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ENVIRONMENTAL ASSESSMENT

WILSON DAM BASCULE BRIDGE REPLACEMENT

Colbert and Lauderdale Counties, Alabama

LEAD AGENCY
TENNESSEE VALLEY AUTHORITY

COOPERATING AGENCY
UNITED STATES ARMY CORPS OF ENGINEERS

MARCH 2008

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FINAL ENVIRONMENTAL ASSESSMENT

WILSON DAM BASCULE BRIDGE REPLACEMENT COLBERT AND LAUDERDALE COUNTIES, ALABAMA

TENNESSEE VALLEY AUTHORITY

MARCH 2008

The Proposed Decision and Need

Tennessee Valley Authority (TVA) and the U.S. Army Corps of Engineers (USACE) jointly propose to construct a fixed bridge over the lower end of the auxiliary lock at Wilson Dam (Figure 1) to provide safe, reliable access to the main lock. The proposed fixed bridge would replace the existing bascule bridge to access the main lock chamber and lock operations building (Figure 2). Due to the age and condition of the bascule bridge, TVA is concerned that the continuing operation and use of the bascule bridge would be unsafe and finds the bridge to be unreliable. The bascule bridge currently continues to operate, but its long-term reliability and safety are in question.

Critical components such as the trunnion bolts, counterweight attachment bolts, and gear track anchor bolts have active corrosion and section loss (gear wear). When the bridge is operated, binding occurs in the gear mechanism, which is designed to slide freely up and down. It is suspected that the binding is a result of deterioration of the gear assembly.

In addition, the opening of the bascule bridge span is not functioning properly. The bridge is designed to open to 76 degrees and 15 minutes, but due to its condition, it currently opens only to approximately 58 degrees. The opened bridge span at either angle does not allow adequate clearance for some oversized cargo or towboats.

Furthermore, the bascule bridge is considered unsafe for heavy loads because it is not designed to carry the heavy equipment that must pass across it to support construction activity at the main lock. For example, because the bridge only has toe locks and lacks heel locks to secure both ends, when the bridge is in a lowered position, heavy equipment has to be moved onto the heel of the bridge to prevent toe uplift as heavy equipment passes across the bridge (Figure 3).

The existing bascule bridge would remain in place and continue to be available for main lock area access until the new bridge is completed. The new bridge would remove traffic from the bascule bridge, which currently provides the only access to the main lock area.

Background

The Tennessee River system is managed through a series of dams and navigation locks owned by the U.S. government and operated by TVA and the USACE. In accordance with the TVA Act, TVA is entrusted with the possession, operation, and control of the dams and all associated buildings, machinery, and lands, with the exception of the navigation locks, which are entrusted to the USACE.

Wilson Dam, completed in 1925, is over 100 feet tall and nearly 0.75 mile in length (Figure 4). Wilson Dam is on the National Register of Historic Places (NRHP), and it has been officially recognized by the U.S. government for its historical significance. The dam was designated a National Historic Landmark (NHL) on November 13, 1966. The largest mass concrete lock and dam of its day in the U.S., it was the first federal hydroelectric project as well as the first USACE multipurpose effort. TVA acquired possession of the dam when the agency was created in 1933. As part of Wilson Dam, a single-leaf bascule bridge was constructed that spanned the original lock chamber and permitted barge traffic to pass through the chamber when in the raised position (Figure 5). The original lock chamber, which now serves as the auxiliary lock, was the only lock until the main lock was completed in 1959. The bascule bridge also serves as the only access to the main lock chamber and lock operations building.

The bascule bridge is used daily for access to the lock area. In addition, during an outage of the main chamber, it is used by vehicles carrying heavy equipment to access the main lock for maintenance activities. Typically, the main lock undergoes routine maintenance every three to five years, which requires the shutdown of the main lock and the use of the auxiliary lock. When the auxiliary lock is used, the bascule bridge must be raised to permit barges through its upper lock (Figure 6).

TVA has concerns that the bridge is unsafe and unreliable. Critical components such as the trunnion bolts, counterweight attachment bolts, and gear track anchor bolts have active corrosion and gear wear (Figure 7). In addition, a lack of heel locks in the original design causes the machinery to resist live load (i.e., moving objects such as vehicles or equipment) and induces significant stresses in them, which is an undesirable condition. This lack of heel locks also causes uplift at the toe under a heavy load at the heel. If by human or mechanical error the lock pins were not to engage when traffic passed over the bridge, a catastrophic failure could occur. If a bridge failure were to occur early into a main chamber outage, it has been estimated that the auxiliary and main locks could both likely be closed for two months. Because heavy load vehicles using the bascule bridge could contribute to a potential failure, discontinuing use of the bridge for access to the main lock (once the new bridge is in place) would reduce the likelihood of a failure.

Other Environmental Reviews and Documentation

In May 2003, TVA completed an environmental review, *River Heritage Hotel, Wilson Dam Reservation in Lauderdale County, Alabama, Environmental Assessment* (TVA 2003). This review assessed a request to grant a permanent easement to the Public Park Authority of the Shoals (PPA) over approximately 12 acres of TVA Wilson Dam Reservation lands, as well as the expansion of the Development Opportunities allocation in the *Muscle Shoals/Wilson Dam Reservation Land Use Plan* (TVA 1996) to include the 12 acres of land requested for the permanent easement. TVA granted the permanent easement to the PPA and modified the *Muscle Shoals/Wilson Dam Reservation Land Use Plan* allocation for the 12 acres of TVA Wilson Dam Reservation lands. The River Heritage Hotel was built on the lands reallocated by TVA and opened in June 2005.

Alternatives

TVA considered two alternatives, namely:

- The No Action Alternative - A new fixed bridge would not be constructed, and the bascule bridge would remain as it is.
- The Action Alternative - A new fixed bridge would be constructed to provide access to the main lock area. The existing bascule bridge would remain in place and continue to be available for use. Once the fixed bridge is in place, the bascule bridge would no longer be used to access the main lock chamber and lock operations building, but it would still be used to allow passage of watercraft through the auxiliary lock until TVA proposes a long-term plan for it.

If TVA were to adopt the No Action Alternative, the bascule bridge would continue to operate and function as it currently does. TVA would need to address essential repairs in the immediate future as well as long-term repairs that would be necessary within the next 10 to 15 years. Although maintenance would address some of the problems, there are certain issues associated with an 80-year-old bridge, such as gear wear or steel corrosion, which cannot be addressed without a complete overhaul.

Under the Action Alternative, a new fixed bridge would be constructed over the lower auxiliary lock to provide safe and reliable access to the main lock area. The bascule bridge would no longer be used to access the main lock area once the fixed bridge was in place. The auxiliary lock and bascule bridge would continue to be used for barge and other watercraft traffic during main lock outages. The bascule bridge would remain in place and operational for the short term (one to four years).

The USACE has provided the design for a new fixed bridge. The proposed fixed bridge would be placed downstream of the bascule bridge over the west end of the auxiliary lock near the existing abutment (Figure 8) and constructed of concrete and steel. The proposed fixed bridge is a 340-foot-long by 26-foot and 9-inch-wide, three-span, continuous composite steel-plate-girder type with integral abutments (Figure 9). The bridge would be located near the existing abutment that was once part of the temporary bridge built to allow construction of the new main lock (Figure 10). The existing concrete abutment located near the new abutment (abutment one) would be removed. The existing abutment would need to be removed because it is too small for the new bridge, is located too far down slope to maintain proper vertical alignment, and is skewed at the wrong angle for the proposed new bridge structure. Excavation would be required at the two abutments at either end of the bridge and at the two bents (footing and column) located near the lock walls. The color of the concrete and steel would be based upon the shade that best matches the existing concrete of the dam and lock. This would be determined by TVA and the Alabama State Historic Preservation Officer (SHPO) after viewing color samples applied to the existing concrete on site.

Grade work would be done on the north approach to tie the existing road in to the new bridge. The new approach roadway would be approximately 1,500 feet long. A section of guardrail would be installed, and the existing chain link security fence may need to be moved. Grade work at the south approach would be done to tie the bridge into the parking lot. The length of the approach would be approximately 150 feet long. A 13-foot-wide section of riprap would be placed on the slope below the abutment to protect against soil erosion. Drainage inlets for the bridge and roadway would be placed at the south end and

would be connected to existing drainage lines. One flagpole would be relocated, and one new area light would be installed in the vicinity adjacent to the new approach roadway.

