Document Type: EA-Administrative Record
Index Field: Environmental Assessment
Project Name: WCF Deconstruction
Project Number: 2014-34

WIDOWS CREEK FOSSIL PLANT DECONSTRUCTION
FINAL ENVIRONMENTAL ASSESSMENT
Jackson County, Alabama

Prepared by:
TENNESSEE VALLEY AUTHORITY
Knoxville, Tennessee

June 2016

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Table of Contents

List of Appendices

List of Tables

List of Figures

Symbols, Acronyms, and Abbreviations

AADT	Average Annual Daily Traffic
ACM	Asbestos-Containing Material
ADEM	Alabama Department of Environmental Management
APE	Area of Potential Effects
AR4	Intergovernmental Panel on Climate Change Fourth Assessment
BMP	Best Management Practice
CBMPP	Construction Best Management Practices Plan
CEQ	Council on Environmental Quality
CFC	Chlorinated fluorocarbon
CFR	Code of Federal Regulations
CH_4	Methane
CO_2e	Carbon Dioxide Equivalent
dB	decibel
dBA	A-weighted decibel
EA	Environmental Assessment
EO	Executive Order
EPA	Environmental Protection Agency
FFCA	Federal Facilities Compliance Agreement
ft	feet
GWP	Global Warming Potential
HFC	Hydrofluorocarbon
HUC	Hydrologic Unit Code
IPCC	Intergovernmental Panel on Climate Change
km	kilometer
kV	kilovolt
Ldn	Day-Night Sound Level
Leq	Equivalent Sound Level
LOS	Level of Service
mi	mile(s)
mph	miles per hour
MW	Megawatt
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
PCB	Polychlorinated Biphenyl
PFC	Perfluorocarbon
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
RFAI	Reservoir Fish Assemblage Index
SF_6	Sulfur Hexafluoride
SHPO	State Historic Preservation Office
SMZ	Streamside Management Zone
SR	State Route
SWMA	State Wildlife Management Area
TRM	Tennessee River Mile
TVA	Tennessee Valley Authority
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
vpd	vehicles per day
WCF	Widows Creek Fossil Plant

CHAPTER 1 - PURPOSE OF AND NEED FOR ACTION

1.1 Introduction and Background

The Tennessee Valley Authority (TVA) Widows Creek Fossil Plant (WCF), located in Jackson County, Alabama, is one of the oldest fossil plants in TVA's fleet. WCF is named for Widows Creek, which flows through the plant site. Widows Creek is located on Guntersville Reservoir on the Tennessee River in Jackson County in northeast Alabama. WCF is a 1,600-megawatt (MW) coal-fired power station, 4.8 miles (mi) (7.7 kilometers [km]) east of Stevenson, Alabama. WCF generates about nine billion kilowatt-hours of electricity a year using eight coal-fired generating units. The first 140-MW unit, Unit 1, was constructed in 1950 and operation began in 1952. Five additional identical 140-MW units (Units 2-6) were built between 1952 and 1954. Two more units (Unit 7 at 575 MW and Unit 8 at 550 MW) began operation in 1961 and 1965, respectively. Between May 2012 and July 2013, Units 1-6 (the "Alpha Plant") were retired under an agreement that TVA entered into with the U.S. Environmental Protection Agency (EPA). Units 7-8 (the "Bravo Plant") are housed in a separate building from the Alpha Plant. Unit 7 was retired on September 21, 2015. Unit 8 was idled in September 2014 and has been retired.

TVA's agreement with EPA is a Federal Facilities Compliance Agreement (FFCA), which resolved a dispute over how the Clean Air Act's New Source Review program applied to maintenance and repair activities at TVA's coal-fired power plants. TVA also entered into a judicial consent decree with the states of Alabama, Kentucky, Tennessee, and North Carolina and three environmental advocacy groups: the Sierra Club, the National Parks Conservation Association, and Our Children's Earth Foundation. The consent decree is substantively similar to the FFCA. These agreements (collectively called the "EPA Agreements") require TVA to reduce emissions across its coal-fired generating system and take other actions at its coal plants, including retiring some of its units (hence TVA's retirement of WCF Units 1-6). The EPA Agreements did not require TVA to retire Units 7 and 8. However, TVA decided to retire Units 7 and 8 for financial and regulatory reasons.

TVA is investigating options for deconstruction of the powerhouses and powerhouse equipment and systems associated with the eight units at WCF, including the following:

- Electrostatic precipitators
- Selective catalytic reduction systems
- Flue gas desulfurization units
- Coal-handling facilities
- Ancillary buildings
- Water intake structures
- Water treatment building
- Powerhouse General Service Unit transformer yards
- Coal rail and barge unloading facilities
- Facility chimneys
- Electrical Control Building

The 161-kilovolt (kV), 230-kV, and 500-kV switchyards will remain in service, regardless of the plant deconstruction option selected.

Figure 1-1 shows the location of WCF in northeastern Alabama. Figure 1-2 shows the WCF deconstruction area and overview map, Figure 1-3 shows the WCF Units 1-6 structures included in the deconstruction study, and Figure 1-4 shows WCF Units 7-8 and other plant structures included in the deconstruction study. The deconstruction area covers approximately 200 acres within the 2,542 acre WCF property.

The impact of activities associated with the closure of the ash and gypsum ponds, remediation of any contaminated soils associated with the coal yard, closure of the coal yard runoff pond, and closure of the National Pollutant Discharge Elimination System (NPDES) outfalls in conjunction with closure of discharge and stormwater permits will be assessed in future environmental reviews since all such activities would occur independent of the deconstruction of WCF. These projects could occur independent of each other as well; some or all of them could be implemented in any order.

1.1 Purpose and Need

The purpose of the proposed action is to appropriately manage disposition of the buildings and physical structures at WCF that are no longer used for their original purpose of power generation. TVA needs to manage the disposition of the WCF site to provide necessary structures and facilities for ongoing site activities while considering capital costs, long-term operations and maintenance costs, environmental risks, and safety and security at the plant site. The preferred alternative would provide the best balance based on a consideration of these factors.

1.2 Decision to be Made

This environmental assessment (EA) is being prepared to inform TVA decision makers and the public about the environmental consequences of the proposed action. The decision TVA must make is whether to assess, close, and secure power production facilities, and implement an operations and maintenance program to maintain structures and equipment; demolish the facility to grade with controlled explosive demolition of Units 1-8 chimneys; demolish the facility to grade with Units 1-8 chimney dismantlement; demolish the facility to grade with Units 1-8 chimney hybrid demolition/dismantlement; or to take no action. TVA is working with the Alabama Department of Environmental Management (ADEM), Alabama Department of Conservation and Natural Resources, U.S. Fish and Wildlife Service (USFWS), and Alabama Historical Commission in assessing the impacts of its decision.

1.3 Related Environmental Reviews and Consultation Requirements

Environmental documents and materials were reviewed related to this assessment. These included environmental assessments and reviews at WCF and the surrounding area for actions related to the proposed deconstruction of the facility. The contents of these documents help describe the WCF deconstruction project area and are incorporated by reference as appropriate. Documents reviewed are listed below.

- *Widows Creek Fossil Plant Deconstruction, Jackson County, Alabama* (TVA 2011a). This EA describes the impacts of the proposed deconstruction of WCF for a preliminary deconstruction design.
- *Widows Creek Property Disposal Environmental Assessment, Jackson County, Alabama* (TVA 2015b). This EA describes the potential impacts of future uses of a 600-acre property that was part of the Widows Creek property.

- *Widows Creek Fossil Plant Integrated Pollution Prevention Plan and Spill Response Plan Revision 4* (TVA 2011b). This plan describes the stormwater pollution prevention and potential hazardous materials and controls.
- *Widows Creek Fossil Plant House Demolition* (TVA 2013). This EA evaluated the demolition and debris removal of structures located on approximately 600-acres of land adjacent to WCF acquired by TVA for future activities. The demolition allowed TVA to protect human health and safety by removing abandoned structures that could attract vagrants and crime.
- *Ash Impoundment Closure* (TVA 2015). This EIS evaluates the closure of coal combustion residual impoundments at select TVA coal-fired power plants to assist TVA in complying with the Coal Combustion Residual Rule issued by the EPA.

1.4 Scope of the Environmental Assessment

TVA has prepared this EA to comply with the National Environmental Policy Act (NEPA) and associated implementing regulations. TVA considered the possible environmental effects of the proposed action and determined that potential effects to the environmental resources listed below were relevant to the decision to be made; thus, the following environmental resources are addressed in detail in this EA.

- Land Use and Prime Farmland
- Geology and Groundwater
- Surface Water
- Floodplains
- Wetlands
- Aquatic Ecology
- Wildlife
- Vegetation
- Threatened and Endangered Species
- Air Quality and Climate Change
- Hazardous Materials and Solid and Hazardous Waste
- Transportation (Rail and Roadway)
- Noise and Vibration
- Visual Resources
- Natural Areas, Parks, and Recreation
- Cultural and Historic Resources
- Utilities and Service Systems
- Safety
- Socioeconomics and Environmental Justice

1.5 Necessary Permits or Licenses

Information regarding the following permits or coordination is provided in Appendix A.

- Resource Conservation and Recovery Act Hazardous Waste Part C Permit Application, EPA Form 8700-12 (Office of Management and Budget #2050-0024)
- Air Construction Permit and modification of existing Title V Permit
- Modification of the existing NPDES Permit for WCF
- Permits associated with disposal of sewage and sanitary wastewater into the onsite septic system

- Underground storage tank registrations and permits, provided the tanks are abandoned or removed
- Oil Spill Prevention, Control, and Countermeasure Plan or Integrated Pollution Prevention and Spill Response Plan
- Coverage under Alabama General NPDES Permit for Discharges of Stormwater Associated with Construction Activities
- Standard best management practices (BMPs) and Integrated Pollution Prevention Plan for the addition of a stormwater pond if required
- Coordination with USFWS as needed to disturb or remove federally listed species if present at the time of deconstruction
- U.S. Army Corps of Engineers (USACE) Section 404 permit, if wetland in the project area is filled or dredged
- Notification of Demolition (State of Alabama and EPA)
- As part of the National Emission Standard for Asbestos, an asbestos inspection and notification to the Alabama Department of Environmental Management (ADEM) would be required before demolition

No permits or licenses would be required specifically for solid or hazardous materials transportation-related activities under any of the potential alternatives with the exception of hauling hazardous materials for the purpose of disposal offsite. The selected contractor would be responsible for ensuring necessary permits are obtained and implemented, manifests completed, and hazardous waste disposal properly reported.

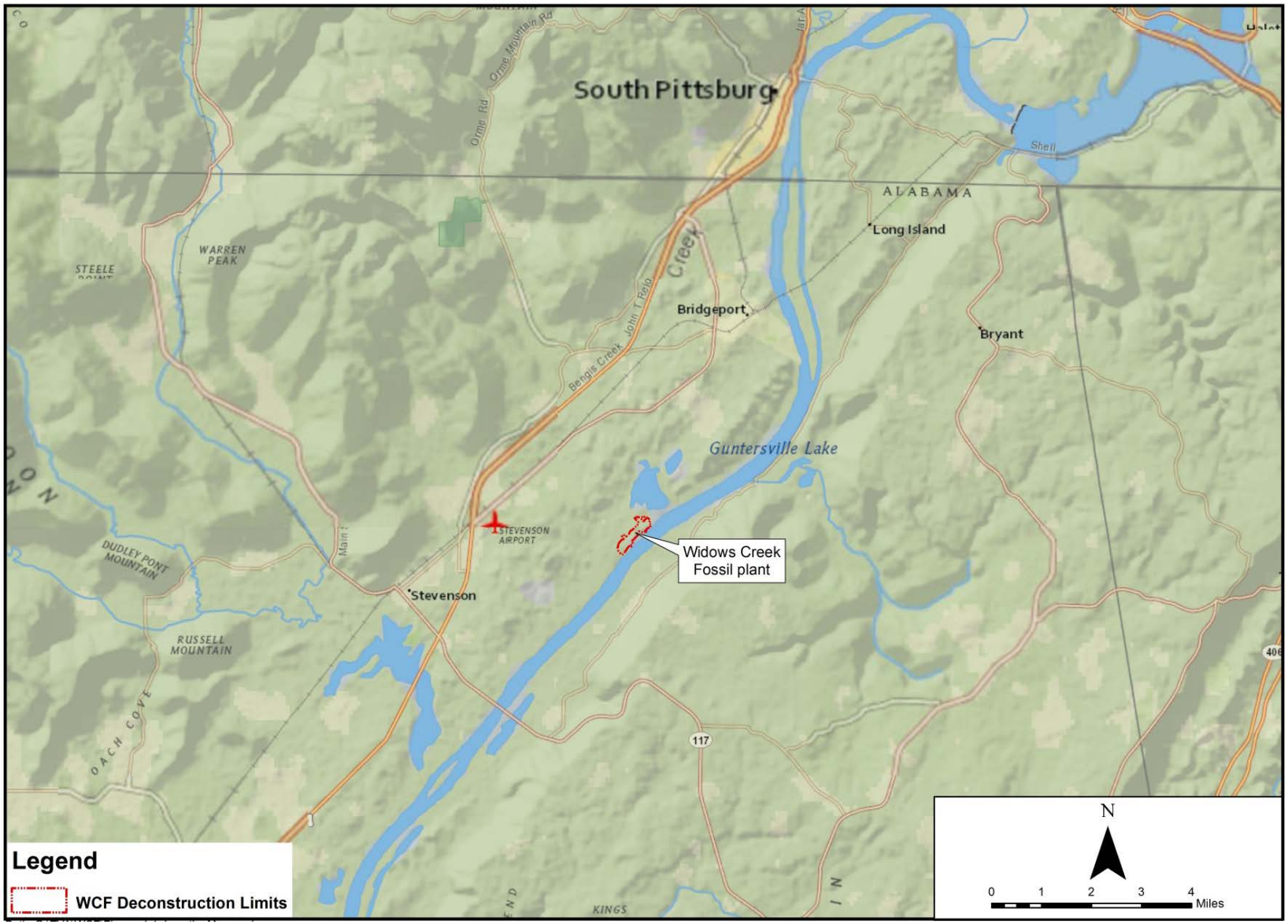

Figure 1-1. Location of WCF

Figure 1-2. WCF Deconstruction Area and Overview Map

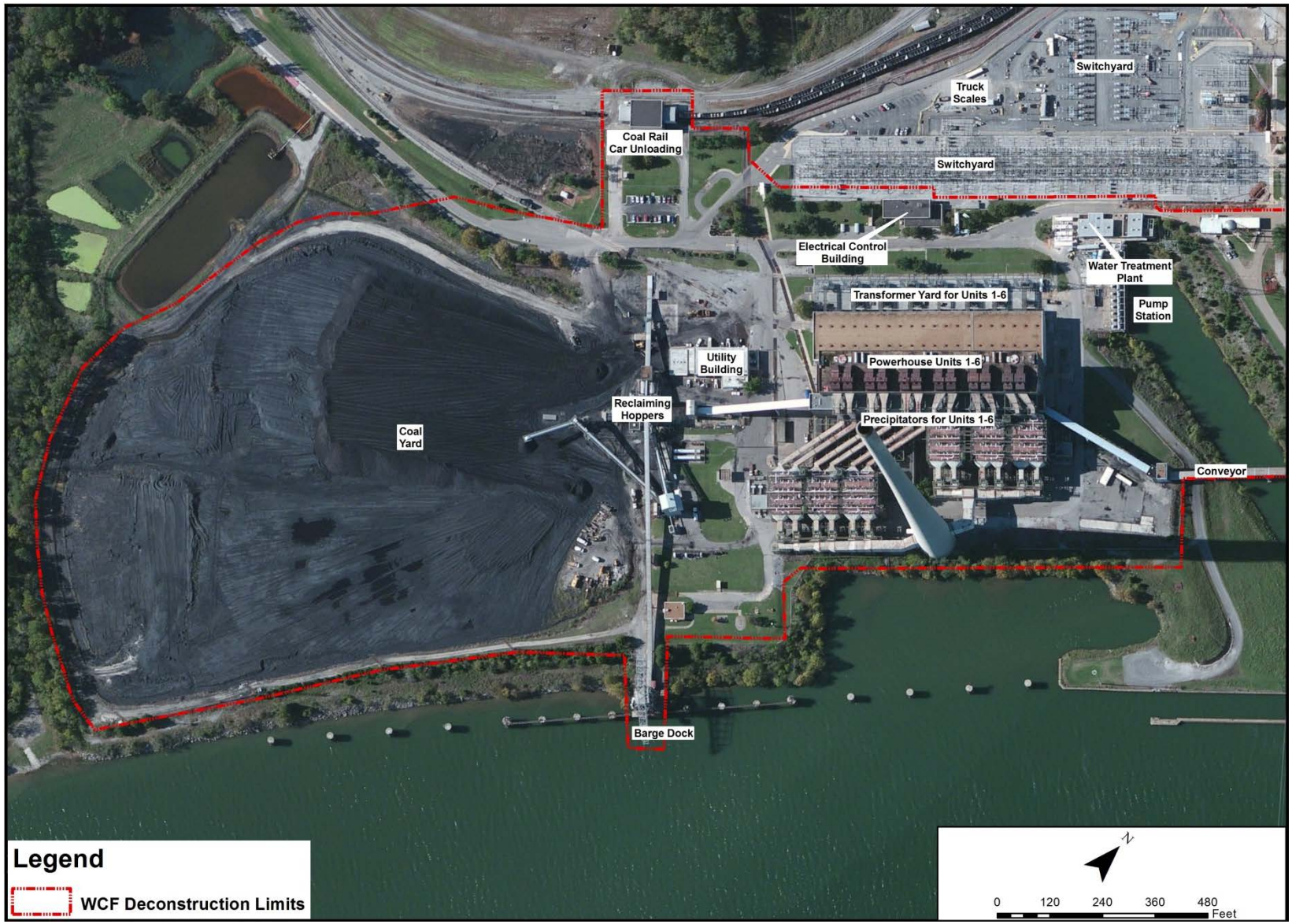

Figure 1-3. WCF Units 1-6 Structures

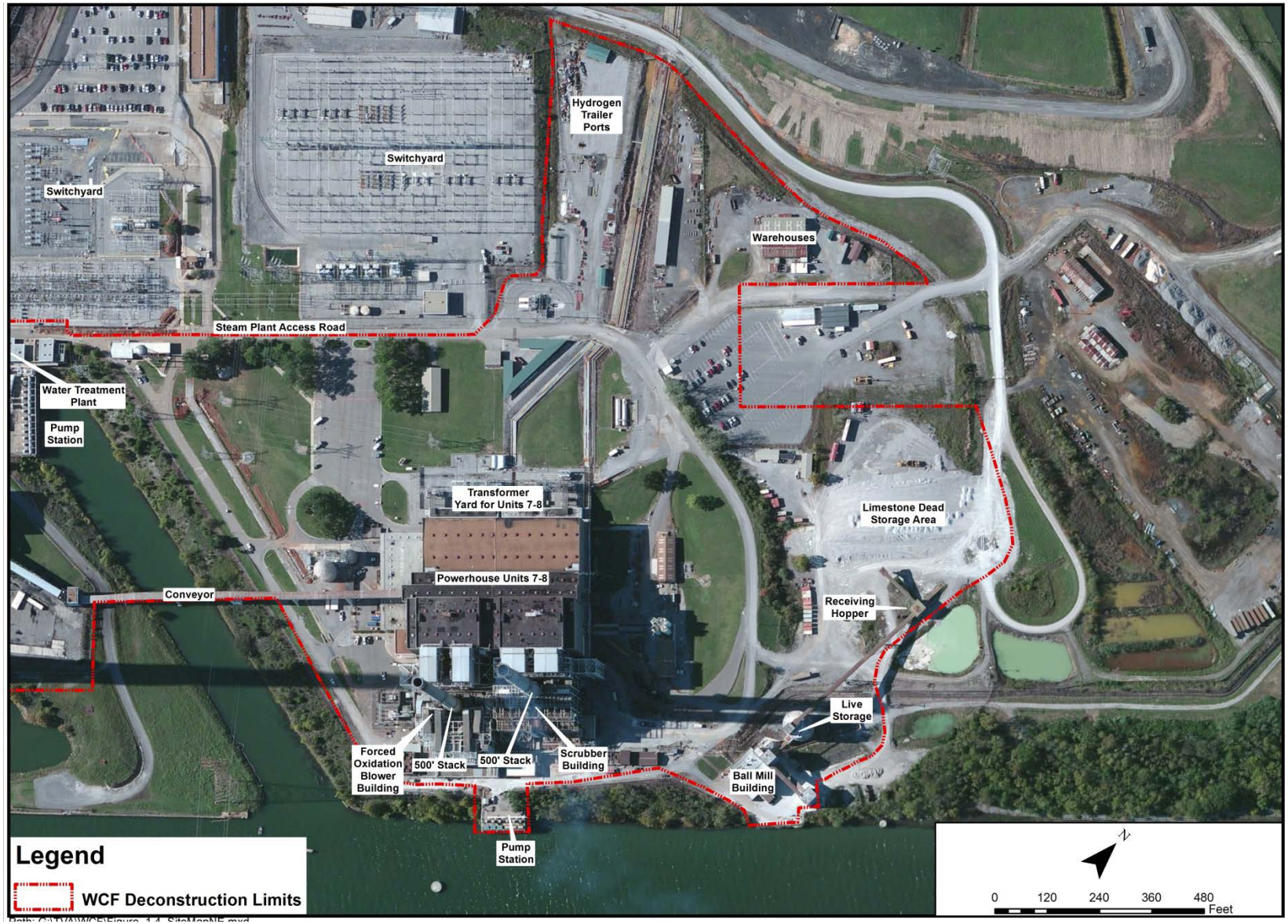

Figure 1-4. WCF Units 7-8 and Other Plant Structures

CHAPTER 2 - ALTERNATIVES

This chapter presents descriptions of the proposed action and its alternatives, a brief comparison of their environmental effects, and TVA's preferred alternative.

2.1 Description of Alternatives

The following are summaries for each alternative proposed for this EA.

2.1.1 Alternative A – Assess, Close, and Secure Power Production Facilities, and Implement Operations and Maintenance Program to Maintain Structures and Equipment

The objective of Alternative A is to de-energize systems at the site and minimize environmental and safety risks, and to close the site to a "cold, dark, and dry" status. Existing buildings, structures, and equipment within the approximately 200-acre decontamination/deconstruction boundary (Figures 1-2, 1-3, and 1-4) would remain in place. Activities associated with Alternative A include the following:

- Creation of procedures detailing operations and maintenance plans for the facility
- Periodic roof and structural inspections
- Periodic monitoring of the condition of hazardous materials
- Periodic hazardous material removal as materials deteriorate over time
- Maintenance of fire protection systems in buildings
- Monitoring and periodic maintenance of remaining polychlorinated biphenyl (PCB)-containing and PCB-contaminated electrical equipment and encapsulated areas (as required by federal regulation)
- Maintenance of lighting and emergency egress lighting in buildings
- Maintenance of chimney lighting required by Federal Aviation Administration regulations
- Maintenance of select sump pumps to prevent below-grade spaces (basements) from becoming flooded

Under Alternative A, the plant staff and regular maintenance activities would be reduced, and personnel from other TVA sources would be used, as necessary, to assist with performing operations and maintenance activities.

Major equipment at WCF would remain at the site because it cannot be used at other TVA facilities nor does this equipment have resale value in the market. The anticipated cumulative cost of Alternative A is expected to be higher than the costs of Alternatives B1, B2, and B3 and similar to the cost of Alternative C.

2.1.2 Alternative B1 – Demolition to Grade with Controlled Explosive Demolition of Units 1-8 Chimneys (three chimneys total)

The objectives of Alternative B1 are to:

- Decontaminate buildings and structures (remove hazardous materials for reuse or disposal)
- Demolish buildings and equipment/systems included within the approximately 200-acre decontamination/deconstruction boundary (Figure 1-2) and associated underground structures to a depth of 3 feet (ft) below ground,
- Backfill below grade building foundations

- Bulkhead or remove the intake and discharge channels; flow-fill may be placed behind the bulkheads as a field engineering option
- Restore the site to grade to allow drainage away from the demolished building footprints

The cost analysis for the demolition portion of this alternative includes the projected salvage value of scrap metal and concrete/masonry. Scrap metal would be sold to local or regional vendors, and concrete/masonry would be processed and re-used onsite as backfill.

This alternative would use the most economic method to demolish the Unit 1-8 chimneys through controlled demolition using explosives. Buried utilities would be cut and capped at the decontamination/deconstruction boundary (Figures 1-2, 1-3, and 1-4) and abandoned in place. Utilities constructed of hollow pipe would be decommissioned through placement of a mechanical cap or plug and/or placement of concrete on an open end. Abandoning utilities in place and demolishing structures to 3 ft below grade would result in a “brownfield” site.

This alternative includes three options for disposing of the cooling water intake and discharge tunnels: sealing with bulkheads, sealing with bulkheads and flow-fill, or removal. Sealing would consist of erecting bulkheads within the intake and discharge tunnels. Sealing with flow-fill would include closing the tunnels with bulkheads and then pumping a mixture of water, cement, and fine aggregate in to fill the tunnels. (Use of flow-fill would be evaluated during design and engineering of the demolition.) Tunnel removal would include complete demolition of the structures. While the decision whether to use either sealing or removal would be made during Phase 2 of the WCF Deconstruction project after detailed engineering plans are developed, this EA assesses the impacts of all options.

This alternative would include the potential to use the coal yard area as a laydown area, particularly for the storage of fill.

Demolition of the following facilities and structures is not within the scope of this alternative:

- 161-kV, 230-kV, and 500-kV switchyards and associated overhead grid – These assets would remain in service as part of TVA’s electric power grid.
- Ash Pond, Gypsum Pond, Coal Yard Runoff Pond, and Ancillary Ponds – TVA is currently evaluating closure of these ponds. Closure of the ponds is an action that is independent from decontamination/deconstruction of the structures. The ponds can remain open after demolition is complete. The ponds can also be closed before demolition takes place.
- Guard House – Due to a continued need for site security and access control, the Guard House will remain in place.
- Parking lots and roads outside the decontamination/deconstruction boundary – The parking lots and roads will be needed for the foreseeable future and will not be demolished at this time.
- Buildings outside decontamination/deconstruction boundary – Some onsite buildings will remain in place for future use by transmission system maintenance crews, as the site will continue to be used and maintained as part of TVA’s electric power grid.
- The coal yard soils will be addressed in a separate future project.
- Mooring cells, sheet piling, and other structures along the river shoreline, such as the intake structures – These structures will remain in place at this time.
- Railroad tracks will remain in place.

Refer to Figures 1-2, 1-3, and 1-4 for the locations of buildings and other structures included or excluded from this study.

This alternative does not include any remediation or closure activities related to environmentally impacted soil in the coal yard or petroleum-contaminated soil associated with existing or former underground storage tanks. One known leaking underground storage tank remediation area is located between Units 1-6 and the Coal Yard Utility Building. This alternative, however, includes the remediation of petroleum-contaminated soil that would be encountered during removal of precipitators, shallow foundations, and Units 1-6 ash sluice lines above three feet below grade. The remediation of the coal yard and the remaining petroleum-contaminated soil would be addressed as separate actions of independent utility.

This alternative takes into account the impact of the disposal of ash and gypsum wastes that are encountered in the course of decontamination/demolition. The anticipated cumulative cost of Alternative B1 is expected to be lower than the cost of Alternatives A, B1, B3, and C

2.1.3 Alternative B2 – Demolition to Grade with Units 1-8 Chimney Dismantlement

Alternative B2 is identical to Alternative B1 with one exception: Units 1-8 chimneys would be dismantled instead of being demolished with controlled explosives. The demolition cost of this alternative would be significantly higher than the demolition cost of Alternative B1.

Dismantlement of chimneys involves erecting ring scaffolding or another support structure around the chimneys and demolishing them from the top to bottom in a controlled manner. This method of chimney demolition would involve significantly higher labor costs and higher risks of accidents compared to controlled explosive demolition. All other conditions as described under Alternative B1 would apply to Alternative B2. The anticipated cumulative cost of Alternative B2 is expected to be lower than the cost of Alternatives A and C but higher than the cost of Alternatives B1 and B3.

2.1.4 Alternative B3 – Demolition to Grade with Units 1-8 Chimney Hybrid Demolition/Dismantlement

Alternative B3 is identical to Alternatives B1 and B2 with one exception: Units 1-8 chimneys would be removed through a hybrid approach of dismantlement and controlled explosive demolition. The demolition cost of this alternative would be higher than the demolition cost of Alternative B1 but lower than the cost of Alternative B2. This method of chimney removal would involve higher labor costs and higher risks of accidents compared to Alternative B1 but lower costs and risks compared to Alternative B2. All other conditions as described under Alternative B1 would apply to Alternative B3. The anticipated cumulative cost of Alternative B3 is expected to be lower than the cost of Alternatives A, B2, and C but higher than the cost of Alternative B1.

2.1.5 Alternative C – No Action

Under Alternative C, TVA would take no action. Consequently, WCF Units 1-8 would be left in place in their current condition. Additionally, TVA would take no action to maintain the units in operable condition. The plant would not generate power, and it would not be possible to restart the units. The plant would not be heated, cooled, or supplied with electricity. TVA would continue to restrict access to WCF. Periodic inspections and critical maintenance would be performed as needed. TVA would maintain the NPDES permit, implement the Integrated Pollution Prevention Plan, and perform environmental monitoring and reporting as required. TVA would continue current operations and maintenance practices to remove hazardous materials from Plant A. Costs for the No Action Alternative would be similar to Alternative A, which are higher than Alternatives B1, B2, and B3.

2.2 Comparison of Alternatives

The environmental impacts of the alternatives are summarized in Table 2-1. These summaries are derived from the information and analyses provided in Chapter 3.

Table 2-1. Summary and Comparison of Alternatives by Resource Area*

Resource Area	Impacts from Alternatives				
	A	B1	B2	B3	C
Land Use and Prime Farmland	None	Minor beneficial	Minor beneficial	Minor beneficial	None
Geology and Groundwater	Minor	None	None	None	Minor
Surface Water	Minor	None	None	None	Minor
Floodplains	None	Minor beneficial	Minor beneficial	Minor beneficial	None
Wetlands	None	None	None	None	None
Aquatic Ecology	None	None	None	None	None
Wildlife	None	None	None	None	None
Vegetation	None	Minor beneficial	Minor beneficial	Minor beneficial	None
Threatened and Endangered Species	None	None	None	None	None
Air Quality and Climate Change	None	Minor and temporary	Minor and temporary	Minor and temporary	None
Hazardous Materials, and Solid and Hazardous Waste	Minor	None	None	None	Minor
Transportation (Rail and Roadway)	Minor	Minor	Minor	Minor	None
Noise and Vibration	None	Minor and temporary	None	Minor and temporary	None
Visual Resources	None	Minor beneficial	Minor beneficial	Minor beneficial	None
Natural Areas, Parks and Recreation	None	None	None	None	None
Cultural and Historic Resources	None	None	None	None	None
Utilities and Service Systems	Minor	None	None	None	Minor
Safety	Minor	Minor and temporary	Minor and temporary	Minor and temporary	Minor
Socioeconomics	None	Minor beneficial	Minor beneficial	Minor beneficial	None
Environmental Justice	None	None	None	None	None

* Unless otherwise stated, impacts listed in the table are adverse effects.

2.3 Identification of Mitigation Measures

2.3.1 Surface Water

Alternatives B1, B2, and B3 include land disturbance, which would require a Construction Storm Water permit from ADEM and a Construction Best Management Practices Plan (CBMPP). The current NPDES permit, Storm Water Multi-Sector Permit, and Spill Prevention, Control, and Countermeasure Plan may require modification for all alternatives. Turbidity curtains would be installed as necessary to minimize potential impacts to surface waters during explosive demolition activities.

2.3.2 Wetlands

For impacts to wetlands that cannot be avoided under Alternatives B1, B2, and B3, a USACE Section 404 permit would be obtained that would minimize and offset potential impacts.

