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JOHN SEVIER FOSSIL PLANT DECONSTRUCTION
FINAL ENVIRONMENTAL ASSESSMENT
Hawkins County, Tennessee

Prepared by:
TENNESSEE VALLEY AUTHORITY
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Symbols, Acronyms, and Abbreviations

ACM	Asbestos-Containing Material
ACS	American Community Survey
APE	Area of Potential Effect
ARAP	Aquatic Resource Alteration Permit
AST	Aboveground Storage Tank
BMP	Best Management Practice
CFC	Chlorofluorocarbon
cfs	cubic feet per second
CO_2	Carbon Dioxide
dBA	A-weighted decibel
DCH	Designated Critical Habitat
DMR	Discharge Monitoring Report
EA	Environmental Assessment
EIP	Environmental Integrity Project
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ETNG	East Tennessee Natural Gas
FEMA	Federal Emergency Management Agency
GWP	Global Warming Potential
HAER	Historic American Engineering Record
HFC	Hydrofluorocarbon
HRM	Holston River mile
HUC	Hydrologic Unit Code
HVAC	Heating, Ventilation, and Air Conditioning
IMP	Internal Monitoring Point
IPPP	Integrated Pollution Prevention Plan
JCC	John Sevier Combined Cycle Plant
JSF	John Sevier Fossil Plant
Ldn	day-night sound level
Leq	equivalent sound level
LOS	Level of Service
mg/L	milligrams per liter
MGD	million gallons per day
MOA	Memorandum of Agreement
MW	megawatts
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NLEB	Northern long-eared bat
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O&M	Operation and Maintenance
ODS	Ozone-Depleting Substance
PCB	Polychlorinated Biphenyl
PFC	Perfluorocarbon
PPD	Project Planning Document
ppm	parts per million
RI	Remedial Investigation
SACE	Southern Alliance for Clean Energy
SELC	Southern Environmental Law Center

SF_6	Sulfur Hexafluoride
SFI	Sport Fishing Index
SHPO	State Historic Preservation Office
SPCC	Spill Prevention, Control, and Countermeasure
SR	State Route
SWPPP	Storm Water Pollution Prevention Plan
TCWN	Tennessee Clean Water Network
TDEC	Tennessee Department of Environment and Conservation
TDOT	Tennessee Department of Transportation
TVA	Tennessee Valley Authority
TWRA	Tennessee Wildlife Resources Agency
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
VSMP	Vital Signs Monitoring Program

CHAPTER 1 - PURPOSE OF AND NEED FOR ACTION

1.1 Introduction and Background

The Tennessee Valley Authority (TVA) John Sevier Fossil Plant (JSF) is located near Rogersville, Tennessee in Hawkins County. It is located on 750 acres of rolling land south of the Holston River near Holston River Mile (HRM) 106 on the Cherokee Reservoir (see Figure 1-1). TVA began operations at JSF in 1957 and continued to utilize the plant until 2012. The facility has four coal-fired generating units that produced 800 megawatts (MW) of electricity prior to its retirement.

The coal-fired power generation produced at JSF was replaced with a natural gas-fired combined-cycle plant on the John Sevier reservation. The combined-cycle plant began commercial operation in April 2012 and is an 880 MW facility. Generation at this site was transferred from coal to natural gas to help TVA maintain base-load generation and help TVA meet obligations to reduce nitrogen oxides (NO_x) and sulfur dioxide (SO_2) emissions under the Clean Air Act. The four JSF units are shut down and disconnected from TVA's transmission system.

1.1 Purpose and Need

The purpose of this project is to determine the future disposition of the physical structures associated with the retired coal-fired plant units, including the powerhouse, coal handling appurtenances, and surrounding support buildings. The closure of the Fly Ash Stack, Bottom Ash Pond, Chemical Treatment Ponds, Coal Yard, and Waste Stabilization Pond (Coal Yard Runoff Pond) are independent actions that, from a National Environmental Policy Act (NEPA) perspective, will be evaluated separately when it is determined how and when these activities will occur. TVA needs to determine the most cost-effective disposition solution while also considering safety, security, liability, and environmental risk at the plant site.

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 the site; conduct selective demolition; demolish the site to grade ("Brownfield"); or take no action. TVA is working with the Tennessee Department of Conservation (TDEC), U.S. Fish and Wildlife Service (USFWS), Tennessee Wildlife Resources Agency (TWRA), and Tennessee State Historic Preservation Commission in assessing the impact 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 the adjoining TVA facility and surrounding area for actions related to the proposed construction and operation of the John Sevier Combined Cycle Plant (JCC) and actions related to JSF prior to closing in 2012 generated by TVA, Spectra Energy Partners (2010), East Tennessee Natural Gas (ETNG), and the U.S. Army Corps of Engineers (USACE). The contents of these documents help describe the JSF Deconstruction project area and are incorporated by reference as appropriate. Documents reviewed are listed below.

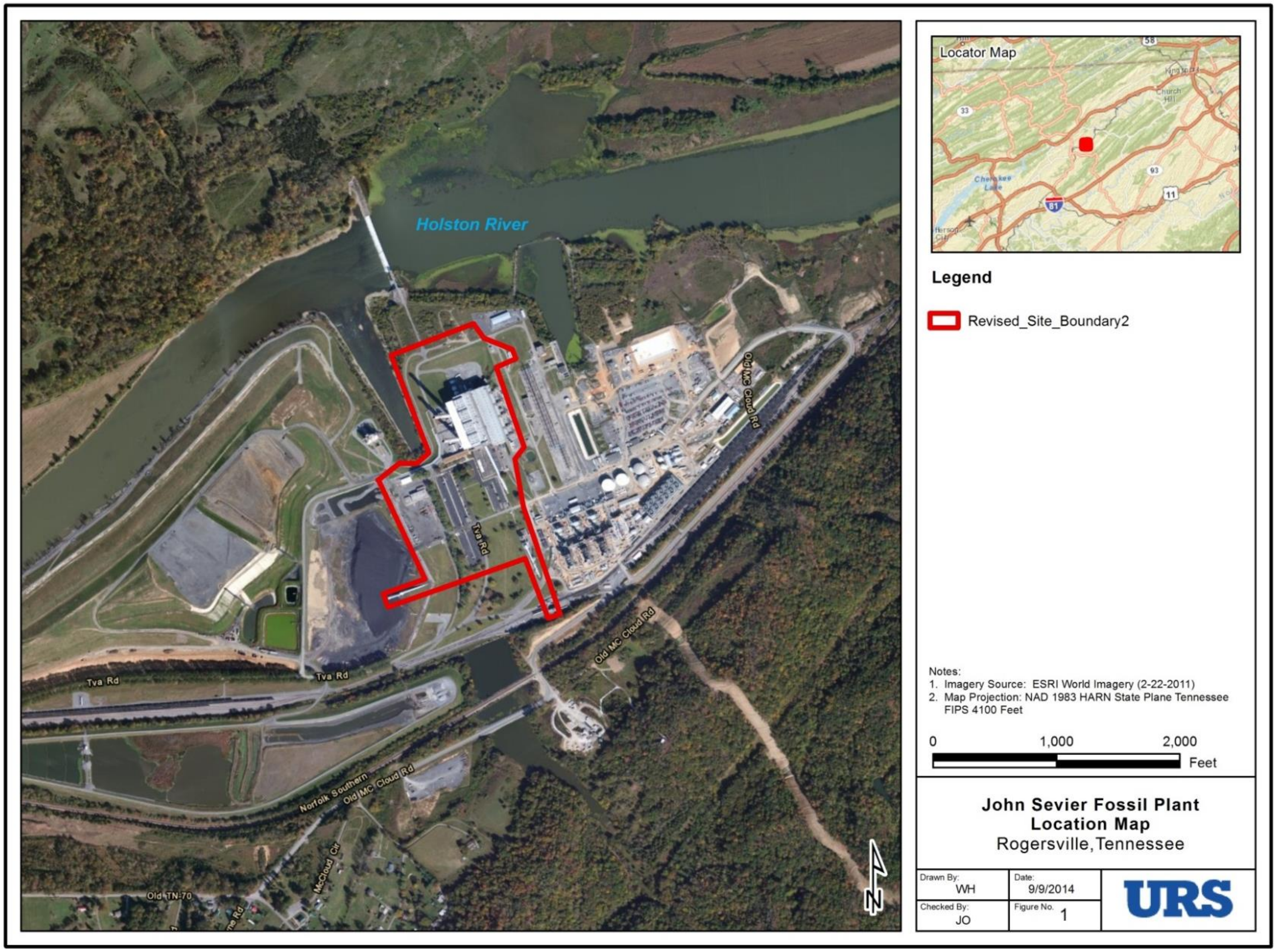

Figure 1-1. JSF Location Map

- *John Sevier Fossil Plant Addition of Gas-Fired Combustion Turbine/Combined-Cycle Generating Capacity and Associated Gas Pipeline Environmental Assessment* (TVA 2010). This EA describes the construction, operation, permitting, and environmental setting directly adjacent to JSF.
- *John Sevier Fossil Plant Intake Debris Removal Environmental Assessment* (TVA 2005). This EA established protocols for future routine maintenance necessary to maintain the raw water intake structure for the JSF and JCC facilities.
- *John Sevier Fossil Plant Units 1 Through 4 Control Systems for Reduction of Nitrogen Oxides Environmental Assessment* (TVA 2006a). This EA evaluates six options for the further removal of NO_x from coal combustion gases at JSF. This EA discusses TVA’s strategy to reduce NO_x to benefit regional air quality.
- *Installation of Flue Gas Desulfurization System on John Sevier Fossil Plant Draft Environmental Assessment* (TVA 2009a). TVA prepared a draft EA for a proposal designed to help reduce SO_2 emissions at JSF by installing dry scrubber technology.
- *Northeastern Tennessee Project Draft Environmental Assessment* (Spectra Energy Partners 2010). ETNG prepared a draft EA in cooperation with USACE for a proposal to construct and upgrade the 28.0 mi of pipeline to provide natural gas transmission service for the proposed TVA gas-fired facility on the JSF Reservation.

1.4 Scope of the Environmental Assessment

TVA has prepared this EA to comply with 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, potential effects to the following environmental resources are addressed in detail in this EA:

- Climate and greenhouse gas
- Air quality
- Groundwater and geology
- Solid waste and hazardous materials and waste
- Aquatic ecological resources
- Vegetation
- Wildlife
- Threatened and endangered species
- Surface water
- Floodplains
- Natural areas, parks and recreation
- Wetlands
- Socioeconomics and environmental justice
- Cultural and historic resources
- Land use and prime farmland
- Visual resources
- Noise
- Safety
- Utilities and service systems
- Transportation

1.5 Necessary Permits or Licenses

The environmental permits to be obtained for the activities related to TVA's action include:

- Air Construction Permit and modification of existing Title V Permit;
- Modification of the existing National Pollutant Discharge Elimination System (NPDES) Permit for JSF;
- Coverage under Tennessee General NPDES Permit for Discharges of Storm water Associated with Construction Activities;
- Standard best management practices (BMPs) and Integrated Pollution Prevention Plan (IPPP) for the addition of a storm water pond if required; and
- Coordination with the USFWS as needed to disturb or remove active bird nests under Alternatives B and C.

Information regarding the above permits or coordination is provided in Appendix A. No permits or licenses would be required specifically for solid or hazardous transportation-related activities under any of the potential alternatives, with the exception of hauling hazardous materials for the purpose of disposal off-site. The selected contractor would be responsible for ensuring necessary permits are obtained and implemented, manifests completed, and hazardous waste disposal properly reported.

CHAPTER 2 - ALTERNATIVES

Descriptions of the proposed action and its alternatives, a brief comparison of their environmental effects, and TVA's preferred alternative are presented in this chapter.

2.1 Description of Alternatives

TVA has determined that there are three action alternatives to meet the purpose and need defined in Chapter 1. These alternatives and a No Action Alternative were evaluated in this EA and are described below. Costs associated with each action alternative were estimated as part of the project planning document (PPD) (HDR Engineering, Inc. 2014). The estimated costs were based on a projection of the initial engineering and capital cost plus the 20-year operation and maintenance (O&M) cost. Based on these estimates, Alternative C is the lowest cost action alternative, with Alternative A the highest and B the next highest. Over the 20-year period, Alternative C is 17 percent of the cost of Alternative A and 21.6 percent the cost of Alternative B. Alternative D would be relatively low cost but would not meet the purpose and need of the project. The preferred alternative will provide the best balance of these considerations for TVA and is planned, if action is selected, for approximately 2016 to 2019.

2.1.1 Alternative A – Assess, Close, and Secure Site

Under Alternative A, TVA would close and secure the JSF coal facility. Existing structures would remain in place and high risk environmental and safety issues would be addressed. Condenser cooling water intake tunnels would remain in place for use at JCC. Tunnels not needed for JCC would be abandoned in place by installing bulkheads. Screening or bulkheads would be installed or upgraded to prevent fish movement into the tunnels. BMPs will be utilized to minimize the contact of uncured grout or concrete with the water column. The plant staff and regular maintenance would be minimized to the extent practicable and labor from other TVA sources would be utilized as necessary.

Alternative A would include identification and documentation of the utilities left in place and operational. For example, one utility identification task would be to evaluate the existing lighting fixtures to determine which lights need to remain in service for areas that are routinely used. Buildings where lighting remains in service would need periodic inspections. Water service will remain at the powerhouse only for fire suppression but will be disconnected to all other buildings. No heat or air conditioning will be provided to any buildings or the powerhouse.

Specific environmental issues to address with this alternative include (but are not limited to) the removal of hazardous materials such as asbestos-containing materials (ACMs), mercury, polychlorinated biphenyls (PCBs), and lead-based paint. Existing structures would be assessed for materials such as glaze, caulk, building siding, roofing materials, electrical cable, and cable trays. Certain electrical wiring installed at JSF in the 1950s contained PCBs. While the quantity is likely minimal, there is the potential that some PCB wiring still exists. Universal waste and lead batteries from emergency lighting are present at the site as well as mercury switches and bulk chemical inventory. Review of environmental impacts related to the closure of sanitary sewage facilities, sewer pipelines, and septic tanks would need to be included as well as aboveground storage tanks (ASTs) and underground storage tanks (USTs). The level of effort to maintain environmental compliance of structures and equipment left in place after closure would be addressed if this alternative is selected.

2.1.2 Alternative B – Selective Demolition

Alternative B involves the same objectives as Alternative A of assessing, securing, and closing some buildings, but seeks to accomplish this objective by reducing future maintenance costs by removing selected outlying structures and leaving the main powerhouse standing.

Structures to be removed would include the sanitary septic system, utility building, reclaim hopper, stocking out equipment, two stack chimneys, office wing, service bay, selected items within the switchyard, condensate storage tanks, hydrogen trailer area, shed facilities in the northeast corner of the site, truck scales, coal control tower and adjacent buildings, rotary car dumper/hopper building, and selected portions of the coal handling equipment, including oil-filled coal conveyor magnets within tunnels.

Other activities would include (but are not limited to) removal of selected street lighting, concrete slabs, and foundations; backfill of basements, pits, and trenches associated with structures to be removed; installation of topsoil and seed for disturbed areas; removal of portions of coal conveyor tunnels; installation of bulkheads in various locations; plugging/abandonment of selected electrical manholes; and removal of aboveground gas and diesel tanks. TVA would not deconstruct but would close and secure the powerhouse as a part of this alternative. This would include the maintenance of sumps needed to control seeps, limited electrical, and site security.

Alternative B would have hazardous materials concerns similar to those listed in Alternative A. Reducing the amount of structures and equipment would reduce O&M costs/personnel time compared to Alternative A. A conceptual site plan for Alternative B is provided in Appendix B.

2.1.3 Alternative C – Demolition to Grade (“Brownfield”)

Alternative C involves the removal of retired or abandoned structures, roads, and parking lots associated with the coal-fired facility. The structures to be removed down to surrounding grade would include the powerhouse and outlying structures. Basements would be backfilled, pits and trenches would be brought up to surrounding grade, and disturbed areas would be vegetated with topsoil and seed. Any remaining electrical manholes would be plugged and abandoned.

Alternative C would include removal of the items discussed in Alternatives A and B plus the solid and hazardous waste and materials in the powerhouse and loose combustible debris, light bulbs and ballasts, and street lighting. Some concrete slabs and foundations would be removed.

Demolition to grade or 2 ft below grade would turn the current property into a “brownfield.” Brownfields are lands that are no longer suitable for agriculture, but can be used for commercial or industrial purposes (EPA 2014a). Buildings would be removed, including parts or all of the foundations, and basements would be backfilled, pits and trenches would be brought up to surrounding grade, and disturbed areas would be vegetated by seeding with grass. Removal of the powerhouse and outlying structures would remove the need to have permanent O&M staff stationed onsite. Regular inspections of the structures and equipment would no longer be necessary.

Removal of the powerhouse and outlying structures would remove the need to have permanent O&M staff stationed onsite. Regular inspections of the structures and equipment would no longer be necessary. A conceptual site plan for Alternative C is provided in Appendix B.

2.1.4 Alternative D – No Action

Under the No Action Alternative, TVA would not perform any deconstruction or other disposition activities and would continue to maintain the structures at JSF in their current state. Currently, four generating units are disconnected from TVA's transmission system. Most of the coal plant systems have been shut down except for the electrical distribution system, ash sluice/high pressure fire protection water supply, sump pumps, dewatering pumps, coal yard run-off pumps, chemical pond pumps, dry stack toe drain pumps, aircraft warning lights, and plant ventilation. The condenser cooling water system is in natural circulation (low energy maintenance) mode.

Many of the large volume oil containers have been drained and the oil has been recycled. Various high value machines and equipment have been transferred to other plants. Activities are underway to provide long-term support facilities for the switchyard and electrical control building, which would continue to operate as a vital TVA transmission resource under all alternatives.

The retired coal plant is currently staffed with two auxiliary unit operators working four days per week to monitor the systems that are still in service and respond to any emerging issues (environmental or otherwise). This staff is supplemented with technicians from TVA's adjacent JCC, who provide support the other three days of the week.

No routine maintenance is currently performed at the coal facility. The combined cycle plant provides any necessary maintenance support. Systems and structures are degrading rapidly and lighting in the facility is poor. Peeling lead paint, failing concrete, buckling floor tiles, and asbestos breakdowns are examples of the onsite hazard risks. There are also issues with the functionality of sump pumps and some are not considered to be viable in the long-term.

2.1.5 Alternatives Considered but Eliminated From Further Discussion

During alternatives development for this project, TVA engaged in discussions to consider potential reuse of the buildings at JSF. TVA determined that adaptive reuse of the buildings is not feasible due to the long lead time involved in developing alternative uses and lack of market demand for a large industrial site at this location. Therefore, adaptive reuse of the buildings is not considered in the evaluation.

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			
	Alternative A	**Alternative B**	**Alternative C**	**Alternative D**
Cost	High cost	High cost	Lowest cost	Low cost
Climate and greenhouse gas	No impact	No impact	No impact	No impact
Air quality	No impact	Minor short-term impacts	Minor short-term impacts	No impact

Resource Area	Impacts			
	Alternative A	Alternative B	Alternative C	Alternative D
Groundwater and geology	Potential long-term impacts to groundwater with structures left in place	Potential long-term impacts to groundwater with structures left in place	No impact	Potential long-term impacts to groundwater with structures left in place
Solid waste and hazardous materials and waste	Potential long-term impacts to human health and the environment with structures left in place	Potential long-term impacts to human health and the environment with structures left in place	No impact	Potential long-term impacts to human health and the environment with structures left in place
Aquatic ecological resources	No significant impact	No significant impact	No significant impact	No significant impact
Vegetation	No impact	No impact	No impact	No impact
Wildlife	No significant impact	No significant impact	No significant impact	No significant impact
Threatened and endangered species	No impact	No impact	No impact	No impact
Surface water	No impact	No significant impact	No significant impact	Potential impact
Floodplains	No impact	No impact	No impact	No impact
Natural areas, parks and recreation	No impact	No impact	No impact	No impact
Wetlands	No impact	No impact	No impact	No impact
Socioeconomics and environmental justice	No impact	Short-term beneficial impacts	Short-term beneficial impacts	No impact
Cultural and historic resources	No significant impact	No significant impact	No significant impact	No significant impact
Land use and prime farmland	Negative impact	Beneficial impact	Beneficial impact	Negative impact
Visual resources	Negative impact	Minor beneficial impacts	Potential beneficial impact	Negative impact
Noise	No impact	short-term impacts	short-term impacts	No impact
Safety	Potential impact	Potential impact	Potential long-term benefits	Potential impact
Utilities and service systems	No impact	No impact	No impact	Potential long-term impact
Transportation	Short-term impact	Short-term impact	Short-term impact	No impact

2.3 Identification of Mitigation Measures

The following mitigation measures and BMPs have been identified to reduce potential environmental effects:

- Implement erosion controls and BMPs for storm water impacts, particularly for Alternatives B and C;

- For Alternatives B and C, schedule demolition activities to avoid disturbing ospreys while nesting, or remove nests when ospreys are not present;
- One month prior to demolition activities, conduct bat survey and removal for Alternatives B and C;
- Remove hazardous material and solid waste for Alternatives A, B, and C;
- Implement dust control during demolition for Alternatives B and C;
- Conduct groundwater monitoring for Alternatives A, B, and D;
- Conduct continued O&M and security for Alternatives A, B, and D; and
- Under Alternative C, reroute potable water from JSF to JCC.

