

DRAFT ENVIRONMENTAL ASSESSMENT

File No. 200702181

BILLY CHRISTOPHER, d/b/a River Front Development LLC

**Proposed Dredging, Community Dock, Bank Stabilization, and Boat Ramp
at Mile 7.3, Right Bank, Elk River, Wheeler Reservoir, Limestone County, Alabama**

Prepared by
U.S. ARMY CORPS OF ENGINEERS
Nashville District, Regulatory Branch

In cooperation with
TENNESSEE VALLEY AUTHORITY

For further information, contact:

Richard D. Graham
Regulatory Specialist
U.S. Army Corps of Engineers
Regulatory Branch
3701 Bell Road
Nashville, Tennessee 37214
Phone: (615) 369-7507

Stanford E. Davis
Senior NEPA Specialist
Tennessee Valley Authority
400 West Summit Hill Drive
WT 11D
Knoxville, Tennessee 37902-1499
Phone: (865) 632-2915
Fax: (865) 632-3451
E-mail: sedavis2@tva.gov

July 27, 2009
Date

Page intentionally blank

Contents

Chapter 1.0	Purpose and Need For Project
	1.1 Background
	1.2 Decision Required
	1.3 Other Approvals Required
Chapter 2.0	Public Involvement Process
Chapter 3.0	Environmental and Public Interest Factors Considered
	3.1 Introduction
	3.2 Physical/Chemical Characteristics and Anticipated Changes
	3.3 Biological Characteristics and Anticipated Changes
	3.4 Human Use Characteristics and Anticipated Impacts
	3.5 Cumulative and Secondary Impacts
Chapter 4.0	Alternatives
	4.1 Introduction
	4.2 Description of Alternatives
	4.3 Comparison of Alternatives
	4.4 Special Permit Conditions
Chapter 5.0	Literature Cited
Appendices	
A	Joint Public Notice 08-19
B	Inspection Required for Permit Processing
C	Modified Project Plans and Drawings
D	Joint Public Notice Responses
E	Applicant's Rebuttal to the Joint Public Notice Responses
F	Alabama State Historic Preservation Officer and Tribal Consultation Correspondence

Page intentionally blank

Chapter 1.0 Purpose and Need for Project

1.1 Background. On October 22, 2007, the U.S. Army Corps of Engineers (Corps) received a Department of the Army (DA) permit application from Billy Christopher, doing business as River Front Development LLC, 211 S. Jefferson Street, Athens, Alabama 35611, for the proposed construction of a community water use facility. The application was coordinated with the Tennessee Valley Authority (TVA), a cooperating agency in the permitting review process. Over the next months, TVA and the Corps worked to define the project's geographic scope and area of potential effect, which is required by the *National Environmental Policy Act* (NEPA) and Section 106 of the *National Historic Preservation Act*, respectively. On September 8, 2008, TVA advised Mr. Christopher that he must have a Phase I archaeological survey performed, and provided him with a scope of work and maps depicting the survey area. After close communication with Mr. Christopher during these processes and his having provided additional data and specifications, his application was generally considered complete on September 9, 2008. However, following another site visit on June 15, 2009, and to avoid or minimize specific project-related effects, revised plans and drawings were developed in late June 2009 (see Modifications to Proposal below).

The purpose of this project is to provide water access and enhanced recreation opportunity for residents of the planned adjoining community as well as access and commercial boat storage to the public. The proposed work would involve constructing a community dock, dredging, bank stabilization, and a boat ramp and courtesy dock in conjunction with a proposed land-based residential development at Elk River Mile 7.3, right bank, Wheeler Reservoir, Limestone County, Alabama (Figure 1). Related land-based facilities would also include a dry-stack storage building, small (1.1-acre) inland lake, parking, roads, and residential lots (Figure 2). The dry-stack storage building and associated parking would be a commercial operation made available to the general public via rental agreements. The boat launching ramp and courtesy dock would be shared by the commercial operation and the residents of the development. The originally proposed work would have consisted of dredging roughly 20,000 cubic yards of reservoir bottom at the subject location to accommodate navigational needs within the cove.

The proposed dredging site measures 90 feet wide by 500 feet long by 7 feet deep. No dredging would occur within 25 feet of the normal summer pool (NSP) shoreline. NSP for Wheeler Reservoir is elevation 556.0 feet above mean sea level (msl). The dredged material would be removed from the reservoir via backhoe and truck, where possible, and via suction drill if needed. Dredged material would be transported to an upland-contained holding pond and placed on private land above elevation 560.0-foot msl. Return water would be filtered prior to its runoff from the pond.

The community dock would include one 10-foot by 30-foot covered, floating slip and 16 20-foot by 30-foot covered, floating slips. The slips would be for use by residential lot owners in the development. A 6-foot-wide by 910-foot-long boardwalk would be built from the docks parallel to the shoreline and leading to a private boat ramp. Docks and boardwalk would be secured with spud poles.

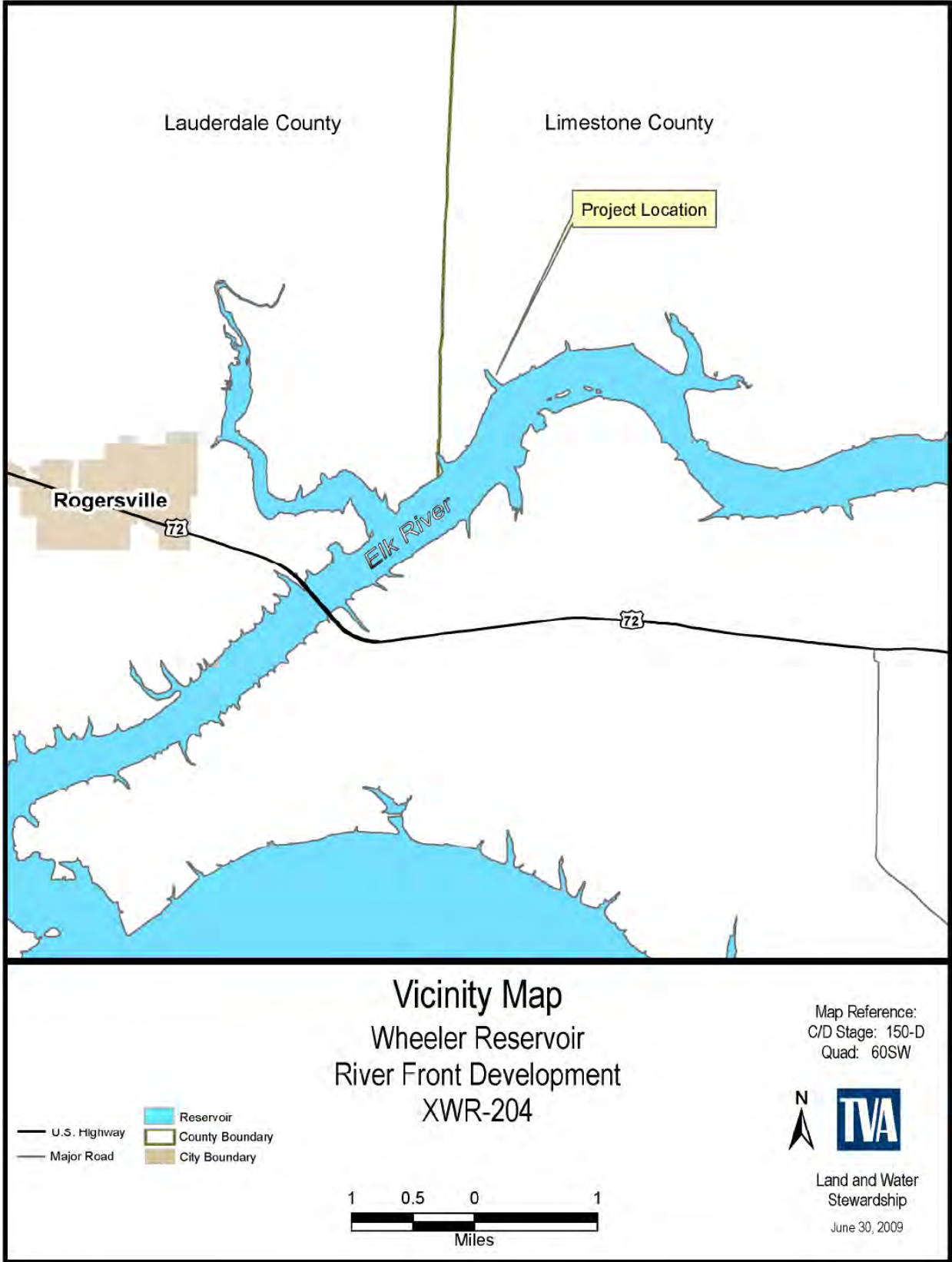


Figure 1. Billy Christopher River Front Development Proposal, Elk River Mile 7.3, Right Bank, Wheeler Reservoir, Limestone County, Alabama – General Locator Map