The proposed construction activities would have no impact on main lock operations. The auxiliary lock could be closed for short durations (two to three hours) while the beams are set over the lock. The maximum number of workers on site at one time would be approximately 15.

The existing bascule bridge, which would be replaced with the new fixed bridge, functions as a feature of the auxiliary lock. The bascule bridge is 148 feet and 2.25 inches long by 26 feet wide. The distance of the bascule leaf from toe to trunnion (the portion of the bridge leaf that rotates up in the air) is 108 feet and 7.75 inches long. The bridge is considered unsafe for heavy loads because it is not designed to carry the heavy equipment that must pass across it to support construction activity at the main lock. In addition, a lack of heel locks in the original design causes the machinery to resist live load. This induces significant stresses into the machinery, which is an undesirable condition. This lack of heel locks also causes the bridge to lift up at the toe when under a heavy load at the heel. Furthermore, critical components such as the trunnion bolts, counterweight attachment bolts, and gear track anchor bolts have active corrosion and section loss.

Eventually, TVA will need to make a decision regarding disposition of the existing bascule bridge. TVA is not yet proposing long-term plans for the bascule bridge. With regard to eventual decisions about the bascule bridge, the presently proposed Action Alternative regarding construction of the new fixed bridge does not preclude consideration of the array of options available to TVA. Potential options for managing the bascule bridge range from continued maintenance and backup operation of the bridge; locking it in place; or removal of the bridge leaf (the part of the bascule bridge system that is not permanently attached to the dam). In addition, the bascule bridge could potentially be reused and become a feature of the Florence River Heritage Trail, serving as an interpretative display for cultural resources and a public overlook for viewing Wilson Dam NHL. However, because of the deteriorated condition of the bridge, removal of the bascule bridge would be the safest long-term resolution. The auxiliary lock would have safer, more efficient lockage times as a result of bridge removal.

Potential effects of these options for disposition of the bascule bridge would be expected to include those typically resulting from continuation of normal maintenance or refurbishment (typically covered by categorical exclusion, indicating insignificant impacts), short-term options such as activities to lock the bridge in place (e.g., welding wastes), or long-term options as related to removal (e.g., outage, transport, visual, and mitigated cultural resource effects) and placement on an appropriate site (e.g., impacts from any necessary clearing or site and access development resulting in effects to land use, terrestrial and aquatic resources, water quality, and visual and cultural resources). With the exception of cultural resource effects, potential effects for all of these resource areas would be controllable to insignificance with the implementation of standard best management practices (BMPs) as described in Muncy 1999. Pursuant to Section 106 of the National Historic Preservation Act (NHPA), TVA is consulting with the Alabama SHPO and the Advisory Council on Historic Preservation on the disposition issue. Once a proposal for the bascule bridge is developed, TVA will fully examine the environmental consequences associated with that proposal and its reasonable alternatives.

Affected Environment and Evaluation of Impacts

A preliminary environmental review of the proposed fixed bridge is documented in Categorical Exclusion Checklist Number 16057 (see Attachment A). Evaluation of the proposed project has allowed TVA to conclude that certain resources would not be affected by the proposed fixed bridge construction. These resources include threatened and endangered plants and terrestrial animals, terrestrial ecology, wetlands, prime farmland, noise, and recreation. Resources potentially affected by the construction of a fixed bridge are cultural resources, visual resources, managed areas, water quality and surface water, aquatic ecology, threatened and endangered aquatic animals, floodplains, navigation, dam safety, and solid waste. Those resources that have the potential to be affected have been given further consideration in this environmental review.

Cultural Resources

Pursuant to Section 106 of the NHPA, TVA has surveyed the area of potential effects (Figure 11), reported on historic properties, and consulted on the proposed fixed bridge construction and the bascule bridge (Pietak et al. 2002).

As previously mentioned, Wilson Dam is listed on the NRHP and is an NHL as designated by the U.S. Department of the Interior. The addition of a new fixed bridge could affect the integrity of the characteristics that qualified it for placement on the NRHP and determined its NHL status. Section 110 of the NHPA includes specific provisions that address federal agencies' responsibilities when their activities involve NHLs.

TVA has concluded that, because of the similarity of the new fixed bridge to the existing 1950s elevated highway bridge over the dam, the proposed new bridge is an effect on Wilson Dam, but not an adverse effect. The Alabama SHPO, in a letter dated December 11, 2007 (Attachment B), concurred with this determination with the condition that "the new bridge should be painted or concrete tinted to more closely match the color of the dam." To avoid an "adverse effect" determination pursuant to the NHPA, TVA would commit to coordinate with the Alabama SHPO to select a paint color for the new bridge that would best match Wilson Dam's current appearance. The USACE would specify a finish but not a color for the fixed bridge. The color chosen would be used for the concrete-applied texture finish and structural steel coating. With this mitigation, the impact of the proposed action on cultural resources would be insignificant.

Visual Resources

Currently, the bascule bridge is obscured from view in the lowered position except for occasional views available for recreational reservoir users and passengers on vessels that pass through the Wilson Dam lock system. In the raised position, the viewshed becomes slightly broader both upstream and downstream. The addition of a new bridge would have a visual impact on the original design of Wilson Dam. However, the impacts of the new fixed bridge would be less significant than the prior additions of the larger new lock and the elevated highway bridge over both locks. Overall, the impacts of the proposed action on visual resources would be insignificant.

Managed Areas

The proposed work is within 0.1 mile of two managed areas, Wilson Dam Tailwater Restricted Mussel Harvest Area and Veteran's Memorial Park (formerly Point Park). Managed by the Alabama Department of Conservation and Natural Resources, the Wilson Dam Tailwater Restricted Mussel Harvest Area extends from Wilson Dam downstream to

the upper end of Seven Mile Island. However, this restricted mussel area does not extend into the Florence Canal and the auxiliary lock area of Wilson Dam. With the implementation of BMPs as described by Muncy (1999), any potential impacts to the mussel harvest area as a result of the proposed action would be insignificant. Veteran's Memorial Park is managed by the City of Florence and is located northeast of the auxiliary lock and east of Wilson Dam Road with shoreline on Wilson Reservoir. Although low levels of noise from the proposed construction site could temporarily impact park users, impacts would be insignificant because this type of noise is typical of the lock area. Cranes and machinery are used for some of the dam's routine projects and are particularly used during lock outages.

Water Quality and Surface Water

The project area drains to the Tennessee River both upstream and downstream of Wilson Dam. Upstream, Wilson Reservoir is classified by the Alabama Department of Environmental Management for public water supply, fish and wildlife, and swimming and other whole body water-contact recreation. Pickwick Reservoir downstream of Wilson Dam is classified for public water supply and fish and wildlife.

Soil disturbances associated with construction activities can potentially result in adverse water quality impacts. Soil erosion and sedimentation can increase turbidity (water cloudiness) and threaten aquatic life. However, TVA routinely includes precautions in design, construction, and maintenance to minimize these potential impacts. Proper implementation of BMPs as described by Muncy (1999) and the following control measures are expected to result in temporary and insignificant surface water impacts:

- 1) Compliance with applicable environmental laws and regulations; and
- 2) Control measures to prevent the discharge or loss of potential pollutants to the reservoir and to contain and properly dispose of all wastes, accidental spills, surface runoff, or other potential contaminants.

Potential impacts to water quality would be insignificant with the implementation of the above described control measures.

Aquatic Ecology

Streams in this region of the Tennessee Valley are characterized by coarse chert gravel and sand substrates interspersed with bedrock areas, moderate gradients, and clear waters (Etnier and Starnes 1993). Aquatic habitat near the reservoir shoreline is influenced by back-lying land use and underwater topography, which varies from moderately steep land with scattered bluffs near the river channel to shallow embayments and coves. Natural shoreline is mostly wooded, and developed areas typically include shoreline stabilization structures such as riprap.

Without the use of BMPs, the proposed action could affect aquatic ecology due to modification of the riparian zone and storm water runoff resulting from construction activities. Siltation and polluted storm water runoff can have a detrimental effect on many aquatic animals (including fish and mussels) adapted to riverine environments. Turbidity caused by suspended sediment can negatively impact spawning and feeding of many fish species (Sutherland et al. 2002). Mussel species adapted to a sand-and-gravel bottom environment cannot survive in an environment composed of fine sediment. Siltation clogs the gills and eventually causes the animal to smother (Parmalee and Bogan 1998).

