FRANKLIN COUNTY WATER SERVICE AUTHORITY RAW WATER INTAKE, TREATMENT PLANT, AND DISTRIBUTION LINES

Bear Creek Reservoir
Franklin County, Alabama

Lead Agency
TENNESSEE VALLEY AUTHORITY

Cooperating Agencies
U.S. ARMY CORPS OF ENGINEERS
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEAR CREEK DEVELOPMENT AUTHORITY
FRANKLIN COUNTY WATER SERVICE AUTHORITY

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1.0 Purpose and Need

The Franklin County Water Service Authority (FCWSA) proposes to construct a water intake, water treatment plant, and distribution line on Tennessee Valley Authority's (TVA's) Bear Creek Reservoir. This project is needed to meet the long-range objectives of the FCWSA, which are to create a regional potable water supply system and to provide a safe, adequate, and dependable source of water. Currently, potable water service within Franklin County is provided by ten separate water works systems. Raw water sources within the county consist of both groundwater and surface water sources. In recent years, a severe shortage of water has occurred in the county, and conservation has been mandated.

This Environmental Assessment (EA) evaluates the environmental impacts of FCWSA's proposed action. TVA must decide whether to issue the required Section 26a permit for the water intake and necessary land rights for the distribution lines and approve the use of Bear Creek Development Authority (BCDA) property for the plant and distribution lines.

1.1 Background

The service area of the FCWSA includes all areas of the county not presently served by a municipal water system. FCWSA supplies water to 5,000 households and 118 poultry houses for primary use and to two water treatment plants and two water systems for secondary use. The combined usage rate is 1.1 million gallon per day (mgd) for the average day and 1.7 mgd for the average peak day.

Presently, the FCWSA purchases all of its water from the cities of Russellville, Red Bay, and Phil Campbell. The source for Russellville's water treatment plant is Elliot Lake, in which the water level has become alarmingly low several times during the past three years. The source for the Red Bay water system is groundwater wells and there have been water shortages in the past. The Phil Campbell water system purchases its water from the Upper Bear Creek Water Treatment Plant, located approximately 10 miles south of Phil Campbell. Often Phil Campbell has difficulty supplying both its own water needs and the needs of the FCWSA. Both the Hodges and Vina systems depend on small springs for their public water source. The Vina water system has been placed on moratorium by the state in the past due to water quality violations.

In the spring of 1997, FCWSA asked Paxton, Price & Rider Engineering, Inc., to draft a preliminary engineering study to determine the feasibility of the treatment plant project. Results from the study indicated that a minimum two mgd plant would be needed. The total cost of the plant and appurtenant distribution mains would be $8 million to $10 million (Paxton, 1997).

Subsequently, the project was designed to serve an additional 2,000 households in order to meet the projected demands of the area in the next 20 years. Also, the project is designed to serve schools at Vina and Belgreen as well as churches and some small businesses (stores, gas stations, etc.). There are no existing major industries in the project area that would be served. The twenty-year projected usage for the average day is 2.43 mgd with a 3.65 mgd peak rate. This was determined by extrapolation of the historical population and water consumption data for FCWSA. The proposed treatment plant would produce 2.5 mgd with a storage capacity of 1.5 mgd. The project would take 18 to 24 months to construct and would result in 60 to 70 jobs during construction and four to eight (grade three and four) operators and/or maintenance type jobs during operation.

The FCWSA has submitted an application to TVA to construct a water intake, water treatment plant, and distribution line on TVA's Bear Creek Reservoir. As shown in Figure 1-1, the proposed project would involve TVA public land and public land owned and managed by BCDA. The proposed project would include special appropriations for water and wastewater infrastructure projects from the U.S. Environmental Protection Agency (EPA). It would also require issuance of approval from the U.S. Army Corps of Engineers (USACE) pursuant to Section 10 of the Rivers and Harbors Act of 1899 for the water intake, it must meet the criteria for authorization under Nationwide Permit #12, pursuant to Section 404 of the Clean Water Act (CWA) for the backfill associated with the underground stream crossings for the distribution lines, and require TVA approval under Section 26a of the TVA Act.

1.2 Cooperating Agencies

The scope of this project includes federal actions to be taken by TVA, EPA, and the USACE. TVA is the lead federal agency for this Environmental Assessment (EA) primarily because of the need for TVA public land. Also, TVA approval is needed for the use of BCDA land. EPA, USACE, BCDA, and FCWSA are cooperating agencies.

1.3 The Federal and State Decisions

To support this project, FCWSA requests that TVA grant an easement for 3.25 acres of TVA public land to be used to construct a raw water pumping station and intake; to grant an easement over 2.6 acres of TVA public land for distribution lines; approve use of 17.83 acres of BCDA land for the water treatment plant and raw water pumping station; and to approve 2.6 acres of BCDA land for distribution lines. FCWSA also requests that TVA issue approval under Section 26a of the TVA Act for the water intake. FCWSA requests that BCDA allow use of 17.83 acres of BCDA land for the water treatment plant and raw water pumping station; and 2.6 acres of BCDA land for distribution lines.

Section 10 of the Rivers and Harbors Act of 1899 prohibits the alteration or obstruction of any navigable waters of the U.S. unless authorized by the Secretary of the Army with action through the Chief of Engineers. The proposed intake is located on navigable waters of the U.S. as defined by 33 CFR Part 329. Section 301 of the CWA prohibits the discharge of dredged or fill material into waters of the U.S. unless authorized by the Department of the Army (DA) pursuant to Section 404 of the CWA. The proposed fill associated with the intake and stream crossings would be located on waters of the U.S. as defined by 33 CFR Part 328. DA permits would be required for the work; therefore, USACE must decide on issuance of a permit for the proposal, issuance of a permit with modifications or conditions, or permit denial.

FCWSA has applied for use of special appropriations projects (SPAPs) for this drinking water project. EPA must decide on approval and issuance of funds from this program for this project.

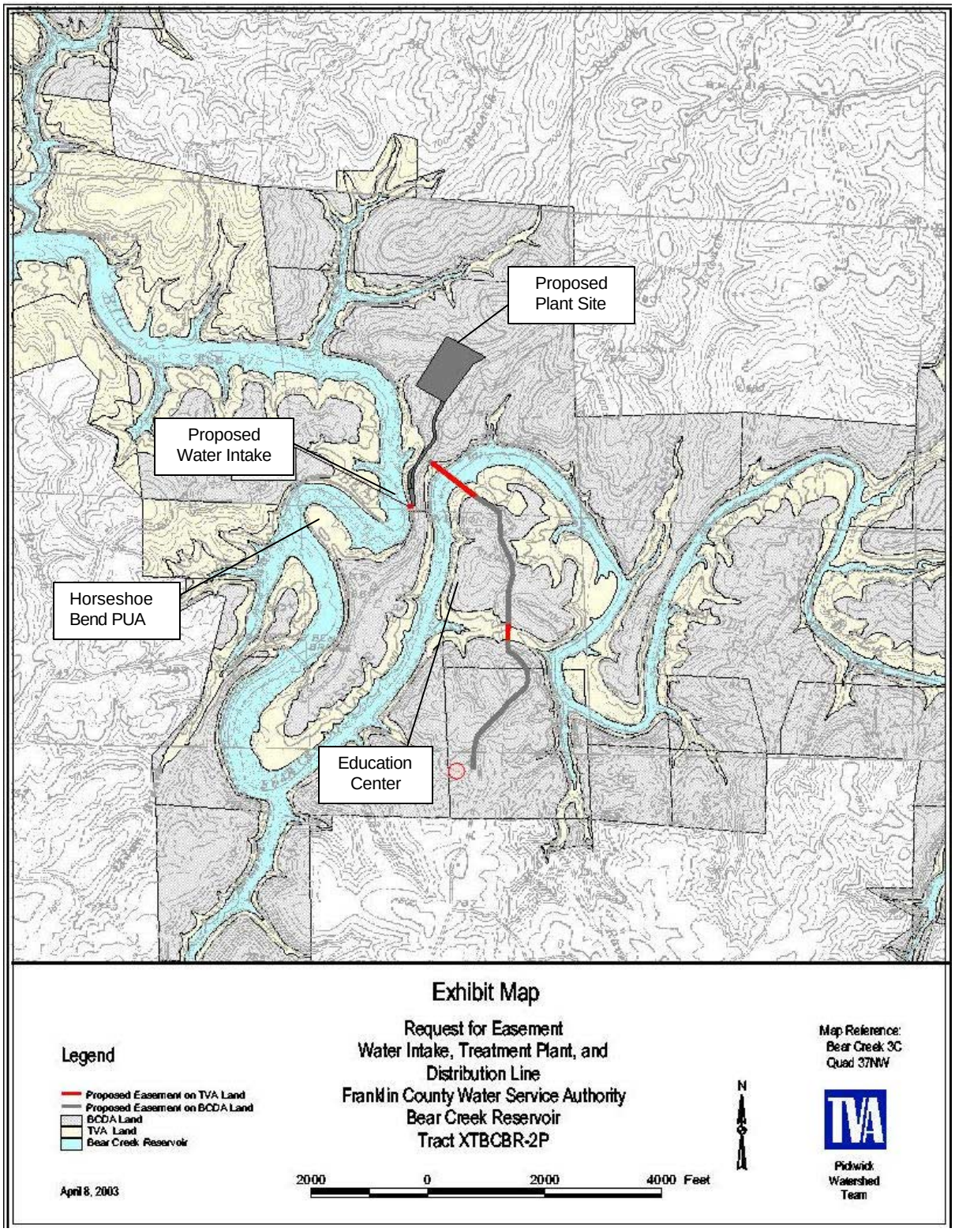

Figure 1-1. Exhibit Map

1.4 Public Involvement Process

On January 8, 2002, the USACE issued Public Notice 02-01 for the proposed action (see Appendix A). Responses from the public notice were received from the U.S. Fish and Wildlife Service (USFWS) and the Alabama Historical Commission (AHC) and are included in Appendix C. By letter dated February 6, 2002, the AHC requested that a professional archaeologist survey the project area (see Appendix C). Archeological resources and potential impacts are discussed in Section 3.6.

By letter dated March 14, 2002, the USFWS stated that they inspected the site on January 24, 2002, with Lisa Morris, USACE (see Appendix C). Based on the information gathered prior to and during the field visit, the USFWS recommended that the applicant use best construction management techniques. The large amount of excavation initially proposed concerned USFWS and therefore they recommended the use of a turbidity curtain around the area proposed for excavation for the water intake and downstream of the distribution line crossing. The USFWS was also concerned about fish and other aquatic life being entrained in the structure or impinged on the screen, and therefore recommended a screen or other mesh-like apparatus over the intake to prevent this. According to their records, there are no federally listed or proposed threatened or endangered species or designated critical habitat located on or adjacent to the proposed project sites. USFWS has determined that the requirements of Section 7 of the Endangered Species Act of 1973, as amended, are fulfilled. Subsequently, the applicant modified its proposed plan. The original plan called for a large permanent wet well excavation (100 ft by 100 ft plus a 60 ft by 13 ft channel) requiring removal of approximately 9,000 cubic yards of lake bottom material. The applicant's modified plan requires only 1,300 cubic yards of excavation with a plan to backfill to preconstruction contours over three 30-inch pipe casings after installation, with submersible well pumps. Additionally, the applicant proposes to construct the water intake during a special drawdown of the reservoir, allowing much of the work to be done in the dry. The modified plan would result in substantially less spoil and excavation of the lake bottom; fewer impacts to the environment; and addresses USFWS comments regarding the large spoil and excavation. In October 2002, the USFWS was notified of this reduction in excavated material and sent a copy of the modified plan. Since the modified plan has substantially less impacts on the environment than what was originally stated in the public notice, there is no need to issue a new public notice.

The FCWSA published a public notice in the *Franklin County Times* on March 24 and 31, April 7 and 14, 2002, announcing the proposed action and specifics for two public meetings. The public meetings were held at Hodges Community Center on April 11, 2002, and at Belgreen School on April 25, 2002. Twenty-eight people attended the meetings in addition to several representatives from FCWSA, TVA, Engineering Service Associates, and Price, Rider & Mullins, Inc. Questions asked at the public meetings consisted of issues about the price of water, projected completion date of the project, plans to buy out the smaller water districts in the county, whether lake levels would be affected, and whether fire hydrants could be installed.

TVA distributed the draft EA for public and interagency review on January 14, 2003. Comments were received from USACE, the Alabama State Historic Preservation Officer (SHPO), and EPA (see Appendix C). In their letter dated February 12, 2003, the SHPO stated they had previously reviewed the project and concurred with TVA's finding. TVA received comments from USACE, on January 30, 2003,and from EPA on April 2, 2003, both cooperating agencies. Information in the EA has been revised in response to their comments and specific responses to EPA's comments are also included in Appendix C.

TVA received USFWS comments on the draft EA on April 24, 2003. Additionally, TVA is aware of two other USFWS letters, dated December 31, 2002 to Alabama Department of Environmental Management (ADEM) and Don Price, with Price, Rider, and Mullins Engineering. USFWS issues are summarized and addressed in Appendix D. Information has been added to the EA in response to their comments and specific responses to USFWS comments to TVA are also included in Appendix D.

1.5 Other Pertinent Environmental Documents

This EA was prepared using information from the environmental and engineering documents described below:

Environmental Assessment, Bear Creek Reservoirs Land Management Plan (TVA, 2001)

In 2001, TVA completed the Environmental Assessment, Bear Creek Reservoirs Land Management Plan. This plan allocates the Bear Creek Reservoirs land for a variety of single and multiple land uses. It allocates 9,166 acres of public land around the Bear Creek Reservoirs for Project Operations, Sensitive Resource Management, Natural Resource Conservation, Industrial and Commercial, Recreation, and Residential Access. Specifically, 2,295.6 acres were allocated on Bear Creek Reservoir for Project Operations, Sensitive Resource Management, and Recreation. The land at the proposed intake site was allocated to Zone 6, Recreation, and Zone 3, Sensitive Resource Protection.

Comprehensive Water Study for Franklin County, Alabama (Price, et al., 2000)

This study was prepared by Price, Rider & Mullins Engineering, Inc., in cooperation with the Northwest Alabama Council of Local Governments and the FCWSA. The purpose of this study was to provide the FCWSA with adequate data and information to make sound decisions concerning the size and location of water mains, water tanks, and booster stations that would be needed to deliver water from a proposed new water treatment plant to the users of the water. Future peak day estimated usage for the combined systems of FCWSA, Red Bay, Vina, and Hodges was estimated to be approximately 3.65 mgd. The future peak flow for the Phil Campbell system was estimated to be 1.39 mgd. The study concluded that the appropriate size water treatment plant for FCWSA's needs would be 2.5 mgd. The plant would be designed to be easily upgraded in the future to 5.0 mgd by increasing the filter rate.

Environmental Information Document, (Price, et al., 2002)

This document was prepared by Price, Rider & Mullins Engineering, Inc., in order to provide background information to TVA, USACE, and EPA to assist in preparing this EA. The document includes a description of the existing facilities, proposed facilities and funding, need for the proposed facilities, alternative analysis, affected environment, and public participation to date.

1.6 Necessary Federal Permits or Licenses

Construction of the water intake would require permits from USACE under Section 404 of the CWA and Section 10 of the Rivers and Harbors Act and from TVA under Section 26a of the TVA Act and permits for any shoreline stabilization and wetland alterations. National Pollutant Discharge Elimination System (NPDES) storm water construction permits are required for activities involving soil disturbance greater than one acre. The backfill work

associated with the utility distribution line meets the criteria for authorization under Nationwide Permit #12 pursuant to Section 404 of the CWA. The state of Alabama has previously issued a water quality certification for Nationwide Permit #12 pursuant to Section 401 of the CWA as required for this action.

Water quality certification for construction of the water intake would be required from the Alabama Department of Environmental Management (ADEM) in accordance with Section 401(a)(1) of the CWA. Additionally, a water supply permit for the operation of the water treatment plant would be needed from ADEM.

2.0 Alternatives

2.1 Alternatives Not Described in Detail

Several alternatives for the location of the water treatment plant were considered during preliminary engineering studies. These locations also included various distribution system routes. Also, an alternative to withdraw 5.0 mgd was considered for Bear Creek Reservoir. None of these alternatives would have any environmental advantages over the preferred alternative. These alternatives were eliminated from further analysis for the reasons listed below.

Construction of a 2.0- to 2.5-mgd water treatment plant on the north side of Little Bear Creek was initially considered in detail in a preliminary engineering report in March 2000. However, TVA determined that a withdrawal of this amount from the Little Bear Creek source would not allow operation of the Little Bear Creek Reservoir as designed. Also the available site is steep and rocky, leading to increased cost and constructability concerns. Since the site is approximately 700 feet from Little Bear Creek Dam, TVA also had concerns about dam safety if blasting were required during construction.

Construction of a 2.0- to 2.5-mgd water treatment plant approximately midway of Little Bear Creek Reservoir and Bear Creek Reservoir with water intake structures on each lake was also considered. This alternative would provide an adequate water source for Franklin County's present and future needs. However, two intake structures and pumping stations would be required as well as approximately four miles of 36-inch raw water transmission pipe. This alternative was eliminated from further consideration by the FCWSA, because of the monetary costs associated with the construction and operation of two intake structures and raw water piping to the plant and potential construction concerns on the Little Bear Creek Reservoir site previously described. Additionally, there would be potential for more environmental impacts caused by constructing a water intake structure and pumping station on two reservoirs as compared to one reservoir and impacts associated with running more raw water line than the proposed action. Also, a plant on Cedar Creek was preliminarily considered but was rejected since the Bear Creek site would be more centrally located and Bear Creek Reservoir has lower turbidity.

The FCWSA initially asked TVA to consider a withdrawal rate of 5.0 mgd on Bear Creek Reservoir. Bear Creek Reservoir was designed to provide at least 5.0 mgd and serve Red Bay, Hodges, Vina, and surrounding areas. The preliminary engineering reports suggested a maximum daily demand of only 2.5 mgd by the year 2010. TVA projected that the 2030 demand for Franklin and parts of Winston County would be 9.9 mgd annual average. The available water supply is 22 mgd annual average (11 mgd from Upper Bear Creek Reservoir, 6.0 mgd from Cedar Creek Reservoir, and 5.0 mgd from Bear Creek Reservoir). TVA projected that the 2030 demand for the FCWSA would be 2.1 mgd annual average. In order to ensure long-term availability of water and to protect limited water resources available for reservoirs such as Bear Creek, TVA only permits withdrawals of water to meet near-term demonstrated needs. Therefore, TVA recommended a withdrawal rate of 2.5 mgd with flexibility that if the demand on FCWSA increases and they demonstrate the need for more water in the future, TVA would consider a request to raise the permitted limit above 2.5 mgd. This would also provide flexibility for additional water quantity to be available for other potential uses which might foster economic growth in the area.

2.2 Alternatives Evaluated in Detail

2.2.1 No Action

Under the No Action Alternative, the FCWSA would not secure an additional source of water supply, and transmission mains (or lines) to connect the various systems within the county, and additional storage tanks would not be constructed. FCWSA would continue to utilize its current system and water sources to meet water demands. The No Action Alternative would result in a continuation of the shortages of water and mandatory conservation programs that have plagued the county since 1999. The towns of Hodges and Vina would continue to struggle to operate and maintain systems depending on springs as their only water supply source. Flow reduction (to reduce the amount of unaccounted for water loss) was considered as part of the No Action alternative. It was determined that even with a flow reduction of unaccounted for water loss to a level below the state average of 15 percent, there still would not be enough water to meet current and future demands. Therefore, flow reduction was eliminated from further review.

2.2.2 Applicant's Proposed Action With Identified Mitigation Measures

FCWSA proposes to construct a 2.5-mgd water treatment plant on Bear Creek Reservoir with an intake structure. For future needs, the plant would be designed to be easily upgraded to 5.0 mgd by increasing the filter rate. Water would be pumped from an intake structure on Bear Creek at mile 77.0, to the proposed treatment plant. The proposed water treatment plant would be located on top of the ridge that overlooks the Horseshoe Bend area on Bear Creek Reservoir. This area is located west of County Road 27 and within approximately 1,300 feet of, and up slope from, the intake structure. The pipeline from the intake/pumping station would also be constructed west of County Road 27 en route to the proposed water treatment plant. From the treatment plant, the main distribution water line would cross Bear Creek at Mile 79.8. The distribution water line that would cross the stream channel would be placed in an excavated trench, backfilled, and topped with riprap for a minimum of three feet of cover over the pipe. Preconstruction contours of the creek would be restored.

The applicant modified its proposed plan, primarily due to costs. The original plan called for a large permanent wet well excavation (100 ft by 100 ft plus a 60 ft by 13 ft channel). About 9,000 cubic yards of lake bottom material would have been removed for the purpose of bringing the normal lake pool to the face of the wet well for intake. The applicant's modified plan requires only 1,300 cubic yards of excavation with a plan to backfill to preconstruction contours over three 30-inch pipe casings after installation. The pump station would require three 30-inch casings in an excavated channel to the bottom of the creek channel (see Figure 2-1). The excavation would be deep enough to provide two feet of cover above the casing and would be approximately 1,300 cubic yards of material. Each 30-inch pipe would be encased in concrete and the channel would be backfilled to approximately the original bottom contour. Submersible well pumps would be installed in the three casings. The modified plan results in substantially less spoil and excavation of the lake bottom and would result in fewer impacts to the environment.

The proposed water treatment plant would be designed to comply with current and anticipated EPA and ADEM regulations for high rate filter operation and enhanced coagulation. Treatment processes would be as follows:

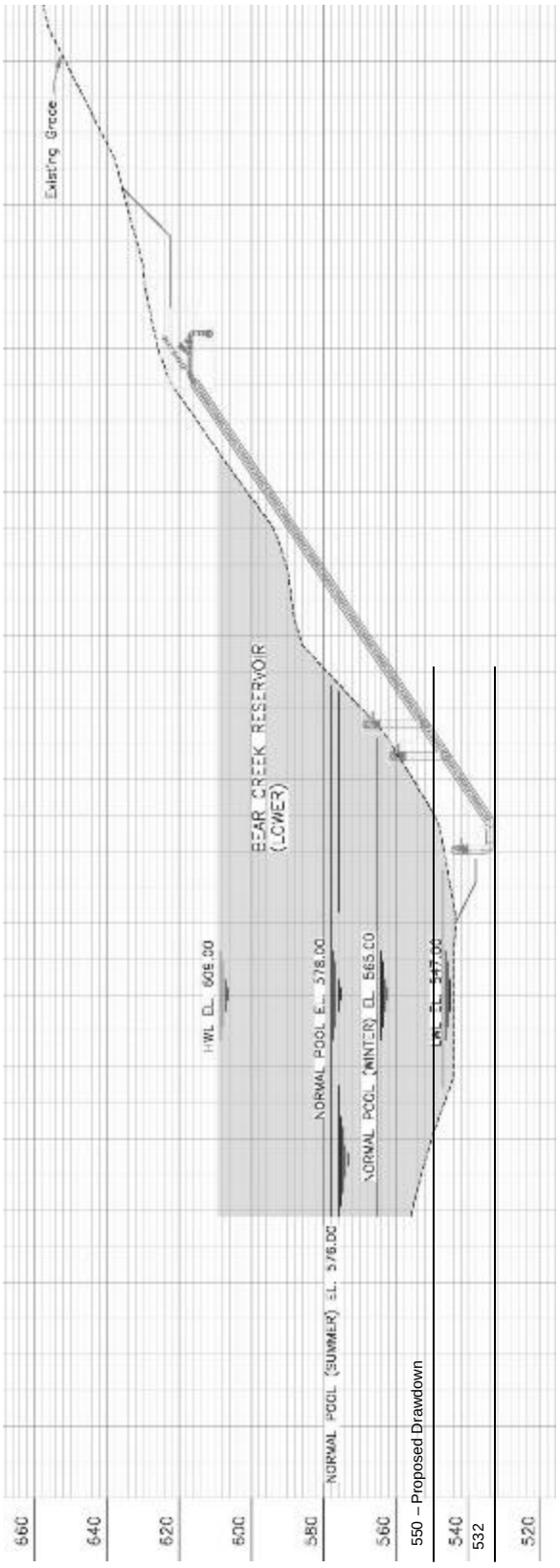

Figure 2-1. Cross Section of Proposed Water Intake

1. Raw water aeration – Units would be constructed for aeration of the raw water prior to treatment to reduce potential problems with iron and manganese, taste and odors, and organic precursors.
2. Chemical addition – Lime for pH control, alum for coagulation, potassium permangenate for manganese and taste/odor control, activated carbon for taste/odor and organic precursor control, and chlorine for periodic control of algae that may form in the plant basins.
3. Rapid mixing – For rapid mixing of alum for proper coagulation of colloidal material (turbidity) in the raw water.
4. Flocculation Units – For slow mixing of the raw water in the coagulation process.
5. Sedimentation basins – Units in which the turbidity settles and is removed form the raw water.
6. Rapid sand filters – Gravity filter unit using sand and anthracite to filter non-settleable material from the raw water. Filters would have a system to use finished water for back washing and cleaning.
7. Disinfection – Breakpoint chlorination would be used for pathogen elimination and maintenance of a disinfectant residual in the system. Storage would be provided for adequate chlorine contact time. The same storage would provide a volume of water for filter backwash and for finished water pumping.
8. Fluoridation – Fluoride would be added to the finished water as a dental prophylactic.
9. Finished water pumping – High service pumps would be installed to pump the potable water to the distribution system.
10. Backwash water handling – Storage would be in on-site lagoons. Solids would be removed every 5 – 7 years, dewatered, and taken to approved landfill for ultimate disposal. Clarified water would be recycled to the head of the plant.