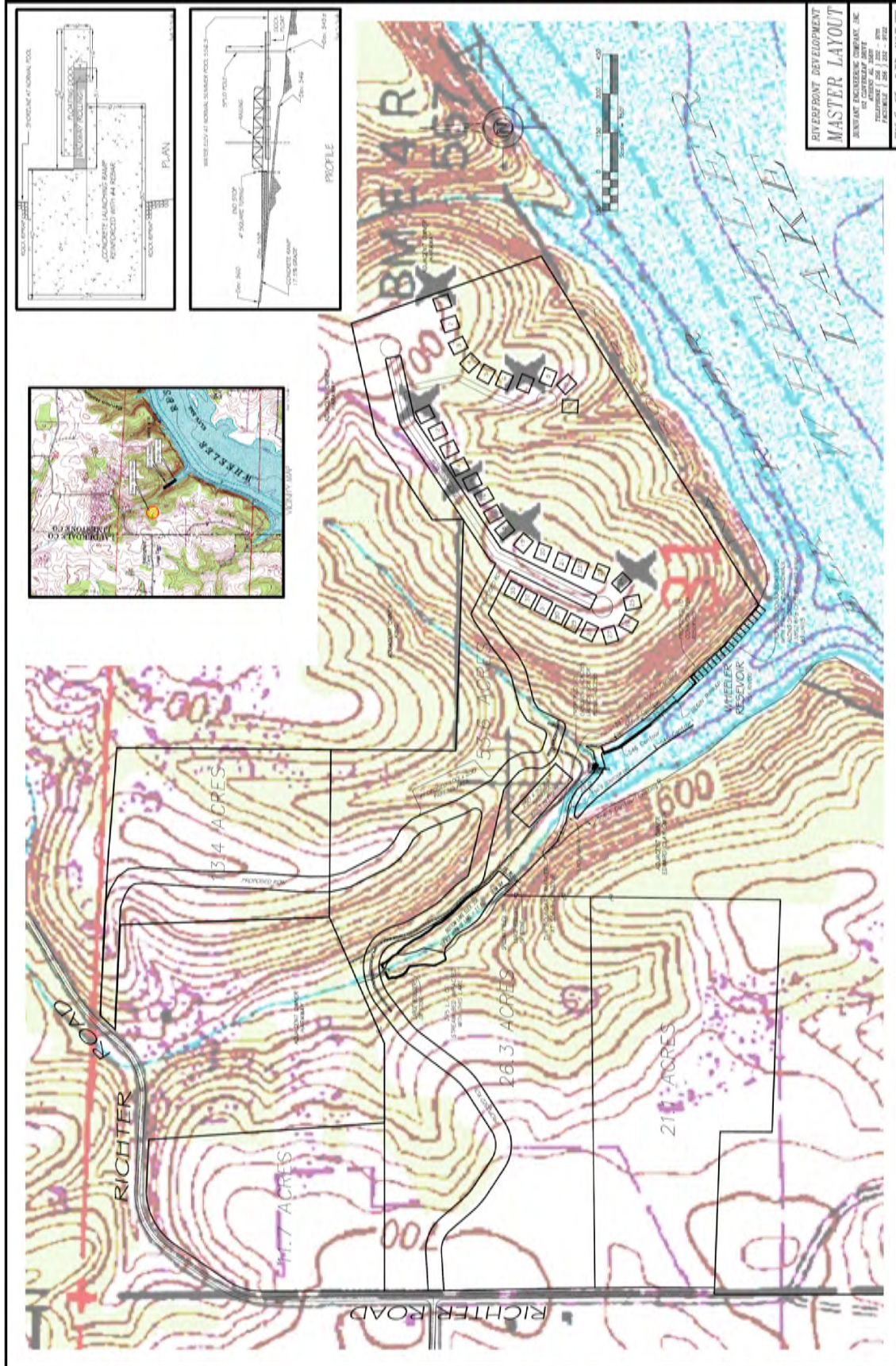


Figure 2. Billy Christopher River Front Development Proposal, Elk River Mile 7.3, Right Bank, Wheeler Reservoir, Limestone County, Alabama – Original Master Layout Plan

The 18-foot-wide by 80-foot-long ramp, with attached 8-foot-wide by 43-foot-long floating courtesy dock, would be built beside of a dry storage boat launch. The launch would require 150 cubic yards of fill. Riprap stone would be placed along 600 feet of shoreline for bank stabilization.

Proposed upland facilities include a 100-foot-wide by 200-foot-long parking lot, 200-slip dry storage building, 33 developed lots, and two culverts in drainages along needed access roads off of Richter Road. Altogether, 17 community dock wet slips, with a capacity to accommodate 33 boats, would be constructed. The dry stack facility would allow storage of up to 200 boats. The launch ramp would include portions to serve the community slips and dry storage facility. The general public would be able to use the dry storage facility and ramp through individual rental agreements.

The Corps and TVA issued Joint Public Notice (JPN) No. 08-19 (Appendix A) on September 11, 2008, to advertise the proposal. Of the 53 written responses, 50 stated opposition to the project, 23 requested a public hearing be held, and three government agencies provided comments. Copies of all responses were sent to the applicant for his rebuttal, to which he responded in a letter dated November 11, 2008. After receiving a copy of the JPN, the Alabama Department of Environmental Management (ADEM) advised Mr. Christopher by letter dated September 17, 2008, that he should apply for water quality certification for the originally proposed project.

On March 12, 2008, Richard Graham, of the Corps, inspected the proposed site, which is within a narrow cove located off the right-descending bank of Elk River. Since the cove is between two relatively steep hills, it appeared that any structure constructed within the cove, such as a boat dock, would be well protected from inclement weather. Portions of TVA land along the shoreline of the proposed project area show vegetative and hydrological characteristics of wetlands. During the Corps' wetland delineation, it was determined that wetland soils were not present in these areas; however, these sites do represent wetland habitat areas as defined by Executive Order 11990, which requires only the predominance of wetland vegetation. The substrate where the proposed dredging would occur appeared to be comprised of rock, cobble, and silt. There was no boating activity within the cove on this date of the Corps' inspection. See inspection report in Appendix B. TVA staff met on site on October 29, 2008, to inspect the area for important terrestrial plant and animal resources, including rare species, which could potentially be affected by activities within the scope of the review. To verify the extent of the proposed dredge area and potential conflicts with other sensitive resources, TVA staff also examined the site by boat on June 15, 2009.

Modifications to Proposal

During the review of the proposed activities, several project-related modification and revisions were needed to avoid or minimize impacts (Appendix C). The proposed dredge has been reduced in length to avoid potential impacts to wetland habitat area found in the uppermost portions of the cove. Now, roughly 7,000 cubic yards of reservoir bottom would be dredged to accommodate recreational boat access to the cove and ramp. Similarly, no riprap would be placed in the back of the embayment to avoid impacts to the emergent wetland area. Riprap would be placed on either side of the proposed ramp but would be limited to the minimum needed to prevent erosion and undercutting. Total length of riprap has been reduced. The proposed boardwalk to access the community dock facility would be constructed immediately adjacent to the NSP shoreline. It would be a fixed structure with a floor elevation a minimum of 2 feet above NSP elevation 556.0 msl. Signage would be placed along the boardwalk indicating that no mooring of vessels to the structure is permitted. To the extent practicable, the riprap,

launch ramp, and dredge would be constructed so that any effects on wetlands would be minimized (see special aquatic sites in Section 3.3).