In order to minimize potential impacts to aquatic life, BMPs as described by Muncy (1999) would be applied to all construction activities. These BMPs are designed in part to minimize disturbance of riparian areas and subsequent erosion and sedimentation that can move into the reservoir. With the implementation of these BMPs, all potential direct, indirect, or cumulative impacts to aquatic communities or habitat as a result of the proposed new bridge construction would be insignificant.

Threatened and Endangered Aquatic Animals

The TVA Natural Heritage database indicated there are 18 federally listed aquatic animals and three state-listed mussels within 10 miles of Wilson Dam (see Attachment C). In addition, the tailwater below Wilson Dam has been designated nonessential experimental population (NEP) status by the U.S. Fish and Wildlife Service for 13 federally listed mussels and one federally listed snail (see Attachment C). Several mussel species are currently known from this section of the river system and are not included in the NEP. The long-term goal of this designation is to improve the status of all of these species so that they no longer need protection under the Endangered Species Act.

New bridge construction activities including soil disturbance and removal of riparian vegetation would have no effect on aquatic animal species with the proper implementation of BMPs (Muncy 1999), including measures to prevent the introduction of sediment and wet concrete into the reservoir. Because BMPs for construction near streams and waterways would be used and spill material containment protocols would be implemented, there would be no effects to threatened and endangered aquatic animal species.

Floodplains

As a federal agency, TVA is subject to the requirements of Executive Order (EO) 11988 on floodplain management. The EO is not intended to prohibit floodplain development in all cases, but rather to create a consistent government policy against such development under most circumstances.

The proposed project involves construction of a bridge within the 100-year floodplain. Consistent with EO 11988, a bridge is considered a repetitive action in the floodplain that would result in minor impacts because there would be no increase in upstream flood elevations.

Navigation

Studies have indicated that operation of the existing bascule bridge is inefficient. The lockage time per barge at the Wilson Dam auxiliary lock increased 11 percent during 1991-2003 when compared to 1981-1990. This increase in time was caused in part by the need to make adjustments for proper operational performance of the bascule bridge in the early stage of a main lock outage. The time required to raise or lower the bascule bridge span is about 10 minutes, and the bridge is raised and lowered after each individual craft passes through the lock. If another tow is waiting, the bridge would still be lowered and then raised again rather than leaving it open. This is done for safety reasons, and it allows the lock operations building to be readily accessible at all times when the main lock is not in use. In the event of an accident, especially with physical injury, it is imperative that emergency equipment and personnel have quick access to the construction site.

In addition, the opening of the bascule bridge span is not functioning properly. Although the bridge was designed to open to an angle of 76 degrees and 15 minutes, it currently opens only to approximately 58 degrees due to deterioration of its condition. The opened bridge

span at either angle does not allow clearance for some oversized cargo or towboats. If a barge cannot pass through the chamber due to height limitations, the lockmaster can increase the angle of the span slightly. It has been necessary on occasion to saw off ladders and other protrusions for some craft to pass under the bascule bridge span. Certain barges have been roped off to the river wall of the lock and slowly worked under the bridge and out of the chamber.

The new fixed bridge would not impact navigation because the new bridge would be built on the grounds outside of the auxiliary lock. It will span the auxiliary lock, and the new bridge is designed to allow ample clearance for passing watercraft.

Dam Safety

The existing bascule bridge is considered unsafe for heavy loads because it is not designed to carry the heavy equipment that must pass across it to support construction and maintenance activities at the main lock.

The construction of the new fixed bridge would not have an impact on the water barrier structures for the dam. Since the existing bascule bridge will remain in place at least until the new bridge is completed, access for dam safety maintenance and emergencies will be as reliable as it is currently. The construction of the proposed fixed bridge would meet the purpose and need of this proposed project. Once the new fixed bridge is in place, access to the main lock for dam safety maintenance will be safe and reliable.

Solid Waste

The proposed project would create solid waste such as soil and rock from excavations; miscellaneous metal waste (e.g., rebar, guardrail, structural steel); concrete waste from pier, abutment, and deck construction; plastic pipe from drain construction; concrete forming materials (e.g., plywood, dimensional lumber, sonotube); and other miscellaneous construction debris. Potential impacts would be insignificant with the implementation of the following commitments:

- 1) Construction contractor would comply with all federal, state, and local laws and all TVA regulations.
- 2) All recyclable materials would be recycled.

Cumulative Impacts

Cumulative impacts to Wilson Dam NHL would not be significant. Wilson Dam NHL was conceived, designed, and built to provide flood control, improved navigation, and low-cost hydroelectric power. Since its completion in 1925, Wilson Dam has been an active industrial structure and, as such, has been modified to reflect changes in technology, security, and safety. Even so, it retains its historic fabric and function and would not be compromised by the placement of a new, visually sympathetic bridge to access the main lock area. The cumulative impact to Cultural Resources is insignificant when the proposed action is considered together with all other previous actions, including the construction of the main lock and the elevated highway bridge, as well as all present and reasonably foreseeable future actions.

Potential impacts to visual resources, managed areas, water quality and surface water, aquatic ecology, threatened and endangered aquatic animals, floodplains, navigation, dam

safety, and solid waste have been analyzed with respect to other past, present, and reasonably foreseeable future actions. There would be no cumulative impacts to these resources.

Commitments

TVA and the USACE would work with the Alabama SHPO collaboratively to determine the concrete color for the new bridge. The USACE would communicate to the bridge construction contractor that there would be coordination with TVA and the SHPO to designate an appropriate color that best matches Wilson Dam's current appearance. The contractor would supply five color samples (colors to be determined by TVA and the Alabama SHPO) of texture finish that would be applied to small sections of the lock concrete. TVA and the Alabama SHPO would choose the color that best matches the existing concrete of Wilson Dam. This color would be used for the concrete-applied texture finish and structural steel coating.

Standard Environmental Protection Procedures

In order to minimize potential impacts to aquatic life, BMPs as described by Muncy (1999) would be applied to all construction activities. These BMPs are designed in part to minimize disturbance of riparian areas and subsequent erosion and sedimentation that can move into the reservoir.

In addition to BMPs, proper implementation of the following control measures is expected to result in temporary and insignificant surface water impacts:

- 1) Compliance with applicable environmental laws and regulations; and
- 2) Control measures to prevent the discharge or loss of potential pollutants to the reservoir and to contain and properly dispose of all wastes, accidental spills, surface runoff, or other potential contaminants.

Potential solid waste impacts would be insignificant with the implementation of the following measures:

- 1) Construction contractor would comply with all federal, state, and local laws and all TVA regulations.
- 2) All recyclable materials would be recycled.

Preferred Alternative

TVA and the USACE's preferred alternative is the Action Alternative of constructing a new fixed bridge over the lower auxiliary lock to provide safe and reliable access to the main lock area. The bascule bridge would no longer be used to access the main lock chamber and lock operations building once the fixed bridge is in place. The auxiliary lock and bascule bridge would continue to be used for barge and other watercraft traffic during main lock outages. The bascule bridge would remain in place and operational for the short term (one to four years). Long-term plans for the bascule bridge would be proposed and evaluated at a later time.

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Agencies and Others Consulted

Alabama Historical Commission, State Historic Preservation Officer
Advisory Council on Historic Preservation
City of Florence, Alabama
Retirement Systems of Alabama
Public Park Authority of the Shoals

