individual water use facilities. TVA has prepared this environmental assessment (EA) to determine whether to abandon the flowage easement and approve the proposed facilities under Section 26a of the TVA Act.

Section 10 of the Rivers and Harbors Act of 1899 (RHA) prohibits the alteration or obstruction of any navigable waters of the United States unless authorized by the Secretary of the Army acting through the Chief of Engineers. The Tennessee River is navigable waters of the United States as defined by 33 Code of Federal Regulations (CFR) Part 329. Section 404 of the Clean Water Act (CWA) prohibits the discharge of dredged or fill material into

Lowe's Ferry Subdivision – Proposed Flowage Easement Abandonment and Water Use Facilities

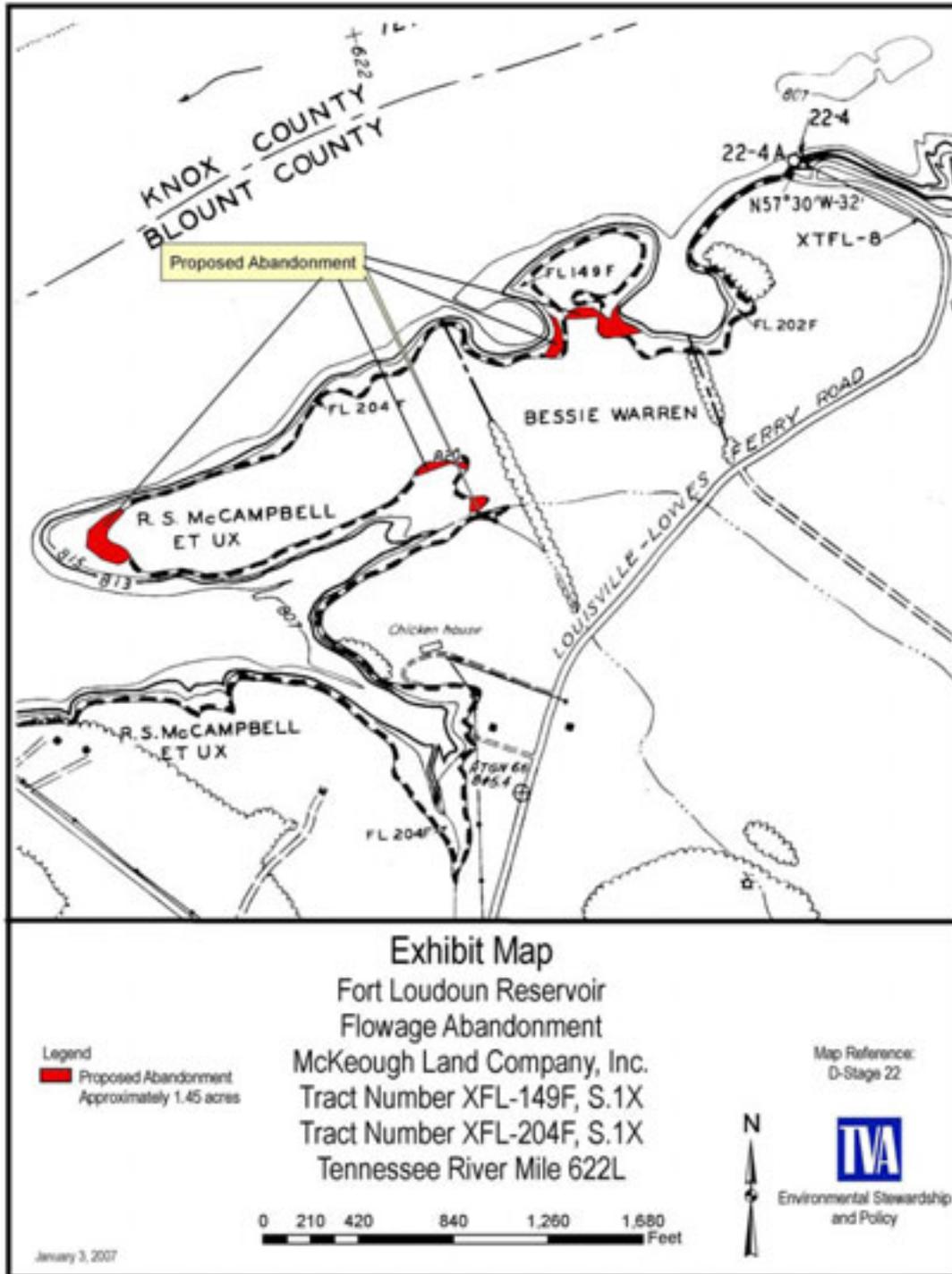


Figure 1-1. Project Exhibit Map

waters of the United States unless authorized by the Department of the Army (DA). The area between TRMs 621.6 and 623.1 and this area's unnamed tributaries are waters of the United States as defined by 33 CFR Part 328. Therefore, since the proposal involves structures and fill within a navigable waterway, Section 10 and 404 permits would be required. Since a DA permit would be required, USACE must decide whether to (1) issue a permit as proposed, (2) issue a permit with modifications and/or conditions, or (3) deny the permit. USACE is a cooperating agency in the preparation of this EA.

## **1.2. Other Pertinent Environmental Reviews or Documentation**

In April 1999, the TVA Board of Directors (Board) adopted the preferred alternative (Blended Alternative) identified in the *Shoreline Management Initiative Final Environmental Impact Statement* ((SMI FEIS) (TVA 1998)). The Blended Alternative emphasizes protection of important public shoreline values and includes a shoreline categorization system and shoreline development standards to protect sensitive resources. On November 1, 1999, TVA began implementing the Blended Alternative as its Shoreline Management Policy (SMP) in permitting actions associated with residential shoreline development on all TVA reservoirs. This Lowe's Ferry Subdivision EA incorporates practices consistent with the SMI record of decision (ROD) and the associated SMP. This EA incorporates by reference the findings in the SMI FEIS and ROD.

In May 2006, the Board approved the delegations of authority to the Chief Executive Officer to handle specified land transactions including abandonment of flowage easements up to 20 acres. In November 2006, the Board approved TVA's Land Policy to govern the retention, disposal, and planning of interests in real property. The policy allows TVA to continue to consider the release or modification of flowage rights no longer necessary for TVA to operate the system.

## **1.3. Public Involvement**

Public notice of TVA's proposed land action appeared in the *Lenoir City News Herald*, *Maryville Daily Times*, and *Knoxville News-Sentinel* on Monday, January 22, 2007. TVA received comments from eight individuals and one agency. The February 16, 2007, joint public notice (PN07-16) issued by TVA and USACE announced a public comment period through March 17, 2007. During the public comment period, Tennessee Wildlife Resources Agency (TWRA) and U.S. Fish and Wildlife Service (USFWS) submitted comments stating that the proposed dredging would remove shallow habitat and recommending the installation of spawning benches. Chapter 4.2.3 of this document addresses TWRA and USFWS concerns. In addition, the applicant has agreed to install eighteen spawning benches. The comments received during the public comment period, as well as those received earlier by TVA, were identified as relating to the following resource areas: land policy, land use, navigation and boating safety/congestion, floodplains, aquatic ecology, and threatened and endangered species. The comments received were grouped into these issue categories and are summarized in Appendix B.

TVA released the draft EA for public review on August 8, 2007. Postcards were mailed to those individuals who had previously commented on the proposed land action. In addition, the draft EA was also made available for review on the TVA Web site at: <http://www.tva.gov/environment/reports/lowesferry>. People could request written copies as needed. The draft EA was also mailed to several other federal, state, -foot and local

agencies for comment. The Tennessee Historical Commission stated, by letter dated August 23, 2007, that the project as currently proposed will not adversely affect any property that is eligible for listing in the National Register of Historic Places. On September 6, 2007, East Tennessee Development District stated this proposal has “no conflicts with the plans or programs of the District or other agencies in the region.” Comment letters received during the draft EA public comment period are included in Appendix C.

#### **1.4. Necessary Federal Permits or Licenses**

Approval under Section 26a of the TVA Act of 1933, as amended, is required for the construction of any obstructions in and along the Tennessee River or its tributaries. TVA approval is also required for earth-disturbing or construction activities on TVA flowage easement land below elevation 820-foot msl (maximum shoreline contour of Fort Loudoun Reservoir). McKeough has submitted a Section 26a application for fill, five individual structures totaling 37 community boat slips, and access walkways. Lowe's Ferry Subdivision has deeded rights to request approval for shoreline stabilization and 45 waterfront lots eligible to apply for individual water use facilities. Land use authorization (abandonment of flowage easement) has been requested for approximately 1.45 acres below elevation 820-foot msl where McKeough proposes to fill for homesite development and construction of a road. Land use requests for abandonment at locations where TVA holds flowage easement rights are required to afford any new owner an unencumbered future title.

As indicated in Section 1.3 above, construction and operation of community boat slips, fill, and excavation below elevation 820-foot msl and disturbance of wetland areas also require approval by USACE under Section 10 of the RHA and Section 404 of the CWA. The evaluation of the impact of the activity on the public interest will include application of guidelines promulgated by the U.S. Environmental Protection Agency under Section 404(b)(1) of the CWA. Before a Section 404 permit can be issued, certification must be provided by the State of Tennessee, Division of Water Pollution Control, pursuant to Section 401(a)(1) of the CWA, that applicable water quality standards will not be violated.

Storm water, potable water system, and sewer system development authorizations from the Tennessee Department of Environment and Conservation (TDEC) may be required for some development activities. TDEC, Division of Water Pollution Control, has received a request for Tennessee Aquatic Resource Alteration Permit from the applicant for dredges at three locations. Because the shoreline stabilization requests are anticipated, Water Quality Certification from TDEC would not be required at this time. Future requests for shoreline stabilization and private water use facilities would be subject to review by TDEC. The development has received the necessary National Pollutant Discharge Elimination System (NPDES) permit from TDEC for storm water discharges.

## CHAPTER 2

### 2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

Construction of Lowe's Ferry Subdivision is not water dependent, and denial of the proposed shoreline improvements would not likely cause McKeough to stop this development. Therefore, even under Alternative A (No Action), McKeough would likely develop this subdivision on this site regardless of whether TVA or USACE approve the land or Section 26a actions or the Section 404 and Section 10 actions. Under the No Action Alternative, TVA and USACE would consider future requests for individual docks and other shoreline alterations from individual lot owners.

TVA and USACE have considered the direct and indirect effects that would be caused by the federal actions related to the McKeough application. Construction of Lowe's Ferry Subdivision is not dependent upon construction of the road at the desired location; neither is it dependent upon approval of the flowage easement abandonment, community boat slips, dredges, fills, individual water use facilities, and shoreline stabilization. In its application to TVA and USACE, McKeough has indicated that no federal financial assistance will be used in this project. McKeough proposes to fund the total project costs, estimated to be about \$6.3 million. Other than assessing the indirect effects on resources caused by their approvals, the federal permitting agencies have neither control nor responsibility for actions taken by McKeough on its private land above elevation 820-foot msl and outside the approximate 103-acre area of potential effect (APE) (see Section 3.6).

The scope of this EA covers the APE within Lowe's Ferry Subdivision and effects on resources along the shoreline up to elevation 820-foot msl, and other portions of the site are being evaluated as appropriate in consideration of potential direct, indirect, and cumulative effects. It is contemplated that some of the 45 prospective waterfront landowners in the subdivision may submit individual Section 26a permit applications to TVA, and Section 10 and Section 404 applications to USACE for building private water use facilities and shoreline stabilization along this portion of the Tennessee River in the future. The permitting authorities, including TDEC, would likely individually review such future activities. In fact, lots have been sold in the subdivision, and TVA has already begun receiving Section 26a applications from individual lot owners. The completion of the various environmental inventories and evaluations as a part of this EA and the SMP would facilitate and expedite agency reviews of these individual applications. Future shoreline vegetation restoration, enhancement, and management over the private land would be encouraged by the permitting authorities and, where appropriate, tied to mitigation or conditions of approvals.

#### 2.1. Alternatives

##### 2.1.1. Alternative A – The No Action Alternative

Under this alternative, TVA would not abandon the flowage easement, and TVA and USACE would not issue the requested Section 26a, Section 10, and Section 404 permits. Consequently, construction of the proposed water use facilities and construction of homes and a road in the requested flowage easement abandonment areas would not occur. Other components of the development are currently under construction and lot sales are

underway. TVA and USACE believe that development of the site would likely take place whether or not TVA or USACE takes any action to approve the land or Section 26a actions.

### **2.1.2. Alternative B – Applicant's Proposal**

McKeough is developing a new residential subdivision on the Tennessee River, Fort Loudoun Reservoir. In order to facilitate the development, McKeough has requested that TVA and USACE approve community boat slips, dredges, and fill, and that TVA approve flowage easement abandonment to allow houses and a road to be built on land in five areas totaling approximately 1.45 acres below the 820-foot msl elevation. The property over which TVA holds flowage easement rights requires an abandonment to afford any new owner an unencumbered future title.

McKeough's conceptual residential development for the 300-acre site is comprised of 229 homesites, roads, sewer, water, power, other utilities and infrastructure improvements, the placement of fill for nine homesites and a roadway, five individual structures totaling 37 community slips, access walkways, and dredges at three locations. The projected total number of shoreline lots and interior lots would be 69 and 160, respectively. Lowe's Ferry has deeded rights to request approval for shoreline stabilization, and 45 waterfront lots are eligible to apply for individual water use facilities.

The community docks were originally proposed to be built in four locations and constructed of galvanized steel framing with wood or composite decking and high-density polyethylene flotation. Upon completion of the community docks, the boat slips would accommodate 71 small watercrafts. Site A would contain one community structure accommodating eight small watercrafts and extend 100 feet from the normal summer pool shoreline. This structure was shortened to 100 feet from the originally requested 139 feet to reduce interference with recreational watercraft in the area. This structure would serve lots 45-50, 120, and 121. Site B would contain one community structure accommodating six small watercrafts and extend 125 feet from the normal summer pool shoreline. This structure would serve lots 76-80 and 85. Site H would contain two community structures accommodating 46 small watercrafts and extend 330 feet from the normal summer pool shoreline. These structures would serve 35 percent of the interior lots. Site I would contain one community structure accommodating 11 small watercrafts and extend 150 feet from the normal summer pool shoreline. This structure would serve the lots near 157 and 158. The maximum wintertime dock configuration would not extend beyond the summer configuration. A 10-foot wide, hinged access walkway would connect the dock to the shoreline.

The original design proposed dredging at three locations. Dredging would be conducted from the shore with a dragline during winter pool. Site C would be deepened to elevation 803-foot msl by removing 3,000 cubic yards of material for facilitating boat access into a small cove. Permit applications for individual water use facilities would also be entertained by TVA and USACE in this cove. Site D would be deepened to elevation 803-foot msl by removing 2,000 cubic yards of material for facilitating boat access into a small cove. Site E would be deepened to elevations 807- to 805-foot msl by removing 1,640 cubic yards of material for ensuring sufficient navigation depths into a small cove. Spoil material from the dredges would be placed in an upland area previously designated by the applicant and reviewed by TVA (see Figure 3.2 and Appendix A).