2.3.1 Air Quality
Preventing moisture and dampness within remaining structures would mitigate the amount of algae and/or mold growth, thereby preventing impacts to indoor air quality that otherwise could threaten human health under Alternatives A, B, and D.

Under Alternatives B and C, the demolition contractor would be required to remove coal ash from the facilities prior to demolition and to 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 and 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 by as much as 95 percent. Additionally, TVA routinely requires onsite contractors to maintain engines and equipment in good working order.

2.3.2 Groundwater and Geology
Alternative C employs the BMP of removing any pathway for groundwater contamination within the affected area. Alternatives A, B, and D would require continuation of groundwater monitoring to assess potential future impacts.

2.3.3 Solid and Hazardous Materials and Waste
TVA would need to maintain security at the facility under Alternatives A, B, and D with fencing and security personnel. Operational personnel would also be required to operate systems at the facility. Trespassers and operation personnel would potentially be exposed to hazardous materials and waste onsite.

TVA would also need to assess periodically the condition of remaining site facilities and potentially hazardous wastes as they deteriorate and determine whether selective demolition would be needed at some point in the future.

2.3.4 Wildlife
Osprey and their nests have been observed on structures at the JSF. In order to avoid impacts to ospreys, demolition activities within 660 ft of the nests would not occur between March 1 and July 15 when osprey are nesting. Alternatively, nests may be removed between November and February when ospreys are not present. Deterrents would be installed where nests have been built in the past in order to prevent these birds from re-nesting in the same locations, as osprey are known to have high site fidelity.

2.3.5 Threatened and Endangered Species
Bats, including federally listed endangered species, are known to roost in abandoned buildings. If Alternative B or C is selected, an extensive survey of the main plant building

would be performed approximately one month prior to demolition. If listed bats are found, demolition actions would need to be coordinated with USFWS and/or TWRA.

2.3.6 Surface Water

Alternatives B and C include land disturbance, which would require a Storm Water Management Plan and BMPs. The current NPDES permit, Storm Water Multi-Sector Permit, Construction Storm Water Permit, State Operating Permit for the Pump and Haul of domestic wastewater, and Spill Prevention, Control and Countermeasures (SPCC) Plan may require modification for all alternatives.

2.3.7 Safety

TVA would need to maintain security at the facility under Alternatives A, B, and D with fencing and, if necessary, security personnel. TVA would also need to assess periodically the condition of remaining site facilities as they deteriorate and determine whether selective demolition would be needed at some point in the future.

2.3.8 Utilities and Service Systems

No mitigation measures would be required for Alternatives A, B or D. Under Alternative C, the existing potable water line that serves JSF would need to either be rerouted or preserved in its current location in order to maintain service to JCC.

2.4 The Preferred Alternative

TVA’s proposed action and preferred alternative is Alternative C, Demolition to Grade (“Brownfield”). Alternatives A, B, and D are discussed and analyzed as alternatives to this proposed action.

Alternative C, Demolition to Grade (“Brownfield”), has the least environmental impact of the four alternatives. Alternatives A, B, and D are less acceptable due to both short-term and long-term impacts and maintenance cost.

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 2014, published and unpublished reports, and personal communications with resource experts.

3.1 Climate and Greenhouse Gas

3.1.1 Affected Environment

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.

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 switch gear. SF_6 has replaced flammable-insulating oils in many applications and allows for more compact substations in dense urban areas.

HFCs and PFCs are used as alternatives to several classes of ozone-depleting substances (ODSs) 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. These systems would be eliminated with Alternatives A, B, and C.

Total 2012 U.S. emissions from SF_6 from equipment manufacturing and from electrical transmission and distribution systems were estimated to be 6.0 teragrams of carbon dioxide equivalents. This quantity represents a 77 percent decrease from the Environmental Protection Agency's (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.

Overall, fluorinated gas emissions in the United States have increased by about 83 percent between 1990 and 2012, largely because these substances are widely used as a substitute for ODSs. 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 2014b). According to the most recent U.S. Greenhouse Gas Inventory, emissions of fluorinated gases accounted for about 3 percent of total U.S. greenhouse gas emissions (EPA 2014b).

3.1.2 Environmental Consequences

Greenhouse gases with relatively long atmospheric lifetimes (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) tend to be evenly distributed throughout the atmosphere, and consequently global average concentrations can be determined. The global warming potential (GWP) of any potential release can be calculated using the factors presented in Table 3-1.

Table 3-1. Global Warming Potentials and Atmospheric Lifetimes (years) of HFC, PFC, and SF_6

Gas	Atmospheric Lifetime	100-year GWP	20-year GWP	500-year GWP
HFC-23	264	11,700	9,100	9,800
HFC-32	5.6	650	2,100	200
HFC-125	32.6	2,800	4,600	920
HFC-134a	14.6	1,300	3,400	420
HFC-143a	48.3	3,800	5,000	1,400
HFC-152a	1.5	140	460	42
HFC-227ea	36.5	2,900	4,300	950
HFC-236fa	209	6,300	5,100	4,700
CF4	50,000	6,500	4,400	10,000
C2F6	10,000	9,200	6,200	14,000
C3F8	2,600	7,000	4,800	10,100
C4F10	2,600	7,000	4,800	10,100
C-C4F8	3,200	8,700	6,000	12,700
C5F12	4,100	7,500	5,100	11,000
C6F14	3,200	7,400	5,000	10,700
SF6	3,200	23,900	16,300	34,900

Source: EPA 2014c.

3.1.2.1 Alternatives A, B, and C – Assess, Close, and Secure Site

Efforts would be made to avoid releases from any equipment containing SF_6 or HFCs. In the event a release does occur, it can be expected to be insignificantly small, limited to the amount of gas in a specific container. Equipment containing PFCs is not present onsite.

3.1.2.2 Alternative D – No Action

Releases from equipment containing SF_6 or HFCs, if left in place, may occur over time. In the event a release does occur, it can be expected to be insignificantly small, limited to the amount of gas in a specific container. Equipment containing PFCs is not present onsite.

3.2 Air Quality

3.2.1 Affected Environment

Hawkins County is an “attainment” area for all air pollutants (http://www.epa.gov/oaqps001/greenbk/ancl.html accessed March 30, 2015). Currently there are no air discharges due to operations at JSF as it has been closed down since 2012. The primary mechanisms for causing potential effects to local air quality considered in this assessment are the demolition of buildings and structures and transportation-related activities. Both generate fugitive dust, which is commonly measured by the size of particulate matter. A common unit of measure for dust is PM_{10} (particulate matter less than 10 microns in diameter). Likewise, exhaust from internal combustion engines used to power trucks and demolition equipment can affect local air quality, especially if the engines are not maintained in proper working condition.

3.2.2 Environmental Consequences

3.2.2.1 Alternative A – Assess, Close, and Secure Site

Under Alternative A, there would be no near-term direct effects to local air quality because there would be no immediate changes in the local area (i.e., the proposed demolitions would not occur due to TVA action, and removal of demolition material would not occur).

Indirect negative impacts to air quality under Alternative A 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 individuals that would potentially contact this environment would be short-term exposure of trespassers or temporary maintenance workers.

3.2.2.2 Alternative B – Selective Demolition and Alternative C – Demolition to Grade ("Brownfield")

Demolition of the buildings and structures would likely 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 affect 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. Based on the large size of the TVA JSF facility, this is likely the case. The potential drift distance of particles is governed by the release point of the particle, the 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 mph), particles larger than about 100 µm are likely to settle out within 6 to 9 meters (20 to 30 ft) from the edge of the road or other point of emission. Particles that are 30 to 100 µm in diameter are likely to undergo slower settling. These particles, depending upon the extent of atmospheric turbulence, are likely to settle within a few hundred feet from the road. Smaller particles, particularly PM_{10}, and $PM_{2.5}$ have much slower settling velocities and are much more likely to have their settling rate reduced by atmospheric turbulence" (EPA 2013).

Site preparation and vehicular traffic over paved and unpaved roads at the site would result in the emission of fugitive dust PM 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 on the roadways to reduce fugitive dust emissions

The demolition contractor would be required to remove coal ash from the facility proposed for deconstruction prior to demolition of that facility and 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 by as much as 95 percent. Additionally, TVA routinely requires onsite contractors to maintain engines and equipment in good working order to reduce potential carbon monoxide emissions from poorly operating engines and equipment and improve fuel efficiency. With these measures in place, potential effects to local air quality from the proposed demolitions are expected to be minor and temporary.

Long-term, indirect impacts to local air quality from the eventual site development would depend on the land use and activities proposed at that time. It would be speculative to assess those potential effects since the information related to future site development is not available at this time.

3.2.2.3 Alternative D – No Action

Under the No Action Alternative, there would be no near-term direct or indirect impacts to local air quality because there would be no immediate changes in the local area (i.e., the proposed demolitions would not occur due to TVA action).

Indirect negative impacts to air quality under Alternative A could occur as algae and mold grow within structures, which would increase due to the limited maintenance schedule. Algae and mold growth could create an unhealthy environment within the abandoned structures.

3.3 Groundwater and Geology

3.3.1 Affected Environment

The JSF site is located in the Valley and Ridge Province of the Appalachian Highlands. The region is characterized by long, narrow ridges and somewhat broader intervening valleys trending northeast-southwest. The ridges are typically parallel and have relatively level tops. They are composed of resistant sandstones and less soluble limestones and dolomites, whereas the intervening valleys are developed in more easily weathered shales and more soluble limestones (Kellberg and Benziger 1952).

The facility occupies the present floodplain and an older, higher river terrace to the southeast. The present floodplain, averaging about 800 ft in width, extends the full length of the site and has an average surface elevation of about 1,080 ft. The older terrace rises to an average elevation of about 1,140 ft and extends southeastward approximately 2,500 ft to the base of a low ridge. The terrace is presently dissected by tributary streams.

The site is situated on a corner of the old river terrace bounded by the present floodplains of the Holston River to the northwest and Dodson Creek to the southwest. Topography across the disposal area currently slopes and drains to the Holston River, Dodson Creek, and an unnamed ephemeral stream flowing generally northeastward across the eastern end of the bottom ash disposal area and sedimentation pond. Three shallow geologic units of relevance to the EA are present beneath the site. These include, in descending stratigraphic order, Recent and Plio-Pleistocene age alluvial deposits associated with the Holston River and its tributaries, residuum derived from weathering of underlying rock, and the Sevier shale (Ordovician age).

The alluvial deposits generally mantle the entire site and consist of unconsolidated sandy, clayey silt with interspersed pebbles and cobbles. The recent alluvium occupies the present floodplains of the Holston River and its tributaries where surface elevation is below about 1,100 ft. It is present only to the southwest of the site. Older terrace alluvium is generally present beneath upland portions of the site above elevation 1,100 ft. Thickness of the alluvium tends to be greatest within the upland interior portions of the site and thinnest along the southeastern side of the site. Overall thickness ranges from 0 ft to 39 ft and averages approximately 14 ft.

The residual soils are generally encountered beneath the alluvium deposits. Residuum primarily consists of unconsolidated silts, clays, and weathered shale, and typically exhibits weak relict structure of the parent shale bedrock. Thickness varies widely across the site, ranging from 0 ft to 60 ft and averaging 21 ft.

The Sevier shale comprises bedrock beneath the site. The Sevier shale consists of dark gray to black, slightly calcareous shale with thin interbedded limestone layers ranging up to about 0.3 ft in thickness. Shales vary from fresh to friable with some layers showing evidence of moderate weathering. Bedding attitude is variable often ranging from 40 to 90 degrees within the same core hole from which the presence of small-scale, tightly folded anticlines and synclines as commonly observed in local bedrock exposures. Several cores indicated faults of unknown displacement intersecting bedding at various angles. Brecciation of thin limestone layers within a shale matrix was also observed (TVA 2010). No borings completed on JSF have fully penetrated the Sevier shale, but Rodgers (1953) estimates total thickness is at least 2,500 ft. The first occurrence of groundwater beneath the site is generally either in the basal portion of the soil overburden or upper bedrock, depending on location and time of year. Groundwater is derived from infiltration of precipitation through the soil overburden and from lateral groundwater inflow originating in upland recharge areas to the southeast. Movement of shallow groundwater is generally northwestward across the site toward the Holston River and Dodson Creek where it ultimately discharges. The principal aquifer in the site locality is the Sevier shale, consisting of thinly bedded, slightly calcareous shale with interbedded limestone layers. Faulting and jointing has provided limited access for circulating groundwater as evidenced by iron staining along joints and fractures and moderate weathering of some layers. However, the absence of thick sections of pure limestone has precluded cavity development. Because of limited secondary porosity and low rock matrix permeability, the upper portion of the Sevier shale in the site locality is generally capable of supplying only small domestic and farm water demands.

An inventory of water supply wells on the south side of the Holston River within 1 mi of the site was performed in July 2014 (Luke Ewing, TDEC Director of Well Licensing Program, personal communication, 2014). Local wells were identified using the TDEC well database, discussions with the Persia Water Utility, which serves the region, and review of Hawkins County property assessments. The TDEC information included 157 well locations; however, only a small number were within the 1 and 2 mi radii. Five private water supply wells were identified within 1 mi and 10 private water supply wells were identified within 2 mi of the site. Information regarding these wells within 1 mi of the site is listed in Table 3-2, with locations shown on Figure 3-1. This includes one residential well (Well No. 1) located on TVA property. Well sources and depths were not confirmed, but given the limited selection of aquifers available locally and the limited demands typical of domestic or farm users, it is reasonable to assume most wells obtain water from the Sevier shale or possibly the alluvial deposits. No water quality data were available for these wells.

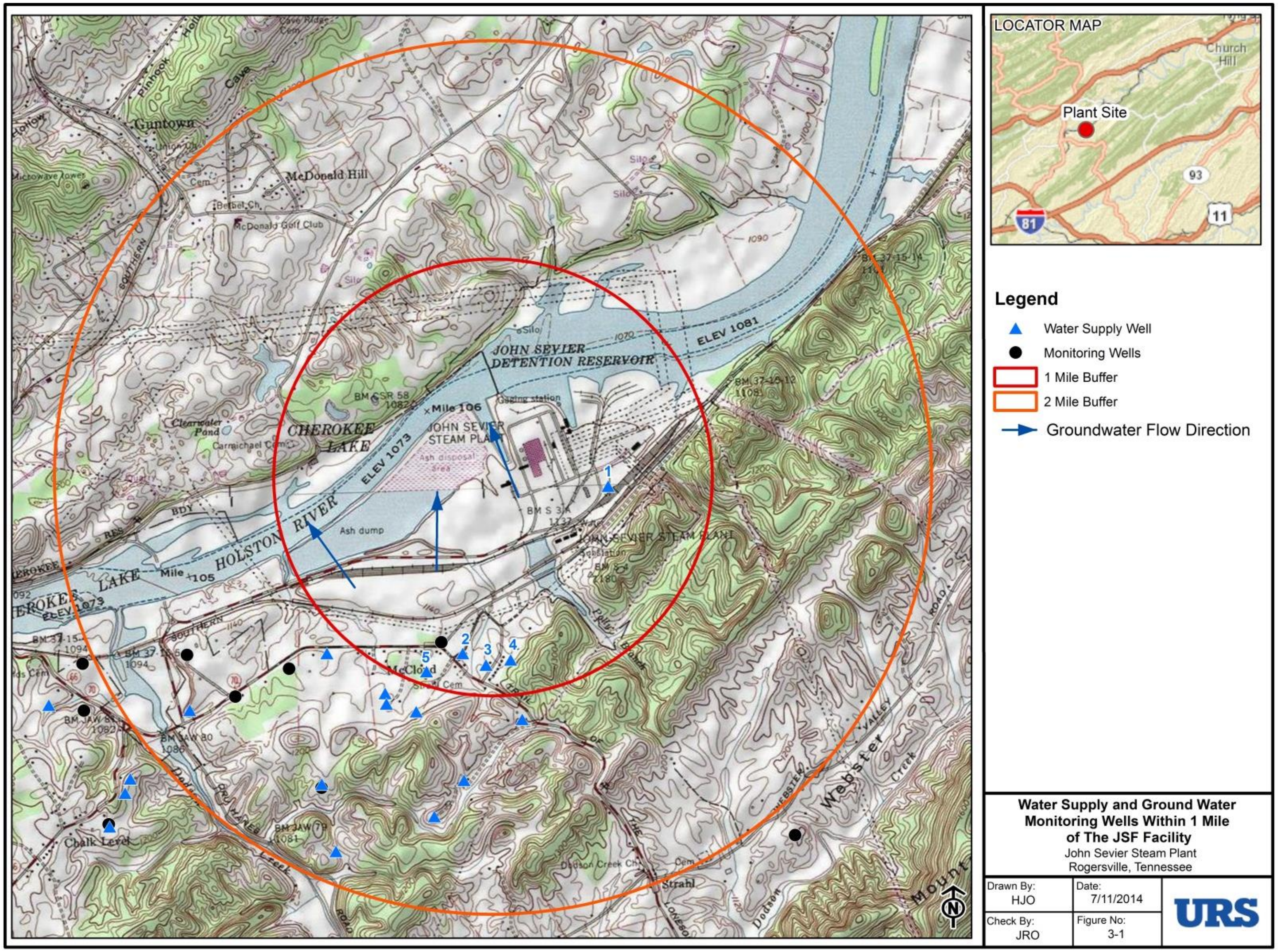

Figure 3-1. Water Supply Wells within 1 mi of JSF

Table 3-2. Water Supply Wells within 1 mi of JSF

Point	Longitude (*dd)	Latitude (*dd)	Depth (ft)
1	-82.958	36.375	400
2	-82.986	36.367	165
3	-82.983	36.364	94
4	-82.980	36.366	120
5	-82.977	36.360	465

(*) dd = decimal degrees

3.3.2 Environmental Consequences

3.3.2.1 Alternative A – Assess, Close, and Secure Site

Under this alternative, potential stored contaminant sources at the JSF power plant buildings would be removed. Existing structures would remain in place, and high risk environmental and safety issues would be addressed. Without complete removal of the structures, there is the potential for materials to degrade, make contact with surface water, wind erosion or degrade, and become leachable into the groundwater. Over time lead from lead-based paint, metals in wiring and pipe, and oil from retired equipment may find its way to soils and groundwater. Maintenance activities associated with environmental items would continue for decades. Selection of this alternative may result in long-term impacts.

3.3.2.2 Alternative B – Selective Demolition

Structures selected for potential demolition are listed in Section 2.

Alternative B includes hazardous materials concerns similar to those listed for Alternative A, primarily because the powerhouse would not be demolished in this alternative. Selection of this alternative may result in potential long-term impacts similar to Alternative A, but to a lesser extent as the potential for materials from the powerhouse to degrade by wind, rain, or biological factors would continue to exist and potentially reach the groundwater system.

3.3.2.3 Alternative C – Demolition to Grade ("Brownfield")

Alternative C is demolition to ground surface and below in some situations. This action would result in the lowest risk to soils and groundwater as known contaminants would be removed from the site. The potential for contamination of soils and groundwater is unlikely and no significant impacts are anticipated.

3.3.2.4 Alternative D – No Action

Under this alternative, the facility and associated structures would not be demolished and solid and hazardous waste would remain, resulting in the highest potential risk of exposure. If the facility is left as is, it would present a higher risk than Alternatives A, B, and C for the potential to contaminate soil and groundwater as systems and structures are degrading rapidly. Peeling lead paint, failing concrete, buckling floor tiles, and asbestos breakdowns are examples of the onsite hazard risks. There are also issues with the long-term functionality of sump pumps. Selection of this alternative may result in long-term impacts.

3.4 Solid Waste and Hazardous Materials and Waste

3.4.1 Affected Environment

The following materials are known or expected to be present on the JSF site:

- ACM.

- Mercury in equipment switches.
- PCBs in transformers and other oil-filled equipment. Certain electrical wiring installed at JSF in the 1950s contained PCBs. There is potential that some quantity of PCB wiring still exists at JSF, although the quantity of this wiring present is expected to be minimal.
- Lead-based paint.
- 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.).
- ASTs and USTs and oil/water separators.
- Containerized petroleum products or chemicals.
- Chlorinated fluorocarbons (CFCs) (Freon) from equipment.
- Radioactive sources from equipment.
- Batteries in bulk and associated fixtures including DCS UPS batteries and lead batteries from emergency lighting.
- Loose combustible debris (tenant debris).
- Street lighting.
- Fugitive dust emissions.
- Heavy metals.
- Creosote (in railroad ties).