The proposed dry stack and associated parking area would be placed above elevation 560 msl (see flood control functions in Section 3.2).

1.2 Decision Required. The proposed location is a water of the United States (U.S.) as defined by 33 Code of Federal Regulations (CFR) Part 328 and a navigable water of the U.S. as defined by 33 CFR Part 329.

- Section 10 of the *Rivers and Harbors Act of 1899* prohibits the alteration or obstruction of any navigable water of the U.S. unless authorized by the Secretary of the Army acting through the Chief of Engineers.
- Section 301 of the *Clean Water Act (CWA)* prohibits the discharge of dredged or fill material into the waters of the U.S. unless authorized by the DA pursuant to Section 404 of the same Act.

DA and TVA permits are required; therefore, the agencies must decide on one of the following:

- Issuance of permits for the proposed work
- Issuance of permits with modifications or conditions
- Denial of the permits

1.3 Other Approvals Required. Other federal, state, and/or local approvals may be required for the work.

- Section 26a of the *TVA Act* requires that no dam, appurtenant work, or other obstruction affecting navigation, flood control, or public lands or reservations be constructed and thereafter operated or maintained across, along, or in the Tennessee River or any of its tributaries until plans for such construction, operation, and maintenance have been submitted to and approved by TVA. In addition to other provisions of its approval, TVA would require the applicant to employ best management practices (BMPs) to control erosion and sedimentation, as necessary, to prevent adverse aquatic impacts. TVA is reviewing this application for a Section 26a permit. TVA is a cooperating agency in the preparation of this environmental assessment (EA).
- In accordance with Section 401(a)(1) of the CWA, water quality certification from ADEM is required for the originally proposed work. This certification, if needed for the modified proposal, is expected to be forthcoming and is required prior to any federal approvals. As appropriate, it will be included as a part of the supporting appendix material in this final EA.

Chapter 2.0 Public Involvement Process

As previously stated, on September 11, 2008, the Corps and TVA issued JPN No. 08-19 (Appendix A) to advertise the proposed work. All responses to the notice are included in Appendix D. The applicant's rebuttal to the responses is included in Appendix E. A summary of the responses is as follows:

- By letter dated October 6, 2008, the Alabama Department of Conservation and Natural Resources stated that (1) no net loss of stream or wetland functions should occur as a result of the project; (2) the use of BMPs to minimize shoreline erosion are encouraged; in particular, riprap is recommended rather than a sea wall since it offers usable aquatic habitat; and (3) strict adherence to state water quality standards is required.
- By letter dated October 8, 2008, the Alabama State Historic Preservation Officer (SHPO) concurred with the Corps/TVA joint opinion that a cultural resource assessment was needed in order to complete the review. The applicant was provided with a copy of the SHPO letter and commissioned a Phase I survey. Upon receipt of the survey, the SHPO concurred with TVA by letter dated April 2, 2009 (Appendix F), that the proposed project activities would have no effect on any known cultural resources listed in or eligible for the National Register of Historic Places (NRHP).
- By e-mail dated October 16, 2008, the U.S. Fish and Wildlife Service (USFWS) stated that no significant adverse effects on fish and wildlife resources are expected to result from this project and, therefore, USFWS had no objections to the issuance of these permits.
- Of the 53 comments received as a result of the JPN (50 individuals, and three state and federal agencies), 50 individuals were opposed to the proposed work, and 23 commenters requested that a public hearing be held to discuss the issues.

Issues Supporting the Proposal

- Rather than placing the dredged material in an upland location, it could be put to better use by restoring the nearby eroding islands that are protected for wildlife

Issues Opposing the Proposal

- Impacts to area fish and wildlife, in particular, species such as wild turkeys, bald eagles, bats, and Alabama snow-wreath
- Proposed facility would cause a decline in wildlife and waterfowl diversity
- Not in the best interest of the people who chose to live and fish in Elk River
- Concerns regarding large vessels on the Elk River and their perceived threat to jet skiers and small watercraft
- Dredging the slough may adversely affect fish spawning and waterfowl nest patterns, and any work in the slough should be approved by all property owners within the slough

- The entrance to the slough has low visibility from the river because of the bluffs on either side, and boats coming out of the slough will cause a dangerous situation when they merge with boats running the narrow river channel
- Environmental effects on water quality as a result of rainwater runoff from the parking lot or from effluents emitted from the proposed dry storage facility
- Area aesthetics would suffer because a very wealthy man just wants to make more money
- There are already enough boat ramps, boat docks, and residential homes on Elk River
- The proposal would overtax the existing potable water supply and jeopardize the continued habitability and quality of life of existing Richter Road homes
- The proposal would necessitate improvements to Richter Road, which the county cannot afford
- The public notice did not address how the disposal of sanitary waste would be handled
- The applicant would profit financially from using public land, and the public would get nothing in return
- Boat docks cause pollutants and congestion and are not necessary for access to Elk River
- The proposal should be placed on hold until the new TVA Land Policy is in place
- There is a perceived danger that the facility would allow river access to boaters who are unfamiliar with the hazards of the river like submerged stumps and logs or shallow water
- The noise level in the immediate area would increase as a result of the additional boats
- The local fire department could not handle a gasoline-fueled fire if one were to occur at the dock
- Constructing facilities within the shore management zone may be in violation of TVA's Shore Management Policy
- There is not enough police patrol of Elk River to serve this new development
- The increased boat traffic may stir up the riverbed, and increase sedimentation in the vicinity of the docks across from the proposed marina, making them inaccessible, which would reduce property values
- The water facilities and residential development will increase property taxes for residents on Elk River

- The applicant has a bad reputation for saying one thing and doing another (i.e., he did not follow through with approved plans in developing the Bay Hill area boat ramp and roads)

By cover letter dated October 11, 2008, Mr. Paul Hargrove forwarded a petition to the Corps containing 755 signatures of people against development on Elk River.

Chapter 3.0 Environmental and Public Interest Factors Considered

3.1 Introduction. 33 CFR 320.4(a) states the decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest. JPN 08-19 listed factors that may be relevant to the proposal and must be considered. The following sections discuss those factors identified as relevant through the public interest review process and provide a concise description of the anticipated impacts. The relevant blocks are checked with a description of the impacts.

3.2 Physical/Chemical Characteristics and Anticipated Changes.

(x) substrate. Approximately 7,000 cubic yards of substrate would be dredged from a site measuring 90 feet wide by 335 feet long, which equates to a little over 0.5 acre in size. The material would be removed via backhoe and truck, where possible, and a suction drill if needed. No dredging would occur within 25 feet of the NSP shoreline. Erection of spud poles to secure the proposed docks and boardwalk would impact the substrate, but not to a considerable degree. The reservoir bottom substrate in this portion of Elk River generally consists of rock, cobble, and silt. The proposed action would deepen the area by approximately 7 feet, exposing new substrate of likely the same composition. The increased depth would provide safer passage from the proposed docks to the proposed ramp and dry dock area and create slightly enhanced aquatic habitat diversity. Riprap stone would be placed for stabilization along the bank adjacent to the dredged area. This could help curtail erosion of upland soils into the substrate as well as slow down bank erosion resulting from wave action. Modification of this small area of shallow water habitat would result in an insignificant change in the availability of this habitat type and productivity for the area. These areas are quite common on the river and Wheeler Reservoir and would continue to function as habitat for aquatic life.

(x) currents, circulation, or drainage patterns. The site is located within a small cove off Elk River on Wheeler Reservoir. Because this area is very small, compared to the size of the reservoir, and located in the pool area, the proposed construction activities would not likely impact drainage patterns or currents in the area.

