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FINAL ENVIRONMENTAL ASSESSMENT

WORD AND BOGGUS
LINDSEY HARBOR DEVELOPMENT, GUNTERSVILLE RESERVOIR

Marshall County, Alabama

TENNESSEE VALLEY AUTHORITY
(LEAD AGENCY)
U.S. ARMY CORPS OF ENGINEERS
(COOPERATING AGENCY)

JUNE 2004

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Final Environmental Assessment **June, 2004**

Proposed project: Word and Boggus Lindsey Harbor Development,
Guntersville Reservoir
Marshall County, Alabama

Lead agency: Tennessee Valley Authority (TVA)

Cooperating agency: U.S. Army Corps of Engineers (USACE)

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Abstract: Word and Boggus Construction Company is requesting the purchase of 4.43 acres of Tennessee Valley Authority (TVA) public land in the Lindsey Hollow area of Guntersville Reservoir in Marshall County, Alabama. In addition, the company has requested Section 26a approval to construct a 23.5-acre man-made lake and a 2,450-linear foot channel in Lindsey Slough to connect to Guntersville Reservoir. The proposed development would impact 4,107 linear feet of stream habitat and approximately 10 acres of wetlands. The applicant has developed a mitigation plan to offset impacts of the proposed development. The new harbor would facilitate development of a 332.8-acre private land parcel into the Lindsey Harbor development. TVA and the U.S. Army Corps of Engineers have prepared an Environmental Assessment (EA) to understand more clearly what the potential environmental impacts associated with the land sale, lake and channel construction, and the Lindsey Harbor development would be.

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CHAPTER 1

1. PURPOSE OF AND NEED FOR ACTION

1.1. The Decision

In April 2003, Word and Boggus Construction Company of Guntersville, Alabama, submitted to the Tennessee Valley Authority (TVA) a request to purchase 4.43 acres of TVA property in the Lindsey Slough area of Guntersville Reservoir in Marshall County, Alabama. The TVA land parcel is a 4.43-acre portion of TVA Tract XGR-235 (an approximately 9-acre tract consisting primarily of shoreline currently allocated for Residential Access), which lies above the Guntersville Reservoir normal pool elevation of 595 mean sea level (msl). Lindsey Slough (Creek) is a tributary to Big Spring Creek, which enters Guntersville Reservoir between Tennessee River Miles 358 and 359. The land purchase, if secured from TVA, would be used in addition to 332.8 acres of private land purchased by Word and Boggus for development of the Lindsey Harbor project. In order for the 4.43-acre TVA tract to be sold, TVA must determine the requested acreage to be surplus land and then offer the tract at public auction for sale. In order to build the recessed harbor, the project is dependent upon the TVA land purchase. However, the land could be developed for general residential and commercial town center use without TVA approval.

The applicant proposes to develop a high-quality 332.8-acre planned residential community oriented on a new 23.5-acre man-made lake with a channel access to Guntersville Reservoir (see site conceptual plan, Figure 1). The development includes construction of a harbor, developed park areas, a commercial town center, 20 acres for a new city school, pedestrian trails, and individual and community boat slips. There is a dry storage facility planned for off-lake community residents. Approximately 374 home sites would be developed, of which approximately 76 lots would front the lake. The applicant has developed lot restrictions and covenants to ensure a high quality development. The applicant's private property is located at the end of Colonial Drive and Lindsey Lane approximately a mile from the eastern end of the U.S. Highway (US) 431 causeway in Guntersville, Alabama. The Guntersville city limits bound the western, southwestern, and northwestern portions of the development (see site vicinity location map, Figure 2).

Word and Boggus Construction Company has also submitted a joint Section 26a/Department of the Army permit application for the proposed construction of the lake and a channel dredge to connect the development to Guntersville Reservoir. The new lake, 100 to 800 feet wide, would be created by excavating on both sides of the creek that flows through Lindsey Hollow. Excavation would create a 23.5-acre lake surrounded by a poured-in-place seawall topped by an 8-foot-wide sidewalk. A channel would connect the newly excavated harbor to Lindsey Slough and the rest of the reservoir. Channel construction would require dredging Lindsey Slough for a length of 2,450 linear feet, a width of 110 feet, and a depth of 6 feet. The proposed development would impact 4,107 linear feet of stream habitat, in which 3,164 linear feet would be impounded due to construction of a new harbor, and 943 feet would be eliminated due to culverts and fill associated with home and infrastructure construction. Approximately 271,040 cubic yards of material would be excavated to construct the lake and channel.

Figure 1. Lindsey Harbor Development, Guntersville Reservoir, Site Conceptual Plan

Figure 2. Vicinity Map for Lindsey Harbor Development

1.2. Other Pertinent Environmental Reviews or Documentation

In August 2001, TVA prepared the *Final Environmental Impact Statement and Land Management Plan – Guntersville Reservoir* (EIS and Land Plan). This document describes proposed TVA management of 40,236 acres of public land on Guntersville Reservoir based on natural and cultural resource data, economic needs, and public input. Each tract of TVA land was allocated into one of seven zones. The adopted plan allocates intended uses into broad categories including Non-TVA Shoreland, TVA Project Operations, Sensitive Resource Management, Natural Resource Conservation, Industrial/Commercial Development, Developed Recreation, and Residential Access. The reservoir shoreline located in the vicinity of the proposed channel dredge and fronting the 4.43 acres of TVA land requested for sale by the applicant is allocated in the EIS and Land Plan for Residential Access.

The applicant, Word and Boggus Construction Company, has authorized the preparation of several environmental reports to support its requested purchase of TVA land and its request for Section 26a/Department of the Army approvals for the Lindsey Harbor development. Documents that have been submitted by the applicant in support of the project include the following:

- Draft Environmental Report entitled *Lindsey Harbor, Marshall County, Alabama, October 2003 Draft*
- *Wetland Identification/Delineation Report for a Tract in Guntersville (Marshall County), Alabama,* D. R. Sanders and Associates, Inc., October 7, 2002
- *Wetland Jurisdictional Determination and Consulting Proposed Subdivision, Lindsey Harbor*, OMI, Inc., October 22, 2003
- *Vegetation Description and Endangered Species Survey, Lindsey Harbor Development,* Lawton Associates, May 15, 2003
- *Supplemental Vegetation Survey for Lindsey Harbor Development,* Gabrielle A. Ehinger, August 2003
- *Faunal Survey of Lindsey Creek, Lake Guntersville, Guntersville, Alabama, for Mussels of the Family Unionidae,* University of Alabama in Huntsville, August 2003
- *Phase I Cultural Resource Assessment, Proposed Lindsey Harbor Subdivision, Marshall County, Alabama,* report submitted to OMI Engineers, Inc., by P. E. LaMoreaux & Associates, August 5, 2003
- *Phase I Deep Testing Along the Floodplain for the Lindsey Harbor Development, Guntersville Reservoir, Marshall County, Alabama*, Alexander Archaeological Consultants, October 2003.
- *Lindsey Harbor Conceptual Mitigation Plan*. Prepared for Robinsong Ecological Resources, Huntsville, Alabama, Project No. 23093, by Civil & Environmental Consultants, Inc. 2004.
- *Lindsey Harbor Development Mitigation Plan, Addendum 1* – May 21, 2004

- Sediment and Erosion Control Plan for Dredging New Lake

This Environmental Assessment (EA) evaluates the impacts of the land use and anticipated Section 26a requests including the residential development, lake, and channel construction facility approvals. Each water use facility would require an individual Section 26a application and approval from TVA when facility construction is requested.

1.3. The Scoping Process

Articles regarding the proposed Lindsey Harbor development have appeared in the Guntersville, Alabama, newspaper *Advertiser-Gleam* on September 25 and October 19, 2002, and on September 17, 2003. Letters of public support have been received from the mayor of Guntersville, the Marshall County Commission and Economic Development Council, and the superintendent of Guntersville City Schools.

The U.S. Army Corps of Engineers (USACE) published a TVA/USACE Joint Public Notice 03-73 on September 9, 2003. The comment period expired on October 9, 2003. Comments were received from the U.S. Fish and Wildlife Service (USFWS), Alabama Department of Conservation and Natural Resources (ALDCNR), Alabama Department of Environmental Management (ADEM), and adjoining property owners. The USFWS letter dated October 8, 2003, requested additional information in order to complete their review of the proposed development. The ADEM requested submittal of a water quality certification permit application and proof of a valid National Pollutant Discharge Elimination System (NPDES) registration. The applicant provided an ADEM-USACE Joint 404-401 permit application on February 4, 2004, with the requested information. The ALDCNR requested the opportunity to review a proposed mitigation plan and suggested review by other state agencies for potential impacts to state water bottoms and navigational safety issues. They also suggested the use of riprap in lieu of the planned seawall. Adjoining property owners expressed concerns about the various dredging options, siltation, and increased water traffic.

In addition, TVA published notice of the proposed channel excavation in the *Huntsville Times, Advertiser-Gleam,* and *Scottsboro Daily Sentinel* on October 8, 2003. The comment period on the proposed channel dredge was open until November 16, 2003. TVA published a second public notice and initiated interagency review of a draft EA in March, 2004, to provide additional opportunity to comment on the Lindsey Harbor development proposal. Notice of the proposed actions was also available on TVA's Web page (www.tva.gov/environment/reports). Comments in response to these notices were received from the USFWS and the Alabama Historical Commission (AHC). AHC stated that the EA thoroughly and accurately reflects their comments.

The USFWS responded in letters dated April 22, 2004 (to USACE) and May 20, 2004 (to TVA), that based on the available information, the requirements of Section 7 of the Endangered Species Act of 1973, as amended, had been fulfilled. They also concurred with the applicant's plan to mitigate all wetland impacts of the project by purchasing credits at a 2:1 ratio at the Flint Creek Wetland Mitigation Bank.

However, the USFWS expressed two concerns for this project.

1. The project may set a precedent with regard to development of TVA administered residential development reservoir land within the state of Alabama. TVA responded

to this concern by letter of June 10, 2004. Because each land use request is evaluated on its merits, the Lindsey Harbor project will not set a precedent for these types of projects to automatically be approved on other TVA lands. Such projects are expected to be uncommon on the TVA reservoir system.