TVA conducted a preliminary assessment of the buildings and structures proposed for demolition to identify materials containing asbestos, lead paint, PCBs, mercury, and other hazardous materials and chemicals (HDR Engineering Inc. 2014). Additionally, a comprehensive listing of hazardous materials and petroleum products documented in the *JSF Integrated Pollution Prevention Plan (IPPP) and Spill Response Plan* (TVA 2012a) was evaluated and used as reference during a site visit on June 25, 2014. During the fall of 2014, 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 (TVA 2015). The materials and quantities listed in the following tables are taken from the previously submitted reports and the 2015 Hazardous Materials Survey Report. The location of the buildings and materials are provided in the TVA 2015 survey report. Results are summarized in Appendix C. Concrete slabs and foundations to be removed are not listed. Specific oil stains or areas that may contain materials of concern would be addressed prior to demolition. 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 plans to remove hazardous materials prior to implementation of any action taken to demolish structures or close and secure the site.

Materials that would be addressed prior to demolition would include two abandoned underground tanks and an oil/water separator at the hopper building railcar unloading area (Appendix C) and removal of PCB-containing equipment. An inventory obtained from November 2013 indicates 11 PCB transformers at JSF (Appendix C).

3.4.2 Environmental Consequences

3.4.2.1 Alternative A – Assess, Close, and Secure Site

Under Alternative A, potential contaminant sources would be removed, generating quantities of hazardous waste for disposal. Existing structures would remain in place and high-risk environmental and safety issues would be addressed.

The potential risk for hazardous waste to be discharged/released into the environment is low under this alternative, as potential contaminants removed would be transported either by truck or by rail to a landfill operated by a company under TVA contract. Hazardous waste requires specific handling, labeling, and disposal protocols. Disposal of any hazardous material removed would be done at facilities specifically permitted to receive such waste. Asbestos would be removed by a certified contractor and disposed of at a facility designed to receive asbestos. While bulk hazardous materials would be removed from JSF, 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, degradation of these materials may result in release to the environment (i.e., through leaching to surface water or groundwater), and may have long-term impacts to soils, surface water, and groundwater.

3.4.2.2 Alternative B – Selective Demolition

Alternative B would involve removal of potential contaminant sources and removal of certain structures. 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 environmental during handling and disposal is small.

Brick, block, and concrete demolition debris would be used as clean fill where not contaminated by ACM or other hazardous materials. 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 B would have hazardous waste and potential contaminant risk similar to those for Alternative A, but to a lesser extent as the powerhouse would be left in-place.

In addition to solid and hazardous wastes being removed for disposal, Alternative B could result in up to 1,000 tons of scrap metal that would also be hauled from the facility either by truck or by rail. While bulk hazardous materials would be removed from JSF, material such as lead-based paint on metal structures, wiring, and plumbing (copper and lead) may not be removed and over time may have long-term impacts to soils, surface water, and groundwater.

3.4.2.3 Alternative C – Demolition to Grade ("Brownfield")

Alternative C would involve demolition of structures to the ground surface. This action would result in solid and hazardous wastes being removed from the site. Buildings, including the foundations or portions thereof, would be removed. Basements would be backfilled, pits and trenches would be brought up to surrounding grade, and disturbed areas would be vegetated by seeding with grass. TVA specifications for disposal of these materials would be followed and notices, waste shipping practices, and certifications would be implemented. Brick, block, and concrete demolition debris would be used as clean fill where not impacted by ACM or other hazardous materials. Other demolition debris would be hauled either by truck or by rail to a landfill operated by a company under TVA contract. In addition to solid and hazardous wastes being hauled to a landfill operated by a company under TVA contract, Alternative C 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.

Concerns related to solid and hazardous wastes would be low under this alternative. After demolition the potential for contaminants from the facility to reach soils and groundwater would be almost nonexistent. With hazardous materials safely removed and the facility deconstructed to grade or below, no impacts to the environment are anticipated due to the demolition of the plant site related to solid or hazardous waste.

3.4.2.4 Alternative D – 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, B, and C for the potential to contaminate soil and groundwater as systems and structures degrade. Peeling lead-based paint, failing concrete, buckling floor tiles, and asbestos breakdowns are examples of the onsite hazard risk. There are also issues with the long-term functionality of sump pumps, which are maintained to remove water from floor drains. If these sump pumps do not operate, water will build up in the sumps, become septic, crack, and leach contaminated water into the groundwater.

Concerns related to hazardous wastes under this alternative are likely to result in impacts to the environment as there is the potential for environmental contamination. Further, concerns regarding trespassing and vandalism are higher than with the other alternatives. The presumed presence of materials that could be salvageable might tend to 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 JSF 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 and over time may have long-term impacts to soils, surface water, and groundwater.

3.5 Aquatic Resources

3.5.1 Affected Environment

JSF lies within the Holston River (Hydrologic Unit Code [HUC] 0601010401) and Cherokee Lake (HUC 0601010402) watersheds. The reach of the Holston River adjacent to JSF has changed from its former free-flowing character by the presence of the John Sevier Detention Dam (located adjacent to JSF) and Cherokee Dam (35.5 mi downstream). The area affected by Cherokee Reservoir extends to the tailwaters of the John Sevier Detention Dam.

An August 2014 desktop review documented one pond, one perennial stream (Holston River), and four ephemeral streams (wet-weather conveyances) within the project area. However, the one pond within the JSF project review area is a retention basin and does not provide suitable habitat for aquatic species. Therefore, that pond is not discussed in this EA. Ephemeral streams also do not provide suitable habitat for aquatic species. This section addresses aquatic ecology in the Cherokee Reservoir/Holston River adjacent to JSF, and includes the cooling water discharge tunnel, which historically discharged heated water to the discharge channel. This area is an active fishery particularly in winter months when fish are attracted to the warm water.

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 (VSMP) (TVA 2009b). Vital Signs Monitoring activities focus on (1) physical/chemical characteristics of waters; (2) physical/chemical characteristics of sediments; (3) benthic macroinvertebrate community sampling; and (4) fish assemblage sampling (Dycus and Baker 2001).

3.5.1.1 Benthic Community

Benthic macroinvertebrates help indicate surface water quality, and are included in aquatic monitoring programs to describe the potential impacts of discharges to surface water. Compared to the stations of other TVA run-of-the-river reservoirs, the monitoring sites on Cherokee Reservoir have consistently rated as “poor” to “fair” with the exception of 2004 and 2008 when the forebay and mid-reservoir scored “good,” respectively. Cherokee Reservoir rated “good” at the forebay and “good” at the mid-reservoir in 2008 monitoring (Table 3-3). Cherokee is a relatively deep storage impoundment with a long retention time and plenty of nutrients, resulting in low dissolved oxygen levels and high chlorophyll levels. In 2011 TVA shifted to sampling the Holston River benthic communities upstream and downstream of JSF seasonally. Fall sampling indicated good and excellent scores at both upstream and downstream sites in both years (Table 3-4).

Table 3-3. Benthic Community Scores Collected as part of the VSMP in Cherokee Reservoir (2000–2010)

Station	Mile	2000	2002	2004	2006	2008	2010
Forebay	HRM 55	Poor	Poor	Good	Fair	Fair	Poor
Midreservoir	HRM 76	Fair	Poor	Fair	Poor	Good	Very Poor

Table 3-4. Recent (2011–2012) Benthic Community Scores Collected as part of the Biological Monitoring Program in the Holston River

Station	Mile	Year	Season	Score	Rating	Season	Score	Rating
Upstream	HRM 109.3	2011	Summer	23	Fair	Fall	27	Good
Downstream	HRM 106.7	2011	Summer	21	Fair	Fall	31	Excellent
Upstream	HRM 109.3	2012	Summer	23	Fair	Fall	27	Good
Downstream	HRM 106.7	2012	Summer	31	Excellent	Fall	33	Excellent

3.5.1.2 Fish Community

The VSMP included annual sampling from 1993 to 1996 and semiannual fish sampling at Cherokee Reservoir from 2000 to 2012 (TVA 1999). The VSMP fish community monitoring results are shown in Table 3-5. Overall results indicate that the Cherokee Reservoir fish assemblage has been consistently in the “fair” range at the forebay station from 2000 to 2004 and in the “good” range from 2006 to 2012 and in the “good” range at the mid-reservoir transition station from 2000 to 2012, with the exception of “fair” scores in 2002 and 2008.

Table 3-5. Cherokee Reservoir Fisheries Assemblage Index Scores, Based on Vital Signs Monitoring Data

Station	Mile	2000	2002	2004	2006	2008	2010	2012
Forebay	HRM53	Fair	Fair	Fair	Good	Good	Good	Good
Mid-reservoir	HRM76	Good	Fair	Good	Good	Fair	Good	Good

Cherokee Reservoir provides many opportunities for sport anglers. A Sport Fishing Index (SFI) was developed to measure sport fishing quality for various species in Tennessee and

Cumberland Valley reservoirs (Hickman 1999). The SFI is based on the results of fish population sampling by TVA and state resource agencies and, when available, results of angler success as measured by state resource agencies (i.e., bass tournament results and creel surveys). In 2008, the last year TVA conducted SFI analysis, Cherokee Reservoir rated better than average for largemouth bass and striped bass; the SFI rating was below average for black basses, channel catfish, smallmouth bass, spotted bass, and walleye (Table 3-6). There is a precautionary fish consumption advisory in effect for Cherokee Reservoir.

Table 3-6. SFI Scores for Selected Sport Fish Species in Cherokee Reservoir, 2008

Fish Species	2008 Cherokee Reservoir Score	2008 Tennessee Valley-wide Average
Black Basses (in aggregate)	35	37
Black Crappie	31	31
Channel Catfish	32	34
Largemouth Bass	40	35
Smallmouth Bass	24	31
Spotted Bass	28	33
Striped Bass	44	35
Walleye	28	38

3.5.2 Environmental Consequences

3.5.2.1 Alternative A – Assess, Close, and Secure Site

Under Alternative A, TVA would close and secure JSF, leaving existing structures in place. Deconstruction activities for this alternative would include abandoning the condenser cooling water intake and discharge tunnels in place by installing bulkheads. Similar to the No Action Alternative, there is the potential for building materials, including some heavy metals to degrade over the long-term. Healthy aquatic communities (fish and benthic life) in the vicinity of JSF would be expected to remain stable as impacts would accrue only over the long term and would be insignificant.

3.5.2.2 Alternative B – Selective Demolition

Alternative B would involve the same objectives as Alternative A, but TVA would remove selected facilities and hazardous materials to reduce future maintenance costs. Numerous structures, storage tanks, parking areas, and associated street lighting would be removed. 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 storm water runoff resulting from construction activities associated with selective demolition. Removal of streamside vegetation within the riparian zone has the potential to result in 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 and parking areas could lead to increased siltation and runoff in the Holston River adjacent to and downstream of JSF.

Perennial and ephemeral streams as well as watercourses that convey only surface water during storm events that could be affected by the proposed site preparation would be protected by measures outlined in applicable permits. Appropriate BMPs would be implemented during the proposed demolition activities. Thus, any direct, indirect, or cumulative impacts to aquatic ecology resulting from the proposed action would be insignificant. Long-term impacts may occur as a result of buildings left in place. Metal components and lead-based paint could degrade over time and leach to surface water and the aquatic environment. The degradation and leaching to surface water would be expected to minor and impacts insignificant.

3.5.2.3 Alternative C – Demolition to Grade (“Brownfield”)
Alternative C would remove the retired/abandoned structures as well as the roads and parking areas associated with the coal-fired facility. With the implementation of BMPs, there would be no direct impacts to aquatic habitat. Indirect impacts could occur due to modification of the project site and storm water runoff resulting from construction and maintenance activities in the JSF project area. These impacts would be assessed separately if a future alternative use of the facility is selected. Potential impacts include increased erosion and siltation resulting in loss of in-stream habitat. Siltation has a detrimental effect on many aquatic animals adapted to riverine environments. Turbidity caused by suspended sediment can negatively impact spawning and feeding success of fish and mussel species (Brim Box and Mossa 1999; Sutherland, Meyer, and Gardiner 2002). Disturbed areas would be reseeded to prevent excessive storm runoff and erosion.

Perennial and ephemeral streams as well as watercourses that convey only surface water during storm events that could be affected by the proposed site preparation would be protected by measures outlined in standard permit conditions. Applicable permits are listed in Chapter 1. Thus, any direct, indirect, or cumulative impacts to aquatic ecology resulting from the proposed action would be insignificant.

3.5.2.4 Alternative D – No Action
Under the No Action Alternative, TVA would not perform any deconstruction or other disposition activities and would allow the structures at JSF to remain in their current state, with the exception of removal of hazardous materials. There is the potential for building materials, including some heavy metals, to degrade over the long-term. Impacts to the aquatic ecology would only accrue over the long-term and would be insignificant.

3.6 Vegetation

3.6.1 Affected Environment
Aerial photos of the project area indicate that lands associated with JSF have been heavily disturbed by construction, operation, and maintenance of the coal-fired generating plant and associated structures. Buildings and impervious surfaces cover much of the site, but mowed lawns with scattered landscape trees also occur there. The plant community found onsite is intensively managed (i.e., frequently mowed) and is dominated by nonnative herbaceous species. A row of planted pine trees, mowed grass, and ornamental trees and shrubs exists alongside buildings and parking lots within the footprint. A limited number of white ash, sugar maple, and American elm trees are located in the open lawn area between the parking lots and discharge channel. This limited amount of vegetation does not possess conservation value.

3.6.2 Environmental Consequences

3.6.2.1 Alternative A – Assess, Close, and Secure Site
Adoption of Alternative A would not significantly affect plant life because no natural plant communities occur on JSF property. Remediation of environmental issues and O&M of the remaining facilities may result in removal of some vegetation, but those areas would be small and are currently dominated by nonnative species. Any efforts to revegetate the site

after soil disturbance would restore plant cover to a state comparable to the present condition of the property. No impacts are anticipated.

3.6.2.2 Alternative B – Selective Demolition

Adoption of Alternative B would not significantly affect plant life because no natural plant communities occur on JSF property. Remediation of environmental issues and selective demolition of structures may result in removal of some vegetation, but those areas would be small and are currently dominated by nonnative species. Any efforts to re-vegetate the site after soil disturbance would restore plant cover to a state comparable to the present condition of the property. Demolishing buildings and removal of other infrastructure could result in a slight increase of vegetated area on JSF property if the areas are revegetated post-demolition. Vegetation would be comprised of nonnative, noninvasive species. No impacts are anticipated.

3.6.2.3 Alternative C – Demolition to Grade ("Brownfield")

Adoption of Alternative C would not significantly affect plant life because no natural plant communities occur on JSF property. Remediation of environmental issues and demolition of structures and other infrastructure may result in removal of the current vegetation. The project area would be revegetated after completion of work. Any efforts to revegetate the site after soil disturbance would restore plant cover to a state comparable to the present condition of the property. This alternative would result in an increase of vegetated area on JSF property. Vegetation planted under this alternative would likely be limited to typical grass cover (i.e., rye grass and fescue). Vegetation of this type would be comprised of nonnative, noninvasive species. No impacts are anticipated.

3.6.2.4 Alternative D – No Action

Adoption of Alternative D would not significantly affect plant life because no natural plant communities occur on JSF property. The vegetation onsite, which has no conservation value, would remain in its current condition and would continue to be regularly maintained.

3.7 Wildlife

3.7.1 Affected Environment

The proposed project footprint encompasses the JSF power plant, adjacent industrial structures, parking lots, and mowed areas between these structures. The plant site has little natural vegetation. A row of planted pine trees, mowed grass, and ornamental trees and shrubs exists alongside buildings and parking lots within the footprint. A limited number of white ash, sugar maple, and American elm trees are located in the open lawn area between the parking lots and discharge channel.

Mowed herbaceous fields and manicured lawns offer little suitable habitat for rare or diverse assemblages of wildlife species, but can be used by many common species especially when the landscape still retains a few trees. Birds that utilize these grassy areas include Canada goose, eastern phoebe, eastern kingbird, eastern meadowlark, Killdeer, purple martins, red-tailed hawk, and rock dove, among others. Mammals that can be found here are common mole, cottontail rabbit, groundhog, least shrew, white-footed mouse, and white-tailed deer. Examples of birds that utilize planted trees and buildings in industrialized areas include American robin, American goldfinch, blue jay, Carolina chickadee, Carolina wren, chimney swift, eastern towhee, osprey, tufted titmouse, northern cardinal, northern mockingbird, and yellow breasted chat. Mammals found in and around these industrialized areas include common raccoon, eastern gray squirrel, hispid cotton rat, and Virginia opossum. Raccoon prints were observed on July 29, 2014, during field reviews of the inside of the main plant building high up in the coal tower. Reptiles found in these areas are fence lizards, five-lined skinks, rat and ring-necked snakes.

The TVA Natural Heritage database indicated one cave within three miles of the project area. This cave is approximately two miles from the project footprint. No caves were found on the project site during field reviews. No other unique or important terrestrial habitats exist. No heronries have been reported within three miles of the project area. However, one aggregation of migratory birds (swallows, common to bridges and open buildings) and four osprey nests were encountered during field reviews. Three osprey nests and two adult ospreys were observed on top of three of the tall lighting structures surrounding the coal pile. One additional osprey nest was found on the inside of a support beam on the northwest corner of the coal control tower.

3.7.2 Environmental Consequences

3.7.2.1 Alternative A – Assess, Close, and Secure Site

Under Alternative A, common mammals and resident and migratory birds would continue to opportunistically use the buildings as shelter. Common raccoons, possums, rats, bats, and mice would occasionally enter buildings in an attempt to find food and shelter, while ospreys, swallows, and other birds that nest on man-made structures would continue to use rafters, support beams, lighting fixtures, poles, and building corners as nesting sites. It is likely that under Alternative A use of buildings by nesting birds and mammals would increase due to reduced human activity in the area. Removal of the cooling system and tunnels and addressing septic issues may disturb common wildlife species sheltering in the area; however, these actions would not destroy any wildlife habitat. Similarly, disturbed environments are common in areas surrounding the project site since JCC is active. Closure actions may displace wildlife temporarily to these surrounding areas until actions are complete. Upon completion of Alternative A, species that utilize man-made structures and early successional habitat would repopulate the area. Terrestrial animals and their habitats would either not be affected or benefit from the reduction in human activity at the project site.

3.7.2.2 Alternative B – Selective Demolition

Under Alternative B, TVA would reduce the number of structures and would add topsoil and seed to disturbed areas. This alternative would result in more disturbance and displacement of wildlife in the project footprint than Alternative A due to the permanent removal of some structures. However, the main plant building would remain in place, thus displaced wildlife may associate with this remaining large building or adjacent areas with similarly disturbed habitat common around the project site. It is likely that common, opportunistic foragers such as raccoons, possums, rats, bats, and mice would continue to enter the remaining structures in an attempt to find food or shelter.

Adult ospreys and four osprey nests were observed on lighting structures around the coal storage pile and in the support beam of the coal control tower. Under this alternative both would be demolished. In order to avoid direct impacts to ospreys, demolition activities within 660 ft of the nests would not occur between March 1 and July 15 when osprey are nesting. Alternatively, nests may be removed between November and February when ospreys are not present. Deterrents would be installed where nests have been built in the past in order to prevent these birds from re-nesting in the same locations, as osprey are known to have high site fidelity. Areas of bird activity and nests have been flagged. If demolition schedules or nest removal cannot occur within the time frames specified, a permit from USFWS would be needed to disturb or remove any active nests. Upon completion of the project, wildlife species that use man-made structures and early successional habitat would repopulate the area and utilize what remains. By avoiding impacts to the osprey nest sites, this alternative is not expected to result in significant impacts to terrestrial wildlife or their habitats.

3.7.2.3 Alternative C – Demolition to Grade ("Brownfield")

This alternative would result in more disturbance and displacement of wildlife using this area than Alternatives A or B. Any wildlife opportunistically using the buildings for shelter would be displaced to adjacent areas such as JCC structures or off of the site entirely. Adult ospreys and four osprey nests were observed on lighting structures around the coal storage pile and in the support beam of the coal control tower. The same controls would be utilized as in Alternative B.

3.7.2.4 Alternative D – No Action

Under the No Action Alternative TVA would not deconstruct or remove structures at JSF and would allow the structures to remain in their current state. Birds, raccoons, possums, rats, bats, mice, and other common species would occasionally enter buildings in an attempt to find food or shelter, while ospreys and other birds that nest on man-made structures would continue to use rafters, support beams, lighting fixtures, poles, and building corners on which to build nests. It is likely that under Alternative D use of buildings by nesting birds and mammals may increase. Therefore, terrestrial animals and their habitats would either not be affected, or benefit from the removal of human disturbance from the project site.