FCWSA also proposes to construct a transmission system to deliver the treated water to the Hodges, Vina, Belgreen, and Gravel Hill areas. The most cost-effective transmission system includes 30-inch, 16-inch, 12-inch and 8-inch water mains and two elevation tanks. This alternative would interconnect the FCWSA's system to the distribution systems of Hodges, Vina, Red Bay, Russellville, and Phil Campbell in Franklin County.

Water Mains (Lines)

A system of water transmission mains (or lines) would be required to efficiently and adequately deliver the treated water from the new water treatment facility to the various populated regions of the FCWSA's area as well as to the other systems, such as Hodges and Vina, that intend to purchase bulk water supplied by the new plant. The proposed layout of the water transmission mains is described as follows:

1. Construct 1.6 miles of 30-inch ductile iron main from the treatment plant site along Horseshoe Bend Road northeastwardly to the intersection with County Road 16.
2. Construct 5 miles of 16-inch diameter ductile iron main along County Road 16 from this intersection of Horseshoe Bend to the intersection of Alabama Highway 187.
3. Stub out a valve 16-inch main in a northerly direction at the intersection of Horseshoe Bend Road for a future connection to Red Bay.
4. Construct 3.7 miles of 16-inch ductile iron water main along Alabama 187 northwardly from the intersection of County Road 16 and Alabama Highway 187 to Glasgow Corner.

5. Construct 2.9 miles of 12-inch ductile iron water main northwardly along Alabama 187 from Glasgow Corner to the intersection with Alabama 24 at Belgreen.
6. Construct 2.5 miles of 12-inch ductile iron water main westwardly along Alabama Highway 24 from Belgreen to a connection with the FCWSA's Dempsey water system.
7. Construct 0.5 miles of 12-inch ductile iron water main northwardly along County Road 49 from the intersection of Alabama Highway 187 and Alabama Highway 24 to the intersection with an existing 8-inch water main from Russellville to Belgreen.
8. Construct 2.8 miles of 12-inch ductile iron water main from the proposed water treatment plant at Horseshoe Bend southwardly through Overton Farm and along Overton Farm Road to the intersection with Alabama Highway 172. This main would cross beneath Big Bear Creek at Overton Farm by directional bore and would connect to the Hodges water system's existing 6-inch water main at the intersection of Overton Farm Road and Alabama Highway 172.
9. Construct 5.0 miles of 8-inch PVC water main along Alabama Highway 172 from the intersection of Overton Farm Road and Alabama Highway 172 westwardly to the existing Vina water system.
10. Construct 1.0 miles of 12-inch ductile iron water main along County Road 16 southeastwardly from the intersection of County Road 16 and Alabama Highway 187 to a connection with an existing 6-inch main of FCSWA's system.

The State/County Roads in the project area have existing rights-of-way varying in widths from 60 feet to 80 feet. The proposed water mains would be placed in the outer 5 to 10 feet of these existing rights-of-way. These rights-of-way are maintained by state and/or county crews utilizing mowing equipment and/or approved herbicides. In areas where additional easements or rights-of-ways are necessary (see water lines described in numbers 1 and 8), the easements would be from 20-30 feet wide. These easements would be maintained by the FCWSA utilizing mowing equipment. Excavated material from the construction process would be sidecast and used for backfill/grading in the same location of the line.

Meters

A master meter would be installed at the connection to the Hodges water system at the intersection of Overton Farm Road and Alabama Highway 172. Also, a master meter would be installed at the connection to the Vina water system near the eastern corporate limits. Both of these master meter stations would have 6-inch compound meters.

Pump Station

There are existing water booster stations at Dempsey and Old Nauvoo that would no longer be needed when this project is completed. These booster stations could be relocated to serve the Gravel Hill water system area and the Crooked Oak water system area, if needed in the future, but this is not considered a part of this project.

Water Storage Tanks

A one-million-gallon elevated tank would be constructed at Glasgow Corner. The approximate ground elevation at Glasgow Corner is 920 feet above mean sea level (msl). The height of the tank would be approximately 140 feet; therefore, the overflow elevation would be approximately 1,060 feet msl. Also, a 0.5-million-gallon elevated water storage

tank would be near the intersection of Overton Farm Road and Alabama Highway 172. The approximate ground elevation at the proposed tank site is 830 feet msl. The proposed elevated water tank would be approximately 140 feet high. Therefore, the overflow elevation of the tank would be approximately 970 feet msl.

Applicant's Proposed Mitigation Measures

The final plans and specifications for the treatment plant, intake structure, water transmission mains and tanks would be reviewed by ADEM as well as other agencies that have a regulatory or financial interest. All contracts would be awarded with the stipulation that "should undetected cultural resources be encountered during project activities, work shall cease and the Alabama Historical Commission shall be contacted immediately." Additionally, the contractor(s) would be required to restore all disturbed areas to original conditions. The contractor(s) would use erosion and siltation prevention measures during construction. These measures would include, but not be limited to, use of silt fence, staked hay bales, and riprap check dams as appropriate. Easements would be limited to the minimum width necessary to install the water main, and the mains (or lines) would be located within the existing road right-of-way (ROW). The FCWSA would not provide new water connections within the 100-year floodplain. The finished contours would not be changed within the floodplain. The specifications would also include requirements that all contractors and/or subcontractors would employ water trucks and other means to minimize disturbance and dust. Spoil would be disposed of on site to fill low areas and would be properly drained, and new vegetative cover, consisting of native species, would be established by the contractor.

The construction of portions of this project would be near the campground and boat launching facilities on Bear Creek Reservoir as well as the Bear Creek Educational Center. These facilities are operated by BCDA. BCDA has been be involved in the project's planning and design to assure that the project does not result in a loss of any of their facilities or access to these facilities. BCDA would continue to be involved to ensure that construction activities do not impede access to or interfere with the operation of these facilities. A 100-foot wide vegetative buffer consisting of native trees has been planned around the treatment plant site to reduce potentially adverse effects to visual resources.

The applicant has requested the reservoir water level be lowered on Bear Creek Reservoir to begin October 1, 2003, be at elevation 550 feet msl on October 26, 2003, and be maintained at that elevation for a two-week period corresponding to normal winter drawdown in 2003. This would allow most of the intake line to be installed on dry land. This would minimize environmental damage and reduce the cost associated with underwater excavation.

2.3 Comparison of Alternatives

The No Action Alternative would result in a continuation of the shortages of water and mandatory conservation programs that have plagued the county in recent years. It is anticipated that the shortages and mandatory conservation measures would become more stringent as population growth occurs and quality of life in the area would decline. The No Action Alternative would also be commercially detrimental to a county that is considered economically distressed by the U.S. Department of Commerce. The No Action Alternative would also force Hodges and Vina to continue to rely on springs as their only source for water supply. For these reasons and because this alternative does not meet the needs of the applicant, it is considered unreasonable.

Under the proposed action there would be insignificant or no impacts on wetlands, terrestrial resources, threatened and endangered species, cultural resources, noise, and socioeconomics. Under the proposed action, the mitigation measures identified in section 5.0, would further reduce potential impacts to surface water and aquatic resources, floodplains, aesthetics, recreational resources, and state listed plant species.

2.4 Preferred Alternative

TVA's preferred alternative is the Applicant's Proposed Action, as modified, with the mitigation measures identified in Section 5.0. Adoption of the alternative would not result in any adverse or significant impacts and would enable FCWSA to meet their projected water supply demand. The USACE and EPA will determine their preferred alternative after independent review of this EA.

3.0 Affected Environment and Environmental Consequences

3.1 Introduction

Bear Creek Dam and Reservoir are part of the Bear Creek Project which consists of four dams and reservoirs (Bear, Upper Bear, Little Bear, and Cedar), a 9-mile floodway along an 18-mile stretch below Bear Creek Dam, and a 26-mile recreational floatway below Upper Bear Dam. The reservoirs have a combined surface area of 8,300 acres and a shoreline length of approximately 284 miles. Flood control features of the project substantially reduced flooding on about 15,000 acres of farmland. The project provides other benefits by adding controlled flood storage to the TVA control system. Construction on Bear Creek Dam and Reservoir was completed in 1969 at a cost of $4.5 million. The dam is located at Bear Creek Mile 74.6 in Franklin County, Alabama, 30 miles southwest of Sheffield and 10 miles southeast of Red Bay. The reservoir lies in Franklin and Marion Counties, Alabama. The reservoir provides flood control, recreation, and environmental education benefits. When the four multipurpose reservoirs in the Bear Creek watershed were planned, Upper Bear Creek and Bear Creek Reservoirs were intended to be used as a source of municipal and industrial water supply for the region. Bear Creek was designed to accommodate a water supply withdrawal of at least 5.0 mgd to serve Red Bay, Hodges, Vina, and the surrounding area.

The project area covered by this EA includes the water intake, treatment plant site, and all distribution lines to be constructed with federal funds. The proposed water treatment plant would be located on 14.86 acres of BCDA public land. An additional 2.97 acres of BCDA land have been requested for a raw water intake line. The proposed raw water intake would be located on TVA Bear Creek Land Plan Parcel 6, which is allocated to Zone 6, Recreation in the 2001 Bear Creek Reservoirs Land Management Plan because of the Bear Creek Environmental Education Center (see Figure 3-1). The southernmost portion of TVA Bear Creek Land Plan Parcel 7 would be crossed in order to avoid steep slopes for the raw water line. This parcel was allocated to Zone 3, Sensitive Resource Management because of sensitive resources located elsewhere on the parcel. The distribution waterline would cross TVA Bear Creek Land Plan Parcel 4, which was also allocated to Zone 6, Recreation because of the Bear Creek Environmental Education Center.

Access corridors for public works/utility projects proposed on any TVA public land that do not affect the allocated land use or sensitive resources would not require an allocation change so long as such uses would not be inconsistent with the use of the allocated zone. (An access corridor is a linear pathway extending between TVA and the adjacent landowner to the water. It is located in a way that minimizes removal of trees or other vegetation and potential for erosion. The corridor would be stabilized and revegetated with native species.) The proposed raw water line would not affect the use of the land for recreation nor would it affect any sensitive resources, which are located elsewhere on the parcel. Therefore, a land use allocation change is not necessary for TVA Bear Creek Land Plan Parcels 4, 6, or 7.

The water transmission mains (or lines) would follow existing road ROWs along sections of Alabama Highways 18, 24, and 172 and County Roads 16 and 49 (see section 2.2.2). The water storage tanks would be located at the intersection of Overton Farm Road and Alabama Highway 172 and near Glasgow Corner.

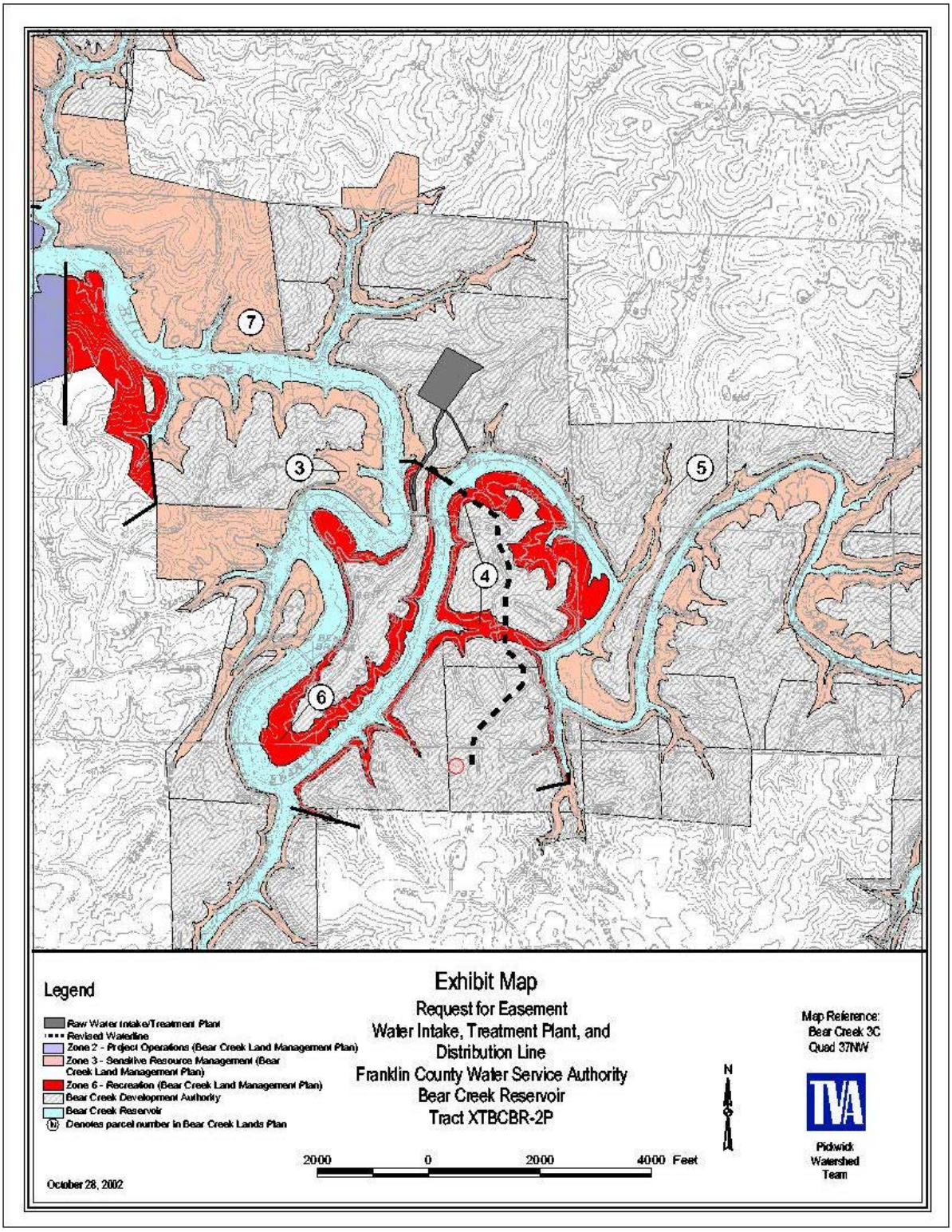

Figure 3-1. Bear Creek Land Plan Parcel Numbers Affected

3.2 Terrestrial Ecology

3.2.1 Plants

The Bear Creek Project area is located in three physiographic provinces designated by Fenneman (1938) as the Coastal Plain, the Interior Low Plateau, and the Appalachian Plateau. The interior edge of the Coastal Plain province, also known as the Fall Line Hills, includes the upland areas of Bear Creek Reservoir. This subsection of the Coastal Plain province is typically 20 to 40 miles wide and within the Bear Creek Project is classified by Braun (1950) as the oak-hickory forest region. This forest type is a transitional belt where the ranges of trees of the central hardwood forest and of the coniferous forest of the southeast overlap. Tree species characteristic of this forest type include chestnut oak, loblolly pine, sweet bay magnolia, and, in the past, American chestnut.

The Interior Low Plateau province is characterized by Braun as the western mesophytic forest. Within this portion of the western mesophytic forest, Braun further defines the Mississippi Plateau, which in Alabama is generally hilly. Forest types characteristic of the Mississippi Plateau include a dry oak or oak-hickory forest on the south-facing slopes and ridge tops and a mixed mesophytic forest type on more moist slopes. This area is a mosaic of unlike communities, including cedar glades and swamp forests. The Appalachian Plateau province, in the northern portions of Alabama, is defined by Braun as lying within the mixed mesophytic forest region. This region is characterized by oaks and pines with the true mixed mesophytic communities confined to the valley slopes. Tree species typical of this forest type include various species of oak, beech, maple, hemlock, and pine.

The 16-acre site for the proposed water treatment plant on BCDA property is characterized as gently sloping upland hardwood forest, small sawtimber-size class. The overstory forest component is predominately white and southern red and black oaks, hickories, red maple, yellow poplar, elm, and beech. The understory is sparsely vegetated with dogwood, poison ivy, and seedlings and saplings of the overstory trees.

The majority of the distribution line on the south side of the reservoir would be placed along the secondary access road serving the Bear Creek Environmental Education Center. The greater proportion of the length of that corridor is currently road ditch, the non-woody vegetated road shoulder, or upland hardwood forest. Predominate tree species include loblolly and Virginia pine, elm, red maple, hickory, red oak, and beech. The understory is composed of poison ivy, dogwood, and seedlings or saplings of the overstory trees. The construction right-of-way would impact a 50-foot wide area, approximately 4,700 feet (5.4 acres) from the Overton cemetery to the BCDA property boundary. The distribution line would also cross approximately 1,100 feet of upland mixed pine-hard wood cover between the southern reservoir edge and the Overton cemetery. Much of this area has recently been salvaged harvested due to southern pine beetle infestation. Loblolly and Virginia pine only were removed in the summer of 2001, and the resulting cover is early successional forbs, vines and grasses with scattered woody volunteer and resprouted species. Mature tree species remaining in a low density include hickories, red oaks, red maple, yellow poplar, elm, beech green ash, dogwood and redbud. Shrubs present are hornbeam, American beautyberry, and autumn olive. The predominate vines are muscadine, blackberry and green briar. Forbs include pokeberry, serecia and bicolor lespedeza, boneset, verbena, asters, poison ivy, and partridge pea. Common grasses present are japanese grass, crabgrass, and panic grass.

The majority of the water mains (lines) are within maintained (mowed) road ROWs with the exception of the habitats described in section 3.3. These ROWs, in which the water mains would be installed, is commonly non-woody vegetated road shoulder and road ditch.

3.2.2 Terrestrial Animals

The various plant communities and geological formations found on the Bear Creek Reservoir system provide suitable habitat for a variety of animals. These species represent a variety of mammals, birds, reptiles, and amphibians. The proposed water intake facility and the associated distribution line are located in upland habitat, except for the reservoir crossing. More common species of wildlife observed include mammals, such as white-tailed deer, armadillo, raccoon, eastern chipmunk, hispid cotton rat, striped skunk, white-footed mouse, southern flying squirrel, and gray squirrel. Common species of birds include great horned and barred owls, blue jay, eastern phoebe, barn swallow, tufted titmouse, cardinal, American crow, a variety of migrating neotropical birds, and black and turkey vultures. Common reptiles included ground skink, box turtle, and eastern garter and black rat snakes.

3.2.3 Environmental Consequences

Under the No Action Alternative, no impacts would occur to the terrestrial environment to including no risk of introduction or spread of invasive plant species. Under Alternative B, no impacts from invasive terrestrial plants are anticipated because the subject area would be within the boundaries of the water plant or within maintained ROWs. The ROWs and plant area would be periodically mowed to prevent growth of any plants with large root systems which also would prevent the spread of any invasive species. Disturbance from clearing and installation of the distribution line would occur approximately two to four months during the growing season. Many of the resident species of wildlife (hawks, owls, the scrub-shrub guild of songbirds, deer, possum, raccoons, foxes, squirrels, rats, and mice) would still use this strip of bare dirt in a mixed forested-shrub habitat during times construction was not occurring (i.e., late evening to early morning). Construction impacts of this project's magnitude, in this locale, are not all negative. Displaced wildlife would reenter the area after construction. Maintenance of a 30-foot-wide (3.2 acres) permanent utility corridor in mid to early stage seral successive vegetation would provide a linear opening in a young forest site. This opening, as well as the roadside right-of-way which passes through the mature upland forest, would provide a long-term, increased diversity of both the vegetative and wildlife communities in the immediate vicinity.

Installation of the water treatment plant would permanently change the ecological character of the 16 acres of upland hardwood. Removal of the majority of the trees, construction of the treatment pools, building and walkways, parking lot, entrance road, planting of sod-type lawn, and erection of a security fence would eliminate current forest wildlife use, and favor openland wildlife use by such species as bluebirds, English sparrows, brown-headed cowbirds, and robins. The immediate vicinity (two to three square miles or 1,300 -1,950 square acres) is characterized as diverse habitat: patches of irregularly shaped, and variable sized and aged blocks of upland forest, clearcut/planted pine, fescue pasture and lawn, upland shrub-brush, interspersed by a paved road, gravel roads, and a seasonally variable water level man-made reservoir. This is not suitable habitat for forest interior birds that require substantial (greater than 1,000 acres) acreages of unfragmented mature hardwoods for nesting/brood-rearing (e.g., woodthrush, cerulean, worm-eating, Kentucky and hooded warblers, eastern pewee). The fragmentation due to the establishment of a permanently maintained linear opening in the smaller blocks (less than 60 acres) of young

trees (less than 60 years, average age) on this project would not negatively impact the scrub-shrub birds currently utilizing this area. This includes both residents and migrants such as white-throated-sparrow, mockingbird, white-eyed vireo, chat, blue-winged and prairie warblers, quail, and towhee. The distribution lines would follow existing road ROWs and would not fragment forest habitat.

3.3 Threatened and Endangered Species

3.3.1 Affected Environment

The TVA Heritage database and recent discoveries include records of 43 listed vascular plant species and one listed moss species from Franklin County, Alabama. Four of those species are federally listed as threatened and two are federally listed as endangered. All 44 species are included in Table 3-1. The Association for Biodiversity Information (now named NatureServe) is in the process of classifying plant communities of the world and ranking them.

Table 3-1. State and Federally Listed Plant Species From Franklin County, Alabama

Common name	Scientific name	Status	
		State	Federal
Price's potato bean	*Apios priceana*	NOST	THR
Wall-rue	*Asplenium ruta-muraria*	NOST	
Brook saxifrage	*Boykinia aconitifolia*	NOST	
A moss	*Bryoxiphium norvegicum*	NOST	
Dodder	*Cuscuta harperi*	NOST	
Prairie clover	*Dalea foliosa*	NOST	END
Gattinger prairie clover	*Dalea gattingeri*	NOST	
Alabama larkspur	*Delphinium alabamicum*	NOST	
Harper umbrella plant	*Eriogonum longifolium* var. *harperi*	NOST	
White trout-lily	*Erythronium albidum*	NOST	
Mountain witch-alder	*Fothergilla major*	NOST	
Carolina gentian	*Frasera caroliniensis*	NOST	
Cream Avens	*Geum virginianum*	NOST	
Eggert's Sunflower	*Helianthus eggertii*	NOST	THR
Shining club moss	*Huperzia lucidula*	NOST	
Rock clubmoss	*Huperzia porophila*	NOST	
Goldenseal	*Hydrastis canadensis*	NOST	
Gorge filmy fern	*Hymenophyllum tayloriae*	NOST	
Butler quillwort	*Isoetes butleri*	NOST	
Alabama jamesianthus	*Jamesianthus alabamensis*	NOST	
Alabama glade-cress	*Leavenworthia alabamica*	NOST	
Lyre-leaf bladderpod	*Lesquerella lyrata*	NOST	THR
Harper's grooved-yellow flax	Linum sulcatum var Harperi	NOST	
Pale umbrella-wort	*Mirabilis albida*	NOST	
Leechbrush	Nestronia umbellula	NOST	
Soft false gromwell	Onosmodium molle ssp molle	NOST	
Limestone adder's tongue	*Ophioglossum engelmannii*	NOST	

Common name	Scientific name	Status	
		State	Federal
Allegheny-spurge	*Pachysandra procumbens*	NOST	
Tuberous scurf-pea	*Pediomelum subacaule*	NOST	
American pillwort	Pilularia americana	NOST	
Yellow sunnybell	Schoenolirion croceum	NOST	
Riddell's spike moss	*Selaginella arenicola* ssp. *Riddellii*	NOST	
Ledge spike moss	*Selaginella rupesttis*	NOST	
Elliott sida	*Sida elliottii*	NOST	
Mountain camellia	*Stewartia ovata*	NOST	
Limestone fameflower	*Talinum calcaricum*	NOST	
Menge's fame-flower	*Talinum mengesii*	NOST	
Little mtn. meadow-rue	*Thalictrum mirabile*	NOST	
Alabama Streak-Sorus Fern	*Thelypteris pilosa* ssp. *alabamensis*	NOST	THR
Dwarf filmy-fern	*Trichomanes petersii*	NOST	
Prairie trillium	*Trillium recurvatum*	NOST	
Horse gentian	*Triosteum angustifolium*	NOST	
Eggleston's violet	*Viola egglestonii*	NOST	
Yellow-eyed grass	*Xyris tennesseensis*	NOST	END

END = Listed Endangered THR = Listed Threatened NOST = No Status: State listed in Alabama, but no state status assigned

In May 2003, the project area consisting of the proposed water treatment plant site and water transmission line routes were botanically surveyed. A driving survey was first conducted to eliminate areas that had no potential of containing unusual habitats or rare plants. Once these areas (i.e. parking lots, lawns, paved areas, hayfields, etc.) were eliminated, the process of field-checking the remaining sites began. Areas with rich botanical features such as unusual plant communities (i.e. old growth forests, prairies, wetlands) or rare plant species were identified. These included stream banks, roadside thickets, old fields, pine plantation margins, seeps, and rich woods. Prior to the survey, 44 (6 federally listed and 38 state listed) rare vascular plant species were known to occur in Franklin County. One rare moss, a non-vascular plant, had also been previously documented from Franklin County. Although no federally listed species were found, vegetative plants of what may be a federally listed species were located at two places. In addition, six state listed plant species were found within or near the proposed project area. Furthermore, two forested areas were identified that appear to be uncommon in Alabama.