McKeough plans to construct a clubhouse, parking area, and swimming pool. These facilities, which comprise the common area, along with platted common land around the facilities, would be deeded to the Lowe's Ferry Homeowners Association for the sole use of the homeowners association. McKeough does not intend to operate the community docks as a commercial facility, and fees collected would be used to maintain and manage the docks properly. Lowe's Ferry Homeowners Association would manage the facilities to ensure compliance with applicable environmental laws and regulations.

McKeough requests the abandonment of flowage easement rights associated with a roadway and nine lots. The nine lots affected are 1, 23, 24, 28, 29, 41, 42, 43, and 56 and would be filled to maintain a minimum floor elevation above TVA's Flood Risk Profile (FRP). The proposed fills on these lots total 1.95 acre-feet. Lots 28 and 29 are adjacent to a proposed roadway to be built at the northern end of the property at approximately TRM 622.1L. This roadway would be filled to maintain a minimum road elevation above TVA's FRP and allow access to Lots 24, 25, 27, and 28. Approximately 0.89 acre-foot of fill material would be used for roadway construction along with Lots 28 and 29. The total amount of fill for all construction below elevation 820-foot msl elevation is approximately 2.84 acre-feet. The fill material would be obtained on site from elevations below the 820-foot msl elevation, specifically from the lots mentioned above and Lots 25 and 27.

TVA staff conducted a field review of Lowe's Ferry Subdivision on June 18, 2007, and discovered that fill material for the proposed roadway had been placed below the 820-foot msl elevation. The applicant was notified in writing on June 27, 2007, that TVA approval was required for activities such as the placement of fill below the 820-foot msl elevation.

It is contemplated that 45 prospective landowners in the residential development may submit individual Section 26a permit applications to TVA for building private water use facilities and shoreline stabilization in the future. USACE would review all future applications for water use facilities along this portion of the Tennessee River and determine whether Section 10/404 permits can be granted. TVA under Section 26a would individually review all such future activities. The completion of the various environmental inventories and evaluations as a part of this EA and of the SMP would facilitate and expedite TVA's review of individual Section 26a applications. Future shoreline vegetation restoration, enhancement, and management over the private land would be encouraged by TVA and, where appropriate, tied to mitigation or conditions of Section 26a permits.

Private water use facilities at the Lowes Ferry development are defined as:

- Docks or piers with 1,000 square feet or less of surface area excluding access walkways.
- Water-based boathouses/covered boat slips with 1,000 square feet or less of surface water area excluding access walkways.
- Electrical lifts for recreational watercraft.
- Mooring buoys or posts for recreational watercraft.
- Enclosed storage space for water use equipment equal to or less than 32 square feet.

- Power lines, poles, and underground utilities to serve water use facilities.
- Fish attractors designated and located according to TVA guidelines.

TVA staff conducted a field review of Lowe's Ferry Subdivision on August 20, 2007, and discovered that riprap stabilization had been placed along the shoreline of Lot 52. The property owner was notified in writing on September 10, 2007, that TVA approval was required for such activities and various other shoreline alterations.

There are paved (maintained) city access roads to the property entrance. McKeough proposes to conduct \$1.8 million in improvements to the existing access roads. Approximately 5.2 miles of roadway would be constructed or improved to serve the residential development and provide access to the community structures. These roads would be constructed to the standards of the City of Louisville, Tennessee, and would be dedicated to the city as public roads after their eventual inspection and acceptance. The city would assume maintenance and responsibility for the subdivision roads.

The Fort Loudoun Electric Cooperative would provide electric power service to the Lowe's Ferry development. The South Blount Utility District provides potable water services to this area and plans to extend availability to provide water service to the subdivision. Municipal sewer services are unavailable on or near the property. Consequently, McKeough has contracted with Utility Capacity Corporation (UCC) to design an on-site sewage collection, treatment, and disposal system. The sewage system would consist of individual treatment units located on each lot, a treated sewage effluent collection system, and disposal of treated sewage effluent via slow-rate land application. When constructed, the sewer facility would be owned and operated by UCC. An easement over an 11.8-acre common area within Lowe's Ferry Subdivision would be granted to UCC and would be the location for the wastewater treatment drainfield for the entire subdivision. It would be sown and maintained in grass and kept inside a chain-link fence.

### **2.1.3. Alternative C – Applicant's Proposal With Mitigation**

All features of Alternative B are incorporated under Alternative C. Additionally, under Alternative C, USACE and TVA have identified the following measures for reducing environmental impacts. These measures were formulated as a result of TVA's technical review and in response to comments received from the public. The applicant would be required to implement the following mitigation measures:

- A total of 18 spawning benches would be installed near Sites A and I.
- The applicant would be required, through deed restrictions, to create visual protection buffers surrounding potential historic properties located nearby. The measures would include enhancing an existing tree line, blocking the proposed development in Lots 1 to 12 from view at the Gillespie House, and limiting the height of new construction in these lots to below the level of the intervening vegetation.
- Testing of the sediment from the dredge would be required for volatile organics (benzene, toluene, ethylbenzene, total xylenes), semivolatile organics (polycyclic aromatic hydrocarbons [PAHs], etc.), polychlorinated biphenyls (PCBs), pesticides/insecticides (chlordane, lindane, heptachlor epoxide, dichlorodiphenyltrichloroethane [DDT], dieldrin, and endrin), and total metals

(mercury, arsenic, copper, chromium, cadmium, lead, nickel, and zinc). The level of contamination found (if any) would determine how the spoil would be handled.

- Material dredged would be tested for toxic materials (as listed above) before dredging commences. If toxic materials are detected, dredging plans would be evaluated in light of the extent and level of those contaminants at the site. Dredging would not proceed without a dredging plan that guarantees that no toxic material would be released to the environment.
- All saturated spoil would be dewatered using berms, silt fencing, or other silt-control devices positioned in such a way as not to allow silt-laden water to reenter the reservoir. The method of dewatering needs prior approval from TVA.
- All uncontaminated dredged material must be removed to the previously reviewed upland site, contained in such a manner as to prevent its return to any water body or wetland, and permanently stabilized to prevent erosion.

The following special and routine permit conditions would be established as conditions in TVA's Section 26a permit in order to reduce the potential for adverse environmental effects.

### **Special Conditions**

- All color schemes for water use facility exteriors would be visually compatible with natural background colors and include dark roofs on all water use facilities.
- The lots served by the community docks would not be eligible for individual water use facilities or private docks.
- The spoil material would be disposed of and contained on designated land lying and being above the 820-foot msl contour. Every precaution would be made to prevent the reentry of the spoil material into the reservoir.
- Any future facilities or equipment subject to flood damage would be located above or flood proofed to the TVA FRP elevation 819.5.
- Any future development proposed within the limits of the 100-year floodplain, elevation 816.9, would be consistent with the requirements of Executive Order 11988.
- All future development would be consistent with the requirements of the *TVA Flood Control Storage Loss Guideline*.
- The total lakeward extent of Site H should not exceed 330 feet as measured from normal summer pool elevation of 813 feet above msl.
- The applicant is advised in writing that Site H would front onto a commercial navigation channel and a high-use recreational boating area, and may be vulnerable to wave wash and possible collision damage from passing vessels. A built-in wave attenuation system is recommended.

- The lakeward extent of Site A may not exceed 100 feet; the lakeward extent of Site B may not exceed 125 feet; and the lakeward extent of Site I may not exceed 150 feet from normal summer pool elevation of 813 feet above msl.
- Sites A, B, and I would be located in coves with other recreational boaters and may be vulnerable to wave wash and possible collision damage. There would be no “no-wake” zones associated with these facilities.
- Lots 168, 169, 170, 171, and 228 are located on a stretch of shoreline that has been classified by TVA Navigation staff as restricted due to close proximity to the navigation channel. Dock applications for these lots would be subject to individual review by TVA Navigation staff, and dock lengths would be limited or docks may be prohibited entirely on these lots so as not to pose a safety hazard to navigation.

### **Routine Conditions**

- For all electrical services permitted, a disconnect would be located at or above the 820-foot msl contour that is accessible during flooding.
- TVA would retain the right to flood the area below 820-foot msl contour and would not be liable for damages resulting from flooding.
- Silt curtains would be placed around the perimeter of the dredge area, so as not to allow silt-laden water outside the work area.
- All floating structures must be securely anchored to prevent them from breaking free during a flood event.

## **2.2. Comparison of Alternatives**

Under all alternatives, there are no uncommon terrestrial plant communities, Wild and Scenic Rivers or their tributaries, streams on the Nationwide Rivers Inventory, or managed areas and/or ecologically significant sites that would be affected. Wildlife observed in the project area is considered common both locally and regionally. There would be no effects to threatened or endangered plants or animals. There would be no effects to natural areas or prime farmlands.

Under the No Action Alternative, TVA believes the residential development would still occur. In fact, lots are being sold now, with no guarantee that there would be waterfront amenities provided. The ongoing development of residential subdivisions in nearby areas on Fort Loudoun Reservoir without access to community facilities provides additional evidence to support TVA's analysis. If the federal permitting authorities have no jurisdiction or deny the project, effects of residential development may still likely be minor. McKeough would be required to comply with state and local laws, regulations, and ordinances designed to minimize effects on wetlands, water quality, floodplains, aquatic and terrestrial ecology, and other environmental resources (see Chapter 4, Environmental Consequences).

Action Alternatives B and C do not include any development in the three wetlands present along the shoreline. However, wetlands are present in the areas where individual water use facilities could be permitted, and permit conditions would be specified to avoid impacts

to wetlands to the extent practicable. Cumulative impacts to wetlands as the result of maintenance to vegetation would be insignificant.

Best management practices (BMPs), proper management of storm water runoff from construction activities, mitigation associated with the dredge spoil material, and subsequent operation of the proposed facilities are expected to result in insignificant impacts to reservoir water quality. McKeough would test reservoir bottom sediments prior to dredging and not dispose of any contaminated spoil material on site. If warranted, dredging would proceed only in accordance with a dredging plan that ensures that no toxic material would be released to the environment. Mitigation associated with the neighboring historic property would ensure no impact to the resource. The impacts to visual resources associated with the proposed action would be insignificant. There would be no impacts to the 100-year floodplain, and the proposal is consistent with Executive Order 11988.

The higher concentration of watercraft around the proposed community facilities would likely contribute to a slight acceleration of erosion of surrounding areas of unprotected shoreline; however, any potential for erosion would rapidly diminish with increasing distance from the community facilities. The increase in recreational vessels as a result of the additional boat slips would not significantly impact boater congestion. Construction noise would be noticeable for a short time, and there would be increases in noise from land-based and water-based sources over the long term. Because of the current background noise and the existence of similar activities and noise sources in the neighborhood, the modest increases in project noise would not amount to a significant impact. The proposed Lowe's Ferry Subdivision would generate and distribute additional traffic to the existing transportation network. The applicant intends to spend \$1.8 million on road improvements surrounding the development. Since no significant impacts are expected and the population in the area is generally sparse, no disproportionate impacts to disadvantaged populations would be likely to occur under either action alternative.

### **2.3. The Preferred Alternative**

TVA's preferred alternative is the modified proposed action, Alternative C. USACE has no preferred alternative as regulations prevent them from being for or against an applicant's proposal during permit or approval evaluations.

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## CHAPTER 3

### 3.0 AFFECTED ENVIRONMENT

Fort Loudoun Dam is located at TRM 605; Fort Loudoun Reservoir is the uppermost in the chain of nine TVA reservoirs that form a continuous navigable channel from there to Paducah, Kentucky. Fort Loudoun is connected by a short canal to Tellico Reservoir on the nearby Little Tennessee River. Water is diverted through the canal to Fort Loudoun for power production. The canal also offers commercial barges access to Tellico without the need for a lock. At full pool, Fort Loudoun Reservoir has a surface area of 14,600 acres and 379 miles of shoreline. The generating capacity of Fort Loudoun's four units is 155,600 kilowatts of electricity.

As previously stated, the project area lies between TRMs 621.6 to 623.1L on Fort Loudoun Reservoir in Blount County, Tennessee. Currently, there are no other major development projects being proposed for this portion of the Fort Loudoun Reservoir. Previous shoreline development has resulted from creation of the Carl Cowan Park downstream of the project site. In addition, several other shoreline subdivisions have been developed both northeast and south of the project site along the shoreline of Fort Loudoun Reservoir.

In 1942, TVA purchased two tracts of flowage easement, FL149F and FL204F, at this location, both below the 820-foot msl elevation. TVA owns flowage easement rights over approximately 142 acres of land below elevation 820-foot msl within these two tracts of land. These easement rights, over privately owned reservoir land, generally provide for TVA to flood the land, remove obstructions that interfere with the navigation or flood control, and erect navigation aids. The applicant plans to develop Lowe's Ferry Subdivision on approximately 300 acres of the adjoining private property. Of property planned for development, approximately 1.45 acres is located below the 820-foot msl elevation.

TVA manages 379 miles of shoreline on Fort Loudoun Reservoir. The Lowe's Ferry Subdivision owns approximately 2.3 miles of property along the Tennessee River on Fort Loudoun Reservoir. This proposal occupies less than 1 percent of all shoreline property along Fort Loudoun Reservoir.

### 3.1. Terrestrial Ecology

Based on review of the TVA Natural Heritage database and field investigations, staff biologists characterize habitat conditions and wildlife communities within the project area. Specific habitat features such as caves, bluffs, glades, and wetlands as well as overall habitat composition are noted. If rare species or their habitats are identified, further field investigations would be performed and mitigation to protect local populations of rare species would be proposed.

#### 3.1.1. Plants

The Lowe's Ferry development on Fort Loudoun Reservoir is located in the Southern Limestone/Dolomite Valleys and Low Rolling Hill level IV ecoregion. This ecoregion is a subdivision of the Ridge and Valley level III ecoregion and is located between the Blue Ridge Mountains on the east and Cumberland Plateau on the west. This ecoregion is a relatively low-lying region made up of roughly parallel ridges and valleys that were formed

through extreme folding and faulting events in past geologic time (Griffith et al. 2001). Land cover includes intensive agriculture, urban, and industrial, or areas of thick forest. Common forest types include white oak forest, bottomland hardwood forest, and riparian forest in addition to grassland barrens intermixed with cedar-pine glades (Griffith et al. 2001).

The vegetative (physiognomic) class observed within the project footprint (5.75 acres of excavation and fill areas and the 1.45 acres of flowage easement) is almost 100 percent herbaceous vegetation with a few scattered trees along the shoreline. On lands within and surrounding the Lowe's Ferry development, additional vegetative classes present are herbaceous vegetation, evergreen-deciduous forests, and shrubland.

The grass/forbs habitat occurs primarily as managed mowed grass fields and pastures. Common weedy species found are Bermuda grass, Johnson grass, lesser burdock, narrowleaf plantain, orchard grass, stinking chamomile, tall fescue, and various other broadleaved species. On lands adjacent to the project, the grass/forb habitat accounts for approximately 90 percent of the area and has a similar herbaceous flora as the project site.