3.8 Threatened and Endangered Species

3.8.1 Affected Environment

The Endangered Species Act (ESA) provides broad protection for species of fish, wildlife, and plants that are listed as threatened or endangered in the United States or elsewhere. Section 7 of the ESA outlines procedures for federal agencies to follow when taking actions that may jeopardize federally listed species or their designated critical habitat. The policy of Congress is that federal agencies must seek to conserve endangered and threatened species and use their authorities in furtherance of the ESA's purposes.

The state of Tennessee provides protection for species considered threatened or endangered or deemed in need of management within the state other than those already federally listed under the ESA. The state listing of a species is managed by TDEC. Additionally, the Tennessee Natural Heritage Program and TVA both maintain databases of aquatic and terrestrial animal species that have been designated as threatened, endangered, of special concern or otherwise warrant tracking (i.e., determined to be imperiled or vulnerable but not yet assigned an official status) in Tennessee.

The TVA Natural Heritage database, as well as records maintained by the Tennessee Bat Working Group (ultimately submitted to the Tennessee Natural Heritage Program), indicated two Tennessee state-listed and one federally-protected terrestrial animal species have been documented within 3 mi of JSF. Two additional terrestrial animal species, both federally listed as endangered, and one terrestrial animal species currently proposed for federal listing as endangered, have been documented in Hawkins County, Tennessee (Table 3-7).

Table 3-7. Species of Conservation Concern within the JSF Proposed Project Area

Common Name	Scientific Name	Status [a]	
		Federal	State (Rank [b])
Birds			
Bald Eagle	*Haliaeetus leucocephalus*	DM	NMGT (S3)
Virginia Rail	*Rallus limicola*	--	TRKD (S1)
Fish			
Spotfin Chub	*Erimonax monachus*	LT	THR (S2)
Tangerine Darter	*Percina aurantiaca*	--	NMGT (S3)
Blotchside Logperch	*Percina burtoni*	--	NMGT (S2)
Tennessee Dace	*Phoxinus tennesseensis*	--	NMGT (S3)
Mammals			
Gray Bat	*Myotis grisescens*	LE	END (S2)
Northern Long-eared Bat	*Myotis septentrionalis*	PE	--
Indiana Bat	*Myotis sodalis*	LE	END (S1)
Southern Bog Lemming	*Synaptomys cooperi*	--	NMGT (S4)
Mussels			
Purple Bean	*Villosa perpurpurea*	LE	END (S1)
Cumberland Bean	*Villosa trabalis*	LE	END (S1)
Plants			
American Barberry	*Berberis canadensis*	--	SPCO (S2)

Source: TVA Natural Heritage database, accessed July 2014; species documented in Hawkins County, Tennessee, and/or within 3 mi (terrestrial animals), 5 mi (plants), or 10 mi (aquatic animals) of the proposed site.

[a] Status Codes: DM = Delisted but still being monitored; END = Endangered; LE = Listed Endangered; LT = Listed Threatened; SPCO = Listed Special Concern; NMGT = In Need of Management; PE = Proposed Endangered; THR = Threatened; TRKD = Tracked by the Tennessee Natural Heritage Program

[b] Status Ranks: S1 = Extremely rare and critically imperiled; S2 = Very rare and imperiled; S3 = Vulnerable; S4 = Apparently secure, but with cause for long-term concern

The TVA Natural Heritage database indicated that one Tennessee state-listed plant and no federally listed plants have been documented within 5 mi of the project area (Table 3-7). No federally listed plants previously have been reported from Hawkins County. No Designated Critical Habitat for plant species occurs on the JSF property. A desktop review of aerial photos indicated that the project area has been heavily disturbed by construction, operation, and maintenance of the facility and that the property is incapable of supporting any state or federally listed plant species.

The TVA Natural Heritage database further indicated three federally listed aquatic species (one fish, two mussels), and three Tennessee state-listed species (three fish) are considered extant within the Holston River (HUC 0601010401) and Cherokee Reservoir (HUC 0601010402) watersheds and/or within a 10-mi radius of the project area (Table 3-7). Historical records for the federally listed purple bean mussel are from Beech Creek, a tributary to the Holston River that flows into the John Sevier Detention Reservoir at approximately HRM 108.7, located greater than one river mile above JSF. No Designated Critical Habitat units for federally listed aquatic species are present within the project area. Beech Creek Unit Seven, however, is Designated Critical Habitat for the federally endangered purple bean and is located approximately four river miles upstream of JSF. No impacts to this Designated Critical Habitat would occur given its upstream location from the project site.

Southern bog lemmings (*Synaptomys cooperi*) are typically found in wet grasslands, marshes, and wetlands. They can also be found in upland deciduous/coniferous forests. Southern bog lemmings require dense, matted groundcover for nesting and tunneling. The location of a historical record of this species occurs approximately 2.8 mi from the project area. Suitable habitat for southern bog lemming is lacking within the project area.

A single dead Virginia rail (*Rallus limicola*) was collected in 1999 from a wetland adjacent to JSF. This specimen was found approximately 800 ft from the proposed project area. Virginia rails prefer marshes and wetlands with shallow water, cattails, bulrushes, and an abundance of invertebrates on which to forage. Suitable habitat for Virginia rail is lacking within the project area.

Bald eagles (*Haliaeetus leucocephalus*) are protected under the Bald and Golden Eagle Protection Act and managed in accordance with the National Bald Eagle Management Guidelines (USFWS 2007). This species is associated with large, mature trees capable of supporting its massive nests. These nests are usually found near larger waterways over which eagles forage. Records document the occurrence of four bald eagle nests within 3 mi of the project area. These nests were documented along the edges of fields adjacent to the Holston River. The closest of these recorded nests is approximately 0.92 mi from the project area. Three of these nests are thought to be secondary nests rather than a primary nesting site. Suitable nesting habitat does not exist for bald eagles in the project footprint. No bald eagle nests or resident bald eagle pairs were observed within the project area during field surveys conducted in July 2014.

Gray bats (*Myotis grisescens*) roost in caves year-round and migrate between summer and winter roosts during spring and fall (Tuttle 1976; Brady et al. 1982). Although they prefer caves, gray bats have been documented roosting in large numbers in buildings (Gunier and Elder 1971). They forage over bodies of water. Records document the occurrence of two gray bat cave hibernacula in Hawkins County. The closest of these is 7.1 mi from JSF. A mist net survey also captured four male gray bats near the Holston River, approximately 20 mi from JSF. No caves have been documented within the project area and the nearest documented cave is approximately 2.0 mi from the project area. Suitable foraging habitat for gray bat is lacking within the project area.

Indiana bats (*Myotis sodalis*) hibernate in caves and typically roost during summer in mature forests with open understories, suitable roost trees, and nearby sources of water (USFWS 2013). Roosts are formed under the exfoliating bark of live and dead trees (Pruitt and TeWinkel 2007; Kurta, Murray, and Miller 2002). Although less common, Indiana bats also have been documented roosting in buildings (Butchkoski and Hassinger 2002). A known Indiana bat cave hibernacula is located approximately 12.5 mi from the project area. No caves have been documented within the project area; the nearest documented cave is approximately 2.0 mi from the project area. Trees and shrubs along buildings and parking lots in the project area may provide foraging habitat for Indiana bats. None of this vegetation, however, offers suitable summer roosting habitat for Indiana bat.

Northern long-eared bat (*Myotis septentrionalis*) (NLEB) was proposed in October 2013 for federal listing as endangered by USFWS. In winter, this species roosts in caves or cave-like structures (such as buildings), while summer roosts are typically in cave-like structures (such as buildings) as well as live and dead trees with exfoliating bark and crevices. NLEBs tend to forage within the midstory and canopy of upland forests on hillsides and ridges (USFWS 2014). Records from the Tennessee Bat Working Group indicate documented occurrence of NLEB in Hawkins County (Tennessee Bat Working Group 2014). The specific locations of these records; however, are not known. No caves have been found in the project footprint and the nearest documented cave is approximately 2.0 mi from the project area. Similar to gray bats and Indiana bats (see above), however, NLEBs may attempt to roost in the abandoned main plant building slated for demolition in August 2015. Trees and shrubs along buildings and parking lots in the project area may provide foraging habitat for NLEBs. None of this vegetation; however, offers suitable summer roosting habitat for NLEBs.

Buildings with the potential to be demolished under Alternatives B and C were surveyed on July 29, 2014, and no evidence (i.e., staining, guano) of use by bats was observed. The main plant building, however, offers a multitude of potential roosting sites throughout the many floors, dark crevices, boilers, and insulated rooms. Due to the many openings in the building, including windows and bay doors, it is possible that bats (including the three listed species reported from Hawkins County) could enter the building to roost between the July 29, 2014, survey and the scheduled demolition date (August 2015).

The building would be re-surveyed within one month of the beginning of demolition activities to verify that no listed bat species have moved into the building. It is not anticipated that this survey would show evidence of bat use. If any evidence of bat use is documented during this survey, TVA would coordinate with USFWS and/or TWRA as appropriate to address the issues.

Due to changes caused by impoundment of the river, suitable habitat is no longer present for the purple bean mussel or any of the other state-listed or federally listed aquatic species in the main stem of the Holston River from Cherokee Dam (HRM 52.3), upstream to the upper end of the John Sevier Detention Reservoir (HRM 118), and none of these species are likely to occur in the vicinity of JSF (HRM 106-107). The TVA Natural Heritage database indicated additional state-listed and federally listed species were once present in the Holston River adjacent to and downstream of JSF, but these have been eliminated from this portion of their former range. These species include the green blossom pearlymussel (*Epioblasma torulosa gubernaculum*), fine-rayed pigtoe (*Fusconaia cuneolus*), turgid blossom pearlymussel (*Epioblasma turgidula*), birdwing pearlymussel (*Lemiox rimosus*), Cumberland monkeyface (*Quadrula intermedia*), and spiny riversnail (*Io fluvialis*).

The following three federally listed aquatic species potentially occur within the Holston River (HUC 0601010401) and Cherokee Reservoir (HUC 0601010402) watersheds and within a 10-mi radius of the proposed project area. General ecological descriptions were retrieved from Etnier and Starnes (1993) for the fish species and from Parmalee and Bogan (1998) for the mussel species. Cumberland bean (*Villosa trabalis*) occurs in small rivers and streams in gravel or sand substrate with fast current in riffle areas. It is restricted to a very few streams and rivers in the upper Cumberland River and its tributaries in Kentucky, and the Hiwassee River in Polk County, Tennessee. A medium-sized species, the shell is oval and elongate in shape. Purple bean mussel occurs in substrate comprised of coarse sand and gravel with some silt, in moderate to strong current with rock piles and large flat rocks. Suitable host fish include sculpin (*Cottus* sp.), greenside darter (*Etheostoma blennioides*), and fantail darter (*E. flabellare*). The purple bean mussel is a medium-sized species growing to a maximum length of approximately 2 in. Spotfin chub (*Erimonax monachus*) is an obligate inhabitant of clear upland rivers associated with swift currents and boulder substrate. Juveniles can be found over gravel substrate with moderate current. Adults grow to a maximum length of approximately 4 in. and feed primarily on aquatic insect larvae. The body is elongated and somewhat compressed.

3.8.2 Environmental Consequences

3.8.2.1 Alternative A – Assess, Close, and Secure Site

Under this alternative, there would be no impacts to listed terrestrial animal species or their habitats.

Alternative A would have no effect on federally listed or state-listed plant species because no habitat capable of supporting listed plants occurs on JSF property.

Adverse water quality impacts could potentially result from implementation of the proposed action, which could have indirect impacts over time to aquatic species within water bodies in the project area. Alternative A, however, would not alter the watercourses or landscape in the project area. Since no sensitive aquatic species occur within the project area, no impacts would occur to sensitive aquatic species listed in Table 3-7. No Designated Critical Habitat for any federally listed aquatic species exists adjacent to JSF, downstream of JSF, or within the 10-digit HUCs potentially affected by the proposed project. Suitable habitat is no longer present for any of the state-listed or federally listed species in the main stem of the Holston River from Cherokee Dam (HRM 52.3), upstream to the upper end of the John Sevier Detention Reservoir (HRM 118), and none of the species are likely to occur in the vicinity of JSF (HRM 106-107). No impacts to state-listed or federally listed aquatic species or their habitats are anticipated to occur as a result of TVA actions associated with Alternative A.

3.8.2.2 Alternative B – Selective Demolition

TVA has determined that the main plant building did not (as of the July 29, 2014, survey) contain any of the listed bat species reported from Hawkins County (Gray bat, Indiana bat, and NLEB). Therefore, no impacts to these species are anticipated to occur as a result of demolition activities.

Adoption of Alternative B would have no effect on federally listed or state-listed plant species because no habitat capable of supporting listed plants occurs on JSF property.

No state-listed or federally listed aquatic species or associated Designated Critical Habitat are known to occur within watersheds in the proposed project area, and appropriate stream protection measures outlined in permit conditions would be implemented during selective demolition activities, no impacts to state-listed or federally listed aquatic species or their habitats are anticipated to occur as a result of implementation of Alternative B.

3.8.2.3 Alternative C – Demolition to Grade (“Brownfield”)

Similar to Alternative B, TVA has determined that the main plant building did not (as of the July 29, 2014, survey) contain any of the listed bat species reported from Hawkins County (Gray bat, Indiana bat, and NLEB). Therefore, no impacts to these species are anticipated to occur as a result of demolition activities. However, because there exists some potential for one or more of these species to occupy the building in the interim between the July 2014 survey and the beginning of demolition, if Alternative C is selected, TVA would re-survey the buildings within one month prior to demolition. It is anticipated that no bats would be found during these surveys, and there would be no impacts to state-listed or federally listed terrestrial animal species or their habitats due to building demolition activities considered under Alternative C.

If TVA documents the occupation of this facility by state-listed or federally listed bat species, TVA would coordinate with USFWS and/or TWRA and comply with applicable state and federal regulations.

Alternative C additionally would remove parking lots, paved roadways, and any trees and shrubs alongside these parking lots and buildings. These trees were evaluated for potential use by bald eagles, Indiana bat, and NLEB. No suitable nesting habitat exists for bald eagles in these trees potentially affected by Alternative C. No bald eagle nests or resident bald eagle pairs were observed. Bald eagles thus would not be affected by proposed actions under Alternative C. In addition, trees and shrubs that would be removed are not suitable for summer-roosting Indiana bats or NLEB. This vegetation, however, may offer a small, low quality area of foraging habitat for Indiana bat and NLEB. Similar foraging habitat is available in areas immediately adjacent to JSF and, in particular, along the Holston River. Removal of this vegetation, therefore, would not impact foraging bats. If no bats are found during surveys of the main plant building, there would be no impacts to listed terrestrial animal species or their habitats with the implementation of Alternative C.

Adoption of Alternative C would have no effect on federal or state-listed plant species because no habitat capable of supporting listed plants occurs on JSF property. Adverse water quality impacts could potentially result from the implementation of Alternative C, which could have direct and indirect impacts to aquatic species within waterbodies in the project area. However, watercourses that could be affected by the proposed project would be protected by standard permit conditions. Suitable habitat is no longer present for any of the state-listed or federally listed species in the main stem of the Holston River from Cherokee Dam (HRM 52.3), upstream to the upper end of the John Sevier Detention Reservoir (HRM 118), and none of these species are likely to occur in the vicinity of JSF (HRM 106-107). Since no state-listed or federally listed aquatic species or associated Designated Critical Habitat are known to occur within watersheds in the proposed project area, and appropriate stream protection measures outlined in permit conditions would be implemented during site preparation activities, no impacts to state-listed or federally listed aquatic species or their habitats are anticipated to occur as a result of implementation of Alternative C.

3.8.2.4 Alternative D – No Action

Under this alternative, there would be no impacts to listed terrestrial animal species or their habitats.

Adoption of Alternative D would have no effect on federally listed or state-listed plant species because no habitat capable of supporting listed plants occurs on JSF property. Under Alternative D, TVA would not perform any deconstruction or other disposition activities and would continue to allow the structures at JSF to remain in their current state. Changes to the area would nonetheless occur over time, as factors such as human population trends, land use and development, quality of air/water/soil, recreational patterns, and cultural, ecological, and educational interests change within the area. The status and conservation of any potentially affected aquatic species would be determined by the actions of others. Additionally, leakage of hazardous chemicals or heavy metals over time from existing structures could have localized impacts on water quality in the Holston River adjacent to and downstream of JSF. There would be no measureable direct, indirect, or cumulative effects to state-listed or federally listed aquatic species or associated Designated Critical Habitat with the implementation of Alternative D.

3.9 Surface Water

3.9.1 Affected Environment

3.9.1.1 Stream-Designated Uses

JSF is located on the JSF Reservation, which is at Holston River Mile (HRM) 106.2. The Holston River is impounded at HRM 52.3 by Cherokee Dam, and the impoundment extends upstream approximately 54 mi to the John Sevier Detention Dam and Pool at HRM 106.3. The John Sevier Detention Reservoir is 305 acres in size, with a surface area of 10.7 square miles. The John Sevier Detention Dam, constructed in 1954, is a concrete gravity dam. The core is concrete, and the foundation is rock. Its length is 1,110 ft. The maximum discharge is 229,000 cubic feet per second (cfs). Its capacity is 5,500 acre ft. This concrete dam was constructed to create a detention pool in order to supply cooling water to JSF.

Cherokee Reservoir is the farthest downstream and largest impoundment of the Holston River. The average flow of the Holston River at Cherokee Dam is 4,500 cfs. JSF formerly used water withdrawn from the John Sevier Detention Pool for plant service water and for cooling water for its condensers. Prior to shutdown, the maximum JSF withdrawal with four units operating was estimated to be 1,013 cfs (655 million gallons per day [MGD]). The JCC intake continues to withdraw water from the John Sevier Detention Pool at an estimated current maximum withdrawal of about 11.16 cfs (7.21 MGD). This current intake structure would be used for this flow, but discharge would be directed to the reservoir not the discharge channel.

Water quality on the Holston River was assessed by TDEC in reporting year 2012 (TDEC 2012a). TDEC classified the Holston River for use as a domestic water supply, as an industrial water supply, for fish and aquatic life, for recreation, for livestock watering and wildlife, and for irrigation. The Holston River from HRM 89.0 upstream to HRM 142.3 is listed as not supporting one or more of its uses due to mercury contamination from sources outside Tennessee (TWRA 2014).

Runoff from the JSF site and coal yard is routed to the Coal Yard Runoff Pond, which is pumped to the Bottom Ash Pond then discharged. Prior to December 2012, JSF discharged to Polly Branch, a zero flow stream, which is classified for uses for fish and aquatic life, recreation, livestock watering and wildlife, and irrigation (TDEC 2012c). As of July 17, 2014, Polly Branch, located south of the project area, had not been assessed by TDEC as either supporting or not supporting its uses. NPDES Permit number TN0005436 (TDEC 2011) and NPDES Industrial Storm Water General Permit number TNR053187 cover water discharges at JSF. Drainage from the JSF site discharges to Holston River at HRM 105.2 (Outfall 006) and Holston River at HRM 106.7 (Outfall 002).

3.9.1.2 Domestic Water Supply

Morristown Utility Systems operates a domestic water supply intake 31 mi downstream of JSF at HRM 75. Water from this intake serves approximately 60,000 people in Morristown, Bean Station, Rutledge, Russellville, Whitesburg, Bulls Gap, White Pine, and Mooresburg.

The water system design capacity is 24 MGD with 9 MGD being the average daily demand. The intake design has two separate systems. The primary system is a variable stage intake that allows water to be drawn from lake stages between 1,020 ft and 1,070 ft. The secondary system is a standby intake that projects into the original riverbed and can be activated during outages of the primary system. The water plant is equipped with conventional equipment for potable water treatment, including equipment for chlorinating water. JCC currently utilizes the domestic water supply from the retired power plant. TVA is in the process of arranging for a new water source for JCC.

Persia Water Utility serves most residents within the site locality. This utility has applied for a water supply intake on the left bank of the Holston River between HRMs 102 and 103 (Gary Newton, Persia Water Utility, personal communication, July 24, 2014). This would be the only public water supply in the site locality and would be located approximately 2 mi downstream of the project site.

3.9.1.3 Reservoir Water Quality

The reach of the Holston River adjacent to JSF has been changed from its former free-flowing character by (1) control of river flow by upstream dams, primarily Fort Patrick Henry Dam, and (2) the presence of the John Sevier Detention Dam and the downstream Cherokee Dam. The area affected by Cherokee Reservoir extends to the tailwaters of the John Sevier Detention Dam and Pool. Cherokee Reservoir is a relatively deep storage impoundment with a long retention time and a sufficient amount of nutrients to result in low dissolved oxygen levels and high chlorophyll levels (Dycus and Baker 2001) during certain times of the year. Like most TVA reservoirs, stratification during summer months occurs for Cherokee Reservoir. Recent concerns have included occasional low dissolved oxygen in the reservoir forebay and in releases from Cherokee Dam.