2.3.3 Wildlife

Inactive structures may be used by migratory birds for nesting. In order to avoid impacts to aggregations of migratory birds under Alternatives B1, B2, and B3, a survey of the buildings and structures within the project footprint would be performed at least one month prior to demolition to determine whether any migratory birds are actively using these structures. To prevent nesting prior to demolition, openings will be closed to the extent possible and deterrents may also be put in place. If active nests are present and demolition activities must occur within the active nesting season, TVA would coordinate with USFWS to ensure the assessment and appropriate mitigation of impacts to migratory birds.

2.3.4 Threatened and Endangered Species

Inactive structures may be used by federally listed gray bats, Indiana bats, and northern long-eared bats for roosting. Under Alternatives B1, B2, and B3, a survey of buildings, structures, and chimneys within the project footprint would be performed approximately one month prior to demolition to determine whether listed bat species are present. To prevent roosting prior to demolition, openings will be closed to the extent possible, and deterrents may also be put in place. If listed bats are actively roosting and would potentially be affected by demolition actions, TVA would consult with the USFWS to resolve potential impacts.

The decision whether to seal or remove the intake and discharge tunnels or to leave them in place would be made during Phase 2 of the WCF Deconstruction project after detailed engineering plans are developed. Should the decision be made to seal or remove the tunnels, TVA would consult with the USFWS regarding potential impacts to federally listed aquatic species that could be impacted by such actions. TVA would conduct a survey of the tunnels to determine if federally listed aquatic species are present in the tunnels and if so, consultation would result in a plan to minimize and mitigate potential impacts to such species.

2.3.5 Air Quality and Climate Change

Dust control would be required under Alternatives B1, B2, and B3 when any demolition activity takes place, during site grading, and during the transportation of demolition debris. Primary efforts in mitigation would be the control of dust generated from deconstruction activities to prevent it leaving the site. The demolition contractor would be required to remove ash from the facility proposed for deconstruction prior to demolition of that facility and would implement dust control measures during demolition to prevent the spread of dust, dirt, and debris. These methods include wetting equipment and demolition areas, covering waste or debris piles, using covered containers to haul waste and debris, and wetting unpaved vehicle access routes during hauling. Wet suppression can reduce fugitive dust emissions from roadways and unpaved areas. TVA also routinely requires onsite contractors to maintain engines and equipment in good working order.

Under Alternatives B1, B2, and B3, during demolition of the stacks, TVA would implement BMPs including wetting down the structure prior to felling, use of misting systems during stack felling, and tackifier applied inside the stacks. The fall zones would have berms to reduce the lateral extent of the dust cloud. Also, a hardened berm near the base of the stack would act as a backstop to prevent rock and debris spreading from the base of the stacks during demolition. Water or another approved material would be applied to the clean soil to discourage it from becoming airborne when the stack comes down. A misting system would be used to saturate

the air inside the fall zone and help to bind fugitive dust as it becomes airborne, hastening its resettling and preventing undue spread off site. Cleaning the inside of the stack and removing any fibrous materials is a common practice to mitigate additional dust generation (Project Navigator Ltd. 2013).

2.3.6 Hazardous Materials and Solid and Hazardous Waste

Under Alternatives B1, B2, and B3, TVA would remove hazardous materials from the facility. Removal is mitigation for the potential release of hazardous material. BMPs would be implemented as hazardous materials are removed by the demolition contractor. Under Alternatives A and C, BMPs would not be required. TVA would maintain security at the facility under Alternatives A and C with fencing and security personnel. With Alternatives B1, B2, and B3, TVA would maintain the fencing and security but to a lesser degree as the potential hazards of a standing facility would not exist.

Under Alternatives A and C, TVA would assess periodically the condition of remaining site facilities and potential hazardous materials as structures deteriorate and determine whether selective demolition or additional remediation would be needed at some point in the future.

2.3.7 Transportation

Under Alternatives B1 and B3, during the blasting event, river traffic would be restricted in the vicinity, CSX Railroad would be contacted and train movement prevented in the area, and select public roadways would be closed for public safety and to facilitate site security. Water, rail, and road traffic closures would vary from approximately three hours before and up to three hours after the blast. The road closure would not likely affect a large number of local residents due to the sparse population in the area. The demolition contractor would create a detailed plan for road closures that would be distributed to affected parties, including emergency personnel. After demolition, a railroad-provided team would inspect the track prior to reopening for rail service.

2.3.8 Noise and Vibration

A documentation services company would be contracted to evaluate the potential for vibration impacts under Alternatives B1 and B3. The documentation services company would use site-specific data provided by the blasting contractor to prepare a vibration model simulating the effects of discharge of the explosives or vibrations due to the stack hitting the ground. The model results would be compared to thresholds developed by the United States Bureau of Mines for vibration damage. The study would assess structures within a 0.5 mi radius of the stack.

Onsite power transmission equipment at WCF would have the potential for minor effects from vibrations caused by explosive demolition of the stacks. Minor effects could include temporary power disruption. Mitigation measures to minimize potential impacts would be determined during the construction planning process and could include switchyard alignment, staging personnel in the Electrical Control Building (which would continue operations until near the end of the deconstruction process), and scheduling the demolition during off-peak hours. Use of such mitigation measures would immediately address any power disruptions. Therefore, potential impacts to power transmission from vibration associated with felling of the stacks would be considered minor.

2.3.9 Safety

TVA would maintain security at the facility under all alternatives, but at a greater level with Alternatives A and C, due to remaining structures. Fencing and security personnel would remain

for all alternatives. TVA would also assess periodically the condition of remaining site facilities as they deteriorate.

Under Alternatives B1 and B3, explosives would be managed under the direction of a licensed blaster; 24-hour security would be provided to monitor the explosives. Detailed security plans would be developed and provided to area emergency response agencies. Security details, including any information about the transport and storage of explosives, would be limited to authorized personnel only. Site security on the day of the event would be strictly enforced, and trespassing would not be tolerated. Notifications to the public would be issued prior to the use of explosives for demolition. Prior to the demolition, the area would be prepared, and a circular fall exclusion zone equal to 1.5 times the height of the chimney would be established. During the blast event, no personnel would be allowed in the fall exclusion zone.

2.4 Preferred Alternative

The only difference between Alternatives B1, B2, and B3 is the means of demolishing the Unit 1-8 stacks. Therefore, the primary differences in potential impacts associated with these three alternatives are the noise, vibration, and safety considerations associated with explosive demolition of the stacks. Despite these differences, Alternatives B1, B2 and B3 would have similar impacts, which are minor and insignificant. Alternatives A and C have a higher potential for environmental impacts than Alternatives B1, B2, and B3 since existing structures would be left in place at the facility. Alternative B1, has the lowest cumulative cost of all action alternatives, therefore, at present Alternative B1 is TVA's preferred alternative. Because the choice of method for demolishing the chimneys includes engineering and other considerations not relevant to the NEPA analysis, in the future TVA could decide to select either Alternative B2 or Alternative B3 as the preferred alternative.

CHAPTER 3 - AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the affected environment (existing conditions) of environmental resources in the project area and the anticipated environmental consequences that would occur from adoption of the alternatives described in Chapter 2. The affected environment descriptions below are based on surveys conducted in 2015, published and unpublished reports, and personnel communications with resource experts.

3.1 Land Use and Prime Farmland

3.1.1 Affected Environment

WCF is located in Jackson County, Alabama. Jackson County does not have land use zoning throughout the county, and the project area is currently not zoned. Most of the WCF vicinity is characterized by residual clay soils covered by grass, scrub, pasture, and mixed forests. The ridgeline that forms the southern boundary of the WCF property is densely forested. Historic land use within the WCF property included agricultural use and residential developments prior to TVA's purchase of the property. Following its purchase of the property, TVA removed the buildings and converted the area from low density residential and agricultural use to undeveloped land in portions of the site while the remainder of the WCF property was utilized for the facility (TVA 2015a).

After deconstruction of WCF, the project site would initially be designated as a brownfield and reseeded with native vegetation. It would become available for future light industrial uses; however, the extent of the potential future development is unknown. The remaining WCF property outside of the project site would continue under existing land uses or would be addressed under other actions.

The WCF project area contains approximately 200 acres within the 2,542 acre Widows Creek property. The majority of the soils within the WCF property are a form of silt loam, predominantly Egam (Eg), Huntington (HI), Lindside (LI), and Etowah (Esu) silt loams. Cumberland and Colbert silty clays occupy a portion of the central part of the facility. Other soil types present within the facility boundary are Bruno (Bf) fine sandy loam, Capshaw (Cpu) silt loam, Cumberland (Csu) silt loam, Talbott (Tv) silty clay loam, Tupelo (TuV) silt loam, Tyler (Tce) sandy loam, and Wolftever (Wsv) silt loam (Figure 3-1) (U.S. Department of Agriculture [USDA] Natural Resources Conservation Service [NRCS] 2015b).

Historically, the soils within the WCF boundary are designated as prime farmland by the NRCS (USDA NRCS 2015b) or farmland of statewide importance. Approximately 20 percent (72 acres) of the project area is considered prime farmland and 36 percent (128 acres) is considered farmland of statewide importance (TVA 2015a) (Figure 3-1). Form AD 1006, "Farmland Conversion Impact Rating," must be completed with assistance from the NRCS before an action is taken when prime farmland is involved. WCF had been producing power since 1952. Because the project site is currently an industrial setting and has been for over 50 years, the completion of Form AD 1006 and consultation on prime farmlands is not required (USDA NRCS 2015a).

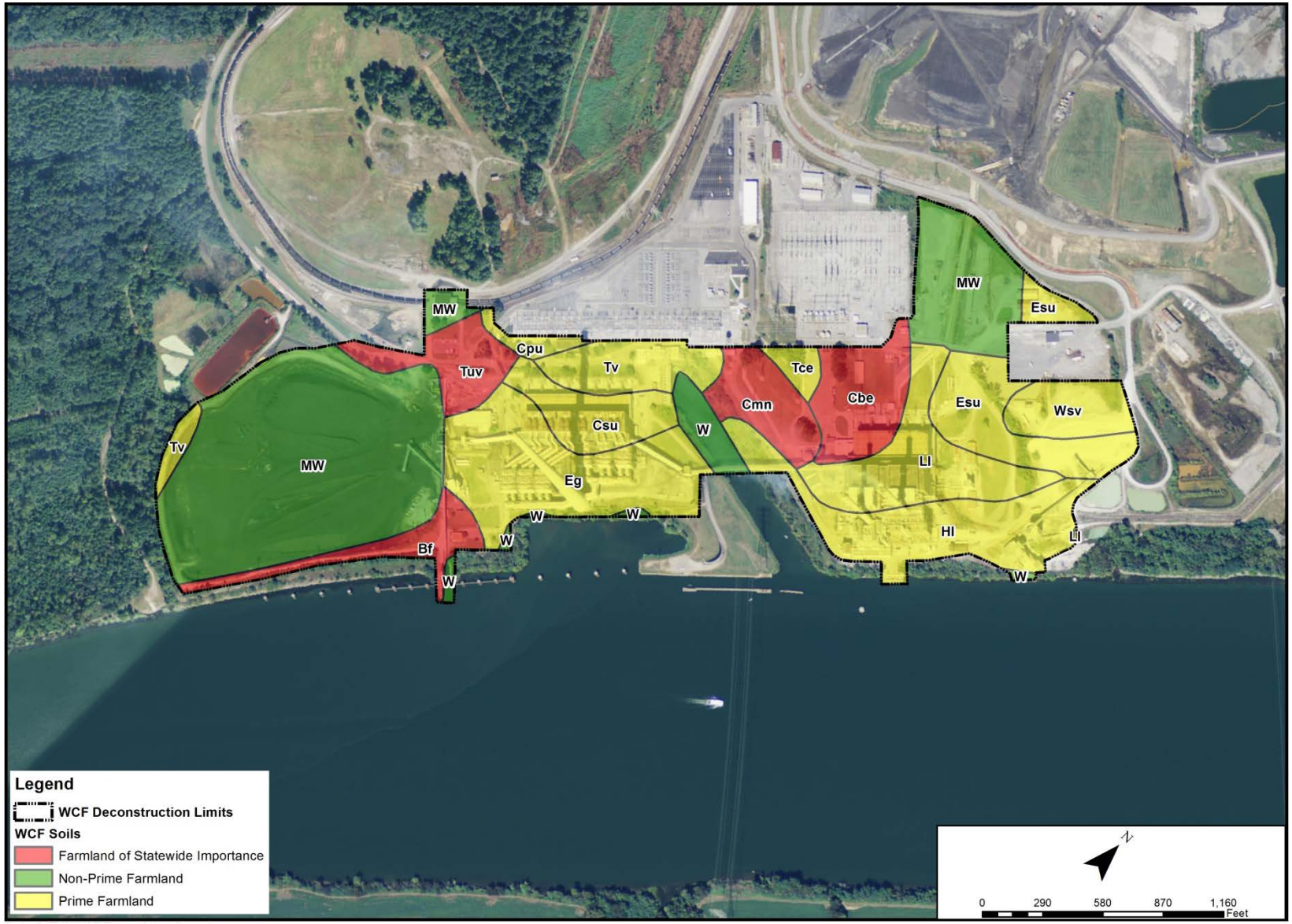

Figure 3-1. Soils within the WCF Project Area

3.1.2 Environmental Consequences

3.1.2.1 Alternative A – Assess, Close, and Secure Power Production Facilities, and Implement Operations and Maintenance Program to Maintain Structures and Equipment

Alternative A would not alter the land use or disturb any prime farmland because existing structures would remain in place. Previously converted prime farmland would remain undisturbed onsite. Overall, there would be no impact to land use or prime farmland.

3.1.2.2 Alternative B1 – Demolition to Grade with Controlled Explosive Demolition of Units 1-8 Chimneys

Under Alternative B1, the project site would initially be designated as a brownfield site and reseeded with native vegetation. In the future, the site could potentially be redeveloped for light industrial or other beneficial use. As a result, beneficial land use could be realized. No adverse impacts would be anticipated.

Deconstruction of all aboveground structures within the project site to a depth of 3 ft below grade would result in disturbance to the soil in the immediate vicinity of the structures and the stack fall area in the coal yard. The basement of the facility would be filled with material from the deconstruction process as well as imported fill. This would result in a net increase in the amount of soil available on the site. As the entire project site is a previously disturbed area and would continue to be designated for nonagricultural purposes, no impacts to prime farmland are anticipated.

3.1.2.3 Alternative B2 – Demolition to Grade with Units 1-8 Chimney Dismantlement

As land use and soil changes would be the same under Alternative B2 as described under Alternative B1, impacts would also be the same. As described for Alternative B1, there could be potential beneficial impacts to land use and no anticipated impacts to prime farmlands under Alternative B2.

3.1.2.4 Alternative B3 – Demolition to Grade with Units 1-8 Chimney Hybrid Demolition/Dismantlement

As land use and soil changes would be the same under Alternative B3 as described under Alternative B1 and B2, impacts would also be the same. As described for Alternatives B1 and B2, there could be potential beneficial impacts to land use and no anticipated impacts to prime farmlands under Alternative B3.

3.1.2.5 Alternative C – No Action

Similar to Alternative A, the adoption of Alternative C would mean that WCF structures and powerhouse would remain in place with no impact to the existing land use or prime farmland.

3.2 Geology and Groundwater

3.2.1 Affected Environment

The majority of the geology beneath WCF is shale bedrock from the Sequatchie Formation (shown as shale on Figure 3-2). The geology then transitions into limestone from the Nashville group and the Stones River group to the northwest of WCF (shown as limestone on Figure 3-2). All the bedrock formed during the Ordovician age is likely overlain by alluvial deposits from the Tennessee River (GeoHazards 2011).

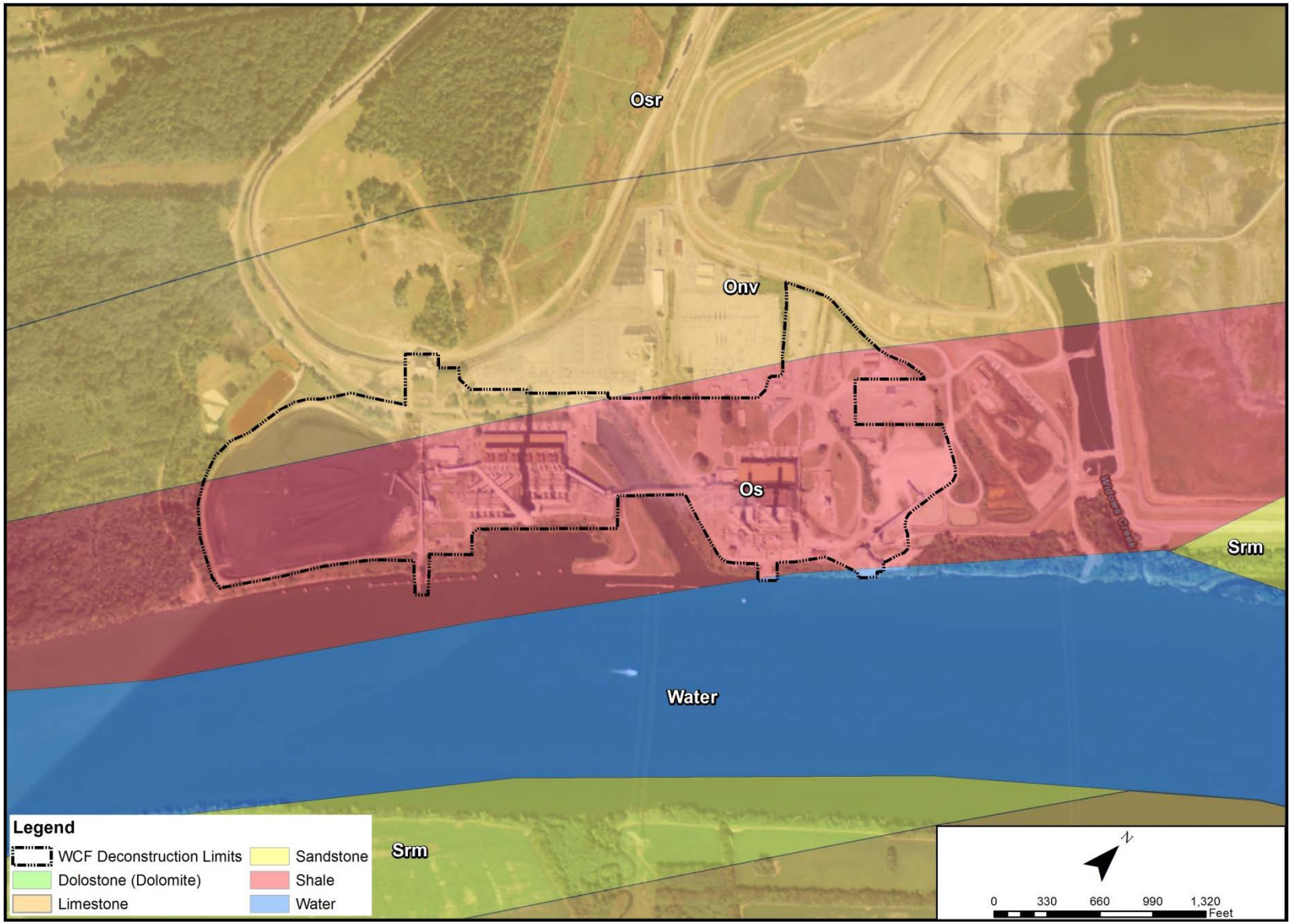

Figure 3-2. WCF Geology Map

Limestone is susceptible to the formation of karst topography, including sinkholes. There are no known sinkholes within the WCF boundary. The closest identified sinkhole is approximately 1 mi west of the facility on Steam Plant Access Road. There are two other sinkholes west-northwest of the facility within the power line corridor off of County Road 70. There are also no drinking water wells within 1 mi of the project area. The groundwater flow direction is toward the east to the Tennessee River away from any residential wells. Extra care may need to be taken with contaminated equipment because of the ease with which contaminants can move through karst topography (GeoHazards 2011).

3.2.2 Environmental Consequences

3.2.2.1 Alternative A – Assess, Close, and Secure Power Production Facilities, and Implement Operations and Maintenance Program to Maintain Structures and Equipment

Alternative A would not alter the geology or groundwater because existing structures would remain in place and be monitored for environmental and safety hazards. Periodic inspections and maintenance would be performed as needed to ensure that any contaminated equipment would not impact the geology or groundwater. However, with materials remaining in place over the long-term, degradation and contamination of groundwater may occur. Therefore, there may be minor impact to the existing geology or groundwater could be impacted over time.

3.2.2.2 Alternative B1 – Demolition to Grade with Controlled Explosive Demolition of Units 1-8 Chimneys

Under Alternative B1, all identified aboveground structures would be deconstructed to a depth of 3 ft below ground. The stacks would be removed through demolition. Removal of the stacks would result in vibrations at the surface in the immediate vicinity of the stacks when they are felled. Additional vibrations would be generated throughout the course of deconstruction of the buildings and grading and backfilling of the facility. There would be no impacts anticipated to the existing geology or groundwater flow pattern.

3.2.2.3 Alternative B2 – Demolition to Grade with Units 1-8 Chimney Dismantlement

Under Alternative B2, all aboveground structures would be deconstructed to a depth of 3 ft below grade. The stacks and structures would be removed through deconstruction. Removing these elements would result in minor vibrations at the surface during deconstruction of the structures and grading and backfilling of the facility. There would be no impacts anticipated to the existing geology or groundwater flow pattern.

3.2.2.4 Alternative B3 – Demolition to Grade with Units 1-8 Chimney Hybrid Demolition/Dismantlement

Under Alternative B3, all aboveground structures would be deconstructed to a depth of 3 ft below grade. The upper portions of the stacks would be removed through deconstruction while the lower portions of the stacks would be explosively felled. Removing these elements would result in minor vibrations at the surface in the immediate vicinity of the stacks when they are felled. There would be existing vibrations at the surface during deconstruction of the structures and grading and backfilling of the facility. There would be no impacts anticipated to the existing geology or groundwater flow pattern.

3.2.2.5 Alternative C – No Action

Under Alternative C, the WCF structures and powerhouse would remain in place with no change to the existing geology or groundwater. Under this alternative, there would be a higher potential for long-term impacts to groundwater quality because of the higher risk of contamination as the structures degrade. The potential for groundwater contamination would also create a risk of

degrading the highly erodible, karst topography that underlies the northwest portion of the project area. Overall, the potential impacts of this alternative would be minor.

3.3 Surface Water

3.3.1 Affected Environment

The WCF site is located on the right (western) bank of Guntersville Reservoir at Tennessee River Mile (TRM) 407.5, downstream of the mouth of Widows Creek. Guntersville Reservoir extends 76 river miles from Guntersville Dam in northeast Alabama (TRM 349.0), across the Alabama-Tennessee state line (TRM 416.5), to Nickajack Dam in southeast Tennessee (TRM 424.7). Average flow at Guntersville Dam is 41,100 cubic feet per second.

Consistent with the TVA Act, Guntersville Dam and Reservoir are operated for the purposes of flood protection, navigation, and power production, as well as to protect aquatic resources and provide water supply and recreation. During normal operations, the surface elevation of Guntersville Reservoir varies between 593 ft above mean sea level in winter and 595 ft above mean sea level in summer. During high-flow periods, the top of the normal operating elevation range may be exceeded to regulate flood flows. From mid-May to mid-September, TVA varies the elevation of Guntersville Reservoir by 1 ft to aid in mosquito population control. Because of the need to maintain a minimum depth for navigation, Guntersville is one of the most stable TVA reservoirs, with a limited fluctuation of only 2 ft between its normal minimum pool in the winter and its maximum pool in the summer.

The State of Alabama has designated most of Guntersville Reservoir for public water supply, swimming, and other whole body water-contact sports, and fish and wildlife use classifications. The segment from approximately TRM 363 to TRM 832.5 (upper end of Buck Island to mouth of Roseberry Creek) does not carry the public water supply classification.

The state also assesses the water quality of streams in the state. Those not meeting water quality standards are listed in a federally mandated report, referred to as a 305(b) report (from the section of the Clean Water Act). This report is published in alternate years. Major surface water bodies near the project area have impaired water quality that does not support designated beneficial uses (e.g., swimming, public water supply, and aquatic habitat) (ADEM 2014b). Widows Creek and Guntersville Reservoir (Lake Guntersville) are both listed as impaired because of elevated mercury levels from atmospheric deposition. Widows Creek is considered impaired from its confluence with the Tennessee River to 5 miles upstream; this includes the stretch of Widows Creek adjacent to the project area. Guntersville Reservoir is considered impaired over an approximately 2,700-acre area between Pump Spring Branch (approximately 4 mi downstream from the project area) and the Alabama-Tennessee state line (approximately 8 mi upstream of the project area).

Both listings contribute to a fish consumption advisory issued by the Alabama Department of Public Health in 2015 (Alabama Department of Public Health 2015). Widows Creek and Guntersville Reservoir were listed on the 2014 Alabama Final 303(d) list, but total maximum daily levels for mercury have not been established for either water body (ADEM 2014b).

Widows Creek runs along the eastern side of the WCF site. The current creek channel through the plant site to the mouth underwent major rerouting in the 1970s to allow ash storage in the lowest areas of the plant site. The drainage area of Widows Creek is 43.5 square miles. The watershed has many karst features (sinkholes, caves, and springs). Dry Creek, which flows into a cave, may resurface in springs in the Widows Creek drainage, which would add another 14

square miles to the drainage area. The upper part of the watershed is on the wooded slopes of the Cumberland Plateau escarpment. The downstream portions are in the rolling Sequatchie Valley, where land is mostly in pasture with some cultivated areas.

3.3.1.1 Process and Stormwater

NPDES Permit number AL0003875 (ADEM 2008b) covers water discharges at WCF. Drainage from the WCF site discharges to the Tennessee River. Process wastewater discharges from the facility are permitted under NPDES permit and include outfalls that are sampled, monitored, and reported on monthly discharge monitoring reports. These include Outfall 001 (Ash Impoundment Discharge) and Outfall 002 (Once-through Condenser Cooling Water). AL0003875 has been administratively continued as ADEM reviews TVA's permit renewal application.

The majority of the process wastewater flows onsite have either ceased completely due to the closure of the facility or the quantity of the flows has greatly reduced. All chemical treatment ponds have been closed and are no longer receiving process or stormwater.

All units at WCF were retired by the end of September 2015, and a majority of the process flows stopped when the plant ceased generation. Precipitation-driven flows, some sump flows, and some dewatering flows continue to the permitted discharge at Outfall 001.

3.3.1.2 Ash Impoundment

Historical sources of flows to the ash impoundment are listed in Table 3-1.

Table 3-1. Historical Inflow Sources to Ash Impoundment

Source	Annual Average Inflow to Ash Impoundment (mgd)
Ash sluice water	20.413
Flue gas desulfurization wet stack	7.822
Units 1-6 sumps	1.938
Non-chemical metal cleaning wastes	0.002
Coal pile runoff	0.254
Pumping basin	0.525
Units 7-8 ash bilge and station sumps	5.023
Units 7-8 powerhouse unwatering sump	0.026
Precipitator washdown pads	0.0017
Water treatment plant wastes	0.0671
Precipitation minus evaporation on ash impoundment	0.275
Air preheater wash	0.0178
Withdrawal for scrubber makeup	-5.215
Total	31.1528

Source: ADEM 2008b.

3.3.2 Environmental Consequences

3.3.2.1 Alternative A – Assess, Close, and Secure Power Production Facilities, and Implement Operations and Maintenance Program to Maintain Structures and Equipment

Under Alternative A, it is assumed that TVA would be required to continue operating some sumps and stormwater systems at the retired facility. Leaving the facility in place with only periodic monitoring increases the potential for direct discharges of degraded and aging building materials that may include hazardous materials and solid or special waste, including, but not limited to, friable asbestos, oils, and metals releases, to receiving streams through sump

discharges, stormwater releases, and to adjacent surface waters. The intake and discharge tunnels would need to continue to be inspected and maintained in order to ensure their integrity. The implementation of BMPs, protocols to respond to onsite spills prior to discharge, and site cleanup would help to reduce any releases to surface waters.

Permits would continue to be renewed with applicable monitoring requirements included. Permits and associated pollution prevention plans would be modified to indicate the changes from current conditions. The sumps and stormwater would discharge to the ash pond system under the ADEM NPDES permit program. Minor impacts are anticipated with this alternative.

3.3.2.2 Alternative B1 – Demolition to Grade with Controlled Explosive Demolition of Units 1-8 Chimneys

Surface Water

The majority of flows from the facility, other than precipitation-driven flow and initial sump discharges, ceased in September, 2015. There are no active withdrawal rates for this facility, and this would not likely change with this deconstruction alternative.

Thermal discharges from the site would also not change. Raw and potable waters and stormwater flows associated with this project would remain at ambient temperatures; therefore, no additional thermal impacts would be anticipated.

Under Alternative B1, initially, sumps and stormwater systems would still be operated and utilized. However, eventually these flows would be altered, and permits would be modified to manage altered discharges. Eventually the sumps would be demolished and any flows would be managed with portable pumps.

Demolition/Construction Impacts

Wastewaters generated during the proposed project may include construction stormwater runoff, dewatering of work areas, domestic sewage, non-detergent equipment washings, dust control, and hydrostatic test discharges.

Surface Runoff

Demolition activities would have the potential to temporarily affect surface water via stormwater runoff. TVA would comply with appropriate state and federal permit requirements. Demolition and construction activities of the associated project would be located on the plant property. TVA would obtain a Construction Storm Water Permit from ADEM prior to beginning demolition. Surface water impacts resulting from disturbance during selective demolition would be mitigated by the use of stormwater pollution prevention BMPs to minimize the extent of disturbance and erosion. Stormwater would discharge via either NPDES permitted discharge points or the designated construction stormwater outfalls. Silt fences, sediment basins, and/or other sediment and erosion control measures, as described in *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority* (Bowen et al. 2012), would be installed, inspected, and maintained for the duration of demolition as needed to avoid contamination of surface water adjacent to the project area. Therefore, no significant impacts to surface water would be expected due to surface water runoff from the construction site. Proposed project activities would be conducted in a manner to ensure that waste materials are contained, and the introduction of pollution materials to the receiving waters would be minimized.

Currently active industrial stormwater outfalls are monitored, every six months or annually, depending on the NPDES requirements. This monitoring, in addition to required NPDES

monitoring, would continue throughout the demolition process, with modifications as directed by the construction BMP plan. Following demolition, permits may be modified or reduced based on the change in operation at the facility. Permit modification requests would be negotiated with ADEM, as necessary, throughout the demolition process.

Chimney/Stack Demolition

Stack demolition has the potential to have direct impacts due to the potential for discharge of fill and residual ash to Waters of the State or United States. Following shut-down of the units all three stacks were washed to remove as much ash and dust as possible and reduce potential impacts to surface waters during demolition. These demolition activities would be designed in a way to minimize any impacts to adjacent waters; however, mitigation measures, such as turbidity curtains in adjacent waters, would be considered to help mitigate any incidental discharge of ash, soil, or sediment to receiving streams. With mitigation measures and BMPs in place, incidental discharges to the main stream Tennessee River due to these activities should be minimized.

Cooling Water Intake Channel Sealing or Removal

The sealing option of the cooling water intake and discharge tunnels would bulkhead the internal portion of the tunnels and would leave the tunnels in place. Flow-fill may be placed behind the bulkheads to supplement the sealing. Installation of the flow-fill would be evaluated during the design and engineering of the demolition. This option would take place within the tunnel and would not be expected to cause negative impacts as long as the appropriate BMPs are utilized.

The sealing with flow-fill option to close the cooling water intake and discharge tunnels would bulkhead the internal portion of the tunnels and would leave the tunnels in place. Additionally, a mixture of water, cement, and fine aggregate would be pumped in to fill the tunnels. This option would take place within the tunnel and would not be expected to cause negative impacts as long as the proper BMPs were utilized.