(x) suspended particulates, turbidity. During the dredging and construction phases, some turbidity would likely occur in the immediate area. This is expected to be temporary and would not be expected to disburse to Elk River. To ensure against turbidity drift, however, a silt curtain would contain most of the resultant turbidity within the work area and would be used (see special permit condition No. 5 in Section 4.4).

() baseflow

(x) storm, wave, and erosion. Riprap stone would be placed for stabilization along a portion of the bank adjacent to the dredged area and near the ramp and boardwalk. This would help curtail erosion of upland soils into the substrate as well as slow down bank erosion resulting from wave action. It is likely that the increased volume of boating traffic in the cove could contribute to shoreline erosion. However, there are no studies currently available that address this issue at the proposed site. The site is within a cove that appears to be well protected from inclement weather. If a permit were granted, however, it would be conditioned to advise the applicant of the possibility that any permitted structures may be subject to damage by wave wash from passing vessels. Issuance of a permit would not relieve the applicant from taking all proper steps to ensure the integrity of the permitted structures and the safety of any

boats moored thereto from damage by wave wash, and the applicant could not hold the United States liable for any such damage.

(x) water quality. The project area drains to the Elk River at Wheeler Reservoir. This section of the Elk River is classified by ADEM for swimming and other whole body water-contact sports and for fish and wildlife. The Elk River, 2 miles downstream of the project from Wheeler Reservoir to Anderson Creek, is on the state 303(d) list as impaired (i.e., not fully supporting its designated uses) due to pH and nutrients from pasture grazing and nonirrigated crop production.

TVA monitors ecological conditions at four locations on Wheeler Reservoir—the deep, still water near the dam, called the forebay; the middle part of the reservoir; the Elk River embayment; and the riverlike area at the extreme upper end of a reservoir, called the inflow—usually on a two-year cycle. The reservoir rated poor in 2007, compared to either good or fair in all previous years. Generally, lower ecological health scores occur during years with lower flows when, typically, chlorophyll concentrations are higher and dissolved oxygen concentrations are lower. This pattern held true for 1999, 2001, and 2007, which were all characterized by low flows. In 118 years of record, 2007 was the driest year.

Dissolved oxygen rated good at the midreservoir location and poor at both the forebay and Elk River embayment due to low concentrations (less than 2 milligrams per liter of oxygen) in the lower water column during the summer. Dissolved oxygen has rated good at the midreservoir location in all previous years, but ratings have varied between good, fair, and poor at the forebay and embayment locations, primarily due to reservoir flows. Sediment quality rated good at all locations monitored. No pesticides or PCBs (polychlorinated biphenyls) were detected, and the concentrations of metals were within expected background levels. Sediment quality typically rates good, although it rated fair at the midreservoir location in 2003 due to the presence of low levels of chlordane (a pesticide previously used to control termites and crop pests).

The proposed project involves construction activities along the shoreline. During the construction phase, erosion and turbidity levels would be elevated locally for a short time. Following construction activities, turbidity levels and sedimentation into the reservoir originating from the site would return to preconstruction levels or below due to the stabilization of the shoreline. BMPs and proper management of storm water runoff are expected to minimize impacts to reservoir water quality and would not worsen conditions in the impaired downstream part of Elk River.

The proposed community dock would allow for the mooring of boats that may discharge small amounts of petroleum products into the water. However, such leaking is not expected to occur frequently or involve large amounts and would be dissipated rather quickly by normal water circulation in the cove and Elk River. If good and proper operating, safety, and housekeeping procedures are followed at the dock, adverse water quality impacts related to spillage of petroleum substances would be minor.

Based on his original proposal, the applicant has applied for water quality certification (WQC) from ADEM. Based on April 2009 e-mail correspondence, ADEM had not completed its review of the proposal. Neither TVA nor the Corps would make a final decision or issue respective approvals until the WQC is issued by ADEM, if needed for the modified proposal. WQC would provide evidence that state water quality standards would not be violated by implementation of the proposed activities and any resultant permit conditions could be considered in this environmental review.

(x) flood control functions. The community docks, dredge, riprap, and boat launch ramp are considered amongst a class of repetitive actions in floodplains that have been determined by TVA to have minor impacts on floodplain values. The upper limits of both the 100-year and 500-year floodplain at this location on Wheeler Reservoir are elevation 560-foot msl. The proposed dry stack building and associated parking area would be constructed above elevation 560 msl or the limits of the 500-year floodplain; therefore, the project would have no effect on TVA flood control storage.

(x) shore erosion and accretion patterns. There are many variables that contribute to shore erosion. However, there are no measurable means of determining erosion as a direct result of recreational boating in the area that might originate from boat launching and associated mooring at the proposed community docks. Mooring and operating boats at the proposed dock would slightly increase wave action within the cove and along the Elk River shoreline in the immediate vicinity. Some portions of the shoreline fronting the applicant's property have naturally occurring exposed rock, which would eliminate the possibility for shoreline erosion at the site. Some portions of shoreline at the ramp and near the boardwalk would be stabilized with riprap minimizing the effects of wave erosion.

As previously mentioned, the use of BMPs during construction would minimize sediment in runoff from the site and into Elk River.

3.3 Biological Characteristics and Anticipated Changes.

(x) special aquatic sites (wetlands, pool and riffle areas, sanctuaries and refuges). TVA owns the reservoir bottom and a narrow strip of land up to elevation 556.3 msl along the shore in the vicinity of the proposed River Front Development shoreline alterations. Portions of the TVA lands contain sufficient vegetative and hydrological characteristics to be classified as wetlands. These sites represent wetland habitat areas as defined by Executive Order 11990 (Protection of Wetlands), which requires only the predominance of wetland vegetation. In accordance with its 1987 jurisdictional manual (U.S. Department of the Army, Corps of Engineers 1987), during the Corps' wetland identification and delineation verification process, it was determined that hydric soils were not present in these areas.

Consistent with TVA's Shoreline Management Policy (TVA 1998), disturbance of TVA properties would occur only at the areas of reservoir access and shoreline alteration including the ramp, dredge, riprap, and boardwalk access. Access from the proposed boardwalk to the community dock and the access road to the ramp would be outside the wetland area and above elevation 556.3 msl. These activities would have no effect on this sensitive habitat type on the TVA property.

The adjoining TVA properties in the vicinity of the proposed ramp location consist of a broader band of wetland vegetation (0.53 acre). This area consists of a more diverse wetland community, including water-willow, button bush, cattail, sedges, lizard's tail, and spotted jewelweed. The proposed boat ramp and a portion of the associated dredge are located in the wetland area. At the proposed ramp location, TVA land includes only a narrow strip along the shoreline (less than 3 feet wide), and water depth beyond the shoreline drops quickly from approximately 6 inches to about 3 feet. Wetland vegetation in this area consists of small patches of water-willow and button bush. Construction of the ramp, in accordance with the modified plans (Appendix C), would have minimal direct and indirect effect on this wetland habitat area (less than 550 square feet or about 0.01 acre).

The proposed dredge area would include TVA properties below NSP in the vicinity of the proposed boat ramp. As originally proposed, the dredge would adversely impact the emergent shoreline wetland areas. As designed, this proposed dredge would include a shallow water region south and east of the proposed ramp (the uppermost portions of the cove). This area had been historically disturbed and emergent and shrub/scrub wetland vegetation has been removed. Termination of this disturbance would likely result in recovery of wetlands in this area. A dredge of this area would eliminate the potential for wetland vegetation recovery. Removal of sediments and organic debris (driftwood) from this area could also alter hydrologic characteristics of the shoreline (increased wave action), creating adverse impacts on the fringe wetland habitats. However, the proposal reduced from 500 feet to 335 feet in length would avoid potential impacts to wetland habitat area found in the uppermost portions of the embayment (Appendix C). Restricting all dredge activities to a corridor from the ramp to navigable waters would minimize potential impacts to this aquatic habitat (see original dredge plan in Appendix A and modified plan in Appendix C, Facility Location, and Section 4.4).