Approximately 27 mi of river downstream of Cherokee Dam are reported as impaired due to low dissolved oxygen and flow alterations (TDEC 2012b). TVA currently mitigates (increases) dissolved oxygen and maintains a minimum release flow from Cherokee Reservoir. In 1995, as part of its Reservoir Releases Improvements Program, TVA installed an oxygen addition system on the upstream side of Cherokee Dam. TVA typically injects 2,100 tons per year of pure oxygen into the water impounded behind Cherokee Dam. This system, in addition to surface water pumps and turbine venting, maintains the dissolved oxygen concentrations of Cherokee Dam releases at 4 milligrams per liter (mg/L) or more. These systems have improved the aquatic habitat downstream for the last 19 years.

EPA Region 3 is currently completing an assessment and determining remedial obligations concerning historical releases of mercury from Olin Corporation into the North Fork Holston River and Holston River that have impacted sediments behind and downstream of the JSF Detention Dam. The JSF/JCC detention dam is considered as an obstacle, reducing the migration of mercury impacted sediment continuing downstream in the Holston River. Based on available information, EPA does not believe that the subsurface sediment referenced above presents a risk of concern at this time (EPA 2015).

Releases occurred for an extended period until the plant was closed in 1972. The plant site is located more than 100 mi upstream of the JSF site. Mercury released from this industrial source has contaminated surface water and sediments of both the North Fork Holston and Holston rivers. Since the 1970s, TVA has measured elevated levels of mercury in Cherokee Reservoir. In 1983, the Saltville site was added to the Superfund National Priorities List. A 2001-2002 EPA investigation (EPA 2002) of the North Fork Holston and Holston rivers and an associated ecological risk assessment reported results indicating elevated mercury levels in sediment cores collected upstream of the JSF Detention Dam, downstream from the JSF intake channel.

The EPA Superfund Remedial Investigation (RI) of the Saltville Waste Disposal Ponds Site in Virginia has detected elevated levels of mercury associated with subsurface sediments just upstream of the JSF Detention Dam. Based on a preliminary evaluation of available RI results, EPA believes that mercury in the subsurface sediments may potentially present an unacceptable risk to human health and/or the environment if the dam is deconstructed or if other activities disturb and/or mobilize the subsurface sediment. Deconstruction of the dam is not proposed as part of this project (EPA 2015).

TWRA continues to monitor mercury levels in fish tissues in the Holston River (TWRA 2014), which includes a precautionary fish consumption advisory for the South Holston River from HRM 89 to HRM 142 and includes the JSF reservoir at HRM 106. Olin Corporation and EPA may also sample Holston River sediments in conjunction with assessments of the Saltville Waste Disposal Ponds Superfund Site.

No Nationwide Rivers Inventory streams or Wild and Scenic Rivers are near the proposed action.

3.9.1.4 Process and Storm Water

Process wastewater discharges from the facility are permitted under NPDES permit TN0005436 (TDEC 2011) and include outfalls that are sampled, monitored, and reported on monthly discharge monitoring reports (DMR). These include Outfall 002, Condenser Cooling Water; Internal Monitoring Point (IMP) 005, Chemical Treatment Ponds discharge to the Bottom Ash Pond; Outfall 006, Bottom Ash Pond discharges to Holston River; and IMP 008, Waste Stabilization Pond discharges to the Bottom Ash Pond. As of June 30, 2014, TN0005436 has been administratively continued as TDEC reviews TVA’s permit renewal application.

The facility also discharges industrial storm water via the Multi-sector Storm Water General Permit, which has several outfalls monitored and sampled quarterly and annually: F04, Behind Water Treatment Plant; F05, F06, F07, and F17 at the Discharge Channel; F16A, Dry Stack Stilling Pond; and F16B, J-Pond outfall.

3.9.1.5 Sanitary Wastewater

Sanitary wastewater is collected in a 16,200-gal tank. Treatment of this waste stream is provided through a bio-filter and the waste stream then discharges into the waste stabilization pond, which then discharges to the bottom ash pond. The septic tanks for the water treatment plant and the yard storage building are both precast concrete and each has a working capacity of 540 gal. Both disposal fields are the conventional tile absorption non-filtering type. The disposal fields for the water treatment plant and yard storage building have an area of 1,200 square feet and 650 square feet, respectively. These tanks and disposal areas are located south of the fly ash silo and west of the utility building in a grassed area (Figure 3-9).

3.9.2 Environmental Consequences

3.9.2.1 Alternative A – Assess, Close, and Secure Site

Under Alternative A, TVA would be required to continue operating sumps and storm water systems at the retired facility. 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.

Alternative A would include a complete inventory of existing permits including notification and reporting requirements. Permits that are grandfathered with JCC operations would require consultation and coordination with JCC Operations for the timing and methodology for modification as needed.

Permits that would require attention under this alternative include:

- JSF NPDES Permit TN 0005436, expired on June 30, 2014 (TDEC 2011). A renewal application was submitted to TDEC on December 23, 2013. Deconstruction site changes have been initially discussed with TDEC. TDEC is awaiting TVA's path forward for plant deconstruction, which may constitute the need for an application supplement to modify the permit.
- JSF Storm Water Multi-Sector Permit (TNR053187) expired on May 14, 2014 (TDEC 2010b) and is administratively continued.
- A State Operating Permit for the pump and haul of domestic wastewater would be obtained for temporary restroom facilities for approximately eight personnel if needed.
- The JSF IPPP and/or SPCC Plan would require modification to address the change in facility status. With the removal of oil and hazardous material storage and use the requirements for an SPCC plan are no longer applicable and would be discontinued.

3.9.2.2 Alternative B – Selective Demolition

Surface Water

Similar to Alternative A, sumps and storm water systems would be altered and permits would be modified to continue managing discharges. TVA would obtain a Construction Storm Water Permit from TDEC prior to beginning demolition. Surface water impacts resulting from disturbance during selective demolition would be mitigated by use of storm water pollution prevention BMPs to minimize the extent of disturbance and erosion. Storm water would discharge via permitted discharge points. Silt fences and/or other sediment and erosion control measures would be installed, inspected, and maintained for the duration of demolition as needed.

Currently active industrial storm water outfalls are monitored quarterly and annually. This monitoring would continue throughout the demolition process, with modifications as directed by the storm water pollution prevention plan (SWPPP). Following demolition, permits could be modified or reduced based on the change in operation at the facility. Permit modifications would be negotiated with the State of Tennessee following demolition.

To conduct this work, USACE and TDEC permits are not anticipated as there are no anticipated impacts to Waters of the State or United States associated with the proposed structures. In the event a permit is required, any mitigation would be identified through the Aquatic Resource Alteration Permit (ARAP) and Section 404 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 ARAP and Section 404 permitting process.

Storm Water

TVA would submit to TDEC a Notice of Intent (NOI) to discharge storm water from demolition activities and obtain a General Storm Water Permit for discharge of storm water associated with construction activity from TDEC prior to beginning demolition. TVA would also be required to prepare an SWPPP that provides descriptions and procedures for engineering controls and management measures both to prevent spills and to minimize the impacts from potential spills of fuels and other hazardous chemicals. Currently, storm water from the area of the power plant is routed to the Eisenhower pond, a storm water sump on the north side of the power plant. This sump pumps storm water to the waste stabilization pond. This system would need to be maintained.

Environmental Permits

The modification of environmental permits related to surface water discharges for this alternative would be similar to Alternative A and would include a complete inventory of existing permits, including notification and reporting requirements.

Permits that would require attention and coordination under this alternative include:

- JSF NPDES Permit TN 0005436, expired on June 30, 2014 (TDEC 2011). A renewal application was submitted to TDEC on December 23, 2013.
- JSF Storm Water Multi-Sector Permit (TNR053187) expired May 14, 2014 (TDEC 2010b) and is administratively continued.
- Submittal of an NOI to discharge storm water under the TDEC General Permit for selective demolition activities.
- A State Operating Permit for the pump and haul of domestic wastewater would be obtained for temporary restroom facilities.
- The JSF IPPP and/or SPCC Plan would require modification to address the change in facility status. With the removal of oil and hazardous material storage and use the requirements for an SPCC plan are no longer applicable, and the plan would be discontinued.

Sanitary Water

With the retention of a small number of employees (four to six) as a maintenance crew for the power plant, sanitary wastewater disposal would be required. This alternative would include removal of the septic system; therefore, sanitary facilities would need to be provided by portable systems or use of facilities at the Transmission Control Building. Sanitary wastewater would be disposed of by an approved vendor and/or at an approved facility.

3.9.2.3 Alternative C – Demolition to Grade ("Brownfield")

Surface Water

No surface waters are located within the footprint of the project site. Offsite surface waters are influenced by the facility by the flow of water through the cooling water tunnel to the discharge channel (Holston River). Surface water is also affected by the discharge of storm water from the facility during storm events. Demolition to grade would result in installing bulkheads in the cooling water tunnel and final removal of flow to the discharge channel. Water levels in the discharge channel could be influenced by Cherokee Reservoir water elevations and bottom elevations of the channel; however, a greater volume of flow would flow over the detention dam. Water elevations below the dam are not expected to be affected.

Surface water impacts resulting from disturbance during demolition would be mitigated by use of storm water pollution prevention BMPs to minimize the extent of disturbance and erosion. TVA would obtain a Construction Storm Water Permit from TDEC prior to beginning demolition. Storm water would discharge via permitted discharge points. Silt fences and/or other sediment and erosion control measures would be installed, inspected, and maintained for the duration of demolition as needed. Currently active storm water outfalls are monitored quarterly and annually. Following demolition, permits could be modified, reduced, or eliminated based on the change in operation at the facility and routing of storm water. Permit modifications would be negotiated with the state of Tennessee following demolition.

To conduct this work, USACE and TDEC permits are not anticipated as there are no impacts to Waters of the State or United States associated with the proposed structures. In the event a permit is required, any mitigation would be identified through the ARAP and Section 404 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 ARAP and Section 404 permitting process.

Storm Water

TVA would submit to TDEC an NOI to discharge storm water from demolition activities and obtain a General Storm Water Permit for discharge of storm water associated with construction activity prior to beginning demolition. TVA would also be required to prepare an SWPPP that provides descriptions and procedures for engineering controls and management measures both to prevent spills and to minimize the impacts from potential spills of fuels and other hazardous chemicals.

Environmental Permits

The modification of environmental permits related to surface water discharges for this alternative would be substantially different compared to Alternatives A and B due to changes to the site. A complete assessment of existing permits including notification, reporting, and expiration requirements would be warranted.

Permits that would require attention with this alternative include:

- JSF NPDES Permit TN 0005436, expired on June 30, 2014 (TDEC 2011). A renewal application was submitted to TDEC on December 23, 2013, and the permit is administratively continued. The permit could be substantially modified to indicate removal of the power plant and facilities.
- JSF Storm Water Multi-Sector Permit (TNR053187) expired May 14, 2014 (administratively continued); however, future storm water management may be required for the project area (TDEC 2010b) and storm water permit coverage for the closed landfill would continue to be active.
- Submittal of an NOI to discharge storm water under the TDEC General Permit for selective demolition activities.
- A State Operating Permit for the pump and haul of domestic wastewater would not be required for long term use; however, there may be a pump and haul permit utilized for de-construction purposes.
- The JSF IPPP and/or SPCC Plan would need to be evaluated for the remaining structures but continuance of the plans may not be required.

3.9.2.4 Alternative D – No Action

Under the No Action Alternative, TVA would be required to continue operating sumps, ponds, and storm water systems at the retired facility. Permits would continue to be renewed and monitoring requirements would continue to be followed.

Permits would be modified as needed to indicate the changes from current conditions, which would include the reduction of sources of storm water from facilities closed and relocation of storm water treatment facilities.

Environmental Permits

This alternative would include a complete assessment of existing permits, including notification and reporting requirements. Permits that are grandfathered with JCC operations would require consultation and coordination with JCC Operations for the timing and methodology for modification and closure.

Permits that would require attention and coordination with this alternative include:

- JSF NPDES Permit TN 0005436, expired on June 30, 2014 (TDEC 2011). A renewal application was submitted to TDEC on December 23, 2013, and the permit is administratively continued. Deconstruction site changes have been initially discussed with TDEC. TDEC is awaiting TVA's path forward for plant retirement, which may constitute the need for an application supplement to modify the permit.
- JSF Storm Water Multi-Sector Permit (TNR053187) expired May 14, 2014, and is administratively continued. This permit would require modification (TDEC 2010b).
- The JSF IPPP and/or SPCC Plan would require modification to address the change in facility status. With the removal of oil and hazardous material storage and use, the requirements for an SPCC plan would no longer be applicable and the SPCC Plan could be discontinued.

3.10 Floodplains

3.10.1 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 1 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. Floodplains associated with the project area are shown on Figure 3-2.

The Holston River 100-year flood elevation at JSF is 1,089.2 ft; and the 500-year flood elevation is 1,091.1 ft (elevations referenced to National Geodetic Vertical Datum 1929). The project boundary lies outside the 100-year floodplain of the Holston River.

3.10.2 Environmental Consequences

As a federal agency, TVA is subject to the requirements of Executive Order (EO) 11988, Floodplain Management. The objective of EO 11988 is "…to avoid to the extent possible the long- and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative" (U.S. Water Resources Council 1978). The EO is not intended to prohibit floodplain development in all cases, but rather to create a consistent government policy against such development under most circumstances. The EO requires that agencies avoid the 100-year floodplain unless there is no practicable alternative. For certain "critical actions," the minimum floodplain of concern is the 500-year floodplain. None of the activities associated with the alternatives discussed in this EA are considered Critical actions according to the definition presented in 44 CFR Chapter 1, Part 9.6.

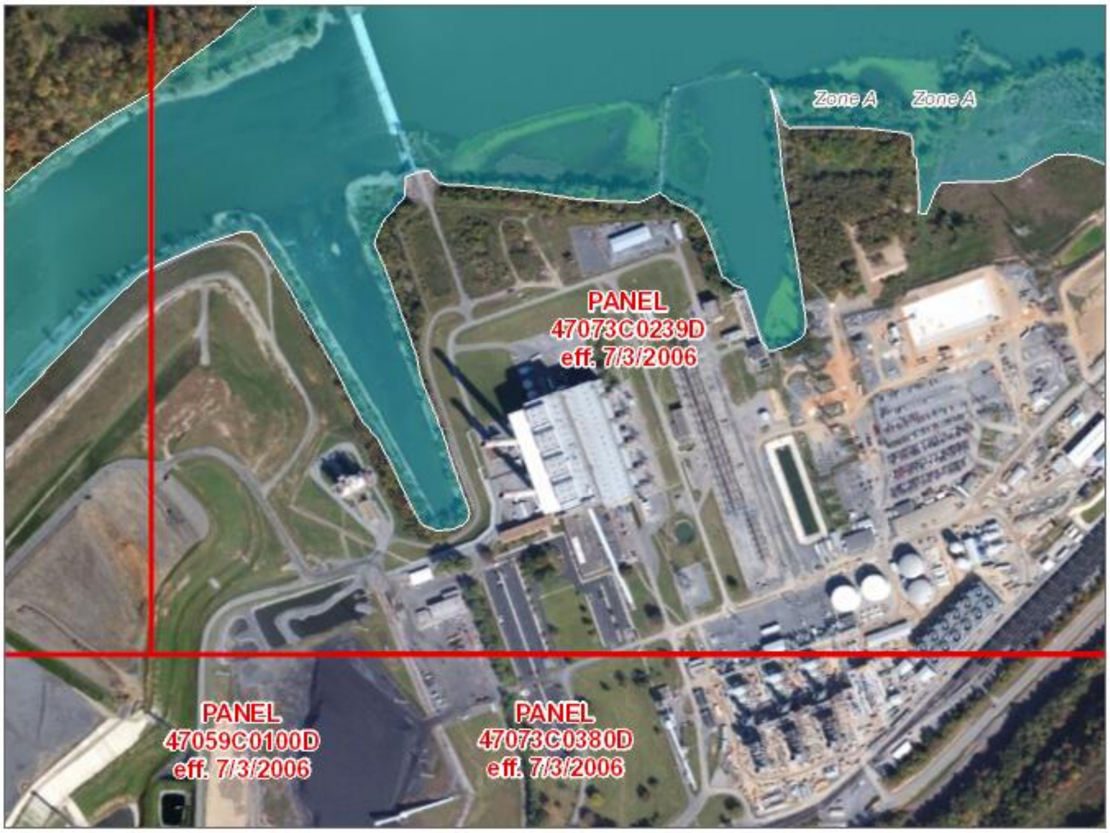

Figure 3-2. Floodplains Associated with JSF, as shown in the National Flood Hazard Layer (FEMA 2014)

3.10.2.1 Alternatives A, B, C, and D

The activities associated with Alternatives A, B, and C would occur outside the 100-year floodplain of the Holston River; therefore, there would be no impacts to floodplains. This would be consistent with EO 11988. Under Alternative D, no permanent physical alteration or deconstruction activities would occur at the existing JSF. Therefore, there would be no impacts to floodplains because there would be no physical changes to the current conditions found within local floodplains.

3.11 Natural Areas, Parks and Recreation

3.11.1 Affected Environment

Natural areas include managed areas, ecologically significant sites, and Nationwide Rivers Inventory streams. Natural areas that are on, immediately adjacent to, or within 10 mi of the project area were reviewed. Three natural areas are within 10 mi of JSF (Figure 3-3). Ebbing and flowing spring is located 4 mi from the boundaries of JSF. This unique spring is only one of two in the world that exhibits regular in and out flow similar to what is seen in tidal systems. Horner Cave is located 8 mi north of JSF. This limestone cave, located north of Rogersville, features a large, stream-eroded cavern. Beech Creek Unit 7 Designated Critical Habitat (DCH) is located within 3 mi of JSF. This is a segment of Beech Creek proposed as DCH for five endangered freshwater mussels (see Section 3.8).

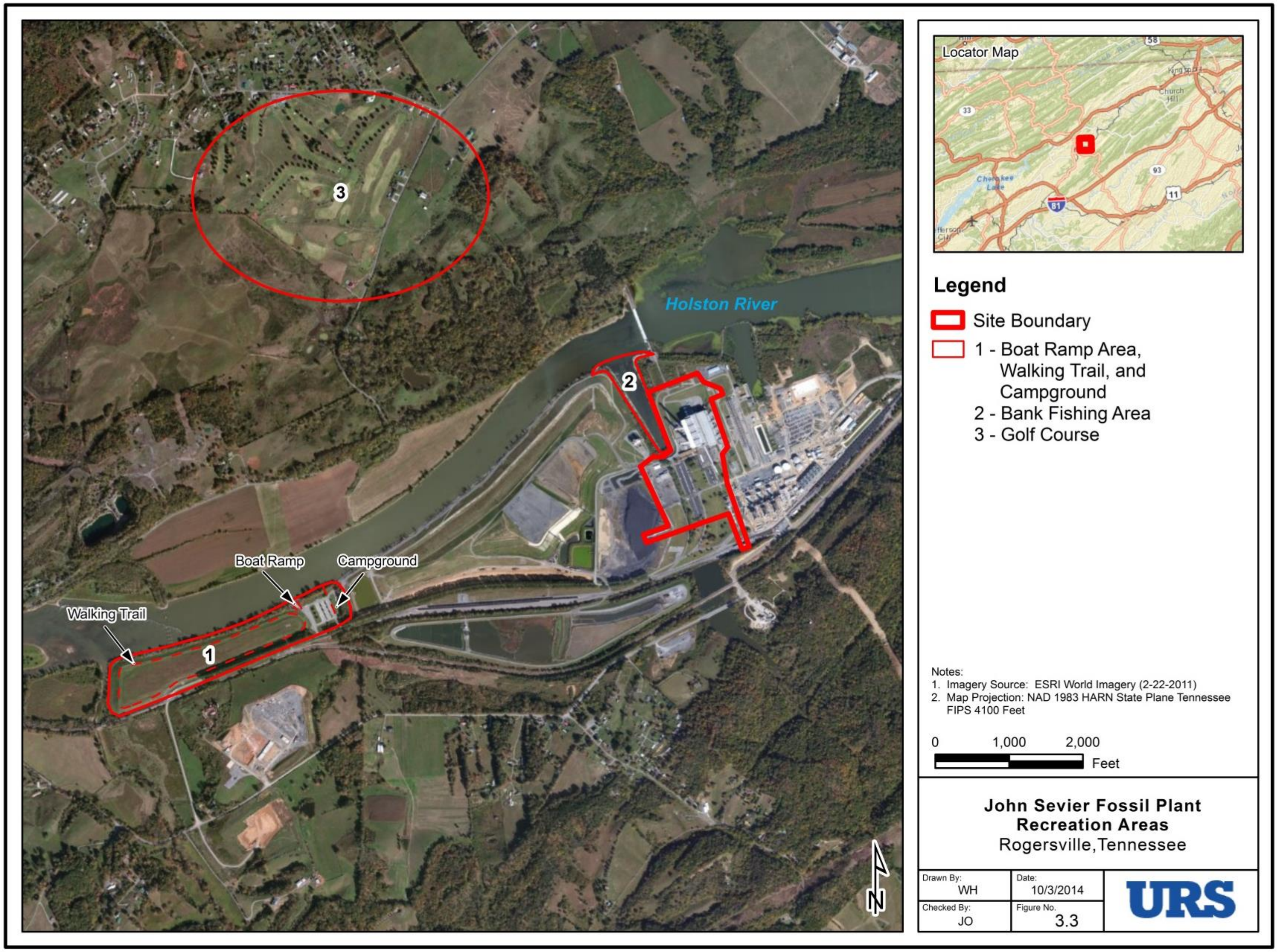

Figure 3-3. Recreation Areas

There are two developed water-based outdoor recreation areas within five river miles downstream from JSF and, below the John Sevier Detention Dam (Figure 3-3). These include:

- TVA public boat ramp and adjacent walking trail, parking area, and campground and
- Bank fishing area adjacent to the JSF discharge channel.