The option to remove the tunnels has the potential to have impacts to surface waters through conveyance of sediment as part of the removal process. The project area would either need to be dewatered and BMPs utilized to reduce these potential impacts, or other appropriate removal methods would need to be utilized. This option's impacts are expected to be temporary and would be mitigated with proper work practices and BMPs.

To conduct this work, USACE and ADEM permits may be required depending on the proposed option selected. Anticipated impacts to Waters of the State or United States associated with the proposed project would be mitigated with the use of BMPs and implementation of a maintenance program. In the event a permit is required, any mitigation would be identified through the Joint USACE and ADEM Section 404/401 permitting process, providing for compensation for the loss of wetlands or stream reaches. Potential surface water impacts during demolition would be mitigated, and the impacts would be minor with the implementation of BMPs as well as compliance with the requirements of the USACE and ADEM permitting process.

- Domestic Sewage - Portable toilets would be provided for the additional construction workforce as needed. These toilets would be pumped out regularly, and the sewage would be transported by tanker truck to a publicly-owned wastewater treatment works that accepts pump out.

- Equipment Washing and Dust Control – Equipment washing and dust control discharges would be handled in accordance with BMPs described in the construction BMP plan for water-only cleaning and/or NPDES Permit AL0003867.
- Hydrostatic Testing – These discharges, if required, would be handled in accordance with NPDES Permit AL0003867 or the ADEM General NPDES Permit for Discharges of Hydrostatic Test Water.

With the implementation of appropriate BMPs, no significant impacts to surrounding surface waters are expected from demolition activities.

Operational Impacts

The main operational change that would take place with the demolition of the facility would be the change in management of the onsite stormwater and process wastewater that is currently treated in impoundments and discharged from the ash impoundment No. 4 and stilling impoundments. Since the units all ceased operation in September 2015, process streams would also eventually cease; however, process stormwater discharges and other NPDES permitted discharges would still be managed. Any remaining minor flows would be redirected to other treatment systems as necessary to comply with a modified NPDES permit. This re-routing would conceptually employ onsite stormwater ponds (non-coal combustion residual impoundments) and new ditches or piping to enable the proper handling and treatment of the waste streams. BMPs and wastewater treatment would be employed, as needed, to mitigate any pollutant discharge.

With the coal-fired units no longer in operation, the only significant remaining flows would be surface runoff stormwater flows, process stormwater flows, and possibly some sump or dewatering flows. The specific characteristics of future discharges are unknown at this time. However, the total loadings to the Tennessee River should decrease significantly. No impacts are anticipated to surface water resources.

3.3.2.3 Alternative B2 – Demolition to Grade with Units 1-8 Chimney Dismantlement

The impacts of Alternative B2 would be similar to impacts assessed in Alternative B1, except this alternative would have the potential to mitigate some of the risks of incidental releases of ash, soil, or sediment to surface waters by removing the stacks/chimneys by a more controlled technique. No impacts are anticipated to surface water resources.

3.3.2.4 Alternative B3 – Demolition to Grade with Units 1-8 Chimney Hybrid Demolition/Dismantlement

The impacts of this alternative would be similar to impacts discussed for Alternative B1. There is a potential that this alternative would mitigate some of the risks of incidental releases of ash, soil, or sediment to surface waters by removing the stacks/chimneys in a more controlled technique for the top portion of the stacks. No impacts are anticipated to surface water resources.

3.3.2.5 Alternative C – No Action

Under the No Action Alternative, it is assumed that TVA would be required to continue operating some sumps and stormwater systems at the retired facility. Leaving the facility in place greatly increases the potential for direct discharges of chemicals, hazardous waste, and even solid waste, including but not limited to friable asbestos releases to receiving streams through sump discharges, stormwater releases, and to adjacent surface waters. Without maintenance, the intake and discharge tunnels and all chimneys would be at risk of losing their structural integrity,

which would likely have direct and indirect impacts on surface water quality through unpermitted releases of sediment, chemical, and solid waste.

Permits would continue to be renewed with applicable monitoring requirements included. Permits and associated pollution prevention plans would be modified to indicate the changes from current conditions. The sumps and stormwater would discharge to the ash pond system through the ADEM NPDES permit program. Minor impacts are anticipated with this alternative.

3.4 Floodplains

3.4.1 Affected Environment

A floodplain is the relatively level land area along a stream or river that is subjected to periodic flooding. The area subject to a one percent chance of flooding in any given year is normally called the 100-year floodplain. The area subject to a 0.2 percent chance of flooding in any given year is normally called the 500-year floodplain.

Portions of the proposed demolition/deconstruction project would take place within the 100-year floodplain of the Tennessee River on Guntersville Reservoir from TRM 407.2 to 408.1, right descending bank. The following facilities are located within the floodplain: barge dock, conveyor, pump station, ball mill building, live storage area, receiving hopper, limestone dead storage area, warehouses, coal yard, and hydrogen trailer ports, as shown on Figure 3-3. Because of the nature of the proposed action, which is to deconstruct the WCF facility, there is no practicable alternative to avoid demolishing structures currently located in the 100year floodplain.

The Tennessee River 100-year flood elevations range from 607.6 ft to 607.9 ft above mean sea level, and the 500-year flood elevations range from 610.1 ft to 610.5 ft above mean sea level.

3.4.2 Environmental Consequences

3.4.2.1 Alternative A – Assess, Close, and Secure Power Production Facilities, and Implement Operations and Maintenance Program to Maintain Structures and Equipment

Under Alternative A, the facilities would remain in place; thus, there would be no impact to existing conditions within the floodplain.

3.4.2.2 Alternatives B1, B2, and B3 – Demolition to Grade with Controlled Explosive Demolition of Units 1-8 Chimneys, with Dismantlement, and with Hybrid Demolition/Dismantlement

Under Alternatives B1, B2, and B3, facilities would be removed to 3 ft below grade, which would improve the flow-carrying capacity of the Tennessee River, although insignificantly. Because WCF is retired, equipment that could be damaged during a flood would not be replaced or repaired. The coal yard could be repurposed into a laydown yard. According to topographic maps, the elevation of the coal yard is about 610 ft to 615 ft above mean sea level, which would be slightly above the 100-year flood elevation. For those portions of the coal yard below the 100-year elevation, a laydown yard would be considered a temporary use of the floodplain and not subject to Executive Order (EO) 11988. Overall impacts to the floodplain from Alternatives B1, B2, and B3 would be minor but beneficial.

3.4.2.3 Alternative C – No Action

Under Alternative C (No Action Alternative), the facilities would remain in place; thus, there would be no impact to existing conditions within the floodplain.

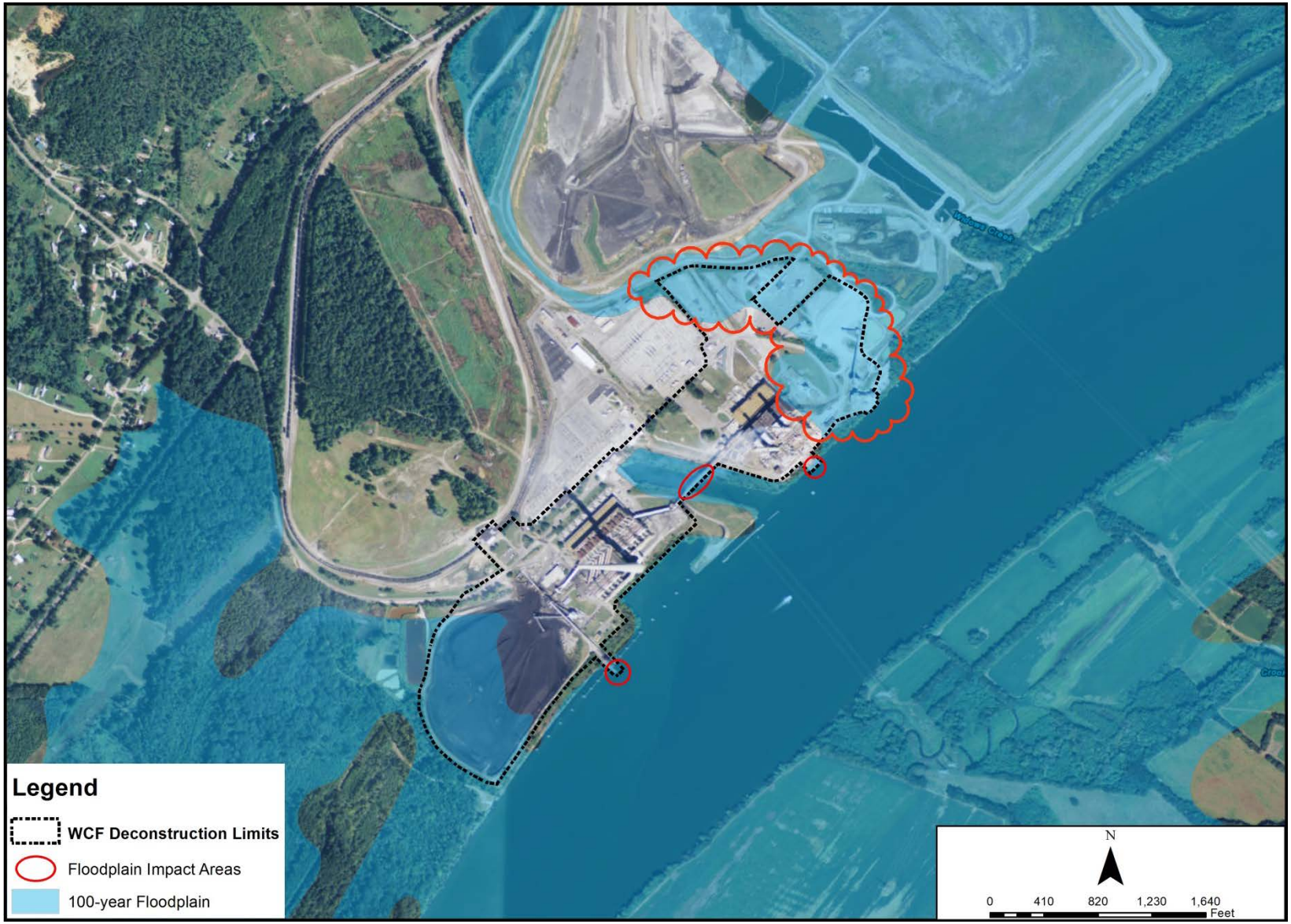

Figure 3-3. WCF Facilities within the 100-year Floodplain

Table 3-2. Summary of Potential Floodplain Impacts

Facilities Affected	Alternative A	Alternatives B1, B2, and B3	Alternative C
Barge Dock	None	Small and beneficial	None
Conveyor	None	None: above 100-year flood elevation	None
Pump Station	None	Small and beneficial	None
Ball Mill Building	None	Small and beneficial	None
Live Storage Area	None	None	None
Receiving Hopper	None	None: above 100-year flood elevation	None
Limestone Dead Storage	None	None	None
Warehouses	None	Small and beneficial	None
Hydrogen Trailer Ports	None	None	None
Cooling Water Intake Tunnels	None	None: facilities underground	None
Coal Yard	None	None	None

3.5 Wetlands

3.5.1 Affected Environment

Wetlands are areas that are inundated or saturated by water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (40 Code of Federal Regulations [CFR] 230.3(t)). Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands are highly productive and biologically diverse ecosystems that provide multiple public benefits such as flood control, reservoir shoreline stabilization, improved water quality, and habitat for fish and wildlife resources.

Within the vicinity of WCF, wetlands are commonly associated with the shoreline and embayments of Guntersville Reservoir, floodplains of creeks, and low-lying, poorly drained areas. There is one wetland present within the proposed project footprint (W001 - Figure 3-4). Located in a drainage channel along the road at the northwest corner of the site, W001 is approximately 0.2 acre and the dominant vegetation is cattail (*Typha latifolia*).

3.5.2 Environmental Consequences

3.5.2.1 Alternative A – Assess, Close, and Secure Power Production Facilities, and Implement Operations and Maintenance Program to Maintain Structures and Equipment

Under Alternative A, the facility would be closed and secured, and no impacts to wetlands would be anticipated.

3.5.2.2 Alternatives B1, B2, and B3 – Demolition to Grade with Controlled Explosive Demolition of Units 1-8 Chimneys, with Dismantlement, and with Hybrid Demolition/Dismantlement

Adoption of Alternative B1, B2, or B3 would result in the deconstruction of the WCF plant. Depending on the layout of roads and other construction areas, there could be impacts to W001. This wetland is located near the project site boundary (Figure 3-4). TVA would attempt to avoid impacts to this wetland if possible. However, because of the nature of the proposed action, there is no practicable alternative to avoid certain activities that might impact wetlands. In such instances where impacts to wetlands cannot be avoided, regulatory requirements associated with USACE Section 404 permitting program would provide mitigation sufficient to

offset impacts to an insignificant level. With this mitigation performed, no impacts to wetlands would be anticipated.

Figure 3-4. Wetlands within the Footprint of the WCF Proposed Demolition Footprint

3.5.2.3 Alternative C – No Action

Under the No Action Alternative, the proposed project would not be implemented, and no impacts to wetlands would be anticipated.

3.6 Aquatic Ecology

3.6.1 Affected Environment

WCF is located in the Sequatchie Valley sub-region of the greater Southwestern Appalachians ecoregion (Griffith et al. 2001) and within the Tennessee River 10-digit Hydrologic Unit Code (HUC) watershed 0603000102 in Guntersville Reservoir.

The Sequatchie Valley of the greater Southwestern Appalachians ecoregion is characterized by hilly and irregular topography and is a productive agricultural region with areas of pasture, hay, soybeans, corn, small grain, and tobacco (Griffith et al. 2001). The WCF facility is located on the eastern shore (right descending bank) of Guntersville Reservoir at TRM 408. The reach of the Tennessee River adjacent to WCF has been altered from its former free-flowing character by the presence of Guntersville Dam, located approximately 59 river miles downstream of WCF, and Nickajack Dam, located approximately 17 river miles upstream.

TVA began a program to monitor the ecological conditions of its reservoirs systematically in 1990. Reservoir (and stream) monitoring programs were combined with TVA's fish tissue and bacteriological studies to form an integrated Vital Signs Monitoring Program. Vital signs monitoring activities focus on physical/chemical characteristics of waters, physical/chemical characteristics of sediments, benthic macroinvertebrate community sampling, and fish assemblage sampling (Dycus and Baker 2001). Benthic macroinvertebrates are included in aquatic monitoring programs because of their importance to the aquatic food chain and because they have limited capability of movement, thereby preventing them from avoiding undesirable conditions. Sampling and data analysis are based on seven parameters: species diversity, presence of selected taxa that are indicative of good water quality, occurrence of long-lived organisms, total abundance of all organisms except those indicative of poor water quality, proportion of total abundance comprised by pollution-tolerant species, proportion of total abundance comprised by the two most abundant taxa, and proportion of samples with no organisms present.

TVA initiated a study in 2000 to evaluate fish communities in areas immediately upstream and downstream of WCF in Guntersville Reservoir using Reservoir Fish Assemblage Index (RFAI) multi-metric evaluation techniques. Fishes are included in aquatic monitoring programs because they are important to the aquatic food chain and because they have a relatively long life cycle that allows them to reflect conditions over time. Fishes are also important to the public for aesthetic, recreational, and commercial reasons. Monitoring results for each sampling station are analyzed to arrive at an RFAI rating, which is based primarily on fish community structure and function. Also considered in the rating is the percentage of the sample represented by omnivores and insectivores, overall number of fish collected, and the occurrence of fish with anomalies such as diseases, lesions, parasites, deformities, etc. The Vital Signs Monitoring Program fish community monitoring results are shown in Tables 3-3 and 3-4. Overall results indicate that the fish assemblage in Guntersville Reservoir has been consistently "poor" to "fair" from 2000 to 2014.

Table 3-3. Benthic Community Scores Collected as part of the Vital Signs Monitoring Program in Guntersville Reservoir at TRM 350, 375.2, and 424 (1994-2010)

Station	Site	1994	1996	1998	2000	2002	2004	2006	2008	2010
Inflow	TRM 424	Good	Good	Fair	Good	Good	Good	Fair	Fair	Poor
Transition	TRM 375.2	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair	Fair
Forebay	TRM 350	Good	Good	Fair	Good	Fair	Fair	Fair	Good	Fair

Table 3-4. Guntersville Reservoir Fisheries Assemblage Index Scores based on Vital Signs Monitoring Program Data at TRM 424, 410, 405, 375.2, and 350

Station	Site	2000	2001	2002	2005	2006	2007	2008	2009	2010	2011	2012	2014
Inflow	TRM 424	Poor	-	Fair	-	Fair	-	Fair	Good	Fair	-	Fair	Fair
Upstream of WCF	TRM 410	Fair	Fair	Fair	Poor	Fair	Poor	Poor	Fair	-	Fair	-	Fair
Downstream of WCF	TRM 405	Fair	Fair	Fair	Fair	Fair	Fair	Poor	Fair	-	Fair	-	Fair
Transition	TRM 375.2	Fair	-	Fair	-	Fair	-	Fair	Fair	Fair	-	Fair	Fair
Forebay	TRM 350	Good	-	Fair	-	Fair	-	Fair	Fair	Fair	-	Fair	Fair

3.6.2 Environmental Consequences

3.6.2.1 Alternative A – Assess, Close, and Secure Power Production Facilities, and Implement Operations and Maintenance Program to Maintain Structures and Equipment

Under Alternative A, potential leakage of hazardous chemicals or heavy metals could have localized impacts on water quality in the Tennessee River adjacent to and downstream of WCF. Changes to aquatic ecology would likely occur within the watershed over the long term due to factors such as the continuation of agricultural activities and human population growth. With appropriate BMPs and stream management zones (SMZs) implemented during construction, operation, and maintenance of the proposed activities, impacts to aquatic ecology resulting from the proposed action would be insignificant.

3.6.2.2 Alternative B1 – Demolition to Grade with Controlled Explosive Demolition of Units 1-8 Chimneys

Under Alternative B1, aquatic ecology could be affected by the proposed action either directly by the alteration of aquatic habitat conditions or indirectly due to modification of the riparian zone by stormwater runoff resulting from construction activities associated with selective demolition. Potential impacts due to removal of streamside vegetation within the riparian zone include increased erosion and siltation, loss of in-stream habitat, and increased stream temperatures. Construction activities associated with the removal of buildings as well as backfilling underground facilities could lead to increased siltation and runoff in the Tennessee River adjacent to and downstream of WCF. While highly unlikely due to the proven success of numerous stack demolition with explosives, a stack, if felled into the river, could result in minor and short-term impacts to local species as result of the impact. Ash from the stack could impact water quality for a short time as the ash settles and disperses downstream. The sole aquatic feature identified adjacent to the proposed project area is the mainstem of the Tennessee River (SMZ 001, see Table 3-5), which would receive a 70 ft minimum SMZ buffer width and/or protection of the existing riparian buffer zone. With appropriate BMPs and SMZs implemented during construction, operation, and maintenance of the proposed construction activities, any impacts to aquatic ecology resulting from the proposed action would be insignificant.

Table 3-5. Streams Located in the Proposed WCF Deconstruction Project Area in Jackson County, Alabama

Stream ID	Stream Type	Streamside Management Zone Category	Stream Name	Field Notes
001	Other	Category B (70 ft)	Tennessee River	Tennessee River. Multiple federally listed species occur nearby.

3.6.2.3 Alternative B2 – Demolition to Grade with Units 1-8 Chimney Dismantlement

This alternative is identical to Alternative B1, with the exception of dismantling Units 1-8 chimneys from top to bottom without explosives, which eliminates the risk of a stack accidentally falling into the river potentially harming a limited amount of fish. With appropriate BMPs and SMZs implemented during construction, operation, and maintenance of the proposed construction activities, any impacts to aquatic ecology resulting from the proposed action would be insignificant.

3.6.2.4 Alternative B3 – Demolition to Grade with Units 1-8 Chimney Hybrid Demolition/Dismantlement

This alternative is identical to Alternatives B1 and B2, with the exception of using a hybrid approach combining dismantlement and controlled explosives for Units 1-8 chimneys. As with Alternative B1, there is a remote potential that a stack or portion of a stack could fall into the river resulting in a short-term minor impact to aquatic life. With appropriate BMPs and SMZs implemented during construction, operation, and maintenance of the proposed construction activities, any impacts to aquatic ecology resulting from the proposed action would be insignificant.

3.6.2.5 Alternative C – No Action

Under the No Action Alternative, TVA would not perform any deconstruction or other disposition activities. If left under current conditions, potential leakage of hazardous chemicals or heavy metals from existing structures could have impacts on water quality in the Tennessee River adjacent to and downstream of WCF. These impacts would accrue over a relatively long period of time. Changes to aquatic ecology would likely occur within the watershed over the long term due to factors such as the continuation of agricultural activities and human population growth. With appropriate BMPs and SMZs implemented during operation and maintenance of the inactive facility, any impacts to aquatic ecology would be insignificant.

3.7 Wildlife

3.7.1 Affected Environment

WCF is a highly industrialized area with minimal vegetation, most of which is maintained in an herbaceous or manicured state. Mowed grass, ornamental trees, and shrubs exist alongside buildings and parking lots within the footprint.

Mowed herbaceous fields and manicured lawns offer little suitable habitat for wildlife or rare species but can be used by many common species, especially when the landscape includes a few trees. Birds that utilize grassy areas in industrialized areas such as found at WCF include Canada goose (*Branta canadensis*), eastern phoebe (*Sayornis phoebe*), eastern kingbird (*Tyrannus tyrannus*), eastern meadowlark (*Sturnella magna*), killdeer (*Charadrius vociferous*), purple martin (*Progne subis*), red-tailed hawk (*Buteo jamaicensis*), and rock dove (*Columba livia*). Some birds that utilize planted trees and buildings in industrialized areas include American robin (*Turdus migratorius*), American goldfinch (*Carduelis tristis*), blue jay (*Cyanocitta cristata*), Carolina chickadee (*Poecile carolinensis*), Carolina wren (*Thryothorus ludovicianus*), chimney swift (*Chaetura pelagica*), eastern towhee (*Pipilo erythrophthalmus*), osprey (*Pandion haliaetus*), tufted titmouse (*Baeolophus bicolor*), northern cardinal (*Cardinalis cardinalis*), northern mockingbird (*Mimus polyglottos*), and yellow breasted chat (*Icteria virens*) (National Geographic 2002). Mammals that may be found in this type of environment include common mole (*Talpa europaea*), ground hog (*Marmota monax*), least shrew (*Cryptotis parva*), hispid cotton rat (*Sigmodon hispidus*), white-footed mouse (*Peromyscus leucopus*), common raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), eastern gray squirrel (*Sciurus carolinensis*), and white-tailed deer (*Odocoileus virginianus*) (Reid 2006). Reptiles that typically occur in such areas include eastern fence lizard (*Sceloporus undulatus*), American toad (*Anaxyrus americanus*), rat snake (*Pantherophis obsoletus*), and ring-necked snake (*Diadophis punctatus*) (Conant and Collins 1998).

The TVA Natural Heritage database on August 31, 2015, indicated that four caves have been documented within 3 mi of the project footprint. The closest cave is located approximately 2.5 mi

from the project footprint. No other unique or important terrestrial habitats have been documented within the project footprint.

Four heron rookeries have been reported within 3 mi of WCF (approximately 0.3, 0.5, 1.8, and 2.6 mi away). No other migratory bird aggregations or colonial wading bird colonies are known from the project footprint.

3.7.2 Environmental Consequences

3.7.2.1 Alternative A – Assess, Close, and Secure Power Production Facilities, and Implement Operations and Maintenance Program to Maintain Structures and Equipment

Under Alternative A, TVA would de-energize all systems at the site and minimize environmental and safety risks. Trees and other vegetation would remain in place in their current state. Consequently, Alternative A would result in no impacts to wildlife.

3.7.2.2 Alternative B1 – Demolition to Grade with Controlled Explosive Demolition of Units 1-8 Chimneys

Alternative B1 would result in more disturbance and displacement of wildlife in the project footprint than Alternative A due to the permanent removal of structures. Any wildlife (primarily common, habituated species) currently using the sparse trees, mowed fields, or buildings and other structures may be displaced by increased levels of human disturbance during construction actions, but it is expected that they would return to the project area upon project completion. Alternative B1 also would include controlled demolition of the stacks using explosives. Inactive chimneys may be used by migratory birds. In order to avoid impacts to aggregations of migratory birds, survey of all buildings and structures within the project footprint would be performed approximately one month prior to demolition to determine whether any migratory birds are actively using these buildings or structures. Alternatively, inactive bird nests may be removed before demolition and deterrents placed on walls in order to prevent birds from re-nesting in the same location. TVA, in agreement with USFWS has established a 660 buffer zone for heron rookeries. The nearest heron rookery is over 1,500 feet from the project area and would not be affected by Alternative B1. If active nests are present and demolition activities have to occur within the active nesting season, TVA would coordinate with USFWS for the assessment and appropriate mitigation of impacts to migratory birds. By avoiding impacts to aggregations of migratory birds, this alternative is expected to have no impacts to terrestrial wildlife or their habitats.

3.7.2.3 Alternative B2 – Demolition to Grade with Units 1-8 Chimney Dismantlement

Surveys and any subsequent avoidance, minimization, or regulatory coordination measures as described for Alternative B1 would similarly apply to Alternative B2. Additionally, this alternative would have a longer duration than Alternative B1. While project activities are occurring, migratory birds may try to nest in chimneys or utilize (perch or nest) scaffolding or other support structures. Additional wildlife surveys may be warranted. No impacts are anticipated for this alternative with the measures identified in Alternative B1 implemented.

3.7.2.4 Alternative B3 – Demolition to Grade with Units 1-8 Chimney Hybrid Demolition/Dismantlement

Surveys and any subsequent avoidance, minimization, or regulatory coordination measures as described for Alternative B1 would similarly apply to Alternative B3. As with Alternative B2, this alternative would have a longer duration than Alternative B1. While project activities are occurring, migratory birds may try to nest in chimneys or utilize (perch or nest) scaffolding or

other support structures. Additional wildlife surveys may be warranted. No impacts are anticipated for this alternative with proper surveys and consultation with USFWS.

3.7.2.5 Alternative C – No Action

Under Alternative C, sparse trees, mowed lawns, and other structures within the footprint would remain in place in their current state. Alternative C would result in no impacts to wildlife.

3.8 Vegetation

3.8.1 Affected Environment

The WCF plant site has been heavily disturbed by construction, maintenance, and operation of the facility. As a result of this wholesale alteration of the physical landscape, no portion of the potential affected area supports a natural plant community. Most areas within the potential affected area on the WCF plant site are non-vegetated, but a few very small locations do contain early successional vegetation dominated by non-native weeds.

3.8.2 Environmental Consequences

3.8.2.1 Alternative A – Assess, Close, and Secure Power Production Facilities, and Implement Operations and Maintenance Program to Maintain Structures and Equipment

Under Alternative A, TVA would not perform deconstruction or other disposition activities. TVA would continue to maintain structures in their current state and the vegetation on the facility. Under this alternative, there would be no impacts to vegetation.

3.8.2.2 Alternatives B1, B2, and B3 – Demolition to Grade with Controlled Explosive Demolition of Units 1-8 Chimneys, with Dismantlement, and with Hybrid Demolition/Dismantlement

Adoption of Alternative B1, B2, or B3 would result in the deconstruction of the WCF plant. These areas do not contain intact native plant communities, and adoption of these alternatives would not change that situation. Impacts to vegetation may be permanent, but the vegetation found onsite is comprised of non-native weeds, planted shrubbery, and early successional plants that have no conservation value. Following completion of the deconstruction, disturbed areas would be reseeded with native vegetation. This would constitute a minor beneficial impact. Impacts would be the same for Alternatives B1, B2, and B3.

3.8.2.3 Alternative C – No Action

Under the No Action Alternative, TVA would not perform deconstruction or other disposition activities. TVA would continue to maintain structures in their current state. Under this alternative, there would be no impacts to vegetation.

3.9 Threatened and Endangered Species

3.9.1 Affected Environment

3.9.1.1 Aquatic – Threatened and Endangered Species

The Endangered Species Act provides broad protection for species of fishes, wildlife, and plants that are listed as threatened or endangered in the United States or elsewhere. The Act outlines procedures for federal agencies to follow when taking actions that may jeopardize federally listed species or designated critical habitat. The policy of Congress is that federal agencies must seek to conserve endangered and threatened species and use their authorities in support the Act's purposes. The State of Alabama provides protection for species considered threatened, endangered, or deemed in need of management within the state other than those federally

listed under the Act. This listing is handled by the Alabama Department of Conservation and Natural Resources; however, the Alabama Natural Heritage Program and TVA both maintain databases of aquatic animal species that are considered threatened, endangered, special concern, or tracked in Alabama.

The TVA Natural Heritage database in September 2015 indicated 17 federally listed species as endangered (1 fish, 15 mussels, and 1 snail), 2 federally listed species as threatened (1 fish, 1 mussel), and 40 state-listed species (1 crayfish, 4 fishes, 2 insects, 27 mussels, and 6 snails) within the Tennessee River 10-digit HUC watershed (HUC 0603000102) of the proposed project, from Jackson County, Alabama, and within a 10-mi radius of the proposed project. Freshwater mussels listed as historical (more than 25 years old) suggest these species are very rare or no longer occur in this area of their former range. Of the 16 federally listed mussels, 12 are considered either historical or extirpated and are not anticipated to occur in the area of the Tennessee River adjacent to the project site. A survey was conducted in 2009 to identify potential habitat within the Widows Creek drainage for Anthony's riversnail (*Athernia anthonyi*). The survey did not document any live or dead snails, but several dead relic shells of common mussel species were observed within Widows Creek (TVA 2009). Only two federally protected species in Table 3-6 have been documented in Guntersville Reservoir in the vicinity of the WCF site, the federally endangered pink mucket (*Lampsilis abrupta*) and Anthony's riversnail. All other federally protected species listed in Table 3-6 are found in either the nearby Paint Rock River system or outside the area of potential impacts.