A few scattered trees (dogwood, eastern red cedar, hackberry, silver maple, slippery elm, tall false indigo, and tulip poplar) were found along the shoreline in the area of the flowage easement. On lands adjacent to the project, approximately 6 percent of the land cover is evergreen-deciduous forests with pine-oak hickory communities common on dry slopes with loblolly and shortleaf pine, southern red oak, and mockernut hickory. Other species in the overstory are blackgum and hackberry. Eastern red cedar, flowering dogwood, persimmon, and sassafras were common in the understory. Black willow, mimosa, silky dogwood, sycamore, and tag alder were found growing along the shoreline. American beech, Carolina buckthorn, flowering dogwood, hackberry, pawpaw, redbud, southern red oak, sugar maple, and white oak were found on more mesic slopes with ebony spleenwort, poison ivy, Virginia creeper, and winter creeper common on the forest floor. On the edges of the forest and roadsides, box elder, bush honeysuckle, Chinese privet, greenbrier, muscadine, prairie rose, sawbrier, summer grape, and trumpet creeper were observed.

Scrub-shrub wetlands were observed at the backs of coves and wet depressions within the development and account for the remaining 4 percent of the total area. Shrubs include black willow, Chinese privet, elderberry, silky dogwood, and tag alder. Herbaceous vegetation is dominated by rushes (soft rush and path rush) and sedges (false hop sedge, Frank's sedge, and fox sedge), blackberries, common anglepod, common boneset, cut grass, deer tongue grass, greenbrier, rose mallow, and touch-me-not.

There are no uncommon terrestrial plant communities, designated critical plant habitat, or otherwise noteworthy botanical areas occurring on or adjacent to the Lowe's Ferry development.

Invasive exotic plant species occurring within and near the project area include autumn olive, bush honeysuckle, Chinese privet, Japanese honeysuckle, Japanese stilt grass, mimosa, multiflora rose, sericea lespedeza, tree-of-heaven, and winter creeper. All of these species have the potential to impact the native plant communities adversely because of their potential to spread rapidly and displace native vegetation. Essentially the entire proposed project is on land in which the native vegetation has been extensively altered as a result of previous land use history in the form of agricultural practices. All of these invasive species are Rank 1 (severe threat) and are of high priority to TVA (James 2002).

### **3.1.2. Animals**

Terrestrial habitat within the project area is early successional habitats (herbaceous vegetation with a few scattered trees) and several coves along the reservoir shoreline. The landscape surrounding the project footprint was previously pasture used by cattle, but it is currently being converted to a housing development. Although 90 percent pasture, the surrounding land also includes some evergreen-deciduous forests and shrubland.

Early successional habitats support numerous common bird species, especially where small areas of forested habitat form edge habitat. These species include mourning dove, eastern phoebe, Carolina chickadee, tufted titmouse, Carolina wren, white-eyed vireo, song sparrow, field sparrow, orchard oriole, indigo bunting, eastern towhee, and American goldfinch. White-tailed deer and eastern cottontail are also frequently observed in early successional habitats. Within forest fragments, such as those in the nearby landscape, Virginia opossum, striped skunk, gray squirrel, and rodents such as white-footed mouse are common. Reptiles frequently found in this habitat include racer, black rat snake, brown snake, and eastern garter snake.

Shoreline coves, especially those containing forested banks and emergent vegetation, provide habitat for common amphibians such as green frog, southern leopard frog, and bullfrogs. These coves also provide habitat for several species of herons and egrets. Green heron, great blue heron, and black-crowned night herons were observed in the cove habitat of this project area.

Ten caves and two heron colonies have been reported within 3 miles of the project area. All caves are 0.5 mile or greater from the project area, and both heron colonies are greater than 2 miles away. No additional caves, heron colonies, or other unique habitats were observed during field investigations. The project area does not contain any designated critical habitat for federally protected species.

### **3.2. Aquatic Ecology**

A Sport Fishing Index (SFI) has been developed to measure sport fishing quality for various species in Tennessee and Cumberland Valley reservoirs. The SFI is based on the results of fish population sampling by TVA and state resource agencies and, when available, results of angler success as measured by state resource agencies (i.e., bass tournament results and creel surveys). Based on SFI data, Fort Loudoun rated below average for all categories, except largemouth bass in 2005. Data on the fish species collected have been published or posted on the Internet for all samples taken between 1994 and 2004. However, the numbers of each species collected are only available from 2003 to 2006. In total, there were 48 species collected from Fort Loudoun Reservoir between 2000 and 2006.

The State of Tennessee advises against eating catfish or largemouth bass over 2 pounds from Fort Loudoun Reservoir because of PCB contamination. The state has also issued a fish consumption advisory against eating any largemouth bass caught in the Little River embayment. TVA collected channel catfish and largemouth bass from the reservoir for tissue analysis in autumn 2005. The results, which will be provided to state agencies in Tennessee, were similar to those of previous years.

The Reservoir Vital Signs Monitoring Program included annual fish sampling on Fort Loudoun Reservoir from 1994 until 2006. Fish are included in aquatic monitoring programs

because they are important to the aquatic food chain and because they have a long life cycle, which allows them to reflect water quality conditions over time. Fish are also important to the public for aesthetic, recreational, and commercial reasons. Ratings are based primarily on fish community structure and function using a metric known as the Reservoir Fish Assemblage Index. Also considered in the rating is the percentage of the sample represented by omnivore and insectivores, overall number of fish collected, and the occurrence of fish with anomalies such as diseases, lesions, parasites, deformities, etc. (TVA 1999). The fish community in Fort Loudoun Reservoir has consistently rated in the “fair” to “good” range for the forebay and “poor” to “good” for the transition sampling stations. Land use in the area has primarily been associated with agriculture and public recreation, but in the last few years, aquatic habitat in the area has been disturbed by residential and/or commercial facilities.

### 3.3. Threatened and Endangered Species

#### 3.3.1. Plants

A review of the TVA Natural Heritage database indicated there are no federally listed and six state-listed species recorded from within 5 miles of the Lowe's Ferry development. In addition, two federally listed taxa are known from Blount County, Tennessee (Table 3-1). Current rankings of state- and federally listed species were verified through the NatureServe Web site (NatureServe 2007).

TVA biologists conducted a field survey on June 14, 2007, and found no state- or federally listed species within the Lowe's Ferry development. The table below describes the state-listed plant species reported from within 5 miles of the Lowe's Ferry development and federally listed species known from Blount County, Tennessee.

**Table 3-1. State- and Federally Listed Plant Species Near the Lowe's Ferry Site**

Common Name	Scientific Name	Federal Status	State Status/Rank
Appalachian bugbane	<i>Cimicifuga rubifolia</i>	--	THR/S3
Heavy-fruited sedge	<i>Carex gravida</i>	--	SPCO/S1
Marsh pea	<i>Lathyrus palustris</i>	--	SPCO/S1
Pursh's wild-petunia	<i>Ruellia purshiana</i>	--	SPCO/S1S2
Spreading avens	<i>Geum radiatum</i>	END	END/S1
Spreading false-foxglove	<i>Aureolaria patula</i>	--	THR/S3
Sweetscent ladies'-tresses	<i>Spiranthes odorata</i>	--	END/S1
Virginia spirea	<i>Spirea virginiana</i>	THR	END/S2

Federal abbreviations: END = Listed Endangered; THR = Listed Threatened

State status abbreviations: END = Endangered; THR = Threatened; SPCO = Special Concern

State rank abbreviations: S1 = Critically imperiled with less than 5 occurrences; S2 = Imperiled with 6 to 20 occurrences; S3 = Rare or uncommon with 21 to 100 occurrences

#### 3.3.2. Terrestrial Animals

No federally or state-listed terrestrial animals were observed during field investigations on June 14, 2007. A review of the TVA Natural Heritage database during June 2007 indicated that there are five federally listed animal species reported from Blount County, Tennessee,

and three state-listed species reported from within 3 miles of the proposed activities. This area also includes a record of nesting ospreys, a species considered rare by the Tennessee Natural Heritage Program, but not state-listed. Table 3-2 describes federally listed terrestrial animal species reported from Blount County and state-listed terrestrial animal species reported from within 3 miles of the project site.

**Table 3-2. State- and Federally Listed Terrestrial Animal Species Near the Proposal**

Common Name	Scientific Name	Federal Status	State Status
<b>Amphibians</b>			
Eastern Hellbender	<i>Cryptobranchus alleganiensis alleganiensis</i>	-	NMGT (S3)
Tennessee Cave Salamander	<i>Gyrinophilus palleucus</i>	-	THR (S2)
<b>Birds</b>			
Bald Eagle	<i>Haliaeetus leucocephalus</i>	LT	NMGT (S3)
Osprey	<i>Pandion haliaetus</i>	-	NOST (S3)
Red-cockaded Woodpecker	<i>Picoides borealis</i>	LE	EXTI (S1)
<b>Mammals</b>			
Carolina Northern Flying Squirrel	<i>Glaucomys sabrinus coloratus</i>	LE	END (S1)
Gray Bat	<i>Myotis grisescens</i>	LE	END (S3)
Indiana Bat	<i>Myotis sodalis</i>	LE	END (S1)
Southeastern Shrew	<i>Sorex longirostris</i>	-	NMGT (S4)

Federal Status: LE = Listed Endangered; LT = Listed Threatened

State Status: END = Endangered; THR = Threatened; NMGT = In Need of Management; NOST = No Status  
S1 = Critically Imperiled; S2 = Very Rare or Imperiled; S3 = Rare or Uncommon; S4 = Abundant

**Eastern hellbenders** are found in large and midsized, fast-flowing, rocky rivers at elevations below 762 meters (Petranka 1998). Hellbenders are known from the tributaries of the Tennessee River, but no habitat for this species exists within the project area.

**Tennessee cave salamanders** occur in caves or similar subterranean habitats. Tennessee cave salamanders are known from a cave approximately 2.8 miles from the project area. No caves or other suitable subterranean habitat for this species exists in or near the project area.

**Bald eagles** typically nest in forested habitats near large bodies of water such as reservoirs, rivers, and riparian wetlands. One bald eagle pair has been reported nesting in Blount County, and the nest locations of this pair occur approximately 5 miles from the project site. Although a few large trees exist on the project area, the lack of forested habitat in general indicates poor habitat suitability for bald eagles in the project footprint.

**Ospreys** nest on both human-made and natural structures in or near large bodies of water. Numerous osprey nests exist on Fort Loudoun Reservoir, with the closest nest occurring

0.3 mile from the project area. Abundant suitable habitat exists for this species all along Fort Loudoun Reservoir.

**Red-cockaded woodpeckers** inhabit old-growth pine forests with an open understory. The species is considered extirpated from the state of Tennessee, and all red-cockaded woodpecker records from Tennessee are historical; habitat for this species does not exist within the project area.

**Carolina northern flying squirrels** inhabit high-elevation spruce-fir and occasionally hardwood forests down to 4,000 feet. Habitat for this species does not exist within the project area.

**Gray bats** roost in caves year-round and typically forage over open-water habitats including streams, rivers, and reservoirs. A cave historically used by gray bats occurs 0.5 mile from the project site on Keller Bluff. Two other gray bat caves occur on nearby Keller Bend, both greater than 1 mile away, and a fourth gray bat cave occurs 2.5 miles away. No new caves were found on the project area, but foraging habitat for gray bats exists along Fort Loudoun Reservoir.

**Indiana bats** roost in caves during the winter and typically form summer roosts under the bark of dead or dying trees (Menzel et al. 2001). Their summer roosts are found in forests with an open understory, usually near water (Romme et al. 1995), and Indiana bats forage primarily in forested areas along streams or other corridors. The nearest cave containing an Indiana bat roost is approximately 20 miles from the project area. No caves or foraging areas were found on the project site, and existing trees near the project area form only poor-quality forested habitat. No suitable habitat for this bat exists in the project area.

**Southeastern shrews** are found in a variety of habitats from fields to woods, but are usually near moist areas (Linzey 1998). This species has been found in disturbed habitat such as abandoned fields with dense ground cover of honeysuckle, grasses, sedges, and herbs, and suitable habitat for this species exists within the project area.

### 3.3.3. Aquatic Species

After reviewing the proposed site location, one state-listed aquatic species, the blue sucker, is known from Fort Loudoun Reservoir within a 10-mile radius of the construction area. The blue sucker is an inhabitant of swift waters over firm substrate in big rivers (Etnier and Starnes 1993). However, the habitat in the project area is slow-moving water with a mud, clay, or cobble substrate, not preferred by the blue sucker. Three federally listed and five state-listed species occur below the dam and in other tributary watersheds within 10 miles of the project area, but none near the proposed project area. Since there are no threatened or endangered species or their habitats near the site, the proposed project would not affect federally listed or state-listed species.

### 3.4. Wetlands

Wetlands in the proposed project area are primarily confined to low-lying, poorly drained areas associated with streams and with the reservoir shoreline. A wetland delineation was conducted for the entire Lowe's Ferry development and indicated 10 wetlands totaling 5.8 acres are present on the site (Figure 3-1). Three of these wetlands are present on the shoreline and within the area affected by the applicant's proposal and future applications for individual facilities (Table 3-3). The remaining seven wetlands are present on the interior of the 303-acre tract and are associated with intermittent streams; these areas are not

discussed in this analysis because they are outside the scope of the federal actions related to the McKeough application.