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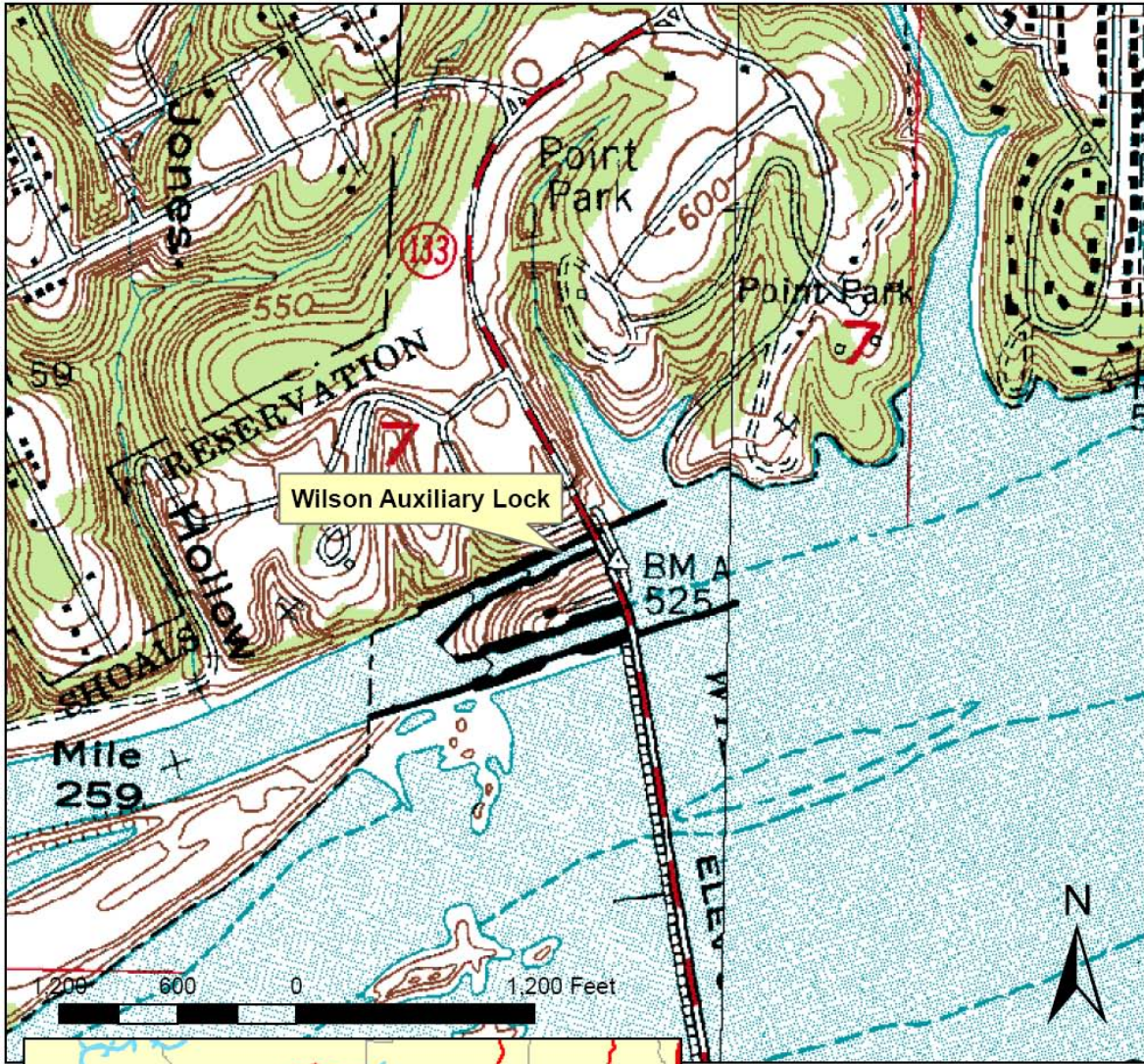
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Attachments

- Figure 1. Topographical Map of Wilson Dam Area and Auxiliary Lock
- Figure 2. Aerial Photo of Wilson Dam, Bascule Bridge, and Proposed Fixed Bridge
- Figure 3. Drawing Illustrating the Bascule Bridge Including Toe and Heel Components
- Figure 4. Historical Photo of Wilson Dam
- Figure 5. Bascule Bridge in Raised Position
- Figure 6. Bascule Bridge Opened Allowing for Barge Passage
- Figure 7. Photo of Current View Under Bascule Bridge
- Figure 8. Photo of Main Lock Construction With Temporary Bridge Abutment
- Figure 9. Drawing Illustrating the Proposed Alignment of New Fixed Bridge
- Figure 10. Wilson Bridge Main Lock Under Construction With Temporary Bridge
- Figure 11. Cultural Resources Area of Potential Effects
- Attachment A. Categorical Exclusion Checklist Number 16057
- Attachment B. Alabama SHPO letter dated December 11, 2007
- Attachment C. Federally and State-Listed Aquatic Animal Species Known From Within 10 Miles Downstream of Wilson Dam (TRM 259) and Federally Listed Aquatic Species Reported From Colbert and Lauderdale Counties, Alabama



LOCATED AT TENNESSEE RIVER MILE 259.4R

PROPOSED BASCULE BRIDGE REPLACEMENT AT WILSON AUXILIARY LOCK

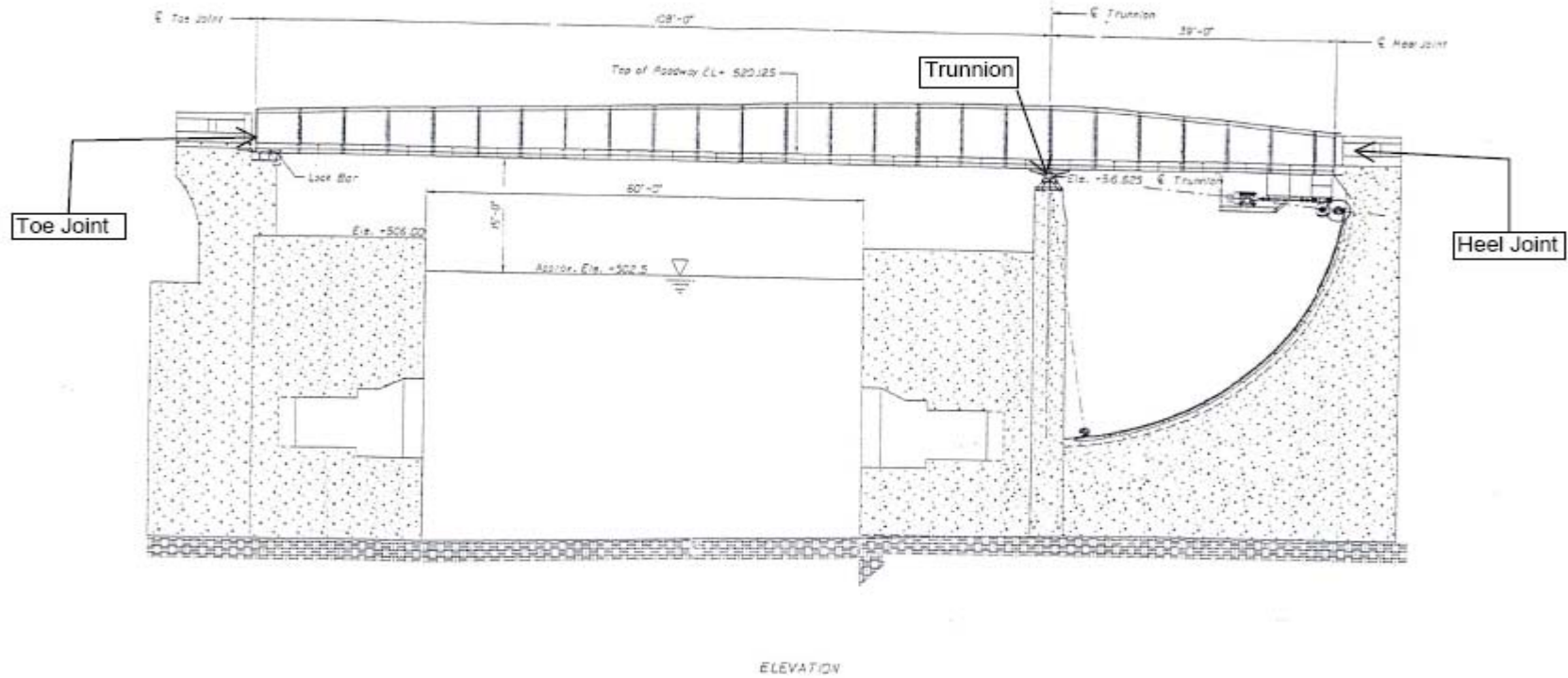
over
near
county
application by
date

TENNESSEE RIVER
FLORENCE, AL
LAUDERDALE CO, AL
TENNESSEE VALLEY
AUTHORITY
JUNE 2007

Figure 1. Topographical Map of Wilson Dam Area and Auxiliary Lock



Figure 2. Aerial Photo of Wilson Dam, Bascule Bridge, and Proposed Fixed Bridge



Wilson Dam Bascule Bridge
 Tennessee Valley Authority
 Lauderdale County, AL
 Hardesty & Hanover, LLP
 Date: 2002
 Original Drawing Held By H&H
 View is Elevation
 Photograph Number: N/A

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								LAUDERDALE	
								WILSON DAM BASCULE BRIDGE	

Figure 3. Drawing Illustrating the Bascule Bridge Including Toe and Heel Components