Table 3-6. Records of Federal and State-Listed Aquatic Animal Species within the Tennessee River 10-digit HUC Watershed (HUC 0603000102) and a 10-mi Radius of the Proposed Project and/or within Jackson County, Alabama

Common Name	Scientific Name	Element Rank [a]	Federal Status [b]	State Status [b] (Rank) [c]
CRAYFISHES				
Southern Cave Crayfish	*Orconectes australis australis*	E		TRKD (S3)
FISHES				
Blotched Chub	*Erimystax insignis*	E		TRKD (S2)
Blotchside Logperch	*Percina burtoni*	E		TRKD (S1)
Flame Chub	*Hemitremia flammea*	H		NMGT (S3)
Palezone Shiner	*Notropis albizonatus*	E	LE	PROT (S1)
Snail Darter	*Percina tanasi*	E	LT	THR (S2S3)
Southern Cavefish	*Typhlichthys subterraneus*	E		PROT (S3)
INSECTS				
A Caddisfly	*Rhyacophila alabama*	E		PROT (S1)
A Glossosomatid Caddisfly	*Agapetus hessi*	E		TRKD (S1)
MUSSELS				
Alabama Lampmussel	*Lampsilis virescens*	E	LE	PROT (S1)
Alabama Rainbow	*Villosa nebulosa*	E		TRKD (S3)
Angled Riffleshell	*Epioblasma biemarginata*	X		EXTI (SX)
Black Sandshell	*Ligumia recta*	E		TRKD (S2)
Butterfly	*Ellipsaria lineolata*	E		TRKD (S3)
Cumberland Bean	*Villosa trabalis*	X	LE	PROT (SX)
Cumberland Moccasinshell	*Medionidus conradicus*	E		PROT (S1)
Cumberland Monkeyface	*Quadrula intermedia*	X	LE	PROT (S1)
Deertoe	*Truncilla truncata*	E		TRKD (S1)
Dromedary Pearlymussel	*Dromus dromas*	X	LE	PROT (S1)
Elktoe	*Alasmidonta marginata*	H		EXTI (SX)

Common Name	Scientific Name	Element Rank [a]	Federal Status [b]	State Status [b] (Rank) [c]
Fanshell	*Cyprogenia stegaria*	H	LE	END (S1)
Fine-rayed Pigtoe	*Fusconaia cuneolus*	E	LE	PROT (S1)
Flutedshell	*Lasmigona costata*	H		PROT (S2)
Hickorynut	*Obovaria olivaria*	H		EXTI (SX)
Kidneyshell	*Ptychobranchus fasciolaris*	H		TRKD (S1)
Long-solid	*Fusconaia subrotunda*	E		TRKD (S1)
Mucket	*Actinonaias ligamentina*	E		TRKD (S2)
Narrow Catspaw	*Epioblasma lenior*	H		EXTI (SX)
Ohio Pigtoe	*Pleurobema cordatum*	E		TRKD (S2)
Orange-foot Pimpleback	*Plethobasus cooperianus*	H	LE	PROT (S1)
Painted Creekshell	*Villosa taeniata*	E		TRKD (S3)
Pale Lilliput	*Toxolasma cylindrellus*	E	LE	PROT (S1)
Pheasantshell	*Actinonaias pectorosa*	E		TRKD (S1)
Pink Mucket	*Lampsilis abrupta*	E	LE	END (S2)
Purple Lilliput	*Toxolasma lividus*	E		TRKD (S2)
Pyramid Pigtoe	*Pleurobema rubrum*	H		PROT (S2)
Rainbow	*Villosa iris*	E		TRKD (S3)
Ring Pink	*Obovaria retusa*	X	LE	PROT (S1)
Rough Pigtoe	*Pleurobema plenum*	X	LE	PROT (S1)
Round Hickorynut	*Obovaria subrotunda*	E		TRKD (S2)
Sheepnose	*Plethobasus cyphyus*	H	LE	PROT (S1)
Shiny Pigtoe Pearlymussel	*Fusconaia cor*	H	LE	PROT (S1)
Slabside Pearlymussel	*Pleuronaia dolabelloides*	H	LE	PROT (S1)
Slippershell Mussel	*Alasmidonta viridis*	E		PROT (S1)
Smooth Rabbitsfoot	*Quadrula cylindrica cylindrica*	H	LT	PROT (S1)
Snuffbox	*Epioblasma triquetra*	H	LE	TRKD (S1)
Spike	*Elliptio dilatata*	E		TRKD (S1)
Tennessee Clubshell	*Pleurobema oviforme*	E		TRKD (S1)
Tennessee Heelsplitter	*Lasmigona holstonia*	H		TRKD (S1S2)
Tennessee Pigtoe	*Pleuronaia barnesiana*	E		TRKD (S1)
Wavy-rayed Lampmussel	*Lampsilis fasciola*	E		TRKD (S1S2)
White Heelsplitter	*Lasmigona complanata*	H		TRKD (S2S3)
SNAILS				
Anthony's River Snail	*Athearnia anthonyi*	E	LE	PROT (S1)
Armored Rocksnail	*Lithasia armigera*	E		TRKD (S1S2)
Corpulent Hornsnail	*Pleurocera corpulenta*	E		TRKD (S1)
Smooth Mudalia	*Leptoxis virgata*	E		TRKD (S1)
Spiny Riversnail	*Io fluvialis*	E		TRKD (S2)
Varicose Rocksnail	*Lithasia verrucosa*	E		TRKD (S3)
Warty Rocksnail	*Lithasia lima*	E		TRKD (S2)

Source: TVA Natural Heritage database, September 2, 2015.

[a] Heritage Element Occurrence Rank: E = extant record ≤25 years old; H = historical record >25 years old; X = Extirpated

[b] Status Codes: LE or END = Listed Endangered; LT or THR = Listed Threatened; EXTI = Extirpated from state or region; NMGT = In Need of Management; PROT = Protected; TRKD = Tracked by state natural heritage program (no legal status)

[c] State Ranks: S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable; SX = Presumed Extirpated

Species Accounts of Listed Aquatic Animal Species

The following list includes federally listed aquatic species potentially occurring within the Tennessee River 10-digit HUC watershed (HUC 0603000102) and a 10-mi radius of the proposed project, and/or within Jackson County, Alabama.

- **Anthony's riversnail**: Freshwater gastropod endemic to the Tennessee River drainage. Once widely distributed within the river system, it is now restricted to only a few isolated populations, including the lower reaches of the Sequatchie River and in the Tennessee River in the Nickajack Dam tailwaters in Marion County, Tennessee and Jackson County, Alabama (Garner and Haggerty 2010). No critical habitat has been designated for this species.
- **Pink Mucket**: Occurs in a variety of cobble, gravel, sand, and other substrate types (preferably free of silt) in medium to large rivers. Pink mucket is gravid from late summer or autumn to the following summer (Williams, Bogan, and Garner 2008). Historically, the pink mucket occurred in the Ohio, Cumberland, Tennessee, and middle Mississippi River systems (Parmalee and Bogan 1998). Within the last 30 years, pink mucket is known from tailwaters of eight Tennessee River Dams (Kentucky, Pickwick, Wilson, Guntersville, Nickajack, Chickamauga, Watts Bar, and Fort Loudoun dams), four tributary dam tailwaters (Bear Creek, Norris, Cherokee, and Douglas dams), and two mainstem reservoirs (Kentucky and Wheeler Reservoirs). This species has apparently always been uncommon or rare wherever found. No critical habitat has been designated for this species.

3.9.1.2 Terrestrial Ecology – Threatened and Endangered Species

The TVA Natural Heritage database on August 31, 2015, indicated no Alabama state-listed species and one federally protected terrestrial animal species (bald eagle) within 3 mi of the project footprint (Table 3-7). The database also indicated the occurrence of three federally listed terrestrial animal species (gray bat [*Myotis grisescens*], Indiana bat [*Myotis sodalist],* and northern long-eared bat [*Myotis septentrionalis*]) have been documented in Jackson County, Alabama.

Table 3-7. Federally Listed Terrestrial Animal Species Reported from Jackson County, Alabama, and Other Species of Conservation Concern Documented within 3 mi of WCF

Common Name	Scientific Name	Status [a]	
		Federal	State [b]
Birds			
Bald eagle	*Haliaeetus leucocephalus*	DM	PROT(S3)
Mammals			
Gray bat [c]	*Myotis grisescens*	LE	PROT(S2)
Northern long-eared bat [c]	*Myotis septentrionalis*	LT	TRKD(S2)
Indiana bat [c]	*Myotis sodalis*	LE	PROT(S2)

Source: TVA Natural Heritage database, August 31, 2015.

[a] Status Codes: DM = Delisted, recovered, and still being monitored; LE = Listed Endangered; LT = Listed Threatened; PROT = Protected; TRKD = Tracked.

[b] State Ranks: S2 = Imperiled; S3 = Vulnerable.

[c] Federally listed species reported from Jackson County, Alabama but not within 3 mi of project area.

Bald eagles (*Haliaeetus leucocephalus*) are protected under the Bald and Golden Eagle Protection Act. This species is associated with large, mature trees capable of supporting its massive nests. Nests typically are found near large waterways where eagles forage (Turcotte and Watts 1999). Records document occurrence of 17 bald eagle nests in Jackson County, 1 of which is within 10 mi of the project footprint (approximately 0.7 mi away). No bald eagle nests have been documented within the project footprint. No suitable nesting or foraging habitat for bald eagles was noted during desktop review of the project footprint.

Gray bats roost in caves year-round and migrate between summer and winter roosts during spring and fall (Tuttle 1976). Although more closely associated with caves, gray bats have been documented roosting in large numbers in buildings (Gunier and Elder 1971). They forage over bodies of water. Nine gray bat cave hibernacula have been documented in Jackson County. The closest of these caves is located 6.8 mi away from WCF. A 2013 mist net survey captured one gray bat at the Walls of Jericho, approximately 20 mi from WCF. No caves have been reported in the project footprint, and the nearest documented cave is approximately 2.5 mi from the project area. Nevertheless, gray bats may attempt to roost in plant buildings proposed for demolition. Depending on number of openings including windows and bay doors, there is some potential for bats to enter one or more buildings to roost between now and time of demolition. Suitable foraging habitat for gray bat does not occur within the proposed project footprint.

Indiana bats hibernate in caves in winter. During summer, Indiana bats roost under exfoliating bark of dead and living trees in mature forests with an open understory often near sources of water. Indiana bats are known to change roost trees frequently throughout the summer season, yet still maintain site fidelity, returning to the same summer roosting areas in subsequent years. This species forages over forest canopies, along forest edges and tree lines, and occasionally over bodies of water (Pruitt and TeWinkel 2007; Kurta, Murray, and Miller 2002; USFWS 2015). Indiana bats also roost in trees during spring and fall migration between winter hibernacula and summer sites. Suitable roost tree habitat surrounding hibernacula has been found to be of particular importance during migration season. Indiana bats have been documented in Jackson County with the closest record approximately 10.5 mi from the project area. No caves have been reported in the project footprint, and the nearest documented cave is approximately 2.5 mi from the project area. No suitable foraging habitat or summer roosting habitat is present within the proposed footprint.

The Northern long-eared bat predominantly overwinters in large hibernacula including caves, abandoned mines, and cave-like structures. During fall and spring this species utilizes entrances of caves and surrounding forested areas for swarming (i.e., reproductive activity) and staging (i.e., preparation for travel to summer sites). In summer, northern long-eared bats roost individually or in colonies beneath exfoliating bark or in crevices of both live and dead trees. Roost selection by northern long-eared bat is similar to Indiana bat. It is thought, however, that northern long-eared bats are more opportunistic in roost site selection. This species also has been documented roosting in abandoned buildings and under bridges. Northern long-eared bats emerge at dusk to forage below the canopy of mature forests on hillsides and roads and occasionally over forest clearings and along riparian areas (USFWS 2014). Northern long-eared bats have been documented in Jackson County with the closest record being approximately 14.7 mi from the project area. No caves have been reported in the project footprint, and the nearest documented cave is approximately 2.5 mi from the project footprint. No suitable foraging habitat or summer roosting habitat exists within the proposed footprint.

3.9.1.3 Plants – Threatened and Endangered Species

The TVA Natural Heritage database indicated no federally listed and five state-listed plant species are known to be within 5 mi of the proposed project area. Three federally listed plants, as well as one candidate for federal listing, have been previously reported in Jackson County, Alabama, where the project would be located (Table 3-8). A desktop review of the WCF plant site indicates that no habitat for federal or state-listed plant species occurs in the areas where work would occur. The habitat onsite has been severely degraded and is populated primarily with non-native species. No designated critical habitat for plants occurs in the proposed project area.

Table 3-8. Federally Listed Plants and Candidates Previously Reported from Jackson County, Alabama, and all Plant Species of Conservation Concern known within 5 mi of the WCF Project Area

Common Name	Scientific Name	Federal Status [a]	AL State Status [a] (Rank) [b]
Yellow Giant-hyssop	*Agastache nepetoides*	-	SLNS(S1)
Price's Potato-bean [a]	*Apios priceana*	THR	SLNS(S2)
American Hart's-tongue Fern [a]	*Asplenium scolopendrium var. americanum*	-	SLNS(S1)
Morefield's Leather-flower [a]	*Clematis morefieldii*	END	SLNS(S2)
Dutchman's Breeches	*Dicentra cucullaria*	-	SLNS(S2)
American Columbo	*Frasera caroliniensis*	-	SLNS(S2)
Monkey-face Orchid	*Platanthera integrilabia*	C	SLNS(S2)
Pussy Willow	*Salix humilis*	-	SLNS(S2S3)
Green Pitcher Plant [a]	*Sarracenia oreophila*	END	SLNS(S2)

[a] Status codes: C = Candidate; END = Endangered; SLNS = Listed by the state of Alabama but not assigned a status; THR = Threatened.

[b] Rank Codes: S1 = Extremely rare and critically imperiled in the state with 5 or fewer occurrences, or very few remaining individuals, or because of some special condition where the species is particularly vulnerable to extirpation; S2 = Very rare and imperiled within the state, 6 to 20 occurrences; S3 = Rare or uncommon with 21 to 100 occurrences; S4 = Apparently secure; S#S# = Denotes a range of ranks because the exact rarity of the element is uncertain (e.g., S1S2).

[c] Federal-listed species occurring within the county where work would occur, but not within 5 mi of the project area.

3.9.2 Environmental Consequences

3.9.2.1 Alternative A – Assess, Close, and Secure Power Production Facilities, and Implement Operations and Maintenance Program to Maintain Structures and Equipment

Adverse water quality impacts could potentially result from the implementation of Alternative A, which could have indirect impacts to aquatic life within water bodies in the project area over time. Although no federally designated critical habitat exists adjacent to or downstream of WCF or within the watershed potentially affected by the proposed project, the federally listed Anthony's riversnail and pink mucket are known to occur in the vicinity of WCF in Guntersville Reservoir. Impacts to water quality downstream of WCF resulting from this alternative could impair habitat utilized by these species over the long term but would be minimal and insignificant. Thus, there would be no measureable effects to state or federally listed aquatic species or critical habitats. Because environmental conditions would remain essentially the same within the project area, Alternative A would not result in adverse impacts to federally listed

terrestrial animal species or their habitats. The action would not affect federal or state-listed plants because those species are not present there.

3.9.2.2 Alternative B1 – Demolition to Grade with Controlled Explosive Demolition of Units 1-8 Chimneys

Adverse water quality impacts could potentially result from the implementation of Alternative B1, which could have impacts to aquatic biota within water bodies in the project area. However, watercourses that could be affected by the proposed project would be protected by standard permit conditions. Specifically, the shoreline of the Tennessee River would receive a 70 ft minimum SMZ buffer width and/or protection of the existing riparian buffer zone. The decision whether to seal or remove the intake and discharge tunnels or to leave them in place would be made during Phase 2 of the WCF Deconstruction project after detailed engineering plans are developed. Should the decision be made to seal or remove the tunnels, TVA would consult with the USFWS regarding potential impacts to federally listed aquatic species that could be impacted by such actions. TVA would conduct a survey of the tunnels to determine if federally listed aquatic species are present in the tunnels and if so, consultation would result in a plan to minimize and mitigate potential impacts to such species. Since no designated critical habitat occurs within watersheds in the proposed project area, and appropriate stream protection measures outlined in permit conditions would be implemented during site preparation activities, no significant impacts to state or federally listed aquatic species are anticipated to occur as a result of Alternative B1.

Alternative B1 would result in demolition of plant buildings, structures, and chimneys, for which there is potential for federally listed gray bats, Indiana bats, and northern long-eared bats to roost. If any listed bats are present within buildings, structures, or chimneys during demolition, individuals would be impacted. To prevent roosting prior to demolition, openings will be closed to the extent possible and deterrents may also be put in place. If this alternative is selected, a survey of buildings, structures, and chimneys within the project footprint would be performed approximately one month prior to demolition to determine whether listed bat species are present. If listed bats are actively roosting and would potentially be affected by demolition actions, TVA would consult with the USFWS to resolve potential impacts.

Alternative B1 also would remove parking lots, paved roadways, and any adjacent trees and shrubs. These trees could be used by bald eagles, Indiana bat, and northern long-eared bat. It is unknown whether suitable nesting habitat exists for bald eagles in trees potentially affected by Alternative B1, though it is highly unlikely. The nearest bald eagle record is from 0.7 mi away, and no records have been reported from the project footprint. Bald eagles would not be affected by Alternative B1 activities. In addition, trees and shrubs proposed for removal are likely not suitable for summer roosting Indiana bats or northern long-eared bat. This vegetation, however, may offer a small, low quality area of foraging habitat for Indiana bat and northern long-eared bat. Similar foraging habitat is available in areas immediately adjacent to the project site, including the Tennessee River. Removal of this vegetation, therefore, would not impact foraging bats. If no bats are found during surveys of plant buildings, structures, or chimneys, there would be no impacts to listed terrestrial animal species or their habitats.

Adoption of Alternative B1 would result in some additional disturbance on the WCF site, but the action would not affect federal or state-listed plants because those species are not present.

3.9.2.3 Alternative B2 – Demolition to Grade with Units 1-8 Chimney Dismantlement

Impacts to threatened or endangered species would be similar under Alternative B2 as Alternative B1 and no impacts are anticipated.

3.9.2.4 Alternative B3 – Demolition to Grade with Units 1-8 Chimney Hybrid Demolition/Dismantlement

Impacts to threatened or endangered species would be similar under Alternative B3 as Alternative B1 and B2 and no impacts are anticipated.

3.9.2.5 Alternative C – No Action

Impacts to threatened or endangered species would be similar under Alternative C as Alternative A and no impacts are anticipated.

3.10 Air Quality and Climate Change

3.10.1 Affected Environment

WCF operates under a Title V permit #A60-040106-515, Facility #705-008 (ADEM 2008a). During 2015, one unit operated at WCF, Unit 7, which shut down on September 21, 2015. With the plant no longer burning coal, the primary mechanisms for causing potential effects to local air quality considered in this assessment are the demolition of buildings and structures, site grading, removal of solid and hazardous waste, and transportation-related activities. All generate fugitive dust, which is commonly measured by the size of particulate matter. A common unit of measure for dust is particulate matter less than 10 microns in diameter (PM_{10}). Likewise, exhaust from internal combustion engines used to power trucks and demolition equipment can affect local air quality, especially if the engines are not properly maintained.

Fugitive greenhouse emissions result from intentional or unintentional releases to the atmosphere. The main greenhouse gases of concern are hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF_6). HFCs can be emitted during the use of refrigeration, air conditioning, and fire suppression equipment. PFCs can be produced as a byproduct of various industrial processes. SF_6 can escape from gas-insulated substations and switchgear through seals, especially from older equipment. These gases can be released during equipment manufacturing, installation, servicing, and disposal (EPA 2015).

The largest use of SF_6, both in the United States and internationally, is as an electrical insulator and interrupter in equipment that transmits and distributes electricity. It is used in gas-insulated substations, circuit breakers, and other switchgear. SF_6 has replaced flammable-insulating oils in many applications and allows for more compact substations in dense urban areas (EPA 2015).

HFCs and PFCs are used as alternatives to several classes of ozone-depleting substances that are being phased out under the terms of the Montreal Protocol and the Clean Air Act Amendments of 1990. Although HFCs and PFCs are not harmful to the stratospheric ozone layer, they are potent greenhouse gases. Sources of these gases may be found in refrigeration units, heating and air conditioning units, etc. (EPA 2015).

The 2015 U.S. Greenhouse Gas Inventory uses emission estimates that have been revised to reflect the global warming potentials (GWPs) provided in the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment (AR4). AR4 values differ slightly from those presented in the IPCC Second Assessment (used in the previous inventories), which results in time-series recalculations for most inventory sources. Under the most recent reporting guidelines, countries are required to report using the AR4 GWPs, which reflect an updated understanding of the atmospheric properties of each greenhouse gas. The GWPs of methane (CH_4) and most fluorinated greenhouse gases have increased, leading to an overall increase in carbon dioxide equivalent (CO_2e) emissions from CH_4, HFC, and PFCs. The GWPs of nitrous

oxide and SF_6 have decreased, leading to a decrease in CO_2e emissions from these greenhouse gases (EPA 2015).

Total 2013 U.S. emissions from SF_6 from equipment manufacturing and from electrical transmission and distribution systems were estimated to be 5.1 million metric tons CO_2e. This quantity represents an 80 percent decrease from the EPA's estimate for 1990. This decrease is believed to have two causes: a sharp increase in the price of SF_6 during the 1990s and a growing awareness of the environmental impact of SF_6 emissions through programs such as EPA's SF_6 Emission Reduction Partnership for Electric Power Systems (EPA 2015).

Overall, HFCs, PFCs, SF_6 and nitrogen trifluoride accounted for 2.5 percent of 2013 greenhouse gas emissions in the United States. Emissions of PFCs and SF_6 have actually decreased during this time due to emission reduction efforts in the aluminum production industry (PFCs) and electricity transmission and distribution industry (SF_6) (EPA 2015).

3.10.2 Environmental Consequences

3.10.2.1 Alternative A – Assess, Close, and Secure Power Production Facilities, and Implement Operations and Maintenance Program to Maintain Structures and Equipment

Under Alternative A, there would be no near-term direct effects to local air quality because the current operations at the site were shut down on September 21, 2015. Because the facilities would not be demolished, the potential for release of pollutants or particulate matter would be minimized. There would be a small potential for release of particulate matter associated with the removal of hazardous material under this alternative. The use of BMPs would control the potential for fugitive dust and other particulate matter to be released. If a release occurs, it can be expected to be small and temporary in nature, constituting only potential minor, localized impacts to air quality.

Indirect negative impacts to air quality under Alternative A could occur as fungus, mold, or other biological organisms grow within structures, which would likely increase due to the limited maintenance schedule. Biological growth could create an unhealthy environment within the abandoned structures. However, these impacts are not anticipated to be significant for local air quality as affected individuals in this environment such as trespassers or temporary maintenance workers would likely experience only short-term exposure.

Efforts would be made to avoid releases from any equipment containing SF_6 or HFCs during the hazardous material decontamination process at the facility. If a release occurs, it can be expected to be insignificantly small and limited to the amount of gas in a specific container. There is no equipment containing PFCs onsite. No impacts to climate change are anticipated for Alternative A.

3.10.2.2 Alternative B1 – Demolition to Grade with Controlled Explosive Demolition of Units 1-8 Chimneys

Demolition of the buildings and structures would temporarily generate fugitive dust. Likewise, removal of demolition debris and other materials offsite, backfilling structures, and grading would generate some amounts of fugitive dust and would cause localized effects to air quality in the form of exhaust emissions.

Fugitive emissions from demolition activities typically produce particles that are primarily deposited on the property where the structures being demolished are located. The potential drift distance of particles is governed by the initial injection height of the particle, the terminal settling

velocity of the particle, and the degree of atmospheric turbulence. Theoretical drift distance, as a function of particle diameter and mean wind speed, has been computed for fugitive dust emissions. Results indicate that, for a typical mean wind speed of 16 km/hour (10 miles per hour [mph]), particles larger than about 100 micrometers (μm) are likely to settle out within 20 to 30 ft from the point of emission. Particles that are 30 to 100 μm in diameter, depending upon the extent of atmospheric turbulence, are likely to settle within a few hundred feet from the point of emission (i.e., the fall area of the stack). Smaller particles, particularly PM_{10} and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) due to their size and weight are much more likely to be dispersed by wind (EPA 2006).

Demolishing the stack would likely produce the most particulate matter of any site activity but would be limited to a one-time event. Particulate matter generated from stack demolition would have the potential to travel off the site. The distance the particulate matter could travel would be dependent on the height of the dust column generated from demolition and wind and weather conditions during demolition. Demolition and felling of stacks has been documented many times (Malcom Pirnie 2013) and the effects are well known.

During demolition of the stacks, TVA would implement BMPs including wetting down the structure prior to felling, use of misting systems during stack felling, and tackifier applied inside the stacks. The fall zones would have berms to reduce the lateral extent of the dust cloud. Also, a hardened berm near the base of the stack would act as a backstop to prevent rock and debris spreading from the base of the stacks during demolition. Water or another approved material would be applied to the clean soil to discourage it from becoming airborne when the stack comes down. A misting system would be used to saturate the air inside the fall zone and help to bind fugitive dust as it becomes airborne, hastening its resettling and preventing undue spread off site. Cleaning the inside of the stack and removing any fibrous materials is a common practice to mitigate additional dust generation (Project Navigator Ltd. 2013).

Site preparation and vehicular traffic over paved and unpaved roads at the site would result in the emission of fugitive dust PM_{10} during active construction or demolition removal periods. The largest fraction (greater than 95 percent by weight) of fugitive dust emissions would be deposited within the construction site boundaries (Buonicore and Davis 1992). The remaining fraction of the dust would be subject to transport beyond the property boundary. If necessary, emissions from open construction areas and paved/unpaved roads would be mitigated by spraying water or another approved material on the roadways to reduce fugitive dust emissions.

The demolition contractor would be required to remove ash from the facility proposed for deconstruction prior to demolition of that facility and would implement dust control measures during demolition to prevent the spread of dust, dirt, and debris. These methods include wetting equipment and demolition areas, covering waste or debris piles, using covered containers to haul waste and debris, and wetting unpaved vehicle access routes during hauling. Wet suppression can reduce fugitive dust emissions from roadways and unpaved areas. TVA also routinely requires onsite contractors to maintain engines and equipment in good working order. With these measures in place, potential effects to local air quality from the proposed demolition and deconstruction are expected to be minor and temporary.

As indicated in Alternative A, efforts would be made to avoid releases from any equipment containing SF_6 or HFCs. If a release occurs, it can be expected to be insignificantly small and limited to the amount of gas in a specific container. There is no equipment containing PFCs onsite.

Overall, this alternative is expected to have a minor and temporary impact on air quality and no impact on climate change.

3.10.2.3 Alternative B2 – Demolition to Grade with Units 1-8 Chimney Dismantlement

Alternative B2 would be similar to Alternative B1 with the exception that the dismantlement would include a greater number of labor hours and would not include the explosives and felling of the stacks. While stacks would be dismantled piece by piece, dust would still be created by material falling into the chimney as it is dismantled from the top down. Dismantled stack material would be hauled from the bottom of the stack and moved to the staging area in the coal yard or used as fill in other portions of the facility. Due to the small quantity of material demolished daily and small area within the stack where this material would be accumulated, it is likely that much of the material would be handled twice; once to stockpile in the coal yard and then as fill material in the building or hauled to a landfill. Dust suppression similar to that described for Alternative B1 would be utilized throughout the dismantlement, filling, and grading process.

As indicated previously, efforts would be made to avoid releases from any equipment containing SF_6 or HFCs. If a release occurs, it can be expected to be insignificant and limited to the amount of gas in a specific container. There is no equipment containing PFCs onsite.

This alternative is anticipated to have a minor and temporary impact on air quality and no impact on climate change.

3.10.2.4 Alternative B3 – Demolition to Grade with Units 1-8 Chimney Hybrid Demolition/Dismantlement

Air impacts resulting from Alternative B3 would have components of both Alternatives B1 and B2, including dismantling of the stacks from the top and then felling by use of explosives for the bottom half. Dismantled stack material would be hauled from the bottom of the stack and moved to the staging area in the coal yard or used as fill in other portions of the facility. The remainder of the stack would fall in the coal yard. Dust suppression similar to that described for Alternative B1 would be utilized throughout the dismantlement, demolition, filling, and grading process.

As described previously, efforts would be made to avoid releases from any equipment containing SF_6 or HFCs. If a release occurs, it can be expected to be insignificant and limited to the amount of gas in a specific container. There is no equipment containing PFCs onsite.

As with Alternatives B1 and B2, Alternative B3 is anticipated to have a minor and temporary impact on air quality and no impacts on climate change.

3.10.2.5 Alternative C – No Action

Under the No Action Alternative, there would be no near-term direct or indirect impacts to local air quality. Unit 7 was shut down in September 2015; therefore, there are no air emissions from the stacks at the facility. Under the No Action Alternative, no fugitive dust would be generated from demolition activities.

Releases from equipment containing SF_6 or HFCs, if left in place, may occur over time. If a release occurs, it can be expected to be insignificant and limited to the amount of gas in a specific container. There is no equipment containing PFCs onsite.

Similar to Alternative A, indirect negative impacts to air quality could occur as fungus, mold, or other biological organisms grow within structures, which would increase due to the limited maintenance schedule. Biological growth could create an unhealthy environment within the

abandoned structures. However, these impacts are not anticipated to be significant for local air quality as affected individuals in this environment, such as trespassers or temporary maintenance workers, would likely experience only short-term exposure.

This alternative is anticipated to have no impact on air quality or climate change.

3.11 Hazardous Materials and Solid and Hazardous Waste

3.11.1 Affected Environment

The following materials are known to be present at WCF:

- Asbestos containing materials (ACM)
- Mercury in equipment switches and flow meters
- Lead-containing materials
- PCBs in transformers and other oil-filled equipment
- Materials such as glaze, caulk, building siding, roofing materials, electrical cable, cable trays, etc.
- Other construction waste (e.g., concrete, scrap metal, etc.)
- Nonhazardous materials such as universal waste (fluorescent light bulbs, ballasts, etc.)
- Aboveground storage tanks and underground storage tanks
- Containerized petroleum products or chemicals
- Chlorinated fluorocarbons (CFCs) (Freon) from equipment
- Radioactive sources from equipment
- Out of date surplus materials
- Various oils and fuels
- Antifreeze
- Batteries in bulk and associated fixtures including deep cycle series uninterruptible power supply batteries and lead batteries from emergency lighting
- Loose combustible debris (tenant debris)
- Street lighting
- Heavy metals
- Batteries
- Creosote (in railroad ties)

During the fall of 2015, TVA conducted a hazardous materials survey of the project area to quantify and locate hazardous materials in order for demolition contractors to prepare bids for the removal of hazardous wastes and materials (AECOM 2015). The survey was conducted as two separate events with a report prepared for Units 1-6 in early October 2015 and Units 7-8 in late October 2015. The locations of the buildings and materials identified are provided in the AECOM 2015 survey reports. These reports detail ACM, lead-containing materials, PCB-containing materials, mercury containing materials, and other hazardous materials that are contained in Units 1-8 and the surrounding structures. Tables 1-5 from the AECOM reports detail the hazardous materials quantities and locations; the data for Units 1-8 is summarized below. Additional sampling of inaccessible materials, such as liquids or residual solids in sumps, tanks, or storage containers, may be required prior to demolition activities.

TVA would remove hazardous materials prior to implementation of any action taken to demolish structures and as a part of Alternatives A and C as needed to secure the facility. Specific oil stains or areas that may contain materials of concern would be addressed prior to demolition as well. Materials that would be addressed prior to demolition would include ACMs, lead-containing

materials, and other hazardous materials identified throughout the survey area. The following quantities of ACMs, lead-containing materials, and other hazardous materials were identified during the survey in October 2015 at Units 1-6:

- 76,160 linear feet (LF) of ACM pipe insulation and 9,125 linear feet of ACM mudded fittings.
- 116,230 square feet (SF) of ACM duct insulation.
- 104,000 SF of ACM boiler insulation.
- 15,000 LF of ACM cement conduit and 41,670 SF of ACM cement panels and cable trays.
- 58,000 SF of ACM wall block and mortar in the Turbine Bay; this material may be present in other areas of the powerhouse and the quantity may be greater. Similar wall block and mortar are present in the service bay, service bay office wing, water treatment plant, dock service building, electrical equipment building, and rail car hopper building.
- Electrical transformers, some of which contain PCBs
- Large quantities of stored chemicals and compressed gasses, used oil, and common building hazardous materials such as light tubes and ballasts, batteries, mercury gauges, and emergency lights.
- 25,000 SF of refractory brick within Units 1-6, which was observed to emit radiation above background levels during the TENORM screening survey.

Hazardous materials identified at Units 7-8 include:

- 54,852 LF of ACM pipe insulation;
- 6,069 ACM fittings (elbows, tees, unions, flanges, hangers);
- 164,740 SF of ACM duct insulation;
- 39,000 SF of ACM boiler insulation;
- 88,270 SF of asbestos cement panels and asbestos cement cable trays;
- 61,750 SF of ACM roofing materials;
- An estimated quantity of 100,250 LF of ACM woven cloth wire wrap present on cables in the survey area and additional cloth wrap present on wires within energized electrical equipment such as circuit breaker and switchgear cabinets and within 4,160 and 480 Boards;
- 125,600 SF of ACM waterproofing on the interior of the Units 7-8 stacks (chimneys) – assumed to be present based on construction of similar stacks;
- 23,920 SF of ACM plaster;
- 71,800 SF of ACM asphaltic coating on metal siding;
- 400 LF of ACM rope gasket material associated with corbels in Units 7 and 8 stacks (chimneys);
- 3,790 LF of ACM caulk;
- Electrical transformers, some of which contain PCBs;
- Large quantities of stored chemicals and compressed gasses, used oil, and common building HazMats such as light tubes and ballasts, batteries, mercury gauges, and emergency lights;
- 119,320 SF of refractory brick within Units 7-8 which was observed to emit radiation above background levels during the TENORM screening survey – refractory brick on elevations 628 and 649 (24,320 SF total) had radiation levels above 50 microrems per hour
- 400 LF of ACM rope gasket material associated with corbels in Units 7 and 8 stacks (chimneys);
- 270 gallons of mineral oil associated with below-grade oil-filled transmission lines

Based on a review of existing information, observations made by AECOM inspectors, and the results of suspect material sampling, it can be concluded that ACMs, lead-containing materials, and other hazardous materials are present at Units 1-6 and 7-8. These materials will require special removal, handling, and disposal by appropriately trained and licensed personnel and contractors prior to demolition activities.