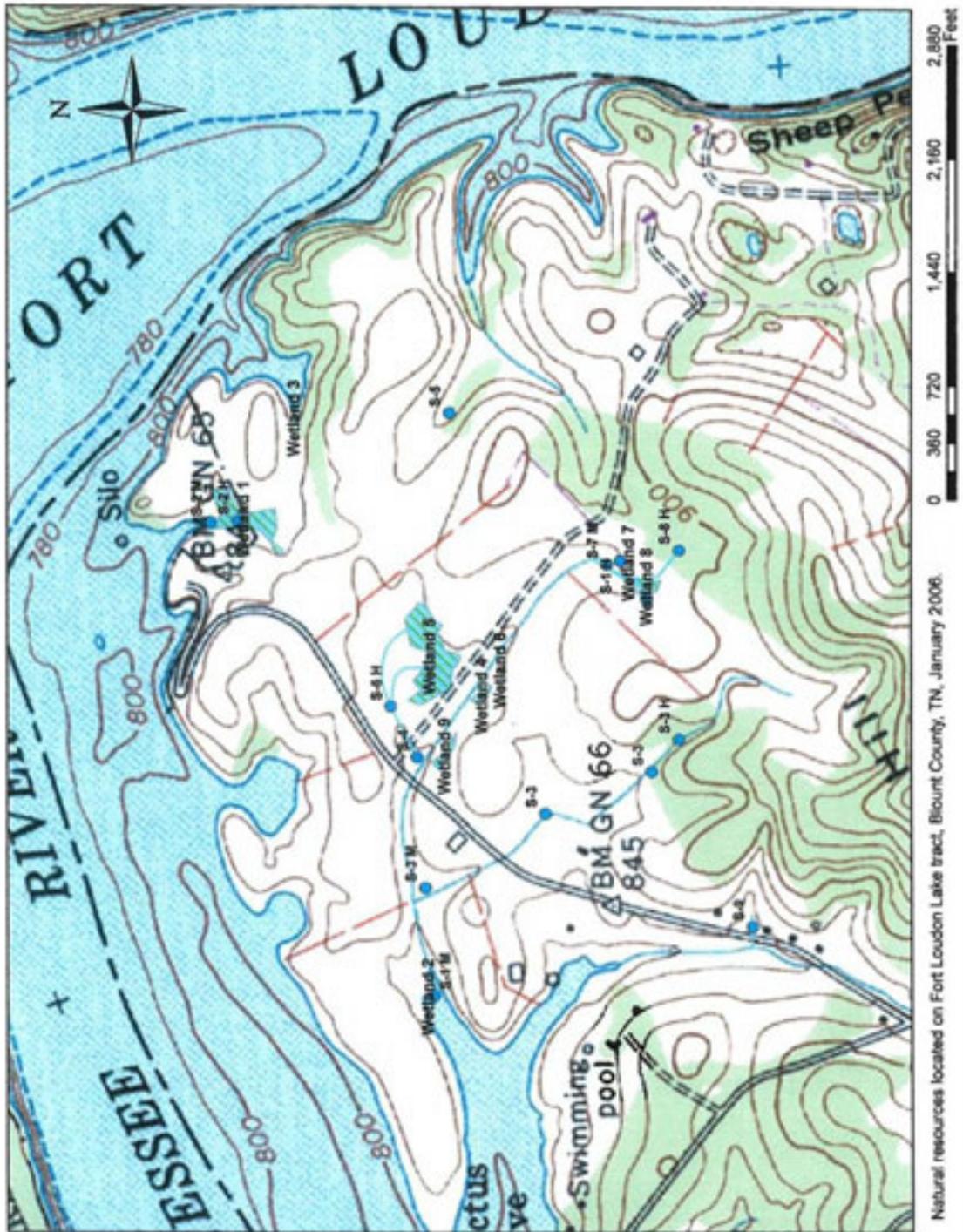


Figure 3-1. Wetlands Located Near Lowe's Ferry Development

**Table 3-3. Wetlands Located Within the Proposal**

Wetland ID	Type <sup>a</sup>	Wetland Acreage
W1	PFO/PSS	1.88
W2	PEM	0.04
W3	PSS	0.08
<b>Total Acres</b>		<b>2.0</b>

<sup>a</sup> Classification codes as defined in Cowardin et al. 1979:

PEM = palustrine emergent, persistent vegetation

PSS = palustrine scrub-shrub, broadleaf deciduous

PFO = palustrine forested, broadleaf deciduous

Wetland 1 (W1) is a 1.88-acre forested/scrub-shrub wetland located in the northwest corner of the development. Dominant vegetation includes sycamore, black willow, tag alder, and silky dogwood. Wetland 2 (W2) is a very small (0.04 acre) emergent wetland composed of soft rush, path rush, false hop sedge, Franks' edge, and fox sedge. Wetland 3 (W3) is a very small (0.08 acre) scrub-shrub wetland composed of black willow, silky dogwood, and tag alder. Wetlands 1-3 are associated with drainages at three coves on the reservoir and provide some degree of function for storm water retention, erosion control, toxicant absorption, flood control, and wildlife habitat.

### 3.5. Visual Resources

The physical, biological, and cultural features of an area combine to make the visual landscape character both identifiable and unique. Scenic integrity indicates the degree of unity or wholeness of the visual character. Scenic attractiveness is the evaluation of outstanding or unique natural features, scenic variety, seasonal change, and strategic location. Where and how the landscape is viewed would affect the more subjective perceptions of its aesthetic quality and sense of place. Views of a landscape are described in terms of what is seen in foreground, middleground, and background distances. In the foreground, an area within 0.5 mile of the observer, details of objects are easily distinguished in the landscape. In the middleground, normally between 1-4 miles from the observer, objects may be distinguishable, but their details are weak and they tend to merge into larger patterns. Details and colors of objects in the background, the distant part of the landscape, are not normally discernible unless they are especially large and standing alone. The impressions of an area's visual character can have a significant influence on how it is appreciated, protected, and used.

Vegetation on the site is predominately hardwoods interspersed with pines and other evergreen species. The site is characterized by notable peaks on the back-lying property and is highly visible from the reservoir. The parcel can be seen by the public in the immediate foreground from the water and from visitors at Carl Cowan Park and Admiral Farragut Park to the north. It is visible from numerous residential developments to the northwest and southwest. The scenic value of the tract is good, based upon its visibility and minor human alterations occurring along the shoreline.

The shoreline east of the parcel is mainly undeveloped and is characterized by woodlands along the shoreline and some open pasture areas. When viewed in context with developments to the northwest and southwest, this parcel provides a transition zone of light

residential development to a mainly unaltered landscape with positive visual attributes. Access to the property would be from the main channel of Fort Loudoun Reservoir by boat and along Lowe's Ferry Road to the south.

### **3.6. Cultural Resources**

For at least 12,000 years, the lands along the Tennessee and French Broad Rivers have been an area for human occupation, which became more intense through succeeding cultural periods. In the East Tennessee area, archaeological investigations have demonstrated that Tennessee and the eastern Ridge and Valley region were the setting for each one of these cultural/temporal traditions, from the Paleo-Indian (10,000-8000 B.C.), the Archaic (8000-1200 B.C.), the Woodland (1200 B.C.-A.D. 1000), and the Mississippian (A.D. 1000-1500), to the Protohistoric-Contact Period (A.D. 1500-1750). Prehistoric archaeological stages are based on changing settlement and land use patterns and artifact styles. Each of these broad periods is generally broken into subperiods (Early, Middle, and Late), which are also based on artifact styles and settlement patterns. Smaller time periods known as 'Phases' are represented by distinctive sets of artifactual remains. In addition, historic era cultural traditions have included the Cherokee (A.D. 1700-present) and European- and African-American (A.D. 1750-present) occupations.

The Paleo-Indian Period (10,000-8000 B.C.) represents the documented first human occupation of the area. Highly mobile bands of hunters and gatherers dominated the settlement and land use pattern of this period. The subsequent Archaic Period (8000-1200 B.C.) represents a continuation of the hunter-gatherer lifestyle. Through time, there is increasing social complexity and the appearance of horticulture late in the period. The settlement pattern during this period is characterized by spring and summer campsites. Increased social complexity, reliance on horticulture and agriculture, and the introduction of ceramic technology characterize the Woodland Period (1200 B.C.-A.D. 1000). The increased importance of horticulture is associated with a less mobile lifestyle as suggested by semipermanent structures. The Mississippian Period (A.D. 1000-1500), the last prehistoric period in East Tennessee, is associated with the pinnacle of social complexity in the Southeastern United States. This period is characterized by permanent settlements, maize agriculture and chiefdom-level societies. The Protohistoric-Contact Period (A.D. 1500-1750) consisted of the effects of European contact in the region. During this period, European contact arose through trade and construction of European settlements along the borders of Native American territory. European-American settlement increased in the early 19th century as the Cherokee were forced to give up their land.

With the expansion of the United States of America, this location became part of Tennessee. Blount County was formed in 1795 from portions of Knox County. The Tennessee River became a part of a significant transportation and trade network throughout the region, and the use of ferries was indispensable to cross the river until 1872 (Rule 1900). A number of ferries (Lowe's Ferry, Wright's Ferry, Louisville Ferry, and Bond's Ferry) were built and used near the vicinity of the project area (Patton et al. 2006). By the mid-1800s, railroads were constructed, and a more passable roadway system connected Knoxville to Charleston and other prominent cities at that time (McArthur 1976). With this advantage, East Tennessee had a more mixed economic base than the middle and western portions of the state by 1860. When the Civil War began, East Tennessee was generally not supportive to the Secessionist movement because of a low slave population and a diverse economy (D'Angleo 2001). Although a number of significant Civil War battles occurred in the region, no skirmishes are recorded in the project area. After the Civil War,

Lowe's Ferry Subdivision – Proposed Flowage Easement  
Abandonment and Water Use Facilities

East Tennessee had social and economic instability, as did most of the Confederate States. Most of the area relied on agriculture and farming. With the development of TVA in 1933, the economy and lifeways changed with the wide availability of low-cost electrical services. This, in turn, brought successful ventures in economic development and recreation to East Tennessee and the surrounding communities.

The National Historic Preservation Act of 1966 (NHPA) and the Archaeological Resources Protection Act of 1979 provide that TVA and USACE protect significant archaeological resources or historic properties located on TVA lands or affected by TVA undertakings. In response to this federal legislation, TVA conducts surveys to record historic properties. Based on the level of federal involvement with this project, the APE for historic properties was considered approximately 103 acres of the 300-acre subdivision (Figure 3.2).



Figure 3-2. Area of Potential Effect for Lowe's Ferry Development

### **Archaeological Resources**

A Phase I cultural resources survey of the APE was conducted by BHE Environmental Inc. From September 14-21, 2006, and January 10-11, 2007, an archaeological survey was conducted on land above summer pool within the proposed APE, excluding the fill-disposal area. Three archaeological sites were identified but were severely eroded. None of the sites contained intact archaeological resources. The consultant recommended the archaeological sites as ineligible for listing on the National Register of Historic Places (NRHP). In December 2006, TVA Cultural Resources staff inspected the shoreline between winter and summer pool elevation, and no historic properties were identified. During June 2007, TVA staff was notified that a fill-disposal area was proposed outside of the previously determined APE. TVA Cultural Resources reviewed the area, which had been extensively disturbed by construction and landscaping activities, and found no effect on archaeological resources.

### **Historic Structures**

During the same time the archaeological survey was conducted, BHE Environmental Inc. investigated a visual APE for effects on historic architectural resources. The visual APE is considered to be 0.5-mile boundary from the direct APE or direct line of sight, whichever is less. In June 2007, TVA Cultural Resources staff reviewed effects on historic properties (historic structures) regarding the placement of fill.

Five historic architectural resources were recorded within the 0.5-mile boundary: BT-637, BT-2443, BT-2444, BT-2445, and KN-3787.

BT-637 (Veronica Walker House) – a single-story, hall-and-parlor-type house, built ca. 1915. The house is in poor condition because of neglect and deterioration. Due to the poor condition and common architectural type, the structure is considered ineligible for listing on the NRHP. Furthermore, the project area is not within the direct line of sight from the house.

BT-2443 (James Gillespie House) – the primary residence of the James Gillespie agricultural complex. The house was constructed of limestone ca. 1802 and is a two-story, three-bay, federal-influenced structure built in a rectangular plan. New windows and a rear two-story frame addition were added later. It is in fair to poor condition because of general neglect and deterioration caused by water damage. Despite these alterations and conditions, the original exterior form and design of the house remain intact. This house is listed on the NRHP.

BT-2444 (Gillespie Springhouse) – a two-story, stone springhouse that is the only antebellum stone outbuilding identified in the county. It is in fair to poor condition but retains its original form and materials. The roof is gone, and the foundation is deteriorating. The structure is considered eligible for listing on the NRHP.

BT-2445 (Gillespie Barn) – a small garage/barn in fair to poor condition that retains its original form and materials. The structure is considered ineligible for listing on the NRHP.

KN-3787 (John Fitzgerald House) – a folk-Victorian house that was likely constructed ca. 1840. Many alterations have occurred, and the property has suffered considerable vandalism and deterioration. Based on the substantial compromises to its integrity, the structure is considered ineligible for listing on the NRHP.

Due to potential visual adverse effects to the NRHP-listed historic properties, additional review of the direct line of sight of the Gillespie House (BT-2443) was conducted because of its proximity to the project area. It was determined that the screening effects of distance, vegetation, and topography would not adversely affect the integrity of the Gillespie House. A potential exception was construction of residences in the closest lots to the Gillespie House. Commitments to enhance an existing tree line, block the proposed development in Lots 1 to 12 from view at the Gillespie House, and limit the height of new construction in these lots to below the level of the intervening vegetation were made. With these commitments and screening effects of distance, vegetation, and topography, there would be no adverse effect on historic structures.

### **3.7. Water Quality**

TDEC classifies Fort Loudoun Reservoir for fish and aquatic life, irrigation, livestock watering and wildlife, recreation, and public water supply. Fort Loudoun Reservoir is listed on the State of Tennessee's Section 303(d) list as impaired (i.e., not supporting its designated uses) due to contaminated sediment from PCBs.

TVA initiated a Vital Signs Monitoring Program in 1990 to monitor the ecological conditions of TVA reservoirs using indicator parameters as a measure of overall ecological "health." Fort Loudoun Reservoir is monitored annually because it is the first reservoir on the main channel of the Tennessee River and because a number of water-quality issues have been identified in past years. Most TVA reservoirs are monitored every other year once baseline data have been established.

Samples are taken from the forebay at TRM 605.5, from midreservoir at TRM 624.6, and from the inflow at TRM 652. Parameters used as indicators are dissolved oxygen, chlorophyll, sediment quality (sediment toxicity tests and/or sediment chemical analyses including heavy metals, pesticides, and PCBs), benthic macroinvertebrate, and fish communities. Fort Loudoun Reservoir had an overall "fair" rating in 2003 and 2005 and an overall "poor" rating in 2000, 2001, 2002, and 2004. In 2005, dissolved oxygen levels rated good at the forebay and midreservoir locations. This parameter usually rates good except during years with exceptionally low flows, as in 1999, 2001, and 2002, when dissolved oxygen rated poor at the forebay. TVA has installed aeration equipment to add oxygen to the deep water above Fort Loudoun Dam and to improve conditions immediately downstream. At the forebay and midreservoir sampling locations, chlorophyll concentrations were high during most sampling periods in 2005 and rated poor. High chlorophyll concentrations are a consistent issue on Fort Loudoun, rating poor at both sites from 1995 through 2002. However, the higher flows in 2003 resulted in the lowest summer chlorophyll average to date at the transition site and the first good rating since 1994.

The bottom life rated poor at the forebay and inflow monitoring locations and at the lower end of the good range at the midreservoir. Bottom life at the midreservoir typically rates fair due to greater diversity, which includes a better representation of intolerant species such as mayflies (*Hexagenia*). Sediment quality rated fair at both the forebay and midreservoir monitoring locations. Low levels of chlordane were detected in the sediment samples from both locations. Chlordane, PCBs, and zinc have exceeded suggested limits in some previous years.

The State of Tennessee has issued a bacteriological advisory for the Sinking Creek embayment of Fort Loudoun Reservoir (1.5 miles from the head of the embayment to the

cave). Fecal coliform bacteria levels in 2006 were within the State of Tennessee's guidelines for water contact with four exceptions: Yarbber Peninsula Beach, Willow Point Marina boat ramp, Concord Park Beach—the cove, and Tennessee Wildlife Resources Agency's Perrys Mill canoe access site.