2. The off-site stream mitigation proposal was a conceptual plan and recommended specific measures to mitigate project impacts. USFWS recommended that dredging be conducted during the dry season (August to October). An erosion control plan was requested. Silt curtains were requested at the area where the earthen berm would be breached to allow water to flow into the newly constructed harbor. For the stream mitigation projects, USFWS recommended that heavy equipment routes be identified in the plans and limited to identified corridors, that the stream flow at Payne Farm not be split down two separate channels (thereby affecting stream hydraulics), that stream channel features such as rock vanes be included in the plans, and that Best Management Practices be employed. These conditions have been incorporated into the Amended Conceptual Mitigation Plan in the Appendix.

The ALDCNR responded by letter dated April 15, 2004. ALDCNR commented that the stream mitigation guidelines used did not take into account the condition of the impacted stream nor the expected water quality of the restored stream at the mitigation site. They also felt that the fixed mitigation ratios (from the Tennessee Stream Mitigation Guidelines) did not fully address the range of conditions that might exist for a given project used and are too low when mitigation lags (or is concurrent with) stream impacts and that they do not account for significant differences that exist between streams of different order or stream type (intermittent versus perennial streams). ALDNCR stated that these factors lead to over or under mitigation.

To address these concerns, TVA, USACE, the applicant and consultants met with ALDNCR on April 30, 2004. As a result of this meeting, the applicant has prepared and submitted to the agencies an Addendum 1 (Attachment A) to the Conceptual Mitigation Plan to address these concerns. The concerns expressed by the USFWS and ALDNCR are addressed in the addendum. ALDNCR, in their letter dated May 28, 2004, withdrew their objection to the Conceptual Mitigation Plan. The USFWS also indicated concurrence with the mitigation plan by e-mail of June 3, 2004. TVA will require compliance with the Conceptual Mitigation Plan and Addendum 1 as a condition of permit approval. TVA will also require a permit condition for several of the USFWS recommendations.

The ADEM Section 401 Water Quality Certification, issued on April 22, 2004, contained 20 special conditions that should provide reasonable assurance that any discharge resulting from the proposed activities does not violate applicable water quality standards. ADEM requested that Section 401 water quality certification (WQC) special conditions be incorporated in the USACE permit.

Based on these concerns and TVA and USACE staff review, the following areas for impact analysis were identified for evaluation related to the proposed action:

- Water Quality
- Aquatic Ecology
- Wetlands
- Terrestrial Ecology
- Threatened and Endangered Species

- Cultural Resources
- Wastewater and Water Use and Solid Waste Management
- Floodplains
- Land Use and Transportation
- Recreation
- Visual/Aesthetic Resources
- Air Quality and Noise
- Socioeconomics

1.4. Necessary Federal Permits or Licenses

Section 26a of the TVA Act requires that TVA approval be obtained prior to construction, operation, or maintenance of any obstruction potentially affecting navigation, flood control, or public land or reservations along the Tennessee River or any of its tributaries. A Section 26a approval is required for fill, water use facilities and seawalls.

Section 404 of the Clean Water Act prohibits discharge of dredged or filled material into waters of the U.S. unless authorized by the Department of the Army. Section 10 of the Rivers and Harbors Act of 1899 prohibits the unauthorized alteration or construction of navigable waters of the U.S. Construction of the man-made lake and channel dredge would occur in navigable waters and therefore would require approval. A permit from the USACE under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbor Act would be required.

ADEM issued a Water Quality Certification for the proposed Lindsey Harbor development lake and channel excavation on April 22, 2004, in accordance with Section 401 of the Clean Water Act. In a letter from ADEM dated March 24, 2003, the applicant received an NPDES permit addressing storm water runoff from construction-related activities.

CHAPTER 2

2. ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1. The No Action Alternative

Under the No Action Alternative, the Word and Boggus purchase of TVA land would not be approved. The applicant would not be able to acquire the 4.43 acres of TVA land to develop the Lindsey Harbor development in its current configuration. The Section 26a request for the 23.5-acre man-made lake and the 2,450-linear foot channel dredge would be denied as well as the associated water use facilities. The applicant could continue to develop the private property but without the man-made lake or channel access to Guntersville Reservoir. No community boat slip, dry storage, or individual boat slips would be permitted. The associated proposed stream and wetland impacts would not occur.

2.2. The Proposed Action Alternative

Word and Boggus evaluated other potential project sites within the Guntersville Reservoir based on a defined set of selection criteria developed to meet their needs. After evaluating alternative locations, they determined that only one site met their qualifications. Word and Boggus subsequently purchased the 332.8-acre Lindsey Hollow site for their new development.

Under the proposed Lindsey Harbor development (Action Alternative), TVA would make available for sale the 4.43-acre TVA parcel for development of the Lindsey Harbor project. TVA would approve the Section 26a request for permission to construct the 23.5-acre man-made lake and 2,450-linear foot channel dredge to access Guntersville Reservoir. The new harbor and boat channel would facilitate the proposed 332.8-acre Lindsey Harbor development on the applicant's private land. The Lindsey Harbor development would include construction of a harbor, developed park areas, a commercial town center, 20 acres for a new city school, pedestrian trails, and individual and community boat slips. A dry storage facility planned for off-lake community residents could be constructed. A storm water retention basin would be constructed to capture upland erosion that has historically impacted the existing channel in Lindsey Slough. Approximately 374 home sites could be developed, of which 76 lots would front the lake. The proposed 23.5-acre man-made lake and 2,450-linear foot channel would be constructed to create a new boat harbor on Guntersville Reservoir. The applicant would be required to mitigate stream and wetland impacts as described in the Lindsey Harbor Conceptual Mitigation Plan dated January 29, 2004 and Addendum 1 dated May 21, 2004 (Appendix A).

Should the applicant purchase the TVA property at public auction, TVA would require (within 30 days of the land sale date) conveyance of a flowage easement (providing TVA the right to flood the purchasers private property) up to the 600-msl elevation. The flowage easement would preclude any structural development below the 600-msl-contour elevation. The applicant has previously agreed to the flowage easement and restriction, and this easement would become a condition of any sale agreement.

The Lindsey Harbor development would create access to its proposed boat harbor by dredging a channel through TVA property. Options for dredging this access channel are discussed below.

2.2.1. Dredge Option One

Dredge Option One (Figure 3 – Drawing 2767-4A) would include two channels--the southern most channel would extend along the south shoreline of Lindsey Slough, and the second channel would follow a historical channel conducted in the 1960s and the late 1970s, which is near the north shore of Lindsey Slough.

The first channel to be dredged as part of Option One would extend from TVA Marker No. 113 in a westerly direction along the south shoreline of Lindsey Slough for approximately 2,450 feet. The channel would have a width of 110 feet and an average depth of 6 feet. The first portion of the excavation would include approximately 1,750 feet and would be performed with a combination of track-hoe (80 percent) and pump dredge (20 percent). The 110-foot dredge would include approximately 80 feet for the actual dredge and an additional 15 feet on each side of the dredge for shore protection with riprap. The riprap would allow the developers initial access to the center channel by truck and track-hoe and would allow the same equipment access to the channel for future maintenance if needed. The remainder of the dredge would include an additional 700 feet by a width of 80 feet. This excavation would be conducted with the exclusive use of a pump dredge through the existing impoundment. The pump dredge would remove existing siltation that has accumulated in the area.

Dredge Option One also includes re-dredging of a second channel located north of and adjacent to the first dredge. This channel was dredged in the 1960s and the late 1970s by TVA and others. This dredge would be approximately 2,185 feet in length by 40 feet in width. Dredge Option One is preferred by the applicant.

2.2.2. Dredge Option Two

Dredge Option Two would include one channel (see Figure 4 - Drawing 2767-4B). The channel would extend along the northern shoreline of Lindsey Slough and would follow a historical channel that was dredged in the 1960s and 1970s.

Dredge Option Two would extend from TVA Marker No. 113 in a northwesterly direction along the northern shoreline of Lindsey Slough for approximately 2,234 feet by a width of 80 feet by an average depth of 6 feet. The first portion of the excavation would include approximately 1,750 feet and would be performed with a combination of track-hoe (80 percent) and pump dredge (20 percent). The 110-foot channel would include approximately 80 feet for the actual dredge and an additional 15 feet on each side of the channel for shore protection with riprap. The riprap would allow the developers initial access to the channel by truck and track-hoe and would allow the same equipment access to the channel for future maintenance if needed. The remainder of the dredge would involve an area approximately 485 feet by 80 feet. This excavation would be conducted with the exclusive use of a pump dredge through the existing impoundment. The pump dredge would remove existing siltation that has accumulated in the old channel.

Figure 3. Drawing 2767-4A Showing Dredge Option One

Figure 4. Drawing 2767-4B Showing Dredge Option Two

2.2.3. Dredge Option Three

Dredge Option Three would include one channel that would extend near the north shoreline of Lindsey Slough and would follow a historical channel dredged in the 1960s and 1970s (see Figure 5 - Drawing 2767-4C).

Dredge Option Three would extend from the western edge of TVA Marker No. 113 in a northwesterly direction along the northern shoreline of Lindsey Slough for approximately 2,185 feet by a width of 40 feet by an average depth of 6 feet. The first portion of the excavation would include approximately 1,750 feet and would be performed with a combination of track-hoe (80 percent) and pump dredge (20 percent). The remainder of the channel would include involve an area of approximately 435 feet by 40 feet. This excavation would be conducted with the exclusive use of a pump dredge through the existing impoundment. The pump dredge would remove existing siltation that has accumulated in the old channel.

2.3. Comparison of Alternatives

Under the No Action Alternative, Lindsey Harbor would not be developed as currently proposed. The project could continue without creation of a 23.5-acre man-made lake and connecting channel dredge to Guntersville Reservoir. Under no action, there could still be a residential and commercial town center development but likely overall less socioeconomic benefits because there would be no lake or water use facilities. Eventual development of this property, with associated terrestrial and aquatic impacts from land clearing, is likely due to the accessibility and nearness to the city of Guntersville.