3.11.2 Environmental Consequences

3.11.2.1 Alternative A – Assess, Close, and Secure Power Production Facilities, and Implement Operations and Maintenance Program to Maintain Structures and Equipment

Under Alternative A, hazardous materials and waste not associated with the structural materials would promptly be removed from the facility. Potential contaminant sources that are incorporated into the facility structure would remain in the decommissioned facility. There would be a potential risk for hazardous waste to be discharged/released into the environment under this alternative, as potential contaminants would remain in place. However, periodic inspections would minimize this risk by identifying potential issues, and damaged materials would be removed. Periodic quantities of hazardous materials and waste would be generated for disposal. Removed materials would be transported either by truck or by rail to a landfill or other approved disposal facility operated by a company under TVA contract. Hazardous waste, PCB, ACM, and universal waste require specific handling, labeling, and disposal protocols. Disposal of any hazardous material removed would be done at facilities specifically permitted to receive such waste. Asbestos and ACM would be removed by a certified contractor and disposed of at a facility designed to receive asbestos and ACM. While bulk hazardous materials would be removed from WCF as they deteriorate, material that is incorporated into the remaining structures, such as lead-based paint on metal structures, wiring, and plumbing (copper and lead), may not be removed. Over time, any environmental and safety issues resulting from the degradation of these remaining materials would be addressed as and when such issues are identified.

3.11.2.2 Alternative B1 – Demolition to Grade with Controlled Explosive Demolition of Units 1-8 Chimneys

Alternative B1 would involve removal of potential contaminant sources from the various structures, deconstruction of the identified structures described in Chapter 2, and explosive demolition of chimneys for Units 1-8. The TVA Specification for Demolition and Disposal of Structures provides specific measures to be taken with respect to the handling and disposal of solid and hazardous wastes. With these precautionary measures in place, the potential for releasing hazardous materials into the environment during handling and disposal would be minimized.

Brick, block, and concrete demolition debris not contaminated by ACM or other hazardous materials would be used as clean fill in the basements and lower levels of the facility. Contaminated demolition debris and hazardous wastes would be hauled either by truck or by rail to a landfill designed to receive such waste and operated by a company under TVA contract. Alternative B1 would include a significant investment recovery opportunity in the form of recycling scrap metal and re-using demolished concrete and masonry for clean fill.

This alternative is likely to have short-term impacts to the local environment through the release of fugitive dust during demolition and removing material to the landfill. Implementation of the mitigation measures of dust suppression and environmental controls outlined in the guidance would minimize potential impacts. Due to the temporary nature of the operations, use of

permitted disposal facilities, and trained and experienced contractors and personnel, environmental impacts from waste handling and disposal are not anticipated.

3.11.2.3 Alternative B2 – Demolition to Grade with Units 1-8 Chimney Dismantlement

Alternative B2 is similar to Alternative B1 with the exception that demolition of the stacks would take place using scaffolding and would be done manually without explosives. This approach would require more time, which would allow for a greater chance of release of dust and potentially hazardous material. Deconstruction of the other structures onsite would be the same as under Alternative B1. Similarly to Alternative B1, Alternative B2 would also include significant investment recovery in the form of recycling and re-use. Due to the temporary nature of the operations, use of permitted disposal facilities, and trained and experienced contractors and personnel, environmental impacts from waste handling and disposal under Alternative B2 would be similar to those described for Alternative B1 and are not anticipated.

3.11.2.4 Alternative B3 – Demolition to Grade with Units 1-8 Chimney Hybrid Demolition/Dismantlement

Alternative B3 combines aspects of both Alternatives B1 and B2. Deconstruction of the majority of the structures onsite would be similar. The top of the stacks would be dismantled manually and then the lower sections would be dropped using explosives. This alternative would be less expensive and time consuming than Alternative B2 but greater than Alternative B1 in both aspects. As with Alternatives B1 and B2, Alternative B3 would include significant investment recovery in the form of recycling and re-use. Due to the temporary nature of the operations, use of permitted disposal facilities, and trained and experienced contractors and personnel, environmental impacts from waste handling and disposal under Alternative B3 would be similar to those described for Alternatives B1 and B2 and are not anticipated.

3.11.2.5 Alternative C – No Action

Under this alternative, the power plant and associated structures would not be demolished. If the facility is left as-is, it likely would present a higher risk than Alternatives A, B1, B2, and B3 for the potential to contaminate soil and groundwater as systems and structures degrade. Peeling lead-based paint, failing concrete, buckling floor tiles, and asbestos and ACM breakdowns are examples of the onsite hazard risk. There would also be issues with the long-term functionality of sump pumps, which are maintained to remove water from floor drains. If these sump pumps are allowed to be inoperative, water would build up in the sumps, become septic, and leach potentially contaminated water into the groundwater.

Concerns related to hazardous wastes under this alternative would be likely to result in impacts to the environment as there is the potential for environmental contamination. Further, concerns regarding trespassing and vandalism would be higher than with the other alternatives. The presumed presence of materials that could be salvageable might attract thieves. Unauthorized persons at the site could presumably be exposed to potential contaminants or physical injury. While much of the bulk hazardous materials would be removed from WCF as part of closing the facility, material such as lead-based paint on metal structures, wiring, and plumbing (copper and lead) may not be removed. Over time, degradation of these materials may result in release to the environment (e.g., through leaching to soils, surface water, or groundwater), and are likely to have minor long-term impacts. Overall, impacts from hazardous and solid waste are anticipated to be minor.

3.12 Transportation (Rail and Roadway)

The existing condition of transportation resources in the vicinity of WCF and the potential effects of the proposed alternatives on the traffic infrastructure are described in this section.

3.12.1 Affected Environment

The existing transportation infrastructure near the WCF site includes federal, state, and county roads as well as railway for land access, river access via barge through the system of locks along the Tennessee River, and access by air with two municipal airports in the vicinity. The plant is located about 22 mi northeast of Scottsboro, Alabama, and 28 mi west-southwest of Chattanooga, Tennessee.

The assessment of traffic effects for the project is based on the transportation planning and engineering concept of level of service (LOS). LOS is a qualitative measure that describes operational conditions within a traffic stream and their perception by drivers and/or passengers. Six levels of service, A through F, define the full range of driving conditions from best to worst, in that order. These levels of service qualitatively measure the effect of such factors as travel time, speed, cost, comfort, safety, and maneuvering freedom. The LOS and capacity are the measurements of the ability of an intersection or a roadway to accommodate design traffic volumes. LOS-E is considered the lowest acceptable LOS.

3.12.1.1 Local Roadway Access

Interstate Highways I-24 and I-59 provide access generally to WCF. The nearest major highway is US Highway 72 (John T Reid Parkway/Lee Highway) that connects Chattanooga, Tennessee, and Huntsville, Alabama, and passes approximately 3 mi northwest of the site. Within the project vicinity, US 72 is a four-lane median divided highway with 12-ft lanes and 10-ft shoulders and unlimited access for trucks and automobiles (TVA 2015a).

The WCF site can be accessed from US 72 via Alabama State Route (SR) 277 and County Road 69, or via County Road 96. Both routes intersect with Steam Plant Access Road, which provides direct access to the facility (TVA 2015a).

County Road 96 is a two-lane highway that connects with US 72 south of the US 72/SR 277 interchange. The rolling roadway has no shoulders and is striped to indicate that passing is not allowed. US 72 at County Road 96 is a stop-controlled intersection with a free-flow right turn at its approach. The four-lane divided facility on US 72 has a right turn lane at the County Road 96 northbound approach and a left turn lane in the southbound direction (TVA 2015a).

County Road 69 provides access from US 72 to SR 277 to Steam Plant Access Road. County Road 69 has an at grade railroad crossing near SR 277 that is un-signalized but that has cross buck warning signs. In accordance with the *Manual on Uniform Traffic Control Devices* (Federal Highway Administration 2009), stop signs are also in place on both sides of the at-grade crossing. Northbound and southbound approaches on US 72 at County Road 69 have right and left turn lanes. The posted speed limit near this intersection is 65 mph (TVA 2015a).

Steam Plant Access Road is a two-lane roadway to the WCF site from SR 277 and crossing several county roads, including County Road 96. The intersection of SR 277 and Steam Plant Access Road is un-signalized; however, the SR 277 eastbound approach has an exclusive right turn lane to accommodate the substantial number of vehicles utilizing the US 72/SR 277 interchange to Steam Plant Access Road (TVA 2015a).

The 2013 average annual daily traffic (AADT) count was obtained from the Alabama Department of Transportation, Alabama Transportation Planning Bureau's web site (Alabama Department of Transportation 2013). Traffic along US 72 ranges from 10,600 vehicles per day (vpd) near the Alabama-Tennessee state line to 12,320 vpd south of the SR 277 junction. Daily traffic along SR 277 (SR 2) ranges from 4,480 vpd north of Bridgeport to approximately 4,000

vpd between Steam Plant Access Road and US 72. Approximately 2,600 vpd travel along SR 277 east of Steam Plant Access Road. On County Road 75, the AADT averages 1,100 vpd east and west of US 72. On County Road 117, the daily traffic varies between 3,360 and 3,540 vpd east and west of US 72 (TVA 2015a). Traffic count locations are shown on Figure 3-5.

3.12.1.2 Railroads

The CSX Railroad operates a main line between Chattanooga, Tennessee, and Huntsville, Alabama, that runs parallel to SR 277 (SR 2) near the WCF site. WCF is served from this mainline with trains delivering coal. TVA constructed a spur line from the CSX tracks southeast to WCF. Approximately 9,000 tons of coal were delivered per day via rail on 90-car unit trains when WCF was operational. Jackson County Road 69 has an at-grade crossing near the SR 277 intersection (TVA 2015a).

3.12.1.3 River Transport

Guntersville Reservoir is one of five TVA reservoirs and locks that accommodate barges along the Tennessee River. Approximately 54 million tons of materials move along the Tennessee River each year. Nickajack Dam is located at TRM 424.7, about 17 mi upstream from the WCF plant. Over two million tons of materials ship through the Guntersville Reservoir and the Nickajack Lock on more than 2,500 barges moving through the lock each year (TVA 2015a). Historically coal was shipped to WCF via barge. A barge slip and unloading crane are located at WCF.

3.12.2 Environmental Consequences

3.12.2.1 Alternative A – Assess, Close, and Secure Power Production Facilities, and Implement Operations and Maintenance Program to Maintain Structures and Equipment

Under Alternative A potential contaminant sources would be removed from the project site. Existing structures would remain in place, and high-risk environmental and safety issues would be addressed. Potential contaminants removed would be transported either by truck or by rail to an offsite hazardous waste landfill or alternate approved disposal facility. Truck traffic volumes to and from the facility could increase temporarily for a short period, resulting in a minor impact to the LOS for roads in that area. No long-term impacts to transportation would be anticipated.

3.12.2.2 Alternative B1 – Demolition to Grade with Controlled Explosive Demolition of Units 1-8 Chimneys

Alternative B1 would involve removal of potential contaminant sources and removal of all structures within the project site. The Units 1-8 stacks would be demolished via explosives, the use of which would necessitate increased security measures that would affect transportation in the immediate vicinity of the project site. During the blasting event, select public roadways would be closed for public safety and to facilitate site security. River traffic would be restricted as well due to the potential for demolition debris to fall into the river. Traffic closures would vary from approximately 3 hours before and up to 3 hours after the blast. The closure would not likely affect a large number of local residents due to the sparse population in the area. The demolition contractor would create a detailed plan for road closures that would be distributed to affected parties, including emergency personnel.

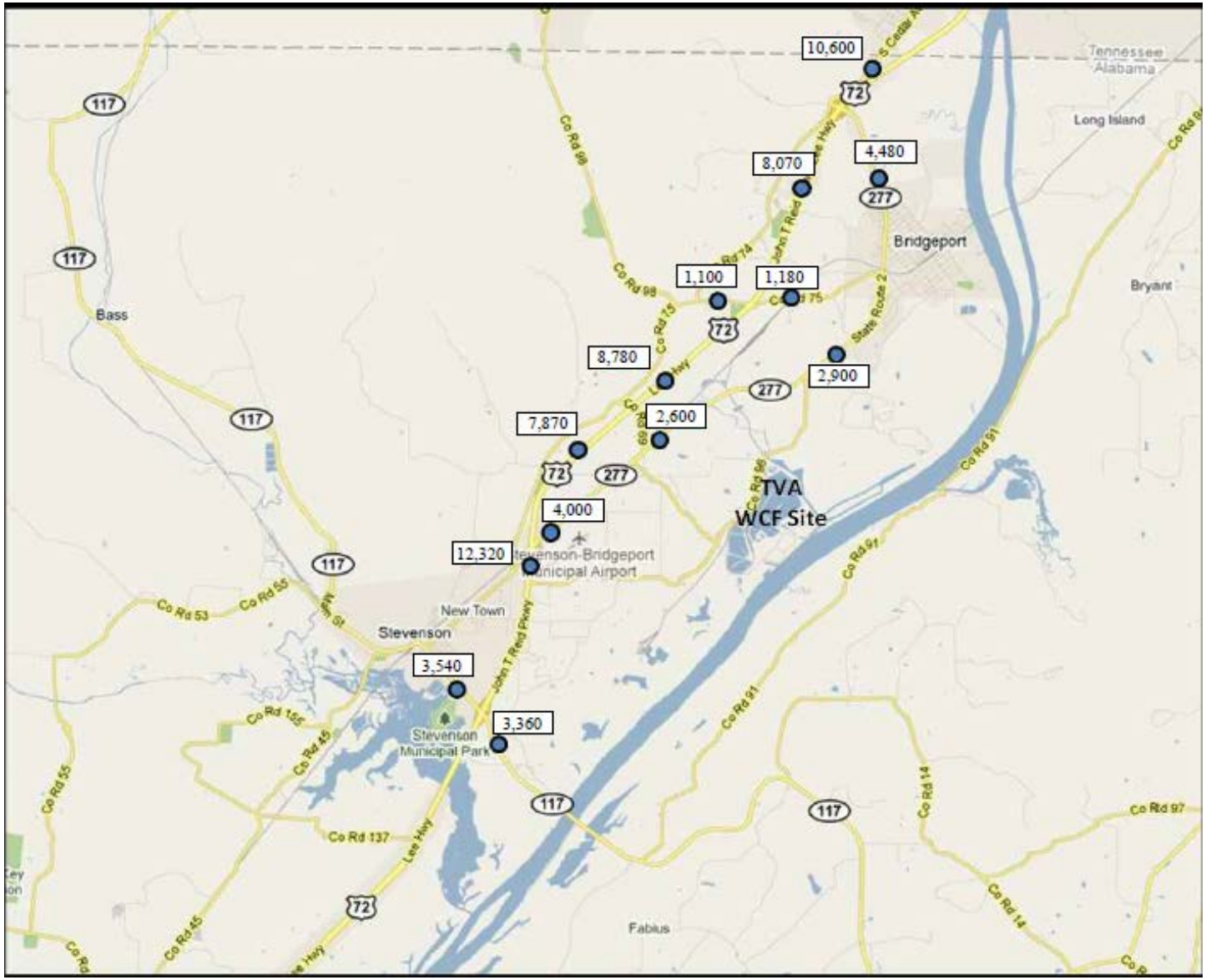

Figure 3-5. 2013 AADT at Locations near WCF

Demolition debris would be used for fill material of the basements at the facility with any excess hauled to an offsite landfill either by truck or by rail. In addition to demolition material being hauled to an offsite hazardous waste landfill, Alternative B1 could result in up to several hundred tons of scrap metal that would also be hauled from the facility either by truck or by rail. Truck traffic volumes in the vicinity could increase temporarily for a short period, having a minor impact on the LOS for roads in that area.

CSX Railroad would be contacted and train movement would be prevented in the area during the blasting event. After demolition, a railroad-provided team would inspect the track prior to reopening for rail service. No barge or boat traffic would be allowed in the area during the event. Due to the temporary nature of demolition operations, no impacts to rail and navigational traffic are expected.

3.12.2.3 Alternative B2 – Demolition to Grade with Units 1-8 Chimney Dismantlement

The effects of Alternative B2 would be identical to those resulting from Alternative B1 with the exception of security-related issues. For example, the road closure and a temporary halt to barge/boat and rail traffic would likely not be required. Dismantlement would take longer to accomplish than demolition and so the presence of trucks hauling debris would likely extend for a longer time than with Alternative B1. Truck traffic volumes in the vicinity could increase temporarily for a short period, having a minor impact on the LOS for roads in that area. Due to the temporary nature of demolition operations, no impacts to rail and navigational traffic are expected.

3.12.2.4 Alternative B3 – Demolition to Grade with Units 1-8 Chimney Hybrid Demolition/Dismantlement

Alternative B3 proposes to remove the Units 1-8 stacks through a hybrid approach of controlled explosive demolition and dismantlement. Under Alternative B3, TVA would remove the stacks for Units 1-8 by dismantling the uppermost portions of the stacks and then using controlled explosives to remove the remaining lower portions. This method of stack removal involves the need for increased traffic security measures during blast events similar to Alternative B1. Effects on the transportation infrastructure would be similar to those produced by Alternative B1. Truck traffic volumes in the vicinity could increase temporarily for a short period, having a minor impact on the LOS for roads in that area. Due to the temporary nature of demolition operations, no impacts to rail and navigational traffic are expected.

3.12.2.5 Alternative C – No Action

Under the No Action Alternative, there would be no effect on the transportation infrastructure as there would be no impact in the current uses of the facility.

3.13 Noise and Vibration

3.13.1 Affected Environment

The areas north, south, and east of WCF are predominately wooded or in agricultural use. A small number of residences are scattered throughout with the closest being approximately eight-tenths of a mile from the facility.

Noise is measured in logarithmic units known as decibels (dB). Given that the human ear cannot perceive all pitches or frequencies in the sound range, noise measurements are typically weighted to correspond to the limits of human hearing. This adjusted unit of measure is known as the A-weighted decibel, or the dBA, which reflects the fact that a human ear hears poorly in

the lower octave-bands. It emphasizes the noise levels in the higher frequency bands that are heard more efficiently by the ear and discounts the lower frequency bands.

The equivalent sound level (Leq) averages the fluctuating noise heard over a specific time as if it had been a steady sound. The day-night sound level (Ldn) is the 24-hour average noise level with a 10-dBA penalty between 10 p.m. and 7 a.m. to account for the fact that most people are more sensitive to noise while they are sleeping.

There are no federal, state, or local regulations for community noise in Jackson County; however, EPA (1973) guidelines recommend that Ldn not exceed 55 dBA. Given that nearby residences are at least 0.8 mi from the facility, these guidelines would probably not apply since the average community reaction would be virtually non-existent (see Table 3-9).

Table 3-9. Estimated Annoyance from Background Noise

Ldn (dBA)	Percent Highly Annoyed	Average Community Reaction
75 and above	37%	Very severe
70	25%	Severe
65	15%	Significant
60	9%	Moderate
55 and below	4%	Slight

Source: Federal Interagency Committee on Noise 1992.

The demolition blast event would generate noise both from the explosion and from the collapse of the stacks. The fact that this noise generation would be a one-time event removes it from the background/constant/continuing intermittently category that defines Ldn and corresponding levels of annoyance within the community. For example, the Occupational Safety and Health Administration permissible noise exposure in the workplace is 90 dB (e.g., a lawn mower) for eight hours per day, or 115 dB (e.g., emergency vehicle siren) for 0.25 hour. The blast event at the source may be equivalent to a thunderclap (120 dB). Notifications to the public would be issued prior to the use of explosives for demolition.

3.13.2 Environmental Consequences

3.13.2.1 Alternative A – Assess, Close, and Secure Power Production Facilities, and Implement Operations and Maintenance Program to Maintain Structures and Equipment

Under Alternative A noise levels may be impacted by removal and transport of potential contaminant sources from the facility prior to closure. Existing structures would remain in place, and high-risk environmental and safety issues would be addressed. Potential contaminants removed would be transported either by truck or by rail to an offsite hazardous waste landfill or alternate approved disposal facility. Truck traffic volumes to and from the facility could increase temporarily for a short period, potentially generating a slight increase in noise during daylight hours in that area. The impacts would be insignificant.

3.13.2.2 Alternative B1 – Demolition to Grade with Controlled Explosive Demolition of Units 1-8 Chimneys

Alternative B1 would generate noise during the removal of potential contaminant sources and removal of all structures. The Units 1-8 stacks would be demolished via explosives, the use of which would generate a noise and vibration event of very short duration.

A documentation services company would be contracted to evaluate the potential for vibration impacts with seismologic analysis. The documentation services company would use site-specific data provided by the blasting contractor to prepare a vibration model simulating the effects of discharge of the explosives or vibrations due to the stack hitting the ground. The model results would be compared to thresholds developed by the United States Bureau of Mines for vibration damage. The study would assess the impact of vibration to structures within a 0.5 mi radius of the stack.

Seismologic analyses carried out at recent demolitions of other tall industrial chimneys in the United States strongly suggest that the vibrations would not result in measurable effects on nearby structures (Protec 2008, 2009, and 2013). These seismological analyses were conducted to measure the effects from demolition-related vibrations on standing structures in the vicinity of the chimney demolitions. In each case, vibrations were below the recommended limits set by the U.S. Bureau of Mines Report (Siskind et al. 1980). The report authors in each case concluded the demolitions would not cause damage to structures within the radius of influence. Vibrations resulting from the demolition of the WCF Units 1-6 chimney would be of similar magnitude. The site-specific vibration model results would be used to verify no significant impact to structures in the area. The use of BMPs including wetting down the structure prior to felling, use of misting systems during stack felling, and use of berms during demolition would also serve as a form of noise/vibration control. Therefore, no damage to structures is anticipated. Due to the temporary nature of the operation, noise and vibration effects on the environment are expected to be minor and temporary.

3.13.2.3 Alternative B2 – Demolition to Grade with Units 1-8 Chimney Dismantlement

The dismantlement activity would not produce the noise and vibration effects associated with Alternative B1 felling of the stacks; however, noise would be generated as part of the demolition of structures. No impacts on the public would be anticipated due to the location of the facility and the sparse population in the area.

3.13.2.4 Alternative B3 – Demolition to Grade with Units 1-8 Chimney Hybrid Demolition/Dismantlement

Alternative B3 proposes to remove the Units 1-8 stacks through a hybrid approach of controlled explosive demolition and dismantlement. Under Alternative B3, the stacks for Units 1-8 would be removed by dismantling the uppermost portions of the stacks and then using controlled explosives to remove the remaining lower portions. This method of stack removal would have less temporary short-term impact on noise and vibration as compared to Alternative B1 as the stack height at demolition would be approximately 500 ft rather than 1,000 ft, resulting in a lower amount of explosives being necessary; however, noise would be generated as part of the demolition of structures. However, no impacts to the public would be anticipated due to the location of the facility and the sparse population in the area.

3.13.2.5 Alternative C – No Action

Under the No Action Alternative, TVA would not perform any deconstruction or other disposition activities. There would be no noise- or vibration-related effects because of this alternative.

3.14 Visual Resources

Visual resources were evaluated based on physical characteristics of the area, including topography, aerial photography, site inspection, vegetation, existing land uses, and distance from the project location.

3.14.1 Affected Environment

WCF is located near the town of Stevenson, Alabama, along an impounded section of the Tennessee River (Guntersville Reservoir). The landscape is characterized by ridges running in a general southwest to northeast direction. The area along the river is gently rolling with an average elevation of 600 ft in the vicinity of the plant. On the south side of the river, approximately 1 mi from the site, Sand Mountain rises to a broad gently rolling plateau with elevation of 1,500 ft. On the north side of the river, the land rises more gently to an elevation of 650 to 700 ft. Summerhouse Mountain and the Cumberland Plateau rise to over 1,500 ft but are over 4 mi from WCF. The higher terrain areas and Sand Mountain are more heavily forested than the lower elevations along the river valley, which are used for agriculture based on site review.

Land use in the vicinity is predominantly rural with single family residences interspersed with open fields of pasture or crops and forested areas. Approximately 2 mi south of the plant is a large factory that produces corrugated cardboard.

Figure 3-6 shows the location of visual resources within the project area for the foreground (less than 1 mi) while Figure 3-7 shows the location of visual resources for the foreground and middle ground distances (1 to 4 mi). Photographs depicting views of the facility from multiple locations of potentially impacted receptors is provided in Appendix B. These include residences, churches, schools, and other features. Within 1 mi of the site, the majority of the residences are located west of the site along County Road 96 with a smaller number located along County Road 91 on the east side of the river. Between 1 and 2 mi is a similar distribution of residences. The only recreational facility is the Bengis Reservation, located 3.6 mi north of the site, near the intersection of US 72 and County Road 70. North Jackson High School is located off of SR 277 approximately 2.25 mi northeast of the site.

The existing WCF stacks, buildings, and associated high voltage transmission lines are the dominant feature of the landscape within the foreground. To the north of the site, along County Route 96, existing vegetation limits views to the site at many locations. Across the river along County Route 91, the views are not as obscured due to the numerous open fields between the road and the river. Recreational users of the river have clear views of the plant within the foreground and middle ground distance (1 to 4 mi).

Within the middle ground distances, views are more limited due to intervening vegetation and topography. At these distances, only the upper portion of the main stack is visible. On the north side of the river, the stack is visible from various points along US 72 and SR 277 where open fields are adjacent to the roads. On the south side of the river, the middle ground distance views are from the broad plateau of Sand Mountain, which is 800 ft to 900 ft above the base elevation of the plant. From these locations, the plant is not significantly visible due to the height of the land and intervening vegetation.

3.14.2 Environmental Consequences

3.14.2.1 Alternative A – Assess, Close, and Secure Power Production Facilities, and Implement Operations and Maintenance Program to Maintain Structures and Equipment

The adoption of Alternative A would mean that WCF structures and powerhouse would remain in place with no impact to the existing visual environment.

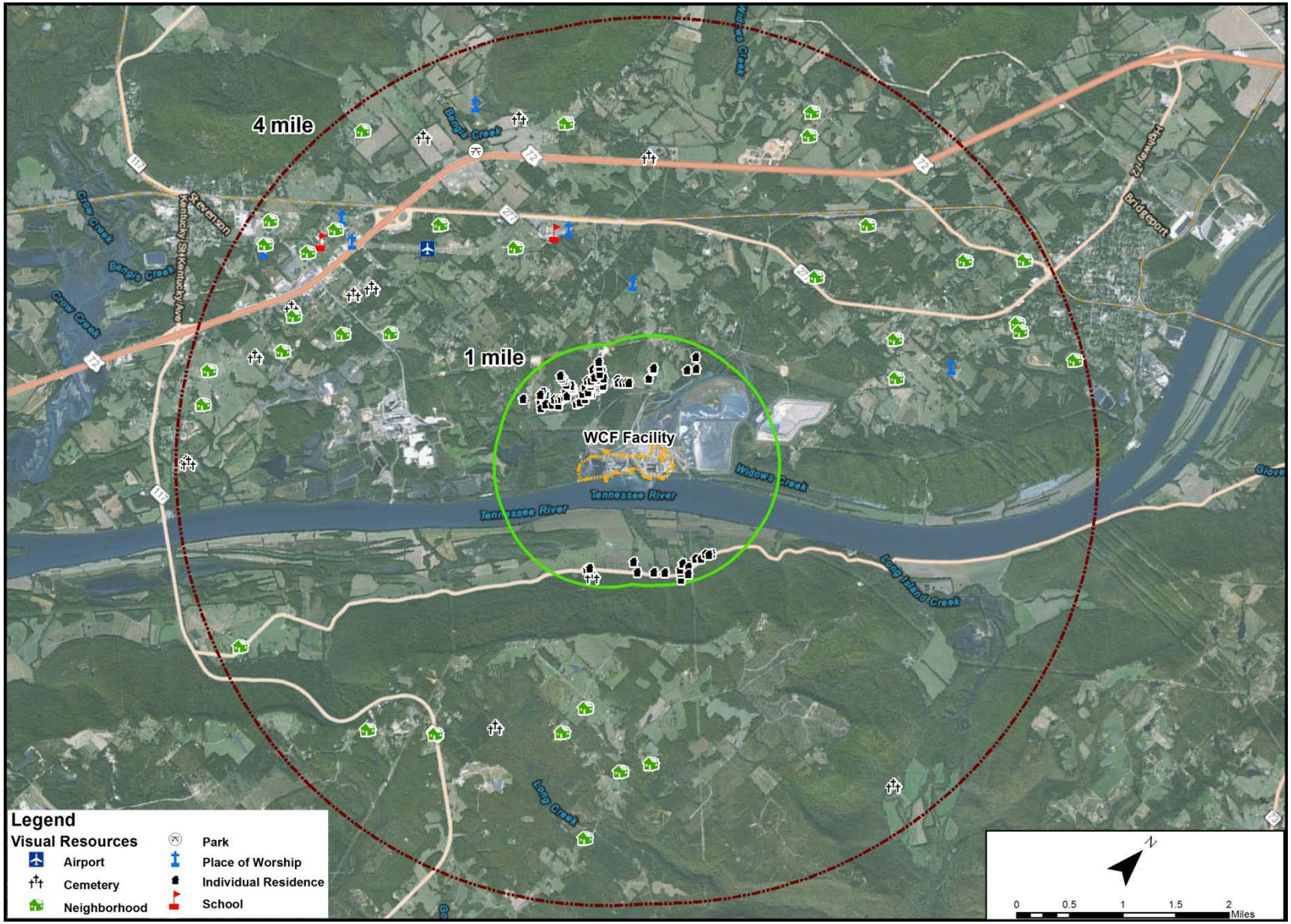

Figure 3-6. One Mile and Four Mile Buffer Zone

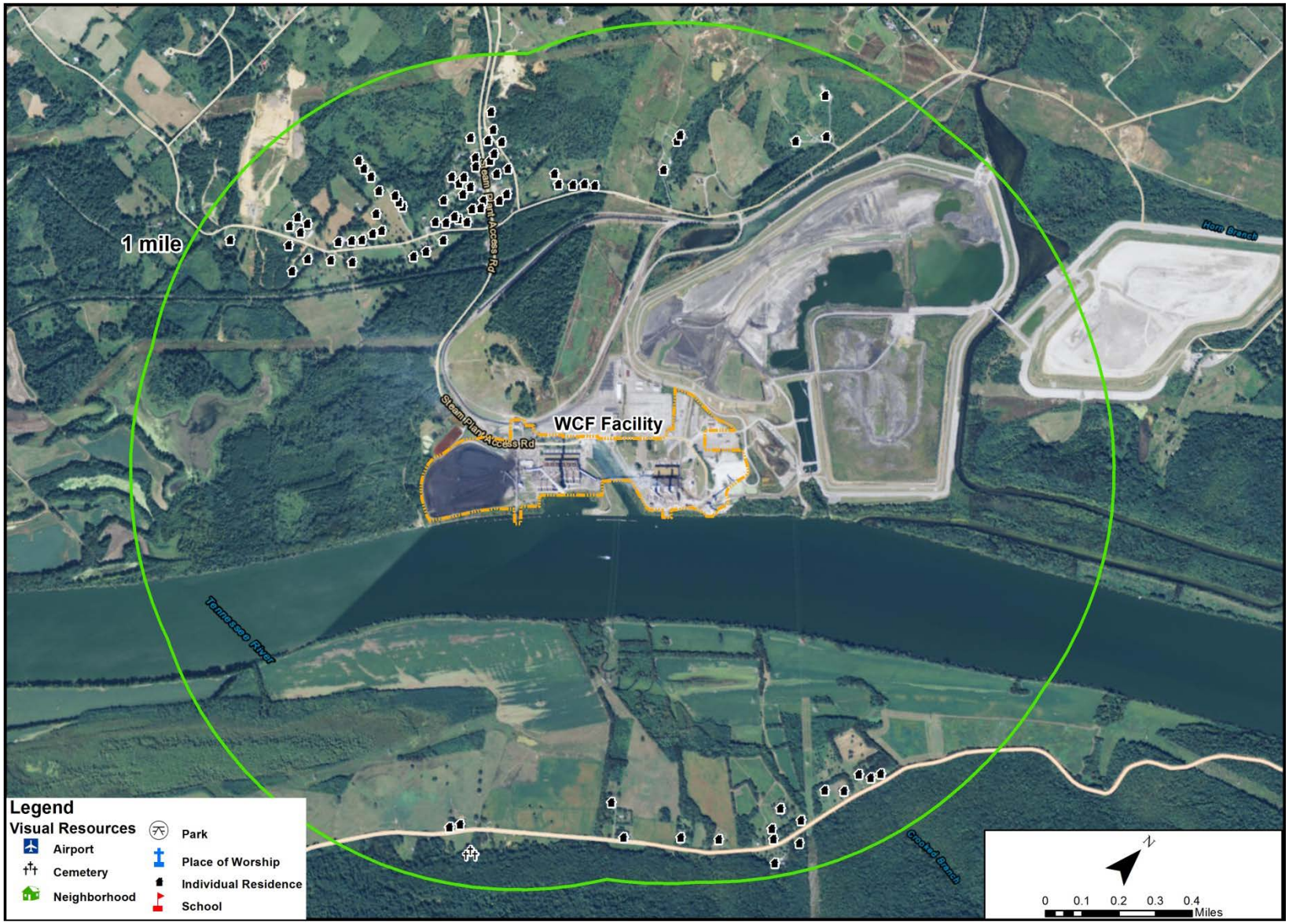

Figure 3-7. One Mile Buffer Zone

3.14.2.2 Alternatives B1, B2, and B3 – Demolition to Grade with Controlled Explosive Demolition of Units 1-8 Chimneys, with Dismantlement, and with Hybrid Demolition/Dismantlement

Under Alternatives B1, B2, and B3, WCF, the adjacent 1,000-ft and 500-ft stacks, and underground structures would be deconstructed to a depth of 3 ft below grade. Removing these elements, especially the visually dominant stack, would greatly enhance the visual environment of both the near and middle ground distances. This would represent a substantial change for the viewers in a relatively small area, so the overall impacts of all demolition alternatives would be beneficial.