### 3.8. Recreation and Recreational Boating Safety/Congestion

Fort Loudoun encompasses 14,600 water surface acres at full summer pool and supports approximately 7.5 million recreation user days per year. In addition, Fort Loudoun adds over \$401 million to the state economy annually. With its close proximity to urban centers, Fort Loudoun is an important resource for recreational users of the Tennessee Valley.

A recreation survey of visitors to Fort Loudoun Reservoir was conducted during the summer season of 2005, using a combination of on-site observation, brief visitor intercept interviews, and a mail survey. The purpose of the study was to obtain information about the nature and extent of visitors' recreational use of the reservoir and related economic expenditures, attitudes, and preferences.

**Table 3-4. Fort Loudoun Recreational Activities**

<b>Activity</b>	<b>n</b>	<b>%</b>
Pleasure boating (including house boating)	164	43.7
Fishing (from boat)	150	39.9
Swimming/beach use	74	19.8
Water-skiing/tubing/other towing	69	18.4
Sightseeing	58	15.4
Viewing wildlife	53	14.2
Riding a personal watercraft	45	11.9
Fishing (from shore)	40	10.6
Picnicking	23	6.2
Hiking/walking/jogging	19	5.0
Other activities	17	4.6
Canoeing/kayaking	16	4.2
Bicycling	5	1.4
Horseback riding	4	1.0
Camping	3	0.7
Sailing	2	0.5
Hunting	2	0.4
Windsurfing	0	0.0

Note: Respondents could check more than one activity.

Visitors were intercepted at public lake access sites, including boat ramps, marinas, and campgrounds, and resorts with a boat ramp or marina. Although the survey included questions about land-based recreation activities (e.g., hiking, hunting, and horseback riding), sampling was conducted only at water-access sites, so people who only accessed TVA lands for recreation at nonwater access points were not included in the study.

The two most popular recreational activities were pleasure boating and fishing from a boat with 43.7 percent and 39.9 percent of survey respondents participating respectively (Table 3-4).

Visitors were asked to report their perception of the numbers of other recreationists and the associated acceptable level in which they occur. Almost 53 percent of the respondents felt there were too many jet skis, and 35.4 percent thought there were too many pleasure boaters, while a much lower 15.8 percent felt there were too many people (Table 3-5).

**Table 3-5. Perceived Number on Fort Loudoun Reservoir**

Recreationists	n	Don't know	Too few (1)	About right (2)	Too many (3)
Personal watercraft/jet skis	351	4.9%	2.5%	39.8%	52.8%
Pleasure boaters	349	5.4%	2.3%	56.8%	35.4%
Homes/cottages along the banks	336	7.4%	4.2%	54.4%	34.0%
People	326	5.6%	2.0%	76.5%	15.8%
Boat fishermen	346	7.3%	6.9%	77.0%	8.7%
Commercial establishments	339	14.1%	34.6%	45.5%	5.9%
Sailboats	338	22.0%	18.6%	54.7%	4.7%
Campers	338	34.9%	16.8%	45.5%	2.8%
Bank fishermen	339	14.8%	16.0%	66.5%	2.6%
Canoes/row boaters/kayaks	330	28.5%	20.1%	50.6%	0.8%

These data show that the addition of boaters and jet skis has the ability to detract from the recreational experience at a much higher level than other activities. This could be because Fort Loudoun has experienced tremendous growth in the amount of boating traffic and can be generally viewed as a reservoir where crowding has the ability to become an issue.

TVA staff examined Water Reservoir Opportunity Spectrum (WROS) (Hass et al. 2004) boating capacity coefficients that aid in examining the recreational experience and the associated levels of boating density on specific reservoirs.

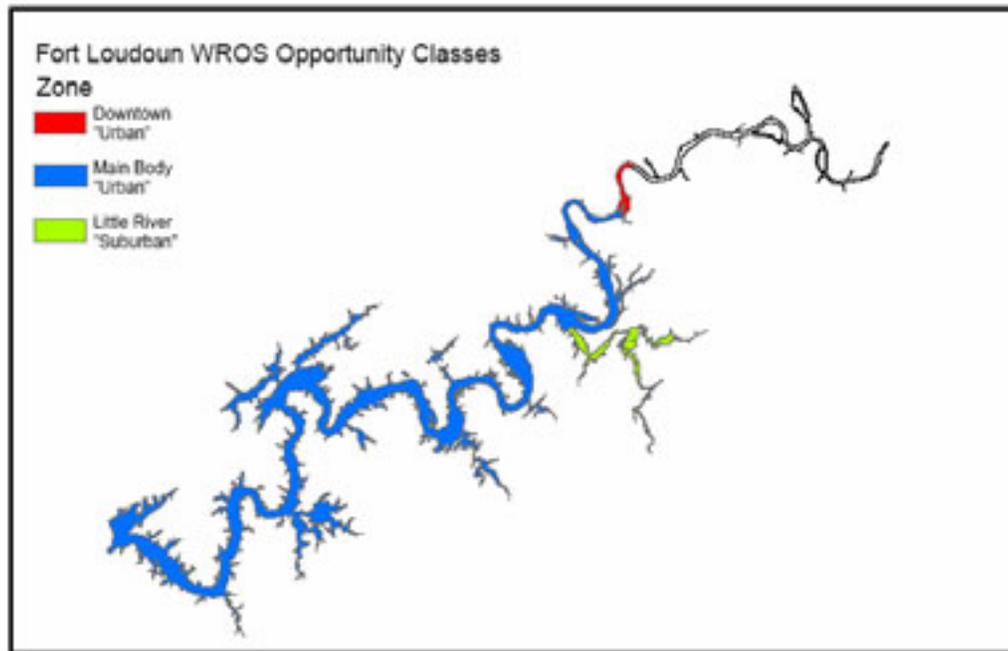
WROS defines the setting available to achieve a particular recreation experience. The WROS is broken down into six opportunity classes from the greatest impact to the least (Urban, Suburban, Rural Developed, Rural Natural, Semiprimitive, and Primitive) based on the way people experience their natural surroundings, in particular a body of water (Table 3-6). Research shows that people not only seek to participate in recreation activities, but they also seek specific settings in order to enjoy a given experience and its benefits. In WROS, settings, experience, and benefits are listed as components of a recreation opportunity. Several attributes are used to categorize the reservoir. Physical attributes include degree of development, degree of resource modification, and distance to development on the water. Managerial attributes include the degree of public or commercial access facilities and degree of management presence. Social attributes

include the degree of visitor concentration or presence, degree of nonrecreational use, and the degree of diverse recreation activities.

**Table 3-6. WROS Opportunity Classes as a Function of Density**

Opportunity Class	Density (Acres per Boat)
Urban	1-10
Suburban	10-20
Rural Developed	20-50
Rural Natural	50-110
Semiprimitive	110-480
Primitive	480-3,200

Three management zones were identified and defined by the recreation assessment for Fort Loudoun Reservoir. A WROS opportunity class was calculated and assigned for each. Most of Fort Loudoun Reservoir (“main body”) was designated as Urban, with the riverine section flowing through Knoxville also identified as Urban (but with differing riverine character), and finally the Little River corridor was Suburban (Figure 3-3).



**Figure 3-3. WROS Opportunity Classes on Fort Loudoun Reservoir**

Boating units were identified by unit access analysis. That is, all access points on the reservoir were tallied, and an assumption of the percentages of boats that would use the reservoir at different times of the season/week (for each type of access point) was compiled in a matrix to determine the WROS opportunity class. The project in question occurs within the Main Body section of Fort Loudoun Reservoir. For purposes of this analysis, only the

Main Body will be considered in the calculations. In addition, calculations for the average summer weekend day (before and after project) will be used in significance determination. Fort Loudoun Main Body opportunity class is currently 8 surface acres per boat (Table 3-7), which falls into the Urban category (1-10 acres per boat).

**Table 3-7. WROS Opportunity Class Calculation for Main Body of Fort Loudoun (Current Conditions)**

Main Body	Average Summer Weekday	Average Summer Weekend Day	Peak Summer Holiday
Estimated boating units in use	850	1554	2129
Surface acres per boating unit	15	8	6

The addition of 116 (71 community facility and 45 individual) slips (the amount proposed in the project) does not change the surface acres per boating unit for an average summer weekend day (Table 3-8). Furthermore, the designation continues to be “Urban.”

**Table 3-8. WROS Opportunity Class Calculation for Main Body of Fort Loudoun Considering Project in Question**

Main Body	Average Summer Weekday	Average Summer Weekend Day	Peak Summer Holiday
Estimated boating units in use	868	1582	2169
Surface acres per boating unit	14	8	6

### 3.9. Navigation

Fort Loudoun Reservoir was created by the construction of Fort Loudoun Lock and Dam by TVA. Completed in 1943, Fort Loudoun Lock and Dam created the final slack-water navigation pool in the Tennessee River system, allowing commercial navigation to operate the entire length of the river from the mouth at Paducah, Kentucky, to the headwaters at Knoxville, Tennessee, a distance of 652 miles. The Tennessee River waterway is in turn linked to the 12,000-mile National Inland Waterway in several places and supports Valley, national, and international commerce.

Today, commercial navigation on Fort Loudoun Reservoir is an important component of the transportation infrastructure of East Tennessee and the regional economy. Typically, between 500,000 and 600,000 tons of material are moved by barge in and out of three active and three intermittent barge terminals in the Knoxville area. In 2006, some 573,000 tons of commodities moved by barge on Fort Loudoun Reservoir. These shipments included asphalt, salt, sand and gravel, chemicals, scrap metal, and equipment. The use of the waterway rather than truck or rail saved area shippers and their business partners

\$5.3 million in transportation costs. These savings are ultimately passed along to the consumer and help to keep the cost of living relatively low in East Tennessee.

The location of the proposed action, between TRMs 621.6L and 623.1L, is 20 miles above the dam, and the reservoir exhibits distinctive riverine characteristics as it meanders toward Knoxville 25 miles upstream. At the lower or downstream end of the Lowe's Ferry property, the navigation channel favors the opposite (right-descending) bank. Here the river is about 2,200 feet wide, and the distance to the marked navigation channel is approximately 1,500 feet. Immediately opposite the downstream end of the Lowe's Ferry property is Knox County's Carl Cowan Park, the location of a popular public boat-launching ramp.

As one follows the river upstream to the upper end of the proposed subdivision, the river bends to the southeast and the channel and commercial sailing line veer toward the left-descending bank. At the upstream end of the subdivision property, the river is about 1,600 feet wide, and the distance to the navigation channel is about 100 feet. The only navigation aid in the vicinity is the U.S. Coast Guard-maintained Prater Light and Daymark located midriver at TRM 632.3.

### **3.10. Floodplains**

As noted previously, the area potentially impacted by the proposed project extends from TRMs 621.6L through 623.1L. The 100-year floodplain at TRM 623.1L is the area lying below elevation 816.9 msl. The TVA FRP elevation is 819.5 msl. The FRP is used to control flood damageable development on TVA lands. At this location, the FRP elevation is equal to the 500-year flood elevation. The flood elevations at TRM 623.1 were used for the entire area because of the minor differences between those and the elevations at TRM 621.6. Blount County, Tennessee, has adopted the 100-year flood as the basis for its floodplain regulations, and any development must be consistent with these regulations. The floodway adopted by Blount County, Tennessee, is that portion of the Tennessee River channel and floodplain that must remain open and unobstructed to allow passage of floodwaters in order to prevent increases in upstream flood elevations.

### **3.11. Land Use and Prime Farmland**

This development site for Lowe's Ferry Subdivision contains approximately 300 acres on Fort Loudoun Reservoir. This reservoir provides a variety of benefits. In addition to safe navigation travel, Fort Loudoun Reservoir assists in storing floodwaters that protect the city of Chattanooga and other cities along the Tennessee River, as well as producing over 140,000 kilowatts of electricity every hour. Additional benefits of the reservoir include providing drinking water to municipalities along the river, preserving aquatic and wildlife habitats, and providing opportunities for a wide variety of recreational activities (Fort Loudoun Reservoir Recreation Study 1997). TVA seeks to balance these benefits as it considers the impacts of such requests as the Lowe's Ferry Subdivision.

Prime farmland is defined by the U.S. Department of Agriculture as land that has the best combination of chemical and physical characteristics for producing food, feed, forage, fiber, and oilseed crops. To be considered prime farmland, it cannot be urban, built-up, or covered by water. Concern regarding the conversion of prime farmland to urban or industrial use prompted the creation of the 1981 Farmland Protection Policy Act. This act requires that all federal agencies evaluate impacts to farmland prior to converting the land permanently to nonagricultural use. Form AD 1006, "Farmland Conversion Impact Rating,"

must be completed by federal agencies with assistance from the Natural Resources Conservation Service (NRCS) before an action is taken.

The APE for Lowe's Ferry Subdivision covers approximately 103 acres. Table 3-9 lists the acreages of the prime farmland soils and other soils in the area. Only 22.5 acres is considered prime farmland.

**Table 3-9. Soils in the Area Potentially Affected by the Lowe's Ferry Development**

Soil Survey Unit Symbol	Map Unit Name	Rating	Acres in APE
Ck	Cumberland silty clay, severely eroded, moderately steep phase	Not prime farmland	18.7
Cl	Cumberland silty clay loam, eroded, gently sloping phase	Prime farmland	14.8
Cm	Cumberland silty clay loam, eroded, sloping phase	Not prime farmland	30.7
Cn	Cumberland silty clay loam, eroded, moderately steep phase	Not prime farmland	5.8
Ec	Emory silty clay loam, gently sloping phase	Prime farmland	1.5
Ed	Etowah silt loam, eroded, gently sloping phase	Prime farmland	1.5
Ee	Etowah silt loam, eroded, sloping phase	Not prime farmland	2.2
Le	Lindside silt loam	Prime farmland	4.7

Of the 379 miles of shoreline along the reservoir, TVA only retained ownership of approximately 20 percent of those miles (74 miles). In addition, TVA retained flowage easement rights over 3,269 acres. These rights enable TVA to control certain types of developments to prevent flood damage and reduce impacts associated with reservoir operations.

McKeough has requested that TVA abandon 1.45 acres of flowage easement rights over two tracts of land, FL149F and FL204F. The abandonment of these rights will facilitate the development of nine lots and a road in five different areas. McKeough would be responsible for all costs associated with the abandonment including paying the difference in the fair market value of the property without the flowage easement.

Comments received during the public scoping period expressed concerns that this request does not comply with TVA's Land Policy. Both tracts of land involved in this abandonment are privately owned, and TVA retained the right to flood up to a certain elevation point. The

Land Policy states that “TVA will continue to consider the release or modification of flowage rights no longer necessary to TVA to operate the system.” Determination of the need for these landrights for system operations is considered during TVA’s environmental and programmatic review.