Similarly, no riprap would be placed in the back of the cove to avoid impacts to the emergent wetland area. Riprap would be placed on either side of the proposed ramp but limited to the minimum needed to prevent erosion and undercutting of the ramp. Total length of riprap has been reduced from 600 feet to 320 feet. Approximately 300 feet of riprap would be placed on the north side of the cove, and a 10-foot-long section would be placed on each side of the proposed ramp. To the extent practicable, the riprap would be placed so that any effects on TVA wetlands would be minimized. The proposed boardwalk to access the community dock facility would be placed immediately adjacent to the NSP elevation (556 msl) along the left-descending bank of the cove and outside of the wetland and, therefore, is expected to have no direct or indirect impacts.

(x) endangered or threatened species. In response to the JPN, by e-mail dated October 16, 2008, the USFWS stated that no significant adverse effects on fish and wildlife resources are expected to result from this project. Therefore, USFWS had no objections to the issuance of these permits. These comments were provided in accordance with provisions of the *Fish and Wildlife Coordination Act* (48 Statute [Stat.] 401, as amended; 16 U.S. Code (USC) 661 et seq.) and the *Endangered Species Act of 1973* (87 Stat. 884, as amended; 16 USC 1531 et seq.).

Terrestrial Animals

Review of the TVA Natural Heritage database indicated that a number of federally listed terrestrial animals are reported to occur in Limestone County, Alabama, in the general vicinity of the River Front Development proposal. They include gray bat (*Myotis grisescens*) and Indiana bat (*Myotis sodalis*). A cave in the vicinity formerly inhabited by these species was inundated by Wheeler Reservoir. Extant populations do not occur in the area, and the proposal would have no effect on any known populations of these bats.

State-listed terrestrial animals, including amphibians, reported from the area include hellbender (*Cryptobranchus alleganiensis*), Tennessee cave salamander (*Gyrinophilus palleucus*), and bald eagle (*Haliaeetus leucocephalus*). Hellbender occurs only in clear, flowing streams and rivers and would not occur in the project area. Tennessee cave salamander is a cave-dwelling species and would not occur in the project area. The bald eagle is known to nest approximately 5 miles from proposed River Front Development site. Because of its distance from the development, this project would have no effect on the known eagle's nest. This nest was constructed and continues to be active with current human residential and recreational use in

the vicinity. The increased use of the area after the project is complete would have no effect on this nest.

Aquatic Animals

Limestone County, Alabama, has a large number of listed or rare aquatic species. Review of the TVA Natural Heritage database indicated that 10 federally listed, two candidates for federal listing, and 45 state-listed aquatic species have been reported to occur in Limestone County, Alabama (Table 1). Extant populations of these species are primarily known from tributaries of the Tennessee and Elk River systems or from unimpounded portions of the Elk River. Most of these species were extirpated from the Tennessee and lower reaches of the Elk Rivers after completion of Wheeler Dam. They do not occur in the impact area, and the proposal would have no effect on any known populations.

Table 1. Federally and State-Listed Aquatic Threatened and Endangered Animals Known to Occur in Limestone County, Alabama

Common Name	Scientific Name	State Status (Rank)	Federal Status
Fish			
Bigeye chub	<i>Hybopsis amblops</i>	TRKD (S3)	-
Blotched chub	<i>Erimystax insignis</i>	TRKD (S2)	-
Bluebreast darter	<i>Etheostoma camurum</i>	TRKD (S1)	-
Blueside darter	<i>Etheostoma jessiae</i>	TRKD (S3)	-
Boulder darter	<i>Etheostoma wapiti</i>	PROT (S1)	END
Chestnut lamprey	<i>Ichthyomyzon castaneus</i>	TRKD (S2)	-
Fantail darter	<i>Etheostoma flabellare</i>	TRKD (S3)	-
Flame chub	<i>Hemitremia flammea</i>	TRKD (S3)	-
Gilt darter	<i>Percina evides</i>	TRKD (S2)	-
Mountain madtom	<i>Noturus eleutherus</i>	TRKD (S1)	-
Paddlefish	<i>Polyodon spathula</i>	PROT (S3)	-
Redline darter	<i>Etheostoma rufilineatum</i>	TRKD (S3)	-
River carpsucker	<i>Carpionodes carpio</i>	TRKD (S2)	-
River darter	<i>Percina shumardi</i>	TRKD (S3)	-
Rosyface shiner	<i>Notropis micropteryx</i>	TRKD (S2)	-
Silver redhorse	<i>Moxostoma anisurum</i>	TRKD (S2)	-
Silver shiner	<i>Notropis photogenis</i>	TRKD (S1)	-
Slackwater darter	<i>Etheostoma boschungii</i>	PROT (S1)	THR
Slender madtom	<i>Noturus exilis</i>	TRKD (S3)	-
Snubnose darter	<i>Etheostoma simoterum</i>	TRKD (S3)	-
Southern cavefish	<i>Typhlichthys subterraneus</i>	PROT (S3)	-
Southern redbelly dace	<i>Phoxinus erythrogaster</i>	TRKD (S3)	-
Spring pygmy sunfish	<i>Elassoma alabamae</i>	PROT (S1)	-
Stargazing minnow	<i>Phenacobius uranops</i>	TRKD (S1)	-
Stonecat	<i>Noturus flavus</i>	TRKD (S1)	-
Stripetail darter	<i>Etheostoma kennicotti</i>	TRKD (S3)	-
Tuscumbia darter	<i>Etheostoma tuscumbia</i>	PROT (S2)	-
Mussels			
Butterfly	<i>Ellipsaria lineolata</i>	TRKD (S3)	-
Cumberland monkeyface	<i>Quadrula intermedia</i>	PROT (S1)	END
Deertoe	<i>Truncilla truncata</i>	TRKD (S1)	-

Common Name	Scientific Name	State Status (Rank)	Federal Status
Kidneyshell	<i>Ptychobranthus fasciolaris</i>	TRKD (S1)	-
Monkeyface	<i>Quadrula metanevra</i>	TRKD (S3)	-
Mucket	<i>Actinonaias ligamentina</i>	TRKD (S2)	-
Ohio pigtoe	<i>Pleurobema cordatum</i>	TRKD (S2)	-
Orange-foot pimpleback	<i>Plethobasus cooperianus</i>	PROT (S1)	END
Painted creekshell	<i>Villosa taeniata</i>	TRKD (S3)	-
Pink mucket	<i>Lampsilis abrupta</i>	PROT (S1)	END
Pink papershell	<i>Potamilus ohioensis</i>	TRKD (S3)	-
Purple lilliput	<i>Toxolasma lividus</i>	TRKD (S2)	-
Ring pink	<i>Obovaria retusa</i>	PROT (S1)	END
Rough pigtoe	<i>Pleurobema plenum</i>	PROT (S1)	END
Sheepnose	<i>Plethobasus cyphus</i>	PROT (S1)	CAND
Spectaclecase	<i>Cumberlandia monodonta</i>	PROT (S1)	CAND
Tennessee clubshell	<i>Pleurobema oviforme</i>	TRKD (S1)	-
Tennessee pigtoe	<i>Fusconaia barnesiana</i>	TRKD (S1)	-
Wavy-rayed lampmussel	<i>Lampsilis fasciola</i>	TRKD (S1S2)	-
White heelsplitter	<i>Lasmigona complanata</i>	TRKD (S2S3)	-
Snails			
Anthony's river snail	<i>Athearnia anthonyi</i>	PROT (S1)	END
Armored snail	<i>Pyrgulopsis pachyta</i>	PROT (S1)	END
Skirted hornsnail	<i>Pleurocera pyrenella</i>	TRKD (S2)	-
Slender campeloma	<i>Campeloma decampi</i>	PROT (S1)	END
Spiral hornsnail	<i>Pleurocera brumbyi</i>	TRKD (S2)	-
Varicose rocksnail	<i>Lithasia verrucosa</i>	TRKD (S3)	-
Aquatic Insects			
A caddisfly	<i>Hydropsyche rotosa</i>	RARE (S1)	-
A caddisfly	<i>Hydropsyche simulans</i>	RARE (S1)	-
A caddisfly	<i>Rhyacophila fenestra</i>	RARE (S1)	-
Crayfish			
Troglobitic crayfish	<i>Cambarus jonesi</i>	SPCO (S2)	-

-- = Not applicable

Status codes: CAND = Federal candidate species; END = Endangered; PROT = Protected; RARE = Rare; SPCO = Species of concern; THR = Threatened; TRKD = Tracked by state natural heritage program.