Three areas along the proposed water transmission lines have or potentially have rare or unusual botanical resources. Individuals tentatively identified as Price's potato bean, (federally listed as threatened) occur at two sites (Sites A and B, described below) in the immediate vicinity of the water line route. Site A is located approximately two miles west of Belgreen, on the north side of New Highway 24 and the west bank of Lick Creek (see Figure 3-2). Price's potato bean may occur here or the species present may be a common look-alike species, American groundnut.

Five state-listed plant species occur in the immediate vicinity of the proposed water line route at sites B and C. Site B is approximately 6 miles south of Belgreen, on the East side of Highway 187, immediately south of Little Bear Creek (see Figure 3-3). The site is bordered by Highway 187 to the northwest and west and by Little Bear Creek to the

northeast. The Allegheny spurge, goldenseal, horse-gentian, and prairie trillium occur here. In addition, individuals tentatively identified as Price's potato bean also occur here. The forest community at this site is considered uncommon for the state of Alabama.

Figure 3-2. Site A

Figure 3-3. Site B

Site C is along the neck of Horseshoe Bend, on the east and west sides of County Road 27 from the road right-of-way margins down to Big Bear Creek for a distance of approximately one-half mile. The northern limit of the site is located where an old woodland road intersects County Road 27 on the west and the southern limit of the site is located where the proposed pipeline crosses Big Bear Creek Reservoir and intersects County Road 27 from the east. There are two areas of concern within Site C. The northern area of concern (see Figure 3-4) would not be impacted, because it is not located within the proposed easement boundaries. In the southern area, along the very neck of Horseshoe Bend on slopes above Big Bear Creek Reservoir, on both the east and west sides of County Road 27, extensive areas of uncommon, undisturbed, forested sandstone and limestone rock outcrops occur. On the western side of County Road 27, the rocky forest community supports four rare plant species: cream avens, Allegheny spurge, Carolina gentian, and horse-gentian. There are 14 other populations of Carolina gentian known to exist in the state of Alabama. There are only three other populations of cream avens known to exist in the state of Alabama, with one of those populations containing a single plant.

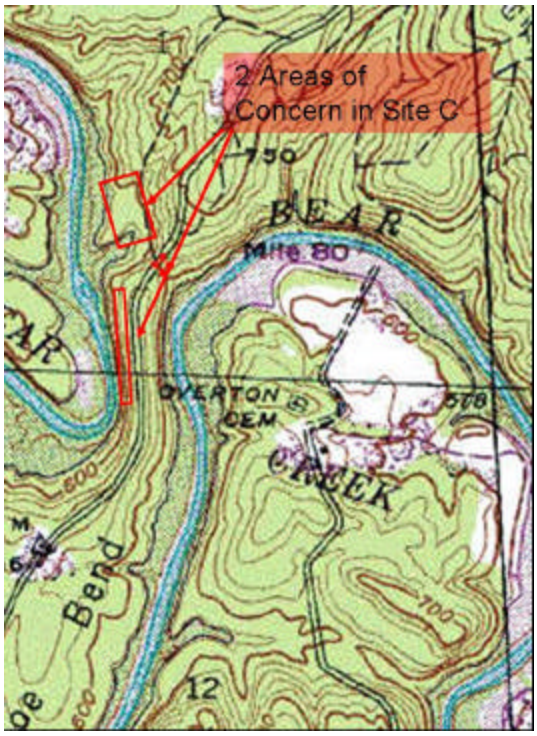

Figure 3-4. Site C

Eleven terrestrial animal species have been documented from Franklin, Marion, and Winston Counties (Table 3-2). Seven of these species are protected by the USFWS or the state of Alabama. The remaining four species are considered rare or uncommon by The Alabama Natural Heritage Program (ALNHP)^{SM}. Many of the species reported from the surrounding counties have restricted distributions and would not exist in the project area. These include species such as Black Warrior waterdog and the federally listed as threatened flattened musk turtle. No suitable habitat for red-cockaded woodpeckers was found during an August 2002 inspection, and the species is not likely to exist in the project area. Of the remaining eight species identified in Franklin, Marion, and Winston Counties, none are known from a three-mile radius of the project. Although there is suitable habitat in the area and bald eagles and osprey nest on the Bear Creek system, no nests have been reported from within three miles of the project site. Both species are regularly observed on the reservoir.

Table 3-2. Rare Terrestrial Animals From Franklin, Marion, and Winston Counties

Common Name	Scientific Name	Status	
		State	Federal
Mammals			
Gray Bat	*Myotis grisescens*	Protected	Endangered
Northern Long-eared Bat	*Myotis septentrionalis*	No Status*	-
Birds			
Bald Eagle	*Haliaeetus leucocephalus*	Protected	Threatened
Barn Owl	*Tyto alba*	No Status	-
Osprey	*Pandion haliaetus*	Protected	-
Red-cockaded Woodpecker	*Picoides borealis*	Protected	Endangered
Reptiles			
Alligator Snapping Turtle	*Macroclemys temminckii*	Protected	-
Coal Skink	*Eumeces anthracinus*	No Status	-
Flattened Musk Turtle	*Sternotherus depressus*	Protected	Threatened
Amphibians			
Black Warrior Waterdog	*Necturus alabamensis*	No Status	-
Green Salamander	*Aneides aeneus*	Protected	-

* No status indicates that these species are not formally listed by the state of Alabama. However, these species are considered rare or uncommon by the ALNHP.

3.3.2 Environmental Consequences

A plant species occurring at Site A may be federally listed as threatened or it may be a common look-alike species. Individuals tentatively identified as Price's potato bean were observed. To avoid potential impacts to this species, the applicant would install the proposed line on the south side of the new Highway 24 in this area, bore under the site with sufficient vertical and horizontal clearance of the plants, or the applicant, would choose to verify the species in mid-July through August by having a botanist revisit the site. If it is determined that the species is not the federally listed plant, the line could be installed as planned on the north side of the road with no impacts to threatened and endangered species in this area. If this option is chosen, FCWSA would provide written documentation to TVA for verification prior to soil disturbance in the area. If the listed species is determined to be present, FCWSA would avoid the areas as indicated above. If the applicant chooses to bore under the site, TVA staff will mark the minimum distances for the entrance and exit of the drilling, and the U.S. Fish and Wildlife Service would be coordinated with. Under either scenario, impacts to rare plant species are not expected.

Site B is of botanical concern because of the presence of Allegheny spurge, goldenseal, horse-gentian, and prairie trillium. In addition, individuals tentatively identified as Price's potato bean also occur here. In order to avoid potential impacts to these resources, the proposed pipeline would be installed along the west side of Highway 187 between the section of highway located between the north end of the Highway 187 bridge over Little

Bear Creek (near the intersection of Highway 187 and County Road 22) south for approximately one-half mile to the top of the ridge (out of the ravine). Under this alternate route, no impacts to rare or unusual botanical resources are anticipated.

There are two areas of potential botanical concern associated with Site C. The northern area of concern is not expected to be impacted, because it is not located within the proposed easement boundaries (see Figure 3-4). In the southern area, along the very neck of Horseshoe Bend on slopes above Big Bear Creek Reservoir, on both the east and west sides of County Road 27, extensive areas of state significant forested sandstone and limestone rock outcrops occur. On the western side of County Road 27, where the waterline is proposed, the rocky forest community supports four state rare plant species: cream avens, Allegheny spurge, Carolina gentian, and horse-gentian. Potential impacts to these species can be avoided by keeping all construction activities and equipment out of these areas. To ensure all construction activities avoid these areas, the boundaries of this rocky forested community would be identified prior to ground disturbance and its boundaries maintained during construction. The area to avoid is east (uphill) of the existing construction road on the forested rocky slope.

With the above restrictions at Sites A, B, and C incorporated into the construction of the pipeline, no impacts are anticipated to rare plant species except for the insignificant impacts to the Carolina gentian. Only a small portion of the population of this species would be impacted by construction. A loss of a small portion of a population of a species that is known from 13 other sites in the state is considered insignificant at the state level.

There is no suitable roosting habitat for gray bats within this project area. Trees along portions of the site could be used by Indiana bats but considering the amount of available habitat in the vicinity, the project would not result in adverse impacts to Indiana or gray bats or their habitats. There would be very minor impacts to habitat for bald eagles. Due to the amounts of suitable habitat in the vicinity and because bald eagles do not nest in the vicinity, the proposed project would not result in adverse impacts to bald eagles.

3.4 Surface Water and Aquatic Ecology

3.4.1 Affected Environment

Water quality in the Bear Creek Reservoir is influenced by the physical characteristics of the reservoir, geology, land use, and inflow water quality. Average discharge is 380 cubic feet per second, and retention time is 13 days (TVA, 1988, TVA, 1994; TVA, 1995; TVA, 1996; TVA, 1997; TVA, 1998). Most of the drainage area for the reservoir lies within the western Highland Rim physiographic province, and underlying rock formations are limestone. Numerous limestone outcroppings occur throughout the drainage area and are prevalent along many areas of shoreline. Land use throughout the reservoir's drainage areas consists primarily of forested lands and agriculture (TVA, 1994; TVA, 1995; TVA, 1996; TVA, 1997; TVA, 1998). Reservoir full pool elevation (summer pool) is approximately 576.1 feet. The reservoir is operated as close to full pool as possible from approximately April 15th through October 15th. The reservoir is brought to elevation 565 feet by approximately December 1 and held at that level until about January 1st in order to provide for flood control storage. Therefore, the reservoir fluctuates over a normal range of about 11 feet. Also, TVA maintains a minimum flow release of 21 cfs at Bear Creek Dam year round.

TVA began a program to systematically monitor the condition of its reservoirs in 1990. Levels of toxic metals in sediments have not been found to exceed TVA and EPA sediment quality guidelines (TVA, 1994; TVA, 1995; TVA, 1996; TVA, 1997; TVA, 1998). Elevated levels of toxic metals, particularly aluminum, iron, and manganese, are found in deep water areas of Bear Creek Reservoir (TVA, 1988; Angus and Marion, 1993). Phosphorus is probably limited in the natural runoff of area lands, and may also be lost as it forms precipitants with metals (Angus and Marion, 1993).

Stratification of the reservoir that occurs during summer months leads to anoxic conditions (i.e., little or no oxygen) throughout most of the reservoir volume as decomposition uses all available oxygen in the hypolimnion. Oxygen levels in the hypolimnion are typically less than two milligrams per liter throughout the summer months. Typically, only the upper 10-16 feet of water in the reservoir contains sufficient oxygen levels during summer months to support most aquatic life. Anoxic conditions allow reduction of iron and manganese compounds. Reduction causes these potentially toxic metals to become available in the water column. Sulfide compounds are also formed during the anoxic period and can lead to adverse effects on aquatic organisms. A combination of anoxia, toxic metals, and sulfides typically adversely affects most aquatic life. Benthic communities typically are not diverse, and comprised primarily of tolerant species such as dipteran larvae (TVA, 1994; TVA, 1995; TVA, 1996; TVA, 1997; TVA, 1998).

The usual pH for Bear Creek Reservoir is about 7.0 pH units. The waters of Bear Creek Reservoir are typically soft with very low alkalinity. This allows poor buffering capacity for the acidic runoff from area mines (Marion, Angus, and McClintock, 1991). The low hardness also provides little chelation of toxic metals. Metal concentrations are typically high. Typically, aluminum, iron, and manganese are the primary problematic metals (Angus and Marion, 1993). High concentrations of metals combined with low hardness could cause problems for many aquatic organisms.

As part the Vital Signs Monitoring Program initiated by TVA in 1990, Bear Creek has been monitored for physical/chemical characteristics of water, physical/chemical characteristics of sediment, benthic macroinvertebrate, and fish community assemblages. The reservoir has been sampled annually since 1993 in the forebay region at Bear Creek Mile 75.0. After the 1997 sampling season, the reservoir has been monitored on a biannual basis (there was no sampling in 1998). Bear Creek Reservoir has been rated fair to poor each year.

The primary water quality indicator of concern for Bear Creek is dissolved oxygen (DO). Each year, DO levels have been sufficiently low to yield a poor rating. In 1993 and 1994, the Bear Creek Reservoir received poor sediment toxicity ratings. Each year, except for 1993, the reservoir has produced good ratings in chemical analysis of sediments. In 1993, sediment chemistry received a poor rating for Bear Creek Reservoir. Sediment toxicity was not monitored after 1994. Levels of chlorophyll in Bear Creek Reservoir were fair in 1994 but poor for all other years. A summary of monitoring results is included in Table 3-3.

Table 3-3. Water Quality Ratings, Vital Signs Monitoring Data

	1993	1994	1995	1996	1997
Dissolved Oxygen	poor	poor	poor	poor	poor
Chlorophyll	poor	fair	poor	poor	poor
Sediment Chemistry	poor	good	good	good	good
Sediment Toxicity	poor	poor	NS	NS	NS

NS-Not Sampled

TVA rotenone sampling at Bear Creek resulted in the capture of 25-33 species from 1974 through 1978. TVA's gill net and electrofishing sampling in this reservoir in 1997 collected 24 species of fish, with gizzard shad being the most numerous followed by spotted sucker, bluegill, threadfin shad, and largemouth bass (TVA, 1998). This indicates that the fisheries community has remained fairly stable over the 20-year period. Overall, compared to the other Bear Creek Project reservoirs and other TVA reservoirs in the Interior Plateau ecoregion (e.g., Tims Ford and Normandy), the fish community rating has been good in all years sampled, except for the fair rating in 1995. TVA's benthic samples taken from Bear Creek Reservoir in 1997 included seven species, with Oligochaetes (aquatic worms) and Chironomids (midge larvae) being the most numerous groups. Fingernail clams were the only mollusks collected. The benthic community in Bear Creek has rated from fair to poor since 1993. Chlorophyll levels and DO content are two water quality parameters that have for the most part rated poor throughout the sampling period that would have a negative impact on both the benthic and fish communities.

3.4.2 Environmental Consequences

Activities associated with the construction, excavation, and backfilling in or adjacent to Bear Creek Reservoir would have the most potential to impact surface water and aquatic resources. There would be temporary and insignificant impacts associated with the excavation, installation, and backfilling activities for the water mains, since the applicant proposes to use BMPs and restore all disturbed areas to original conditions.

To minimize or avoid impacts to the aquatic and terrestrial species, construction activities in or adjacent to the Reservoir would occur during a dry weather period while Bear Creek Reservoir is at low winter pool condition. The applicant has requested the reservoir water level be lowered on Bear Creek Reservoir to begin October 1, 2003, and be at elevation 550 feet msl on October 26, 2003, and be maintained at that elevation for a two week period corresponding to normal winter drawdown in 2003. This would allow most of the intake line to be installed on dry land. This would minimize potential environmental impacts from increased turbidity and sedimentation and reduce the cost associated with underwater excavation.

In addition, Best Management Practices (BMP) would be implemented at every phase of the proposed project. Erosion control devices would be utilized to reduce sedimentation in Bear Creek Reservoir or tributaries of Bear Creek to include the area selected for receiving the spoils/excavated materials. A floating turbidity curtain would be placed in the reservoir in an area surrounding the proposed excavation at the intake/pumping station and also in the area downstream of the distribution water line excavation. The curtain would help

reduce the potential of a large sediment plume from forming in the reservoir and impacting its flora and fauna, as well as other water quality parameters in the reservoir. Measures would be taken to de-water the area in the location of the proposed intake/pumping station. Since concrete would be used in pouring the casing of the pipes in the trenches, it is recommended that measures be taken to avoid the introduction of uncured concrete into the waters of the reservoir in order to avoid increased pH levels which has been known to cause fish kills. The excavated material would be used in grading low areas on the treatment plant site. In order to avoid impacts to fish and other aquatic species, the intake structure would have a screen or other mesh-like apparatus that would allow water to be drawn into the pipe but would prohibit them from becoming entrained in the structure or impinged on the screen.

The construction of the open-trench stream crossing on the distribution lines would be conducted in a manner that minimizes the amount of disturbance to the existing stream channel and streambanks. The stream channel and streambanks would be restored to their original slope and profile. The pipeline would be located at an elevation below the existing streambed that eliminates the potential for the pipeline in future years to become an impediment to stream flows or a migration barrier to aquatic species. The rock/riprap backfill material would be placed in a way that would not impede future stream flows or the migration of aquatic species. The elevation of the top of the backfill would be placed in a manner so that the potential for erosion during future stream flow events is minimized at these sites. To help reduce sedimentation to Bear Creek Reservoir, and to provide habitat for many wildlife species (i.e. migratory song birds), bioengineering techniques and the planting of woody vegetation in the locations of the open-trench construction would be used to improve stream bank stability. If during any phase of this project, listed or proposed listed species are found, the project, at such time, would cease.

The applicant would require the contractor(s) to restore all disturbed areas to original conditions and to use erosion and siltation prevention measures during construction. These measures would include, but not be limited to, use of silt fence, staked hay bales, and riprap check dams as appropriate. Easements for the water lines would be limited to the minimum width necessary to install the water main and would be located within the existing road ROW. Spoil would be disposed of on site to fill low areas and would be properly drained, and new vegetative cover would be established by the contractor.

In addition to the applicant's proposed mitigation measures, the following measures were recommended by the USFWS:

1. A floating turbidity curtain should be placed in the reservoir in an area surrounding the proposed excavation at the intake/pumping station and also in the area downstream of the distribution water line excavation.
2. The area in the location of the proposed intake/pumping station should be de-watered.
3. Uncured concrete should not be introduced into the waters of the reservoir.
4. The intake structure should have a screen or other mesh-like apparatus that would allow water to be drawn into the pipe but would prohibit them from becoming entrained in the structure or impinged on the screen.
5. Bioengineering techniques and the planting of woody vegetation in the locations of the open-trench construction should be used to improve stream bank stability.
6. If during any phase of this project, listed or proposed listed species are found, the project should cease.

TVA proposes to address these recommended mitigation measures by:

1 and 2. The revised scope to include a special drawdown to elevation 550 msl would minimize the need for a turbidity curtain. However, a small cofferdam would still be needed for the lower intake which would involve soil disturbance down to approximately elevation 532 msl. Additionally, turbidity curtains would be needed in the event that the special drawdown could not be achieved due to unforeseen river scheduling such as flood control during a heavy rain event. Therefore TVA's Standard Conditions for Best Management Practices would include the condition that the applicant install cofferdams and/or silt control structures between construction areas and surface waters prior to any soil-disturbing construction activity, and require clarification of all water that accumulates behind these devices to meet state water quality criteria at the stream mile where activity occurs before it is returned to the unaffected portion of the stream. Cofferdams must be used wherever construction activity is at or below water elevation. A floating silt screen extending from the surface to the bottom is to be in place during excavation or dredging to prevent sedimentation in surrounding areas. It is to be left in place until disturbed sediments are visibly settled.

3. The revised scope to include a special drawdown to elevation 550 msl would minimize the amount of work to be done in the water. The applicant has agreed to use precast concrete in areas where it can not be performed in the dry. Therefore, TVA will require the applicant to ensure that concrete structures that will be in the waters of the reservoir will either be formed and poured on the bank and lifted into place or the area where the structures will be located will be dewatered before concrete is poured and maintained dry until the concrete is cured.
4. The applicant's proposed design for the water intake includes a screen around the intake ports with a one-quarter-inch diameter to allow for a one-tenth foot per second velocity to avoid fish entrainment or impingement. Additionally, TVA's standard conditions for water intakes require the screen openings on the intake strainer must be 1/8-inch (maximum), to minimize the entrapment of small fish.
5. TVA's Standard Conditions require the applicant to agree to use vegetation (versus riprap) wherever practicable and sustainable to stabilize streambanks, shorelines, and adjacent areas. These areas will be stabilized as soon as practicable, using either an appropriate seed mixture that includes an annual (quick cover) as well as one or two perennial legumes and one or two perennial grasses, or sod. In winter or summer, this will require initial planting of a quick cover annual only, to be followed by subsequent establishment of the perennials. Seed and soil will be protected as appropriate with erosion control netting and/or mulch and provided adequate moisture. Streambank and shoreline areas will also be permanently stabilized with native woody plants, to include trees wherever practicable and sustainable (this vegetative prescription may be altered if dictated by geologic conditions or landowner requirements). The applicant would also agree to install or perform additional erosion control structures/techniques deemed necessary by TVA.
6. FWS's comment number 6 will be included as a commitment stating that the applicant will include this language in all contractors issued for the project.

All spoil material would be temporarily and permanently stored above the 610.3 foot contour and BMPs would be used to prevent the reentry of the spoil material into the reservoir. The applicant proposes to use the spoil to fill in low areas on the site above the 610.3 foot contour. A complete list of TVA's General Conditions and Standard Practices that would apply to this specific project is included in Appendix B.

The reservoir fluctuates over a normal range of about 11 feet over the course of a year. An elevation of 576.1 feet is normal summer pool or full pool elevation and 565 feet is winter

pool elevation. Hydrologic simulations of reservoir operation with a water intake withdrawing two mgd resulted in a maximum pool level decrease of 0.1 feet (1.2 inches) during a small part of the summer during a very dry year. A withdrawal of four mgd (which is almost twice what TVA proposes to approve with this action) resulted in a decrease in the normal summer reservoir level of up to 0.6 feet (7.2 inches) to 0.8 feet (9.6 inches) for several weeks during the summer. Simulations indicate that during the dry years of 1987 and 1988, up to 12 mgd could be withdrawn from the reservoir while maintaining minimum flow releases (21 cfs) from the dam. However, the summer level in a 12 mgd scenario would be about 571 feet (a five feet decrease in elevation). All simulations reflect conservative drawdown effects by assuming a minimum release of 25 cfs although the minimum actually provided is 21 cfs in TVA's operational guidelines for the dam. Because the water intake would not significantly impact reservoir levels or releases during a very dry year, there would be no discernible impacts to aquatic ecology in the reservoir or downstream of the dam as a result of the operation of the water intake at permitted levels of 2.5 mgd.

3.5 Wetlands and Floodplains

3.5.1 Affected Environment

Extensive areas of wetlands are not present on Bear Creek Reservoir. Review of TVA's Heritage Database did not indicate the presence of any wetlands in the proposed project area. The 100-year floodplain on Bear Creek Reservoir is the area below elevation 609.5 feet msl. The 500-year or "critical action" floodplain on Bear Creek Reservoir is the area below elevation 610.3 feet msl.