The TVA-maintained public boat launching ramp is located approximately 1 mi downstream from JSF. This ramp was developed by TVA in the 1970s. More recently, a walking trail was established on top of an ash storage site that is located just downstream from the ramp. The ramp parking area also serves trail users. A small public campground developed and operated by TVA, for plant workers and the public, was also situated just upstream from the boat launching ramp. This campground was permanently closed in 2013 due to security and safety issues, low use, and O&M budget constraints.

The second area, which is located immediately adjacent to the old fossil plant, is a bank fishing area. Facilities include a gravel parking lot and a concrete walkway that extends along both banks of the fossil plant cooling water discharge channel. This walkway also provides access to the downstream side of the John Sevier Detention Dam. The area was developed by TVA in the 1990s but was closed to the public in 2013 due to public safety and security issues related to the current Dry Ash Pond construction project. Prior to closure, this facility received frequent use by bank fishermen due to the discharge of cooling water associated with operation of the fossil plant and the area’s proximity to the tailwaters of John Sevier Detention Dam where fish tend to concentrate, especially during the late winter-spring spawning season.

Other outdoor recreation areas within close proximity of the site include McDonald Hills Golf Course, located approximately 1 mi northwest of the plant site on the north side of the John Sevier Detention Reservoir (see Figure 3-3).

3.11.2 Environmental Consequences

3.11.2.1 Alternative A – Assess, Close, and Secure Site

The proposed deconstruction project alternatives, including Alternative A, would not impact the open or closed status of the discharge channel bank fishing area. As previously discussed, the discharge channel bank fishing area was closed in 2013 due to public safety and security issues related to the current Dry Ash Pond construction project ongoing at JSF. TVA plans to reevaluate the fishing access area at JSF as a part of future NEPA activities at JSF. See the cumulative impacts in Section 3.21.4.

Implementation of this alternative would have no significant impact on natural areas, parks, or other developed recreation facilities in the study area because they are located sufficiently distant from the plant.

3.11.2.2 Alternative B – Selective Demolition

See paragraph 1 for Alternative A in Section 3.11.2.1.

Because natural areas, parks, or other developed recreation areas within the study area are not located close to the plant, and demolition activities would be relatively short in duration, no significant impact on these facilities would occur.

3.11.2.3 Alternative C – Demolition to Grade (“Brownfield”)
See paragraph 1 for Alternative A in Section 3.11.2.1.

Because of the distance from the plant site and the relatively short duration of demolition activities, natural areas, parks, or other developed recreation areas within the study area would not be significantly impacted by implementation of this alternative.

3.11.2.4 Alternative D – No Action
See paragraph 1 for Alternative A in Section 3.11.2.1.

Natural areas, parks or other developed recreation areas within the study area would not be affected under this alternative.

3.12 Wetlands

3.12.1 Affected Environment
Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, mud flats, and natural ponds. EO 11990 (Protection of Wetlands) directs federal agencies to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. In addition, activities in wetlands are regulated under the Clean Water Act and various state water quality protection regulations.

In east Tennessee, wetlands are typically associated with low-lying, poorly drained areas, floodplains and riparian zones, and reservoir shorelines. In the Holston River watershed, wetlands comprise less than 1 percent of overall land use (TDEC 2007).

Prior to construction of JSF, it is likely wetlands were associated with the floodplain and shoreline of the site. Review of hydric soils data indicated small areas of relict hydric soils are present within the site boundary. Field surveys, however, indicate only one small (0.04-acre) emergent wetland is present within the proposed project boundary (Figure 3-2). Vegetation is comprised of cattail (*Typha latifolia*) and soft rush (*Juncus effusus*). This wetland is considered an isolated wetland. Filling or grading would not require an ARAP from the state of Tennessee as the activity is permitted under the general permit for Minor Alterations of Wetlands (TDEC 2010a), and is permitted under Nationwide Permit 18 (Minor Discharges) (USACE 2012) as the action would be less than the threshold of either permit, which is 0.1 acre.

3.12.2 Environmental Consequences

3.12.2.1 Alternative A – Assess, Close, and Secure Site
Under Alternative A the site would remain intact, and there would be no impacts to wetlands.

3.12.2.2 Alternative B – Selective Demolition
Alternative B would entail retirement of selected structures at JSF and deconstruction of the infrastructure within the project boundary. The one small wetland located onsite is present within a grassy area between two parking lots and would not likely be affected by this alternative. Prior to any deconstruction activities, this area would be flagged to avoid any impacts. There would be no impacts to wetlands associated with this alternative.

3.12.2.3 Alternative C – Demolition to Grade ("Brownfield")
Alternative C would include retirement of many structures at JSF and grading parking lots, etc. This alternative would not impact the one small wetland located onsite within a grassy area between two parking lots. As stated previously, this area would be flagged to avoid impacts.

3.12.2.4 Alternative D – No Action
Under Alternative D the site would remain intact, and there would be no impacts to wetlands.

3.13 Socioeconomic and Environmental Justice

3.13.1 Affected Environment
JSF is located in Hawkins County, Tennessee, about 5 mi east-southeast of the city of Rogersville. Hawkins County is part of the Kingsport-Bristol-Bristol Metropolitan Statistical Area, which includes Sullivan, Scott, Washington, and Greene counties in Tennessee and Washington County in Virginia.

3.13.1.1 Socioeconomics
According to the 2008-2012 American Community Survey (ACS) (U.S. Census Bureau 2014), the population of Hawkins County is estimated to be 55,993. Of the other counties in the project area, the largest adjacent county is Sullivan, with an estimated population of 156,675. The next largest county is Washington, Tennessee, with a population of 122,840. Washington County, Virginia, has a population of 54,691. Greene County's population is 68,755. The population of the independent city of Bristol, Virginia, is 17,747, which is slightly smaller than Scott County, with 22,196.

Average income levels in Hawkins County are lower than state and national levels. According to estimates for 2012 (www.bea.gov, accessed August 2014) per capita personal income was $30,007 in Hawkins County, approximately 70.2 percent of the national average of $42,693 and 77.4 percent of the state average of $38,752. The economy of Hawkins County is more dependent on farming and on manufacturing than either the state or the nation. Farm employment accounts for 8.5 percent of total employment in the county, while manufacturing accounts for 20.7 percent. In contrast, farm employment accounts for 2.1 percent of the Tennessee total and 0.6 percent of the national total. Manufacturing accounts for 8.9 percent of Tennessee employment and 8.5 percent nationwide.

3.13.1.2 Environmental Justice
Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

Under EO 12898, Environmental Justice, federal agencies are to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.

The minority population in Hawkins County is 4.0 percent of the total, according to ACS 2008-2012 estimates (www.census.gov/acs/www). This is well below the state and national levels of 23.3 and 28.5 percent, respectively. JSF is located in Census Tract 508, Block Group 1. The minority population of this block group is 49, about 3.2 percent of the total population of the block group.

The poverty level in Hawkins County is 16.4 percent, which is slightly lower than the state average of 17.3 percent and the national average of 14.9 percent (U.S. Census Bureau 2014). Poverty levels in the vicinity of JSF are similar to those in the county. Census Tract 508, Block Group 1, has a poverty level of 12.5 percent as of the 2000 Census of Population, slightly higher than the county level of 16.4 percent and the state level of 17.3 percent. Workers commuting from the east would mostly impact Census Tract 508, Block Group 1. Those commuting from the west would impact parts of Census Tract 508 Block Group 3, which has a poverty level of 20.89 percent. In comparison, the comparable county poverty level is 16.4 percent, while the state and national levels are 17.3 and 14.9 percent, respectively.

Overall, poverty levels in the vicinity of JSF are slightly higher than in the larger surrounding areas, but the minority population is small. Minority population levels are low compared to state and national levels. No significant concentrations of minority or low-income populations have been identified, and population in the area is generally dispersed. Any impacts to persons living in the area would be minor under any of the proposed alternatives. Therefore, no disproportionate impacts to disadvantaged populations are expected to occur as a result of implementation of any of the previously discussed alternatives.

3.13.2 Environmental Consequences

3.13.2.1 Alternative A – Assess, Close, and Secure Site
Permanent and temporary employment would not be affected; therefore, there would be no impact to socioeconomics by this alternative.

3.13.2.2 Alternative B – Selective Demolition
Because the coal-fired facility is no longer in operation, loss of employment is not anticipated as a result of Alternative B. Temporary jobs would be generated by the demolition and grading operations resulting in some economic benefit.

3.13.2.3 Alternative C – Demolition to Grade (“Brownfield”)
Because the coal-fired facility is no longer in operation, loss of employment is not anticipated as a result of Alternative C. Temporary jobs would be generated by the demolition and grading operations and would provide substantially more jobs than Alternative B.

3.13.2.4 Alternative D – No Action
Permanent and temporary employment would not be affected by this alternative.

3.14 Cultural and Historic Resources

3.14.1 Affected Environment

3.14.1.1 Statutory and Regulatory Background
Federal agencies are required by the National Historic Preservation Act (NHPA) and by NEPA to consider the possible effects of their undertakings on historic properties. Throughout the process the agency must consult with the appropriate State Historic Preservation Officer (SHPO), federally-recognized Indian tribes that have an interest in the undertaking, and any other party with a vested interest in the undertaking.

Cultural resources include prehistoric and historic archaeological sites, districts, buildings, structures, and objects, and locations of important historic events that lack material evidence of those events. Cultural resources that are included or considered eligible for inclusion in the National Register of Historic Places (NRHP) maintained by the National Park Service (NPS) are called historic properties. To be included or considered eligible for inclusion in the NRHP, a cultural resource must possess integrity of location, design, setting, materials, workmanship, feeling, and association. In addition, it must also meet one of four criteria: (a) association with important historical events; (b) association with the lives of significant historic persons; (c) having distinctive characteristics of a type, period, or method of construction, or representing the work of a master, or having high artistic value; or (d) having yielded or having the potential to yield information important in history or prehistory.

An undertaking may have effects on a historic property that are not adverse, if those effects do not diminish the qualities of the property that identify it as eligible for listing on the NRHP. However, if the agency determines (in consultation) that the undertaking's effect on a historic property within the area of potential effect (APE) would diminish any of the qualities that make the property eligible for the NRHP (based on the criteria for evaluation at 36 CFR 60.4), the effect is said to be adverse. Examples of adverse effects would be ground-disturbing activity in an archaeological site, or erecting structures within the viewshed of a historic building in such a way as to diminish the structure's integrity of feeling or setting.

3.14.1.2 Area of Potential Effect

APE is defined at 36 CFR 800.16(d), 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." APE is analogous to the term affected area as defined in NEPA. For the currently proposed actions at JSF, the APE consists of the JSF facility boundary.

3.14.1.3 Cultural Resources at JSF

TVA conducted various cultural resources surveys between 2007 and 2011 within the JSF reservation with the purpose of identifying archaeological sites and historic architectural resources (Barrett and Karpynec 2008, Gaffin and Marshall 2011, Gage and Guymon 2007, Karpynec et al. 2012, McKee, Barrett, and Karpynec 2008). These surveys included areas within the JSF reservation, which includes the JSF facility boundary (APE). The surveys identified no archaeological sites within the current APE. One of these surveys (McKee, Barrett, and Karpynec 2008) identified JSF as an historic architectural resource. Based on the survey, TVA determined that JSF is eligible for inclusion in the NRHP (letter from Howard to McIntyre dated November 10, 2008), and SHPO agreed (letter from McIntyre to Howard, December 4, 2008).

The 2011 cultural resources survey included a re-evaluation of the JSF plant's eligibility. Based on the results of that evaluation, TVA determined that JSF continues to be eligible for the NRHP under criteria (a) and (c) for its significance in post-World War II electrical development and as a representative example of International Style architecture, and SHPO concurred (letter from McIntyre to Jones, June 24, 2013). National Register-eligible JSF includes the powerhouse with its original power production equipment, attached service bay, conveyor, and exhaust stacks. Contributing resources include the following: the Yard Equipment Maintenance Building, the Breaker Building, the two Conveyor Switchgear Buildings, the Control Tower, the Central Electrical Control Building, the Filter

Plant Building, the Intake Building and associated intake pumps, the Hydrogen Trailer Port, the Sample Building and associated hopper, a water tower, a two-story permanent storage building, five equipment sheds, the concrete detention dam, the coal storage yard, and the Stocking Out Conveyor.

Based on the previous cultural resources surveys and related consultation, no additional historic architectural resources (besides JSF) are located within the JSF reservation, including the current APE.

3.14.2 Environmental Consequences

TVA has previously reached agreement with SHPO concerning the effects of the deconstruction of JSF on historic properties. In June 2013 TVA initiated consultation with SHPO, federally-recognized Indian tribes, and local historic societies concerning the proposed deconstruction of JSF. TVA and SHPO agreed that (1) the JSF Decommissioning project, as proposed in 2012 and described in this EA, would not affect any archaeological sites listed or eligible for listing in the NRHP, (2) that JSF continues to be eligible for listing in the NRHP, and (3) that the decommissioning project would have an adverse effect on JSF (letter from Jones to McIntyre dated June 11, 2013; letter from McIntyre to Jones dated June 24, 2013; and letter from McIntyre to Jones dated June 27, 2013). TVA received no objections from the SHPO regarding the undertaking.

In September 2013, TVA and SHPO entered into a memorandum of agreement (MOA) pursuant to 36 CFR 800 regarding the JSF Decommissioning project. The MOA addresses measures for the avoidance, minimization, and mitigation of adverse effects to JSF from the Decommissioning project. As stipulated by the MOA, TVA has taken steps to mitigate the adverse effects to JSF. Those steps consist of (1) preparing documentation required for the Historic American Engineering Records (HAER) and submitting the documentation to the NPS for review and (2) installing interpretive panels on TVA property at a location accessible to the public. TVA submitted the final HAER documentation to NPS on June 11, 2014. The final submission included the changes that NPS has requested and closely follows the HABS/HAER guidelines published by NPS, as stipulated by the MOA.

TVA hired the Tombras Group, a professional advertising agency, to design five interpretive panels, which present information about the history and architecture of JSF and its historical significance. The panels utilize images provided by the TVA Historian and text composed by TVA staff working closely with the Tombras Group. Installation of the panels was initiated in September 2014.

3.14.2.1 Alternative A – Assess, Close, and Secure Site

Alternative A is not expected to have any effects on NRHP-eligible JSF because this alternative does not include actions that would diminish the qualities of JSF (including contributing elements) that make it eligible for listing in the NRHP.

3.14.2.2 Alternative B – Selective Demolition

Alternative B would result in an adverse effect to JSF because it would include removal (demolition) of contributing elements to JSF including the office wing, stocking out equipment, two stack chimneys, service bay, hydrogen trailer port, and coal control tower. However, TVA and SHPO have agreed (by letters dated August 15, 2014 and September 11, 2014 provided in Appendix D) that the steps that TVA has taken to mitigate the adverse effects of the JSF Decommissioning project have adequately mitigated the adverse effects that would occur as a result of Alternative B. TVA and SHPO have also agreed that no archaeological resources would be affected by the deconstruction of JSF. TVA consulted with federally-recognized Indian tribes concerning the potential effects of the current undertaking on historic properties. The Muscogee (Creek) Nation responded in an email sent September 17, 2014 that they are "…unaware of any culturally significant sites within the project area."

3.14.2.3 Alternative C – Demolition to Grade ("Brownfield")

Alternative C would result in an adverse effect to JSF because it would include removal (demolition) of NRHP-eligible JSF and most of the contributing elements. However, TVA and SHPO have agreed (by letters dated August 15, 2014 and September 11, 2014) that the steps that TVA has taken to mitigate the adverse effects of the JSF Decommissioning project have adequately mitigated the adverse effects that would occur as a result of Alternative C. TVA and SHPO have also agreed that no archaeological resources would be affected by the deconstruction of JSF. TVA consulted with federally-recognized Indian tribes concerning the potential effects of the current undertaking on historic properties. The Muscogee (Creek) Nation responded in an email sent September 17, 2014 that they are "unaware of any culturally significant sites within the project area."

3.14.2.4 Alternative D – No Action

Alternative D would have no effects on NRHP-eligible JSF and no effects on archaeological sites.

3.15 Land Use and Prime Farmland

3.15.1 Affected Environment

Prime farmland soils, as defined by the U.S. Department of Agriculture, are those soils that have the best combination of physical and chemical properties for production of agricultural crops. The concern that continued conversion of prime farmland to nonagricultural use would deplete the nation's resource of productive farmland prompted creation of the 1981 Federal Farmland Protection Policy Act. The act set guidelines that require federal agencies to evaluate land prior to permanently converting it to nonagricultural land use. Form AD 1006, "Farmland Conversion Impact Rating," is required to be completed with assistance from the Natural Resources Conservation Service (NRCS) before an action is taken when prime farmland is involved.

The project site was used for coal-fired power production as recently as 2012. The soils in the area of JSF have formed in alluvial deposits of sandstone, shale, and limestone material deposited by the Holston River. Most are considered very deep soils and are either moderately well-drained or well-drained soils. One soil type is identified for the project site, Holston-Urban land complex (47 acres) (NRCS 2013). The project site area is currently in an industrial setting and consists of soils that are not classified as prime farmland and Form AD 1006 is not required.

3.15.2 Environmental Consequences

3.15.2.1 Alternative A – Assess, Close, and Secure Site

Land use under Alternative A would not change significantly. The JSF coal-fired plant would remain along with the affiliated outer buildings. The site would continue to be nonoperational with only required maintenance occurring as needed. Under this scenario, redevelopment of the site would be limited due to the specialized nature of the facilities. The inability to redevelop the site would pose a significant impact to the efficient use of property that could otherwise be used for renewable or alternative sources of energy and sustainable land use in compliance with the TVA Environmental Policy (TVA 2008).

3.15.2.2 Alternative B – Selective Demolition
Land use under Alternative B would not change significantly. The JSF coal-fired plant would remain, while most of the other facilities would be removed and replaced with topsoil and seeded. The site would continue to be nonoperational with maintenance occurring as needed. Approximately 25 acres of the site would be graded and seeded and made available for other uses. The limited ability to redevelop the site would pose impact to the efficient use of property that could potentially otherwise be used for renewable or alternative sources of energy and sustainable land use. These impacts would be far less than Alternatives A and D but still more than Alternative C.

3.15.2.3 Alternative C – Demolition to Grade ("Brownfield")
If Alternative C is chosen, the site would be converted from an industrial facility to a brownfield totaling approximately 47 usable acres. The resulting brownfield would have the potential for redevelopment as a site for renewable or alternative sources of energy and sustainable land use in compliance with the TVA 2008 Environmental Policy.

3.15.2.4 Alternative D – No Action
Under Alternative D, the potential impacts to the site would be similar to Alternative A. Land use would not change and the inability to redevelop the site would pose a significant impact to the efficient use of property.

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

3.16.1 Affected Environment
JSF is located in a rural portion of Hawkins County, Tennessee, near the small settlement of McCloud. The surrounding topography ranges from gently sloping near the banks of the Holston River to moderately and steeply sloping ranges at Piney Mountain to the south and Town Knobs to the north. Dense forest is visible along the slopes leading up from the valley floor to the hilltops above. Agricultural operations, as well as scattered private residences and rural farmsteads, are visible toward the banks of the Holston River to the south. To the north, and slightly obscured from view, residential development increases in density along the banks and farther northward to the nearby town of Rogersville.

The existing JSF stacks, as well as the 500-kV transmission lines leaving the plant site to the east, are dominant elements in the landscape for recreational river users, shoreline and near shore residents, and motorists traveling on nearby roadways within the foreground (i.e., within 0.5 mi from the observer) and middleground (0.5 mi to 4 mi from the observer) viewing distances. Within the immediate vicinity of the plant site, the landscape character is distinctly industrial. Plant employees and visitors, and visitors to the recreation area, located just off the plant access road and to the west of a large ash disposal area, currently have views of taller elements within the plant site. Views along portions of the access roadway to the south are blocked due to changes in elevation and existing vegetation.