State ranks: S1 = Critically imperiled; S2 = Imperiled; S3 = Vulnerable; S#S# = Occurrence numbers are uncertain

The proposed dredge and community boat docks would be located in the portion of the Elk River where the habitat is altered by the impoundment of the Tennessee River and the creation of Wheeler Reservoir. No records or suitable habitat for these federally listed fish or mussel species is present within the immediate vicinity of the proposed action; therefore, no direct or indirect impacts would occur from the proposed action. Several of the mussel species that are tracked by the State of Alabama can occur in impoundments, but these species are relatively common in Wheeler Reservoir. Potential impacts to these species would be confined to the areas that would be dredged and would not result in effects on the overall populations of these species in Wheeler Reservoir.

Plants

Three state-listed species are known to occur within 5 miles of the project (Table 2). Habitat is present for two of these species. Allegheny-spurge (*Pachysandra procumbens* - S2S3) was found growing on the right bank of the slough on the applicant's property and in the vicinity of the proposed boardwalk. Alabama snow-wreath (*Neviusia alabamensis* - S2) occurs along limestone bluffs just south of the proposed development, but not on the applicant's property.

Table 2. Species of Conservation Concern Known to Occur Within 5 Miles of the Proposed Development in Limestone County, Alabama

Common Name	Scientific Name	State Status (Rank)	Federal Status
Plants			
Alabama snow-wreath	<i>Neviusia alabamensis</i>	SLNS (S2)	-
Allegheny-spurge	<i>Pachysandra procumbens</i>	SLNS (S2S3)	-
Muhly grass	<i>Muhlenbergia sobolifera</i>	SLNS (S1)	-

-- = Not applicable

Status codes: Alabama does not give status to state-listed species; SLNS = No state status

State rank abbreviations: S1 = Critically imperiled, often with 5 or fewer occurrences;

S2 = Imperiled, often with <20 occurrences; S3 = Rare or uncommon, often with <80 occurrences;

S## = Occurrence numbers are uncertain

Allegheny-spurge occurs within the project footprint and in an area where boardwalk access is planned. The species is not critically imperiled in Alabama, and this project would only potentially impact a small portion of the plant population in the area and cause no harm to the species in other parts of its range. TVA would also work with the applicant to minimize the number of individual plants destroyed during project construction and, if practicable, relocate plants that would otherwise be destroyed. Allegheny-spurge is often cultivated and used as a shade-tolerant groundcover.

(x) habitat for fish and other aquatic organisms. The proposed dredging would result in the immediate loss of the existing benthic communities within the affected 30,150 square-foot dredging footprint. Although recolonization is expected to occur in a short time, the composition of the new communities would be slightly different due to the increased water depths. Fish species are expected to benefit from the increased water depths. The proposed boat slips and boardwalk would prevent total penetration of sunlight through the water column and reduce limnetic temperature, thus cooling the aquatic environment. Furthermore, the slips would enhance aquatic habitat by providing surface areas for attachment by sedentary species and shaded areas where smaller fish could hide from predators. The proposed bank stabilization would also likely provide some habitat for small fish and sedentary aquatic species.

(x) wildlife habitat. The proposed facilities would cause most wildlife to alter their feeding, nesting, and movement patterns in order to avoid the area, both during and after construction. These animals would likely relocate to undeveloped habitats within the area. These displaced wildlife populations, although small in number, would compete with individuals of their kind for available suitable habitat and eventually reach population equilibrium. There is a potential for a slight reduction in overall population numbers within their new habitats. Because of the availability of similar suitable habitats in the area relative to the small amount of habitat proposed for development and because the species present are common and abundant in the area and the region, impacts on terrestrial wildlife are expected to be minor. While a small amount of waterfowl use area and suitable habitat associated with this site would also be affected, the proposed water use facilities would result in a minor and insignificant effect on

ducks and geese that live or migrate through this area because of the small portion of water body affected relative to the size of Wheeler Reservoir. In addition, construction of the small inland lake on the unnamed tributary to Elk River would help offset this habitat loss.

Designated Natural Areas

The Narrow Bluff TVA Habitat Protection Area (HPA) is a 7.1-acre land parcel consisting of a narrow strip approximately 0.5 mile long and located on the right bank of the Elk River near Mile 7, downstream from Buzzard Roost Bluff. The parcel consists totally of bluff or semibluff terrain with little or no timber. The soils are highly erodible. Alabama snow-wreath is state-listed (S2) and is imperiled globally (G2) (see Table 2) and occurs on this designated natural area.

Because the HPA is opposite the development site, no impacts to the Narrow Bluff HPA are anticipated as a result of the proposed action.

Invasive Plants

Terrestrial habitats could possibly be impacted by the introduction and spread of invasive nonnative species. Executive Order 13112 (Invasive Species) defines an invasive nonnative species as any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, which is not native to that ecosystem, and whose introduction does or is likely to cause economic or environmental harm or harm to human health (U.S. Department of Agriculture [USDA] 2007). Information provided by the Alabama Invasive Plant Council (2006) reports the following invasive species that pose a severe threat to native ecosystems as occurring in Limestone County: alligator weed, Eurasian water milfoil, Chinese privet, Japanese honeysuckle, Japanese stiltgrass kudzu, multiflora rose, royal empress tree, and tree of heaven.

In addition, the federal noxious weed cogongrass (USDA 2007) has been reported from the adjoining counties of Lauderdale and Lawrence. This highly aggressive weed disrupts ecosystem functions, reduces wildlife habitat, and alters fire regimes and intensity (Evans et al. 2008). To prevent the spread or introduction of these invasive species, all equipment used on site would be cleaned prior to use to ensure it is free of invasive weed seeds or plant parts. Disturbed areas would be revegetated with native or nonnative noninvasive plant species. In addition, clean and weed-free quarried shot rock would be used for bank stabilization. If the above conditions are followed, impacts to the terrestrial ecology from the introduction and spread of invasive nonnative species would be minimal (see Section 4.4).

() biological availability of possible contaminants in dredged or fill material

3.4 Human Use Characteristics and Anticipated Impacts.

(x) existing and potential water supplies; water conservation. The proposed facilities would not typically need a water supply. However, a reliable source of potable water would be needed to supply the proposed residential development. In the event that the current rural water supply may not be capable of handling those needs, the applicant may have to seek another source of water.

(x) water-related recreation. The proposed community water use facilities and ramp would provide safe moorage and access for boaters and enhance recreational boating opportunities within this area of Wheeler Reservoir. The immediate cove is large enough to allow some swimming, fishing, and canoeing while being protected from the wind and rougher waters of the open river.

As previously mentioned, the proposed facilities would be located along the Elk River on the west end of Wheeler Reservoir. This section of the reservoir includes several large embayments, the largest of which is on the Elk River, as well as the main stem of the Tennessee River, extending from Wheeler Dam upstream to approximately River Mile 295. This area of the reservoir includes a total of 26,784 surface acres of water at NSP elevation.

Currently, a total of 13 public recreation areas and three commercial recreation areas provide boating accommodations in this area of the reservoir. The public recreation areas include 13 boat launching ramps with a combined total of 488 vehicle and trailer parking spaces. The commercial marina operations provide a total of 255 dry boat storage spaces and 324 wet slips. In addition, there is an estimated 3,664 boats moored along the shoreline by private property owners on this section of Wheeler Reservoir. The River Front Development LLC proposal would result in the addition of 200 commercial dry boat storage spaces and 33 private community wet slips. Not all 233 boats from these community and dry storage facilities are expected on the reservoir at the same time. However, during the recreation season, an increase in boating activity and usage would likely occur.