3.5.2 Environmental Consequences

Based on a January 24, 2002, onsite investigation by an USACE representative, no wetland areas were found on the entire project site, including the distribution lines, that meet any of the required characteristics to be classified as wetlands. USACE's preliminary jurisdictional determination is that no wetlands adjacent and/or contiguous to waters of the U.S. and subject to USACE's regulatory jurisdiction under Section 404 of the Clean Water Act would be affected by the proposed work. Since no wetlands are present within the project area, there would be no impacts to wetlands. For consistency with Executive Order 11988, the proposed activities are considered to be repetitive actions in the floodplain that should result in minor floodplain impacts because the dredged material would be spoiled outside of the floodplain. Since the applicant proposes to use submersible pumps in the casings and return the pipeline area to preconstruction conditions after completing the project, there would be no adverse affects to the floodplain. In addition, the water treatment plant would be located well above the 500-year flood elevation. The applicant proposes to dispose of spoil on site, which is above the 610.3-foot contour to fill low areas and that the areas would be properly drained, and new vegetative cover would be established. There would be no loss of flood control storage. No new development should occur in the floodplain, since FCWSA has stated in their proposed action, that no new water connections within the floodplain area would be provided. The finished contours would not be changed within the floodplain. According to the Federal Emergency Management Agency website, unincorporated areas of Franklin County participates in the National Flood Insurance Program (NFIP), thereby meeting the standards of the NFIP.

3.6 Cultural Resources

3.6.1 Affected Environment

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 in this area associated with the fur trading industry 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 have been identified within the Bear Creek watershed. Several archaeological sites had been previously recorded within the vicinity of the current project's area of potential effect. An archaeological reconnaissance survey was conducted at the proposed raw water intake, treatment plant, and distribution line locations (Wilkins, 2002a). Based on the results of this survey, it was determined that the previously identified archaeological sites in the vicinity would not be affected by the proposed water intake, treatment plant, or distribution line. One new site (1Fr685) was recorded within the proposed right-of-way for the distribution line. This site was determined to be potentially eligible for listing in the National Register of Historic Places (NRHP). An alternate route was identified for the proposed distribution line to avoid this site; therefore, Phase II testing would not be required to determine the site's NRHP eligibility. A cultural resources reconnaissance survey was conducted on the alternate distribution line route (Wilkins, 2002b), and no historic properties were identified. There are two historic properties listed on the NRHP in Franklin County. None of these properties are located near the project area.

3.6.2 Environmental Consequences

The proposed treatment plant and water intake locations would have no effect on historic properties. The proposed waterlines are within existing road and/or waterline ROWs. Additionally, because the alternate route for the distribution line was identified and would be used, there would be no effect on historic properties. A letter was sent to the Alabama State Historic Preservation Officer (SHPO) on May 8, 2002. The Alabama SHPO's comments were received on June 12, 2002 (see Appendix A). On November 22, 2002, additional comments were received from the Alabama SHPO concurring that the project activities should have no effect on any know cultural resources listed or eligible for the National Register of Historic Places provided that the construction activities are confined to the revised corridor for the distribution line. However, the Alabama SHPO stipulated that should artifacts or archeological features be encountered during project activities, work shall cease and the SHPO's office shall be consulted immediately. This stipulation would be placed in the construction plans to insure contractors are aware of it.

In the draft EA, approximate locations for the tank sites were identified for design purposes. Subsequently, the two tank sites have been identified and a Phase I cultural resources

survey was conducted for both sites on May 08, 2003. Based on the survey results TVA has determined that installation of the two tanks will have no effect on any historic property either on or eligible for the National Register. The survey report, along with a copy of the TVA's final EA and FONSI, will be sent to the SHPO for review and concurrence with TVA's determination.

3.7 Recreation

3.7.1 Affected Environment

Bear Creek Reservoir has two developed campgrounds with 45 campsites operated by BCDA at Piney Point and Horseshoe Bend. The proposed water treatment plant is on the road to Horseshoe Bend. Both have swimming beaches and reservoir access areas with paved parking areas and courtesy docks. There is also a lake access at Scott Ford with a gravel parking lot. TVA operates a swimming beach and tailwater fishing area on the dam reservation. The Bear Creek Environmental Education Center is located at approximately Bear Creek Mile 79. It is owned by BCDA and leased by the Franklin County Board of Education in a cooperative agreement called the Bear Creek Education Project. Developments include group dormitories, kitchen and dining facilities, outdoor activity centers, a beach area with boat dock, restored cultural areas, and staff residences.

The majority of the proposed distribution waterline crosses Bear Creek Environmental Education Center and runs along the east side of the access road to the Education Center. Also, the Education Center uses outdoor areas east of this access road to instruct children in the values of wetlands, plants, and animals. Even though this area is not classified as a wetland and has no functional value, it does have educational value to the Education Center. This is the only area on the Education Center property possessing wetland type plants that can be used for educational purposes. There is a boardwalk on part of it allowing non-intrusive access for the children.

3.7.2 Environmental Consequences

The potential recreational impacts for the proposed action are insignificant provided all disturbed areas are repaired and revegetated and access to the Center is not limited. Since the access road is the only land access to the Center, construction activities could temporarily impede access to the Center. In order to reduce potential impacts regarding access of staff, visitors, and vendors to the Center during construction, all construction activities would be coordinated with the BCDA Administrator. Since the proposed water mains (lines) are within existing ROWs, there would be insignificant impacts during construction activities and no long-term impacts.

3.8 Aesthetics

3.8.1 Affected Environment

The project site is located in a rural portion of Franklin County, Alabama, which is sparsely populated. County Road 27, serving to access the site, is a rural route, and traffic flow is minimal. There would be moderate public visibility due to the close proximity of the Bear Creek Environmental Education Center and the Horseshoe Bend Recreation Area, a planned recreation area operated by the BCDA.

3.8.2 Environmental Consequences

The proposed construction and development of the site would have moderate effects on the visual character due to the removal of vegetation, introduction of structures into the natural environment to include lighting, and temporary visual discord associated with construction phases of the project. Potential impacts to visual resources would be in the proximity of the treatment plant and the proposed intake to the Bear Creek Environmental Education Center and the Horseshoe Bend Recreation Area. The intake facility would have negligible impacts because of its design (see section 2.2.2). Since, the applicant proposes to maintain a 100-foot vegetative buffer consisting of native tree species around the treatment plant, this would mitigate the contrast to the surrounding environment. Additionally, the visual impacts would further be reduced by ensuring that the plant would blend in with the surrounding landscape with the use of muted colors, non-reflective materials, and direct lighting. These measures are part of the commitments listed in Section 5.0. For the proposed water lines (mains), there would be temporary visual discord, and a general impact to the visual and scenic resources. Because the applicant plans to return all disturbed areas to original conditions, the impact along the water main routes would only be visible during the construction phase, then observers would notice no contrast or negative impacts.

3.9 Noise

3.9.1 Affected Environment

Outdoor noise levels in rural residential/agricultural areas typically average 44 decibel (A-weighted) (dB(a)) day-night average sound level (Ldn) (US EPA, 1974), which is the ambient sound level assumed for the proposed site and surrounding area. Local automotive traffic and recreational boat traffic on the Reservoir are the primary sources of noise in the area. The nearest sensitive receptors to the proposed water treatment plant are the Bear Creek Environmental Education Center and two residences. The Education Center is approximately 2,500 feet away and the nearest residence is located approximately 9,500 feet from the property boundary of the site. Additionally, there are no unique areas such as Federal or State wilderness areas in the vicinity of the Reservoir.

Potential sources of noise during construction of the water treatment plant would be on-site construction activities and off-site transportation, including worker traffic and delivery of equipment and construction materials. These impacts would be temporary and would decline with the end of site grading, trenching, and heavy construction. There would be a temporary increase in ambient noise levels during construction because of operation of construction equipment. Earthmoving equipment (e.g., dozers, graders, backhoes) would be the primary on-site sources of noise. Noise levels would generally be higher during the phases of construction that utilize these kinds of equipment, such as excavation and grading. Outdoor construction activities would be most likely limited to daytime hours when increased noise levels would be less noticeable to local residents.

3.9.2 Environmental Consequences

No adverse effect on the environment of Franklin County would be caused by noise from this project. Due to the episodic and temporary nature of construction noise, the distance to homes from the area of the site where heavy equipment would be generating the most noise, and the fact that the construction activity would generally be limited to daylight hours, TVA has determined that the impact of construction noise would be insignificant.

Operational noise would have no impact on the residences or the Education Center because of the distances between them and the plant. The water intake pumps are submerged and are not a source of noise, and the high pressure pumps are inside and cannot be heard without entering the building. The only other noise sources that could occur are minor ones, such as an exhaust ventilation fan or the outside unit for a heat pump/air conditioning combination. On a quiet day, these could have a sound propagation path length of about 200 to 250 feet.

3.10 Socioeconomics and Environmental Justice

The Bear Creek Project (Bear Creek, Cedar Creek, Upper Bear Creek, and Little Bear Reservoirs) lies in Franklin, Marion, and Winston Counties in northwest Alabama, south of the Florence metropolitan area and near the Alabama-Mississippi state line.

3.10.1 Socioeconomics

Population

The 1998 population of the three counties in the Bear Creek area is estimated by the U.S. Bureau of the Census to be 84,825, a 6.4 percent increase over the 1990 population of 79,697. This growth rate is slower than that of the state, which is estimated to have grown by 7.7 percent, and the nation, which is estimated to have grown by 8.7 percent.

The Bear Creek counties have a labor market area (LMA) that includes the Florence metropolitan area to the north, the Decatur metropolitan area to the east, and part of the Birmingham metropolitan area to the south, as well as two Mississippi counties to the west. The LMA has an estimated 1998 population of over 1.2 million, a 3.6 percent increase over 1990. By the year 2020, the Bear Creek area is projected to have a population of over 88,000, while the population of the LMA is projected to be almost 1.4 million.

Labor Force and Unemployment

In 1998, the civilian labor force of the Bear Creek area was 46,250. Of those, 3,065 were unemployed, for an unemployment rate of 6.6 percent. Unemployment rates ranged from 5.6 percent in Winston County to 7.2 in Franklin, with Marion County at 6.9 percent. All of these rates were above the state rate of 4.2 percent and the national rate of 4.5 percent. In the LMA as a whole, the civilian labor force totaled almost 634,000, with an unemployment rate of 4.3 percent, about the same as the state and the nation. However, the unemployment rate varied greatly within the LMA, ranging from 3.1 percent in Jefferson County (Birmingham) to 11.4 percent in Tishomingo County, Mississippi.

Jobs

As is common in rural areas of the Tennessee Valley, the Bear Creek area is more dependent on manufacturing jobs than the state as a whole. In 1997, about 40 percent of all jobs in the Bear Creek area were in manufacturing industries, compared to about 17 percent statewide. Conversely, the area had a smaller share of jobs in services, not quite 17 percent compared to over 25 percent statewide. In the area, manufacturing's share of total jobs actually increased by about one percentage point, while the state followed the national pattern of decline in the manufacturing share of jobs. Both the state and the area, however, experienced an increase in the share of total jobs in the service sector.

Occupation Patterns

All three Bear Creek counties have a much lower share of their workers employed in managerial and professional jobs and in technical, sales, and administrative jobs than in the state overall. Reflecting the relative importance of manufacturing, these counties have more workers in the so-called blue-collar jobs. Both the generally higher-paying category of precision production, craft, and repair jobs and the service, farm operators, fabricators, and laborers category are relatively more important in these counties. Almost 23 percent of Alabama workers are employed in managerial and professional jobs, while the share is around 14 percent in the Bear Creek counties. Similarly, technical, sales, and administrative jobs constitute over 29 percent of the total statewide, but about 21 percent in the area counties. Among blue-collar jobs, the area counties have from about three percentage points more of its workers employed in the precision production, craft, and repair categories and about 14 percentage points more in the service, farm, operators, and laborers category.

Income

Per capita, personal income in the Bear Creek counties increased faster from 1989 to 1997 than in the state or the nation. Increases (in real terms) ranged from about 16 percent in Franklin County to over 19 percent in Marion County, while Alabama's per capita increased 12 percent and the nation's 7.6 percent. However, the average income level in the Bear Creek area remains well below the national and state averages. In the Bear Creek counties, average income ranges from 68 to 74 percent of the national average, while the Alabama average is 82 percent of the national average.

The manufacturing sector generates a large share of the earnings generated in the Bear Creek counties, 39 percent in Franklin County and 51 percent in both Marion and Winston Counties. This is much greater than the 22 percent in the state and 18 percent nationally.

3.10.2 Environmental Justice

Environmental justice is the principle that minority and low income populations should not bear a disproportionate share of adverse human health or environmental effects from a proposed action. Demographic information on ethnicity, race, and economic status is an indicator of whether disproportionate adverse impacts can be expected. The three Bear Creek area counties have relatively small minority populations, particularly in the areas immediately around the Bear Creek Reservoirs. As of 1990, the population of the state of Alabama was 26.7 percent minority (nonwhite plus the white population of Hispanic origin). However, the Bear Creek counties have much smaller minority populations, with the largest percentage in Franklin County at 5.2 percent in 1990. The parts of the counties immediately around the reservoirs have even smaller minority populations, as shown by census tract data. Census tracts are subcounty areas used by the U. S. Census Bureau in taking the decennial census and for which census data are reported. The various census tracts in which the reservoirs are located are listed in Table 3-4. All of these census tracts had very small minority populations in 1990, ranging from 0.5 percent to 1.9 percent. More recent estimates for 1998 show increases in the minority population and the minority share of total population, especially the Hispanic white population, in Alabama and in the three Bear Creek counties (these estimates are not available for census tracts). Using these estimates, the percent minority in 1998 was 27.8 in the state of Alabama, 5.9 in Franklin County, 4.4 in Marion County, and 1.2 in Winston County. However, these estimates are still in a developmental stage and may not be accurate, especially for small populations and for the Hispanic population (U. S. Census Bureau).

On the other hand, poverty rates are somewhat higher in the three counties than in the state, as well as in several of the census tracts. The state poverty rate in 1989 was 18.3, while the Bear Creek counties have poverty rates that range from 19.1 to 20.7 percent. Within the census tracts, poverty rates range from 9.9 percent to 24.3 percent.

3.10.3 Environmental Consequences

The project would take 18 to 24 months to construct and would result in 60 to 70 jobs during construction and four to eight grade three and four operators and/or maintenance type jobs during operation. It is difficult to predict the actual impact that an adequate source of water would have on economic development. Other factors, such as a trained labor force and transportation network are also important to industrial recruiting efforts. However, the construction of the water treatment plant and appurtenant transmission mains and storage facilities would stimulate some economic development. The immediate economic impact would be to provide ample drinking water and fire protection to the current residents and to provide agri-businesses (poultry farms) and commercial customers ample water supply. More long-term impacts would be continued growth in residential and commercial customers as a result of the infrastructure improvements (accessible waterlines and fire protection). Conversely, the failure to provide these facilities could negatively impact economic development in Franklin County, regardless of the size or skill of the work force or the adequacy of transportation. The proposed water treatment plant should help eliminate existing constraints on economic development throughout Franklin County, which are posed by existing water shortages. The proposed county plant would be interconnected with municipal plants which means that economic development benefits would accrue to municipalities as well as the county.

Table 3-4. Minority and Poverty Data

	Total Population	Nonwhite Population	Hispanic White Population	Percent Minority	Percent Persons Below Poverty Level
Franklin County	27,814	1,351	88	5.2	20.7
Census Tract 9731	2,220	7	7	0.6	17.3
Census Tract 9734	2,802	49	3	1.9	24.3
Census Tract 9735	2,443	28	7	1.4	9.9
Census Tract 9736	1,779	2	16	1.0	20.9
Census Tract 9737	5,532	39	13	0.9	21.6
Alabama	4,040,587	1,064,790	15,630	26.7	18.3

Source: U. S. Bureau of the Census, Census of Population 1990

The area around the proposed site is rural in nature and relatively sparsely populated with a small (percentage) minority population, eliminating any environmental justice concerns on this count. Poverty levels in the area are slightly above the state, but close enough to minimize any concerns about environmental justice. Moreover, the effects of the proposed action are expected to be positive on income levels.

3.11 Farmland

3.11.1 Affected Environment

A list of prime farmland soils in Franklin County as published by the U.S. Department of Agriculture, Natural Resources Conservation Service, is provided in Table 3-5. A review of the Soil Survey for Franklin County indicates there are soils that could be classified as prime farmland soils along the proposed routes of the transmission mains. However, since these are existing right-of-ways, these soils have already been removed from agricultural use and therefore are not classified as prime farmland soils.

3.11.2 Environmental Consequences

Little impact is expected because the soils with prime farmland characteristics have already been removed from agricultural use and not classified as prime farmland.

Table 3-5. Prime Farmland in Franklin County, Alabama

Map Symbol	Soil Name
AbB2	Albertville fine sandy loam, 2 to 6% slopes, eroded
CaA	Cahaba fine sandy loam, 0 to 2% slopes
CaB	Cahaba fine sandy loam, 2 to 6% slopes
CmB2	Cane loam, 2 to 6% slopes, eroded
CnB	Captina silt loam, 2 to 6% slopes
DaB2	Decatur silt loam, 2 to 6% slopes, eroded
DcB3	Decatur silty clay loam, 2 to 6% slopes, severely eroded
GrB2	Greenville loam, 2 to 6% slopes, eroded
GrB3	Greenville loam, 2 to 6% slopes, severely eroded
Hu	Huntington silt loam, local alluvium
Ia	Iuka fine sandy loam
Iu	Iuka fine sandy loam, local alluvium
Ld	Lindside silt loam (Chenneby)
Le	Lindside silt loam, local alluvium (Chenneby)
LkB2	Linker fine sandy loam, 2 to 6% slopes, eroded
Oc	Ochlockenee fine sandy loam
OrB2	Ora fine sandy loam, 2 to 6% slopes, eroded
OsB2	Ora fine sandy loam, heavy substratum, 2 to 6% slopes eroded
PrA	Prentiss fine sandy loam, 0 to 2% slopes
PrB	Prentiss fine sandy loam, 2 to 6% slopes
RuB2	Ruston fine sandy loam, 2 to 6% slopes, eroded
SnA	Savannah very fine sandy loam, 0 to 2% slopes

Map Symbol	Soil Name
SnB	Savannah very fine sandy loam, 2 to 6% slopes
SnB2	Savannah very fine sandy loam, 2 to 6% slopes, eroded
TaB2	Talbott silt loam, 2 to 6% slopes, eroded
TdB	Tilden fine sandy loam, 2 to 6% slope

4.0 Conclusion and Findings

Under the proposed action there would be insignificant or no impacts on wetlands, terrestrial resources, threatened and endangered species, cultural resources, noise, and socioeconomics. Under the proposed action, the mitigation measures identified in section 5.0, would better ensure insignificant impacts on surface water and aquatic resources, floodplains, aesthetics, and recreational resources.

5.0 Commitments

TVA's General and Standard Conditions that would apply to this project are included as Appendix B. The commitments listed here are those that are not considered routine commitments.

1. To reduce potential operational effects to the Bear Creek Environmental Education Center, it will be stated in the permit conditions that the applicant will coordinate all construction activities with the Bear Creek Environmental Education Center to minimize impacts to the operation of this facility. Contact is Shannon McKinney, Administrator for BCDA, (256) 332-4392.

2. The applicant will ensure that concrete structures that will be in the waters of the reservoir will either be formed and poured on the bank and lifted into place or that the area where the structures will be located will be dewatered before concrete is poured and maintained dry until the concrete is cured. The applicant will notify TVA 24 hours prior to pouring any concrete below elevation 609 at mean sea level.

3. The applicant will submit to TVA final plans applicable to colors, non reflective materials, and lighting in order to ensure the following requirements will be met:

   Colors of the building facade and surrounding construction will blend with the surrounding landscape rather than contrast with it (i.e., muted natural colors, such as brown, gray, or gray-green). Non-reflective materials will be used on the building and surrounding construction in order to minimize glare from available viewpoints. Direct, full-cutoff lighting will be used to minimize night light trespass at the nearby education center.

4. The applicant will hold a preconstruction meeting and invite TVA and USACE, so that agency representatives can determine that all contracts and construction plans issued for this project will include the following stipulations:

   - As stipulated by the USFWS, that if during any phase of this project, listed or proposed listed species are found, construction activities shall cease and the USFWS will be notified.
   - As stipulated by the Alabama SHPO, that should artifacts or archeological features be encountered during project activities, work shall cease and the SHPO's office shall be consulted immediately.

5. To avoid adverse impacts to terrestrial plant resources within the three sites identified in section 3.3:

   - Site A: To avoid potential impacts to a federally listed plant at Site A, the applicant will either;
     - install the proposed line on the south side of the new Highway 24 in this area,
     - bore under the site with sufficient vertical and horizontal clearance of the plants (If the applicant chooses to bore under the site, TVA staff will mark the minimum distances for the entrance and exit of the drilling), or
     - verify the identity of the species in mid-July through August. If it is determined that the species is not the federally listed plant, the line could be installed as planned on the north side of the road with no impacts to threatened and

endangered species in this area. If this option is chosen, FCWSA will provide written documentation to TVA for verification prior to soil disturbance in the area. Under this scenario, the U.S. Fish and Wildlife Service will be coordinated with. If the listed species is determined to be present, FCWSA will avoid the areas as indicated above.

- For Site B, the applicant will move the pipeline to the west side of Highway 187.
- For Site C, prior to construction, sensitive habitats for state listed species will be marked by TVA staff. The applicant will limit vehicular, construction equipment, and pedestrian access to these areas by using appropriate signage and barriers.

6. To prevent opportunistic looting of exposed archaeological sites, TVA Police will patrol the reservoir periodically during the 14 day drawdown, provided the national security level does not limit TVA Police's resources in the area.

6.0 Supporting Information

6.1 References Cited

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6.2 List of TVA Preparers

J. Scott Atkins, Resource Stewardship, Wildlife Biologist

Charles E. Bohac, River Operations, Water Supply Specialist

Bob Buchanan, River Operations, Program Administrator, Navigation

Larry Clark (retired), River Operations, Water Supply Specialist

Harold Draper, Senior NEPA Specialist, NEPA Team Leader

J. Bennett Graham, Resource Stewardship, Senior Archaeologist

Jay J. McFeters, Energy Research and Technology Applications, Industrial Hygienist

Roger Milstead, River Operations, Technical Specialist (Floodplains)

Richard Pflueger, Resource Stewardship, Land Use Specialist (Recreation)

Jon Riley, Resource Stewardship, Landscape Architect

Helen Rucker, Environmental Policy and Planning, Senior NEPA Specialist

Damien Simbeck, Resource Stewardship, Watershed Technical Specialist

S. Berry Stalcup (retired), Resource Stewardship, Aquatic Biologist

APPENDICES

APPENDIX A – JOINT PUBLIC NOTICE

US Army Corps of Engineers

Nashville District

Public Notice

Public Notice No. **02-01** Date: **January 8, 2002**

Application No. **200102268** TVA RLR No. **73887**

Please address all comments to:
Nashville District Corps of Engineers, Regulatory Branch (Attn: Lisa R. Morris)
3701 Bell Road, Nashville, TN 37214

JOINT PUBLIC NOTICE
US ARMY CORPS OF ENGINEERS
TENNESSEE VALLEY AUTHORITY

SUBJECT: Proposed Municipal Water Intake, Treatment Plant, and Distribution Line

TO ALL CONCERNED: The project described below has been submitted for a Department of the Army (DA) Permit pursuant to **Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act** (CWA) and a Tennessee Valley Authority (TVA) permit pursuant to **Section 26a of the TVA Act**. Since the backfill work associated with a utility distribution line described in this notice meets the criteria for authorization under Nationwide Permit (NWP) #12 and the state of Alabama previously issued a water quality certification for NWP #12, no further water quality determination pursuant to Section 401 of the CWA is required for this action.

APPLICANT: Franklin County Water Service Authority
P.O. Box 278
Russellville, AL 35653

LOCATION: Bear Creek Mile 77.0, Right Bank, (Bear Creek Reservoir), in Franklin County, Alabama. Bear Creek is a tributary of the Tennessee River at Mile 224.8, Left Bank. (Quad - Guinn Cross Roads, AL; lat 34-23-00, lon 88-58-00; NW ¼ of Section 13, T-7-S, R-13-W). See attached Sheet 1.