3.14.2.3 Alternative C – No Action

Selection of Alternative C would not significantly alter the current visual environment because existing structures would remain in place. The visually dominant stack would remain visible. Views on and adjacent to the river would remain the same, with the WCF Plant A stack and powerhouse being the major visual features in the foreground along the riverside, resulting in no impact to visual resources.

3.15 Natural Areas, Parks and Recreation

3.15.1 Affected Environment

The TVA Natural Heritage database indicated no natural areas within the portion of WCF that is proposed for decontamination and deconstruction activities. Two natural areas are located within 5 mi of the proposed project.

Raccoon Creek State Wildlife Management Area (SWMA) is located across the river from WCF (0.32 mi). This 8,507-acre refuge is managed for waterfowl and small game hunting.

Crow Creek Refuge SWMA is a 5,415-acre refuge located 4.7 mi south of the proposed project area. This area is also managed for small game hunting.

Currently no public recreation facilities are within or in the immediate vicinity of the plant deconstruction boundary. Three developed recreation areas are located within 5 mi of the site. These include public boat launching ramps at the mouth of Long Island Creek and near the town of Bridgeport, Alabama. These ramps are located approximately 2.0 and 4.5 mi, respectively, upstream of the facility. The third recreation area, a boat launching ramp located adjacent to the State Highway 117 Bridge, is located about 4 mi downstream from the site.

Water-based recreation activities in the area around the site include general pleasure boating, water sports activity such as water skiing, and boat fishing. When the plant was in operation, boat fishing tended to concentrate within and around the plant's warm water discharge channel. Some boat fishing continues to occur within this area as well as elsewhere along the plant property shoreline.

3.15.2 Environmental Consequences

3.15.2.1 Alternative A – Assess, Close, and Secure Power Production Facilities, and Implement Operations and Maintenance Program to Maintain Structures and Equipment

Both Raccoon Creek and Crow Creek SWMAs are of sufficient distance from the project site such that no impacts to these natural areas are anticipated as a result of implementing Alternative A.

Under this alternative, plant structures and facilities would remain in place, and there would be no impacts on existing recreational use patterns in the vicinity of the plant site.

3.15.2.2 Alternative B1 – Demolition to Grade with Controlled Explosive Demolition of Units 1-8 Chimneys

Both Raccoon Creek and Crow Creek SWMAs are of sufficient distance from the project site such that no impacts to these natural areas are anticipated as a result of implementing Alternative B1.

Under this alternative, demolition would occur. Demolition-related activities could cause some minor shifts in water-based recreation activities in the immediate vicinity of the demolition site. However, because deconstruction work would be of short duration and would not include any shoreline modification, impacts would be temporary and minor in nature. Because of the distance between the plant site and the three developed public recreation facilities in the general area, no impact on use of developed areas is anticipated.

3.15.2.3 Alternative B2 – Demolition to Grade with Units 1-8 Chimney Dismantlement

Both Raccoon Creek and Crow Creek SWMAs are of sufficient distance from the project site such that no impacts to these natural areas are anticipated as a result of implementing Alternative B2.

3.15.2.4 Alternative B3 – Demolition to Grade with Units 1-8 Chimney Hybrid Demolition/Dismantlement

Both Raccoon Creek and Crow Creek SWMAs are of sufficient distance from the project site such that no impacts to these natural areas are anticipated as a result of implementing Alternative B3.

3.15.2.5 Alternative C – No Action

Under the No Action Alternative, the proposed project would not be implemented, and no impacts to natural areas would be anticipated.

Under the No Action Alternative existing recreation use patterns in the vicinity of the plant would continue.

3.16 Cultural and Historic Resources

3.16.1 Affected Environment

With regard to cultural resources, the area of potential effects (APE) is defined as the area of the facility that would be demolished plus the area that would be affected by the demolition. Under 36 CFR 800.16(d), the federal regulations implementing Section 106 of the National Historic Preservation Act, the APE is defined as “the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist.” For the proposed action, TVA has defined the APE for both archaeological and architectural resources as the area in which the undertaking would result in ground-disturbing activities (Figure 1-2). This APE includes the retirement/deconstruction boundary (or facility boundary) and the coal yard, which would be the location of activities such as coal pile cleanup and chimney demolition and cleanup. As the project would not result in the addition of new aboveground features, the architectural APE does not extend beyond the facility boundary.

Existing knowledge of the cultural resources present within the APE and other parts of WCF comes from several cultural resources surveys that TVA sponsored between 1938 and 2011, the excavation of the Widows Creek site (1JA305), and an inadvertent discovery at 1JA186. An archaeological survey of the Guntersville Basin carried out in 1938-39 (Webb and Wilder 1951) and sponsored jointly by TVA, the Works Progress Administration, and the University Museum of Alabama identified 202 sites in the Jackson County portion of the reservoir basin. Six of those sites fall within the WCF boundary: 1JA183, 1JA185, 1JA186, 1JA187, 1JA198, and 1JA199. Site 1JA199 (the Widows Creek Site) was later given a different number, 1JA305, and the number 1JA199 was retired by the Alabama Office of Archaeological Research. Three of these sites (1JA186, 1JA187, and 1JA198) fall within the facility boundary. The 1951 survey report provides little information about these sites other than their size and location.

In preparation for an expansion of WCF facilities in 1973, TVA performed a data recovery excavation at the Widows Creek site, 1JA305. The excavation included auger testing to establish site boundaries, deep excavation of three 10-ft wide trenches, and some 2x2 ft control blocks. The site's dimensions were estimated at 400 ft long and 138 ft wide. Cultural deposits as deep as 12 ft (3.65 m) deep were documented and contained late Archaic and Early Woodland cultural remains. Most of the site deposits date to the Early, Middle, and Late Woodland, although some Mississippian artifacts were recovered. The excavation has been documented by two interim reports (Calabrese 1974, Olinger 1975), a master's thesis (Warren 1975), a study of the vertebrate faunal remains (Morey 1996), a study of modified bone artifacts (Coughlin 1996), and a thesis focusing on human remains from this site and the nearby Williams Landing site (Norton 2004). In 2012, as mitigation for unavoidable adverse effects to site 1JA77 resulting from a bridge construction project, the Alabama Department of Transportation sponsored an in-depth study of existing collections from the Widows Creek site (Little, Johnson, and Holloway 2012). These studies have demonstrated that 1JA305 was the site of long-term habitations from the Late Archaic through Mississippian periods (circa 1000 B.C.E. – 1500 C.E.) and contains rich cultural deposits that have provided important refinements of existing knowledge about these periods.

A March 1981 survey (Hubbert 1981) of an approximately 300-acre tract bordering the east bank of Widows Creek for a proposed ash pond identified no archaeological sites but did indicate that potential for archaeological deposits existed in adjacent tracts. In May and October 1990, the University of Alabama conducted an archaeological survey of two large tracts, totaling approximately 600 acres, which TVA had proposed for use as ash disposal ponds. One of the tracts was largely contiguous with the western boundary of WCF and with the Tennessee River shoreline; the other tract was west of WCF reservation boundary and lay between the 500-kV transmission line corridor and the toe slopes of a series of low hills bordering the river. Nine previously unidentified archaeological sites were identified, seven in the western tract and two in the eastern tract (1JA620, 1JA621, 1JA622, 1JA690, 1JA691, 1JA692, 1JA693, 1JA694, and 1JA695). In addition, three previously recorded sites (1JA180, 1JA181, and 1JA183) were investigated. The most notable among them is site 1JA180 (the Rudder Site), a Mississippian-era village site with a mound, which was excavated in 1938 (Webb and Wilder 1951). The excavation yielded 57 human burials, many cultural features, and abundant artifacts. The features included a salt pan basin, storage pits, fire basins, and burned structures. The artifacts included whole and fragmentary pots and other ceramics, groundstone celts, stone pipes, shell gorgets, and projectile points. During the 1990 survey, surface visibility was largely obscured by a "black sludge" that a paper mill had deposited over the site, and very little material was recovered. Sites 1JA181, 1JA183, and 1JA620 are stratified multi-component sites that may contain deep, intact cultural layers. Sites 1JA621, 1JA622, and 1JA690-1JA693 are low density lithic scatters. Site 1JA694 is a multi-component site with a recent historic component and a low

density lithic scatter. Site 1JA695 is a late 19th-early 20th century historic site that was the site of a structure that had been destroyed by 1990. None of these sites is within the facility boundary.

TVA sponsored a 1985-1987 archaeological survey of selected Tennessee River shorelines on Guntersville Reservoir, and the survey included shoreline fronting WCF (Solis and Futato 1987). This survey reinvestigated 1JA 180, 1JA181, and 1JA183 in addition to many other sites along the Tennessee River shoreline near WCF. Materials were collected from the surface and from shovel tests, but no recommendations were given regarding the sites' significance or future treatment.

Site 1JA186 is located within the WCF coal yard and an earthen berm that separates the Tennessee River shoreline from the coal yard. In 1980, WCF personnel working on the earthen berm inadvertently discovered cultural remains. The inadvertent discovery was investigated by TVA archaeologists, who documented a cultural midden, shell, artifacts, and fire cracked rock, and noted that these originated from 1JA186. (No report of this investigation was filed; information was communicated orally to TRC staff in 2003). Based on the field observations, TVA concluded that the cultural material originated from an intact, 40-cm thick layer located between 1.3 and 1.7 meters below the original ground surface (underneath the berm). Four pit features were noted within the midden, and one of the pits contained an intact human burial (Deter-Wolf 2003). As the berm is still intact and TVA has conducted no ground-disturbing actions on the berm since that time, the berm is inferred to contain intact portions of the midden and possibly additional cultural features such as pits and human burials. This berm is just outside the eastern boundary of the WCF decontamination/deconstruction APE. In 2002, TVA conducted archaeological testing at this site (Deter-Wolf 2003). Twenty-two backhoe trenches were excavated in and near the site boundary, on both sites of the earthen berm, but not within the earthen berm. Based on this study TVA determined that the portions of the site within the coal yard were destroyed in the 1950s and 1960s by WCF construction and are ineligible for inclusion in the National Register of Historic Places (NRHP), although intact sites/deposits remain within the earthen berm. The Alabama State Historic Preservation Officer (SHPO) agreed with this determination.

In 2010 TVA conducted a cultural resources survey of 75 acres proposed for use as a gypsum dewatering site within WCF, east of Widows Creek and within the area investigated by Hubbert in 1981. The study reinvestigated 1JA694 and identified a previously unrecorded archaeological site, 1JA1129. The study authors recommended both sites as ineligible for the NRHP due to a lack of intact cultural deposits (Thomas and Holland 2010). In addition, a small historic cemetery was noted on the eastern edge of the study area.

In 2011, TVA conducted a cultural resources survey (Karpynec, Hockersmith, and Holland 2011a) as part of its regulatory compliance related to the then-proposed WCF Units 1-6 Decommissioning. The southwestern two-thirds of the WCF Units 1-8 decontamination/deconstruction APE (encompassing Units 1-6 and associated structures, the coal yard and associated structures, the water treatment plant, and the intake channel) was included in the 2011 study. Previously recorded archaeological sites 1JA186 and 1JA187 are located within the area surveyed, but no artifacts or features related to either site (and no other archaeological sites) were identified. The survey also documented the extensive ground disturbance that has taken place over the past several decades as a result of the construction and operation of WCF, and the absence of archaeological material within the originally mapped locations of 1JA186 and 1JA187 suggests that both sites were destroyed by construction activities with the exception of a small portion of 1JA186 outside the current APE, as discussed

above. The architectural portion of the survey evaluated the eligibility of WCF Units 1-6 for inclusion in the NRHP. Based on the results, TVA determined that WCF is ineligible for the NRHP due to extensive modern alterations, most notably the installation of emissions control equipment on the Units 1-6 powerhouse. The Alabama SHPO agreed that the APE contained no archaeological resources, but maintained that WCF was eligible for the NRHP. However, SHPO also agreed with TVA that, if TVA provided specific forms of documentation of WCF, the proposed decommissioning would not result in an adverse effect on WCF. The documentation included historic photographs of WCF Units 1-6, current photographs of the facility, a copy of TVA's 1965 Engineering Report on WCF Units 1-6, and copies of the plant layout. TVA subsequently provided these materials to the Alabama Historical Commission.

TVA also conducted a Phase I cultural resources survey of an approximately 360-acre tract that TVA had proposed as a potential coal combustion products landfill (Karpynec, Hockersmith, and Holland 2011b). The tract consists of private land east of Widows Creek, located between WCF and US 72. The survey investigated previously recorded archaeological site 1JA1125 and concluded that the site is ineligible for the NRHP.

In 2015, TVA conducted an architectural assessment of WCF Units 1-8. For the assessment TVA conducted a resurvey of Units 1-6 and a new survey of Units 7 and 8. Based on the results of the assessment, TVA finds that WCF Units 1-8 are ineligible for inclusion in the NRHP due to a loss of historic integrity, resulting from the construction of emissions control equipment on both powerhouses in the 1970s and the addition of numerous modern buildings throughout the facility. In a letter dated October 23, 2015, the Alabama SHPO agreed with TVA's determination of effects on historic properties, including the lack of eligibility of WCF Units 1-8 for the NRHP.

In sum, the area surrounding WCF is archaeologically rich and contains both historic and prehistoric archaeological sites. Five prehistoric sites have been identified within WCF. Three of these (1JA186, 1JA187, and 1JA198) were recorded partially within the facility boundary. The portions of 1JA186 and 1JA187 within the facility boundary have been destroyed. An intact portion of 1JA186 containing artifacts and features, and possibly containing prehistoric human burials, is within the earthen berm that separates the coal yard from the Tennessee River shoreline, but the earthen berm is outside the facility boundary. A small section of the mapped boundary of 1JA198 is within the eastern extremity of the APE, within the limestone dead storage area. TVA finds that the site was likely destroyed by the construction of WCF and that no intact deposits related to this site are extant within the APE. Based on extensive changes to WCF that have obscured most of both powerhouses and added many new structures, TVA finds that WCF is ineligible for inclusion in the NRHP as an historic architectural resource. On October 23, 2015, the SHPO concurred with TVA's determination of effects.

3.16.2 Environmental Consequences

3.16.2.1 Alternative A – Assess, Close, and Secure Power Production Facilities, and Implement Operations and Maintenance Program to Maintain Structures and Equipment

As no intact archaeological sites are located within the APE and Alternative A would not result in any major construction or deconstruction activities, Alternative A would have no impact on archaeological resources that are included or eligible for inclusion in the NRHP.

3.16.2.2 Alternative B1 – Demolition to Grade with Controlled Explosive Demolition of Units 1-8 Chimneys

With no intact archaeological sites located within the APE, Alternative B1 would have no direct effects on archaeological resources that are included or eligible for inclusion in the NRHP.

The WCF Units 1-6 chimney demolition would cause vibrations in the vicinity of the earthen berm separating the coal yard from the Tennessee River shoreline. TVA has carefully considered the potential of these vibrations to result in indirect effects to remnant portions of 1JA186. However, seismologic analyses carried out at recent demolitions of other tall industrial chimneys in the United States strongly suggest that the vibrations would not result in measurable effects on archaeological deposits (Protec 2008, 2009, and 2013). These seismological analyses were conducted to measure the effects from demolition-related vibrations on standing structures in the vicinity of the chimney demolitions. In each case, vibrations were below the recommended limits set by the U.S. Bureau of Mines Report (Siskind et al. 1980). The report authors in each case concluded the demolitions would not cause damage to structures within the radius of influence. Vibrations resulting from the demolition of the WCF Units 1-6 chimney would be of similar magnitude. Therefore, and given the physical nature of archaeological sites and the fact that the 1JA186 deposits are buried below more than one meter of soil/sediment, TVA does not expect vibrations resulting from the demolition to cause any physical effects to 1JA186.

TVA finds that the demolition alternatives would have no impacts on historic architectural resources, as no such resources included or eligible for inclusion in the NRHP are found in the APE.

3.16.2.3 Alternative B2 – Demolition to Grade with Units 1-8 Chimney Dismantlement

With the dismantling of the Unit 1-6 stack the potential to have indirect effects to remnant portions of 1JA186 would not likely occur.

TVA finds that the demolition alternatives would have no impacts on historic architectural resources, as no such resources included or eligible for inclusion in the NRHP are found in the APE.

3.16.2.4 Alternative B3 – Demolition to Grade with Units 1-8 Chimney Hybrid Demolition/Dismantlement

With no intact archaeological sites located within the APE, the demolition of the facility in any manner would have no direct effects on archaeological resources that are included or eligible for inclusion in the NRHP. With the partial dismantling of the Units 1-6 stack, the potential to have indirect effects to remnant portions of 1JA186 would be less than Alternative B1 but more that Alternative B2. TVA finds that the demolition alternatives would have no impacts on historic architectural resources, as no such resources included or eligible for inclusion in the NRHP are found in the APE.

3.16.2.5 Alternative C – No Action

Similar to Alternative A, as no intact archaeological sites are located within the APE, Alternative C would have no impacts on cultural resources that are included or eligible for inclusion in the NRHP.

3.17 Utilities and Service Systems

3.17.1 Affected Environment

This section includes an assessment of the existing utility and service systems and an evaluation of project-related impacts under each of the alternatives.

All services were required for full load operation of Unit 7 until it was retired on September 21, 2015. Unit 7 and 8 operations were dependent upon the proper function of systems housed

within the Units 1-6 powerhouse or interconnected with Units 1-6 powerhouse electrical systems. The most notable plant interconnectivity constraint is that the Units 1-6 powerhouse contains the transformer and electrical panel boards essential for the operation of Units 7-8.

Other current utilities and service systems include drinking water, cooling water, process wastewater and cooling water, sanitary wastewater, cable television, fiber optics, compressed air, and natural gas.

3.17.2 Environmental Consequences

3.17.2.1 Alternative A – Assess, Close, and Secure Power Production Facilities, and Implement Operations and Maintenance Program to Maintain Structures and Equipment

Retirement and deconstruction activities associated with Alternative A would include the following:

- Maintaining fire protection systems in all buildings
- Monitoring and periodic maintenance of all remaining PCB-containing and PCB-contaminated electrical equipment and encapsulated areas (as required by federal regulation)
- Maintaining lighting and emergency egress lighting in all buildings
- Maintaining stack lighting required by Federal Aviation Administration regulations
- Maintaining select sump pumps to prevent below-grade spaces (basements) from flooding

In addition, stormwater systems would remain in place and would require monitoring, including sumps. Potable water and sanitary sewer systems would remain, as there would be maintenance personnel on the property. It is estimated that eight employees would be required for the 24/7 operations and maintenance schedule.

Certain services systems would also remain, including elevators and ventilation fans. Inspections of structures and other associated support systems would continue to be required. The existing railroad tracks once used for coal delivery would remain for this alternative.

Under Alternative A, underground utilities to be abandoned in place would not be maintained. Therefore, over time the pipelines may collapse or experience root intrusion. As the underground utilities age, the pipes may degrade and potentially affect groundwater quality. Additionally, service systems would remain onsite as part of this alternative. These service systems could include lead batteries, mercury switches, electrical wiring containing PCBs, and transformers. Without complete removal of these systems, or replacement with nonhazardous materials, there is a risk for environmental impacts as described previously, including leeching to soils or groundwater. Environmental impacts with this alternative are considered minor.

3.17.2.2 Alternative B1 – Demolition to Grade with Controlled Explosive Demolition of Units 1-8 Chimneys

Under this alternative, all aboveground utilities and service systems would be removed. All buried utilities would be cut and capped at the retirement/deconstruction boundary and abandoned in place. Utilities constructed of hollow pipe would be decommissioned through placement of a mechanical cap or plug, and/or placement of concrete on an open end. The Electrical Control Building would be one of the last structures removed after all systems were appropriately disconnected. With the removal of the facility, the need for site security would be significantly reduced. Removing the powerhouse and outlying structures would eliminate the

need for permanent operations and maintenance staff to be stationed onsite. Regular inspections of structures and equipment would no longer be necessary. Inspection of any engineering controls used for site closure could be necessary but could be provided by local TVA personnel. No impacts are associated with Alternative B1.

3.17.2.3 Alternative B2 – Demolition to Grade with Units 1-8 Chimney Dismantlement

The outcome of this alternative would be identical to that of Alternative B1. No impacts are associated with Alternative B2.

3.17.2.4 Alternative B3 – Demolition to Grade with Units 1-8 Chimney Hybrid Demolition/Dismantlement

The outcome of this alternative would be identical to that of Alternatives B1 and B2. No impacts are associated with Alternative B3.

3.17.2.5 Alternative C – No Action

Under the No Action Alternative, TVA would not perform any deconstruction or other disposition activities. There would be no removal of the utilities and service systems. If the facility remains in the "as-is" condition, it likely would present a higher risk than Alternatives A, B1, B2, and B3 as utilities would not be maintained and would degrade over time, resulting in the potential to contaminate soil and groundwater as described previously. Impacts related to Alternative C would occur over the long-term and are expected to be minor.

3.18 Safety

3.18.1 Affected Environment

The WCF site is generally accessible via US 72 to Alabama Highway 96, from which Steam Plant Access Road provides access to the facility. The WCF campus is surrounded by chain link security fence with the entrance gates guarded. Population in the immediate area (within 1 mi) is very sparse with only a few dwellings in the vicinity.

3.18.2 Environmental Consequences

3.18.2.1 Alternative A – Assess, Close, and Secure Power Production Facilities, and Implement Operations and Maintenance Program to Maintain Structures and Equipment

Under Alternative A, systems at the site would be de-energized, and environmental and safety risks minimized. All existing buildings, structures, and equipment within the retirement/deconstruction boundary would remain in place. Hazardous materials would be removed from the site. Any remaining hazardous materials would be susceptible to increased deterioration and damage when it remains in unconditioned buildings and structures. As the material deteriorates, it presents a material threat to human health and the environment.

Without removal of the structures, materials could degrade; become subject to surface water erosion, wind erosion, or biological disturbance; or become leachable into the groundwater. Over time, lead from paint, metals in wiring and pipe, and oil from retired equipment could find its way to soil and groundwater and potentially contaminate drinking water sources. Maintenance activities associated with environmental items could continue for decades.

Ongoing maintenance activities could present opportunity for injury to maintenance and security staff. Trespassing (by foot or by boat) and vandalism are often a concern at a closed facility that might contain salvageable materials. Unauthorized persons at the site could presumably be exposed to potential contaminants or to physical injury. Some level of security would need to

remain in place to protect workers and TVA property, as well as to dissuade trespassers. Effects on safety to the general public are expected to be minor.

3.18.2.2 Alternative B1 – Demolition to Grade with Controlled Explosive Demolition of Units 1-8 Chimneys

Under Alternative B1, all hazardous materials associated with buildings and structures would be removed and disposed of, and all structures demolished. This action would result in the lowest risk to soil and groundwater as contaminants would be removed from the site. Demolition of all structures to grade, or at least 3 ft below grade, would result in the current property becoming a "brownfield." Brownfields are sites that are no longer suitable for agriculture but that can be used for commercial or industrial purposes. Contamination of soil and groundwater would be unlikely.

As part of the structure removal, the stacks would be demolished via explosives. Prior to the demolition, the area would be prepared, and a circular fall exclusion zone equal to 1.5 times the height of the chimney would be established. During the blast event, no personnel would be allowed in the fall exclusion zone. The targeted fall zone for the Units 1-6 chimney would be to the west into the current location of the coal yard. The fall exclusion zone area is based on guidelines provided by the National Demolition Association's *Demolition Safety Manual* (National Demolition Association 2012) and provides a sufficient safety buffer for debris and dust control around the area as well as a control zone for any unlikely change in the intended fall direction. All worker activity would comply with federal and state safety regulations, including donning appropriate personal protective equipment, maintaining equipment in good working order, and adequate training for work performed, which minimizes safety risks.

There is a remote potential for demolition waste from the controlled explosive demolition of the Units 1-6 stack to fall into the river, especially near the base of the stack. Special protective barriers or berms would be constructed to prevent debris from entering the river. Since explosive demolition would be conducted under tight security, the danger to the public from this activity would likely be very low.

Explosives would be managed under the direction of a licensed blaster. Security would be a very important component of this event to eliminate as much as possible any threats to public health or safety. Once explosives arrive onsite, 24-hour security would be provided to monitor the explosives. Detailed security plans would be developed and provided to area emergency response agencies. Security details, including any information about the transport and storage of explosives, would be limited to authorized personnel only. Site security on the day of the event would be strictly enforced, and trespassing would not be tolerated. Notifications to the public would be issued prior to the use of explosives for demolition.

Public health and safety concerns related to hazardous materials would be low under this alternative. The potential for contaminants from the facility to reach soil and groundwater would be almost nonexistent. Brick, block, and concrete demolition debris not contaminated by asbestos or other hazardous materials would be used as clean fill onsite. Other demolition debris would be hauled to an offsite landfill either by truck or by rail.

Potential contaminants removed prior to structure demolition would be hauled to an offsite landfill either by truck or by rail. Alternative B1 could result in up to 42,000 tons of scrap metal that would also be hauled from the facility either by truck or by rail. These combined hauling activities could cause an increase in truck traffic to and from the facility for some period of time. Trespassing and vandalism would be much less of an issue for the facility since there would be

little to attract unauthorized persons. With the high level of safety awareness and preparation during demolition and removal of facilities, safety and security plans and safety awareness would reduce potentially large safety risk (felling of stacks and demolition of buildings) down to a minor and temporary impact.

3.18.2.3 Alternative B2 – Demolition to Grade with Units 1-8 Chimney Dismantlement

The activities for this alternative are the same as for Alternative B1 with the exception that the Units 1-8 stacks would be dismantled through mechanical means rather than by demolition using controlled explosives. Impacts to human health and safety for this alternative would be the same as for Alternative B1 except for not having the explosives-related security issues and the risk of demolition debris falling into the river. Another difference is in the additional risks to workers from the construction of and work done on the scaffolding needed to dismantle the stacks from the top down. Alternative B2 would pose a higher safety risk than Alternative B1, but a much lower safety risk than the No Action Alternative. With the preparation and execution of safety plans and training, overall impacts to safety would be minor and temporary.

3.18.2.4 Alternative B3 – Demolition to Grade with Units 1-8 Chimney Hybrid Demolition/Dismantlement

Alternative B3 proposes to remove the Units 1-8 stacks through a hybrid approach of controlled explosive demolition and dismantlement. Under Alternative B3, the stacks for Units 1-8 would be removed by dismantling the uppermost portions of the stacks and then using controlled explosives to remove the remaining lower portions. This method of stack removal involves the need for increased security measures during a blast event as described previously as well as higher risks of accidents as compared to Alternative B1 but lower risks as compared to Alternative B2 since the dismantlement would be used for only part of the stack. Alternative B3 would pose a higher safety risk than Alternative B1, but a much lower safety risk that the No Action Alternative. With the preparation and execution of safety plans and training, overall impacts to safety would be minor and temporary.

3.18.2.5 Alternative C – No Action

Under the No Action Alternative, TVA would not perform any deconstruction or other disposition activities. If the facility remains in the “as-is” condition, it likely would present a higher safety risk than Alternatives A, B1, B2, and B3 for the potential to contaminate soil and groundwater as systems and structures degrade. In addition, the risk of trespassing and injury to trespassers would likely increase due to a perception that salvageable materials are present on the site as well as the increased level of environmental contaminants. However, due to the site location and the sparse population, effects on safety to the general public are expected to be minor.

3.19 Socioeconomics and Environmental Justice

3.19.1 Affected Environment

WCF is located in Jackson County in northeast Alabama. The nearest towns are Bridgeport, about 5 mi to the northeast, and Stevenson, about 5 mi to the west-southwest. The facility’s address is Stevenson.

3.19.1.1 Socioeconomics

The 2013 estimated population of Jackson County is 53,171, including 2,278 who live in Bridgeport and 2,370 in Stevenson (U.S. Census Bureau 2015c). As projected by the State of Alabama, the population of Jackson County would decrease to about 51,457 by 2040. Population trends and projections are presented in Table 3-10.

Table 3-10. 2000–2030 Population Data

Area	1990	2000	2010	2013 estimated [a]	Projection 2030	Percent Increase 1990-2010	Percent Increase 2010-2030
Jackson County	47,796	53,926	53,227	53,171	52,247	11.4	-1.8
Alabama	4,040,587	4,447,100	4,779,736	4,799,277	5,373,294	18.3	12.4
United States	248,709,873	281,421,906	308,745,538	311,536,594	359,402,000	24.1	16.4

Sources: U.S. Census Bureau 1990, 2000, 2010, 2014, 2015c; U.S. Census Bureau and Center for Business and Economic Research, The University of Alabama 2015.

[a] 2009-2013 five-year estimate.

Jackson County has a total employment of about 23,880 jobs (Table 3-11). Manufacturing provides the greatest number of jobs (22.5 percent), above both the state level of 10.2 percent and the national level of 7.0 percent. Approximately 16.0 percent of county workers are employed by the government, similar to the state share of 15.8 percent and more than the national share of 13.2 percent. Retail trade (12.2 percent) is slightly higher than the state and national shares. Employment in construction (5.2 percent) is similar to state (5.5 percent) and national (5.1 percent) employment levels. The 2014 annual average unemployment rate for Jackson County was 7.2 percent; this represents a decrease from the 2013 unemployment rate of 7.7 percent (U.S. Bureau of Labor Statistics 2015).