Under the proposed Lindsey Harbor development (Action Alternative), the lake and harbor would be constructed, and the subdivision would gradually be developed as the applicant sells individual lots. The site would be converted from essentially farmland and upland to residential use. Construction traffic would increase the noise level in the area temporarily by a small amount. Small amounts of wildlife habitat would be lost, but there should be insignificant impact on any terrestrial plant or animal species. Removal of the cattle from the pastures would eliminate the free access to the stream and, thus, improve the stream and Guntersville Reservoir from erosion and fecal contamination. There would be temporary impacts expected to aquatic species during lake construction and channel dredging; however, the long-term improvement of the water quality should offset these temporary impacts.

The proposed development would generate minor traffic on area highways. Local jobs would be provided, which would improve the area economy. There would be some minor diffuse indirect impacts over time due to increased population growth and land development as new residents move to the area.

The applicant has presented three dredge options or alternatives to a proposed access channel to the Lindsey Harbor development. The applicant’s preferred alternative is Dredge Option One due to navigational concerns and boater safety issues. The increase in boating traffic in the adjacent waterway will be safer with additional channel area. This dredge alternative would provide the dual channel access as well as the largest channel area from the 23.5-acre constructed lake to Guntersville Reservoir.

Figure 5. Drawing 2767-4C Showing Dredge Option Three

However, it would also create the greatest wetland impacts. Dredge Option One would result in the largest area of wetland loss while Dredge Option Three would result in the least area of wetland impacts. In order to allow for boater safety and enhanced navigation, the larger wetland impacts under Option One appear to be needed to better achieve the applicant's purpose and need.

2.4 The Preferred Alternative

The Preferred Alternative is the Action Alternative because the residential development would likely occur with or without the 23.5-acre lake and channel dredge and the socioeconomic benefits would be greatest with the recreational amenities. Sediment and erosion impacts to Guntersville Reservoir should be reduced to the existing embayment and the existing access channel to current lake residences will be restored. The applicant needs will be met.

The applicant has identified Dredge Option 1 as their preferred alternative for the channel dredge. While the Dredge Option 1 will result in greater wetland impacts, the overall wetland impacts will be compensated by wetland creation in the nearby Flint Creek Wetland Mitigation Bank. Dredge Option 1 also presents the applicant the opportunity to gain an additional entrance access to the development. The option would provide greater boater maneuverability due to a larger channel access area and thereby reduce boating safety and navigational concerns. TVA concurs with the applicant's preferred channel dredge alternative.

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CHAPTER 3

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1. Water Quality

The eastern boundary of the proposed project area consists of mountain slopes that face northward and southward into Lindsey Hollow. All water flow in the immediate area of the project site is directed toward the hollow and eventually the reservoir. A perennial stream is shown on the U.S. Geological Survey topographic map on the eastern end of the property. This drainage accepts a large portion of the storm water that flows toward the stream. An unnamed tributary flows from the east toward the west and through the center of the subject site and through Lindsey Hollow into Big Spring Creek and into Guntersville Reservoir.

Water from upslope as it flows downstream carries sediment of silt, sand, and clay. Over time, this water flow from upstream has reduced the water quality and increased sedimentation, which continues to spread westward into the reservoir. Currently the Lindsey Slough channel area proposed to be dredged has poor water quality with siltation from upslope spreading westward into the reservoir. The district conservationist for the Marshall County Natural Resource Conservation Service has received numerous citizen complaints regarding excess sedimentation/siltation from Lindsey Hollow. The need for dredging out the eroded materials that leave Lindsey Hollow has been a general concern. The sediment reduces the ecological quality of many native aquatic habitats of the immediate area.

Under the No Action Alternative, there could be no change to the current water drainage patterns. Siltation problems from current land use within the Lindsey Hollow area or new development might occur without a new constructed lake and channel access. Any development would require water quality permits from ADEM. Under the proposed Lindsey Harbor development (Action Alternative), the site drainage pattern would change. The majority of the proposed project area is currently categorized as a pervious area, thereby indicating some rainwater is absorbed by the soil rather than all running off site. A typical residential development can increase the area's impervious percentage by as much as 60 percent or more. Based on review of relevant hydrological data, the proposed development would not adversely affect the function of surface drainage in the area. The percentage of impervious area would increase with development; however, the development plans call for buffer zones around the lake and individual drainage plans to meet the overall storm water management program. Site drainage and flood control are also identified in the Lindsey Harbor development restrictions.

Proper sediment control would also be implemented during construction activities. Word and Boggus Construction Company developed a sediment erosion control plan for the project development (Attachment C). Storm water drainage during the construction and development of access roads, park roads, pipelines, and individual facilities would be regulated under the storm water management system as required by ADEM and the city of Guntersville to mitigate any adverse effects of construction. A Notice of Registration for an 85-acre portion of the proposed development requesting NPDES registration has been submitted under ADEM regulations for discharging of treated storm water and for managing

storm water construction-related impacts. In a letter from ADEM dated March 24, 2003, the applicant received an NPDES permit.

Ingress and egress would be controlled with the addition of a 2- to 3-inch open-graded, raised gravel bed at the intersection of the site and public roads. Silt fencing would also be placed along the applicant's western property boundary. Sediment coming from locations off the property can be caught in a proposed containment basin to be placed between the end of the east stream reach and the proposed harbor. This basin would catch a good deal of this sediment as it slowed down upon reaching the still waters of the detention pond. The contents of the basin can be pumped and removed as needed, reducing the amount of sediment reaching the reservoir. The basin is designed in a manner that would allow free movement of fish and wildlife.

To reduce turbidity and siltation levels during construction, a check dam would be placed across the property boundary between TVA Markers 112 and 113 for approximately 100 feet. The check dam would filter the existing stream and allow water flow westward into the reservoir. The check dam would be constructed through excavation to elevation 588 msl and filled with Class 2 riprap at a 2:1 slope up to elevation 589 msl. An earthen berm would be constructed on the northern and southern side of the check dam. The earthen berm height would vary according to existing grade and be constructed to a finished elevation of 600 msl with a 3:1 slope. The earthen berm would extend along the property boundaries for approximately 500 feet on the north side of the check dam and approximately 100 feet on the south side of the check dam. The erosion control methods would remain in place until construction of the lake and stabilization are achieved.

Best Management Practices (BMPs) associated with the proposed development would incorporate measures to improve water quality, thus reducing silt flow into Guntersville Reservoir. The development is expected to improve water quality as well as provide a reduction in sediment load. Previous on-property siltation from logging operations would be reduced due to the inherent nature of the proposed improvements to the property through the fulfillment of the applicant's development plan. The plan would convert a number of acres of steep logging roads, timber staging areas, and gullied wet weather conveyances into stable lawns and canopied green common areas. This ecological "improvement" is expected to increase the richness of diversity of the immediate habitats. No groundwater would be utilized for a water source from the project site, and no impacts are anticipated from the project development.

Lake construction would be conducted in concert with the dredging of the channel. The applicant's proposed development for the construction of a lake and harbor would occur within an existing stream bottomland and would include portions of an eastward reach of an unnamed tributary that flows westward into Big Spring Creek. The harbor and lake would be created by excavation in the dry with the excavated material placed around the perimeter of the lake to form dikes and placed on site for development purposes. The harbor area would be excavated with typical earthmoving equipment, such as trucks or pan scrapers transporting the material to ravines on the property for placement and compaction. Runoff water that collects in low areas being excavated would be pumped out of the area to keep it dry. To reduce turbidity levels, this water would be filtered through a settling basin to allow suspended particles to settle before water is discharged into the river. Access to the harbor would be from either Colonial Drive or Lindsey Lane, and the trucks entering the excavation would be able to drive along the earthen berms. Boat access would be from

one of three proposed channel dredges alternatives at the mouth of Big Spring Creek and Lindsey Hollow.

Approximately 271,040 cubic yards of material (a surface area of 1,219,680 square feet) would be removed to construct the lake and channel. The methods of removal would involve a track-hoe (80 percent) and pump dredge (20 percent). The removal of dredge material would involve both upland areas and wetland areas (approximately 161,000 cubic yards of wetland dredge affecting approximately 10 acres). Fill would be placed behind the lake retaining wall and ravines on the property. TVA anticipates that adherence to compliance requirements of the ADEM 401 Water Quality Certification permit dated April 22, 2004 would reduce impacts to surface water quality to insignificant levels.

3.2. Aquatic Ecology

Lindsey Creek is a perennial flowing stream and is characteristic of other streams found in the Cumberland Plateau region, containing a variety of different habitat types (i.e. pools, riffles, runs) with gravel, cobble substrate. Lindsey Creek likely originates from spring fed tributaries found in the upper reaches of Lindsey Hollow and from several tributaries that originate on top of the plateau (Sand Mountain). Near the east side of the subject property proposed to be developed, the stream is confined by the valley walls of Lindsey Hollow and is bordered by an intact and well established riparian area containing mature hardwoods and a mix of conifers. Stream channel from this reach is dominated by a series of small bedrock, boulder step-pools. As the valley widens, the stream becomes less confined and meanders across the valley floor before its confluences with the backwaters of Lindsey Slough. The riparian buffer in the valley region is sparsely vegetated, primarily consisting of shrubs and grasses (USFWS, 2004).

Two aquatic assessments were conducted in the waters affected by the proposed project development area to assess the aquatic species present and the habitat conditions of the waters (OMI, 2003). The first assessment was conducted on the unnamed second order tributary stream that flows through the proposed Lindsey Harbor site and eventually into Guntersville Reservoir. Sampling and data analysis were conducted using U.S. Environmental Protection Agency (USEPA) Rapid Bioassessment Protocols (USEPA, 1999). The assessment included observation of species diversity and abundance of species, which indicate either good or poor water quality. Station One was located at the downstream end of the stream, immediately upstream of the TVA property line. This area was devoid of riparian vegetation and exhibited some evidence of channelization. The majority of fish species collected from Station One (71 percent) were classified as insectivores; the overall number of fish collected was very low and is related to the poor aquatic habitat. Only one benthic species was collected, also reflecting the lack of aquatic habitat diversity. Station One received a habitat score of 90 out of a possible 200, a “marginal” condition. Station Two, located at the upper end of the portion of stream channel proposed for excavation, exhibited more diverse substrate and stable habitat. While the species diversity increased at Station Two, species composition was similar to that observed at Station One. Station Two received a habitat score of 136, a “suboptimal” condition. Both stations exhibited less than optimal habitat conditions, likely from siltation and past agricultural practices.