- The proposed work would involve TVA land (Tract XTBCBR-2P) and public land managed by the Bear Creek Development Authority (BCDA). Roughly four acres of TVA land would be required for the intake site and a main distribution line crossing the reservoir. Approximately 23 acres of BCDA land would be required for the treatment plant site, intake site, and distribution lines that generally follow existing roads in the area.

CELRN-OP-F 02-01

DESCRIPTION: The proposed work consists of the following:

- Water Treatment Plant. Franklin County would construct a new water treatment plant as shown on the attached Sheet 5. The plant would provide output capacity of five million gallons per day (MGD) to serve over seven thousand households in the Bear Creek Regional area. A 100-foot buffer of original trees would remain between the plant and County Road 27.
- Raw Water Pumping Station/Intake. The proposed water intake structure would have the capacity to withdraw five MGD to supply the proposed treatment plant with water. The proposed structure would be a rectangular, multi-level, concrete building designed for the purpose of screening and pumping raw water. The intake structure would be constructed in the dry; then a 100' x 100' wedge and 13' x 60' channel would be excavated between Bear Creek and the intake building to bring the lake water into the intake. See Sheet 3. Bear Creek Reservoir has a normal summer pool at Elevation 576.0, a high water elevation of 609.0, and a low water elevation of 547.0. Plans show that the bottom of the excavated area would vary from Elevation 540 near the creek to a lower Elevation of 534 at the face of the intake. Approximately 1200 cubic yards of rock/earth would be removed and taken upland for disposal. According to the applicant, the excavated area would not require bank stabilization because of the anticipated rock sides. The bottom of the wet well would be at Elevation 537.0; the top would be at Elevation 623.5.
- Main Distribution Line. A 12" diameter ductile iron water main would cross Bear Creek at Mile 79.8. The line would be installed in an excavated trench, backfilled, and topped with riprap for a minimum three feet of cover over the pipe. The bottom of the creek channel would be returned to preconstruction contours.
- The proposed work would result in an adequate water supply to meet the growing demands of the county and the surrounding area.

Plans of the proposed work are attached.

The decision whether to issue a permit will be based on an evaluation of the probable impacts including cumulative impacts of the activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit, which reasonably may be expected to accrue from the work, must be balanced against its reasonably foreseeable detriments. All factors, which may be relevant to the work, will be considered including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people. A permit will be granted unless the District Engineer determines it to be contrary to the public interest.

CELRN-OP-F 02-01

The Corps of Engineers is soliciting comments from the public; federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition, or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historical properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment (EA) and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and determine the overall public interest of the proposed activity. An EA will be prepared prior to a final decision concerning issuance or denial of the requested permits.

The National Register of Historic Places has been consulted and no properties listed in or eligible for the National Register are known which would be affected by the proposed work. This review constitutes the full extent of cultural resources investigations unless comment to this notice is received documenting that significant sites or properties exist which may be affected by this work, or that adequately documents that a potential exists for the location of significant sites or properties within the permit area. Copies of this notice are being sent to the office of the State Historic Preservation Officer.

Based on available information, the proposed work will not destroy or endanger any federally listed threatened or endangered species or their critical habitats, as identified under the Endangered Species Act, and, therefore, initiation of formal consultation procedures with the U.S. Fish and Wildlife Service is not planned at this time.

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

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for hearings shall state, with particularity, the reasons for holding a hearing. Written statements received in this office on or before February 7, 2002, will become a part of the record and will be considered in the determination. Any response to this notice should be directed to the Regulatory Branch, Attn: Lisa Morris, at the above address, telephone (615) 369-7504. It is not necessary to comment separately to TVA since copies of all comments will be sent to that agency and will become part of its record on the proposal. However, if comments are sent to TVA, they should be mailed to Mr. Jim Shedd, Project Leader, P.O. Box 1010, Muscle Shoals, Alabama 35662.

3

APPENDIX B – TVA GENERAL AND STANDARD CONDITIONS FOR 26A AND LAND USE

RLR No. 73887

GENERAL AND STANDARD CONDITIONS
Section 26a and Land Use

General Conditions

1. You agree to make every reasonable effort to construct and operate the facility authorized herein in a manner so as to minimize any adverse impact on water quality, aquatic life, wildlife, vegetation, and natural environmental values.

2. This permit may be revoked by TVA by written notice if:
   a) the structure is not completed in accordance with approved plans;
   b) if in TVA's judgment the structure is not maintained as provided herein;
   c) the structure is abandoned;
   d) the structure or work must be altered to meet the requirements of future reservoir management operations of the United States or TVA, or:
   e) TVA finds that the structure has an adverse effect upon navigation, flood control, or public lands or reservations.

3. If this permit for this structure is revoked, you agree to remove the structure, at your expense, upon written notice from TVA. In the event you do not remove the structure within 30 days of written notice to do so, TVA shall have the right to remove or cause to have removed, the structure or any part thereof. You agree to reimburse TVA for all costs incurred in connection with removal.

4. In issuing this Approval of Plans, TVA makes no representations that the structures or work authorized or property used temporarily or permanently in connection therewith will not be subject to damage due to future operations undertaken by the United States and/or TVA for the conservation or improvement of navigation, for the control of floods, or for other purposes, or due to fluctuations in elevations of the water surface of the river or reservoir, and no claim or right to compensation shall accrue from any such damage. By the acceptance of this approval, applicant covenants and agrees to make no claim against TVA or the United States by reason of any such damage, and to indemnify and save harmless TVA and the United States from any and all claims by other persons arising out of any such damage.

5. In issuing this Approval of Plans, TVA assumes no liability and undertakes no obligation or duty (in tort, contract, strict liability or otherwise) to the applicant or to any third party for any damages to property (real or personal) or personal injuries (including death) arising out of or in any way connected with applicant's construction, operation, or maintenance of the facility which is the subject of this Approval of Plans.

6. This approval shall not be construed to be a substitute for the requirements of any federal, state, or local statute, regulation, ordinance, or code, including, but not limited to, applicable electrical building codes, now in effect or hereafter enacted.

7. The facility will not be altered, or modified, unless TVA's written approval has been obtained prior to commencing work.

8. You agree to notify TVA of any transfer of ownership of the approved structure to a third party. Third party is required to make application to TVA for permitting of the structure in their name.

9. You agree to stabilize all disturbed areas within 30 days of completion of the work authorized. All land-disturbing activities shall be conducted in accordance with Best Management Practices as defined by Section 208 of the Clean Water Act to control erosion and sedimentation to prevent adverse water quality and related aquatic impacts. Such practices shall be consistent with sound engineering and construction principles; applicable federal, state, and local statutes, regulations, or ordinances; and proven techniques for controlling erosion and sedimentation, including any *required* conditions.

10. You agree not to use or permit the use of the premises, facilities, or structures for any purposes that will result in draining or dumping into the reservoir of any refuse, sewage, or other material in violation of applicable standards or requirements relating to pollution control of any kind now in effect or hereinafter established.

11. The facility will be maintained in a good state of repair and in good, safe, and substantial condition. If the facility is damaged, destroyed, or removed from the reservoir or stream for any reason, or deteriorates beyond safe and serviceable use, it cannot be repaired or replaced without the prior written approval of TVA.

RLR No. 73887

12. You agree that if any historical or prehistoric archaeological material (such as arrowheads, broken pottery, bone or similar items) is encountered during construction of this facility you will immediately contact this office and temporarily suspend work at that location until authorized by this office to proceed.

13. The Native American Graves Protection and Repatriation Act and the Archaeological Resources Protection Act apply to archaeological resources located on the premises. If LESSEE {or licensee or grantee (for easement) or applicant (for 26a permit on federal land)} discovers human remains, funerary objects, sacred objects, objects of cultural patrimony, or any other archaeological resources on or under the premises, LESSEE {or licensee, grantee, or applicant} shall immediately stop activity in the area of the discovery, make a reasonable effort to protect the items, and notify TVA by telephone (phone 386-2228). Work may not be resumed in the area of the discovery until approved by TVA.

14. On TVA land, unless otherwise stated on this permit, vegetation removal is prohibited.

15. You agree to securely anchor all floating facilities to prevent them from floating free during major floods.

16. You are responsible for accurately locating your facility, and this authorization is valid and effective only if your facility is located on or fronting property *owned* or *leased* as shown on your application.

17. It is understood that you own adequate property rights at this location. If at any time it is determined that you do not own sufficient property rights, or that you have only partial ownership rights in the land at this location, this permit may be revoked if TVA receives an objection to your water use facility from any owner or partial owner of the property rights at this location.

Standard Conditions: (Items that pertain to your request have been checked.)

1. Structures and Facilities

a) ☐ TVA number _____ has been assigned to your facility. When construction is complete, this number shall be placed on a readily visible part of the outside of the facility in the numbers not less than three inches high.

b) ☐ The 100-year flood elevation at this site is estimated to be 609.5-feet mean sea level. As a minimum, your fixed facility should be designed to prevent damage to stored boats by forcing them against roof during a 100-year flood event.

c) ☐ You agree that the float will be temporarily connected (i.e., by slip pin/ropes) and not permanently attached to nonnavigable houseboat.

d) ☐ You agree that this _____ shall have no side enclosures except wire mesh or similar screening.

e) ☐ Buildings or other enclosed structures containing sleeping or living accommodations, including toilets and related facilities, or that have enclosed floor area in excess of 32 square feet, are prohibited.

f) ☐ Ski jumps will not be left unattended for extended periods of time. All facilities will be tied to the shoreline or to a boathouse or pier fronting your property at the completion of each day's activities.

g) ☐ For all electrical services permitted, a disconnect must be located at or above the 609.5-foot contour that is accessible during flooding.

h) ☒ You should contact your local government official(s) to ensure that this facility complies with all applicable local floodplain regulations.

i) ☐ The entire closed-loop coil heating and air conditioning system and its support apparatus must be either placed below elevation _____ (to provide a five-foot clearance for water craft at minimum pool elevations of _____) or located underneath a TVA approved water-use facility or other TVA approved structure. The supply and return lines must be buried as they cross the reservoir drawdown zone in areas of water depth less than five feet (minimum pool). The liquid contents of the closed-loop heating and air conditioning system must be propylene glycol or water, and the applicant or authorized agent must provide TVA with written verification of this fact.

RLR No. 73887

j) ☐ You agree that only those facilities which have been approved by TVA prior to construction will be

k) placed within the harbor limits and that permanent mooring buoys, boat slips, or other harbor facilities will not be placed outside the harbor limits.

l) ☐ You agree that all storage, piping, and dispensing of liquid fuel shall comply with applicable requirements of the "Flammable and Combustible Liquids" section of the National Fire Codes and any additional requirements of federal, state, and local laws and regulations.

m) ☐ You agree that the _____ facility hereby approved will be used for _____ and for no other purpose unless approved in writing from TVA.

n) ☐ You agree that the construction project covered by this permit will be completed by the following date: _____.

2. Ownership Rights

a) ☐ No fill will be placed higher than elevation _____ maximum shoreline contour (msc), and every precaution will be taken not to disturb or alter the existing location of the _____-foot contour elevation through either excavation or placement of fill.

b) ☒ You are advised that TVA retains the right to flood this area and that TVA will not be liable for damages resulting from flooding.

c) ☐ You shall notify TVA of any sale or transfer of land, which would affect the landward limits of harbor area, as far in advance of such sale or transfer as possible.

d) ☐ This approval of plans is only a determination that these harbor limits will not have any unacceptable effect on TVA programs or other interests for which TVA has responsibility. Such approval does not profess or intend to give the applicant exclusive control over the use of navigable waters involved.

e) ☐ You recognize and understand that this authorization conveys no property rights, grants no exclusive license, and in no way restricts the general public's privilege of using shoreland owned by or subject to public access rights owned by TVA. It is also subject to any existing rights of third parties. Nothing contained in this approval shall be construed to detract or deviate from the rights of the United States and TVA held over this land under the Grant of Flowage Easement. This Approval of Plans does not give any property rights in real estate or material and does not authorize any injury to private property or invasion of private or public rights. It merely constitutes a finding that the facility, if constructed at the location specified in the plans submitted and in accordance with said plans, would not at this time constitute an obstruction unduly affecting navigation, flood control, or public lands or reservations.

3. Shoreline Modification and Stabilization

a) ☐ For purposes of shoreline bank stabilization, all portions will be constructed or placed, on average, no more than two feet from the existing shoreline at normal summer pool elevation.

b) ☒ You agree that spoil material will be disposed of and contained on land lying and being above the 610.3-foot contour. Every precaution will be made to prevent the reentry of the spoil material into the reservoir.

c) ☒ Bank, shoreline, and floodplain stabilization will be permanently maintained in order to prevent erosion, protect water quality, and preserve aquatic habitat.

d) ☐ You agree to reimburse TVA $_____, which is the current value of the _____ acre feet of power storage volume displaced by fill into the reservoir.

4. Water Intake

a) ☒ If the reservoir falls below the elevation of the intake, the applicant will be responsible for finding another source of raw water.

b) ☒ You must install and maintain a standard regulatory hazard buoy at the end of the intake to warn boaters of the underwater obstruction. The word "intake" should be added to the buoy and be attached using a five-foot cable.

c) ☒ The screen openings on the intake strainer must be 1/8-inch (maximum), to minimize the entrapment of small fish.

RLR No. 73887

d) ☒ This approval does not constitute approval of the adequacy or safety of applicant's water system
e) . TVA does not warrant that the water withdrawn and used by applicant is safe for drinking or any other purpose, and applicant is solely responsible for ensuring that all water is properly treated before using.

5. Bridges and Culverts

a) ☐ You agree to design/construct any instream piers in such a manner as to discourage river scouring or sediment deposition.

b) ☐ Applicant agrees to construct culvert in phases, employing adequate streambank protection measures, such that the diverted streamflow is handled without creating streambank or streambed erosion/sedimentation and without preventing fish passage.

c) ☐ Concrete box culverts and pipe culverts (and their extensions) must create/maintain velocities and flow patterns which offer refuge for fish and other aquatic life, and allow passage of indigenous fish species, under all flow conditions. Culvert floor slabs and pipe bottoms must be buried below streambed elevation, and filled with naturally occurring streambed materials. If geologic conditions do not allow burying the floor, it must be otherwise designed to allow passage of indigenous fish species under all flow conditions.

d) ☐ All natural stream values (including equivalent energy dissipation, elevations, and velocities; riparian vegetation; riffle/pool sequencing; habitat suitable for fish and other aquatic life) must be provided at all stream modification sites. This must be accomplished using a combination of rock and bioengineering, and is not accomplished using solid, homogeneous riprap from bank to bank.

e) ☐ You agree to remove demolition and construction by-products from the site--for recycling if practicable, or proper disposal--outside of the 100-year floodplain. Appropriate BMPs will be used during the removal of any abandoned roadway or structures.

6. Best Management Practices

a) ☒ You agree that removal of vegetation will be minimized, particularly any woody vegetation providing shoreline/streambank stabilization.

b) ☒ You agree to installation of cofferdams and/or silt control structures between construction areas and surface waters prior to any soil-disturbing construction activity, and clarification of all water that accumulates behind these devices to meet *state* water quality criteria *at the stream mile where activity occurs* before it is returned to the *unaffected portion of the stream* . Cofferdams must be used wherever construction activity is at or below water elevation.

c) ☒ A floating silt screen extending from the surface to the bottom is to be in place during excavation or dredging to prevent sedimentation in surrounding areas. It is to be left in place until disturbed sediments are visibly settled.

d) ☒ You agree to keep equipment out of the reservoir or stream and off reservoir or stream banks, to the extent practicable (i.e., performing work "in the dry").

e) ☒ You agree to avoid contact of wet concrete with the stream or reservoir, and avoid disposing of concrete washings, or other substances or materials, in those waters.

f) ☒ You agree to use erosion control structures around any material stockpile areas.

g) ☒ You agree to apply clean/shaken riprap or shot rock (where needed at water/bank interface) over a water permeable/soil impermeable fabric or geotextile and in such a manner as to avoid stream sedimentation or disturbance, or that any rock used for cover and stabilization shall be large enough to prevent washout and provide good aquatic habitat.

h) ☒ You agree to remove, redistribute, and stabilize (with vegetation) all sediment which accumulates behind cofferdams or silt control structures.

i) ☒ You agree to use vegetation (versus riprap) wherever practicable and sustainable to stabilize streambanks, shorelines, and adjacent areas. These areas will be stabilized as soon as practicable, using either an appropriate seed mixture that includes an annual (quick cover) as well as one or two perennial legumes and one or two perennial grasses, or sod. In winter or summer, this will require initial planting of a quick cover annual only, to be followed by subsequent establishment of the perennials. Seed and soil will be protected as appropriate with erosion control netting and/or mulch and provided adequate moisture. Streambank and shoreline areas will also be permanently stabilized with native

woody plants, to include trees wherever practicable and sustainable (this vegetative prescription may be altered if dictated by geologic conditions or landowner requirements). You also agree to install or perform additional erosion control structures/techniques deemed necessary by TVA.

Additional Conditions

APPENDIX C– CORRESPONDENCE WITH FEDERAL AND STATE AGENCIES

United States Department of the Interior

FISH AND WILDLIFE SERVICE
P. O. Drawer 1190
Daphne, Alabama 36526

IN REPLY REFER TO:
02-0495

March 14, 2002

District Engineer
U.S. Army Corps of Engineers
P.O. Box 1070
Nashville, TN 37202-1070

Attention: Ms. Lisa R. Morris

Dear Sir:

This is the report of the U.S. Fish and Wildlife Service (Service) concerning Public Notice 02-01, application No. 200102268 joint public notice U.S. Army Corps of Engineers (Corps) and Tennessee Valley Authority (TVA) for the proposed construction of a raw water intake, treatment plant, and main distribution water line on TVA tract XTBCBR-2P and public land managed by the Bear Creek Development Authority (BCDA), Bear Creek Reservoir, in Franklin County, Alabama. "

The applicant, the Franklin County Water Service Authority, proposes to construct a raw water intake/pumping station, treatment plant, and a main distribution water line to withdraw 5 million gallons per day (mgd) in order to provide over seven thousand households an adequate water supply to meet the increased demands being placed on the existing system in the Bear Creek regional area. As planned, the water will be pumped from the intake structure located on Bear Creek at Mile 77.0 to the proposed water treatment plant. From the treatment plant, the main distribution water line would cross Bear Creek at Mile 79.8. The distribution water line that would cross the stream channel would be placed in an excavated trench, backfilled, and topped with riprap for a minimum of three feet of cover over the pipe. Preconstruction contours of the creek would be restored.

The intake/pumping station is planned for construction on the east shore of Bear Creek Reservoir just to the west of County Road 27, Horseshoe Bend Road. The intake/pumping station is planned to be a rectangular shaped, multi-level, concrete building designed for the purpose of screening and pumping raw water. Construction is planned for the period of winter draw-down on the reservoir (elevation 547'). The structure would be constructed in the "dry"; then a 100' x 100' wedge and 13' x 60' channel would be excavated between Bear Creek and the intake building to bring the lake water to the intake. Approximately 1200 cubic yards of rock/soil would need to be excavated from the site. These materials would be removed from the site and

MAR 19 2002

PHONE: 334-441-5181 www.fws.gov FAX: 334-441-6222
SHIPPING ADDRESS: 1208-B Main Street, Daphne, AL 36526

taken upland for disposal. The applicant does not anticipate the need for bank stabilization in the area of excavation because it is assumed that the site will have stable rock sides.

A water treatment plant is proposed for construction on top of the ridge that overlooks the Horseshoe Bend area on Bear Creek. The area selected for the water treatment plant is located west of County Road 27 and within approximately 1,300 feet of, and up slope from, the intake structure. The pipeline from the intake/pumping station would also be constructed west of County Road 27 en route to the proposed water treatment plant.

A main distribution water line is proposed to cross County Road 27 and Bear Creek at Mile 79.8. The proposed plans for the pipeline are to open-trench, backfill, and stabilize along the entire route of the pipeline, including the stream crossing.

A Service biologist inspected the proposed project site on January 24, 2002 with a representative from the U.S. Army Corps of Engineers (COE). During the field visit the construction site of the intake/pumping station was observed. The water treatment plant site was viewed from County Road 27 as was the segment of stream identified for the main distribution water line crossing. The project sites inspection aided in the discussion of what impacts may be expected or anticipated from the intake/pumping station construction, the construction of a treatment plant and the open-trench construction across Bear Creek. According to past surveys conducted in this area, there are no known federally listed or proposed listed aquatic or terrestrial species at the three proposed construction sites.

Based on the information gathered prior to and during the field visit, the Service recommends the following measures be implemented to avoid or minimize impacts to the aquatic and terrestrial species located on or adjacent to the proposed project sites. All activities associated with the construction, excavation, and backfilling in or adjacent to Bear Creek Reservoir should occur during a dry weather period while Bear Creek Reservoir is at low winter pool condition. Best Management Practices (BMP) should be implemented at every phase of the proposed project. Erosion control devices should be utilized to reduce sedimentation in Bear Creek Reservoir or tributaries of Bear Creek.

Because we have concerns regarding the excavation of soil and rock within Bear Creek Reservoir, we recommend a floating turbidity curtain be placed in the reservoir in an area surrounding the proposed excavation site at the intake/pumping station and also in the area downstream of the distribution water line excavation. This curtain would help reduce the potential of a large sediment plume from forming in the reservoir and impacting its flora and fauna, as well as other water quality parameters in the reservoir. Every measure should be taken to de-water the area in the location of the proposed intake/pumping station. Since concrete will be used in pouring the foundation and walls of the pumping station, it is recommended that all measures be taken to avoid the introduction of uncured concrete into the waters of the reservoir. All excavated material should be disposed of properly and removed from the site and placed in an upland area capable of handling the approximately1200 cubic yards of material anticipated to be removed from the construction sites. Erosion control measures should be in place in the area

selected for receiving the spoils/excavated material from the project sites prior to those materials being delivered to that site.

We have concerns regarding the raw water intake/pumping structure. The Service recommends that the intake structure located in the reservoir possess a screen or other mesh-like apparatus that would allow water to be drawn into the pipe but would prohibit or prevent fish and other aquatic species from becoming entrained in the structure or impinged on the screen.

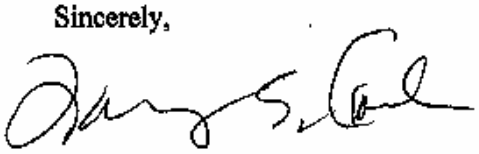
The construction of the open-trench stream crossing should be conducted in a manner that minimizes the amount of disturbance to the existing stream channel and streambanks. All measures to restore the stream channel and streambanks to their original slope and profile should be employed. The pipeline should be located at an elevation below the existing streambed that eliminates the potential for the pipeline in future years to become an impediment to stream flows or a migration barrier to aquatic species. The rock/riprap backfill material should also be placed in a way that would not impede future stream flows or the migration of aquatic species. We recommend that the elevation of the top of the backfill be placed at the elevation of the existing streambed. Materials used to backfill these sites should be placed in a manner that the potential for erosion during future stream flow events is minimized at these sites. We recommend the use of bioengineering techniques and the planting of woody vegetation in the locations of the open-trench construction to improve stream bank stability, to help reduce sedimentation to Bear Creek Reservoir, and to provide habitat for many wildlife species (i.e. migratory song birds).

Based on the information and supporting data provided by a TVA representative, Bear Creek Reservoir is capable of providing the needed water supply to the applicant without compromising or negatively impacting aquatic or terrestrial species that currently utilize the reservoir or the habitats in which they depend. We concur with the TVA regarding this matter.

Our evaluation of this project has also included a review of threatened and endangered species. According to our records, there are no federally listed or proposed threatened or endangered species or designated critical habitat located on or adjacent to the proposed project sites. However, if during any phase of this project listed or proposed listed species are found, the Service should be informed immediately of this information and any work associated with the project, at such time, should cease. We would need to review the newly acquired information and make appropriate recommendations as to avoid or reduce impacts associated with the proposed project on the listed or proposed species.

Based on the best information available at this time, we believe that the requirements of Section 7 of the Endangered Species Act of 1973, as amended, are fulfilled. If you have questions or need additional information please contact Mr. Rob Hurt of my staff at (256) 353-7243.