Based on observations of boating use patterns across the Tennessee River system and on Wheeler Reservoir, TVA estimates that about 25 percent of boats stored at marinas and private water access facilities are likely to be in use during a typical summer weekend day and 35 percent on a peak use summer holiday weekend. Similarly, public boat launching ramps are generally not used at full vehicle/trailer parking capacity. TVA estimates that use of public ramps ranges from 60 to 75 percent of full capacity on typical and peak holiday weekend days, respectively. Therefore, the proposed facilities would result in up to 58 additional boats on the reservoir on a typical weekend day during the boating season and an estimated 82 additional boats during a holiday weekend. These estimates of usage are supported by analysis contained in a recent technical report (TVA 2009). Given the water surface area available, it appears that typical summer weekend and holiday weekend boating activity can be accommodated without exceeding generally accepted optimum recreational boating capacity thresholds (TVA 2009).

It is also assumed that as a staging area some boaters would motor out of the embayment and onto the Elk River and main (Tennessee) river channel to pursue their boating pleasures. With the increased reservoir access and moorage, water-related recreation opportunities such as boating, fishing, and leisure time activities would most likely increase. This would provide a positive benefit and attraction for the residents, potential residents, and those in need of dry boat storage. Because this increase would not be large and would be achieved gradually during residential build-out and commercial dry storage rental, the increased demand and use would not significantly affect overall reservoir (water-related) recreation. Increased use within this area would not jeopardize recreational boating in the cove in the immediate vicinity of the residential development, Elk River or Wheeler Reservoir, as long as recreational boaters follow safe boating practices, State of Alabama boating laws, and U.S. Coast Guard-recommended safety zones around commercial boat and barge traffic. Although there would be a slight increase in recreational boating traffic, it is expected that this impact on recreational boating opportunities would be minor and safety would not be reduced.

(x) aesthetics. The cove and surrounding property lie within an undeveloped area on the lower Elk River. The Elk River shoreline upstream to Maple Swamp Branch and downstream to Anderson Creek is dominated by forested uplands, open agricultural lands, and scattered rural residential properties. TVA fee-owned land fronts much of this shoreline. Currently, there is only one pier and boathouse within the cove. Construction of the proposed

facilities would result in a minor but permanent change and alter the visual character of the immediate shoreline for a short distance relative to the length of undisturbed shore.

(x) traffic/transportation patterns. As indicated above, because the expected increase in recreational boating would not be large and would be achieved gradually during residential build-out and commercial dry storage rental, the increased demand and use would not significantly affect overall reservoir (water-related) recreation (also see water-related recreation section above and navigation and safety section below).

The proposed commercial dry storage and ramp along with development of 33 residential lots would result in a small increase in land-based vehicular traffic on county roads and highways in the area. Some additional traffic to and from this development would be expected from the River Front Development's two access roads onto Richter Road; one of which would T-intersect at Richter Road and County Road 566 (see Appendix A). However, any slight traffic increase would likely be seasonal during the peak summer recreation months and decline in volume during inclement weather and cooler months.

The main east-west artery south of the Elk River from the project, U.S. Highway 72, connects Athens and Florence, Alabama. This multiple-lane highway provides a level of service that would continue to support this development and others occurring west of Athens. Therefore, no significant impact on area transportation is expected.

() energy consumption or generation

() conservation

(x) air quality. Given the nature of the activity, air quality during performance of the work would not exceed *de minimis* (so minor as to merit disregard) levels of direct emissions of a criteria pollutant or its precursors and are exempted by 40 CFR 93.153. After project completion, levels of pollutants normally associated with combustible engines would be higher due to increased traffic within the commercially developing area.

(x) historic properties and cultural values. By letter from TVA dated March 19, 2009, a cultural resources survey conducted by the applicant's consultant, documented in a report entitled *A Phase I Cultural Survey of a Proposed Residential Development Area in Limestone County, Alabama* (Thompson 2009), was transmitted to the Alabama SHPO. Two sites were identified, 1Li758 and 1Li759, but both were determined to be ineligible for listing in the NRHP. By letter dated April 2, 2009, the Alabama SHPO concurred with TVA and the Corps that there are no NRHP-listed or -eligible properties affected by this undertaking. TVA also consulted with federally recognized tribal representatives that may have an interest in the project. On March 26, 2009, the United Keetoowah Band of Indians in Oklahoma had no objection to the project. Furthermore, in its letter dated April 16, 2009, the Alabama-Coushatta Tribe of Texas indicated that based on the January 2009 cultural resources investigation, the project would have no impact to religious, cultural, or historical assets of interest (Appendix F).

Dredged material would be transported to an upland-contained holding pond and placed on private land above the 560.0-foot msl contour (see Appendix A). This area is identified in consultation correspondence with the Alabama SHPO.

(x) navigation and safety. Elk River is not a commercial waterway but is commonly used recreational-boating waters. The proposed facilities would insignificantly benefit recreational navigation in the area by providing safe moorage facilities that would allow easy

ingress and egress to the main channel from the applicant's proposed development (see water-related recreation section above). Commercial navigation on the Tennessee River (Wheeler Reservoir) would not be affected by these community docks. Marking the community dock with safety lights or reflectors would allow boaters to see it better between dusk and dawn, further reducing any navigational hazard (see Section 4.4).

(x) noise. There would be a generation of noise during construction. However, it is expected that construction would be performed during daylight hours, be temporary, and be within normal ranges for construction equipment. After project completion, however, the normal noise associated with occasional boat traffic at a boat dock would be present.

(x) land use classification. In order to succeed at selling residential lots, the applicant proposes to offer each prospective lot owner a boat slip at the proposed facility. This would result in changing the current land use from rural to residential.

(x) economics. Contractors, the workforce, and materials suppliers would benefit economically from the proposed work. The applicant would benefit economically from the sale of residential lots, dry dock rental fees, and other means that he may decide to include in the future. The local government would also benefit from the increased tax base. The proposed facility is not expected to have an adverse financial effect on other such area facilities.

() food and fiber production

() mineral needs

(x) consideration of private property. The adjacent private property within the cove would become less private if the proposed facilities are constructed. Private property values could be affected by the success or failure of the applicant's proposed venture.

(x) environmental justice. The project has been reviewed with respect to environmental justice, and it has been determined that there is no disproportionate concentration of minority or low-income persons within the vicinity of the project site. There would be no residential relocations caused by the proposed action.

3.5 Cumulative and Secondary Impacts. One of the most important aspects of cumulative effect assessment is that it requires consideration of how actions by others (including those actions completely unrelated to the action) have affected and will affect the same resources. Cumulative environmental effects for the proposed facilities were assessed in accordance with guidance provided by the President's Council on Environmental Quality (U.S. Environmental Protection Agency 1999). This guidance provides a process for identifying and evaluating cumulative effects under NEPA. For purposes of cumulative impact assessment, the spatial boundary has been broadened to consider effects of the work and its effects to others. In this case, reasonably foreseeable future actions include:

- Increased real estate value for the applicant's property and other properties within the area
- Improved recreational boating due to additional moorage and storage facilities
- Increased boating effects on crowding, navigation and safety, and water quality

Future associated work that may be proposed in the vicinity of the site can be identified as cumulative or secondary impacts; however, determining the magnitude and significance of cumulative effects, modifying to avoid, minimize, or mitigate significant cumulative effects, and

planning for monitoring and adaptive management would have to be addressed on a case-by-case basis. Overall, while there would be permanent impacts on the tract, given the relatively small area of impact and the relatively low physical and biological functions present in the impact area, the proposal is not anticipated to have a substantial cumulative or secondary effect upon the existing environment, and the sustainability of important resources would not be adversely affected.