The second aquatic assessment was conducted primarily to determine if federally listed species of mussels known from Marshall County were present in the area proposed for channel dredging. The reconnaissance was conducted in Lindsey Slough and Big Spring

Creek embayment through linear and box transects using either snorkeling or self-contained underwater breathing apparatus equipment. Ten transects were conducted to allow for a broad, although not exhaustive, survey of mussels present in the immediate area. The physical environment observed near the proposed project area was mostly shallow, turbid water over substrates that were mostly soft, particulate mud. Hard-packed clay, exposed sheets of limestone, and an extended sandbar were also observed. Because of little current and deep mud and silt, most of the area is not suitable for native mussels with the exception of a channel under the Wyeth Drive bridge, where five native species and one exotic species of mussels were found. None of the species observed were federally or state listed.

Under the No Action Alternative, there would be no change to existing aquatic environmental conditions associated with channel excavation or harbor construction. Siltation from the Lindsey Hollow area, resulting either from past land uses (including logging and agricultural use) or future development, would continue to impact the stream and reservoir environment.

Under the proposed Action Alternative, aquatic impacts would result directly from habitat alterations associated with the channel dredging of Lindsey Slough and harbor construction and indirectly from soil erosion and runoff of chemical fertilizers and other lawn maintenance chemicals from upland areas during development and in the future. The proposed development would likely result in short-term turbidity during channel and harbor excavation and upland clearing but might result in a long-term reduction in siltation in Guntersville Reservoir. It would result in an increase in reservoir-type aquatic habitat in the excavated channel and harbor area (approximately 28 acres) with a loss of stream habitat.

Indirect impacts would be reduced through implementation of BMPs to minimize turbidity entering Guntersville Reservoir during channel and harbor excavation and to control erosion runoff during disturbance of upland soils until the disturbed soils are stabilized with vegetation or by other means. With adequate measures in place to control removal of vegetation in the riparian zone (particularly woody vegetation) and with implementation of BMPs to control runoff, indirect impacts to aquatic habitats can be reduced to insignificant levels.

Channel excavation would change some of the existing shallow near-shore habitat in the slough area to a deeper, riprap-lined channel configuration. Because these shallow habitats, which are highly productive feeding and nursery areas for some reservoir fish species, are widespread in Guntersville Reservoir, this would represent an insignificant loss of shallow near-shore habitat.

Harbor construction would alter approximately 4,107 linear feet of stream habitat by excavation of the harbor and encapsulation in culverts and fill associated with home and infrastructure construction. Approximately 3,164 linear feet would be impounded to create a new harbor and 943 linear feet would be eliminated. Surveys have indicated that stream habitats on the site have been degraded by past land use practices. As mitigation for the stream habitat lost, the applicant would enhance 3,202 feet on site and restore 5,689 feet of streams at the Payne Farm, located in the same watershed (Big Spring Creek) as the Lindsey Harbor project. Loss of stream habitat at the Lindsey Harbor site would be insignificant with implementation of the stream mitigation plan proposed by the applicant (Civil & Environmental Consultants, Inc., 2004).

3.3. Wetlands

Ground surveys of the proposed project area were conducted by D. R. Sanders and Associates, Inc., in July 2002 and TVA Heritage wetland biologists in November 2003. The project area includes land owned by the applicant (Word and Boggus) and an area owned by TVA in and adjacent to the Lindsey Slough. As a result of the surveys, ten wetlands meeting USACE criteria were identified in the project area.

Sanders and Associates identified six jurisdictional wetlands, consisting of approximately 2.74 acres on private land. These six wetlands include a portion of a jurisdictional wetland that lies on the private land boundary with TVA land. A jurisdictional determination was made by USACE for the six wetlands identified by Sanders and Associates. Four wetlands, totaling approximately 5.54 acres, were identified by TVA on the TVA tract. Acreage estimates for these wetlands were based on ground observations and an aerial photograph taken in March 2003 and have not been delineated nor reviewed by USACE for a jurisdictional determination. The total acreage of wetlands on the TVA tract in the proposed project area is approximately 6.33 acres. This includes 0.79 acre in the wetland delineated by Sanders and Associates that crosses the TVA private property boundary. Approximately 5 to 8.5 acres of wetlands in the project area would be affected by the proposed action depending on the dredge option used. All wetland determinations were performed according to USACE standards (Environmental Laboratory, 1987), which require documentation of hydrophytic vegetation (Reed, 1997), hydric soil, and wetland hydrology. Wetlands are classified according to the Cowardin system for the classification of wetlands and deepwater habitats (Cowardin, et al., 1979).

Sanders and Associates identified Wetland Areas 1 through 6, and the descriptions of these areas in the following paragraphs are excerpted from their report. The six wetlands identified by Sanders and Associates on private land are primarily located near the western boundary of the project site. Two additional wetlands are located near the central portion of the site, and one wetland is located near the eastern boundary. Wetland Areas 1, 3, and 6 are palustrine emergent, scrub-shrub wetlands located near the central portion, the eastern boundary, and to the southwest of the site, respectively. The dominant species include buttonbush, Carolina ash, catchfly, soft rush, wool-grass, small spike-rush, and lizard's tail. Wetland Area 3 is within the same drainage basin and is located southwest of Wetland Area 1. This wetland area lies adjacent to an unnamed southwestern tributary of Big Spring Creek. The dominant overstory species include sweetgum, black willow, and Carolina ash. The dominant herb layer consists of hop sedge, cut-grass, netted chain fern, and knotweed. Wetland Area 6 extends southwest/northeast adjacent to the main channel of Big Spring Creek, which flows through the central portion of the subject site. The dominant species consists of soft rush, marsh dewflower, wool-grass, buttonweed, and manna grass.

Wetland Areas 2(a) and 2 (b) are palustrine emergent wetlands located near the western boundary adjacent to TVA land and Lindsey Slough. The dominant species include buttonbush, marsh dewflower, cut-grass, soft rush, wool-grass, and small spike-rush.

Wetland Area 4 is a palustrine emergent wetland located to the north of an unnamed tributary of Big Spring Creek. The dominant species include buttonbush, marsh dewflower, catchfly, soft rush, wool-grass, and small spike-rush.

Wetland Area 5, which includes wetlands on TVA land, is a palustrine scrub-shrub wetland with emergent and aquatic bed characteristics located above the 595 msl normal pool. These wetlands are similar in that they are inundated most of the year and are affected by

Lindsey Slough pool elevation. The dominant overstory species of these wetlands include sweet gum, water oak, and black willow. The herb layer is dominated by buttonbush, cut-grass, and knotweed.

Wetlands identified by TVA on TVA land occur on a low peninsula and adjacent shallow waters in Lindsey Slough and in the riparian zone of Big Creek Spring between the southern stream bank and the 600-foot-elevation contour. Their hydrology is influenced by lake levels, with some areas inundated year round.

Wetland TVA-W1 is a palustrine scrub-shrub wetland with emergent and aquatic fringes on the northern edge where the wetland has filled in an old dredge channel. It is bordered on the south by Big Spring Creek. The dominant overstory species include sycamore and box elder. The scrub-scrub layer is dominated by alder, Chinese privet, and buttonbush. The herb layer is dominated by soft rush, wool-grass, swamp smartweed, jewelweed, and microstegium.

Wetland TVA-W2 is a palustrine emergent wetland at the eastern end of TVA land at TVA Marker 113. The wetland lies in a depressional area that has been historically used for agricultural purposes and is still mowed. The herb layer is dominated by swamp smartweed, Dallis grass, water smartweed, and fescue.

Wetland TVA-W3 is an extensive emergent wetland with interspersed open water. It extends toward the mouth of Lindsey Slough and is filling in the previously dredged channel on the northern side of the slough. Sections of this wetland are inundated year round and are underwater during periods of high water. The dominant tree species are green ash, red maple, and sycamore. The shrub layer contains buttonbush, black willow, streamside alder, Chinese privet, and elderberry. The herb layer is dominated by obligate wetland species including cattail, rice cut-grass, seed box, soft rush, wool-grass, and ditch stonecrop.

Wetland TVA-W4 is a palustrine emergent wetland located between the 600-foot-elevation contour and Big Spring Creek on the southern side of Lindsey Slough. The dominant overstory species are sycamore, green ash, and loblolly pine. The scrub-shrub layer is dominated by Chinese privet and stream alder. The herb layer is dominated by redtop panic grass, soft rush, and hop.

The functions performed by these wetlands include nutrient cycling, removal and transformation of contaminants, sediment retention, provision of wildlife habitat, and biological and landscape diversity. The economic and societal values afforded by these wetland functions include maintenance of wildlife resources, water quality improvement, visual aesthetics related to lake recreation, and biological diversity.

Under the No Action Alternative, the applicant could continue to develop the private property without the man-made lake or channel access to Guntersville Reservoir. The conceptual plan for the development indicates that the 2.74 acres of wetland on private property would be filled. The action, if unmitigated, would result in a loss of 100 percent of the wetlands and impact wetland functions. The wetland functions impacted by this action could include loss of water quality functions, wildlife habitat, and diminishment of biological and landscape diversity.

Activities in waters of the U.S., including wetlands, are regulated under Sections 404 and 401 of the Clean Water Act. The discharge of dredge or fill into waters of the U.S. requires a permit from USACE and Section 401 certification from the state. Under USACE's regulations implementing Section 404 of the Clean Water Act, wetland impacts should first be avoided and minimized. If avoidance is not possible and unavoidable wetland impacts remain following steps to minimize impacts, compensatory mitigation may be required to replace lost wetland area and functions. The conceptual development plan for the Lindsey Harbor development presented by the applicant indicates that the wetlands on private land cannot be avoided. The USACE has indicated that compensatory mitigation would be required for any permitted wetland fill on the private land portion of the project proposed Action Alternative.