The scenic attractiveness of the proposed project area is common to minimal, and the scenic integrity is low due to the industrial nature of the power plant.

3.16.2 Environmental Consequences

3.16.2.1 Alternative A – Assess, Close, and Secure Site

Selection of Alternative A would not significantly alter the current visual environment because existing structures would remain in place. Under Alternative A the visually dominant stacks would remain visible from residences at higher elevations to the north and south of the facility. Views to and from the Holston River would remain the same, with the JSF stacks and associated buildings as major visual features in the foreground along the riverside. With no major changes to the existing landscape, the adoption of Alternative A would not result in significant impacts to existing visual resources.

3.16.2.2 Alternative B – Selective Demolition

Under Alternative B, TVA would remove the two 500-ft stacks and a number of peripheral structures but leave the main JSF plant. Removal of these structures would eliminate the majority of the industrial and institutional features from the foreground of river users, motorists on nearby roads, and some residences. However, the more dominant stacks would remain, thereby maintaining one of the most recognizable features of the site. The adoption of Alternative B would not significantly modify the visual experience for river users, motorists on area roads, or residences because the stacks and powerhouse would remain in place.

3.16.2.3 Alternative C – Demolition to Grade ("Brownfield")

Selection of Alternative C would remove the retired or abandoned structures, parking, and roads associated with the coal-fired facility. Removal of these elements, especially the more dominant elements, such as the stack chimneys, from the foreground of river users, shoreline and near shore residents, and motorists traveling on nearby roadways would eliminate certain industrial elements from the landscape. The adoption of Alternative C would have a positive impact to existing visual resources.

3.16.2.4 Alternative D – No Action

Similar to Alternative A, the adoption of Alternative D would mean that JSF structures including the stacks, powerhouse, and other visually dominant elements would remain in the foreground for river users, shoreline and near shore residents, and motorists traveling on nearby roadways. These structures would remain in context with the existing industrial landscape character of JSF. The adoption of Alternative D would not result in significant impacts to existing visual resources.

3.17 Noise

3.17.1 Affected Environment

The area surrounding JSF consists of open farmland, residential properties, and the upper end of Cherokee Reservoir. The closest homes are located approximately 0.5 mi south of the JSF site. Trees growing between the site and nearby residences block the line of site and help to attenuate noise from JSF.

Noise is measured in logarithmic units called 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. A-scale weighting reflects the fact that a human ear hears poorly in the lower octave-bands. It emphasizes the noise levels in the higher frequency bands heard more efficiently by the ear and discounts the lower frequency bands.

The equivalent sound level, or Leq, is the constant sound level that conveys the same sound energy as the actual varying instantaneous sounds over a given period. It averages the fluctuating noise heard over a specific time period as if it had been a steady sound. The day-night sound level, or 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 Hawkins County; however, EPA (1973) guidelines recommend that Ldn not exceed 55 dBA.

On November 6 and December 4, 2009, background noise was measured to record the existing noise levels in the vicinity of JSF. Noise measurements at residences on McCloud Church Circle averaged 46 dBA during periods without trains or coal unloading. This is typical of a rural setting. During these measurements, the loudest noises were from cars driving on the gravel road, although traffic was very light. Noise from ash handling at the power plant and barking dogs were the most frequent sources. Horses, birds, and leaves in the wind were also heard during these measurements. While coal was being unloaded and the shaker was in use, noise levels averaged 51 dBA near these residences. Periodically, while trains are passing on the main railroad tracks, noise levels are approximately 73 dBA near these residences. Overall, these homes experience relatively low noise levels much of the time; however, there are intermittent periods of high noise levels caused by passing trains and coal delivery trains. Since these background noise measurements were taken, operational changes have reduced the overall noise generated at JSF. The coal plant itself does not generate much noise outdoors since ceasing operations in 2012. Coal unloading has historically been one of the strongest noise generating activities on the site; however, the coal plant no longer requires coal to be delivered by rail. Without the need for coal unloading, operations at JSF currently produce less noise than what has been previously reported and no additional noise study has been deemed necessary at this time.

Noise levels found in the surrounding rural setting beyond JSF are included in Table 3-8.

Table 3-8. 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: U.S. Air Force (USAF) et al. 1992.

3.17.2 Environmental Consequences

3.17.2.1 Alternative A – Assess, Close, and Secure Site

If Alternative A is selected, TVA would continue to follow the current operating plan, which includes ongoing maintenance of the retired coal-fired powerhouse and its related structures and parking. No changes to current noise levels surrounding the JSF coal-fired facility are anticipated under this alternative.

3.17.2.2 Alternative B – Selective Demolition

If Alternative B is chosen, demolition activities would last approximately 12 to 15 months. Most of the work would occur during the day on weekdays. However, demolition activities could occur at night or on weekends, if necessary. Demolition activities would increase traffic on roads near the plant, which would also increase intermittent noise at some nearby residences. During the demolition phase, noise would be generated by a variety of construction equipment, including explosives, compactors, front loaders, backhoes, graders, and trucks. Due to the temporary and intermittent nature of demolition and the site's rural location and distance to nearest receptors, greater than 0.5 mi, noise from demolition activities would not be expected to cause significant adverse impacts.

3.17.2.3 Alternative C – Demolition to Grade ("Brownfield")

Under Alternative C, demolition activities would last approximately 15 to 18 months. Most of the work would occur during the day on weekdays. However, demolition activities could occur at night or on weekends, if necessary. Demolition activities would increase traffic on roads near the plant, which would also increase intermittent noise at some nearby residences. During the demolition phase, noise would be generated by a variety of construction equipment, including explosives, compactors, front loaders, backhoes, graders, and trucks. Due to the temporary and intermittent nature of demolition and the site's rural location, and distance to nearest receptors, greater than 0.5 mi, noise from demolition activities is not expected to cause significant adverse impacts.

3.17.2.4 Alternative D – No Action

Under Alternative D, TVA would continue to follow the current operating plan, which includes ongoing maintenance of the retired coal-fired powerhouse and its related structures and parking. No changes to current noise levels surrounding the JSF coal-fired facility are anticipated under Alternative D.

3.18 Safety

3.18.1 Affected Environment

JSF is bounded to the north and west by the Holston River. The areas south and east of the facility are predominately wooded or in agricultural use with a small number of residences scattered throughout.

The site is generally accessible via TVA Road, the only vehicular route in or out of the facility. TVA Road eventually connects to State Route (SR) 66/70 (two-lane highway) approximately 1.5 mi west of the facility. The JSF campus is surrounded by chain link security fence, with the entrance gates guarded. Population in the immediate area (within approximately 0.5 mi to the south) is very sparse, with only a few dwellings in the vicinity. A small population center is located approximately 2 to 3 mi southwest of the facility. Thus, the effects of any of the selected alternatives on the general population would likely be somewhat low.

3.18.2 Environmental Consequences

3.18.2.1 Alternative A – Assess, Close, and Secure Site

Under Alternative A, existing structures would remain in place and high-risk environmental and safety issues would be addressed. Without complete removal of the structures, there is the potential for materials to degrade; become subject to surface water erosion wind erosion, or biological disturbance; or become leachable into the groundwater. Over time, lead from lead-based paint, metals in wiring and pipe, and oil from retired equipment could find its way to soils and groundwater and potentially contaminate drinking water sources. Maintenance activities associated with environmental items could continue for decades.

Public health and safety concerns related to hazardous materials are low under this alternative. Potential contaminants removed would be transported either by truck or by rail to an off-site landfill. Truck traffic volumes to and from the facility could increase temporarily for a short period. The likelihood that contaminants resulting from material degradation could reach drinking water sources is low. Once the site is secure, there would be very low traffic volumes associated with the facility.

Trespassing and vandalism are often a concern at a closed facility containing salvageable materials. Unauthorized persons at the site could presumably be exposed to potential contaminants or physical injury.

3.18.2.2 Alternative B – Selective Demolition

Alternative B would involve removal of potential contaminant sources and removal of certain structures.

Public health and safety concerns related to hazardous materials are low under this alternative. Brick, block, and concrete demolition debris would be used as clean fill where not impacted by ACM or other hazardous materials. Other demolition debris would be hauled to an offsite landfill either by truck or rail. Alternative B would have hazardous material and potential contaminant concerns similar to those listed for Alternative A.

In addition to potential contaminants being hauled to an off-site landfill as with Alternative A, Alternative B could result in up to 1,000 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. Reducing the amount of outside structures and equipment would require less O&M costs/personnel time than Alternative A. Trespassing and vandalism concerns could likely be reduced due to structure removal.

3.18.2.3 Alternative C – Demolition to Grade (“Brownfield”)

Alternative C would involve demolition of structures to the ground surface.

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

Potential contaminants removed would be hauled to an offsite landfill either by truck or by rail. Alternative C 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 less of an issue for the facility compared to Alternatives A, B, and D.

3.18.2.4 Alternative D – No Action

Under Alternative D, the power plant and associated structures would not be demolished nor would potential contaminants be removed. If the facility is left as is, it likely would present a liability to TVA in that there would be the potential for hazardous materials to contaminate soil and groundwater as systems and structures degrade. Peeling lead-based paint, failing concrete, buckling floor tiles, and asbestos breakdowns are examples of the onsite hazard risks. There would also be issues with the functionality of sump pumps as some are not considered to be viable in the long term.

Public health and safety concerns related to hazardous materials under this alternative are worthy of some attention. Not only would there be the potential for environmental contamination, but concerns regarding trespassing and vandalism would be higher than with some of the other alternatives due to the presence of salvageable materials. Unauthorized persons at the site could presumably be exposed to potential contaminants or physical injury.

3.19 Utilities and Service Systems

3.19.1 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 four alternatives.

It is also necessary to discuss facilities that are not located within this study area but that could be affected by utility relocations or interruptions because they currently share a common service line. This pertains specifically to JCC and the TVA campground.

Current utilities and service systems include drinking water, cooling water, process wastewater and cooling water, sanitary wastewater, electrical, cable television, fiber optics, compressed air, and natural gas. Service systems at the plant are described in Section 3.1.5 of the PPD (HDR Engineering, Inc. 2014). Table 3-9 lists the disposition of the service systems under each alternative.

Table 3-9. Impact to Service Systems by Alternative

Service System	Alternative A	Alternative B	Alternative C	Alternative D
Stack elevator	Stay	Stay	Demo	Stay
Stack aircraft warning lights	Stay	Stay	Demo	Stay
Surge bin sump pumps (requires ash PLC)	Stay	Stay	Demo	Stay
Ash bilge pumps	Stay	Demo	Demo	Stay
Station sumps	Stay	Demo	Demo	Stay
Coal handling sumps	Stay	Demo	Demo	Stay
Powerhouse dewatering pumps	Stay	Stay	Demo	Stay
Sewage ejectors	Stay	Demo	Demo	Stay
CO_2 system	Stay	Stay	Stay	Stay
Lighting system	Stay	Select Demo	Demo	Stay
HVAC and chiller system	Stay	Select Demo	Demo	Stay
Ventilation fans	Stay	Stay	Demo	Stay
Compressed air	Stay	Select Demo	Demo	Stay
Freight elevator (personnel elevators turned off)	Stay	Stay	Demo	Stay
NPDES thermal monitoring instrumentation	Stay	Stay	Demo	Stay
ABB DCS supporting NPDES monitoring	Stay	Stay	Demo	Stay
Treated water (leak check)	Stay	Stay	Demo	Stay
Ash stack toe drain system	Stay	Stay	Stay	Stay
Coal yard runoff pumps (or lined pond pumps)	Stay	Demo	Demo	Stay

Service System	Alternative A	Alternative B	Alternative C	Alternative D
Common and emergency station service transformers	Stay	Stay	Demo	Stay
Emergency station service underground cable	Stay	Stay	Demo	Stay
4160V common boards	Stay	Stay	Demo	Stay
480V boards and transformers	Stay	Stay	Demo	Stay
250V batteries and MG sets	Stay	Stay	Demo	Stay
120V UPS and batteries for NPDES monitoring	Stay	Stay	Demo	Stay

The alternative descriptions provided by the PPD (HDR Engineering, Inc. 2014) were used as the basis for understanding the currently proposed decommissioning options. Available utility and mechanical plan drawings were reviewed with TVA personnel along with field observations to identify current utility layouts and potential utility and service system issues.

Plan drawings for various utilities and service systems were reviewed during the June 2014 site visit. Drawings were provided for utility systems and include the following:

- Raw, treated, and softened water and compressed air lines
- Sumps
- Drainage plan
- Ash sluice piping
- Sewer lines
- Storm water lines
- Electrical lines

Diagrams are available at the JSF job trailer. See Figure 3-4, Figure 3-5, Figure 3-6, Figure 3-7, Figure 3-8, and Figure 3-9 for general utility layout drawings.

3.19.2 Environmental Consequences

3.19.2.1 Alternative A – Assess, Close, and Secure Site

The Alternative A design scope would include identification and documentation of utilities left in place and operational. For example, one utility identification task would be to evaluate the existing lighting fixtures to determine which lights need to remain in service for areas that require frequent occupancy. Remaining buildings would need periodic inspections; therefore, some lighting would remain in each structure. Eleven existing transformers contain or once contained PCBs. To reduce the environmental risk these transformers would be removed and replaced as needed. In addition, storm water 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 O&M schedule.

Services systems would also remain, including fire protection inside the plant, raw water system, ash sluice piping, high-pressure fire protection, elevators, stack aviation lighting, sump pumps, 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. The demolition contractor may choose to utilize rail for transportation of scrap metal or other equipment.