Chapter 4.0 Alternatives

4.1 Introduction. This section discusses alternatives as required by 33 CFR 320.4(a)(2). The relevant environmental issues identified in Chapter 3.0 were used to formulate the alternatives. The alternatives that were given detailed consideration are listed below.

4.2 Description of Alternatives. Only reasonable alternatives have been considered in detail, as specified in 40 CFR 1508.14(a).

a. No Action. No action may be brought about by either of the following: (1) that the applicant elects to eliminate the proposed work currently under jurisdiction of the Corps and TVA or (2) that the permit be denied.

b. The Applicant's Proposed Action. This would consist of permitting the proposed facilities as described in the JPN.

c. Applicant's Proposed Action With Special Conditions or Mitigation. In accordance with 33 CFR 320.4(r), review of the existing action has revealed mitigation measures typical for activities of this nature, which would reduce environmental impacts of the proposed action. The recommended conditions (listed in Section 4.4) were discussed with the applicant who verbally agreed to those conditions. The applicant has also agreed to some reductions in the scope of various aspects of his proposal such as the length of shoreline stabilization and extent of dredging, which were intended to reduce effects of the project (see Section 1.1).

4.3 Comparison of Alternatives.

a. No Action. With this alternative, the applicant would not be allowed to construct the community dock and boat ramp or perform the dredging or bank stabilization. No economic or recreational benefits would be derived from this alternative, and the applicant's needs would not be met.

b. The Applicant's Proposed Action. This alternative would authorize the bank stabilization and dredging and the construction of the community dock and boat ramp according to plans outlined in the JPN. No properties listed in or eligible for the NRHP would be affected, and no federally listed as endangered or threatened species would be impacted. The proposed community dock and ramp would increase water-related recreational opportunities. Dredging the cove as described would create a more navigable area, and the bank stabilization would aid in preventing further erosion of the shoreline. Permitting the proposed action would meet the needs of the applicant and create minor economic benefits to investors and the community.

c. Applicant's Proposed Action With Special Conditions or Mitigation. The impact of this action would be similar to the description in "b" above. Modifications to the proposal identified in Section 1.1 and special conditions, listed in Section 4.4, have been reviewed and accepted by the applicant. This alternative would have the least adverse impacts of the options under consideration. Negative impacts to the environment would be minimized.

4.4 Special Permit Conditions. The following recommended special permit conditions, when applicable, are typically included in most DA permits, and are necessary to comply with federal law, while affording appropriate and practicable environmental protection.

1. The work shall be in accordance with any plans attached to this permit. You (the applicant) must have a copy of this permit available on the site and ensure all contractors are aware of its conditions and abide by them. *Justification: Recommended at 33 CFR 325, Appendix A.*
2. A preconstruction meeting with you, your contractors, and representatives from the Corps and TVA shall be held on site prior to any work in jurisdictional waters. The contractors shall present their method of operation for the work at this meeting. You should contact this office at least one week prior to construction to arrange the required meeting (telephone 615-369-7500). *Justification: To minimize permit noncompliance.*
3. Your (the applicant) use of the permitted activity must not interfere with the public's right to free navigation on all navigable waters of the United States. *Justification: Recommended at 33 CFR 325, Appendix A.*
4. The disturbance to riparian vegetation must be kept to a minimum during construction. To the extent practicable, equipment shall be limited to one access point along the bank. *Justification: To minimize the amount of disturbance in the work area.*
5. A silt curtain, placed between the dredging location and the reservoir proper, must be utilized and be properly maintained at all times during the operation. Appropriate markers should be placed on the silt curtain when it is being used to alert boaters of its presence. Dredged material shall be placed at an upland location outside the 100-year floodplain (also the same as the 500-year flood elevation at this location) and properly stabilized to prevent reentry into the waterway. No dredging would occur within 25 feet of the NSP shoreline. *Justification: To minimize the impacts on water quality.*
6. Maintenance dredging may be performed, as needed, for a period of 10 years from the date of this permit. You must apply to TVA and notify the Corps in writing at least six months prior so your request may be reviewed. Written approval from both agencies is required in order to commence maintenance dredging. *Justification: To facilitate upkeep of the channel and allow this office to determine if circumstances have changed and further review is necessary.*
7. You must install and maintain, at your expense, adequate safety lights, reflectors, and/or signals that would allow the boating public to recognize the community dock's water-based structures between dusk and dawn. This shall be coordinated with the Alabama Marine Police Division, and you must provide evidence of approval to the Corps office and TVA Land and Water Stewardship office. *Justification: To minimize impacts to navigation and safety.*
8. You must recognize that the structure may be subject to damage by wave wash from passing vessels. You must take all proper steps to ensure the integrity of the structure and the safety of boats moored thereto. *Justification: To minimize impacts to safety.*
9. To prevent the spread or introduction of invasive plants, all equipment used on site will be cleaned prior to use to ensure it is free of invasive weed seeds or plant parts. Disturbed areas must be revegetated with native or nonnative noninvasive plant species. Clean and weed-free quarried shot rock will be used for bank stabilization. *Justification: To minimize adverse impacts to the environment.*

10. TVA will work with the applicant to minimize the number of individual Allegheny-spurge (plants) destroyed during project construction and, if practicable, relocate plants that would otherwise be destroyed. *Justification: To minimize adverse impacts to the environment.*
11. The proposed boardwalk to access the community dock facility will be a fixed structure constructed immediately adjacent to the NSP shoreline with a floor elevation a minimum of 2 feet above elevation 556.0 msl. Signage will be placed along the boardwalk indicating that no mooring of vessels to the structure is permitted. *Justification: To minimize impacts to navigation and safety.*
12. Riprap, launch ramp, and dredge will be constructed as described in the modification to proposal and special aquatic sites sections (Section 1.1 and Section 3.3 of this EA) so that any effects on TVA wetlands are minimized. *Justification: To minimize the impacts on wetland resources.*

CHAPTER 5.0. Literature Cited

- Alabama Invasive Plant Council. 2006. *Alabama's 10 Worst Weeds*. Available from <http://www.se-eppc.org/eddMapS/alabama.cfm> (accessed June 2, 2009).
- Evans, C. W., D. J. Moorhead, C. T. Bargeron, and G. K. Douce. 2008. *Field Guide to the Identification of Cogongrass: With Comparisons to Other Commonly Found Grass Species in the Southeast*. Tifton, Ga.: The University of Georgia Center for Invasive Species and Ecosystem Health, Report No. BW-2009-02.
- Tennessee Valley Authority. 1998. *Shoreline Management Initiative – An Assessment of Residential Shoreline Development in the Tennessee Valley - Final Environmental Impact Statement*, Vols. I and II. Norris, Tenn.: TVA, Land Management, November 1998.
- . 2009. *Boating Density Analysis - A Comparison Among Tennessee Valley Authority and Other Federal Agency, State Agency, and An Investor-Owned Utility Technical Report*, Revision 1. Prepared by Jerry Fouse, TVA, Office of Environment and Research. TVA Chattanooga Electronic Document Management System Item No. 091341510.
- Thompson, Brandon S. 2009. *A Phase I Cultural Survey of a Proposed Residential Development Area in Limestone County, Alabama* (report on file at TVA, Cultural Resources staff office, Knoxville, Tennessee 37902).
- U.S. Department of Agriculture. 2007. *Invasive and Noxious Weeds*. Available from <http://plants.usda.gov/java/noxiousDriver> (accessed June 2, 2009).
- U.S. Department of the Army, Corps of Engineers. 1987. *Wetland Delineation Manual*. Waterways Experiment Station Technical Report Y-87-1, January 1987.
- U.S. Environmental Protection Agency. 1999. *Consideration of Cumulative Impacts in EPA Review of NEPA Documents*. USEPA, Office of Federal Activities (2252A), Report No. EPA 315-R-99-002, May 1999. Available from <http://www.epa.gov/compliance/resources/policies/nepa/cumulative.pdf> (accessed July 21, 2009).