Figure 4. Historical Photo of Wilson Dam



Figure 5. Bascule Bridge in Raised Position



Figure 6. Bascule Bridge Opened Allowing for Barge Passage



Figure 7. Photo of Current View Under Bascule Bridge



Wilson Dam Bascule Bridge
Tennessee Valley Authority
Lauderdale County, AL
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Date: 2006
Original Digital Held By TVA
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Figure 8. Photo of Main Lock Construction With Temporary Bridge Abutment

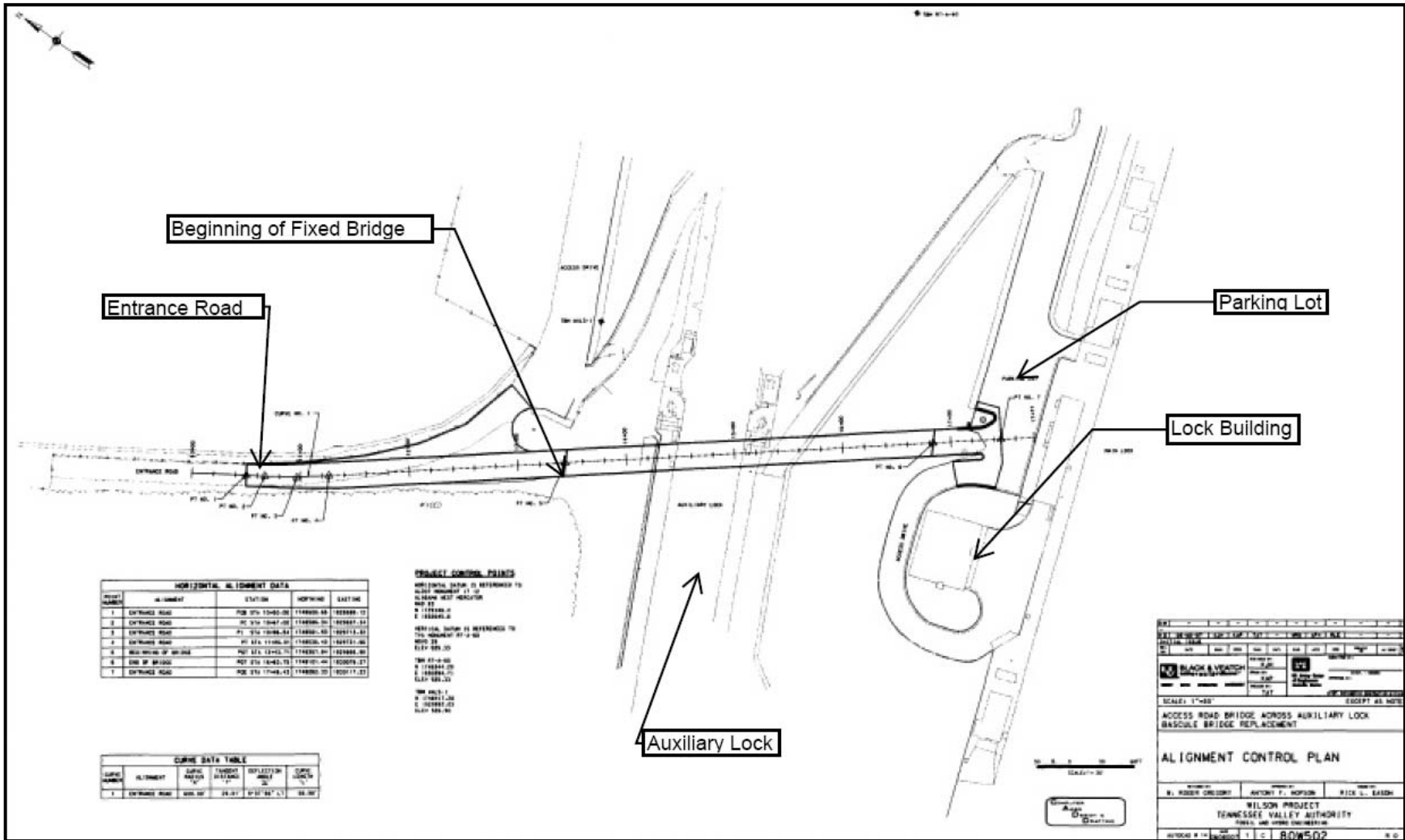


Figure 9. Drawing Illustrating the Proposed Alignment of New Fixed Bridge

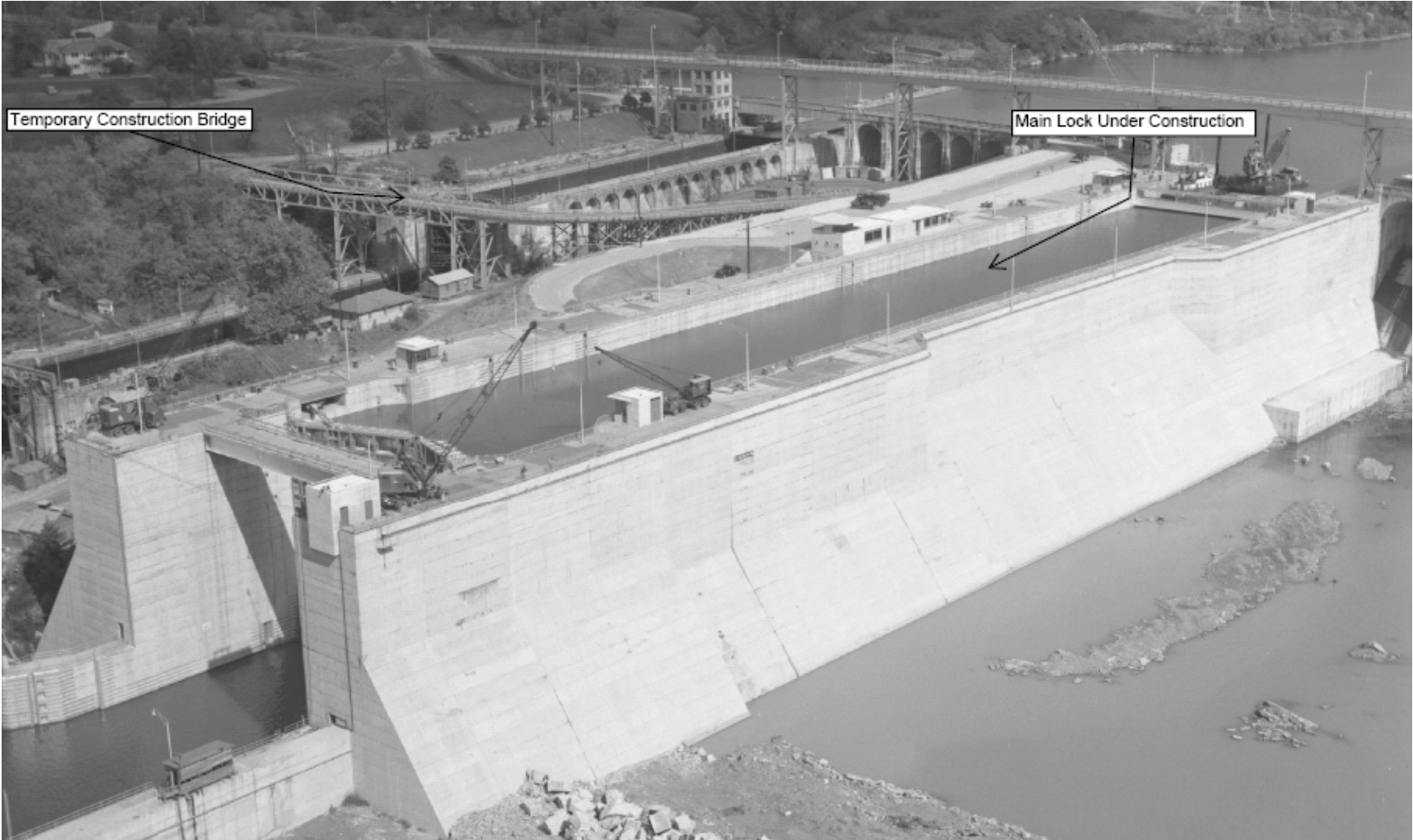
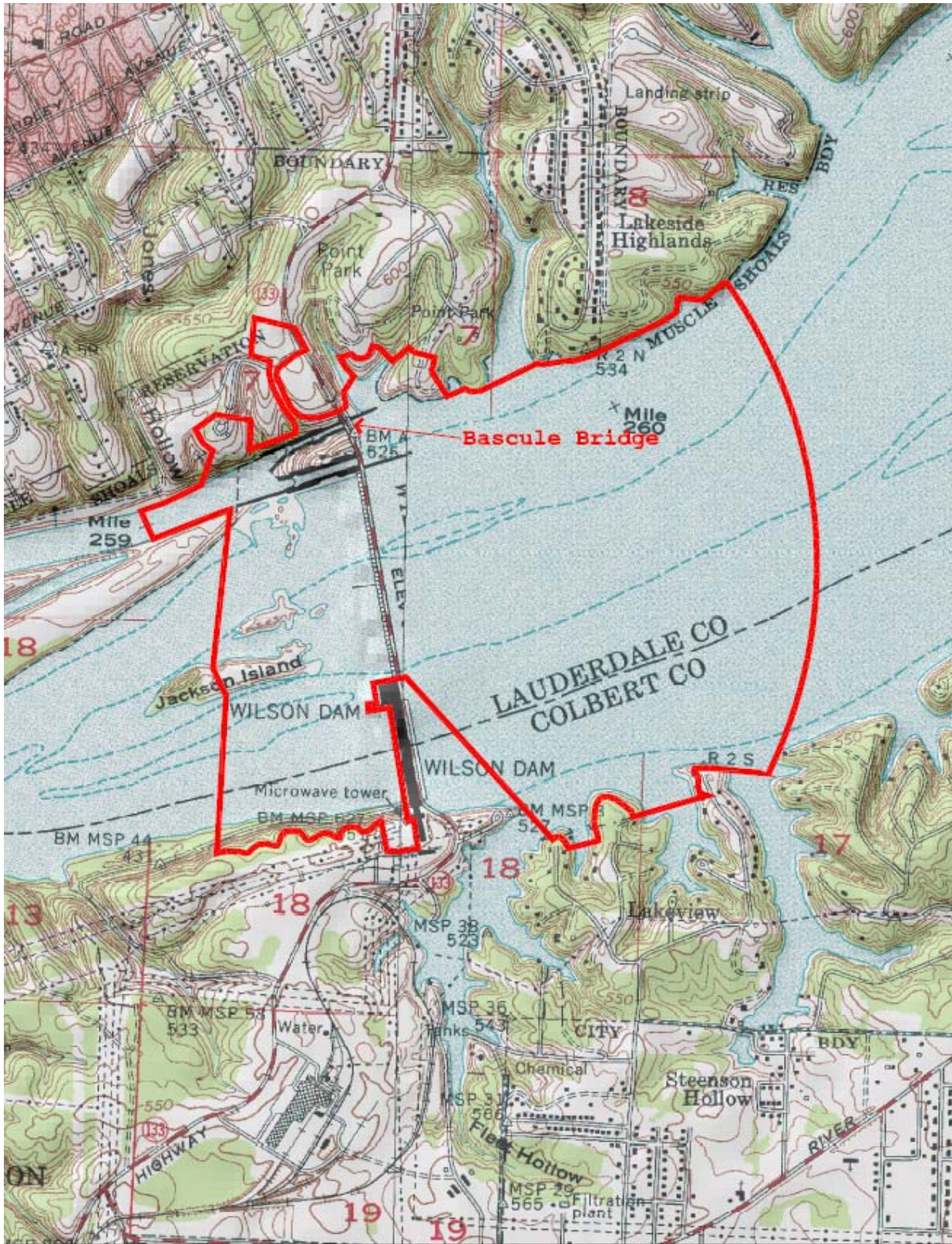