Under the proposed Lindsey Harbor Action Alternative, potential impacts to wetlands would result from two actions--channel dredging and excavation for construction of a 23.5-acre lake to be associated with the Lindsey Harbor development. Approximately 5 to 8.5 acres of wetlands are anticipated to be affected by the proposed action. This includes the 2.74 acres of jurisdictional wetlands on private land that would be lost due to lake and housing construction.

Dredge Option One involves the dredging of two channels on either side of Lindsey Slough. This would impact all five wetland areas identified on TVA land. Dredge Options Two and Three would impact four of the five wetlands on TVA land.

Under each of the dredge options, the loss of 2.74 acres of wetlands on private land is expected to occur. Dredge Option One would result in the largest area of wetland loss. The wetland functions and values impacted by the Lindsey Harbor proposal would include of water quality functions and wildlife habitat and the diminishment of biological and landscape diversity and of visual aesthetics related to lake recreation.

Under all three dredge alternatives (dredge options), compensatory mitigation would be required. Dredge Option Three would have the least amount of impacts on wetlands.

TVA has determined that there is no practicable alternative to develop the project, as proposed, except in the wetland areas. Dredge Option One, in order to provide the necessary protection to the development and general public for navigational and boater safety concerns, is the most practicable option. The reduced boater maneuverability provided by Dredge Options Two and Three, make these options impracticable for safety reasons.

No on-site opportunities for wetland restoration are possible to mitigate for the loss of wetlands on the Lindsey Harbor site and on TVA property in Lindsey Slough. The applicant therefore proposes to purchase mitigation bank credits for 10 acres of wetland impacts at a minimum 2:1 ratio in the Flint Creek Wetland Mitigation Bank in north Alabama. The 10-acre figure is an overestimate of wetland impacts since the acreage of TVA wetlands was estimated from aerial photographs and maps instead of through a civil survey of wetland boundary delineations. The Flint Creek Bank is located 40 miles downstream from the site of the proposed action. The primarily emergent and scrub-shrub wetlands on the Lindsey Harbor site and TVA property would be replaced with forested wetlands in the Flint Creek Bank. Additional impacts to wetlands and wetland functions in the buffer zones can be minimized through avoidance of clearing or grading in those areas and the implementation of BMPs when conducting activities in the vicinity of the remaining wetlands.

Wetland impacts are expected to be insignificant with the purchase of Flint Creek Wetland Mitigation Bank credits. The proposed activities are not expected to have a significant impact on the factors considered under Executive Order 11990 because of the replacement of wetland acreage and functions at the Flint Creek site.

3.4. Terrestrial Ecology

The Lindsey Hollow property is situated between two ridges and adjoins Guntersville Reservoir. Topography within the project site ranges from nearly level to steeply sloping terrain. The property includes north-facing and south-facing slopes of the hollow as well as alluvial bottoms on the western half of the hollow. Several tributaries descending from Sand Mountain to Guntersville Reservoir flow down the slopes to the valley floor creating an unnamed intermittent tributary, which flows easterly through the property and TVA land as it enters Guntersville Reservoir. On the property, the practices of previous property owners have created a number of logging roads and logging staging areas. Currently, cattle operations on land above the property are contributing to a significant amount of silt deposited into a second order stream, which is washed into the reservoir during periods of heavy rain.

The proposed property to be developed consists primarily of three general areas--open farmland, mature forest areas, and selectively logged areas--which have been delineated into seven vegetation communities. Seasonally wet pastures occupy the bottomland within the alluvial plain. Prior to agricultural land clearing, the original forest of this area was bottomland hardwood forest species, which still persist along the pasture margins and include sycamore, water oak, and willow oak. Two large upland pastures extend up adjacent ridges to about the 750-msl contour on south-facing slopes in the west-central part of the property.

The next three delineated areas include mature forest stands and an area described as xeric oak-pine forest at the rim of the hollow, mesic mixed hardwoods of upper slopes and coves, and beech-mountain laurel forest of steep creek side slopes. The xeric community is widespread in the southern Cumberland Plateau, and dominant canopy species include chestnut oak, black oak, pignut, and mockernut hickories, and shortleaf and Virginia pines. Subcanopy species include dogwood, redbud, winged elm, and Carolina buckthorn. The moister mesic community of the upper slopes and coves include chestnut, white, black, red, and southern red oaks; mockernut, pignut, and bitternut hickories are also present as dominant in the canopy. Other hardwoods present include beech, basswood, ash, and sourwood. The beech-mountain laurel forest occupies the steep creek side slopes of the property. Also present in this community are basswood, tulip poplar, Chestnut oak, and mockernut and bitternut hickories.

The three remaining delineated communities are selectively logged and occur throughout the property. The species present include tulip poplar, basswood, mockernut and pignut hickories, and somewhat smaller white, red, and southern red oaks. The understory is poorly developed with opportunistic species such as greenbrier, sumac, Japanese honeysuckle, and sassafras.

The habitats that exist on the proposed property are typical of southern-forested land. Common birds in this area include the brown thrasher, towhee, cardinal, meadowlark, and red-tailed hawk. Mammals typical of this area include white-tailed deer, gray fox, raccoon,

opossum, and gray squirrel. Reptiles and amphibians that utilize these habitats include the black racer snake and the American toad.

Under the No Action Alternative, the project could continue without creation of a 23.5-acre man-made lake and connecting channel dredge to Guntersville Reservoir, resulting in changes to the proposed residential development. Under the proposed Action Alternative, the project is planned to work with the topography of the site, preserving lake views and many natural features. Natural drainage ways and portions of creeks would be left as riparian areas supplemented by sensitive structural drainage where necessary. Vehicular access to residential lots would be controlled, along with building placement on each lot to allow for maintenance of natural vegetation and topographic features of individual lots. The applicant would require adherence to lot restrictions including impervious area, lot drainage, specific grading and vegetation preservation, and landscaping including natural vegetation preservation and maintenance.

Terrestrial animal species known to inhabit the proposed site are all regionally abundant. Some of the forested areas would have to be removed during land clearing and development of the subject site. However, due to the abundance of the species typically common to the area, anticipated impacts are minor.

Environmental improvements include activities inherent in the development, such as removal of cattle from the property, stabilization of slopes through the creation of lower ratio gradients, and establishment of lawns. Where possible, trees impacted by site modifications would be stored and replanted in-situ. This would allow native plant species to remain in place, often minimizing the need to introduce nonnative and smaller replacement trees.

3.5. Threatened and Endangered Species

Five federally listed species were reported by USFWS as possibly located within the proposed project area: the gray bat (*Myotis grisescens*), endangered; the Indiana bat (*Myotis sodalist*), endangered; the red-cockaded woodpecker (*Picoides borealis*), endangered; the bald eagle (*Haliaeetus leucocephalus*), threatened; and the green pitcher plant (*Sarracenia oreophila*), endangered.

Habitat for the gray bat and Indiana bat was determined to be unsuitable at the proposed site. Pottsville sandstone underlies all but an extremely small area at the western end of the property; no caves were noted on the property.

Survey of the property determined that no fire-maintained old-growth pine stands exist on the property, and no pure pine stands exist. Existing pines in a few mature mixed oak-pine stands were examined for signs of nesting activity. No signs or evidence was observed of the red-cockaded woodpecker nor was the habitat deemed suitable for the species.

Trees within approximately 328 feet from the site boundary were carefully observed for signs of bald eagle nesting; none were found. In addition, conversations with Keith Hudson of the Alabama Department of Conservation indicate no nesting sites are known within the immediate area. Conversations with local residents also indicate no eagles have been observed within the immediate area.

No natural open acid bogs exist on the property, which alone suggests the green pitcher plant is not present. However, wetland areas were observed for presence of the green pitcher plant species; none were found. In addition, a wetland survey was conducted on the property. The species listed did not include the green pitcher plant.

In addition to the federally listed species of Prices potato bean (*Apios priceana*), 20 additional species of concern were part of a reconnaissance of the subject site. None of the species were present at the time of the reconnaissance. Observations conclude that either the habitat was unsuitable for the species or if the habitat were suitable, no individuals were encountered.

No plant species state- or federally listed as endangered or threatened were identified within the project area. No impacts to such vegetation are anticipated and would be considered insignificant with reference to the proposed action.

A search of the TVA Natural Heritage database indicated that several sensitive aquatic species are known to exist in Marshall County, Alabama. These included six mussels listed as federally endangered, one federally listed candidate species, one threatened fish, and one threatened turtle, tracked as rare, species by the Alabama Natural Heritage Program. The aquatic reconnaissance included observation for these species within the likely habitats.

The listed species included the flattened musk turtle (*Sternotherus depressus*), threatened; the snail darter (*Percina tanasi*), threatened; the fanshell mussel (*Cyprogenia stegaria*), endangered; the pink mucket mussel (*Lampsilis abrupta*), endangered; the fine-rayed pigtoe mussel (*Fusconaia cuneolus*), endangered; the rough pigtoe mussel (*Pleurobema plenum*), endangered; the shiny pigtoe mussel (*Fusconaia cor*), endangered; the orange-footed mussel (*Plethobasus cooperianus*), endangered; and a candidate species, the slab sided pearly mussel (*Lexingtonia dolabelloides*). Available information indicates many of these populations of mussel species, as well as the snail darter, are limited to the unimpounded portion of the Paint Rock River. Observations and reconnaissance within the immediate project area indicate none of these species are known or likely to inhabit the portions of the Guntersville Reservoir of the project area. Because no rare or endangered aquatic species are known or likely to inhabit the project area, no impacts to such species are anticipated.