Sincerely,



Larry E. Goldman
Field Supervisor

cc: Mr. Jim Shedd, TVA, Muscle Shoals, AL
Mr. Jon Hornsby, Alabama Wildlife and Freshwater Fisheries Division, Montgomery, AL
Mr. Mitt Walker, ADEM, Montgomery, AL
Mr. Bill Cox, EPA, Atlanta, GA
Mr. Rob Hurt, USFWS, Wheeler NWR, Decatur, AL

STATE OF ALABAMA
ALABAMA HISTORICAL COMMISSION
468 SOUTH PERRY STREET
MONTGOMERY, ALABAMA 36130-0900

LEE H. WARNER
EXECUTIVE DIRECTOR

TEL: 334-242-3184
FAX: 334-240-3477

February 6, 2002

Lisa R. Morris
Nashville District Corps of Engineers
Regulatory Branch
3701 Bell road
Nashville, Tennessee 37214

Re: AHC 02-0468; Application No. 200102268; TVA RLR No. 73887; Proposed Municipal Water Intake, treatment Plant and distribution Line on Bear Creek Reservoir, Franklin County

Dear Ms. Morris:

Our files indicate that there are no known cultural resources located within the project area. However, the project area is similar environmentally to areas which are known to have significant cultural resources. Therefore, it must be considered archaeologically sensitive.

The Alabama Historical Commission requests that the project area be surveyed by a professional archaeologist. The archaeologist's report should be submitted to our office for review and determination prior to any construction activities.

We appreciate your commitment to helping us preserve Alabama's non-renewable resources. Should you have any questions, please contact Amanda McBride of this office and **include the AHC tracking number referenced above.**

Very truly yours,

Elizabeth Ann Brown
Deputy State Historic Preservation Officer

EAB/ALM/alm

May 8, 2002

Ms. Stacye Hathorn
Alabama Historical Commission
468 S. Perry St.
Montgomery, Alabama 36130

RE: TVA, PROPOSED RAW WATER INTAKE, TREATMENT PLANT, AND DISTRIBUTION LINE, BEAR CREEK RESERVOIR (BEAR CREEK MILE 76.5-80) FRANKLIN COUNTY, ALABAMA

Dear Ms. Hathorn:

The Bear Creek Water Authority proposes to construct a raw water intake, treatment plant, and distribution line along Bear Creek (CM 76.5-80) on the Bear Creek Reservoir. The Area of Potential Effect for the proposed project would include the approximately 572m intake line, 3.25 acres from the proposed intake structure, and 14.86 acres for the proposed treatment plant. A Cultural Resources Reconnaissance survey was conducted to identify any historic properties that might be present.

Please find enclosed a copy of the survey report "A Cultural Resources Reconnaissance of the Proposed Raw Water Intake, Treatment Plant, and Distribution Line on Bear Creek Reservoir in Franklin County, Alabama." One archaeological site was identified within the proposed distribution line route. The authors have recommended 1FR685 as potentially eligible for the NRHP. TVA Cultural Resources staff concurs with the findings and recommendations of the author that this site may be adversely affected by the proposed water distribution line.

Based on the results of the initial survey, an alternative route was chosen for this line and an additional survey was conducted. The enclosed report entitled "An Addendum to a Cultural Resources Reconnaissance of a Proposed Raw Water Intake, Treatment Plant, and Distribution Line on Bear Creek Reservoir, Franklin County, Alabama" indicates that no historic properties are located within the proposed alternative route. TVA concurs with the findings and recommendations of the author that no historic properties will be affected by the proposed undertaking under the new water distribution line alternative.

Pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations at 36 CFR § 800, TVA:

1. is initiating consultation with your office;
2. finds that no historic properties eligible for the NRHP will be affected by the undertaking; and
3. seeks your concurrence with these findings and determinations.

If you have any questions concerning this project feel free to contact me at (865) 632-1583.

Sincerely,

J. Bennett Graham
Senior Archaeologist

Enclosures

JBG:EEP

STATE OF ALABAMA
ALABAMA HISTORICAL COMMISSION
468 SOUTH PERRY STREET
MONTGOMERY, ALABAMA 36130-0900

LEE H. WARNER
EXECUTIVE DIRECTOR

TEL: 334-242-3184
FAX: 334-240-3477

June 12, 2002

J. Bennett Graham, Ph.D.
Tennessee Valley Authority
P.O. Box 1589
Norris, Tennessee 37828-1589

Re: AHC 2002-0948
Proposed Raw Water Intake, Treatment Plant and Distribution Line, Bear Creek Reservoir (Bear Creek Mile 76.5-80)
Franklin County Alabama

Dear ~~Dr. Graham:~~ Bennett:

Upon review of the cultural resource assessment by the University of Alabama Office of Archaeological Services, the Alabama Historical Commission has determined the following. The results of the assessment indicate that one archaeological site, 1Fr685, is potentially eligible for the National Register of Historic Places. We agree that this site should be avoided as the proposal states by boring to a depth sufficient to avoid impact to the site or choosing another route altogether.

If you choose the first alternative, please provide drawings of the planned directional bore in relation to the archaeological site. Should the second alternative be chosen, the alternate route should be investigated for archaeological resources. If neither alternative is acceptable and the site cannot be avoided, a phase two investigation will be necessary. Phase II proposals should be submitted to our office for review and approval prior to the initiation of testing.

We appreciate your efforts in helping us preserve Alabama's non-renewable cultural resources. Should you have any questions or comments or if we may be of further service, please contact Stacye Hathorn of this office and include the AHC project number referenced above.

Very truly yours,

Elizabeth Ann Brown
Deputy State Historic Preservation Officer

EAB/ALM/sgh

STATE OF ALABAMA
ALABAMA HISTORICAL COMMISSION
468 SOUTH PERRY STREET
MONTGOMERY, ALABAMA 36130-0900

LEE H. WARNER
EXECUTIVE DIRECTOR

TEL: 334-242-3184
FAX: 334-240-3477

November 22, 2002

J. Bennett Graham, Ph.D.
TVA
PO Box 1589
Norris, Tennessee 37828-1589

Re: AHC 2002-0948
TVA Proposed Raw Water Intake, Treatment Plant and Distribution Line
Bear Creek Reservoir (Bear Creek Mile 76.5-80.0
Franklin County

Dear ~~Dr. Graham:~~ Bennett:

Thank you for providing the addendum and calling our oversight to our attention. The Alabama Historical Commission agrees with your determinatoin that the project activities should have no effect on any known cultural resources listed on or eligible for the National Register of Historic Places. Therefore, our office can concur with the proposed activities provided that construction activities are confined to the revised corridor. However, should artifacts or archaeological features be encountered during project activities, work shall cease and our office shall be consulted immediately. This stipulation shall be placed on the construction plans to insure contractors are aware of it.

We appreciate your efforts on this issue. If we may be of further service or if you have any questions or comments, please contact Stacye Hathorn of our office and include the AHC project number referenced above.

Very truly yours,

Elizabeth Ann Brown
Deputy State Historic Preservation Officer

EAB/ALM/sgh

Comments from Cooperating Agencies

U.S. Army Corps of Engineers

-----Original Message-----
From: Morris, Lisa R LRN [mailto:Lisa.R.Morris@lrn02.usace.army.mil]
Sent: Thursday, January 30, 2003 8:54 AM
To: 'Rucker, Helen G.'
Subject: RE: Bear Creek Franklin County Water Intake

Helen:
It would probably be good for you to mention the applicant's changed plan in a couple of sentences of so in the beginning of the EA, since the Corps/TVA public notice describes such a large excavation and USFWS responded to that in their letter. Also, the downgrade to less excavation can be viewed as "better for the environment/less Bear Creek disturbance."

Here's what I wrote for my draft Statement of Findings. Use or change it, as you need.
Public Involvement Process: On January 8, 2002, Public Notice 02-01 (Appendix A) was issued to advertise the proposed work. However since that time, the applicant has modified their proposed plan, primarily due to costs. See modified plan, dated October 17, 2002, Appendix B. As stated in the notice, the original plan called for a large permanent wet well excavation (100' x 100' plus a 60' x 13' channel). About 9,000 cubic yards of lake bottom material would have been removed for the purpose of bringing the normal lake pool to the face of the wet well for intake. The applicant's modified plan requires only 1,300 cubic yards of excavation with a plan to backfill to preconstruction contours over three 30-inch pipe casings after installation. After that submersible well pumps would be installed in the casings. The excavation would be deep enough to provide for two feet of cover over the casings.

The modified plan results in substantially less spoil and excavation of the lake bottom and negates concerns brought forward by the USFWS in response to the notice. The other major aspects of the proposal have not changed. Since the modified plan results in fewer impacts to the environment and addresses USFWS comments regarding the large spoil and excavation, there was no need to reissue a new public notice. In October 2002, the USFWS was notified of this reduction and sent a copy of the modified plan. No further comments have been received from the USFWS. The modified plan is now the plan under consideration.

-----Original Message-----
From: Morris, Lisa R LRN [mailto:Lisa.R.Morris@lrn02.usace.army.mil]
Sent: Monday, January 27, 2003 12:15 PM
To: Rucker, Helen G.; Draper, Harold M.
Subject: RE: Bear Creek Franklin County Water Intake

Just wanted to let you know that I reviewed the Franklin County Water Intake EA and have only two comments.

1) On page 5, you need to strike the statement in the 2nd paragraph, 2nd sentence about ADEM water quality certification being required. In the paragraph above, you state that ADEM has already issued water quality certification for activities that meet NWP#12 which is correct. No "extra" water quality certifications are required.

2) Point - Your EA only addresses the modified plan (less excavation, pipelines in the river being backfilled with intake sticking up at end -typical intake design); however, my Public Notice advertised a much larger more excavation plan. I suppose in my Corps document, I could say that (while not specifically advertised to the public) the new plan has substantially less impacts on the environment then what was advertised, so there is no need to reissue a new public notice.

Response: The EA has been revised to reflect these comments.

EPA Region 4

-----Original Message-----
From: Hatzell.Hilda@epamail.epa.gov [mailto:Hatzell.Hilda@epamail.epa.gov]
Sent: Wednesday, April 02, 2003 9:53 AM
To: hmdraper@tva.gov
Subject: Franklin County FNSI info

Hello Harold,

I have attached my comments and information needs from my review of the Draft EA and the EID for the Franklin County Special Appropriations Project. Please feel free to respond however is appropriate for your agency. One of the easier ways to respond would be to insert the response after each bulleted item and send the document back by E-mail. I will then make the document with the items and responses part of the grant file. But, whatever works for you works for me.

Once I receive the information, I should be able to write a FNSI and supporting EA in a couple of days as our EA is more like an executive summary and is usually only four or five pages. Please call me if you have any questions. (See attached file: Franklin.cms.wpd)
Thanks, Hilda

Hilda Hatzell, Environmental Scientist
Permits, Grants & Technical Assistance Branch
EPA Region 4
61 Forsyth St, SW
Atlanta, GA 30303
office phone: 404 562-9445 FAX: 404 562-8692

Subject: Comments and Questions on Environmental Documents for **Franklin County**, Alabama Raw Water Intake, Treatment Plant, and Distribution Lines (#XP-974127-010)
Author: Hilda Hatzell, Grants and Technical Assistance Section
Note: If any of the information requested below has overlooked and has already been provided in the documents reviewed, please identify which report and page number.

Documents Reviewed:

Environmental Information Document, Proposed Water Transmission Mains and Storage Tanks, Franklin County Water Service Authority (no date provided)[abbreviated EID for reference]

Draft Environmental Assessment; Franklin County Water Service Authority; Raw Water Intake, Treatment Plant, and Distribution Lines; Bear Creek Reservoir; January 2003 [abbreviated Draft EA]

EPA Comment:
General

- There seems to be a basic dichotomy in the information provided along with the environmental effects associated with the proposed project. The selected alternative involves the raw water intake, the treatment plant, ten water mains, two master meters, moving two pump stations, and two water tanks as described on page 10 of the Draft EA. However, most of the Draft EA seems to refer to only the intake, the plant, and the water main to be constructed southward along Alabama Highway 172. The Draft EA concentrates on actions affecting the TVA and BCDA land which would contain the intake, the plant, and part of the southward water line from the treatment plant. This is reinforced by the March 14, 2003 concurrence letter from the Fish and Wildlife Service that does not mention nine of the water mains, the two tanks, and moving the two pump stations. Please clarify.

TVA Response: New information has been added to the final EA to address this comment.

EPA Comment:
- The EID mentions that the board is trying to keep the price of water at $1.75 per thousand gallons. As a point of clarity, is this the current fee or a target value? If it is a target value, what is the current value? Since the residents of Vina and Hodges are currently not in the system, will the water use fee for these residents increase over their current rate? If so, what is the expected increase in rates per month?

TVA Response: This request for information has been forwarded to the applicant and FCWSA will provide the information to EPA.

EPA Comment:
- To clarify, will the proposed 2.5 MGD plant serve existing customers and no new residences will be added at this time? If new residences are to be added, how many and where?

TVA Response: Since the water treatment plant would be sized to handle future growth, new residential users would likely be added some time in the future although none are expected to be added at this time. Additional information about future demand and future users has been added to the EA. While much of this use is expected to occur along the water mains (lines), it is possible that it could occur elsewhere in the area. Beyond these general assumptions, it would require substantial speculation to try to predict the specific locations and nature of future water supply users.

EPA Comment:

- Page 8 of the EID mentions that the total operations and maintenance cost for the *wastewater treatment facility* is approximately $150,000. Is this a typo and *water treatment facility* is meant instead?

TVA Response: This is a typo. The proposed action does not include a wastewater treatment facility. This has been corrected in the final EA.

EPA Comment:

<u>Proposed Project and Funding Status</u>

- To clarify, will the owner and operator for the treatment plant, the two tanks, and all of the 10 proposed lines be the Franklin County Water Service Authority? If not, who owns which parts?

TVA Response: Franklin County Water Service Authority would own the plant and associated infrastructure.

EPA Comment:

- Page 10 of the Draft EA mentions two booster stations that *can* be moved. Is the relocation of the Dempsey and Old Nauvoo booster stations part of this project? If so, where will the booster stations be located in relation to the Gravel Hill and Crooked Oak water systems?
  - On the map in Figure 2 of the EID, is the 'existing old Nauvoo water system tank' the location of the existing Old Nauvoo booster station?
  - On the same map is the 'relocate Dempsey booster station' the location of the existing Dempsey booster station?

TVA Response: There currently are not plans to relocate these booster stations. The applicant's contractor simply indicated that they could be re-located some time in the future if the FCWSA should decide to do this.

EPA Comment:

- For our Finding of No Significant Impact (FNSI), please provide an 8 ½ x 11 inch map of the project area showing the locations of the water treatment plant, two tanks, and ten proposed lines as well as locations for Vina and Hodges and the Bear Creek Reservoir (and the new locations of the booster stations).

TVA Response: This request was forwarded to the applicant for further handling. Descriptions of the water treatment plant, tanks, and proposed lines are provided in the EA.

EPA Comment:

- Additional information is needed about the treatment plant.

- Please provide a brief description of the major unit processes for the treatment plant.

TVA Response: This information has been added to Chapter 2 of the FEA.

EPA Comment:

- Is the plant layout provided for the alternative at Little Bear Creek in the EID, the same as the planned layout for the selected alternative at Big Bear Creek? If not, please provide the layout of the plant.

TVA Response: No. The latest edition is attached.

EPA Comment:

· What is the length of each of the ten water lines described on pages 4-5 of the EID? [I found it difficult to match the line section lengths provided in Appendix 3 of the EID with the lines shown in Figure 2 of the EID.]

TVA Response: This information has been added to Chapter 2 of the FEA.

EPA Comment:

· What funding has been secured for the project? Appendix 4 of the EID, indicates that there was a request to SRF for $10 million and possible bond money for local match. Please provide specifics.

TVA Response: This request has been forwarded to the applicant for a response.

Existing Wastewater/Drinking Water System

EPA Comment:

· Please provide a brief description of the wastewater collection and treatment system(s) for the project area.

TVA Response: There are five incorporated municipalities in Franklin County. Three of the incorporated municipalities operate public sewerage systems and wastewater treatment plants. These municipalities are Russellville, Red Bay, and Phil Campbell. Russellville operates a mechanical wastewater treatment plant with discharge to Cedar Creek. Red Bay operates a lagoon system with discharge to Bear Creek. Phil Campbell operates a mechanical wastewater treatment plant with discharge to Cagle Branch. Vina and Hodges do not have public sewerage facilities. The residents and businesses in these areas utilize septic tanks with field lines.

EPA Comment:

· What are the average and peak water demands for the project area?

TVA Response: Projected water needs for FCWSA were addressed in Section 6.0 of the Comprehensive Water Study for Franklin County, Alabama prepared by Price, Rider & Mullins Engineering, Inc. This document was distributed to EPA and TVA. Recent water usage data is shown in the Tables 19 -23 and peak usage rates are discussed for each system.

EPA Comment:

· How will residuals (sludge) and backwash disposal associated with the water treatment

plant be handled?

TVA Response: Two sludge lagoons would be utilized to handle sludge from the treatment process and sludge disposed of at an approved landfill. The supernatant from the sludge holding basin would be recycled to the head of the water treatment plant.

EPA Comment:
Need for the Project

· What is the planning period for the proposed project?

TVA Response: Engineering planning is underway and current plans show construction completion in December 2005. For purposes of area water supply planning, the assumed planning period is 20 years.

EPA Comment:
Analysis of Alternatives

· Is there an estimate made of water loss in the existing system and was flow reduction considered as an alternative?

· Please provide the present worth analysis for the alternatives.

TVA Response: Flow reduction was considered as part of the No Action alternative and was eliminated from further review. Even with a reduction of unaccounted for water loss to a level below the state average of 15 percent there would not be enough water to meet current and future demands.

Cross-Cutting Environmental Laws and Sources Consulted

EPA Comment:
· On page 23, the Draft EA mentions that numerous archeological sites have been identified in the Bear Creek watershed. Did the archeological survey include the locations for the two tanks, the right-of-ways for all ten of the water lines, and the relocation sites for the pump stations? Was the Alabama SHPO aware of the locations for these items such that the concurrence letter includes them? Please clarify or provide additional concurrence from the SHPO.

TVA Response: Currently, the proposed waterlines are within existing road and/or waterline right-of-ways. These are previously disturbed areas and are not likely to contain potential eligible cultural resources. In the draft EA, approximate locations for the tank sites were identified for design purposes. Subsequent to issuing the draft EA, the two tank sites have been identified and surveyed for cultural resources. TVA has determined no effect on cultural resources and will appropriately coordinate this information with the SHPO for concurrence by providing a copy of the report and TVA's final EA and FONSI.

EPA Comment:
· Is there any affect on air quality, especially dust, from the construction of the plant and other elements of the project? Will it be necessary to do any blasting in order to prepare the site for the treatment plant?

TVA Response: Construction activities for this project would involve equipment and vehicles that would emit engine exhaust from gasoline and/or diesel engines. TVA has determined that these secondary impacts would be minor, intermittent, and transitory, and no significant impacts on air quality would result. Soil surveys do not indicate the need for blasting.

EPA Comment:

- The proposed action (which is the selected alternative) described in Section 2.2.2, mentions ten water mains and two tanks in addition to the treatment plant. However, the March 14, 2002 concurrence letter from the Fish and Wildlife Service that provides a detailed description of the proposed project only mentions one water main and does not mention the tanks. It would appear that the concurrence does not extend to the tanks and nine additional water mains. Please clarify or provide additional concurrence from the FWLS.

TVA Response: On January 24, 2002, the USFWS and USACE attended an onsite meeting which is prior to the March 14, 2002, USFWS concurrence letter. At that meeting, the entire project was discussed and maps showing all the waterlines, approximate tank locations, water intake, treatment plant, and all areas of construction, etc. were reviewed with TVA, USFWS, and USACE.

Additionally, all the water transmission lines and the two identified tank sites have been surveyed and this information has been added to the EA.

EPA Comment:

- In Section 2.2.2, Applicant's Proposed Mitigation Measures, the second paragraph implies that construction activity will occur in the 100-year flood plain. This is a crosscutter issue and a letter of concurrence from FEMA is needed.

TVA Response: The request for a letter from FEMA has been forwarded to the applicant.

EPA Comment:

- Section 1.6 of the Draft EA mentions that it is *anticipated* that stream crossings for the water distribution lines would qualify for the USACE Nationwide Permit. We require crosscutter concurrence from the Army Corps of Engineers for the protection of wetlands (Executive Order 12148) for all Special Appropriations Projects such as this one. Please provide a concurrence letter from Army COE that covers all parts of the project.

TVA Response: The U.S. Army Corps of Engineers is a cooperating agency on this project and will issue a Statement of Findings for the project once TVA completes the final EA. Based on a January 24, 2002 onsite investigation by an USACE representative, no wetland areas were found on the entire project site that meet any of the required characteristics to be classified as wetlands. USACE's preliminary jurisdictional determination is that no wetlands adjacent and/or contiguous to waters of the U.S. and subject to Corps of Engineers' regulatory jurisdiction under Section 404 of the Clean Water Act would be affected by the proposed work.

EPA Comment:

- On page 28, the Draft EA states that the water mains would *generally* follow the existing road rights-of-way or power line easements.
  - Will there be any part of the ten proposed water lines be constructed out side of

these areas? If so, are there any wetlands or prime farmlands affected? If prime farmland is affected, a letter of concurrence will be needed from the USDA.

- How will the water mains be constructed to cross streams?

TVA Response: According to drawings submitted in 2000, by Price, Rider and Mullins Engineering, Inc, the water mains follow existing road right-of-ways and/or waterlines or power line easements. Streams, wetlands and prime farmland are addressed in the EA.

EPA Comment:

- What is the status of the ADEM drinking water permit and NPDES permit required for the plant? Has ADEM reviewed the project and provided any written feedback?

TVA Response: FCWSA will provide this information to EPA.

EPA Comment:

- In regard to supplying drinking water to Hodges and Vina:
  - Will these two towns discontinue their use of spring water altogether or will they keep their systems as drinking water backups?
  - Are there any inter-municipal agreements needed for Hodges and Vina to connect to the proposed system?

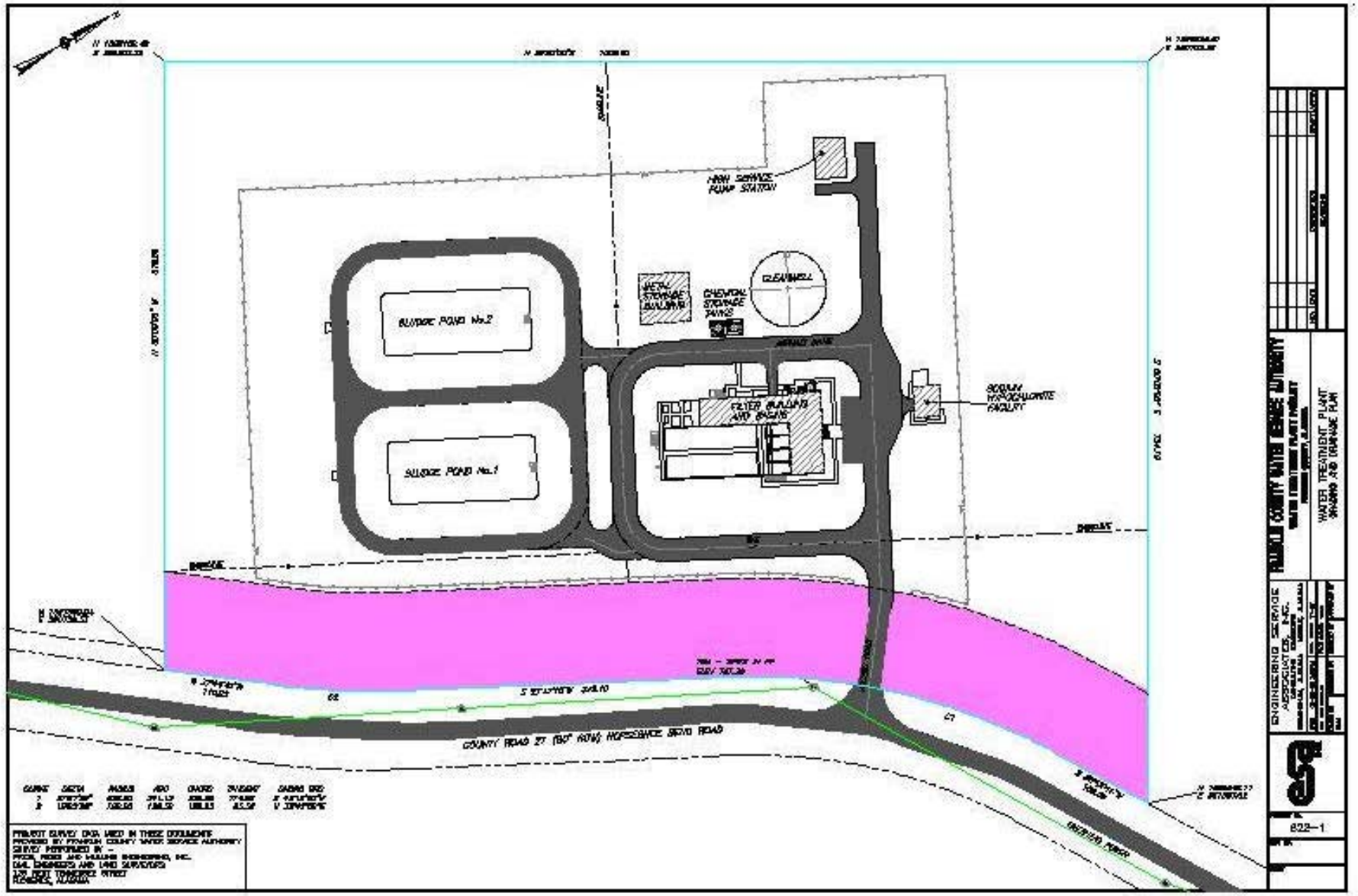
TVA Response: TVA expects these towns to discontinue their use of springs as water supply sources, although they may maintain existing infrastructure to provide a backup water supply. This comment has been forwarded to the applicant.