Table 3-11. 2013 Employment Data

	Jackson County	Alabama	United States
Total Employment[a]	23,880	1,999,182	142,469,000
Industry	**Percentage of Employment**		
Farm	5.9	1.9	1.4
Construction	5.2	5.5	5.1
Manufacturing	22.5	10.2	7.0
Retail Trade	12.2	10.8	10.1
Health Care and Social Assistance	5.2	9.3	11.3
Accommodation and Food Services	5.8	6.9	7.2
Services (other)	6.1	6.8	5.8
Government	16.0	15.8	13.2

Source: Center for Business and Economic Research, The University of Alabama 2013; U.S. Bureau of Economic Analysis 2014b.

[a] Estimates based on 2012 benchmark.

Per capita personal income in Jackson County in 2013 was $32,719, which is 73 percent of the national average of $44,765 and less than the state average of $36,481 (U.S. Bureau of Economic Analysis 2014a).

3.19.1.2 Environmental Justice

EO 12898 directs federal agencies to identify and address, as appropriate, potential disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. While TVA is not subject to this EO, TVA typically assesses environmental justice impacts in its NEPA reviews. This section provides demographic information that characterizes the distribution of minority populations and low-income populations in the project area.

In identifying minority and low-income populations, the following Council on Environmental Quality (CEQ) definitions of minority individuals and populations and low-income populations were used:

- **Minority individuals**. Individuals who identify themselves as members of the following population groups: American Indian or Alaskan Native, Asian, Native Hawaiian or Other Pacific Islander, Black, Hispanic, or two or more races.
- **Minority populations**. Minority populations are identified where (1) the minority population of an affected area exceeds 50 percent or (2) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.
- **Low-income populations**. Low-income populations in an affected area are identified with the annual statistical poverty thresholds from the Census Bureau's Current Population Reports, Series P-60, on Income and Poverty (CEQ 1997).

According to CEQ guidance, U.S. Census data are typically used to determine minority and low-income population percentages in the affected area of a project. The WCF site is located in the northeastern part of Jackson County in Census Tract 9503, which also contains the town of Stevenson. Census Tract 9503, Block Group 1, which contains the WCF site, and Census Tract 9502, Block Group 4 located adjacent to WCF to the north, are identified as the potentially affected area for environmental justice.

Minorities constitute 10.1 percent of the total population in Jackson County as of 2013 (Table 3-12). Census Tract 9503, Block Group 1 has a minority population of 7.3 percent, and Census Tract 9502, Block Group 4 has a minority population of 9.4 percent. These two block groups have a lesser proportion of minorities than does the county as a whole. The block group minority levels are below the state average of 33.2 percent and less than the national average of 36.7 percent. Therefore, residents of the block groups in the potentially affected area for the WCF site are not considered minority populations.

Table 3-12. 2013 Minority Population Data

Area	Total Population	Minority Population	Percent Minority Population
Block Group 1 Census Tract 9503	1410	103	7.3
Block Group 4 Census Tract 9502	963	91	9.4
Jackson County	53,171	5382	10.1
Alabama	4,799,277	1,593,794	33.2
United States	311,536,594	114,486,176	36.7

Source: U.S. Census Bureau 2015a, 2015c.

Note: 2009-2013 American Community Survey 5-Year Estimates.

The portion of the population in Jackson County that has income below the poverty level as of 2013 is 16.0 percent (Table 3-13). Census Tract 9503, Block Group 1, which contains the WCF site, has 11.4 percent of the population living below the poverty level. This is below the county level, as well as below the state and the national levels of 18.6 and 15.4 percent, respectively. In Census Tract 9502, Block Group 4, 18.2 percent of the population has income below the poverty level, which is above the county and national levels but below the state average of 18.6 percent. Therefore, residents of the block groups in the vicinity of the WCF site are not considered low-income communities.

Table 3-13. 2013 Poverty Level Data

Area	Total Population [a]	Persons Below Poverty Level	Percent of Persons Below Poverty Level
Block Group 1 Census Tract 9503	1328	151	11.4
Block Group 4 Census Tract 9502	949	173	18.2
Jackson County	52,614	8,397	16.0
Alabama	4,682,976	870,631	18.6
United States	303,692,076	46,663,433	15.4

Source: U.S. Census Bureau 2015b, 2015d.

Note: 2009-2013 American Community Survey 5-Year Estimates.

[a] Population for whom poverty status is determined.

3.19.2 Environmental Consequences

Social and economic issues considered for evaluation within the impact area include effects on employment and income, change in expenditures for goods and services, and change to current and projected population levels.

The environmental justice impact analysis addresses potential disproportionately high and adverse human health or environmental effects of an action on minority and low-income populations. No minority or low-income populations have been identified in the potentially affected area for the WCF site. Therefore, no disproportionate impacts to environmental justice populations are expected to occur as a result of implementation of any of the four alternatives.

3.19.2.1 Alternative A – Assess, Close, and Secure Power Production Facilities, and Implement Operations and Maintenance Program to Maintain Structures and Equipment

Maintenance of the facilities at the WCF site would involve employment of approximately 31 workers and purchase of goods and services. Workers currently maintaining the inactive units would be retained. There would be no changes to population levels in the area. Overall, employment of the maintenance workforce and routine capital expenditures needed to support Alternative A would have a negligible smaller beneficial impact on the local economy than that associated with current operations at WCF.

3.19.2.2 Alternative B1 – Demolition to Grade with Controlled Explosive Demolition of Units 1-8 Chimneys

There would be short-term beneficial economic impacts from demolition activities associated with Alternative B1, including a temporary increase in employment and income and the purchase of materials, equipment, and services. This increase would be local or regional, depending on where the workers, goods, and services were obtained. It is likely some of the demolition workforce would be from local or regional sources. A portion could potentially come from out of state, temporarily increasing the local population. Also, some materials and services would be purchased locally in the Jackson County area, as well as in adjacent counties. The direct impact to the economy associated with demolition activities would be short-term, approximately two and a half years, and beneficial, with 45 to 75 additional personnel working on-site for the first year in addition to the 31 TVA maintenance personnel, and approximately 15 to 40 the last year and a half.

The majority of the indirect employment and income impacts would be from expenditure of the wages earned by the workforce involved in demolition activities, as well as the local workforce used to provide materials and services. Demolition of the WCF facilities could have minor

beneficial indirect impacts to short-term employment and income levels in Jackson County as well as the surrounding region.

Overall, socioeconomic impacts from Alternative B1 are anticipated to be positive and short-term, although small relative to the total economy of the county.

3.19.2.3 Alternative B2 – Demolition to Grade with Units 1-8 Chimney Dismantlement

The socioeconomic impacts associated with Alternative B2 would be similar to those described for Alternative B1. The employment and income impacts would be somewhat greater based on the larger workforce that would be required to dismantle the chimneys compared to demolishing them through controlled explosives. Overall, socioeconomic impacts from Alternative B2 are anticipated to be positive and short-term, although small relative to the total economy of the county.

3.19.2.4 Alternative B3 – Demolition to Grade with Units 1-8 Chimney Hybrid Demolition/Dismantlement

The socioeconomic impacts associated with Alternative B3 would be between those described for Alternative B1 and B2 as this alternative would take more time than Alternative B1 but probably less than B2. The employment and income impacts would be somewhat greater than Alternative B1 and similar to Alternative B2, and impacts would be short-term and beneficial.

3.19.2.5 Alternative C – No Action

Under the No Action Alternative, the WCF would be left in the "as is" condition. Therefore, no socioeconomic impacts from employment and expenditures at the site would occur.

3.20 Cumulative Impacts

Cumulative impacts are defined in the Regulations for Implementing the Procedural Provisions of the NEPA (CEQ 1987) as follows:

> "Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

Past actions that have already occurred and present actions are integrated into the existing baseline conditions discussed above. The following sections address reasonably foreseeable future actions on WCF and in the immediate vicinity of the plant. Projects planned elsewhere in the community are not likely to have a cumulative impact on the demolition project as they would be a considerable distance from the project area.

Table 3-14. Summary of Present or Reasonably Foreseeable Future Actions in the Vicinity of the Proposed Project

Actions Description	Description	Timing
Switchyard Improvements	Installation of new equipment including towers, lines, transformers, and switch houses.	Future
Coal Yard Restoration	Remaining coal will be excavated and removed after which the yard will be graded and re-vegetated	Future
Rail Loop Drainage Improvements	Fill in low lying areas and install a culvert in the old rail loop to promote positive drainage.	Present/Future
Gypsum Stack Closure	Closure of gypsum stack and cover within the WCF property using soils excavated from adjacent property	Present/Future
Ash Impoundment Closure	TVA would close the 350 acre Ash Impoundment Complex on the WCF property	Future
Disposal of Adjacent Property	TVA would make 360 acre of property, adjacent to and northwest of the WCF deconstruction site, available for light industrial use	Present/Future

Switchyard Improvements

The existing 161-kV, 230-kV, and 500-kV switchyards will remain active on the Widows Creek property. They will be modified and upgraded. Improvements will include the addition of new equipment including towers, lines, transformers, and switch houses.

Coal Yard Restoration

The leftover remnants of coal remaining in the coal yard will be excavated and stored in the onsite Ash Impoundment prior to Ash Impoundment closure. The coal yard will then be graded to drain using soils from the onsite borrow area, and re-vegetated to allow the area to return to a natural state.

Rail Loop Drainage Improvements

The old rail loop is a closed ash impoundment that is no longer used. The drainage improvements project would fill in low lying areas within the loop to promote positive drainage. Project activities would include cutting some trees, removing some existing culverts, installing rip-rap around remaining culvert ends, installing a new culvert under the existing rail spur, and grading the area. Borrow material would be obtained from the onsite borrow area. Exposed soil would be hydroseeded and strawed.

Gypsum Stack Closure

TVA is in the process of closing the Gypsum Stack at WCF. With the retirement of WCF, continued operation of the gypsum stack is no longer needed. The Gypsum Stack is a 160-ac facility used for the long-term storage of gypsum and some fly ash. Part of this closure effort involves constructing a cover over the stack. This cover would shed surface water, limit infiltration, and isolate the gypsum/fly ash from direct contact with the environment. TVA is using soils excavated from the on-site borrow area to construct the cover over the Gypsum Stack. Closing the stack will result in a stable facility that will reduce the infiltration of water into the gypsum/fly ash and the potential subsurface flow into the groundwater.

Ash Impoundment Closure

TVA will begin closing the Ash Impoundment at WCF in spring of 2016. With the retirement of WCF, continued operation of the Ash Impoundment is no longer needed. The Ash Impoundment is a 350+ ac facility used for the long-term storage of gypsum, fly ash and bottom ash. Part of this closure effort involves constructing a cover over the impoundment. This cover would shed surface water, limit infiltration, and isolate the gypsum/fly ash/bottom ash from direct contact with the environment. TVA is using soils excavated from the on-site borrow area to construct the cover over the Ash Impoundment. Closing the impoundment will result in a stable facility that will reduce the infiltration of water into the gypsum/fly ash/bottom ash and the potential subsurface flow into the groundwater.

Disposal of Adjacent Property

In 2010, TVA purchased approximately 600 ac immediately adjoining its WCF. The property was purchased to preserve the ability to convert wet coal combustion residuals at WCF to dry handling systems in the future. Since acquisition of the land, TVA's potential need for this amount of property has changed. Due to the retirement of the coal-fired facilities, TVA no longer needs to preserve all of this property for its use. A total of 360 ac of the property is currently being developed for light industrial use. A data center is proposed for that location and it would operate as a hub for Internet traffic 24 hours a day, seven days a week. The data center is anticipated to create up to 100 jobs.

Four projects are currently planned on or in the immediate vicinity of the WCF project site. Projects on WCF property include modifications to the onsite switchyards, coal yard restoration, and closure of ponds/impoundments. Additionally, a light industrial development is planned for the area adjacent to the northwest of the plant site. These projects could be initiated or in progress during the period in which the WCF deconstruction project would be underway.

Each of these projects would include grading and ground moving in close proximity to the WCF demolition project thereby increasing the use of earth moving equipment and truck traffic. This section discusses those resources and receptors that could result in perceivable, but insignificant, cumulative impacts from TVA's alternative actions. For the proposed alternatives, no substantive cumulative impacts are expected for floodplains, wetlands, wildlife, vegetation, threatened and endangered species (other than aquatic), natural areas, noise, cultural and historic resources, and utilities and service systems. The potential for cumulative impacts to land use, geology and groundwater, surface water, aquatic ecology, aquatic endangered species, air quality, transportation, hazardous materials and solid and hazardous waste, visual resources, safety, and socioeconomics and environmental justice are discussed in the following sections.

3.20.1 Land Use

Cumulative impacts caused by Alternatives B1, B2, and B3 could include the eventual redevelopment of the site, resulting in land use changes. Without knowing what development would occur, it is inappropriate to speculate on the extent or manner of land use changes at this time; however, such changes would be anticipated to be minor as they would result in converting the brownfield site to an active land use. All alternatives could result in cumulative impacts with respect to the nearby projects, in particular the light industrial development. The light industrial development is changing an undeveloped area to a developed area. These cumulative impacts would be anticipated to be minor.

3.20.2 Geology and Groundwater

There are no cumulative impacts with Alternatives B1, B2, and B3, as potential sources of soil or groundwater contamination due to stored chemicals, oils, etc., would be removed from the site. Alternatives A and C would also include removal of contamination from the site; however, they would carry a risk of impacting the environment as materials that cannot be practically removed from structures, sumps, and shafts (lead based paint, metals, etc.) may have the potential to contaminate soil and groundwater following years of deterioration. There would be a potential for cumulative impacts to geology and groundwater as a result of the multiple construction projects and associated vehicles in the area. There would be a small potential for the disturbance of soils and the potential for spills to cause cumulative geology and groundwater effects. Such impacts would be considered unlikely as the various projects would employ best management practices such as spill prevention, control, and countermeasure plans to control for and clean up any spills of hazardous materials that could occur. The construction projects would also utilize engineering controls and best management practices to manage runoff of soils and stormwater and further minimize potential impacts. Therefore, potential cumulative impacts associated with geology and groundwater are anticipated to be minor.

3.20.3 Surface Water

Under Alternatives B1, B2, and B3, surface water could be potentially impacted due to increased silt load resulting from runoff during soil disturbing activities. Similar impacts could be anticipated from the nearby projects. All projects would implement BMPs and engineering controls. Therefore, only minor and temporary impacts to surface waters would be anticipated. Any discharges into surface waters would comply with all NPDES permit limits and local, state, and federal regulations. These impacts would not be expected to be significant.

The closure of the impoundment system and NPDES outfalls would be addressed in an EA at the time of closure in order to assess impacts to closure of this portion of the facility. This assessment would need to include the re-routing of continued onsite process and stormwater. It is assumed that with proper BMPs, maintenance practices, drawdown practices, and treatment of any continuing discharge waste streams, no negative impacts would be expected from these activities. However, a more thorough evaluation would be required once the project details are known for meaningful analysis.

There is a potential for cumulative impacts to surface water quality with Alternatives A and C if the facility is not properly maintained and if hazardous waste and other potential pollutants to surface water are not removed from the site or properly stored and maintained. The intake and discharge tunnels and the onsite chimneys, if left in place, are located in close proximity to surface waters and have the potential to impact surface water quality if not properly maintained or removed. Mitigation measures would be implemented as needed to ensure the discharges from the site would have no significant impacts on the receiving stream water quality.

3.20.4 Aquatic Ecology

With Alternatives B1, B2, and B3, surface water could be potentially impacted due to increased silt load resulting from soil disturbing activities as described previously. Proper implementation of BMPs and engineering controls would be expected to result in no impacts to surface waters and thus no impacts to aquatic ecology.

With Alternatives A and C, there is a potential for cumulative impacts to aquatic ecology if the facility is not properly maintained and if hazardous waste and other potential pollutants leach to surface water are not removed from the site or properly stored and maintained.

3.20.5 Aquatic Endangered Species

The potential cumulative impacts to aquatic endangered species would be similar to those described for aquatic ecology. The federally endangered pink mucket and Anthony's riversnail are known to occur in the vicinity of WCF in Guntersville Reservoir. No designated critical habitat occurs within watersheds in the proposed project area and in the immediate vicinity that would be affected by the other projects in the area. Additionally, appropriate stream protection measures outlined in permit conditions would be implemented during site preparation activities for all projects. Therefore, cumulative impacts to state or federally listed aquatic species are not anticipated.

3.20.6 Air Quality

Under all alternatives for the WCF demolition, potential emissions of greenhouse gasses and fugitive dust could occur as a result of the deconstruction activities. Similar emissions could be anticipated from the other projects in the area as a result of construction activities. The combined projects could cause cumulative minor, temporary impacts to air quality in the area. Such impacts would be mitigated through the use of best management practices such as water suppression for dust control and regular inspections and maintenance of construction vehicles.

3.20.7 Hazardous Materials and Solid and Hazardous Waste

Under the Alternatives B1, B2, and B3, some fugitive dust or releases of hazardous materials could occur. BMPs and mitigation measures would keep transport of such materials to a minimum. If other projects in the area result in minor releases of fugitive dust or hazardous material, this may result in minor cumulative impacts. Alternatives A and C would have some potential for cumulative impacts with regard to potential contamination of soil and groundwater due to the long-term degradation of materials, including materials that cannot be practically removed from structures, sumps, and shafts (lead-based paint, metals, etc.), thereby affecting public health and safety.

3.20.8 Transportation

Under all alternatives for WCF demolition, the increased traffic associated with transport of fill into the site and steel and other deconstructed materials off of the site could result in cumulative transportation impacts in association with other projects in the area. Such impacts would be expected to be concentrated on the WCF site and along Steam Plant Access Road. Impacts would include multiple construction vehicles moving into and out of the site most of the day throughout the construction period and could result in congestion along Steam Plant Access Road and at the intersection with Highway 277 and possible Highway 72. Such impacts would be anticipated to be temporary, lasting only for the duration of the projects, and minor.

3.20.9 Visual Resources

Cumulative impacts caused by Alternatives B1, B2, and B3 could include the eventual redevelopment of the site, providing a different visual experience for recreational river users, motorists, and area residents. Without knowing what development would occur, it is inappropriate to speculate on the extent or manner of visual impacts at this time; however, it would likely present a far better visual setting than the deteriorating facility that would be visible in Alternatives A and C. All alternatives could result in cumulative impacts with respect to the nearby projects, in particular the light industrial development. The light industrial development will result in significant changes to the nearby viewshed. Cumulative impacts would be anticipated to be minor.

3.20.10 Safety

Under the Alternatives A and C, ongoing maintenance activities could present opportunity for injury to maintenance and security staff. Trespassing (by foot or by boat) and vandalism are often a concern at a closed facility that might contain salvageable materials. Unauthorized persons at the site could presumably be exposed to potential contaminants or to physical injury. Under Alternatives B1, B2, and B3, safety issues are short-term and the responsibility of the demolition and hazardous materials removal contractors. During demolition and materials removal, truck traffic of other projects on the WCF property would add to the traffic. This could result in cumulative safety impacts as a result of the cumulative traffic impacts from nearby projects. Impacts would be anticipated to be temporary and minor and would affect primarily the truck drivers and construction personnel. Controls would be needed to ensure truck traffic is coordinated and safe.

3.20.11 Socioeconomics and Environmental Justice

Under Alternatives A and C, cumulative impacts would include the limited redevelopment potential due to the presence of the existing unutilized structures. The presence of these structures prevents significant redevelopment of the property for energy production or recreation opportunities and jobs. While TVA's plans for the site in the future are currently undefined, the remaining buildings in these alternatives present a barrier for future use of the site.

Cumulative impacts caused by Alternatives B1, B2, and B3 could include redevelopment of the brownfield site, which could add jobs to the local economy or the site could potentially offer additional recreation opportunities to the local community.

3.21 Unavoidable Adverse Environmental Impacts

The selected alternative would not cause any unavoidable adverse environmental impacts.

3.22 Relationship of Short-Term Uses and Long-Term Productivity

WCF would be retired and deconstructed to a brownfield site. In the long term, the site could become very productive if various industries were to be established, thereby producing employment opportunities and tax revenue.

3.23 Irreversible and Irretrievable Commitments of Resources

As used here, irreversible commitments of resources include the use or consumption of non-renewable resources because of a decision or implementing a proposed action. For example, extracting ore is an irreversible commitment. Irretrievable commitments involve the use or commitment of resources for a period of time, even a long period. An example of an irretrievable resource commitment is the loss of timber production on a newly cleared transmission line right-of-way through a previously forested area. In that case, removal of the transmission line and the right-of-way would eventually result in the restoration of forestland and timber productivity.

Retiring and deconstructing WCF would not result in any irreversible or irretrievable commitments of resources.

3.24 Public and Intergovernmental Review

A Draft EA of the proposed WCF Deconstruction project was released for comment on February 17, 2016. The comment period closed on March 18, 2016. The Draft EA was transmitted to state, federal, and local agencies and federally recognized tribes. It was also posted on TVA's public NEPA review website. A notice of availability, including a request for comments on the

Draft EA, was published in newspapers serving the Stevenson, Alabama area. Comments were accepted through March18, 2016, via TVA's website, mail, and e-mail.

TVA received four sets of comments: three from the Alabama Department of Environmental Management (ADEM) and one from a previous WCF employee. TVA carefully reviewed the substantive comments that were received. Comments were categorized by author and summarized for the Final EA. The comments and TVA's responses are provided in Appendix D.

CHAPTER 4 - LIST OF PREPARERS

4.1 NEPA Project Management

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Involvement: Wildlife

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Experience: 20 years
Involvement: Socioeconomics and Environmental Justice

Michael Przybyla (AECOM)
Position: Scientist
Education: MS, Planning
Experience: 20 years
Involvement: Visual Resources

Matthew Reed (TVA)
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Daniel Wade (AECOM)
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A. Chevales Williams (TVA)
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Involvement: Floodplains

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Education: BS, Environmental Health
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Involvement: Cultural and Historic Resources

CHAPTER 5 - ENVIRONMENTAL ASSESSMENT RECIPIENTS

5.1 Federal Agencies

Natural Resources Conservation Service, Alabama State Conservationist
U.S. Army Corps of Engineers, Nashville District
U.S. Fish and Wildlife Service, Daphne Field Office

5.2 Federally Recognized Tribes

Eastern Band of Cherokee Indians
United Keetowah Band of Cherokee Indians in Oklahoma
Cherokee Nation
Chickasaw Nation
Muscogee (Creek) Nation of Oklahoma
Thlopthlocco Tribal Town
Kialegee Tribal Town
Alabama-Quassarte Tribal Town
Alabama-Coushatta Tribe of Texas
Eastern Shawnee Tribe of Oklahoma
Shawnee Tribe
Absentee Shawnee Tribe of Oklahoma
Seminole Tribe of Florida
Seminole Nation of Oklahoma
Poarch Band of Creek Indians

5.3 State Agencies

Alabama Department of Agriculture and Industries
Alabama Department of Conservation and Natural Resources
Alabama Department of Environmental Management
Alabama Department of Economic and Community Affairs
Alabama Department of Public Health
Alabama Department of Transportation
Alabama Forestry Commission
Alabama Historical Commission
Top of Alabama Regional Council of Governments

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Appendix A – Summary of Environmental Permits and Applicable Regulations

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Alabama is an "authorized" state, meaning that it is authorized by EPA to administer state environmental law in lieu of most federal environmental laws.

Any entity wishing to construct an air contaminant source, or to modify an existing air contaminant source, is required to obtain a construction permit from the ADEM Division of Air Pollution Control (APC) in accordance with the requirements of ADEM Admin. Code r. 353-3-14. Modification of the existing Title V Permit must be done in accordance with the requirements of ADEM Admin. Code r. 335-3-16.

Modification of the existing NPDES Permit for WCF must be done through the ADEM Division of Water Pollution Control (WPC) in accordance with the requirements of ADEM Admin. Code r. 335-6-6 and the Clean Water Act.

Stormwater runoff from construction sites (or demolition site in this case) is regulated under the NPDES program. Currently, construction projects where 1 acre of land or more would be disturbed require a NPDES Permit. The permit establishes the conditions under which discharge may occur, and establishes monitoring and reporting requirements. Application for coverage under the Alabama General NPDES Permit for Discharge of Stormwater Associated with Construction Activities must be done through the ADEM Division of WPC in accordance with the requirements of ADEM Admin. Code r. 335-6-12 and would require preparation and submittal of a Construction Best Management Practices Plan.

The addition of a stormwater pond would require selection and implementation of standard Erosion Prevention and Sediment Control measures in accordance with the *Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas* (ADEM 2014a).

Under EO 13186, federal agencies are encouraged to implement conservative measures to avoid or minimize adverse impacts on migratory bird resources when conducting agency actions.

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Appendix B – Visual Resources

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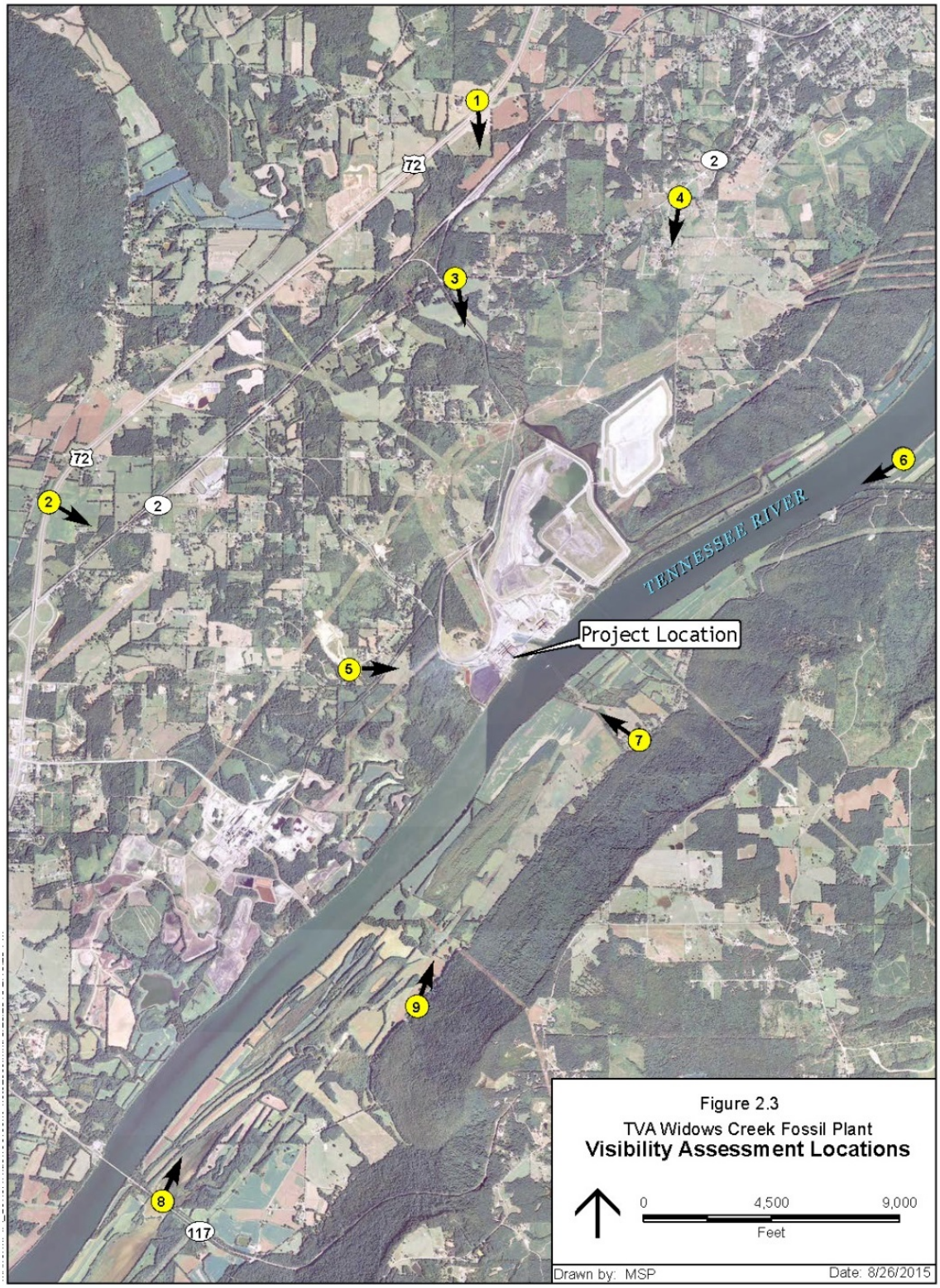
Using Google Street View ® and GIS aerial photography and elevation data, representative views of the site were identified. Figure B-1 shows the location of these photo locations.



Location 1 is near the Bengis Reservation and is approximately 3.6 mi north of the site. Only the upper portion of the chimney is visible.

Location 2 is from US 72 3.2 mi northeast of the site. Here only the upper portion of the chimney is visible with Sand Mountain visible behind it.

Location 3 is 2.5 mi north of the plant on SR 277. Once again, only the upper portion of the chimney is visible.

Location 4 is 3.25 mi north of the site on Meghann Street just south of SR 277. This view is typical of a middle ground view in a low-density residential area. Once again only the upper portion of the chimney is visible.

Location 5 is on County Road 96 just over 1 mi east of the site. Here more of the chimney is seen. The site buildings and equipment are obscured by vegetation.

Location 6 is located almost 3 mi east of the site on Hogjaw Valley Road alongside the Tennessee River. From this location the full site is visible and is typical of what a recreational user of the river would see.

Location 7 is from across the river just less than 1 mi southeast of the plant. Here most of the plant is visible along with its associated transmission line towers.

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Appendix C – Cultural Resources Coordination

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

October 23, 2015

LISA D. JONES
ACTING EXECUTIVE DIRECTOR
STATE HISTORIC PRESERVATION OFFICER

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

Mr. Clinton Jones
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, TN 37902

Re: AHC 2011-1226
CRA
Widows Creek Fossil Plant, Units 1-8 Decontamination and Deconstruction
Jackson County

Dear Mr. Jones:

Upon review of the cultural resource assessment conducted by Tennessee Valley Archaeological Research, and the additional information provided by the Tennessee Valley Authority (TVA) for the above referenced project, we have determined that we agree with TVA's determination of effect. The proposed project activities will have no adverse effect on cultural resources eligible for or listed on the NRHP. Therefore, we concur with the project activities.

However, should artifacts or archaeological features be encountered during project activities, work shall cease and our office shall be consulted immediately. Artifacts are objects made, used or modified by humans. They include but are not excluded to arrowheads, broken pieces of pottery or glass, stone implements, metal fasteners or tools, etc. Archaeological features are stains in the soil that indicate disturbance by human activity. Some examples are post holes, building foundations, trash pits and even human burials. This stipulation shall be placed on the construction plans to insure contractors are aware of it.

We appreciate your commitment to helping us preserve Alabama's historic archaeological and architectural resources. Should you have any questions, please contact Joseph Glazar at 334.230.2653 or Joseph.Glazar@preserveala.org. Have the AHC tracking number referenced above available and include it with any future correspondence.

Sincerely,

Lee Anne Wofford
Deputy State Historic Preservation Officer

LAW/RJG/eds

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Appendix D –Comments on the Draft Environmental Assessment and Responses

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INTRODUCTION

A Draft Environmental Assessment (EA) of the proposed Widows Creek Deconstruction Project was released for comment on February 17, 2016. The comment period closed on March 18, 2016. The Draft EA was transmitted to various agencies and federally recognized tribes. It was also posted on Tennessee Valley Authority's (TVA's) public National Environmental Policy Act (NEPA) review website. A notice of availability including a request for comments on the Draft EA was published in newspapers serving the Stevenson, Alabama area. Comments were accepted through March 18, 2016, via TVA's website, mail, and e-mail.

Comments were received in four documents:

- a letter from Mr. Gerald Martin of the Alabama Department of Environmental Management (ADEM) primarily concerning permit requirements
- an email from Mr. Bobby Rowland of ADEM regarding asbestos inspections
- a letter from Mr. Stephen Cobb of ADEM regarding waste characterization
- a letter from a previous WCF employee (Mr. John Brock) regarding preservation of a portion of the Widows Creek Fossil Plant (WCF).