3.6. Cultural Resources

Human occupation of northern Alabama has occurred from the Paleo-Indian to the Historic period. In northern Alabama, prehistoric archaeological chronology is generally broken into five broad time periods: Paleo-Indian, Archaic, Gulf Formational, Woodland, and Mississippian. Prehistoric land use and settlement patterns vary during each period, but short- and long-term habitation sites are generally located on floodplains and alluvial terraces along rivers and tributaries. Specialized campsites tend to be located on older alluvial terraces and in the uplands. European interactions with Native Americans associated with the fur trading industry in this area began in the seventeenth and eighteenth centuries. The first permanent occupation of northern Alabama by Europeans, European Americans, and African Americans occurred in the late eighteenth century. Various excursions and temporary settlements by the British, French, and Spanish occurred prior to this period. From the 1840s to the mid-twentieth century, northern Alabama was a major cotton growing area. Settlement and land use of the area remained primarily rural

until the mid-twentieth century, at which time industry and urbanization increased. Numerous archaeological sites associated with these earlier occupations have been identified within the Guntersville watershed.

TVA defined the Area of Potential Effect (APE) to be the 332.8 acres of land planned for development and the 4.43 acres of TVA managed land to be used for the channel dredge. Two Phase I archaeological surveys were conducted within the APE to determine if any historic properties were present.

The initial Phase I Cultural Resources survey was conducted by P. E. LaMoreaux & Associates (Lolley, 2003). The goal of this survey was to identify any historic sites, historic structures, or archaeological resources present within the proposed development. This survey identified two archaeological sites and one historic structure. These resources were considered ineligible for listing in the National Register of Historic Places (NRHP). No further work will be required for these sites.

Additional Phase I testing was conducted by Alexander Archaeological Consultants (Alexander and Pickard, 2003) to determine if deeply buried archaeological sites were present within the alluvial terrace of the APE. This survey also included the 4.43 acres of TVA managed land that was not previously investigated. Alexander identified two additional archaeological resources (1MS468 and 1MS467) that were considered potentially eligible for listing in the NRHP.

Word and Boggus Construction Company submitted a revised development plan that would avoid these sites. These areas would be maintained as a mowed “green space.” No ground-disturbing activities would be permitted in these areas. Should Word and Boggus decide at a future date to develop these areas, Phase II testing would be required to determine if these sites are eligible for listing in the NRHP. A letter of TVA’s findings and determinations, including the finding that no historic properties would be affected, was sent to the Alabama State Historic Preservation Officer on December 2, 2003. Letters were sent to all federally recognized, culturally affiliated Native American tribes on December 3, 2003. The Alabama Historic Commission agreed with TVA findings in a letter dated December 31, 2003 (Appendix B).

3.7. Wastewater and Water Use and Solid Waste Management

Currently, wastewater in the Lindsey Hollow area and areas outside the city limits of Guntersville is managed by individual septic tanks. Inside Guntersville city limits, wastewater is managed by the Guntersville Water and Sewer Board. The density of residential development, projected growth of the area, and the relatively thin soils make long-term use of septic systems a poor choice for the project area. If this development were allowed, the development would have municipal sewer service.

The wastewater treatment for the proposed project area would be provided by the Guntersville Waterworks and Sewer Board, Inc., which owns and operates the East Lake Wastewater Treatment Plant. This treatment plant has been in operation for approximately 20 years and is permitted under the NPDES system. The total capacity of the plant is 5.0 million gallons per day. The treatment plant’s average daily flow is 2.6 million gallons per day. Current projected growth of Lindsey Harbor once fully developed would add approximately 65,000 gallons per day to the existing load. The existing and projected use accounts for less than 5 percent of the total plant capacity.

Potable water would be provided by a 4.0-million-gallons-per-day surface water treatment plant and a well producing 1.0 million gallons per day operated by the Guntersville Waterworks and Sewer Board, Inc., which would provide water and sewer service to Lindsey Harbor and maintain the capacity to provide services to the surrounding community.

Currently, solid waste collection outside the city limits is collected by Browning-Ferris Industries, Inc. (BFI), and is disposed of at the Dekalb County, Sand Valley Landfill disposal facility in Collinsville, Alabama. Solid waste within the city limits of Guntersville is collected by Guntersville Sanitation and transported to the BFI Albertville Transfer Station and then to the Sand Valley Landfill in Collinsville. The Sand Valley Landfill, located 32 miles from the project area, is a Subtitle D landfill. This landfill is permitted until the year 2007 and can receive a maximum capacity of 1,500 tons/day. The current average tonnage received at this landfill is 600 tons/day.

There are no permitted hazardous waste treatment or disposal sites in the area of the development to be affected by any wastes that would be generated there. Special wastes are not anticipated to be generated by the development.

Under the No Action Alternative, the wastewater and water use and solid waste disposal services would not be needed. There would be no addition to water use requirements and wastewater and solid waste disposal needs.

Under the proposed Action Alternative, a new sewer line, which would tie in and run in conjunction with the proposed sewer line, would be placed from existing lines at Colonial Drive and/or Lindsey Lane. TVA would require wastewater handling through the city service and will not permit septic systems. The sewer line would be directed eastward into the proposed development. Two new pump stations within the proposed development would be constructed to handle the sewer return to the treatment plant. Based on the available capacity of the East Lake Sewage Treatment Plant and the small overall increase in wastewater that would be generated as a result of this action, TVA has determined that the impact on the wastewater would be insignificant.

A new water line, which would run in conjunction with the proposed sewer line, would be placed from an existing line located at Colonial Drive and/or Lindsey Lane. The water line would be directed along the access roads into Lindsey Harbor. Projections for peak water usage of residential use and maximum capacity of the residents within the proposed project once fully developed would be approximately 80,000 gallons per day for residential users. This assumes full development of approximately 400 residences. The additional potable water required by the proposed development and other demand generated by construction of the water line is within the capacity of Guntersville's potable water treatment system and would not require the construction of additional capacity. Based on the small increase and the availability for providing potable water, TVA has determined that implementing the proposed project would not have a significant impact on water usage.

Under the proposed Action Alternative, solid waste for the proposed Lindsey Harbor development would be managed through the Guntersville Solid Waste Authority. TVA perceives the amount of solid waste generated by the development would be negligible.

Waste resulting from the construction of the site would also be disposed of in the Sand Valley landfill. It is possible some of these wastes could be buried on site. Construction

wastes are typically nondegradable, and these practices would not significantly impact the environment.

TVA has determined, due to the regulatory requirements, that solid wastes generated by the development of the park would not have a significant impact on the environment.

3.8. Floodplains

Normal pool elevation for Guntersville Lake is 595 feet msl. The 100-year floodplain for this area is elevation 596.4 feet msl, and the TVA Flood Risk Profile (FRP) elevation is 597 feet msl. The FRP is based on the 500-year flood and is used to control residential and commercial development on TVA land. The proposed development is located above 595.0 feet msl.

Guntersville and Marshall County, Alabama, have adopted the 100-year flood as the basis for their floodplain regulations, and all development would be consistent with these regulations. There is no identified floodway associated with the proposed action. The proposed action would also allow TVA the right to flood private property up to the 600-foot-msl contour and preclude any structural development below the 600-msl-contour elevation.

Under the No Action Alternative, there would be no immediate change to the existing conditions. The proposed Action Alternative would involve dredging an access channel and lake, the placement of riprap along the channel, the construction of a retaining wall and sidewalk, the development of private land, and the purchase of approximately 4.43 acres of TVA land adjacent to the private land as part of the construction of the lake associated with the development. For compliance with Executive Order 11988, Floodplain Management, the placement of riprap, a retaining wall, and sidewalk are considered to be repetitive actions in the floodplain that would result in minor impacts. All of the dredged material would be spoiled outside the 100-year floodplain and above the TVA FRP elevation 597.0 feet msl. Although the placement of riprap would result in the loss of more than 1 acre-foot of flood control storage, the creation of the lake would likely provide more storage than would be displaced by the riprap. Therefore, the project would comply with the TVA Flood Control Storage Loss Guideline.

The private land proposed for development is located outside the limits of the100-year floodplain, elevation of 596.4 feet msl, while the TVA tract has portions within the 100-year floodplain. All residential or other flood-damageable development around the lake would be constructed at or above the 600-foot-msl elevation, which is above the TVA FRP elevation 597.0 feet msl. In the future, any additional proposed development in the floodplain would be reviewed in advance by TVA to ensure that floodplain impacts would be minimized.

3.9. Land Use and Transportation

Lindsey Harbor currently lies outside of the Guntersville city limits and is primarily rural. The area purchased by the applicant for the proposed development has historically been used for farming purposes. The proposed development property is currently outside the city limits and therefore has no planning or zoning ordinances that would regulate the proposed development. Surrounding properties to the northeast, east, and southeast are also not zoned or located within the city of Guntersville. Properties to the southwest, west, and northwest are located within the city of Guntersville and are zoned single-family and

multifamily residences. The proposed project would be located within this area, north of existing US 431. Commercial businesses are located along US 431. Residences are located to the north. Currently, Colonial Drive provides access to the western portion of the property as well as to residences that are located along this roadway.

Community facilities within the general area include the Guntersville High School, the Val Monte Country Club, several restaurants, and commercial businesses located along US 431. These facilities are all located less than a mile from the proposed development.

Under the No Action Alternative, there would be no immediate change to the existing environment. The applicant could continue to develop the private property without approval of the dredge or lake construction. Under the proposed Lindsey Harbor development Action Alternative, the property's current land use would change from rural to residential single-family homes with some commercial. The master plan includes construction of a harbor, natural green spaces, a commercial town center with a restaurant, developed park areas, pedestrian walks, trails, and individual and community boat slips, as well as a fueling area for boats. Architecture and site development on each lot would be controlled, and development would be further limited by lot covenants and building restrictions. The surrounding area is relatively sparse in population, and there should be no significant negative impact on surrounding residential areas. Once developed the city would provide water, sewer service, and road improvements into the developed area.

The development would result in the generation of additional traffic on the adjacent roadway network. This increase in traffic would not result in a major change to the existing level of service of US 431.

The few residences located on Colonial Drive adjacent to the development would experience the greatest potential impact. Two access roads, Colonial Drive and Lindsey Lane, are proposed to serve as the primary transportation corridors to and from the development. These two roadways are located near the northern and southern shoreline of Lindsey Slough. The extension of Lindsey Lane eastward is proposed to serve as an additional ingress/egress for the development. Lot restriction and covenants would be put in place to minimize an impact on the surrounding residential areas (see Appendix B).