Public Participation

EPA Comment:

- Some additional information is needed concerning public meetings. The newspaper announcement, that is included in the EID and dated April 14, 2002 mentions two public meetings, one on April 11, 2002 and one on April 25, 2002.
  - The notice post dates the first meeting. Is there an announcement for the April 11th meeting?
  - Only the sign-in sheet and meeting notes from the April 11, 2002 meeting are provided in the EID. Are the sign-in sheet and meeting notes available for the April 25th meeting?

TVA Response: The legal ad appeared on in the Franklin County Times on 3/24, 3/31, 4/7 and 4/14 as indicated at the bottom of the ad. The sign-in sheet and meeting notes for the April 25th meeting are available and would be provided by the FCWSA.


SLUDGE POND No.2
SLUDGE POND No.1
HIGH SERVICE PUMP STATION
METAL STORAGE BUILDING
CHEMICAL STORAGE TANKS
CLEARWELL
FILTER BUILDING AND BASINS
SODIUM HYPOCHLORITE FACILITY
COUNTY ROAD 27 (80' R/W) HOPEGHICE BEND ROAD
WATER TREATMENT PLANT GRADING AND DRAINAGE PLAN
ENGINEERING SERVICE ASSOCIATES, INC.
822-1

APPENDIX D –USFWS CORRESPONDENCE

Summary of USFWS Correspondence

USFWS were involved in an interagency site visit in January 2002. By letter dated March 14, 2002, the USFWS stated that they inspected the site on January 24, 2002, with Lisa Morris, USACE (see Appendix C). Based on the information gathered prior to and during the field visit, the USFWS recommended that the applicant use best construction management techniques, a turbidity curtain around the area proposed for excavation for the water intake and downstream of the distribution line crossing, and a screen or other mesh-like apparatus over the intake to prevent fish entrainment and impingement. These recommendations are addressed in Section 3. 4. According to their records, there are no federally listed or proposed threatened or endangered species or designated critical habitat located on or adjacent to the proposed project sites. USFWS determined that the requirements of Section 7 of the Endangered Species Act of 1973, as amended, are fulfilled.

The Draft EA was circulated to USFWS (along with other intergovernmental agencies) for comment on January 14, 2003. TVA received USFWS comments on the draft EA on April 24, 2003. In this letter, USFWS was concerned about the (1) direct effects from physical destruction caused by construction of the waterline (2) alteration of flow regime and impacts on water quality of Bear Creek, including dissolved oxygen concentrations (3) blockage, entrainment and impingement of fish and (4) physical habitat disturbance. USFWS was concerned that the raw water intake and distribution line would not be constructed in existing ROWs and may cause direct physical disturbance to five listed terrestrial species and their habitat. Further, the water main transmission lines would be constructed in existing ROWs and therefore should not have effect on those five Federally listed terrestrial species. USWFS was concerned that minimum flow releases from Bear Creek Dam necessary to support two federally-listed stream species and one candidate for listing species, would be affected by the project. TVA has prepared responses to these issues included in this appendix and new information has been to the final EA to clarify TVA's finding of no effect to threatened and endangered species.

Additionally, TVA is aware of other correspondence from USFWS to the Alabama Department of Environmental Management (ADEM) and Don Price, with Price, Rider, and Mullins Engineering. On April 24, 2003, TVA received a copy of two USFWS letters, both dated December 31, 2002, one addressed to ADEM and the other addressed to Don Price with Price, Rider and Mullins, Inc. These letters were generated in response to an ADEM request for review of their draft EA on Alabama Drinking Water State Revolving Fund Loan for the Franklin County Water Treatment plant project. In October 2002, ADEM initiated an environmental review as a result of FCWSA's request for funding from ADEM's State Revolving Fund. ADEM distributed a Draft EA to USFWS (among other agencies) for comments. The December 31, 2002 USFWS letter stated that surveys of the water mains were needed in mid-March through Mid-April and in the fall by a certified botanist to determine the presence of three federal-listed plant species (federally threatened lyrate bladderpod, threatened Eggert's sunflower, and endangered leafy prairie clover). USFWS recommended a survey for the listed plant species be conducted along the proposed water line routes and associated stream crossings, water treatment plant site, storage tank sites, and any other areas to be disturbed. Also recommended was a survey of the water treatment plant and storage tank sites for the presence of caves. USFWS also recommended that the areas be evaluated by USACE

to verify the presence/absence of wetlands, the project be designed to avoid wetland and stream habitats, and further that the pipeline be run in ROWs, attached to bridges or directionally bored to avoid stream impacts, along with the use of BMPs. In a stamped reply dated April 4, 2002, USFWS stated that no listed, proposed or candidate species were present at the proposed project area. However, new information reveals that the Gray Bat, Eggert's Sunflower, Lyrate bladderpod, Leafy Prairie-clover, and Tennessee yellow-eyed grass may be present in the project area. USFWS recommended that a survey for these federally protected species be conducted if appropriate habitats exist in the project zone.

Information regarding these issues has also been added to the EA. Terrestrial plant surveys were conducted of the proposed water transmission mains and this information has been added to section 3.3. There is no suitable roosting habitat for gray bats within this project. Trees along portions of the site could be used by Indiana bats but considering the amount of available habitat in the vicinity, the project would not result in adverse impacts to Indiana or gray bats or their habitats. As stated in the EA, although there is suitable habitat in the area and bald eagles and osprey nest on the Bear Creek system, no nests have been reported from within three miles of the project site. Both species are regularly observed on the reservoir. Also stated in the DEA, USACE is a cooperating agency, did conduct a site visit, and determined the absence of wetlands. Also, the project has been designed to avoid stream impacts. The pipeline would be run in existing ROWs, and BMPs would be used to minimize stream impacts along with conducting the work during low flow conditions.

Letters Received From USFWS

United States Department of the Interior

FISH AND WILDLIFE SERVICE
P. O. Drawer 1190
Daphne, Alabama 36526

IN REPLY REFER TO:
03-00131, EC 16.1

December 31, 2002

Mr. William A. Lott
Loans and Operator Certification Section, Water Division
Alabama Department of Environmental Management
P.O. Box 301463
Montgomery, Alabama 36130-1463

Dear Mr. Lott:

This responds to your letter regarding an Alabama Drinking Water State Revolving Fund Loan #FS010081-01 for drinking water improvements for the Franklin County Water Service Authority. The proposed project includes construction of a 2.5 MGD water treatment plant with a water intake structure on Bear Creek Reservoir, one 0.5 MG elevated storage tank, one 1 MG elevated storage tank, and water distribution mains to provide direct or indirect interconnection with the Hodges, Vina, Red Bay, Russellville and Phil Campbell water systems. Our report is submitted under provisions of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and the Fish and Wildlife Coordination Act (48 Stat.401, as amended: 16 U.S.C. et seq.).

Endangered Species Act
Our records indicate that the federally threatened lyrate bladderpod (*Lesquerella lyrata*), threatened Eggert's sunflower (*Helianthus eggertii*), endangered leafy prairie clover (*Dalea foliosa*), endangered Tennessee yellow-eyed grass (*Xyris tennesseensis*), threatened bald eagle (*Haliaeetus leucocephalus*), and the endangered gray bat (*Myotis grisescens*) occur in Franklin County and may exist in or near the project area. Species and habitat information is attached. Further information can be found on our website by looking at "Alabama's Threatened and Endangered Species" under the Endangered Species page at http://daphne.fws.gov/ . Information we have recently obtained indicates that some of these species may be affected by the proposed work.

The lyrate bladderpod, leafy prairie-clover, Eggert's sunflower, and Tennessee yellow-eyed grass have all been found along roadsides or ditches in Franklin County. Leafy prairie clover and Tennessee yellow-eyed grass have also been found near streams. Ms. Cary Norquist, a Service biologist with the responsibility for monitoring the status and recovery of these plants, has recommended that a survey be conducted to determine if there will be any impacts to any of these plants. It is for these reasons that **we recommend a survey for the lyrate bladderpod, leafy prairie-clover, Eggert's sunflower, and Tennessee yellow-eyed grass be conducted by**

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PHONE: 334-441-5181 www.fws.gov FAX: 334-441-6222
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a qualified biologist familiar with these species along the proposed water line routes and associated stream crossings, water treatment plant site, storage tank sites, and any other areas to be disturbed. We recommend that the biologist visit a known population of the plants immediately prior to the survey to determine the vegetative state of the plants. Surveys conducted while the plants are dormant cannot be accepted. We recommend that you provide detailed information about the habitat that was found, how the surveys were conducted, and qualifications and experience of the surveyor for conducting surveys on the particular species. Prior experience with the particular species is strongly recommended and visiting a known population of the species immediately prior to a survey to familiarize the surveyor with the species, habitat, and condition of plants at that time of year is also strongly recommended. **The survey should be conducted while the plants have above-ground vegetation and preferably while in a reproductive stage. A survey for the lyrate bladderpod should be conducted when the plant is in bloom from mid-March to mid-April and a survey for the leafy prairie-clover, Eggert's sunflower, and Tennessee yellow-eyed should be conducted in August** (see attached information). Driving surveys are not acceptable. Please note that these plants have been found along roadsides and two may exist near streams. **Please forward the survey results to this office for our review so that Endangered Species consultation can be completed.**

It is our understanding from a conversation between Ms. Liz Langston, of my staff, and Mr. Keith Hudson of Alabama Dept. of Conservation & Natural Resources, that bald eagles historically nested near Little Bear Creek Reservoir but may have recently moved out of the area. Mr. Hudson will be conducting an aerial survey for bald eagles during the first week of January 2003. We will contact Mr. Hudson after his survey to determine whether bald eagles were found near your project area. **If bald eagles are found near the project area as currently described, we will contact you to discuss ways to avoid disturbing them.**

Gray bats forage in Franklin County, but are apparently not known to roost there. Ms. Langston discussed gray bats with Mr. Hudson. He said that there are no known caves in Franklin County that regularly harbor gray bats, but that the gray bats may occasionally utilize them, especially during instances of inclement weather (thunder storms). **We recommend that the sites for the water treatment plant and storage tanks be surveyed for the presence of caves. If a cave is present, contact us for further recommendations.**

Fish and Wildlife Coordination Act

Upon review of the National Wetland Inventory maps it appears that there are wetlands in the project area. We recommend the areas be evaluated by the U.S. Army Corps of Engineers (COE) to verify presence/absence of wetlands that would require a Section 404 permit. We recommend that the proposed project be designed to avoid wetland and stream habitats. If they cannot be avoided, we recommend a mitigation plan be developed and implemented. If pipeline construction in intermittent streams is unavoidable, it should be conducted while the streams are dry. We further recommend that pipeline be run in road rights-of-ways, attached to bridges or directionally bored to avoid impacts to streams. **Adequate** Best Management Practices (BMPs) should be **implemented and properly maintained** during operations to protect surface and

ground water quality from contamination in the project area. Adequate BMP's will be designed to control runoff from steep inclines where applicable.

Should you need any further information regarding our concerns, please contact Liz Langston of my staff at (251) 441-5181 ext. 36.

Sincerely,

Larry E. Goldman
Field Supervisor

cc: Ms. Cary Norquist, USFWS Jackson, MS Field Office
Mr. Don. C. Price, Jr. PE, Price, Rider & Mullins Eng., Inc. Fax # (256) 766-8251

Species Information

Lyrate bladderpod

Lyrate bladderpod is a small annual plant has a very restricted distribution and is only known to exist in Franklin, Colbert, and Lawrence Counties. Populations occur in shallow soils underlaid by limestone adjacent to outcrops supporting cedar glades, gladey lawns, fallow/cultivated gardens, cultivated cotton fields, grassy and rocky pastures, limestone gravelly woods edges and **managed road shoulders**. Most of these habitats are xeric, but plants have also been found in wet roadside ditches. The major threats to the surviving populations of the lyrate bladder-pod are alteration of its upland habitat and herbicide usage.

Seeds germinate in the fall and the young plants overwinter as rosettes. Flowering usually takes place from mid-March to mid-April, and seed dispersal generally occurs from the end of flowering until mid-May.

Leafy prairie-clover

Leafy prairie-clover is a short-lived herbaceous perennial that only reproduces by seed. Flowering begins in late July, peaks in mid-August, and can continue until late August. ripen in October and disperse from late fall to early spring.

This species requires full sun and low competition for optimum growth and reproduction. However, it can persist in partial shade. The species occurs in thin-soiled (4 - 45 cm) mesic and wet-mesic dolomite prairies, limestone cedar glades, and limestone barrens which have shallow, silt to silty clay loam soils over flat and often highly fractured, horizontally bedded limestone or dolomite with frequent expanses of exposed bedrock at surface elevations typically between 550 and 700 feet. These habitats experience high surface and soil temperatures, generally have low soil moisture but are wet in the spring and fall and become droughty in summer, and have a seasonal aspect to the flora.. The distribution of glade, barren, and dry to wet dolomite prairie at any particular site is determined by subtle, local variations in soil and bedrock depths and topographic position, which create a random and intergrading mosaic of these different habitats and their associated plant communities. Because the species is short-lived and does not spread vegetatively, population maintenance is dependent upon seed production and may be buffered from extinction-causing phenomena by a persistent seed bank. It has declined by over 45 percent from historic occurrences.

Leafy prairie-clover can persist in successional plant communities following disturbance or woody succession, but will decline in advanced stages of woody succession. **It has been found in less favorable situations such as seasonally wet ditches along road rights-of-ways.** In Alabama, the species has been found in Jefferson County along a road and creek bed, in Lawrence County under power transmission lines, **in Franklin County along a road right-of-way**, and in Morgan County adjacent to a road.

Eggert's sunflower

Eggert's sunflower is a perennial herb that flowers in August and September. The stem is 1 to 2 meters in height with opposite leaves that are sessile, lanceolate in shape and are either scabrous or glabrous on the upper surface. There are usually few flower heads and these are long peduncled. The heads have both yellow ray flowers and disc flowers. Eggert's sunflower is distinguished from other sunflowers by the following combination of characters: white glaucous stem and underside of the leaves, sessile leaves that taper at the base, and flower head size (2-2.5 cm across). Also, a distinctive bluish cast has been attributed to the vegetation of the plant.

The species is commonly associated with the barrens/woodland ecosystem, a complex of xeric to subxeric plant communities maintained by drought and fire with a grassy ground cover and scattered medium to small canopy trees. The natural condition of the barrens/woodland ecosystem is a mosaic of grassy openings and mixed oak woodlands. Because of the rolling and variable topography, hydrology, and other reasons, mesic forests may also be mixed in these community mosaics, and Eggert's sunflower is found in these areas as well. It has even been found on steep rocky slopes. **Eggert's sunflower will tolerate considerable disturbance and a range of light conditions and persists in, and may even move into, roadsides, power line rights-of-way, or fields that have suitable open habitat. Thriving populations have been found in pine plantations. Most of the known populations are found along roadsides and power line easements.** An exceptionally vigorous population was recently discovered in Franklin County along a logging road.

The primary reason Eggert's sunflower is rare is the decline in the barrens/woodland ecosystem throughout its range due to lack of periodic fire and conversion of the habitat for other uses. Other threats identified for this species include competition from invasive weedy plants, genetic degradation through outcrossing with other sunflowers, and roadside and power line maintenance (herbicide spraying and mowing).

Tennessee yellow-eyed grass

Tennessee yellow-eyed grass is a perennial herb which typically occurs in clumps of a few to many bulbous-based individuals. It is a small herb with grasslike basal leaves and leafless, unbranched, flowering stalks each bearing a terminal, conelike inflorescence comprised of *spirally* arranged bracts enclosing small flowers with yellow or occasionally white petals. It typically blooms between mid-July to mid-September.

Populations are located in spring meadows or along small streams. Suitable habitat usually contains nearly permanent moisture regimes, open, sunny conditions, and calcareous bedrock (shale, limestone, dolomite) or thin calcareous soils. Extant populations occur at 14 sites in Tennessee, Georgia, and Alabama. Many colonies are found along small to medium streams. There is one known population in Franklin County. **It is located on a gentle slope and wet ditch adjacent to a highway.** The Alabama populations appear to exist near timbered or otherwise disturbed land. Much suitable habitat has been lost or impacted due to drainage and conversion of these habitats for agricultural or silvicultural practices.

Bald Eagle

The bald eagle is a bird associated with aquatic ecosystems. It frequents estuaries, large lakes, reservoirs, major rivers, and some seacoast habitats. Fish is the major component of its diet, but waterfowl, seagulls, and carrion are also eaten. Bald eagle habitats encompass both public and private lands. They usually nest in trees near water in relatively remote areas that are free of disturbance. Bald eagles may live 40 or more years.

In the Southeast, the bald eagle nesting period is usually from October 1 to May 15. Individual pairs return to their same territories year after year, and often territories are inherited by subsequent generations. Eagles are most vulnerable to disturbance early in the nesting period, i.e. during courtship, nest building, egg laying, incubation, and brooding (roughly the first 12 weeks of the nesting cycle). Disturbance during this critical period may lead to nest abandonment and/or chilled or overheated eggs or young. Human activity near a nest later in the nesting cycle may cause premature fledging, thereby lessening the chance of survival.

Primary and secondary bald eagle management zones have been determined to be effective in avoiding disturbance to bald eagle pairs and nests. The primary zone is the most critical area and must be maintained to promote acceptable conditions for eagles. It should encompass an area extending from 750 to 1,500 feet outward from the nest tree. **Construction should not occur within the primary zone at any time.** Restrictions in the secondary zone are necessary to minimize disturbance that might compromise the integrity of the primary zone and to protect important areas outside the primary zone. The secondary zone should encompass an area extending outward from the boundary of the primary zone, a distance of 750 feet to 1 mile. **Construction may take place in the secondary zone, but only during the non-nesting period.**

Gray bat

Listed in 1976, this species is strongly loyal to their summer and winter caves, thus they are the most restricted to cave habitats of any U.S. mammal. As a consequence of their combined thermoregulatory and other habitat requirements, gray bats congregate in large numbers and in fewer caves which makes them highly susceptible to disturbances and declines in population. Declines in population may be attributed to pesticide use and other factors (e.g. siltation on aquatic environments) resulting in the loss of prey base, deforestation, caves being flooded from water impoundment, cave entrance closure, and human disturbances (spelunking).

References

USFWS. 1982. Gray bat recovery plan. 121 pp.

USFWS. 1987. Habitat management guidelines for the bald eagle in the southeast region. Third revision. 9 pp.

USFWS. 1994. Recovery plan for Tennessee yellow-eyed grass (*Xyris tennesseensis* Kral). Jackson, MS. 24 pp.

USFWS. 1996. Leafy prairie-clover recovery plan. Atlanta, GA. 74 pp.

USFWS. 1996. Recovery plan for the lyrate bladderpod (*Lesquerella lyrata* Rollins). Atlanta, GA. 27 pp.

USFWS. 1998. Technical/agency draft recovery plan for *Helianthus eggertii* Small (Eggert's sunflower). Atlanta, GA. 32 pp.

USFWS. 1999. Endangered and threatened wildlife and plants; proposed rule to remove the bald eagle in the lower 48 states from the list of endangered and threatened wildlife. Federal Register. Vol. 64, No. 128, pp 36454-36464.

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
P. O. Drawer 1190
Daphne, Alabama 36526

IN REPLY REFER TO:
03-0156

December 31, 2002

Mr. Don C. Price
Price, Rider & Mullins Engineering, Inc.
228 West Tennessee Street
Florence, AL 35630

Dear Mr. Price:

This letter concerns a proposed project by the Franklin County Water Service Authority to construct water transmission mains from a proposed water treatment plant at Horseshoe Bend in Franklin County south to the vicinity of Hodges and Vina as well as north to the vicinity of Belgreen. The following comments are provided in accordance with the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667e), the Migratory Bird Treaty Act (16 U.S.C. 703, *et seq.*) and section 7 of the Endangered Species Act (ESA), as amended (16 U.S.C. 1531-1543).

In a stamped reply dated April 4, 2002, we stated that no listed, proposed or candidate species were present at the proposed project area. However, new information reveals that the following listed species may be present within the project area:

1 Gray bat (*Myotis grisescens*) E.

Listed in 1976, this species is strongly loyal to their summer and winter caves, thus they are the most restricted to cave habitats of any U.S. mammal. As a consequence of their combined thermoregulatory and other habitat requirements, bats congregate in large numbers and in fewer caves which makes them highly susceptible to disturbances and declines in population. Declines in population may be attributed to pesticide use and other factors (e.g. siltation on aquatic environment) resulting in the loss of prey base, deforestation, caves being flooded from water impoundment, cave entrance closure, and human disturbances. We recommend that the sites for the water treatment plant and storage tanks be surveyed for the presence of caves. If a cave is present, contact this office for further recommendations. If no cave is present, no further consultation is necessary for this species.

2 Eggert's Sunflower (*Helianthus eggertii*) T.

This plant is a perennial member of the aster family known only from Kentucky, Tennessee and

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Alabama. It is a tall (to 2.5 meters) plant arising from fleshy rhizomes that can form an extensive network. The leaves are opposite, mostly lanceolate, 20 to 30 cm long, and with smooth to minutely toothed edges. Beginning in early August and continuing through mid-September, the flowers are large (7.5 cm), yellow and are borne on the upper third of the stem. This plant is threatened throughout its range by habitat alteration; residential, commercial or industrial development; habitat succession; herbicide use along ROW's; and conversion of its limited habitat to pasture or cropland. It occurs on rolling to flat uplands in full sun or partial shade. It is often found in open fields or thickets along woodland borders with other tall herbs and small trees.

3. Lyrate bladderpod (*Lesquerella lyrata*) E.

This small herbaceous annual plant species, that occupies open xeric and glade-like habitats. Populations occur in shallow soils adjacent to outcrops supporting cedar glades. This species is vulnerable due to its limited distribution and threats from herbicide usage, road ROW improvements, intensive cattle grazing and increasing residential and commercial development.

4. Leafy Prairie-clover (*Dalea foliosa*) E.

This species occurs in thin-soiled (2 to 18 inches) mesic and wet-mesic dolomite prairie, limestone cedar glades, and limestone barrens. These habitats experience high surface and soil temperatures, generally have low soil moisture but are wet in the spring and fall and become droughty in the summer.

The leafy prairie clover is a hemicryptic, short-lived, glabrous, stout perennial herb with one to several stems 8 to 31 inches high arising from a hardened root crown that has no capacity for vegetative spread. It occurs in small to large isolated populations that range across a disturbed and patchy habitat. It can persist in successional plant communities following disturbance or woody succession, but will decline in advanced stages of woody succession. Since it was first observed, known leafy prairie-clover occurrences have declined by 45 percent due to habitat destruction through residential development and agricultural conversion, overgrazing, and habitat loss from encroachment by woody species.

5 Tennessee yellow-eyed grass (*Xyris tennesseensis*)

This species can be found on seep-slopes, in springy meadows, and on the banks of small streams. It grows in clumps and reaches heights up to three feet. It is threatened by roadside management practices, timbering, fire suppression, and conversion of habitat for agricultural use.