Figure 10. Wilson Dam Main Lock Under Construction With Temporary Bridge



Tennessee Valley Authority
Cultural Resources

**Wilson Dam
Bascule Bridge Replacement**

October, 2007

Drawing WD-8B-r2
Area of Potential Effects

Base: 7.5' (192m) and 1/4" = 17.2' (5.2m) Quad

— APE Boundary

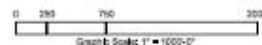


Figure 11. Cultural Resources Area of Potential Effects

Attachment A. Categorical Exclusion Checklist Number 16057

Categorical Exclusion Checklist for Proposed TVA Actions

Categorical Exclusion Number Claimed	Organization ID Number DS-1128	Tracking Number (NEPA Administration Use Only) 16057
Form Preparer Linda K Thomas	Project Initiator/Manager Deborah K Ruth	Business Unit RSOE - River Operations
Project Title Wilson Auxiliary Lock - New Bridge	Hydrologic Unit Code	
Description of Proposed Action (Include Anticipated Dates of Implementation) <input type="checkbox"/> Continued on Page 3 (if more than one line) Wilson Auxiliary Lock - New Bridge		
Initiating TVA Facility or Office	TVA Business Units Involved in Project RSOE - River Operations	
Location (City, County, State) Lauderdale; Colbert, AL, Wilson Auxiliary Lock - New Bridge		

Parts 1 through 4 verify that there are no extraordinary circumstances associated with this action:

Part 1. Project Characteristics

Is there evidence that the proposed action---	No	Yes	Information Source
1. Is major in scope?	X		Ruth D. K. 06/04/2007
2. Is part of a larger project proposal involving other TVA actions or other federal agencies?	X		Ruth D. K. 06/04/2007
*3. Involves non-routine mitigation to avoid adverse impacts?	X		Ruth D. K. 06/04/2007
4. Is opposed by another federal, state, or local government agency?	X		Ruth D. K. 06/04/2007
*5. Has environmental effects which are controversial?	X		Ruth D. K. 06/04/2007
*6. Is one of many actions that will affect the same resources?	X		Ruth D. K. 06/04/2007
7. Involves more than minor amount of land?	X		Ruth D. K. 06/04/2007

* If "yes" is marked for any of the above boxes, consult with NEPA Administration on the suitability of this project for a categorical exclusion.

Part 2. Natural and Cultural Features Affected

Would the proposed action---	No	Yes	Per- mit	Commit- ment	Information Source for Insignificance
1. Potentially affect endangered, threatened, or special status species?	X		No	No	For comments see attachments
2. Potentially affect historic structures, historic sites, Native American religious or cultural properties, or archaeological sites?		X	No	No	For comments see attachments
3. Potentially take prime or unique farmland out of production?	X		No	No	Ruth D. K. 06/04/2007
4. Potentially affect Wild and Scenic Rivers or their tributaries?	X		No	No	For comments see attachments
5. Potentially affect a stream on the Nationwide Rivers Inventory?	X		No	No	For comments see attachments
6. Potentially affect wetlands, water flow, or stream channels?	X		No	No	For comments see attachments
7. Potentially affect the 100-year floodplain?		X	No	No	For comments see attachments
8. Potentially affect ecologically critical areas, federal, state, or local park lands, national or state forests, wilderness areas, scenic areas, wildlife management areas, recreational areas, greenways, or trails?	X		No	No	For comments see attachments
9. Contribute to the spread of exotic or invasive species?	X		No	No	For comments see attachments
10. Potentially affect migratory bird populations?	X		No	No	For comments see attachments
11. Involve water withdrawal of a magnitude that may affect aquatic life or involve interbasin transfer of water?	X		No	No	Higgins J. M. 06/12/2007
12. Potentially affect surface water?		X	Yes	Yes	For comments see attachments
13. Potentially affect drinking water supply?	X		No	No	Ruth D. K. 06/04/2007
14. Potentially affect groundwater?	X		No	No	Ruth D. K. 06/04/2007
15. Potentially affect unique or important terrestrial habitat?	X		No	No	For comments see attachments
16. Potentially affect unique or important aquatic habitat?	X		No	No	For comments see attachments

Part 3. Potential Pollutant Generation

Would the proposed action potentially (including accidental or unplanned)---	No	Yes	Per- mit	Commit- ment	Information Source for Insignificance
1. Release air pollutants?	X		No	No	Ruth D. K. 06/04/2007
2. Generate water pollutants?	X		No	No	Higgins J. M. 06/12/2007
3. Generate wastewater streams?	X		No	No	Higgins J. M. 06/12/2007
4. Cause soil erosion?		X	Yes	Yes	Hagerman J. R. 06/21/2007
5. Discharge dredged or fill materials?	X		No	No	Ruth D. K. 06/04/2007
6. Generate large amounts of solid waste or waste not ordinarily generated?		X	No	Yes	For comments see attachments
7. Generate or release hazardous waste (RCRA)?	X		No	No	Ruth D. K. 06/04/2007
8. Generate or release universal or special waste, or used oil?	X		No	No	Ruth D. K. 06/04/2007
9. Generate or release toxic substances (CERCLA, TSCA)?	X		No	No	Ruth D. K. 06/04/2007
10. Involve materials such as PCBs, solvents, asbestos, sandblasting material, mercury, lead, or paints?	X		No	No	Ruth D. K. 06/04/2007
11. Involve disturbance of pre-existing contamination?	X		No	No	Ruth D. K. 06/04/2007
12. Generate noise levels with off-site impacts?	X		No	No	Ruth D. K. 06/04/2007
13. Generate odor with off-site impacts?	X		No	No	Ruth D. K. 06/04/2007
14. Produce light which causes disturbance?	X		No	No	For comments see attachments
15. Release of radioactive materials?	X		No	No	Ruth D. K. 06/04/2007
16. Involve underground or above-ground storage tanks or bulk storage?	X		No	No	Ruth D. K. 06/04/2007
17. Involve materials that require special handling?	X		No	No	Ruth D. K. 06/04/2007