Based on the limited existing agricultural/residential uses within the area, the proposed homeowner lot restrictions and development covenants to be implemented by the applicant, combined with an extension of Lindsey Lane for use as an additional access road to serve the area, TVA has determined that the impact on land use and transportation of implementing the project as proposed would not be significant.

3.10. Recreation

Lindsey Harbor is located in Big Spring Creek embayment of Guntersville Reservoir at Tennessee River Mile 358.3 on the left bank. Approximately 2 miles up the embayment from the main river navigation channel, a highway (State Route [SR] 227) and railroad causeway crosses the embayment. The Tennessee River navigation charts list the vertical clearance at 5 feet under this causeway at normal pool. The underpass is usable by bass boats, small cruisers, and pontoon boats. The embayment below the SR 227 causeway to the main channel is characterized as heavy industrial use. Signal Point Marina is located on the right bank at the mouth of the embayment and is a full service marina including dry

boat storage. Upstream of Signal Point Marina in Polecat Creek embayment is a boat ramp and municipal park.

Upstream of the SR 227 causeway for approximately 2.5 miles, Big Spring Creek embayment continues to the US 431 causeway. The left bank has a levee with a public walking trail the entire length. Opposite the levee is the downtown Guntersville business district. On the south end of the left bank is a public ramp. A Holiday Inn is located adjacent to the ramp, and amenities include lake access facilities. The right descending bank is primarily residential use with approximately 50 permitted water use facilities. Covenant Cove Marina is prominently located on the right bank in this area between the causeways. It is a full service marina and the development includes dry boat storage, a motel, condominiums, two restaurants, picnic area, swimming beach, and fishing and transient docks.

Approximately 0.5 mile upstream of Covenant Cove is the entrance to the proposed Lindsey Harbor development. Access to the harbor by water is via an underpass of Wyeth Drive. The underpass offers vertical clearance only for vessels the size of typical bass boats and pontoon boats with tops lowered. Horizontal clearance is safely maneuvered by one vessel at a time. Below Wyeth Drive at the mouth of the harbor is a municipal park with a four-lane concrete boat ramp, picnic tables, a T-shaped fishing dock, and parking for approximately 30 vehicle/trailer combinations with additional parking for approximately 100 vehicles.

The area of Big Spring Creek embayment upstream of the US 431 causeway is accessed via an underpass suitable for passage only by vessels the size of typical bass and pontoon boats. Vaughn's Marina is located on the right bank just above the causeway. It offers fuel and approximately 65 covered slips. A public ramp is located across the embayment from Vaughn's. It offers two lanes and parking for approximately 40 vehicle/trailer combinations. The embayment continues upstream for approximately 3 miles and is primarily residential use with private water use facilities.

Big Spring Creek embayment between the US 431 and SR 227 causeways receives heavy recreational use during weekend and summer holiday periods. It offers a location off the main river that is protected from wind and wave action.

Under the No Action Alternative, the applicant would not acquire the TVA land, there would be no dredge, 23.5-acre man-made lake, community slips, individual water use facilities, transient slips for the restaurant, shoreline promenade, or dry boat storage. The shoreline in Big Spring Creek embayment would continue to develop on the east side around Covenant Cove. The area would continue to receive heavy seasonal recreation use.

Under the Action Alternative, the applicant proposes to develop a 23.5-acre lake accessible to Big Spring Creek embayment via a dredged channel approximately 0.5 mile in length. Around the lake would be a residential and commercial development including 76 waterfront lots with individual water use facilities up to 1,000 square feet each; 10-12 day slips; 150 dry slips; and a publicly accessible promenade around the 23.5-acre lake. A pedestrian bridge located at the downstream end of the 23.5-acre lake would provide access to both sides of the development. There would be a few day slips to serve boat traffic wishing to visit the restaurant/commercial area.

The sale of the 4.43-acre tract and approval of the 2,450-foot dredge and the 23.5-acre lake would lead to development of the Lindsey Harbor residential and commercial development and would affect recreation on Guntersville Reservoir, particularly in the vicinity of Big Spring Creek embayment. Approval of up to 76 individual water use facilities, 10-12 day slips, and 150 dry slips inside the 23.5-acre lake would increase boating traffic on the main reservoir. The number and types of facilities proposed for the Lindsey Harbor development is considered dense and TVA recommended that the applicant consider grouping community slips instead of having individual permitted water use facilities and delete the proposed vehicle launch facility from the proposal. The applicant agreed to cluster the individual facilities on every other lot line in order to address the visual concerns.

To obtain access to the reservoir, the applicant has requested a channel dredge alternative (Dredge Option One) which will provide the greatest maneuverability for boating traffic in order to alleviate safety and navigation concerns. This traffic would likely travel down Big Spring Creek past the city of Guntersville to access the main reservoir for most recreational activities, and would disperse widely on the 56,000-acre reservoir. It is likely that boaters originating recreational trips within the harbor would travel downstream under the Wyeth Drive underpass to reach the relatively open water of Big Spring Creek embayment and further to the main navigation channel downstream of the SR 227 underpass. The Wyeth Drive underpass is a relatively narrow space that safely accommodates one vessel at a time. The addition of the above number of facilities in the Lindsey Harbor proposal would increase the number of vessels using the underpass. TVA would require that the applicant obtain a state-approved “no wake” zone from the harbor to the municipal boat ramp just downstream of Wyeth Drive. With a “no wake” zone designation of the proposed channel, the potential impacts on public recreation facilities, activities, and resources would be insignificant.

3.11. Visual/Aesthetic Resources

Visual resources are evaluated based on existing landscape character, distances of available views, sensitivity of viewing points, human perceptions of landscape beauty/sense of place (scenic attractiveness), and the degree of visual unity and wholeness of the natural landscape in the course of human alteration (scenic integrity).

The proposed project site, located in the Big Spring Creek embayment on Guntersville Reservoir, lies along a portion of the Guntersville shoreline where mixed development dominates reservoir views from the foreground (up to 0.5 mile from the observer) and middleground (0.5 mile to 4 miles from the observer) viewing distances. Views from the reservoir into the proposed project site itself are limited as Lindsey Slough is moderately populated, and water use facilities reach down from private homes that flank the shoreline. Reservoir views that are available at the headwaters of Lindsey Slough reveal wetland and lowland areas toward the end of the cove where heavy wetland vegetation rises about the headwaters, giving indication to the topography beneath the emerging marshland. The number of viewers and duration of view from these locations are generally low and infrequent.

Other points from which to view the proposed project area lie at the ends of Colonial Drive and Lindsey Lane, the roadways providing access to the residences that line the shoreline of the slough. Incidental views of the proposed project area come from the southwest as Windsor Drive and Overlook Drive stop at ridge tops overlooking the southern leg of the valley intersecting with Lindsey Hollow. Number of viewers and duration of view from these

locations are somewhat higher when considering those views available from private residences and their associated water use facilities along the shoreline.

Although access to the interior of the proposed project site is prohibited, the occasional visitor may have, depending on seasonal variations in foliage, views of bottomland, along with several outbuildings that suggest the gently sloping pastoral woodland fringes have supported agriculture operations in the recent past. Two small streams wind through the floor of the valley, stopping only briefly to collect in a few small shallow pools before uniting to form the headwaters of Lindsey Slough. As the topography moves from middle of the proposed project site at the eroding stream banks upward through the moderately sloping pastureland, the vegetation thickens. Logging operations and the remains from past logging operations are visible from the foreground viewing distance. As the topography steepens toward the ridge tops surrounding the hollow, views about the lowlands become framed and directed below the horizon, preventing views from within the proposed project area to the background (4 miles from the observer and beyond) viewing distance. Mature hardwoods intermixed with pine species rise from the abruptly sloping topography as views transition to the horizon. The number of viewers and duration of view are generally lower from positions within the proposed project area since it is held in private ownership.

The scenic attractiveness from within the established viewshed is common to the area, and the scenic integrity is moderate to low.

Consequences of the impacts to visual resources are examined based on changes between the existing landscape and the landscape character after alteration, identifying changes in the landscape character based on commonly held perceptions of landscape beauty and the aesthetic sense of place.

Under the No Action Alternative, Word and Boggus Construction Company would not be allowed to purchase TVA managed property and, subsequently, would not be allowed to conduct dredging operations that would result in the construction of a reservoir at the headwaters of Lindsey Slough. However, as indicated in Section 2.1 of this document, development of some nature could occur within Lindsey Slough. The resulting development would alter the landscape character of Lindsey Hollow to undetermined levels of significance, as zoning does not exist and private land lies just beyond the fen to the rear of the cove. In the event that the back-lying property were developed for residential or mixed residential use, the associated impacts would be insignificant.

Under the Action Alternative, the applicant would be given opportunity to purchase the property, resulting in dredging operations occurring at the headwaters of Lindsey Slough to facilitate further development of the proposed small constructed reservoir and ensuing residential development.

The resulting changes would substantially affect the existing landscape character as the back-lying land use is transformed from its existing state into an impounded body of water with dense residential development surrounding the constructed reservoir. Accompanying this development would be a logical increase in population, resulting in an increase in recreational lake traffic and a considerable increase in vehicular traffic to and from the residential, school, and commercial portions of the development. These two resulting impacts would be among the more perceivable lasting impacts from off-site vantage points. However, this increase in population and traffic would come in an area of the reservoir that is already developed and has an advanced capacity to absorb the visual congestion

associated with the proposed development. Residents currently living along Colonial Drive and Lindsey Lane would have the greatest view of increases in traffic and alteration in landscape character, but when viewed in context with other surrounding residences and traffic patterns, the established scenic value from these points would be insignificantly affected. Those residents would potentially have views of discernable alterations in the existing landscape character from Windsor Drive and Overlook Drive (views would vary, based on setbacks, lot restrictions, restrictions on clearing and grubbing).