The Comments (letters and email) are included at the end of this appendix. TVA's responses to comments raised in these documents are provided below.

Letter from Mr. Gerald Martin of ADEM

Martin Comment 1:

Please note that State law and ADEM regulations require that appropriate, effective Best Management Practices (BMPs) for the control of pollutants in stormwater run-off be fully implemented and maintained as needed for all construction and land disturbance activities regardless of permit status or size of the disturbance to prevent/minimize discharges of sediment and other pollutants to waters of the State of Alabama.

Response: Best Management Practices (BMPs) will be implemented as part of the selected alternative.

Martin Comment 2:

Please be advised that pursuant to EPA rules and ADEM Construction General Permit (CGP) ALR100000, the operator or owner is required to apply for and maintain valid National Pollutant Discharge Elimination System (NPDES) coverage for stormwater discharges prior to beginning construction or regulated land disturbance that will equal or exceed one (1) acre in size. The regulations also require NPDES registration for disturbance activities less than one (1) acre that are part of, adjacent to, or if less than one (1) acre in size if stormwater discharges have reasonable potential to be a significant contributor of pollutants to a water of the State or have reasonable potential to cause or contribute to a violation of applicable Alabama water quality standards as determined by the Department.

Response: Prior to beginning construction, TVA will prepare a Construction Best Management Practices Plan (CBMPP) for coverage under the Alabama General NPDES Permit for discharges of stormwater associated with construction activities.

Martin Comment 3:

In addition, a Construction Best Management Practices Plan (CBMPP) is required to be submitted for priority construction sites as defined in the CGP. The regulated construction disturbance also includes, but is not limited to, associated areas utilized for support activities such as vehicle parking, equipment or supply storage areas, material stockpiles, temporary office areas, and access roads, and pre-construction activities performed in advance or in support of construction such as logging, clearing, and dewatering. Please be advise that an operator or owner must retain NPDES permit coverage until all disturbance activity, including phased construction, is complete.

Response: As indicated above, a Construction Best Management Practices Plan will be submitted prior to construction. Coverage under an NPDES permit will be retained until all disturbance activity is complete.

Martin Comment 4:

Additional ADEM air, land, and/or water permits for discharges and regulated impacts resulting from the operation of the completed facility may be required.

Response: TVA will ensure that appropriate ADEM air, land, and/or water permits are acquired.

Martin Comment 5:

Effective Best Management Practices (BMPs), as provided in the, *Alabama Handbook For Erosion Control, Sediment Control, And Stormwater Management On Constructions Sites And Urban Areas,* as amended, Alabama Soil and Water Conservation Committee (ASWCC), for prevention and control of nonpoint sources of pollutants must be implemented prior to, during, and after project implementation. Immediately after completion of the project, effective measures to ensure permanent revegetation, cover, and/or effective stormwater quality remediation must be implemented and maintained. The CGP requires that a CBMPP to reduce pollutant discharges to the maximum extent practicable be prepared by a qualified credentialed professional (QCP) as defined in the CGP, and retained onsite.

Response: A CBMPP, prepared by a qualified credentialed professional (QCP), as defined in the CGP, will be retained onsite.

Martin Comment 6:

Tennessee River Watershed - In order to determine whether this project should be covered under an existing CWA Section 404, Nationwide, or General Permit, or Letter of Permission, you should contact the U.S. Army Corps of Engineers, Nashville District.

Response: The U.S. Army Corps of Engineers, Nashville District will be contacted and appropriate permits will be acquired prior to project initiation.

Martin Comment 7:

All Other Alabama Watersheds - In order to determine whether this project should be covered under an existing CWA Section 404, Nationwide, or General Permit, or Letter of Permission, you should contact the U.S. Army Corps of Engineers, Mobile District.

Response: TVA will contact the U.S. Army Corps of Engineers, Mobile District as needed.

Martin Comment 8:

ADEM's Coastal Program manages uses and activities having the potential to significantly impact the coastal portions of Alabama and /or its resources.

Response: The project is not anticipated to impact coastal waters.

Martin Comment 9:

You may also wish to contact, if applicable, for additional approvals that may apply to your project:

- U.S. Fish & Wildlife Service and the Alabama Department of Conservation & Natural Resources;
- Office OF Water Resources, Alabama Department of Economic and Community Affairs;
- State Fire Marshall and The Alabama Department of Industrial Relations;
- Alabama Department of Industrial Relations;
- Alabama Historical Commission;
- Local county health department, and
- Local municipal or county government, or local zoning planning agency

Response: All other state, Federal and local agencies will be contacted, as appropriate, for permits and approvals.

Email from Mr. Bobby Rowland of ADEM

Rowland Comment 1:
As part of the National Emission Standard for Asbestos an asbestos inspection and notification to the Department would be required before demolition took place. Our ADEM form 496 would need to be submitted 10 working days prior to any asbestos abatement or demolition work began. The form can be found here - http://adem.alabama.gov/DeptForms/Form496.pdf
Also, The Department may perform inspections during the abatement and demolition. Would there be any specific protocols we would need to follow to perform these inspections?

Response: TVA has added a statement to Section 1.5 of the EA: "As part of the National Emission Standard for Asbestos, an asbestos inspection and notification to the Department would be required before demolition (ADEM)".

Letter from Mr. Stephen Cobb of ADEM:

Cobb Comment 1:

The Department recommends that the facility perform a proper waste characterization and make a waste determination on the concrete prior to using it onsite or in any other manner. Based on the results of the determination, the facility should manage the concrete appropriately.

Response: TVA has completed a thorough waste characterization of solid and hazardous waste materials including concrete chip samples and determined the appropriate disposal of these materials. Areas of known spills or stained surfaces of concrete will not be used as fill material and will be characterized properly and disposed of in an appropriate manner.

Cobb Comment 2:

The Department recommends that a proper waste characterization and determination be performed on anything containing lead based paint. Based on the results of this, those items should be managed accordingly.

Response: As a part of the hazardous waste characterization at the facility, hundreds of samples were collected from surfaces and materials that potentially contain lead based paint. This characterization was primarily for worker protection when salvage companies remove metal with lead paint coatings. These materials will be managed according to industry standards.

Website Submission from Mr. John Brock:

Brock Comment 1:

I believe at least one of the widows creek fossil plant units should be restored to mint condition and be made available for public view as a museum to memorialize a way of power generation that appears to be on it's way to becoming a figment of the past. my strong and emotional feelings for widows creek i express as follows:

PEACEFULLY MY LADY SLEEPS. DREAMS OF YESTERYEAR SHE KEEPS. WHEN IN HER PRIME WITH POLISHED STEEL. HER HOTWELLS HOT AND CLEARWELLS CLEAR. HER COAL SCALES WEIGH. HER GLOBE VALVES WHEEL. HER BLAST GATES OPEN AS PRETTY AS YOU PLEASE. HER CHAIN OPERATORS PULL WITH EASE. HER PUMPS ALL PRIME AND HER MOTORS PURR. THIS IS ALL VERY BECOMING TO HER. HER SAFETYS DON'T WEEP. HER PACKINGS DON'T LEAK. HER COLDWELLS ARE FULL AND ALWAYS STICK DEEP. HER BENCHBOARD'S WHITE LIGHTS DO NOT DISAGREE WITH PISTOL GRIPS OR LPB. WITHOUT HOLDING CONTACTS WITH FLASHLIGHTS AND STICKS, OR PINCHING OF PENNIES OR AUO TRICKS. CONDENSER INLET VALVE MOTORS TORQUE STEM. WITH THE PUNCH OF A BUTTON. EVERY ONE OF THEM. HER LEVELS ARE NORMAL IN HER BLOWDOWN TANKS. HER HEATERS ATE TIGHT IN ALL OF HER BANKS. HER WATER AND OIL IS EASILY SEEN, FOR HER ONE HUNDRED THOUSAND SIGHT GLASSES ARE CLEAN. IR AND IK BLOW HER ASH AND HER SOOT. HER TURBINE SHELLS GLIDE ON HER TURBINE'S LUBED FOOT. HER DOWNCOMERS FULL AND HER RISERS WITH STEAM. HER AUOs WORK AS A WELL OILED MACHINE. HER TUBE COVERED LUNG, COUNTERWEIGHTED AND HUNG. SINGS SOFTLY SWEET SONGS LIKE HAVE NEVER BEEN SUNG. HER FEEDPUMPS FEED WATER TO HER DRUM

WITHOUT FAIL. WHILE HER GRINDERS GRIND CLINKERS LIKE HOUNDS GUARDING HELL. A CHEATER IS FIXED TO HER HOGGER DOWN STAIR, BUT RARE IS AN AUO NEEDED DOWN THERE. FOR HER VACUUM AND TURBINE EXHAUST BOTH DO STAY. UNCHANGINGLY SWEET FOR EACH DAY AFTER DAY. AT HER CIRCULATING WATER PUMP'S INTAKE BAY. HER TRAVELING SCREENS TRAVEL OFT AS THEY MAY. HER BUBBLERS RUN WASH PUMPS TO KEEP THEM ALL FREE, FROM MILFOIL AND MINNOWS AND OTHER DEBRIS. HER MILLS POUND HOT CARBON WITH ALL OF THEIR MIGHT. HER PYRITE LINES PULL AND HER ASH PUMPS DON'T FIGHT. CONTROL VALVES DO TOIL WITH OIL AND SPRINGS WHILE HER BABBOTED JOURNALS SILENCE STEEL SHAFT SQUEEL RINGS. CATHEAD DIFFERENTIALS AUTOMATICALLY FEED. HER BURNERS WITH ALL OF THE COAL THAT SHE NEEDS. WHILE HER TURBINES ASCEND TO A SYNCHRONOUS SPEED. AND AS HER SCOPE RUNS PAST THE STROKE OF MIDNIGHT, HER OCB RED LIGHTS BURN BRILLIANTLY BRIGHT. HER CROSS-TIES STAY SHUT LIKE THEY VERY WELL SHOULD. AND SHE TIES TO THE LINE WHEN SHE SAID SHE WOULD. SHE CARRIES HER LOAD WHEN SHE'S NEEDED THE MOST. THROUGH NATURE'S WORST NIGHTMARES SHE'S FIRM AT HER POST. NOW THIS FINE LADY'S A GHOST. AS SHE SLEEPS. HER PIPED LUNGS WILL BE RIPPED FROM HER BREAST. HER WORLD RENOWNED STACK WILL BE LEVELED AT BEST. HER HAMMERHEAD CRANE'S EMPTY TALON IS FREE. SINCE HER BARGES ARE EMPTY OF COAL DON'T YOU SEE? AND BOB JONES, THAT OLD TUG. WILL JUST PULL, TOW AND SHOVE. PAST THE GRAVE WHERE HIS FRIEND USED TO BE. HER BITUMINUS PILES, ONCE MOUNTAINOUS AND VAST. WILL SIMPLY BE FIGMENTS OF HER SIX DECADE PAST. WHEN THEY'VE STRIPPED HER DOWN COLD. FROM HER HEAD TO HER TOE. OF HER METAL AND CONCRETE AND COAL. THEY WON'T EVEN LEAVE THERE A HOLE. AND I SWEAR BY WHAT'S GOOD. I BELIEVE THAT THEY WOULD. STEAL HER SOUL IF THEY THOUGHT THAT THEY COULD. THEY SHALL POINT ONE FINE DAY. THEY SHALL POINT AND THEY'LL SAY. THERE IN THAT PLACE. LIVED A LADY WITH GRACE. SHE LIVED LONG AND SHE FINISHED HER RACE. NONETHELESS MY HEART TRUELY WILL. BASK IN THE WARMTH OF HER STILL. MY LADY WILL THEN BE MADE WHOLE. WHEN HER SPIRIT EMBRACES MY SOUL.

Please do not let this awful thing take place.

Response: TVA appreciates public interest in the facility. Demolition of the facility in an environmentally responsible manner to allow reuse of the property would enhance the economy of the area with the least impact to the environment. Therefore, Alternative B1 is TVA’s preferred alternative.

LANCE R. LEFLEUR
DIRECTOR

ROBERT J. BENTLEY
GOVERNOR

Alabama Department of Environmental Management
adem.alabama.gov

1400 Coliseum Blvd. 36110-2400 ■ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ■ FAX (334) 271-7950

February 23, 2016

ASHLEY FARLESS
TENNESSEE VALLEY AUTHORITY
1101 MARKET STREET, BR4A
CHATTANOOGA, TN 37402

RE: Widows Creek Fossil Plant Deconstruction
Jackson County (071)

Dear Ms. Farless:

The Department's Water Division (WD) has reviewed the information you sent us regarding the above-referenced project. You had requested that we review this information and provide comments.

Attached, please find a copy of WD's proposed project/activity review information.

I hope this information is useful. If you have any questions or need additional information, please contact **me by email at gfm@adem.state.al.us or by phone at (334) 394-4317.**

Sincerely,

Gerald Martin
Technical Staff
Construction Permits Section
Stormwater Management Branch
Water Division

GFM File:PREV

Enclosure: Proposed Project/Activity Review Information
Copy of Review Request Letter

Birmingham Branch
110 Vulcan Road
Birmingham, AL 35209-4702
(205) 942-6168
(205) 941-1603 (FAX)

Decatur Branch
2715 Sandlin Road, S.W.
Decatur, AL 35603-1333
(256) 353-1713
(256) 340-9359 (FAX)

Mobile Branch
2204 Perimeter Road
Mobile, AL 36615-1131
(251) 450-3400
(251) 479-2593 (FAX)

Mobile-Coastal
3664 Dauphin Street, Suite B
Mobile, AL 36608
(251) 304-1176
(251) 304-1189 (FAX)

ADEM CONSTRUCTION STORMWATER

PROPOSED PROJECT/ACTIVITY REVIEW INFORMATION

The Department has received and evaluated the information you sent us regarding the above-referenced project. You had requested that we review this information and provide comments.

Please note that State law and ADEM regulations require that appropriate, effective Best Management Practices (BMPs) for the control of pollutants in stormwater run-off be fully implemented and maintained as needed for all construction and land disturbance activities regardless of permit status or size of the disturbance to prevent/minimize discharges of sediment and other pollutants to waters of the State of Alabama.

A "water of the state" is broadly defined as [§ 22-22-1(b)(2), Code of Alabama 1975, as amended] "All waters of any river, stream, watercourse, pond, lake, coastal, ground, or surface water, wholly or partially within the state, natural or artificial. This does not include waters which are entirely confined and retained completely upon the property of a single individual, partnership, or corporation unless such waters are used in interstate commerce." Discharges of pollutants resulting from failure to implement and maintain effective BMPs are considered unpermitted discharges to state waters.

Please be advised that pursuant to EPA rules and ADEM Construction General Permit (CGP) ALR100000, the operator or owner is required to apply for and maintain valid National Pollutant Discharge Elimination System (NPDES) coverage for stormwater discharges prior to beginning construction or regulated land disturbance that will equal or exceed one (1) acre in size. The regulations also require NPDES registration for disturbance activities less than one (1) acre that are part of, adjacent to, or associated with a larger common plan of development or sale, that may eventually equal or exceed one (1) acre, or if less than one (1) acre in size if stormwater discharges have reasonable potential to be a significant contributor of pollutants to a water of the State or have reasonable potential to cause or contribute to a violation of applicable Alabama water quality standards as determined by the Department. In addition, a Construction Best Management Practices Plan (CBMPP) is required to be submitted for priority construction sites as defined in the CGP. The regulated construction disturbance also includes, but is not limited to, associated areas utilized for support activities such as vehicle parking, equipment or supply storage areas, material stockpiles, temporary office areas, and access roads, and pre-construction activities performed in advance or in support of construction such as logging, clearing, and dewatering. Please be advised that an operator or owner must retain NPDES permit coverage until all disturbance activity, including phased construction, is complete.

Additional ADEM air, land, and/or water permits for discharges and regulated impacts resulting from the operation of the completed facility may be required.

Effective Best Management Practices (BMPs), as provided in the *Alabama Handbook For Erosion Control, Sediment Control, And Stormwater Management On Constructions Sites And Urban Areas*, as amended, Alabama Soil and Water Conservation Committee (ASWCC), for prevention and control of nonpoint sources of pollutants must be implemented prior to, during, and after project implementation. Immediately after completion of the project, effective measures to ensure permanent revegetation, cover, and/or effective stormwater quality remediation must be implemented and maintained. The CGP requires that a CBMPP to reduce pollutant discharges to the maximum extent practicable be prepared by a qualified credentialed professional (QCP) as defined in the CGP, and retained onsite. Information regarding construction activities forms, and other helpful information is available on the ADEM WebPage at http://www.adem.state.al.us/programs/water/constructionstormwater.cnt

Tennessee River Watershed - In order to determine whether this project should be covered under an existing CWA Section 404, Nationwide, or General Permit, or Letter of Permission, you should contact the U. S. Army Corps of Engineers, Nashville District by mail at PO Box 1070, Nashville, TN 37202-1070 or by phone at (615) 736-5181. Facilities covered under a U.S. Army Corps of Engineers Individual 404 Permit, Nationwide or General Permit, or Letter of Permission must apply for NPDES stormwater coverage from ADEM, if construction or land disturbance above the Ordinary High Water Mark, or any non-dredge/fill operations below the Ordinary High Water Mark and associated upland dredge disposal sites that will equal or exceed one (1) acre or that are part of a larger common plan of development or sale in which disturbed acreage will eventually equal or exceed (1) acre.

All Other Alabama Watersheds - In order to determine whether this project should be covered under an existing CWA Section 404, Nationwide, or General Permit, or Letter of Permission, you should contact the U.S. Army Corps of Engineers, Mobile District by mail at PO Box 2288, Mobile, AL 36628-0001 or by phone at (251) 690-2658. Facilities covered under a U.S. Army Corps of Engineers Individual 404 Permit, Nationwide or General Permit, or Letter of Permission must apply for NPDES stormwater coverage from ADEM, if construction or land disturbance above the Ordinary High Water Mark, or any non-dredge/fill operations below the Ordinary High Water Mark and associated upland dredge disposal sites that will equal or exceed one (1) acre or that are part of a larger common plan of development or sale in which disturbed acreage will eventually equal or exceed (1) acre.

ADEM's Coastal Program manages uses and activities having the potential to significantly impact the coastal portions of Alabama and/or its resources. The Coastal Area is comprised of only a portion of Mobile and Baldwin counties and is defined as the lands and waters seaward of the continuous ten-foot contour. ADEM issues Coastal Programs Non-Regulated Use Permits for commercial and residential developments greater than 5 acres in size, construction on Gulf-fronting properties intersected by the Construction Control Line, and groundwater wells that exceed 50 gallons per minute of water withdrawal. ADEM also must certify that permits issued by federal and state agencies, and projects conducted by those agencies, are consistent with the Coastal Program. ADEM accomplishes this by reviewing applications for permits submitted to other agencies. Therefore, it is recommended that applicants having development plans, or even considering development in the Coastal Area, consult with ADEM Coastal Program staff as soon as possible in the project development stage so that the applicant can learn of applicable requirements. Questions involving projects in the coastal area should be directed to the ADEM Coastal Office in Mobile.

You may also wish to contact: (1) the U.S. Fish & Wildlife Service and the Alabama Department of Conservation & Natural Resources. These are the Federal and State agencies, respectively, that have primacy and statutory authority to address potential impacts to endangered or threatened species, (2) the Office Of Water Resources, Alabama Department of Economic and Community Affairs, which is the State agency with primacy and statutory authority to address potential water quantity concerns or issues, (3) the State Fire Marshall and the Alabama Department of Industrial Relations which are the State agencies with primacy and statutory authority to address potential safety considerations regarding blasting, (4) the Alabama Department of Industrial Relations which requires permit coverage and reclamation bonding for most non-coal mining sites, (5) the Alabama Historical Commission which is the State agency with primacy and statutory authority to address preservation or potential impacts to surrounding or onsite historical or archaeological sites, (6) your local county health department for issues related to onsite sewage management, and (7) your local municipal or county government, or local zoning and planning agency, if applicable, for additional approvals that may apply to your project.

In recognition that projects are site specific in nature and conditions can change during project implementation, the Department reserves the right to require the submission of additional information or require additional management measures to be implemented, as necessary on a case–by-case basis, in order to ensure the protection of water quality. Responsibility for compliance with ADEM rules and permit requirements are not delegable by contract or otherwise. The operator or owner must ensure compliance. Any violations resulting from the actions of such person may subject the operator/owner to enforcement action.

ADEM permitting decisions are predicated on current regulatory requirements, established engineering standards and technical considerations, best management practices information, and formal administrative procedures in conformance with Departmental regulations and applicable Alabama law. Issuance of permit coverage by ADEM neither precludes nor negates an operator/owner's responsibility or liability to apply for, obtain, or comply with other ADEM, federal, state, or local government permits, certifications, licenses, or other approvals. ADEM permit coverage does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to persons or property or invasion of other private rights, trespass, or any infringement of Federal, State, or local laws or regulations.

If you have any questions or need additional information regarding construction stormwater permitting, please contact the Water Division in Montgomery at (334) 271-7700 or cswmail@adem.state.al.us.

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

February 18, 2016

TO WHOM IT MAY CONCERN:

DRAFT ENVIRONMENTAL ASSESSMENT – WIDOWS CREEK FOSSIL PLANT DECONSTRUCTION DRAFT ENVIRONMENTAL ASSESSMENT

The Tennessee Valley Authority (TVA) has prepared a Draft Environmental Assessment (EA) to evaluate the disposition of buildings and physical structures at the Widows Creek Fossil Plant (WCF) in Jackson County, Alabama, which are no longer used for their original purpose of power generation.

In an effort to reduce emissions and in response to a regulatory agreement with various agencies and organizations, TVA is retiring some units in the TVA coal fleet. The Widows Creek Fossil Plant is one of the oldest plants in TVA's fleet. WCF Units 1-6 were retired under an agreement between TVA and the U.S. Environmental Protection Agency. Units 7 and 8 were retired for financial and regulatory reasons.

The purpose of this assessment is to determine the best alternative for disposing of the retired buildings and structures. The draft EA evaluates five alternatives:

(A) assess, close and secure power production facilities, and implement an operations and maintenance program to preserve structures and equipment;
(B1) demolish the facility to grade with controlled explosive demolition of Units 1-8 chimneys;
(B2) demolish the facility to grade with Units 1-8 chimney dismantlement;
(B3) demolish the facility to grade with Units 1-8 chimney hybrid demolition/dismantlement; or
(C) take no action.

The draft EA describes the anticipated impacts associated with the disposition of the WCF retired facilities. The Draft EA is available at: https://www.tva.com/nepa.

Your comments are invited on the draft EA through March 15, 2016. Written comments should be sent to Ashley Farless, Tennessee Valley Authority, 1101 Market St., BR4A, Chattanooga, TN 37402. Comments also may be submitted online at: http://www.tvanepacomments.com/. If you have any questions, please contact Ashley Farless at 423-751-2361 or arfarless@tva.gov.

Sincerely,

Amy B. Henry
Manager, NEPA Program & Valley Projects
Safety, River Management and Environment

CBF:CSD

From: Rowland, Bobby A [mailto:BRowland@adem.state.al.us]
Sent: Thursday, February 25, 2016 4:52 PM
To: Farless, Ashley Robin
Subject: Widows Creek Fossil Plant - Asbestos Related to Demolition

TVA External Message. Please use caution when opening.

Ashley,

I have received this letter dated 2/18/16 about the Widows Creek Fossil Plant. As part of the National Emission Standard for Asbestos an asbestos inspection and notification to the Department would be required before demolition took place. Our ADEM form 496 would need to be submitted 10 working days prior to any asbestos abatement or demolition work began. The form can be found here http://adem.alabama.gov/DeptForms/Form496.pdf

Also, The Department may perform inspections during the abatement and demolition. Would there be any specific protocols we would need to follow to perform these inspections?

If you have any questions let me know.

Thanks,

Bobby Rowland
Special Services Section
Air Division
Alabama Department of Environmental Management
Post Office Box 301463
Montgomery, Alabama 36130-1463
(334)271-7962 - Office

LANCE R. LEFLEUR
DIRECTOR

ROBERT J. BENTLEY
GOVERNOR

Alabama Department of Environmental Management
adem.alabama.gov
1400 Coliseum Blvd. 36110-2400 ■ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ■ FAX (334) 271-7950

March 29, 2016

Ms. Ashley Farless
Tennessee Valley Authority
1101 Market Street, BR4A
Chattanooga, Tennessee 37402

Re: **ADEM Review Comments:**
Draft Environmental Assessment – Widows Creek Fossil Plant Deconstruction, dated February 18, 2016
Tennessee Valley Authority – Widows Creek Fossil Plant
Muscle Shoals, Alabama
EPA ID No. AL3 640 090 004

Dear Ms. Farless:

The Alabama Department of Environmental Management (ADEM or the Department) has reviewed the aforementioned report, received on February 22, 2016. Based on this review, the Department offers the following comments:

1. The Department recommends that the facility performs a proper waste characterization and make a waste determination on the concrete prior to using it onsite or in any other manner. Based on the results of that waste determination, the facility should manage the concrete appropriately.

2. The Department recommends that a proper waste characterization and determination be performed on anything containing lead based paint. Based on the results of this, those items should be managed accordingly.

Please respond to these comments within 30 days of receipt of this letter and submit the appropriate changes to the Environmental Assessment report. If there are any questions or concerns regarding this matter please contact Mr. Krishna Morrissette of the Governmental Hazardous Waste Branch at 334-394-4335 or via email at kmorrissette@adem.state.al.us.

Sincerely,

Stephen A. Cobb, Chief
Governmental Hazardous Waste Branch
Land Division

SAC/JW/KMM

cc: J Jason Wilson, ADEM
Kenneth Hickerson, TVA (email only)
Kelley Hartley, ADEM (email only)
Director, RCRA Division, US EPA Region IV
Scott Story, ADEM (email only)
Robert Morris, US EPA Region IV (email only)

Birmingham Branch
110 Vulcan Road
Birmingham, AL 35209-4702
(205) 942-6168
(205) 941-1603 (FAX)

Decatur Branch
2715 Sandlin Road, S.W.
Decatur, AL 35603-1333
(256) 353-1713
(256) 340-9359 (FAX)

Mobile Branch
2204 Perimeter Road
Mobile, AL 36615-1131
(251) 450-3400
(251) 479-2593 (FAX)

Mobile-Coastal
3664 Dauphin Street, Suite B
Mobile, AL 36608
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Comments: I believe at least one of the widows creek fossil plant units should be restored to mint condition and be made available for public view as a museum to memorialize a way of power generation that appears to be on it's way to becoming a figment of the past. my strong and emotional feelings for widows creek i express as follows: PEACEFULLY MY LADY SLEEPS. DREAMS OF YESTERYEAR SHE KEEPS. WHEN IN HER PRIME WITH POLISHED STEEL. HER HOTWELLS HOT AND CLEARWELLS CLEAR. HER COAL SCALES WEIGH. HER GLOBE VALVES WHEEL. HER BLAST GATES OPEN AS PRETTY AS YOU PLEASE. HER CHAIN OPERATORS PULL WITH EASE. HER PUMPS ALL PRIME AND HER MOTORS PURR. THIS IS ALL VERY BECOMING TO HER. HER SAFETYS DON'T WEEP. HER PACKINGS DON'T LEAK. HER COLDWELLS ARE FULL AND ALWAYS STICK DEEP. HER BENCHBOARD'S WHITE LIGHTS DO NOT DISAGREE WITH PISTOL GRIPS OR LPB. WITHOUT HOLDING CONTACTS WITH FLASHLIGHTS AND STICKS, OR PINCHING OF PENNIES OR AUO TRICKS. CONDENSER INLET VALVE MOTORS TORQUE STEM. WITH THE PUNCH OF A BUTTON. EVERY ONE OF THEM. HER LEVELS ARE NORMAL IN HER BLOWDOWN TANKS. HER HEATERS ATE TIGHT IN ALL OF HER BANKS. HER WATER AND OIL IS EASILY SEEN, FOR HER ONE HUNDRED THOUSAND SIGHT GLASSES ARE CLEAN. IR AND IK BLOW HER ASH AND HER SOOT. HER TURBINE SHELLS GLIDE ON HER TURBINE'S LUBED FOOT. HER DOWNCOMERS FULL AND HER RISERS WITH STEAM. HER AUOs WORK AS A WELL OILED MACHINE. HER TUBE COVERED LUNG, COUNTERWEIGHTED AND HUNG. SINGS SOFTLY SWEET SONGS LIKE HAVE NEVER BEEN SUNG. HER FEEDPUMPS FEED WATER TO HER DRUM WITHOUT FAIL. WHILE HER GRINDERS GRIND CLINKERS LIKE HOUNDS GUARDING HELL. A CHEATER IS FIXED TO HER HOGGER DOWN STAIR, BUT RARE IS AN AUO NEEDED DOWN THERE. FOR HER VACUUM AND TURBINE EXHAUST BOTH DO STAY. UNCHANGINGLY SWEET FOR EACH DAY AFTER DAY. AT HER CIRCULATING WATER PUMP'S INTAKE BAY. HER TRAVELING SCREENS TRAVEL OFT AS THEY MAY. HER BUBBLERS RUN WASH PUMPS TO KEEP THEM ALL FREE, FROM MILFOIL AND MINNOWS AND OTHER DEBRIS. HER MILLS POUND HOT CARBON WITH ALL OF THEIR MIGHT. HER PYRITE LINES PULL AND HER ASH PUMPS DON'T FIGHT. CONTROL VALVES DO TOIL WITH OIL AND SPRINGS WHILE HER BABBOTED JOURNALS SILENCE STEEL SHAFT SQUEEL RINGS. CATHEAD DIFFERENTIALS AUTOMATICALLY FEED. HER BURNERS WITH ALL OF THE COAL THAT SHE NEEDS. WHILE HER TURBINES ASCEND TO A SYNCHRONOUS SPEED. AND AS HER SCOPE RUNS PAST THE STROKE OF MIDNIGHT, HER OCB RED LIGHTS BURN BRILLIANTLY BRIGHT. HER CROSS-TIES STAY SHUT LIKE THEY VERY WELL SHOULD. AND SHE TIES TO THE LINE WHEN SHE SAID SHE WOULD. SHE CARRIES HER LOAD WHEN SHE'S NEEDED THE MOST. THROUGH NATURE'S WORST NIGHTMARES SHE'S FIRM AT HER POST. NOW THIS FINE LADY'S A GHOST. AS SHE SLEEPS. HER PIPED LUNGS WILL BE RIPPED FROM HER BREAST. HER WORLD RENOWNED STACK WILL BE LEVELED AT BEST. HER HAMMERHEAD CRANE'S EMPTY TALON IS FREE. SINCE HER BARGES ARE EMPTY OF COAL DON'T YOU SEE? AND BOB JONES, THAT OLD TUG. WILL JUST PULL, TOW AND SHOVE. PAST THE GRAVE WHERE HIS FRIEND USED TO BE. HER BITUMINUS PILES, ONCE MOUNTAINOUS AND VAST. WILL SIMPLY BE FIGMENTS OF HER SIX DECADE PAST. WHEN THEY'VE STRIPPED HER DOWN COLD. FROM HER HEAD TO HER TOE. OF HER METAL AND CONCRETE AND COAL. THEY WON'T EVEN LEAVE THERE A HOLE. AND I SWEAR BY WHAT'S GOOD. I BELIEVE THAT THEY WOULD. STEAL HER SOUL IF THEY THOUGHT THAT THEY COULD. THEY SHALL POINT ONE FINE DAY. THEY SHALL POINT AND THEY'LL SAY. THERE IN THAT PLACE. LIVED A LADY WITH GRACE. SHE LIVED LONG AND SHE FINISHED HER RACE. NONETHELESS MY HEART TRUELY WILL. BASK IN THE WARMTH OF HER STILL. MY LADY WILL THEN BE MADE WHOLE. WHEN HER SPIRIT EMBRACES MY SOUL.

Please do not let this awful thing take place.

John Douglas Brock
Assistant Unit Operator (retired)
Widows Creek Fossil Plant
Tennessee Valley Authority

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