### 3.12. Roads/Traffic

The proposed development is located in Louisville, Tennessee, on Fort Loudoun Reservoir in Blount County and is approximately 15 miles southwest of downtown Knoxville, Tennessee.

Primary access is provided to this area by Interstate 140 (I-140), which is a principal, four-lane divided highway with wide lanes and shoulders. This route traverses a gently rolling area in a northwest to southeast direction from Interstate 40 to U.S. Highway 129 and has a 65 miles per hour (mph) speed limit.

From I-140, access to the area is via Exit 9 to Tennessee State Route (TN) 333, Old Lowe’s Ferry Road, and Lowe’s Ferry Road. TN 333 is primarily a Class II, two-lane road with wide lanes and average to minimal shoulder widths. A Class II highway is one in which motorists do not necessarily expect to travel at high speeds. Class II facilities most often serve relatively short trips, the beginning and ending portions of longer trips, or trips for which sightseeing plays a significant role. TN 333 has a posted speed limit of 45 mph.

Old Lowe’s Ferry Road is a rolling, Class II, rural, two-lane highway with adequate lane widths and no paved shoulder areas. This route has a posted speed limit of 40 mph. Lowe’s Ferry Road is also a rolling, Class II, two-lane rural route. The lanes on Lowe’s Ferry Road are very narrow with no paved shoulders. The pavement itself is in very poor condition for much of the section from Old Lowe’s Ferry Road to the development. The speed limit varies from 20 to 30 mph.

Table 3-10 shows the TVA projected 2008 average annual daily traffic (AADT) counts based on 2006 traffic counts provided by the Tennessee Department of Transportation (TDOT).

**Table 3-10. Projected 2008 Traffic Counts (AADT) for Affected Routes**

Route Name	2008 TVA Projected AADT Range
I-140	42,232
	49,570
TN 333	7,614
Old Lowe’s Ferry Road	2,601
Lowe’s Ferry Road	No Data Available

Figure 3-4 outlines the general location of the proposed development, the likely routes that would be impacted by the additional traffic, and the traffic counts for the routes.



Figure 3-4. Overall Location Map With Traffic Counts

### 3.13. Natural Areas

A review of data from the TVA Natural Heritage database indicated that the proposed action is within 0.5 mile of two public parks, Admiral Farragut Park and Carl Cowen Park. Additional parks within 3 miles of the proposed action include Concord Park, Keller Bend Park, and Louisville Point Park. Mud Flats Cave Protection Planning Site also is within 3 miles of the proposed action. No Nationwide Rivers Inventory streams or Wild and Scenic Rivers are in the vicinity of the proposed action.

- **Admiral Farragut Park**, approximately 0.4 mile north and across Fort Loudoun Reservoir from the proposed action, is a 23-acre shoreline scenic park managed by Knox County Parks and Recreation. It connects to Carl Cowen Park by a 0.5-mile nature walking trail. Other park facilities include a picnic shelter, a forest/lakefront trail, and a disc golf course.
- **Carl Cowen Park**, approximately 0.4 mile north and across Fort Loudoun Reservoir from the proposed action, is a 32-acre shoreline scenic park managed by Knox County Parks and Recreation. Park facilities include a splash pad, basketball court, boat ramp, fishing areas, picnic shelters, playground, soccer field, tennis courts, and walking loop.

- **Concord Park**, another Knox County park along the banks of Fort Loudoun, is approximately 2.0 miles northwest of the proposed action. The 500-acre park offers facilities for several outdoor activities including baseball, softball, football, volleyball, tennis, skating, walking, boating, fishing, junior golf, and mountain biking, and includes The Point at Concord Park (in-line hockey) and The Cove at Concord Park (beach area with lake swimming).
- **Keller Bend Park** is a 16-acre Knox County park featuring a 0.5-mile nature trail. It is approximately 1.7 miles southeast of the proposed action.
- **Louisville Point Park**, a 16-acre park along the Tennessee River (Fort Loudoun Reservoir) managed by Blount County Parks and Recreation, is approximately 2.4 miles southeast of the proposed action. The park has facilities for covered picnicking and grilling, boating, swimming, children's play, volleyball, and horseshoes.
- **Mud Flats Cave Protection Planning Site** is a 40-acre tract approximately 2.8 miles north of the proposed action. The tract surrounds a cave that has habitat suitable for the Tennessee cave salamander. Protection planning sites were once compiled by the Tennessee Protection Planning Committee, now a defunct entity, to inventory and help protect the state's biota.

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## CHAPTER 4

### 4.0 ENVIRONMENTAL CONSEQUENCES

#### 4.1. Terrestrial Ecology

##### 4.1.1. Alternative A

Adoption of Alternative A would not result in any project-related impacts to the terrestrial ecology of the region or to the introduction or spread of invasive terrestrial plant species. There would also be no impacts to wildlife populations or habitats. The herbaceous and sparse woody vegetation growing within TVA flowage easement adjacent to Fort Loudoun Reservoir would continue to grow and be affected occasionally by stream bank erosion from water level fluctuations.

##### 4.1.2. Alternative B

Almost 100 percent of the project footprint occurs on lands with previous and current levels of disturbance to the native plant communities in the form of managed agricultural practices. Since there are no rare terrestrial plant communities present on or adjacent to the project area and the communities present are common and representative of the region, proposed Alternative B would not adversely impact these resources.

The proposed action would allow five community and up to 45 individual docks to be built along the shoreline section of Fort Loudoun Reservoir. Dredging 2.91 acres of lake coves would reduce the amount of shallow water habitat used as foraging habitat for species of turtles and wading birds. The banks of the three dredge areas contain open pastureland with primarily exotic grasses and few trees to provide perches and cover for herons or basking sites for turtles, and these areas are not considered quality habitat for wildlife. Fill and abandoned flowage easement areas are within pastureland containing primarily exotic grasses. They contain poor habitat for wildlife and, therefore, changes to these areas would only minimally impact wildlife.

The proposed addition of boat slips along the banks of Fort Loudoun Reservoir would allow for increased boat traffic within the reservoir. The increased disturbance is expected to be minimal due to the boat traffic currently existing on Fort Loudoun Reservoir.

All caves, heron colonies, and osprey nests known from the vicinity are at sufficient distances from the project site and, therefore, impacts to these resources are not expected under this alternative. This alternative is not expected to result directly, indirectly, or cumulatively in significant impacts to terrestrial wildlife or their habitats.

##### 4.1.3. Alternative C

Impacts under Alternative C would be similar to Alternative B; no significant impacts to the spread of invasive species are expected as a result of proposed Alternative C.

## **4.2. Aquatic Ecology**

### **4.2.1. Alternative A**

For the No Action Alternative, the existing conditions and trends for aquatic life in Fort Loudoun Reservoir are expected to continue.

### **4.2.2. Alternative B**

Under this proposed action alternative, five community docks would be built in addition to three areas dredged for boat access. Individual lot owners could also apply for shoreline alterations. Under the McKeough proposal, short-term turbidity associated with construction of the docks and the dredging of the coves would soon dissipate and would have only insignificant effects on aquatic life. Turbidity could cause a temporary loss of light penetration to the bottom substrate, but this would not noticeably affect aquatic fish or benthic organisms in the area. Because other shoreline alterations, if approved, would likely occur separately and over time, direct, indirect, and cumulative aquatic ecological impacts are expected to be minor.

### **4.2.3. Alternative C**

Dredging would remove shallow water habitat for fish and benthic organisms in three areas and effects would be offset through mitigative measures provided in comments by Tennessee Wildlife Resources Agency and U.S. Fish and Wildlife Service. As described, mitigating the effects of shallow water habitat loss would be done with spawning benches, at a recommended rate of 32 benches per acre. The applicant proposes three dredges in Sites B, C, and D at a total of 1.23 acres. However, after inspecting the site and the shallow water habitat available for spawning, it was determined that only Sites C and D have habitat suitable for spawning with sand and/or gravel. Site B's habitat is loose mud and silt, which is not good for spawning habitat. The total area for Sites C and D that would have shallow water mitigation is 0.552 acre. The total number of benches the applicant would need to install would be 18, and these benches would be placed near Sites A and I. TVA and USACE would require construction-related BMPs to further reduce potential water quality and associated aquatic biota impacts for other proposed actions.

## **4.3. Threatened and Endangered Species**

### **4.3.1. Alternative A**

Since no known populations of endangered or threatened state- or federally listed plant species occur within the area of the Lowe's Ferry development, no project-related impacts to rare plant species, protected wildlife populations, or habitats would result from adoption of Alternative A.

### **4.3.2. Alternatives B and C**

No state- or federally listed plants or aquatic animals would be affected by the proposed development.

There is no suitable habitat for eastern hellbender, Tennessee cave salamander, red-cockaded woodpecker, Indiana bat, or Carolina northern flying squirrel within the APE or in the immediate area surrounding Lowe's Ferry Subdivision. The proposed actions are not expected to impact these protected terrestrial animals. Abundant suitable habitat for

southeastern shrew exists in both the project area and the nearby landscape. The proposed actions in the project area may displace some individuals into nearby areas, but would not measurably affect populations of this shrew.

One bald eagle pair has nested approximately 5 miles from the project site. Although there would be increased boat traffic in the area because of the number of new docks proposed, this pair is accustomed to current levels of disturbance on Fort Loudoun Reservoir, and the increase in boat traffic near the nest would not be significantly greater than what already occurs. No bald eagle nests, and only a few potential nest trees, were located in and near the project area during field investigations. An overall lack of forested habitats, as well as current housing development in the area, would likely discourage any bald eagle from nesting in this area in the future. The proposed actions are not expected to impact bald eagles or their habitats.

The closest active cave roost for gray bats is approximately 1.3 miles from the project site. The proposed actions would not impact this or other caves used by gray bats in the area because of the distances between the project site and the caves. No caves occur on the project site, but foraging habitat for gray bats exists along Fort Loudoun Reservoir. The proposed actions would change existing habitat in several lake coves on the shoreline, but abundant foraging habitat exists over Fort Loudoun and other nearby reservoirs, and the changes to these coves and the shoreline would not affect gray bats. The proposed actions are not expected to impact foraging or roosting sites for gray bats.

Since no populations of state- or federally listed species or designated critical habitat for federally protected species exists within the project area, neither Alternative B nor C is expected to impact state- or federally listed species or their habitats directly, indirectly, or cumulatively.

#### **4.4. Wetlands**

##### **4.4.1. Alternative A**

Adoption of the No Action Alternative would result in minor, insignificant impacts to wetlands. It is foreseeable that individual water use facilities would still be approved and constructed for shoreline residences. Three wetlands (W1, W2, and W3) totaling 2 acres are located in areas where individual water use facilities are allowed. Permit conditions would be specified to avoid wetland impacts to the extent practicable, but there may be some minor wetland impacts if wetland vegetation were cleared or maintained periodically. Overall cumulative effects on wetlands would be insignificant.

##### **4.4.2. Alternatives B and C**

Under Alternatives B and C, TVA would approve under Section 26a of the TVA Act the construction of community boat slips at four locations, excavation of 6,640 cubic yards at three locations below normal summer pool, and excavation of 2.91 acres and fill of 2.84 acres above normal summer pool (elevation 813-foot msl). TVA would also abandon its flowage easement over 1.45 acres for the residential development and construction of a roadway. This proposal would also include the assessment of impacts associated with the future approval and construction of 45 individual water use facilities.

No wetlands are present in areas proposed for dredge, disposal of fill, easement abandonment, or construction of community boat slips. As discussed above, three wetlands are present in the areas where individual water use facilities could be permitted. While permit conditions would be specified to avoid impacts to wetlands to the extent practicable, there may be some minor, insignificant impacts to wetlands if wetland vegetation in these areas were cleared or maintained periodically. Cumulative impacts to wetlands as the result of this clearing would be insignificant.

#### **4.5. Visual Resources**

Visual consequences are examined in terms of visual changes between the existing landscape and proposed actions, sensitivity of viewing points available to the general public, their viewing distances, and visibility of proposed changes. Scenic integrity indicates the degree of intactness or wholeness of the landscape character. These measures help identify changes in visual character based on commonly held perceptions of landscape beauty and the aesthetic sense of place. The foreground, middleground, and background viewing distances were previously described in Section 3.4.

##### **4.5.1. Alternative A**

Under this alternative, TVA and USACE would deny the request to abandon flowage easement rights and not allow dredging below the 820-foot msl elevation or community and private boat slips. However, the property would likely be developed above the 820-foot msl elevation, resulting in a visual change in the landscape. These changes would include clearing of vegetation and views of new structures in the landscape on non-TVA land. However, TVA flowage easements and parts of the shoreline would not be affected by this alternative.

##### **4.5.2. Alternative B**

Under Alternative B, TVA and USACE would consider approving community boat slips, private docks, dredges, fills, and flowage easement abandonment to allow houses and a road to be built on land in five areas totaling approximately 1.45 acres below the 820-foot msl elevation. Under this scenario, the new community boat slips, private boat docks, and houses would add to the number of discordantly contrasting elements visible along this section of the Tennessee River. Additional watercraft on the lake would contribute to an increase in visual congestion. New structures and additional watercraft would combine to reduce the existing scenic value class. However, the development would likely not reduce scenic class more than one level.

The new structures would be seen in the middleground from distances up to 2 miles from the water and surrounding ridgelines. When viewed from these distances, visual impacts decrease as distance increases, and the parcel has a greater ability to absorb alteration in the context of overall scale. The influence of the natural landscape greatly decreases negative impacts on scenic character and is mainly a factor of the natural landscape when viewed from this distance.

Views closer to the proposed development would be visually similar to views of other boating facilities along this stretch of the Tennessee River. The overall scale of the new development would be visually compatible with similar facilities to the northwest and southwest. Potential negative visual impacts of new structures would be minimized if colors

used are compatible with natural background colors and dark roofs are provided on proposed boat slips. Colors within this range merge into broader patterns within the middleground and background distances and details are not as discernible.

During the construction period, there may be noticeable visual impacts due to an increase in personnel, equipment, and materials on-site. This would be temporary until all activities were complete. Therefore, providing mitigation as shown in the mitigation portion of this document would result in insignificant and minor visual impacts for this alternative.

#### **4.5.3. Alternative C**

Under Alternative C, TVA and USACE would approve the request as outlined in Alternative B and incorporate additional features that would reduce environmental impacts. These features would include creating vegetative buffers to protect historic structures within the viewshed of the property as outlined in the Cultural Resources section of this EA. Under this alternative, visual impacts would be similar to those described in Alternative B. All color schemes for water use facility exteriors would be visually compatible with natural background colors and provide dark roofs on all these structures.

### **4.6. Cultural Resources**

#### **4.6.1. Alternative A**

Under Alternative A, McKeough's proposed land use action and shoreline alterations would not be approved. Residential development away from the reservoir would probably affect the Gillespie House; however, these effects would not be the result of any actions of the federal permitting authorities. Therefore, no historic properties would be affected by approval of the federal permitting authorities under this alternative (see Section 2.0 and 2.1.1). Individual future requests for shoreline alterations would be reviewed on a case-by-case basis for impacts to historic properties (archaeological sites or historic structures).