Part 4. Social and Economic Effects

Would the proposed action---	No	Yes	Commit- ment	Information Source for Insignificance
1. Potentially cause public health effects?	X		No	Ruth D. K. 06/04/2007
2. Increase the potential for accidents affecting the public?	X		No	Ruth D. K. 06/04/2007
3. Cause the displacement or relocation of businesses, residences, cemeteries, or farms?	X		No	Ruth D. K. 06/04/2007
4. Contrast with existing land use, or potentially affect resources described as unique or significant in a federal, state, or local plan?	X		No	Ruth D. K. 06/04/2007
5. Disproportionately affect minority or low-income populations?	X		No	Ruth D. K. 06/04/2007
6. Involve genetically engineered organisms or materials?	X		No	Ruth D. K. 06/04/2007
7. Produce visual contrast or visual discord?		X	No	For comments see attachments
8. Potentially interfere with recreational or educational uses?	X		No	Ruth D. K. 06/04/2007
9. Potentially interfere with river or other navigation?	X		No	Ruth D. K. 06/04/2007
10. Potentially generate highway or railroad traffic problems?	X		No	Ruth D. K. 06/04/2007

Part 5. Other Environmental Compliance/Reporting Issues

Would the proposed action---	No	Yes	Commit- ment	Information Source for Insignificance
1. Release or otherwise use substances on the Toxic Release Inventory list?	X		No	Ruth D. K. 06/04/2007
2. Involve a structure taller than 200 feet above ground level?	X		No	Ruth D. K. 06/04/2007
3. Involve site-specific chemical traffic control?	X		No	Ruth D. K. 06/04/2007
4. Require a site-specific emergency notification process?	X		No	Ruth D. K. 06/04/2007
5. Cause a modification to equipment with an environmental permit?	X		No	Ruth D. K. 06/04/2007
6. Potentially impact operation of the river system or require special water elevations or flow conditions??	X		No	Ruth D. K. 02/22/2008

Description of Proposed Action (Include Anticipated Dates of Implementation)	<input type="checkbox"/> Continued from Page 1
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Parts 1 through 4: If "yes" is checked, describe in the discussion section following this form why the effect is insignificant. Attach any conditions or commitments which will ensure insignificant impacts. Use of non-routine commitments to avoid significance is an indication that consultation with NEPA Administration is needed.

An EA or EIS will be prepared.

Based upon my review of environmental impacts, the discussions attached, and/or consultations with NEPA Administration, I have determined that the above action does not have a significant impact on the quality of the human environment and that no extraordinary circumstances exist. Therefore, this proposal qualifies for a categorical exclusion under Section 5.2._____ of TVA NEPA Procedures.

Project Initiator/Manager Deborah K Ruth		Date 02/19/2008
TVA Organization RSO&E	E-mail dkruth@tva.gov	Telephone

Site Environmental Compliance Reviewer

Final Review/Closure

Signature

James F. Williamson
03/05/2008

Signature

Other Review Signatures (as required by your organization)

Linda K Thomas
03/05/2008

Signature

Signature

Signature

Signature

Attachments/References

CEC General Comment Listing

1. Please review CEC 16057 (Wilson Auxiliary Lock - New Bridge) and provide comments by June 25, 2007. The project manager is Debbie Ruth @ 865-632-6119. Charge review time to short code 000WZ7D.
By: Linda K Thomas 06/11/2007
Files: CEC 16057 scope.doc 06/01/2007 31,232 Bytes
Attachment A CEC Bascule Bridge Replacement (2).doc 06/01/2007 26,624 Bytes
Wilson Lock Bridge Replacement.pdf 06/01/2007 218,752 Bytes
WLBRR-00-C10.pdf 06/01/2007 971,505 Bytes
WLBRR-00-S01.pdf 06/01/2007 172,470 Bytes

Part 2 Comments

1. After reviewing the site and heritage database, there were 16 endangered, 2 threatened federal aquatic species, and three state listed mussels that are within ten miles of the project site. However, after reviewing the proposed project there will be no effects to T/E aquatic species if all construction runoff is kept out of the reservoir. The area of effect should not include aquatics if the construction area is contained with appropriate BMP's.
By: Clinton Jones 06/18/2007
Files: Table 3.doc 06/18/2007 61,952 Bytes
1. A review of the TVA Regional Natural Heritage database indicates there are no federal-listed species, one state-listed species (*Dicentra cucullaria*, Dutchman's breeches-S2) and two champion trees (Yellowwood and September Elm) recorded from within five miles of the Bridge replacement at Wilson Auxiliary Lock. All three of these species are found across the river in Colbert County, AL on the Muscle Shoals Reservation. Review of maps, photos, and knowledge of rare plant habitats in the vicinity indicates the proposed project area would not provide suitable habitat for this rare species or would affect the existence of the two champion trees, therefore no significant impacts to these botanical resources are expected.
By: Patricia B Cox 06/21/2007
1. A review of the TVA Natural Heritage database during June 2007 indicated that one state-listed species has been recorded within three miles of the project area. The alligator snapping turtle (*Macrochelys temminckii*) occurs in large, slow moving bodies of water. Suitable habitat exists for this turtle in Pickwick and Wilson Reservoir, but the proposed action would not affect this species, or its aquatic habitat. Three federally listed species have been recorded from Lauderdale County, Alabama: Gray bat (*Myotis grisescens*), Indiana bat (*Myotis sodalis*), and bald eagle (*Haliaeetus leucocephalus*). Bald eagles prefer forested habitat near large bodies of water where they forage. Suitable habitat exists along Pickwick and Wilson Reservoir, but the nearest nest is 11 miles away, and the proposed action would not impact any suitable habitat for this bird. Gray and Indiana bats have been recorded from caves in Lauderdale County, but all are greater than seven miles away and would not be impacted by this project. Both Pickwick and Wilson Reservoir offer ample foraging habitat for both species, but the proposed action would not impact this habitat, or either species. The proposed actions of this project would not impact these, or any other state- or federally protected species, or their habitats.
By: Jenny K Fiedler 06/25/2007
2. Wilson Dam is designated a National Historic Landmark and will require review and consultation with both the AL SHPO and the Advisory Council on Historic Preservation (Wash.D.C.) before work can proceed. Project will be an adverse impact.
By: Charles R Tichy 06/19/2007
2. After consultation with the Alabama SHPO, the design and construction of the new bridge has been determined as having no adverse effect on Wilson Dam NHL. This finding is contingent upon implementation of the commitment that TVA will use a color that will match the dam concrete. Removal of the Bascule Bridge, however, remains an adverse effect and consultation has not been completed.
By: Thomas O Maher 03/05/2008
4. Because no such designated waters occur at or adjacent to the project site, the proposed action is not anticipated to impact Wild and Scenic Rivers or their tributaries.
By: Jan K Thomas 06/20/2007
5. Because no such designated waters occur at or adjacent to the project site, the proposed action is not anticipated to impact streams listed on the Nationwide Rivers Inventory.
By: Jan K Thomas 06/20/2007
6. A review of the National Wetland Inventory, Soil Survey Geographic Database, aerial photographs, USGS topographic maps, site construction plans, and 'scope of work' description indicates that no wetland areas will be affected by the proposed bridge building activities. Bridge piers will be placed outside the navigation channel and best management practices will be in place to ensure that sediment and construction debris does not enter the waterway.
By: Britta P. Dimick 06/18/2007
7. The proposed project involves the construction of a bridge within the 100-year floodplain. Consistent with Executive Order 11988, a bridge is considered to be a repetitive action in the floodplain that should result in minor impacts. Therefore,

we have no objection to the proposed project.