We recommend that a survey for these Federally-protected plant species be conducted if appropriate habitats exist in the project zone. Prior experience with each of these particular

species is strongly recommended for any consultant undertaking such a survey as well as a visit to a known population of the species immediately prior to a survey to familiarize the consultant with the species, habitat and condition of plants at that time of year is also strongly recommended. Surveys cannot be accepted if the plant has no above ground vegetation at the time of the survey. If no suitable habitat exists within the construction zone, no survey is necessary.

We regret any confusion that may be caused by this new information. If you have any questions or need additional information, please contact Mr. Scott Floyd at (251) 441-5181, ext. 40. Please refer to the reference number above.

Sincerely,

Larry E. Goldman
Field Supervisor

United States Department of the Interior

FISH AND WILDLIFE SERVICE
P. O. Drawer 1190
Daphne, Alabama 36526

IN REPLY REFER TO:
03-0449

April 24, 2003

Mr. Jon M. Loney, Manager
NEPA Administration, Environmental Policy and Planning
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, TN 37902-1499

Dear Mr. Loney:

Thank you for your letter of January 14, 2003, providing information on the Franklin County Water Service Authority's (FCWSA) proposal for raw water intake in Bear Creek Reservoir, a treatment plant, and water distribution line, all located in Franklin County, Alabama. We have reviewed the information and are providing the following comments in accordance with the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and the Fish and the Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. et seq.).

We apologize for any delay or inconvenience that may have been caused by our mishandling of your request for comments on this project. We appreciate the best management practices FCWSA plans to implement in project construction. The Service would like to work with FCWSA and the Tennessee Valley Authority (TVA) in development of a water withdrawal program that serves community water needs while protecting Federally listed species.

Based on records, the following Federally listed terrestrial species may occur in the project area:

Federally Listed Terrestrial Species

Tennessee yellow-eyed grass (*Xyris tennesseensis*) - Endangered
Lyrate bladderpod (*Lesquella lyrata*) - Threatened
Leafy prairie-clover (*Dalea = (Petalostemum) foliosa*) - Endangered
Gray bat (*Myotis grisescens*) - Endangered
Indiana bat (*Myotis sodalis*) - Endangered

The Tennessee yellow-eyed grass (*Xyris tennesseensis*), a wetland species, may occur along Bear Creek downstream of the proposed facility and could be adversely affected by operation of the proposed water intake pipe and alteration of the soils hydrology.

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Federally Listed Stream Species

Based on records and data the following federally listed mussel species are known to occur in Bear Creek downstream of proposed project:

Cumberlandian combshell mussel (*Epioblasma brevidens*) - Endangered
pink mucket mussel (*Lampsilis abrupta*) - Endangered
slabside pearly mussel (*Lampsilis doabelloides*) - Candidate

Candidate species are not afforded protection under the ESA. However, the slabside pearly mussel could be proposed for listing in the future and therefore recommendations for this species are included in this review. If the proposed work is not completed in the next year and our recommendations are not implemented, it would be prudent to contact us to determine if any changes have occurred to the status of this species.

Potential Effects of the Project

Possible adverse effects of this project may include: (1) direct effects from physical destruction caused by construction of the waterline (2) alteration of flow regime and impacts on water quality of Bear Creek, including dissolved oxygen concentrations (3) blockage, entrainment and impingement of fish, including host fish of Federally listed mussel species and fish of significant recreational importance; and (4) physical habitat disturbance.

The raw water intake and distribution line (shown on page 2 of the EA) will not be constructed in road rights-of-way and may cause direct physical disturbance to above terrestrial species and their habitat. However, the water main transmission lines (provided on page 10 of the EA) will each be constructed in existing road rights-of-way and therefore should have no effect on those Federally listed terrestrial species above.

See the attached Federally Listed Species Fact Sheet for additional information on Federally listed species that occur, or may occur, in the project area or downstream. Should consultation prove necessary, all of the above effects should be considered. In addition, please consider water level fluctuations and effects on aquatic biota and riparian vegetation; diurnal water temperature variation; and scouring, erosion, and channel instability.

Cumulative Effects

The construction of the proposed water intake line entails use of 30-inch pipe. This pipe size could accommodate much larger withdrawals than the 2.5 mgd projected for 2010 and could result in greater water withdrawal than presently proposed. We are concerned about possible increases in use. Information provided by Mr. Harold M. Draper with TVA shows that a withdrawal of 2 mgd caused a decrease in reservoir level of 0.1 feet, while a withdrawal of 4 mgd caused a decrease of 0.6 to 0.8 feet. It appears that the reservoir water level response to

withdrawal increases is greater than linear and that additional withdrawals greater than 4 mgd will cause significant decreases in reservoir water level. When faced with much lower lake levels from withdrawal increases, we are also concerned that, during hydrological low periods, lakefront property owners may disapprove or complain of water releases necessary to support downstream sensitive species, particular endangered mussels. This could lead to increased pressure to minimize water releases from Bear Creek Dam. While we accept the results of the assessment performed by TVA for the withdrawal of 2.5 mgd of water from Bear Creek, we are concerned that future larger withdrawals projected for 2030 or beyond, will be excessive and not allow for minimum flow releases from Bear Creek Dam necessary to support sensitive species such as the endangered Cumberlandian combshell mussel (*E. brevidens*) and the pink mucket mussel (*L. abrupta*). Species known to occur in the Bear Creek system downstream of the proposed project site. The maintenance of minimum flows is particularly important during hydrological low periods during which water quality conditions are most stressful to aquatic organisms and mussels particularly.

To avoid adverse effects on fish and mussel resources, we recommend that the FCWSA withdraw water from Pickwick Lake and treat the water to drinking water standards. This may be a feasible alternative for meeting future domestic and industrial water supply needs for Franklin and Winston Counties. If this alternative is not feasible, FCWSA should strictly adhere to minimum flows determined necessary to support and maintain healthy populations of above Federally protected mussel species, as well as other fish and wildlife resources.

The Service has also received notice of a proposal involving retrofitting Bear Creek dam (FERC No. 12246-000) for the production of hydropower. Effects of individual projects such as this on water quality and fish and wildlife habitat and resources are interactive and cumulative. A basin-level impact assessment should be conducted to adequately assess the cumulative effect of such developments on fish and wildlife resources in the Bear Creek system.

Recovery Planning

There is interest in re-introducing mussels, particularly *E. brevidens* and *L. abrupta,* in the upper reaches of the Bear Creek system for recovery of the species. Such action is identified in the Recovery Plan for those species. Successful reintroduction is believed possible if water quality and/or habitat conditions causing adverse effects on those mussels are abated or mitigated (Garner and McGregor, unpublished manuscript). The proposed project may preclude this recovery effort.

Recreational Fisheries

Significant recreational and native fishery resources occur in the tail-waters of the proposed project, including migratory fish, such as the striped bass and walleye/sauger. These fishery

resources may also be adversely affected by the proposed action.

Recommendations

We recommend that a habitat survey for the above Federally listed terrestrial species be conducted in the area of construction of the water intake and distribution line (outside of rights-of-way) by a qualified, experienced botanist (plants) and/or biologist (bats). A survey is not necessary for water main transmission lines (constructed in road rights-of-way). If habitat is determined to be present, then detailed surveys should be conducted. We request that you provide us with a description of the habitat observed, as well as a survey report, including survey methodology for our review.

Summary

We would like to know what the projected maximum withdrawal during a 7Q10 flow would be before the minimum instream flow at Bear Creek Dam is reduced to 25 cfs and what assurances TVA will provide that future minimum instream flows will not be reduced below 25 cfs. Upon receipt of this information, review of the survey reports, your analysis of effects on listed species, we will identify whether consultation under section 7 of the Endangered Species Act is completed. Initiation of formal consultation with the TVA may be necessary after review of the requested information.

If you have any questions or need additional information, please contact Mr. Bill Young at (251) 441-5842. In correspondence, please refer to the reference number above.

Sincerely,

Elaine Snyder-Cam

Acting for Larry E. Goldman
Field Supervisor

Enclosures

3

Fact Sheet on the Bear Creek System and its Resources

The Bear Creek System

Bear Creek Reservoir is located in the Bear Creek system. Bear Creek Dam discharges directly into Bear Creek, which then flows approximately 52.5 stream miles before entering Pickwick Reservoir, an impoundment on the Tennessee River. Bear Creek originates in the Warrior Basin district of the Cumberlandian Plateau physiographic province. The lowermost 20 miles of Bear Creek are impounded by Pickwick Reservoir. Four flood-control dams were completed within the Bear Creek system between 1969 and 1979, two on the main channel and one each on Little Bear Creek and Cedar Creek. Other human alterations to habitat associated with flood control include channelization of selected reaches and a 18-mile-long flood-way built to limit inundation of the floodplain during highwater events (Hill, Taylor, and Saylor 1974).

Water Quality

Isom and Yokley (1968) described pre-impoundment water quality of Bear Creek as "essentially pristine." Upstream of the lower reach, the unionid mussel fauna of the Bear Creek system has been decimated since the study by Isom and Yokley (1968). The loss of diversity in the upper reaches of Bear Creek appears to be the result of diminished water quality and/or altered flow regimes associated with construction of impoundments, channelization in this part of the system, and other stream modifications such as habitat degradation due to agricultural and silvicultural practices (Garner and McGregor, unpublished). After dam constructions, waters downstream of Bear Creek Dam were rated poor for fish and benthic life and were reported to suffer from stream bank erosion (Tennessee Valley Authority 1994). The upstream impoundments rated poor in dissolved oxygen content (Tennessee Valley Authority 1994). Bear Creek Lake was rated poor in dissolved oxygen content and fair in all other categories evaluated, with an overall poor rating (Garner and McGregor, unpublished). Garner and McGregor reported heavy alga growth on substrata, warm water temperatures, and unpleasant odors in the tail-waters immediately below Bear Creek . In response to the problems, the Tennessee Valley Authority (TVA) has modified water releases from several of its dams to improve water quality conditions in the tail-waters, and has installed aerators to raise dissolved oxygen concentrations in Upper Bear Creek Lake.

A system-wide comprehensive study (Garner and McGregor, unpublished) of the Bear Creek system was conducted August 1997 - July 2000 by the Geological Survey of Alabama to document current mussel fauna and assess changes to the fauna over the past 80 years. The study consisted of a qualitative survey that included 40 sampling stations. Few or no unionids (none live) were reported immediately below the impoundments and few or none were found further downstream with the exception of a lower short reach just before entering Pickwick Reservoir. Prior to construction of the dams and channelization, Bear Creek supported a benthic fauna representative of a moderately diverse and stable community (Isom and Yokley 1968) and characteristic of low-gradient streams in the geographical area (Hill, Taylor, and Saylor, 1974). That lower reach yielded two federally listed species, the Cumberlandian combshell *(E. brevidens)* and the pink mucket mussel *(Lampsilis abrupta)*. Historically, *L. abrupta* occurred in 25 river systems and was extremely widespread. It is presently known from 16 different rivers

representing three major geographic regions. Although its life history is poorly known, it is probably similar to that of most naiad mollusks with host fish needed for attachment of parasitic glochidia in its reproductive cycle. The population of *E. brevidens* in Bear Creek is the only known viable extant population of this species currently existing in the lower Tennessee River system. *E. brevidens* has been extirpated from a large percentage of its former range. Main-stem Tennessee River populations are no longer found. This species has also been eliminated from numerous tributaries in the Cumberland and Tennessee River systems. A candidate mussel species for Federal protection, the slabside pearly mussel *(Lexingtonia doabelloides)* was also encountered in that lower reach. Only two extant populations of *L. doabelloides* remain downstream of the Paint Rock River (Ahlstedt, 1991).

Though many mussel species have been extirpated, a total of 32 species were encountered in Garner and McGregor's survey of the Bear Creek system. Water quality and habitat improve enough downstream to support a healthy unionid community just before entering the Pickwick impoundment. The unionid community in this limited reach is diverse and healthy, with recruitment noted for several species. Existing data indicate that recovery of the mussel fauna begins 20 km downstream and reaches full recovery about 53 km downstream of the impoundments. It is possible that the flow provided by Cedar Creek ameliorates the quality of Bear Creek waters downstream of Bear Creek Dam to levels suitable for mussel habitation. Evidence of recovery is supported by results of a recent, unrelated study showing that diversity of mussel communities downstream of reservoirs in the system progressively increased until a population structure reflective of an "unmodified" population was reached. Vaughn and Taylor (1999) reported a strong, gradual, linear increase in mussel species richness and abundance with downstream progression from impoundments in the Little River, Oklahoma, which were attributed to the recovery of temperature and flow regimes, similar to the results of this study.

The Bear Creek unionid community includes remnants of its Cumberlandian element and is one of a few viable mussel populations in the lower Tennessee River system. Consequently, this community is critical for conservation of this mussel group, which has suffered declines throughout most of its range. With a healthy population in the lower free-flowing reaches of Bear Creek, recovery of at least parts of the system is possible, if environmental problems are identified and mitigated (Garner and McGregor, unpublished manuscript).

The complex life cycle of mussels increases the probability that weak links in their life cycle will preclude successful reproduction and recruitment (Bogan 1993). Susceptibility of glochidia, juvenile mussels, and host fish to altered and degraded habitats, coupled with chance encounters between glochidia and hosts, can contribute to recruitment failures (Zales and Neves 1982) and relic populations dominated by cohorts of older adults (Neves 1993; Stansbery 1995).

Fish

As in the case of mollusks, the diversity and abundance of fish species in Bear Creek increases with distance downstream from the impoundments, culminating in a fish population structure reflective of an "unmodified" population (pers. comm. between Brian Phillips, Auburn University and Jeff Garner, Alabama Department of Natural Resources and Conservation, Division of Wildlife and Freshwater Fisheries, personal communication, 2001). Bear Creek and its reservoirs

support a popular sport fishery, including that for largemouth and smallmouth bass, spotted bass, bluegill, channel catfish, crappie, walleye/sauger, striped bass, and white bass.

Certain species of riverine fishes are important in the reproduction and distribution of Federally protected mussels that occur in Bear Creek. It is generally recognized that impoundments and flow releases from hydroelectric dams can potentially cause adverse effects on aquatic biota, particularly fish and dependent mussel fauna. The loss of fishes serving as hosts to mussel larvae could adversely effect overall mussel recruitment and long-term survival.

Plants

Tennessee Yellow-Eyed Grass (*Xyris tennesseensis*)

A Federally protected species, the endangered Tennessee yellow-eyed grass (*Xyris tennesseensis*), occurs within a five-mile radius of the proposed project site (Leo Collins, TVA, pers. comm., August 2002). Suitable habitat for long-term survival of this species appears to be very limited. Current populations are located in spring meadows or along small streams. There are 14 extant populations of *X. tennesseensis* encompassing three states which can be summarized as northwest Georgia, northeast, central, and northwest Alabama, and central Tennessee. All except three occur on privately owned lands. Several populations are small and in need of management.

Lyrate bladderpod (*Lesquella lyrata*)

This small herbaceous annual plant species, that occupies open xeric (dry) and glade-like habitats. Populations occur in shallow soils adjacent to outcrops supporting cedar glades. This species is vulnerable due to its limited distribution and threats from herbicide usage, road ROW improvements, intensive cattle grazing and increasing residential and commercial development.

Leafy prairie-clover (*Dalea =(Petalostemum) foliosa*)

Dalea foliosa, a member of the legume family or Fabaceae, requires full sun and low competition for optimum growth and reproduction. The species occurs in thin-soiled (2 to 18 inches) mesic and wet-mesic dolomite prairie, limestone cedar glades, and limestone barrens. These areas have shallow, silt to silty clay loam soils over flat and often highly fractured, horizontally bedded limestone or dolomite with frequent expanses of exposed bedrock at surface elevations typically between 550 and 700 feet. These habitats experience high surface and soil temperatures, generally have low soil moisture but are wet in the spring and fall and become droughty in the summer.

Mammals

Gray bat (*Myotis grisescens*)

Listed in 1976, this species is strongly loyal to their summer and winter caves. Because of their thermoregulatory and other habitat requirements, gray bats congregate in large numbers

and in fewer caves, makings them highly susceptible to disturbances and declines in population. Declines in population have been attributed to pesticide use and other factors (e.g siltation on aquatic environments) resulting in the loss of prey base, deforestation, flooding of caves by water impoundment, cave entrance closure, and human disturbances (spelunking). The Indiana bat (*Myotis sodalis*), listed as endangered, may also occur in this area. Thus, the bat is highly restricted to certain cave habitats.

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TVA Response to USFWS Comments - April 24, 2003

USFWS Comment: The Tennessee yellow-eyed grass, a wetland species, may occur along Bear Creek downstream of the proposed facility and could be adversely affected by operation of the proposed water intake pipe and alteration of the soils hydrology.

TVA Response: No wetlands are found in the vicinity of the intake pipe structure. TVA has determined that operation of the proposed plant would not effect current discharges or pool elevations, therefore there would be no affects or additional affects to this species as a result of the proposed project.

USFWS Comment: Possible adverse effects of this project may include (1) direct effects from physical destruction caused by construction of the waterline

TVA Response: TVA has determined that there is no habitat for terrestrial federally listed species along the proposed new waterline route.

USFWS Comment: (2) alteration of flow regime and impacts on water quality of Bear Creek, including dissolved oxygen concentrations

TVA Response: TVA has determined that operation of the proposed plant would not effect current discharges or pool elevations, therefore there would be no effects to water quality or flows of Bear Creek as a result of the proposed project.

USFWS Comment: (3) blockage, entrainment, and impingement of fish, including host fish of Federally listed mussel species and fish of significant recreational importance

TVA Response: The intake structure is designed to reduce fish entrainment. TVA Standard Condition 4.c would be included in the permit: The screen openings on the intake strainer must be 1/8-inch (maximum), to minimize the entrapment of small fish (see Appendix B).

USFWS Comment: (4) physical habitat disturbance

TVA Response: One federally listed species may occur on the proposed water transmission line routes. This information has been added to Section 3.3 and mitigation measures are identified.

USFWS Comment: The raw water intake and distribution line (shown on page 2 of the EA) will not be constructed in road rights-of-way and may cause direct physical disturbance to above terrestrial species and their habitat. However, the water main transmission lines will each be constructed in existing road rights-of-way and therefore should have no effect on those federally listed terrestrial species above.

TVA Response: The new construction areas and the water main transmission line routes were surveyed for terrestrial species. TVA has determined no effect to any federally listed species and their habitat within the raw water intake and distribution

line. One potentially occurring federally listed species was identified in two areas along the existing road right-of-ways. This information has been added to section 3.3 and measures of avoidance are identified.

USFWS Comment: In addition, please consider water level fluctuations and effects on aquatic biota and riparian vegetation; diurnal water temperature variation; and scouring, erosion, and channel instability.

TVA Response: TVA has determined that because the water intake would not significantly impact reservoir levels or releases even during a very dry year, there would be no discernible impacts to aquatic ecology or water quality in the reservoir or downstream of the dam as a result of the operation of the water intake at permitted levels of 2.5 mgd. See section 3.4 for additional information.

USFWS Comment: The 30-inch pipe could accommodate much larger withdrawals than the 2.5 mgd projected for 2010 and could result in greater water withdrawal than presently proposed. We are concerned about possible increases in use. A withdrawal of 2 mgd caused a decrease in reservoir level of 0.1 feet, while a withdrawal of 4 mgd caused a decrease of 0.6 to 0.8 feet. It appears that the reservoir water level response to withdrawal increases is greater than linear and that additional withdrawals greater than 4 mgd will cause significant decreases in reservoir water level. When faced with much lower lake levels from withdrawal increases, we are also concerned that during hydrological low periods, lakefront property owners may disapprove or complain of water releases necessary to support downstream sensitive species, particularly endangered mussels. This could lead to increased pressure to minimize water releases from Bear Creek Dam. Future larger withdrawals projected for 2030 or beyond will be excessive and not allow for minimum flow releases from Bear Creek Dam.

TVA Response: Reservoir full pool elevation is approximately 576.1 feet. The reservoir is operated as close to full pool as possible from approximately April 15th through October 15th. The reservoir is brought to elevation 565 feet by approximately December 1 and held at that level until about January 1st in order to provide for flood control storage. Therefore, the reservoir fluctuates over a normal range of about 11 feet. As previously stated, hydrologic simulations of reservoir operation resulted in a maximum pool level decrease of 0.1 feet for a withdrawal of 2 mgd during a small part of the summer during a very dry year. A withdrawal of 4 mgd resulted in a decrease in the normal summer reservoir level of up to 0.6 to 0.8 feet for several weeks during the summer. Simulations indicate that during the dry years of 1987 and 1988, up to 12 mgd could be withdrawn from the reservoir with a maximum draw down to about 571 feet while maintaining minimum flow releases from the dam of at least 21 cfs. All simulations reflect conservative drawdown effects by assuming a minimum release of 25 cfs although the minimum actually provided is 21 cfs. As stated in the EA, TVA would review any additional withdrawal requests above the evaluated 2.5 mgd. This information has been added to Section 3.4 of the final EA.

USFWS Comment: We recommend that FCWSA withdraw water from Pickwick Lake. If this alternative is not feasible, FCWSA should strictly adhere to minimum flows determined necessary to support and maintain healthy populations of Federally protected mussel species.

TVA Response: Pickwick Reservoir is over 20 road miles from Russellville and even further from other portions of the FCWSA distribution area. Construction of a water main from this area would likely cost more and cause additional terrestrial habitat, wetland and stream impacts. Accordingly, TVA believes that water withdrawal from Pickwick Lake is not feasible, nor is it necessary, because of the minimal impacts of withdrawal from Bear Creek Reservoir and given that Bear Creek Reservoir was intended to be used as a source of municipal and industrial water supply for the region and designed to accommodate a water supply withdrawal of at least 5.0 mgd to serve Red Bay, Hodges, Vina, and the surrounding area.

USFWS Comment: Effects of the proposed Bear Creek dam hydropower project could be interactive and cumulative. A basin-level impact assessment should be conducted to adequately assess the cumulative effect of such developments on fish and wildlife resources.

TVA Response: TVA has informed the Federal Energy Regulatory Commission, by letter of September 11, 2002, that TVA will not grant the applicant permission to develop hydropower facilities on its Bear Creek Dam property. TVA requested that the Commission dismiss that application.

USFWS Comment: The proposed project may preclude recovery efforts for endangered mussels.

TVA Response: Because of the minimum flow requirements and withdrawal limits currently imposed by TVA, there is no reason that recovery efforts can not take place within the Bear Creek watershed as a result of the proposed water treatment plant.

USFWS Comment: Recreational fishery resources in the tailwater, including striped bass and walleye/sauger, may also be adversely affected.

TVA Response: TVA standard operating policies include maintaining a minimum flow of 21 cfs. Any change in this policy would require an environmental review under NEPA, including the opportunity for input from the public and other agencies. Minimum flow requirements and withdrawal limits would prevent any impacts to the recreational fishery as a result of the proposed treatment plant. TVA has determined that the proposed 2.5 mgd withdrawal rate would not effect the minimum 21 cfs release of Bear Creek Dam.

USFWS Comment: We recommend a habitat survey for the federally listed terrestrial species in the area of the water intake and distribution line (outside of rights of way) by a qualified botanist and biologist. A survey is not necessary for water main transmission lines (constructed in road rights-of-way). If habitat is determined to be present, then detailed surveys should be conducted. We request that you provide us with a description of the habitat observed, as well as a survey report, for our review.

TVA Response: TVA has determined that no habitat exists within the area of the water intake and distribution line and the water transmission lines for federally listed species. A FWS biologist confirmed this during a site visit in 2002 and TVA verified this in May 2003.

USFWS Comment: We would like to know what the projected maximum withdrawal during a 7Q10 flow would be before the minimum instream flow at Bear Creek Dam is reduced to 25 cfs and what assurances TVA will provide that future minimum instream flows will not be reduced below 25 cfs.

TVA Response: The unregulated 7Q10 Bear Creek flow at Red Bay is 21 cfs based on the periods of record of 1915-20 and 1960-1967 which are before the dam was constructed (Atkins and Pearman, 1994). Because the minimum release from the dam is also 21 cfs, withdrawing no water from the reservoir would still result in minimum flow operations being required during times when the inflow was at or below 21 cfs. Simulations indicate that during the dry years of 1987 and 1988, up to 12 mgd could be withdrawn from the reservoir with a maximum draw down to about 571 feet while maintaining minimum flow releases from the dam of at least 21 cfs. TVA operating policies include maintaining a minimum flow of 21 cfs. Any change in this policy would require an environmental review under NEPA, including the opportunity for input from the public and other agencies.