#### **4.6.2. Alternatives B and C**

The Tennessee SHPO was consulted and concurred with the APE and TVA Cultural Resources findings that no archaeological sites would be affected by this project. Consultation letters were sent to the following tribes: The United Keetoowah Band of Cherokee Indians in Oklahoma (UKBIO); Cherokee Nation; Eastern Band of Cherokee Indians; Muscogee (Creek) Nation of Oklahoma; Alabama-Coushatta Tribe; Alabama-Quassarte Tribal Town; Kialegee Tribal Town; Thlopthlocco Tribal Town; Shawnee Tribe; Absentee-Shawnee Tribe of Oklahoma; Eastern Shawnee Tribe of Oklahoma; Chickasaw Nation; Choctaw Nation of Oklahoma (CNO); and Jena Band of Choctaw Indians (JBCI). Responses were received from the JBCI, the UKBIO, and the CNO. These tribes concur that the project would not affect any archaeological sites.

It was determined that the screening effects of distance, vegetation, and topography would not adversely affect the integrity of the Gillespie House. A potential exception was construction of residences on lots in the immediate vicinity of the Gillespie House. Under either Alternative B or C, McKeough would commit to enhancing an existing tree line, blocking the proposed development in Lots 1 to 12 from view at the Gillespie House, and limiting the height of new construction in these lots to below the level of the intervening vegetation. With these commitments and screening effects of distance, vegetation, and

topography, the Tennessee SHPO concurred that no historic properties (historic structures) would be adversely affected by this project.

#### **4.7. Water Quality**

##### **4.7.1. Alternative A**

Since no actions would be taken under Alternative A, surface water quality would not be impacted.

##### **4.7.2. Alternatives B and C**

Under Alternative B, eroded soil or sediment would be the most prevalent pollutant associated with construction activities. The erosion process begins with the dislodgment of soil particles. These particles are then transported as sediment to areas of deposition. Free-falling raindrops impact the soil with much greater energy than does an equal amount of flowing water. If land surfaces have no vegetative cover or other protective debris to cushion the impact, the total energy of falling rain is expended on dislodging soil particles. Loose particles are easily moved and, under certain conditions, carried away by overland water flow. The volume of overland flow that develops from a given rainstorm is related to a soil's physical factors that influence the infiltration and movement of water through the soil.

In reservoir shoreline settings, this process is accelerated. As the energy in the water (waves, generated by wind, personal and commercial watercraft, etc.) meets the shoreline, the erosion process begins. In shoreline erosion and associated bank failure, however, the sediment is immediately deposited in the reservoir, where it can adversely impact water quality and aquatic organisms, and detract from the natural appearance and value of shoreline properties.

The proposed level of land construction is similar to several other existing and proposed developmental projects throughout the Tennessee River system. The state-of-the-art approaches for minimizing soil erosion and subsequent sedimentation from such sites are adequate preconstruction planning and properly selecting, installing, and maintaining specific BMPs. TDEC is responsible for enforcement of state standards for construction sites through the NPDES program for regulating storm water associated with construction activities. The general storm water construction permit requires a construction BMP plan, which must be certified by a qualified credentialed professional. The permit also requires inspection and maintenance of the BMPs. The BMPs required under this permit would reduce impacts to water quality under Alternatives B and C.

Additionally, under Alternatives B and C, the applicant's proposal would be subject to BMPs specified in this EA's commitment list, the Section 404 permit, the Section 26a permit, and the Section 401 Certification.

The following commitments would be required for the dredge to minimize the release of toxic materials to the environment:

- Testing of the sediment from the dredge would be required for volatile organics (benzene, toluene, ethylbenzene, total xylenes), semivolatile organics (PAHs, etc.), PCBs, pesticides/insecticides (chlordane, lindane, heptachlor epoxide, DDT, dieldrin, and endrin), and total metals (mercury, arsenic, copper, chromium,

cadmium, lead, nickel and zinc). The level of contamination found (if any) would determine how the spoil would be handled.

- Material dredged would be tested for toxic materials (as listed above) before dredging commences. If toxic materials are detected, dredging plans would be evaluated in light of the extent and level of those contaminants at the site. Dredging would not proceed without a dredging plan that guarantees that no toxic material would be released to the environment.
- Silt curtains would be placed around the perimeter of the dredge area, so as not to allow silt-laden water outside the work area.
- All saturated spoil would be dewatered using berms, silt fencing, or other silt-control devices positioned in such a way as not to allow silt-laden water to reenter the reservoir. The method of dewatering must be approved by TVA.
- All uncontaminated dredged material must be removed to the previously reviewed upland site, contained in such a manner as to prevent its return to any water body or wetland, and permanently stabilized to prevent erosion.

#### **4.8. Recreation and Recreational Boating Safety/Congestion**

##### **4.8.1. Alternative A**

Under the No Action Alternative, no addition of boats or facilities would occur. Furthermore, no change to the recreation resource is expected under this alternative. No significant impacts are expected under the No Action Alternative.

##### **4.8.2. Alternatives B and C**

Crowding is, and will continue to be, an issue on Fort Loudoun Reservoir. Survey respondents have identified that recreational use (specifically that use which will be facilitated through the addition of more water use facilities) on Fort Loudoun is becoming contentious. The community docks would accommodate 71 watercrafts. Future requests from prospective landowners for private water use facilities would accommodate 45 watercrafts. According to the Zone 6 assessments, the addition of 116 watercrafts onto the main body of Fort Loudoun Reservoir would not dramatically change the character or recreational experience. The addition of boats to the already crowded “urban” situation detracts from the recreation resource, but in this case is insignificant.

#### **4.9. Navigation**

##### **4.9.1. Alternative A**

Under Alternative A, there would be no impacts to navigation.

##### **4.9.2. Alternative B**

There are two potential direct impacts and two possible indirect impacts to navigation should Alternative B be chosen. Direct impacts include interference with the navigation channel and the requirement for additional aids to navigation. Indirect impacts include

increased boating congestion and a possible decrease in boating safety in the vicinity of the proposed new subdivision.

If the community facilities are constructed as proposed, there would be no direct interference with the navigation channel, and no new navigation aids would be required.

There are some individual lots where private docks could impact commercial navigation. Lots 168, 169, 170, 171, and 228, at the upstream end of the subdivision, are located on a stretch of shoreline that has been classified by TVA Navigation staff as restricted due to close proximity to the navigation channel. Docks may be allowed for these lots, but they would be subject to individual review by TVA Navigation staff, and dock lengths would be limited so as not to pose a safety hazard to navigation.

Other lots that have been provisionally identified as having dock rights, subject to individual TVA Section 26a and USACE Section 10 permit reviews, include Lots 1-20, 23-30, 32, 51-56, 86-88, and 117-118.

Boating congestion and associated boating safety concerns are an indirect impact of the proposed development. If the community facilities and individual docks are constructed as proposed, additional boaters can be expected to use Fort Loudoun Reservoir. While Fort Loudoun pool is some 49 miles long, it is mostly riverine. The reservoir often attracts boaters from other reservoirs for special occasions like football games and holiday events.

Boating safety should always be a concern for the public, particularly since law enforcement agencies responsible for marine safety (e.g., TVA Police, U.S. Coast Guard, and Tennessee Wildlife Resources Agency) are not able to patrol all of the waters in their jurisdictions all the time. These agencies rely heavily on public involvement to report incidents and alert them of safety concerns.

The additional boats on the water represented by the community and individual water use facilities in the proposed action do not constitute a significant impact on recreational or commercial boating safety. Furthermore, there are sufficient safeguards in the 26a permitting process to prevent significant impacts from individual dock proposals to commercial navigation safety.

#### **4.9.3. Alternative C**

TVA Navigation specialists find that if the community facilities are constructed as submitted in the application and the following permit conditions for community and individual docks are met, there would be no significant impact to navigation as a result of the proposed action:

- The total lakeward extent of Site H should not exceed 330 feet as measured from normal summer pool elevation of 813 feet above msl.
- The applicant is advised in writing that Site H would front onto a commercial navigation channel and a high-use recreational boating area, and may be vulnerable to wave wash and possible collision damage from passing vessels. A built-in wave attenuation system is recommended.

- The lakeward extent of Site A may not exceed 139 feet; the lakeward extent of Site B may not exceed 125 feet; and the lakeward extent of Site I may not exceed 150 feet from normal summer pool elevation of 813 feet above msl.
- Sites A, B, and I would be located in coves with other recreational boaters and may be vulnerable to wave wash and possible collision damage. There would be no “no-wake” zones associated with these facilities.
- All floating structures must be securely anchored to prevent them from breaking free during a flood event.
- Lots 168, 169, 170, 171, and 228 are located on a stretch of shoreline that has been classified by TVA Navigation staff as restricted due to close proximity to the navigation channel. Dock applications for these lots would be subject to individual review by TVA Navigation staff, and dock lengths would be limited or docks may be prohibited entirely on these lots so as not to pose a safety hazard to navigation.

#### **4.10. Floodplains**

##### **4.10.1. Alternative A**

Under Alternative A, McKeough’s proposed land use action and shoreline alterations would be denied. Under this alternative, any proposed future development within the 100-year floodplain and/or the land subject to the TVA flowage easement would be reviewed by TVA to ensure compliance with Executive Order 11988.

##### **4.10.2. Alternative B**

The proposed project involves the construction of floating, covered boat slips and breakwater, dredging, fill for building lots, riprap, and electrical service. Construction of the floating, covered boat slips and breakwater, dredging, the placement of riprap, and providing electrical service would involve activities within the 100-year floodplain. Consistent with Executive Order 11988, floating, covered boat slips and breakwater, dredging, riprap, and electrical service are considered repetitive actions in the floodplain that should result in minor impacts because the dredged material would be spoiled outside of the floodplain.

The proposed riprap would also be located within the published floodway on the Tennessee River in Blount County, Tennessee. Based on a review of topographic data, aerial photography, and a site inspection, the project would not be considered as an encroachment in the floodway because the amount of riprap necessary for the project is less than the amount of material that either has been lost to erosion or would be removed during bank shaping. The project would comply with the *TVA Flood Control Storage Loss Guideline* because less than 1 acre-foot of flood control storage would be displaced.

The applicant has requested that the flowage easement rights over 1.45 acres be removed to allow fill for residential development. The proposed abandonment of flowage easement rights would not involve activity within the 100-year floodplain, which would be consistent with Executive Order 11988. In order to create buildable lots, soil would be relocated within the flood control storage zone. This would fulfill the requirements of the *TVA Flood Control*

*Storage Loss Guideline* because no outside fill would be placed within the flood control storage zone, and there would be no loss of flood control storage.

#### **4.10.3. Alternative C**

Under this alternative, the anticipated floodplain impacts would be the same as those stated in Alternative B.

To ensure that development of this tract would not adversely impact floodplains and flood control, TVA would include the following conditions in the 26a permit and/or deed modification:

- All floating facilities would be securely anchored to prevent them from floating free during major floods.
- Spoil material would be disposed of and contained on land lying and being above the 819.5-foot contour. Every precaution would be made to prevent the reentry of the spoil material into the reservoir.
- For all electrical services permitted, a disconnect must be located at or above the 820-foot contour that is accessible during flooding.
- Any future facilities or equipment subject to flood damage would be located above or flood proofed to the TVA FRP elevation 819.5.
- Any future development proposed within the limits of the 100-year floodplain, elevation 816.9, would be consistent with the requirements of Executive Order 11988.
- All future development would be consistent with the requirements of the *TVA Flood Control Storage Loss Guideline*.
- TVA would retain the right to flood the area below 820-foot contour and would not be liable for damages resulting from flooding.

### **4.11. Land Use and Prime Farmland**

#### **4.11.1. Alternative A**

Development of the Lowe's Ferry site began in early 2007 and most of the site will be developed if TVA and USACE deny the requested permits and land use action. The property descriptions of the nine affected lots would have to be revised to include only buildable property above the existing 820-foot msl elevation. This development would convert prime farmland to nonfarm use; TVA and USACE would have no control or responsibility for this conversion.

#### **4.11.2. Alternatives B and C**

Alternatives B and C would involve TVA granting a Section 26a approval for community boat slips, dredges, fill, and reservoir drawdown zone excavation. Forty-five waterfront lots located within the development have deeded rights to request TVA and USACE approval

for individual water use facilities and shoreline stabilization. The lots served by the community docks would not be eligible for individual water use facilities or private docks.

TVA also proposes to abandon its flowage easement over approximately 1.45 acres below elevation 820-foot msl where McKeough proposes to fill for homesite development and construction of a road. Abandonment of flowage easement rights would afford any new owner an unencumbered future title.

A Farmland Conversion Impact Rating was completed using input from the NRCS provided by Clarence Conner, the Tennessee resource soil scientist. The NRCS "Relative Value of Farmland to be Converted" in the area was given a score of 81 out of a possible maximum of 100. The "Site Assessment Criteria" rating, which must be completed by the federal agency involved in the action, yielded a score of 71 out of a possible maximum of 160 points. The site assessment score was low due to the extent of urban development within and around the site. The sum of the two scores is the Farmland Conversion Impact Rating and, for this site, the score is 152. A score of 160 or higher implies that the land's value for farming is high enough to recommend that it not be converted to nonfarm use. Alternatives B and C would not adversely affect prime farmlands.

#### **4.12. Roads/Traffic**

##### **4.12.1. Alternative A**

Under Alternative A, none of the requested water use facilities including the proposed community boat slips would be permitted. If the land use, Section 26a, Section 10, or Section 404 actions are not approved, the construction of the new residential subdivision would still likely take place on private land above elevation 820-foot msl elevation. Under the No Action Alternative, residential development above elevation 820-foot msl elevation and outside the APE would likely involve construction of about 153 (on approximately 200 acres) of the 229 single-family homes (see Section 2.0 and 2.1.1). Because not all individual lot owners would request shoreline alterations in the future and, if approved, these requests would not be built at the same time, construction traffic would not notably increase. Therefore, there would no impact on transportation.

##### **4.12.2. Alternatives B and C**

If the land use and other federal actions for construction of the water use facilities under Alternative B or C are approved, this would result in minor direct impacts to the road systems during the residential construction period and once the 76 single-family homes (on approximately 100 acres) are constructed. During homesite construction, there would be additional traffic for workers, and there would be truck traffic to support the delivery of building materials.

Future shoreline alterations proposed by private lot owners would likely include shoreline stabilization with riprap. The 45 waterfront lots occupy a total of approximately 11,000 linear feet of shoreline. As under Alternative A, not all lot owners would make requests, and among those that do apply, if approved, construction of future shoreline alterations would not likely occur at the same time. However, assuming a 12-month period for the shoreline stabilization, an additional 41 truck-trips per day would be added to the residential traffic mix, five days per week. Conservatively, the truck traffic associated with this activity would add to the traffic generated by the number of homes in the subdivision. The effects

of these actions are evaluated as “Direct Impacts” (i.e., activities proposed to occur within the project scope, analysis area, or APE). The effects of the No Action Alternative are evaluated in conjunction with the Action Alternatives B and C and are labeled “Total Impacts.”