By: Roger A. Milstead 06/11/2007

8. The proposed work is adjacent (within 0.1 mile) to two managed areas, Wilson Dam Tailwater Restricted Mussel Harvest Area and Veteran's Memorial Park (formerly Point Park). • The Wilson Dam Tailwater Restricted Mussel Harvest Area, managed by the Alabama Department of Conservation and Natural Resources, is an area of Pickwick Reservoir where restrictions apply to the harvesting of freshwater mussels. This area extends from Wilson Dam downstream to the upper end of Seven Mile Island. The restricted mussel area does not extend into Florence Canal and the auxiliary lock portion of Wilson Dam. Because TVA's Best Management Practices for construction near streams and waterways would be used and spill and material containment protocols would be implemented, no impact on the mussel harvest area is anticipated. • Veteran's Memorial Park is a highly used public park managed by the City of Florence. Located northeast of the auxiliary lock and east of Wilson Dam Road with a shoreline on Wilson Reservoir, this park offers campsites, tennis courts, ball fields, an amphitheater, an 18-hole disc (Frisbee) golf course and other amenities, including a memorial to veterans. Although some congestion and noise from construction in the area could temporarily impact park users, these impacts are anticipated to be insignificant. Two additional managed areas and/or ecologically significant sites are within three miles of the proposed work: • Old First Quarters TVA Small Wild Area and Potential National Natural Landmark • McFarland Park Because the distance from the proposed work to these areas is sufficient (approximately 2.1 – 2.9 miles), no impacts are anticipated as a result of the proposed work.

By: Jan K Thomas 06/20/2007

9. Since the project will not be moving water or aquatic species from other locations, the proposed project will not contribute to the spread of exotic or invasive aquatic species.

By: Clinton Jones 06/18/2007

9. The proposed project would not contribute to the spread of exotic or invasive terrestrial animal species.

By: Jenny K Fiedler 06/25/2007

9. Due to the scope and duration of the project, there is no potential for this project to contribute to the spread of exotic or invasive terrestrial plant species. No permits or commitments are required.

By: Patricia B Cox 06/21/2007

10. There are records of a heron colony on Jackson Island, 0.5 miles from the project site, and an osprey nest (*Pandion haliaetus*), 1.5 miles away. Because of these distances, the proposed action would not impact either the heron colony or osprey nest. No other aggregations of migratory birds are known from within three miles of the project site, and this project would not impact any migratory bird populations.

By: Jenny K Fiedler 06/25/2007

12. Proper implementation of the following control measures is expected to result in temporary and insignificant surface water impacts: 1) compliance with applicable environmental laws and regulations, 2) application of standard TVA Best Management Practices, and 3) commitments to prevent the discharge or loss of potential pollutants to the stream/reservoir and to contain and properly dispose all wastes/accidental spills/surface runoff/potential contaminants.

By: John M. Higgins 06/12/2007

15. No uncommon terrestrial plant communities are known from the immediate area to be impacted and none are indicated on the maps and photographs. Therefore, there is no known potential for this project, as described, to impact such resources. No permits or requirements are required.

By: Patricia B Cox 06/21/2007

15. There are records of two caves within three miles of the project site. These caves are 2.1 and 2.9 miles away. The proposed actions would not impact these caves, or any other unique or important terrestrial habitats.

By: Jenny K Fiedler 06/25/2007

16. The project will not affect unique or important aquatic habitats if BMP's are in place to contain the construction runoff and material from reaching the reservoir.

By: Clinton Jones 06/18/2007

Part 3 Comments

6. Potential impacts would be insignificant with commitments.

By: J. Justin Long 06/14/2007

CEC Comment Listing

14. Light associated with new road approach will be the same as other lighting in the area.
By: Ella C. Guinn (Tina) 03/05/2008

Part 4 Comments

7. Addition of a new bridge would have a minor, insignificant effect on Wilson Dam, which is a National Historic Landmark.
By: Ella C. Guinn (Tina) 03/05/2008

CEC Permit Listing

Part 2 Permits

12. State storm water construction permit if project disturbs more than one acre.
By: John M. Higgins 06/12/2007

Part 3 Permits

4. Stormwater Discharge Permit
By: James R. Hagerman 06/21/2007

CEC Commitment Listing

Part 2 Commitments

12. Best Management and Best Engineering Practices will be used to prevent the introduction of soil or any other pollutants into the stream.
By: John M. Higgins 06/12/2007
12. Best Management Practices shall be used to contain wastes and control pollutants, erosion/sedimentation, and surface runoff.
By: John M. Higgins 06/12/2007

Part 3 Commitments

4. Best Management and Best Engineering Practices will be used to prevent the introduction of soil or any other pollutants into the stream.
By: James R. Hagerman 06/21/2007
6. Contractor shall comply with all federal, state, and local laws and all TVA regulations.
By: J. Justin Long 06/14/2007
6. All recyclable materials will be recycled.
By: J. Justin Long 06/14/2007

Attachment B. Alabama SHPO Letter Dated December 11, 2007

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

COLONEL (RET.) JOHN A. NEUBAUER
EXECUTIVE DIRECTOR

December 11, 2007

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

Thomas O. Maher, Ph.D.
TVA
400 West Summit Hill Drive
Knoxville, Tennessee 37902-1499

Re: AHC 08-0148
Bascule Bridge Replacement
Wilson Dam
City of Florence
Lauderdale County, Alabama

Dear ~~Dr. Maher~~ *TOM*:

Upon review of the information provided by your office and direct consultation with you, we have determined the following. One possibility not discussed in the project package would be for the existing bridge to be left open in place as an option. Notwithstanding, we prefer Option 2, Alternate B, in which the entire bridge and operating machinery would be saved and interpreted for the public. We also recommend that the new bridge should be painted or concrete tinted to more closely match the color of the dam.

We appreciate your continued efforts on this project and we look forward to working with you to its conclusion. Should you have any questions, the point of contact for this matter is Lee Anne Wofford at (334) 230-2659. Please have the AHC tracking number referenced above available and include it with any correspondence.

Truly yours,



Elizabeth Ann Brown
Deputy State Historic Preservation Officer

EAB/LAW/GCR/gcr

Attachment C. Federally and State-Listed Aquatic Animal Species Known From Within 10 Miles Downstream of Wilson Dam (TRM 259) and Federally Listed Aquatic Species Reported From Colbert and Lauderdale Counties, Alabama

Common Name	Scientific Name	Federal Status	State Status
Crustacean			
Alabama cave shrimp	<i>Palaemonias alabamiae</i>	Endangered	Threatened
Native Mussels			
Birdwing pearlymussel*	<i>Lemiox rimosus</i>	Endangered	Protected
Cumberlandian combshell	<i>Epioblasma brevidens</i>	Endangered	Protected
Cracking pearlymussel	<i>Hemistena lata</i>	Endangered	Protected
Dromedary pearlymussel*	<i>Dromus dromas</i>	Endangered	Protected
Fanshell	<i>Cyprogenia stegaria</i>	Endangered	Protected
Orange-footed pearlymussel	<i>Plethobasus cooperianus</i>	Endangered	Protected
Oyster mussel*	<i>Epioblasma capsaeformis</i>	Endangered	Protected
Pink mucket	<i>Lampsilis abrupta</i>	Endangered	Protected
Pyramid pigtoe	<i>Pleurobema rubrum</i>	-	Protected
Ring pink	<i>Obovaria retusa</i>	Endangered	Protected
Rough pigtoe pearlymussel	<i>Pleurobema plenum</i>	Endangered	Protected
Sheepnose	<i>Plethobasus cyphus</i>	-	Protected
Slabside pearlymussel	<i>Lexingtonia dolabelloides</i>	Candidate	Protected
Spectaclecase	<i>Cumberlandia monodonta</i>	-	Protected
Turgid blossom pearlymussel	<i>Epioblasma turgidula</i>	Endangered	Protected
White wartyback pearly mussel	<i>Plethobasus cicatricosus</i>	Endangered	Protected
Snail			
Anthony's riversnail*	<i>Athearnia anthonyi</i>	Endangered	-
Fishes			
Alabama cavefish	<i>Speoplatyrhinus poulsoni</i>	Endangered	Protected
Slackwater darter	<i>Etheostoma boschungii</i>	Threatened	Protected
Spotfin chub	<i>Cyprinella (=Hybopsis) monacha</i>	Threatened	Protected

- Not applicable

* Reintroduced nonessential experimental population species