Visual congestion and discord during the construction period would be probable with occurrence of dredging operations and further development of the project inward of Lindsey Hollow. Heavy equipment operating on site in addition to an increase in personnel and potential construction-related impacts perceivable from off-site locations would adversely contrast with the residential setting that currently exists. However, these impacts associated with construction would remain limited to that period, and should return to a modest level of congruence once construction operations are complete.

While Dredge Option 3 would appear to impact the existing viewshed least, when considering the corresponding dredge proposals, it is the least preferable option due to boater safety consideration. Overall, the proposed project including potential impacts resulting from dredging and channel construction through construction and subordinate development of the property as a mixed-use residential development, would have overall insignificant visual resource impacts.

3.12. Air Quality and Noise

The existing air quality within the proposed Lindsey Harbor project area is good. The Marshall County, Alabama, area is classified by ADEM and the USEPA as an attainment area for all criteria pollutants listed in the National Ambient Air Quality Standards of the Clean Air Act. The Sipsey Wilderness area is the nearest Prevention of Significant Deterioration Class 1 area and is located approximately 70 miles west of the subject site.

Some temporary air pollutant emissions would be generated during site preparation and the construction of the lake within the proposed development. The construction activities would generate emissions from such activities as open burning of vegetation cleared for construction, vehicular traffic, and construction equipment. However, these emissions would be temporary and localized and have insignificant impact on air quality. Air emissions from vehicular traffic are not expected to significantly impact the air quality.

The subject site currently lies within a nonincorporated community and is primarily rural. The city of Guntersville is located adjacent to the proposed development. The applicant intends to apply for annexation into the city of Guntersville. The proposed development is located north of US 431. The urban development within a mile of the proposed project is primarily limited to the northern, western, and northwestern areas. Two sanitary sewer pump stations would be constructed within the boundaries of the proposed development to handle the sewer return to the treatment plant. The pump stations would be housed in an enclosed building surrounded by a 6-foot-high chain-link fence. Vegetation is planned as a screening tool. The type of pumps designed for use at these stations would be submersible inside a below-ground vault. Based on the design constraints of an enclosed building, vegetation screening, and submersible pumps, noise levels would not be significantly impacted.

Businesses and additional residences are located west across US 431. From the western boundary of the proposed development, Guntersville High School occupies property approximately 0.66 mile west across US 431.

Guntersville Lake is within close proximity to the proposed development, and TVA owns the western properties that border the subject site and are adjacent to Big Spring Creek of Guntersville Lake. Development is limited to the southeast, east, and northeast. This area is not zoned and is located outside the city limits of Guntersville.

Other than traffic from US 431 and recreational vessels that routinely use Big Spring Creek and Guntersville Lake, there is no other dominant or ambient noise source in the immediate area. The city of Guntersville does maintain an ordinance for general noise pollution.

The proposed development would generate construction, vehicle, and operational noise. The noise generated by construction operations would be temporary, occurring during development of the park and construction of facilities. Noise generated from new residences would be minor and would be limited to the levels as stated in the restrictive covenants of the Lindsey Harbor. There will be an increase in noise associated with the additional watercraft associated with the development but this is generally acceptable to those interested in locating in a waterfront community and lake users.

Based on the rural location of the development and the restrictive covenants limiting noise generation by residences locating in the development, TVA has determined that implementing the project as proposed would not significantly impact ambient noise.

3.13. Socioeconomics

In 1990, Marshall County had an estimated population of 70,390. Marshall County experienced a growth rate of 15 percent based on an increase of 14,156 people in the year 2001. In contrast, the state growth rate for the same period was 10 percent, with the national growth rate about 12 percent. In 2001, the population of Marshall County was 93.3 percent white, 5.1 percent black, 2.7 percent Hispanic with Asian and Pacific Islander persons making up the balance of the population.

In 1998, Alabama Department of Industrial Relations estimated that the civilian labor force in Marshall County averaged about 38,807 people with 1,963 unemployed, for an unemployment rate of 5.1 percent. In the surrounding counties, there were 14,382 persons unemployed, for a regional unemployment rate of 4.1 percent, compared to Alabama's rate of 4.5 percent. In 1999, the per capita income in Marshall County was $17,089. This is lower than the statewide per capita income of $18,189 and the nationwide per capita income of $25,288.

Under the No Action Alternative, there would be most likely be an increase in the population or revenue base due to the likelihood that some development will occur on the applicant private property. The overall socioeconomic impact may be less due to the absence of the 23.5 acre lake, channel access and water use facilities. Under the proposed Action Alternative, as the Lindsey Harbor develops, it would provide housing and job opportunities for the increasing population. Also due to the relatively easy access of the site from much of northeastern Alabama, including Huntsville, population impacts from in-movers likely would be widely dispersed around the area. Development as proposed would increase the value of generating additional tax revenue. In addition, wages and other positive economic

impacts would produce an overall positive impact on socioeconomic conditions. There is no concentration of low income or minority persons in the immediate vicinity, so there should be no disproportionate adverse effects to low income and minority populations. TVA has determined that implementing the proposed action would not have a significant impact on socioeconomic conditions.

3.14. Summary of TVA Commitments and Proposed Mitigation Measures

Because the proposed Lindsey Harbor development and harbor construction would impact existing streams on private land along with wetlands on private land and TVA land, the applicant has developed a comprehensive wetland and stream mitigation plan (Attachment A) to offset impacts to these waters. The proposed development would require mitigation of approximately 4,107 linear feet of stream impacts and approximately 8.44 total acres of wetlands including 2.74 acres of wetland Impacts on private land. The applicant has agreed to purchase wetland bank credits from the Flint Creek Mitigation Bank to mitigate impacts to approximately 10 acres of wetlands at a ratio of 2:1.

The mitigation plan estimates that a total of 3,316 credit/feet of mitigation would be required to offset stream impacts. The mitigation proposal has identified areas in the upper reach of the project stream where on-site mitigation could occur and at an off-site location on the Payne Farm, located approximately 2 miles upstream (Big Spring Creek) from Guntersville Lake. The developer has located proposed mitigation, which would provide 4,861 credit/feet, an overage of 1,545 credit/feet. Of these mitigation credits, 1,068 credits would be generated from on-site restoration and 3,793 credits from off site. The combined projects would restore and permanently protect 8,891 feet of streams. This linear footage is 2.16 times of that being impacted. A detailed Lindsey Harbor Conceptual Mitigation Plan dated January 29, 2004 and Addendum 1 dated May 21, 2004, is attached (Appendix A).

The following restrictions will be included in TVA's approval of the land request and/or Section 26a permit.

1. The applicant will grant TVA (within 30 days of the land sale date) a flowage easement on private property up to the 600-msl elevation.
2. As mitigation for the stream habitat lost, the applicant will enhance 3,202 feet on site and restore 5,689 feet of streams on the Payne Farm.
3. To mitigate for the loss of wetlands, the applicant will purchase mitigation bank credits for 10 acres of wetland impacts at a minimum 2:1 ratio in the Flint Creek Wetland Mitigation Bank in north Alabama.
4. Archaeological resources (1MS468 and 1MS467) that were determined potentially eligible for listing in the NRHP will be avoided. No ground disturbing activities will be permitted within the boundaries of these archaeological sites, which will be maintained as "green space."
5. The development will be served by connections to a sewage treatment plant. The use of septic systems will not be permitted.
6. All dredged material would be spoiled outside the 100-year floodplain and above the TVA Flood Risk Profile elevation 597.0 feet msl.
7. Dredging activities associated with the channel access to the proposed harbor and landward excavation of the lake harbor shall be conducted during the dry season.
8. A silt curtain or a series of silt curtains, if necessary, shall be installed near the location where the earthen berm will be breached during channel and lake filling after the newly dredged channel and harbor area are excavated.

9. The applicant shall provide documentation to TVA that they have conveyed conservation easements to the state (or another entity agreed upon by TVA and the USACE) for the protection of stream restoration on both the private property and the Payne Farm property.
10. To reduce potential impacts on public recreation and activities, the applicant will obtain a “No wake” zone approval for the proposed channel from the state of Alabama.
11. The pumps designed for use at the sanitary sewer pump stations will be submersible inside an underground valve to minimize noise impacts.

CHAPTER 4

4. LIST OF PREPARERS

TVA	Position or Area of Involvement
Scott Atkins	Terrestrial Ecology
Harold M. Draper	NEPA Administration
Nancy Greer	Guntersville Team Manager
Marianne Jacobs	Archaeological Technician
Ellen Keene	Wetlands
Mary McBryar	Environmental Scientist, Guntersville Team
Roger Milstead	Floodplains
Kenneth Parr	NEPA Administration
George Peck	Water Resources
Richard Pflueger	Recreation
Erin Pritcherd	Cultural Resources
Jon Riley	Visual Resources
Richard Thrasher	Land Use Specialist, Guntersville Team

OMI Inc., Huntsville, Alabama	Position
Amy Werkheiser	Environmental Scientist
John M. Ozier, P.E.	Senior Engineer

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CHAPTER 5

5. LIST OF AGENCIES AND PERSONS CONSULTED

Federal Agencies

U.S. Army Corps of Engineers, Nashville District

U.S. Fish and Wildlife Service, Alabama Ecological Services Office

State Agencies

Alabama Department of Conservation and Natural Resources

Alabama Department of Environmental Management

Alabama Marine Patrol Division

Alabama Historical Commission

Alabama State Lands Division, Natural Heritage Section

City/County

City of Guntersville
- Office of the Mayor
- Guntersville City Schools

Marshall County Commission

Marshall County Economic Development Council

Individuals

Samuel B. Greenwood

Samuel and Pam Harris

Eugene Parets

Richard and Freeda Allegrati

Charles Akridge

Brian McDaniel

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CHAPTER 6

6. LITERATURE CITED

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APPENDIX A – LINDSEY HARBOR CONCEPTUAL MITIGATION PLAN (JANUARY 29, 2004) AND ADDENDUM 1 (MAY 21, 2004)

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APPENDIX B – CORRESPONDENCE

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APPENDIX C – SEDIMENT AND EROSION CONTROL PLAN FOR DREDGING NEW LAKE