The assessment of traffic impacts for these proposed actions within the analysis area is based on the transportation planning and engineering concept of level of service (LOS) found in the Transportation Research Board’s (2000) *Highway Capacity Manual* (HCM). The LOS concept addresses the quality of service, or operating conditions, provided by the roadway network, as perceived by motorists. LOS is a qualitative measure, expressed as one of six levels (A through F), which is described in terms of travel time, comfort, safety, and maneuvering freedom, and incorporates various measurable factors associated with a particular segment of a roadway into the analysis. The six levels of service (A through F) are defined as differing qualities of service provided by a roadway.

- LOS A is defined as the highest quality of service that a particular class of highway can provide. It is a condition of free flow in which there is little or no restriction on speed or maneuverability caused by the presence of other vehicles.
- LOS B is a zone of stable flow. The restriction on maneuverability is negligible, and there is little probability of major reduction in speed or flow.
- LOS C is a zone of stable flow, but at this volume and density level, most drivers are becoming restricted in their freedom to select speed, change lanes, or pass.
- LOS D approaches unstable flow. Tolerable average operating speeds are maintained but could be subject to considerable and sudden variation. This condition is tolerable for short periods.
- LOS E is unstable with lower operating speeds and some momentary stoppages. There is little independence of speed selection and maneuverability. The upper limit of this level is the capacity of the facility.
- LOS F indicates forced-flow operations at low speeds. The level of density increases to the effect of a “traffic jam.”

Table 4-1 contains the levels of service associated with the Projected, Direct, and Total Impacts for the road network if this action is pursued.

**Table 4-1. Results of Level of Service Analysis**

Route Name	2008 TVA Projected AADT Range	LOS	AADT With Direct Impacts	LOS	AADT With Total Impacts	LOS
I-140	42,232	C	42,997	C	44,455	C
	49,570	D	50,335	D	51,793	D
TN 333	7,614	D	8,379	D	9,837	D
Old Lowe's Ferry Road	2,601	C	3,366	C	4,825	D

The Direct Impacts of Alternative B or C would not degrade the level of service of the highways and roads that would be affected. There would be no drops in levels of service for any of the affected routes. The percent increase in AADT for the routes would vary from 1.6 percent on I-140 to 31.0 percent on Old Lowe's Ferry Road.

The Total Impacts (300 acres and 229 houses) are similar to the Direct Impacts (100 acres and 76 homes) with one exception. The level of service for Old Lowe's Ferry Road would drop from an LOS C to LOS D. The percent increase in AADT for the routes would vary from 4.6 percent on I-140 to 87.0 percent on Old Lowe's Ferry Road.

The AADT information in Table 4-1 can be further broken down into peak-hour volumes. Using the standard of 12 percent of the AADT occurring in the peak hour of traffic, this action would generate the values in Table 4-2.

**Table 4-2. Estimates of Peak-Hour Traffic Volumes**

<b>Route Name</b>	<b>Direct Impacts – Peak-Hour Volumes (vehicle/hour)</b>	<b>Total Impacts – Peak-Hour Volumes (vehicle/hour)</b>	<b>HCM Capacity of Two-Lane Rural Highways (vehicle/hour)</b>
<b>TN 333</b>	1,010	1,185	<b>3,200</b>
<b>Old Lowe's Ferry Road</b>	409	584	

The HCM projects a capacity of 3,200 vehicles per hour for two-lane, rural highways (Transportation Research Board 2000). Although the level of service for Old Lowe's Ferry Road would decrease to LOS D if the development on the TVA land occurs, the peak-hour volumes associated with the Direct Impacts and Total Impacts on Old Lowe's Ferry Road and TN 333 would be much lower than the HCM projected capacity.

In addition to the proposed development that includes 2 miles of roads, the developer has been tasked by the City of Louisville with upgrades to 3.2 miles of Old Lowe's Ferry and Lowe's Ferry roads. The upgrades are estimated to cost \$1.8 million and include widening the roads to a minimum width of 20 feet with 2-foot shoulders on each side. The improvements would take place from the intersection of TN 333 and Old Lowe's Ferry Road to the intersection of Old Lowe's Ferry Road and Lowe's Ferry Subdivision, and onto the entrance of the proposed development. This work would improve the conditions on both of these roads greatly and would assist with the flow of the additional traffic generated by the development.

#### **4.13. Natural Areas**

##### **4.13.1. Alternative A**

Under this alternative, TVA and USACE would not approve proposed actions that would allow for community and individual docks as described in Chapter 2. It is likely that non-

TVA land still would be developed residentially under this alternative. Although this development would change the natural quality of views from the nearby parks (see below), the impacts to park users are considered to be insignificant.

#### **4.13.2. Alternatives B and C**

Under this alternative, TVA would abandon 1.45 acres of flowage easement for the residential development and construction of a roadway and would approve five community boat docks and individual docks. Dredging and fill work would be required. Admiral Farragut Park and Carl Cowen Park are both within 0.5 mile of the proposed action and directly across the reservoir from the proposed work. Park users, especially those interested in more nature-centered pursuits, would be temporarily impacted during construction activities, primarily because of noise and possibly odors from machine activity. After construction, boating activity in the area would be expected to increase, likely resulting in more noise, less natural parklike vistas, and ultimately fewer recreational opportunities for shoreline park users (see Recreation). With mitigation as described in Visual Resources, including color compatibility of dock structures with natural background and creating vegetative buffers, impacts to nearby natural areas would be insignificant.

Because the distance from the proposed action to other parks and the protection planning site is sufficient (1.7-2.8 miles), no impacts to these features are anticipated.

#### **4.14. Summary of TVA Commitments and Proposed Mitigation Measures**

TVA proposes the following to minimize and mitigate adverse effects of this proposal.

- Any future facilities or equipment subject to flood damage would be located above or flood proofed to the TVA FRP elevation 819.5.
- Any future development proposed within the limits of the 100-year floodplain, elevation 816.9, would be consistent with the requirements of Executive Order 11988.
- All future development would be consistent with the requirements of the *TVA Flood Control Storage Loss Guideline*.
- The applicant would be required to create visual protection buffers surrounding potential historic properties located nearby. The measures would include enhancing an existing tree line, blocking the proposed development in Lots 1 to 12 from view at the Gillespie House, and limiting the height of new construction in these lots to below the level of the intervening vegetation.
  - The spoil material would be disposed of and contained on designated land lying and being above the 820-foot msl contour. Every precaution would be made to prevent the reentry of the spoil material into the reservoir
- A total of 18 spawning benches would be installed near Sites A and I.
- Material dredged would be tested for toxic materials before dredging commences. Testing of the sediment from the dredge would be required for volatile organics (benzene, toluene, ethylbenzene, total xylenes), semivolatile organics (polycyclic

aromatic hydrocarbons [PAHs], etc.), polychlorinated biphenyls (PCBs), pesticides/insecticides (chlordane, lindane, heptachlor epoxide, dichlorodiphenyltrichloroethane [DDT], dieldrin, and endrin), and total metals (mercury, arsenic, copper, chromium, cadmium, lead, nickel, and zinc). If toxic materials are detected, dredging plans would be evaluated in light of the extent and level of those contaminants at the site. The level of contamination found (if any) would determine how the spoil would be handled. Dredging would not proceed without a dredging plan that guarantees that no toxic material would be released to the environment.

- All saturated spoil would be dewatered using berms, silt fencing, or other silt-control devices positioned in such a way as not to allow silt-laden water to reenter the reservoir. The method of dewatering needs prior approval from TVA.
- All uncontaminated dredged material must be removed to the previously reviewed upland site, contained in such a manner as to prevent its return to any water body or wetland, and permanently stabilized to prevent erosion.
- All color schemes for water use facility exteriors would be visually compatible with natural background colors and include dark roofs on all water use facilities.
- The lots served by the community docks would not be eligible for individual water use facilities or private docks.
- The applicant is advised in writing that Site H would front onto a commercial navigation channel and a high-use recreational boating area, and may be vulnerable to wave wash and possible collision damage from passing vessels. A built-in wave attenuation system is recommended.
- Sites A, B, and I would be located in coves with other recreational boaters and may be vulnerable to wave wash and possible collision damage. There would be no “no-wake” zones associated with these facilities.
- Lots 168, 169, 170, 171, and 228 are located on a stretch of shoreline that has been classified by TVA Navigation staff as restricted due to close proximity to the navigation channel. Dock applications for these lots would be subject to individual review by TVA Navigation staff, and dock lengths would be limited or docks may be prohibited entirely on these lots so as not to pose a safety hazard to navigation.



## CHAPTER 5

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Involvement: Land Use

**S. Clay Guerry**

Position: Recreation Representative, TVA Environmental Stewardship and Policy, Lenoir City, Tennessee  
Education: M.S., Zoology; Masters of Parks, Recreation, and Tourism Management; B.S., Biology  
Experience: 2 years in Recreation Planning  
Involvement: Recreation

**Ella Christina Guinn**

Position: Project Control Specialist, TVA Environmental Stewardship and Policy, Knoxville, Tennessee  
Education: M.S. and B.A., Geography  
Experience: 12 years in Land Use Analysis; 7 years in Environmental Services  
Involvement: Technical Staff Coordinator

**Kelie H. Hammond**

Position: Specialist, Navigation Operations, TVA River Operations, Navigation and Hydraulic Engineering, Knoxville, Tennessee  
Education: M.S., Environmental Engineering, Specializing in Water Resources; B.S., Civil Engineering  
Experience: 4 years Navigation; 3 years in Specialty Engineering positions at TVA  
Involvement: Navigation/Transportation

**A. Eric Howard**

Position: Archaeologist, TVA Environmental Stewardship and Policy, Knoxville, Tennessee  
Education: M.A., Anthropology  
Experience: 10 years in Cultural Resources Federal Compliance Laws; 13 years in Southeastern U.S. and Caribbean Archaeology  
Involvement: Cultural Resources

**Clinton E. Jones**

Position: Aquatic Community Ecologist, TVA Environmental Stewardship and Policy, Knoxville, Tennessee  
 Education: B.S., Wildlife and Fisheries Science  
 Experience: 15 years in Environmental Consultation and Fisheries Management  
 Involvement: Aquatic Ecology and Aquatic Threatened and Endangered Species

**Roger A. Milstead**

Position: Manager, TVA Flood Risk and Data Management, Knoxville, Tennessee  
 Education: B.S., Civil Engineering; Registered Professional Engineer  
 Experience: 30 years in Floodplain and Environmental Evaluations  
 Involvement: Floodplains

**Jason M. Mitchell**

Position: Natural Areas Biologist, TVA Environmental Stewardship and Policy, Knoxville, Tennessee  
 Education: M.P.A. (Environmental Policy); B.S., Wildlife and Fisheries Science  
 Experience: 13 years in Natural Resource Planning and Ecological Assessment with Emphasis on Sensitive Resources  
 Involvement: Natural Areas

**W. Chett Peebles**

Position: Specialist, Landscape Architect, TVA Environmental Stewardship and Policy, Knoxville, Tennessee  
 Education: Bachelor of Landscape Architecture; Registered Landscape Architect  
 Experience: 18 years in Site Planning and Visual Assessment  
 Involvement: Visual Resources

**Kim Pilarski-Brand**

Position: Senior Wetlands Biologist, TVA Environmental Stewardship and Policy, Knoxville, Tennessee  
 Education: M.S., Geography, Minor Ecology  
 Experience: 12 years in Wetlands Assessment and Delineation  
 Involvement: Wetlands

**Erica Wadl**

Position: Watershed Representative, TVA Environmental Stewardship and Policy, Lenoir City, Tennessee  
 Education: B.S., Biology; M.S., Forestry Candidate  
 Experience: 2 years in Watershed Operations and Consulting  
 Involvement: Land Use

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## CHAPTER 6

### 6.0 LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS CONSULTED

#### Federal Agencies

Dr. Lee A. Barclay  
Field Supervisor  
U.S. Fish and Wildlife Service  
446 Neal Street  
Cookeville, TN 38501

Mr. Ron Gatlin, Chief  
U.S. Army Corps of Engineers  
Nashville District, Regulatory Branch  
3701 Bell Road  
Nashville, TN 37202-1070

#### State Agencies

Mrs. Jennifer Barnett  
Tennessee Division of Archaeology  
Cole Building, #3  
1216 Foster Avenue  
Nashville, TN 37210

Mr. Terrence Bobrowski  
East Tennessee Development District  
P. O. Box 249  
Alcoa, TN 37701-0249

Mr. Wilton Burnette  
Department of Economic and Community Development  
320 Sixth Avenue, North, 7th Floor  
Nashville, TN 37243-0405

Mr. Paul Davis  
Tennessee Department of Environment and Conservation  
Division of Water Pollution Control  
7th Floor, L&C Tower  
401 Church Street  
Nashville, TN 37243

Lowe's Ferry Subdivision – Proposed Flowage Easement  
Abandonment and Water Use Facilities

Mr. Douglas J. Delaney, Director  
Environmental Planning and Permits Division  
Tennessee Department of Transportation  
Suite 900, James K. Polk Building  
505 Deaderick Street  
Nashville, TN 37243-0334

Mr. Jim Fyke, Director  
Tennessee Department of Environment and Conservation  
L&C Tower  
401 Church Street  
Nashville, TN 37243-1530

Mr. Herbert L. Harper  
Executive Director  
Tennessee Historical Commission  
2941 Lebanon Road  
Nashville, TN 37243-0442

Mr. Terry Oliver  
Tennessee Department of Agriculture  
Ellington Agricultural Center  
P.O. Box 40627  
Nashville, TN 37204

Mr. Reggie Reeves  
Tennessee Department of Environment and Conservation  
Division of Natural Heritage  
8th Floor, L&C Tower  
401 Church Street  
Nashville, TN 37243

Mr. Barry Stephens, NEPA Contact  
Tennessee Department of Environment and Conservation  
Division of Air Pollution Control  
9th Floor, L&C Tower  
401 Church Street  
Nashville, TN 37243

Mr. Robert M. Todd  
Tennessee Wildlife Resources Agency  
Environmental Services Division  
Ellington Agricultural Center  
P.O. Box 40747  
Nashville, TN 37204

Mr. Mark Tummons  
Tennessee Department of Environment and Conservation  
Division of Recreation Educational Services  
10th Floor, L&C Tower  
401 Church Street  
Nashville, TN 37243

**Individuals**

Krystee Ervin  
Lenoir City, Tennessee

Laurie Galvin  
Louisville, Tennessee

Michael J. Galvin  
Louisville, Tennessee

Dorothy McElyea  
Tennessee

Ken Mack  
Tennessee

April Morgan  
Lenoir City, Tennessee

Robert Niles  
Maryville, Tennessee

Jacklyn O'Conner  
Tennessee

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## CHAPTER 7

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