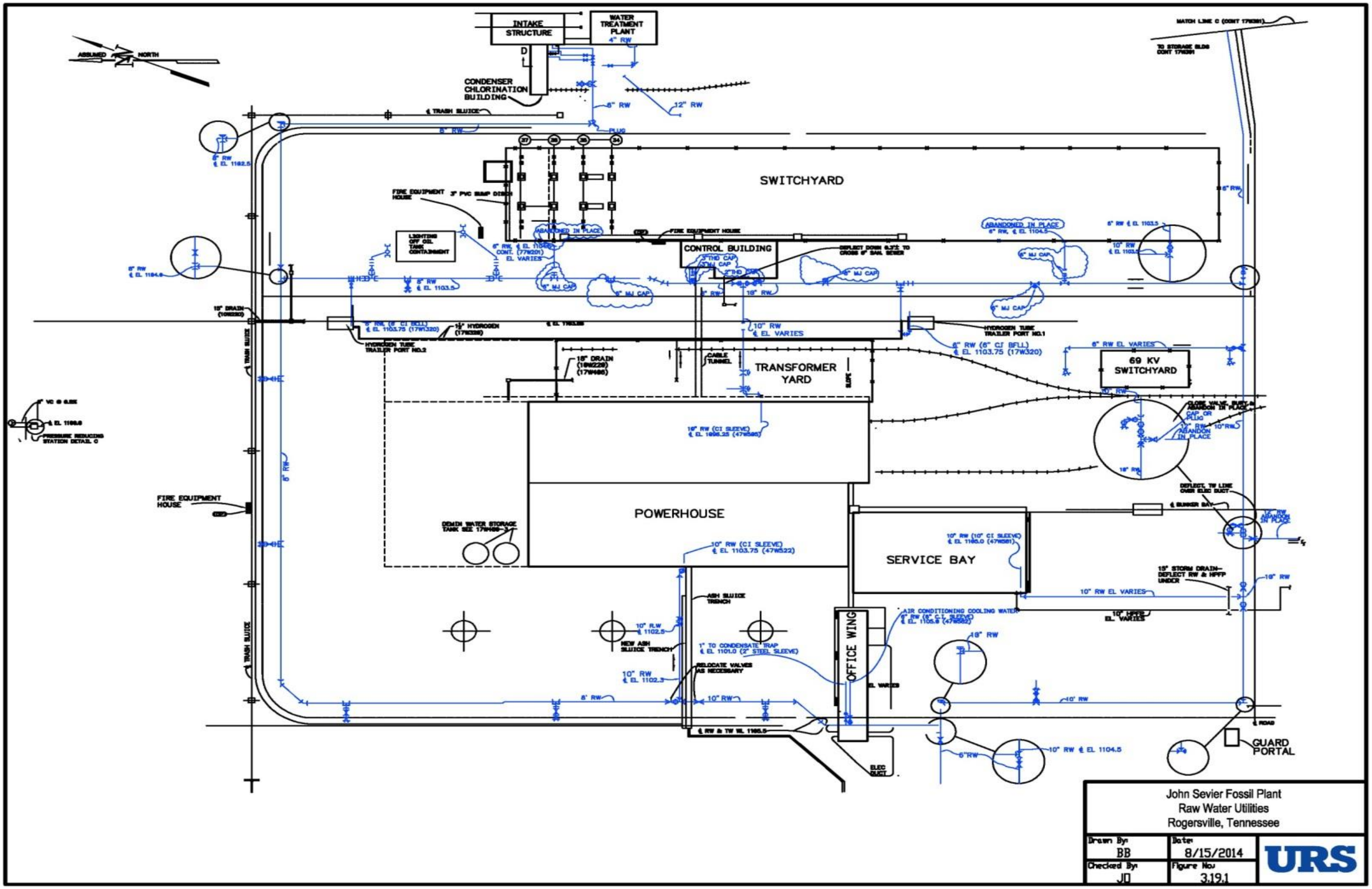

Figure 3-4. JSF Raw Water Utilities

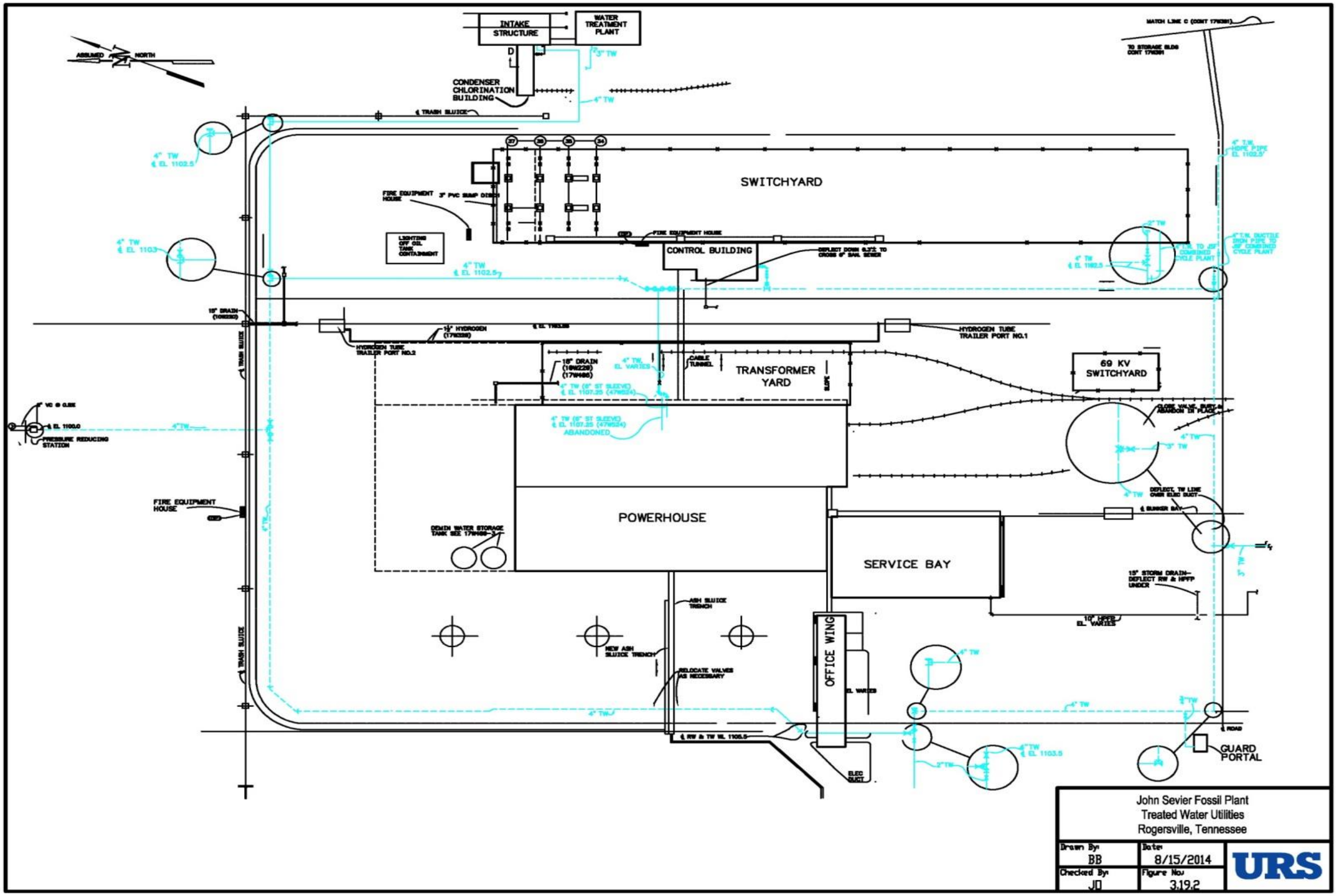

Figure 3-5. JSF Treated Water Utilities

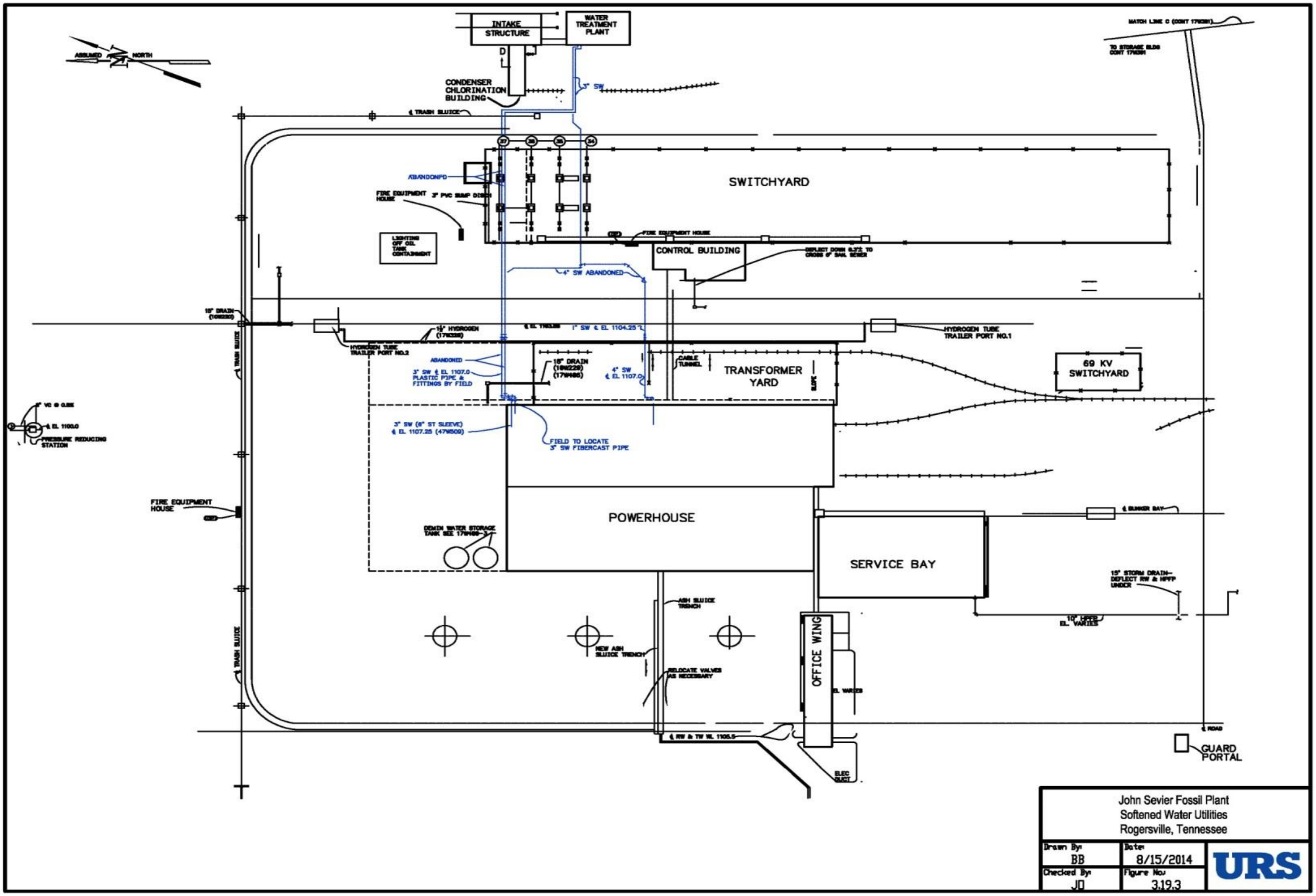

Figure 3-6. JSF Softened Water Utilities

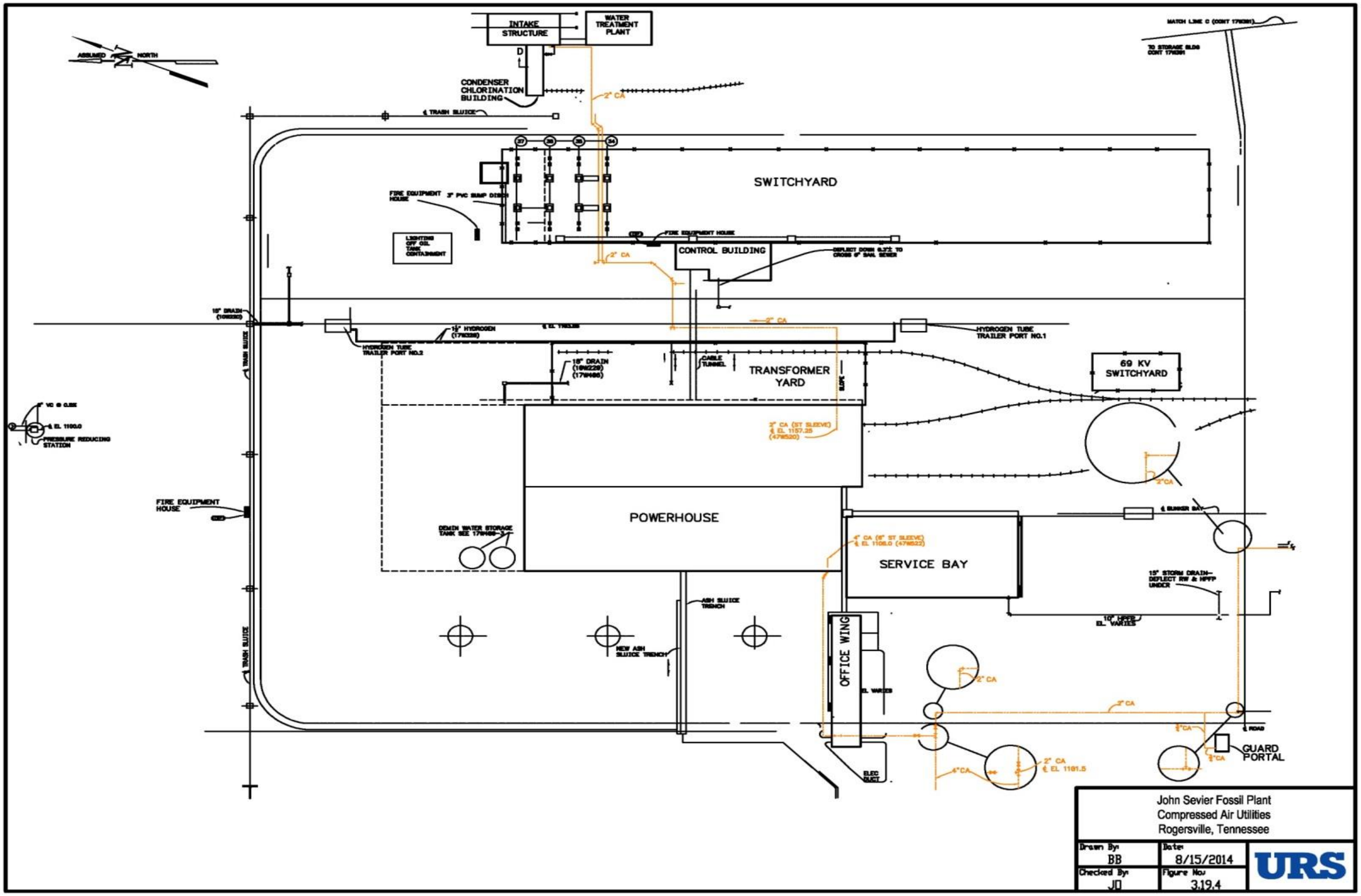

Figure 3-7. JSF Compressed Air Utilities

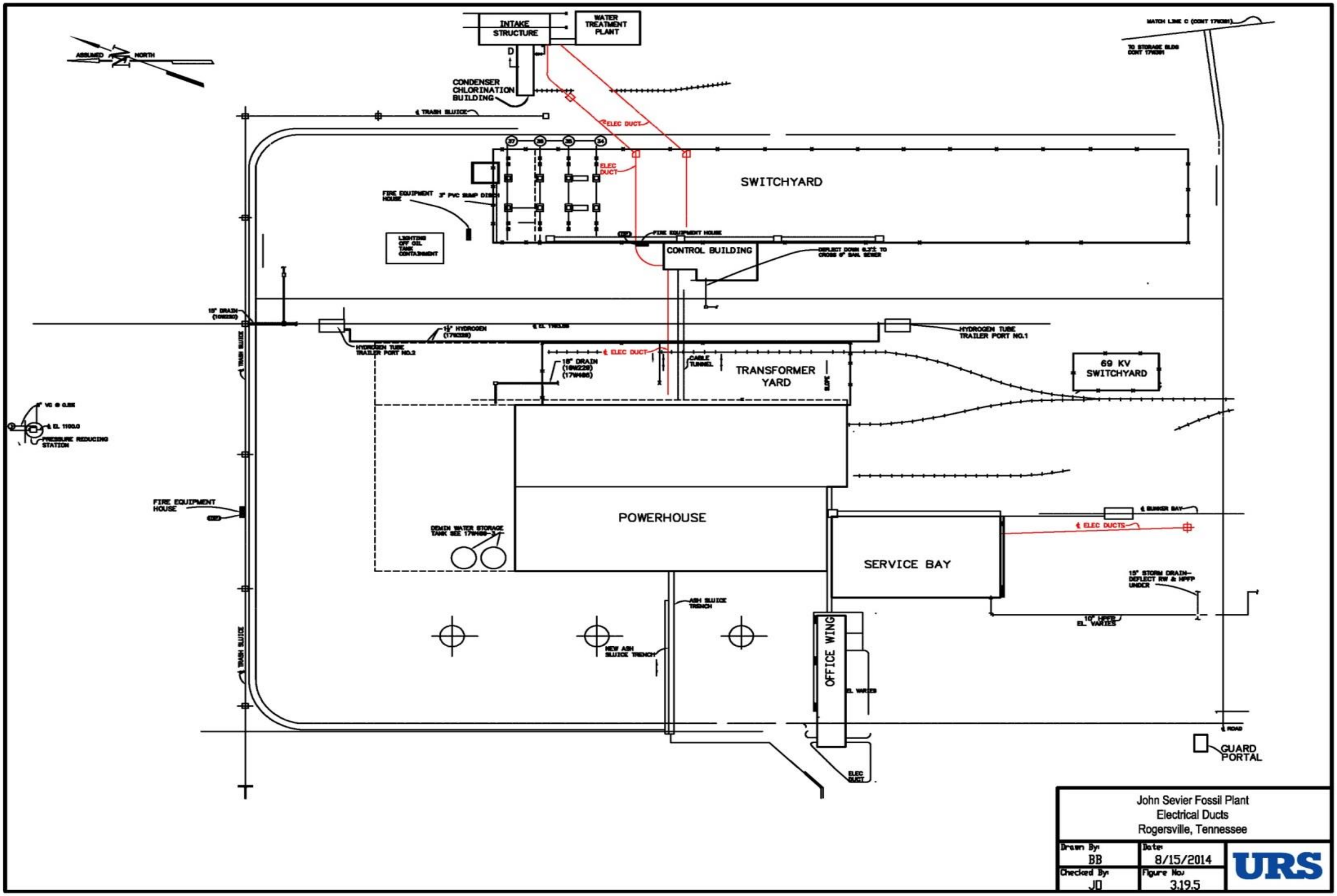

Figure 3-8. JSF Electrical Ducts

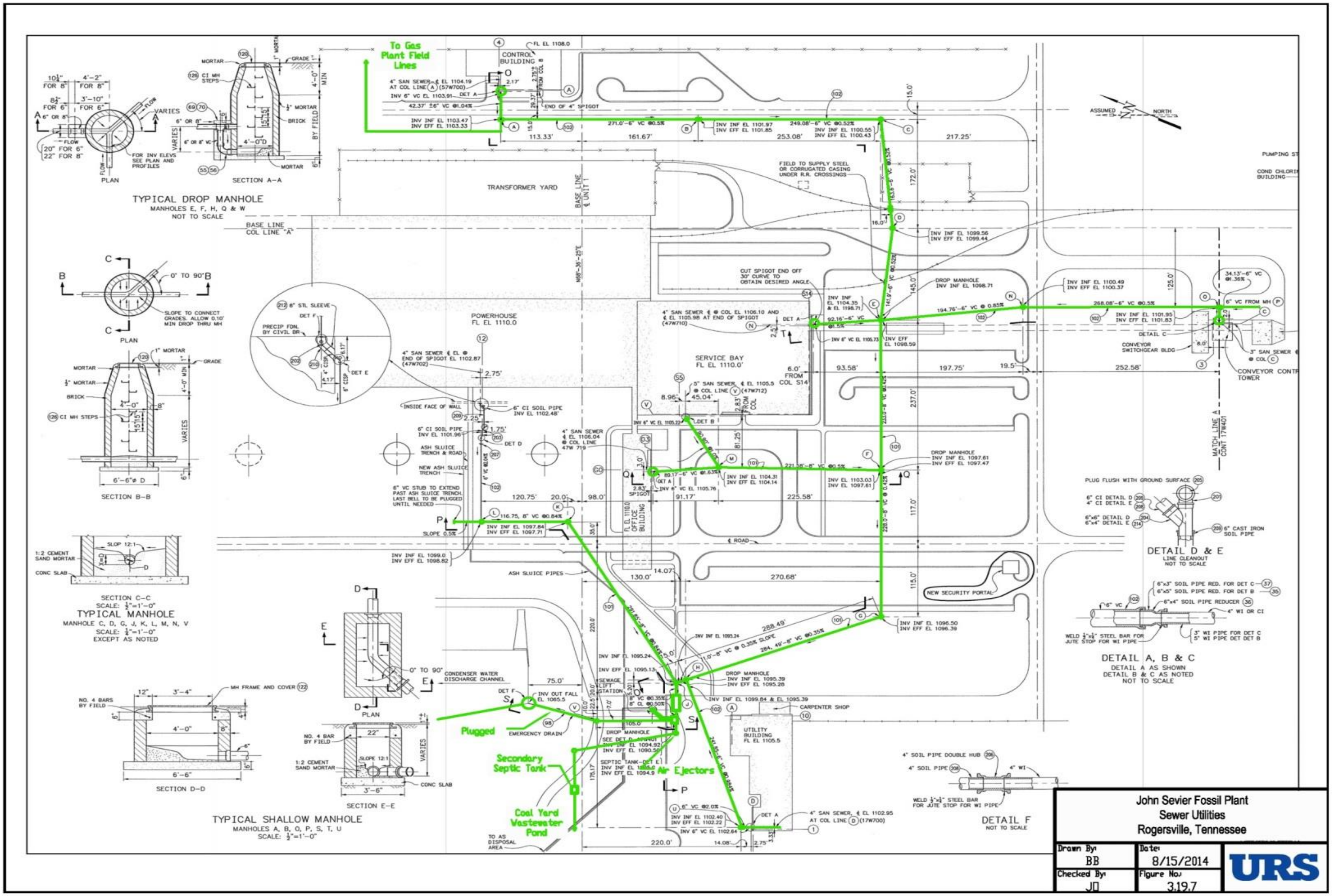

Figure 3-9. JSF Sewer Utilities

JCC is considering replacing the 60-year-old potable water line from the municipal water treatment plant that runs through JSF. This water line is a source of continuous problems and leaks. This potable waterline is not impacted by deconstruction; therefore, its replacement would be performed outside the scope of this project.

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 impact groundwater quality. Additionally, service systems would remain onsite as part of this alternative. These service systems 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.

3.19.2.2 Alternative B – Selective Demolition

Under this alternative, a number of utilities and service systems would also be removed including select street lighting, electrical water and sewer lines from the above structures, compressed air lines, and gas lines from these structures. The rail system would remain with this alternative.

Many of the utilities and service systems would remain as the power plant would not be deconstructed. It is estimated that the number of maintenance personnel would be reduced by 25 percent under Alternative B; thus, six employees would remain. A secondary septic tank currently serves the power plant that would be maintained under Alternative B. Sewer line connections associated with the power plant and secondary septic tank would remain to ensure no sewer service interruptions. If sewer services to the power plant are damaged during the selective demolition, additional service lines would be required to maintain power plant operations.

The power plant electrical power feed, water services (raw water, softened water, and treated water) and compressed air originate at the water treatment plant. The water and compressed air service lines appear to be routed through the transformer yard to the power plant.

Under Alternative B, underground utilities that are 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 impact groundwater quality. Additionally, multiple service systems would remain onsite as part of this alternative. Without complete removal, there is a potential for materials to degrade and possibly impact groundwater.

3.19.2.3 Alternative C – Demolition to Grade ("Brownfield")

Under this alternative, utilities and service systems would be removed, with the exception of site security. With the removal of the facility, site security would be significantly reduced. Removing the powerhouse and outlying structures would eliminate the need for permanent O&M staff to be stationed onsite. Regular inspections of the structures and equipment would no longer be necessary. Inspection of any engineering controls used for site closure would be necessary, but would be provided by local TVA personnel.

For Alternative C, no storm water pond for the area surrounding the former coal buildings is planned. The area would be regraded to sheet flow, ultimately discharging to the discharge channel area. The catch basins in and near the 161 kV switchyard would still flow toward the JCC storm water pond.

Under Alternative C, service systems and utilities would be removed, including the potable water line that currently serves JCC. If Alternative C is selected, the potable water line would either need to be rerouted or replaced with a utility line in order to maintain service to JCC.

3.19.2.4 Alternative D – No Action

Under the No Action Alternative, TVA would maintain the JSF site. The service systems that are currently operational and that would remain so under Alternative D include the electrical distribution system, ash sluice/high pressure fire protection water supply, sump pumps, dewatering pumps, coal yard run-off pumps, chemical pond pumps, dry stack toe drain pumps, aircraft warning lights, and plant ventilation.

The maintenance staff onsite is limited and there is currently no routine maintenance performed at the coal facility. With limited upkeep, the performance of onsite utilities and service systems could be compromised and negatively impact the coal-fired facility and TVA campgrounds over the long term. Additionally, without routine maintenance, the utilities and service systems would continue to degrade, which could potentially affect groundwater and the local environment.

The municipal water treatment plant provides potable water to JCC via an aging water line navigated through the JSF site. The condition of the 60-year-old water line is degrading, which could potentially lead to service interruptions at JCC.

3.20 Transportation

The existing conditions of resources along the proposed transport route and the potential effects of the proposed alternatives on these resources are described in this section.

3.20.1 Affected Environment

JSF is served by highway and railway modes of transportation. Tennessee SR 66 and SR 70 provide truck and automobile access via TVA Road to JSF. The state highways are high-quality, rural roadways with a shoulder. Access from Interstate 81 from the west is via SR 66 northeast to SR 70 east to JSF. Access from Interstate 81 from the east is via SR 70 north to JSF. Direct access to JSF is via Old Highway 70 and a JSF access road (TVA Road) east into the JSF Reservation. Table 3-10 shows the 2008 average annual daily traffic counts (Tennessee Department of Transportation [TDOT] 2008).

Table 3-10. Primary Routes Studied with 2008 Average Annual Daily Traffic Counts

Roadway	Average Daily Use
SR 66 (south of SR 70)	3,653
SR 66 (north of SR 70)	11,122
SR 70	1,074
Old Highway 70	991

The *Highway Capacity Manual* methodology (Transportation Research Board 2000) was followed to identify potential traffic flow problem areas in the vicinity of JSF. The manual provides a qualitative method to measure traffic flow and motorists' perceptions of traffic flow. Six levels of service (LOS) are defined and given letter designations from A to F, with LOS A representing the best conditions and LOS F representing the poorest conditions.

The upper limit of LOS E is considered to be the capacity for roadways in the vicinity of JSF. The LOS for existing traffic was compared to the total of existing traffic plus predicted traffic. There was no change in the anticipated LOS (Table 3-11).

Table 3-11. Current and Anticipated Levels of Service for Roadway Segments in the Vicinity of JSF

Roadway Segment	Existing Level of Service	Anticipated Level of Service
SR 66 (south of SR 70)	D	D
SR 66 (north of SR 70)	E	E
SR 70	C	C
Old Highway 70	D	D

3.20.2 Environmental Consequences

3.20.2.1 Alternative A – Assess, Close, and Secure Site

Under Alternative A potential contaminant sources would be removed. 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. Truck traffic volumes to and from the facility could increase temporarily for a short period, potentially affecting the LOS for roads in that area.

3.20.2.2 Alternative B – Selective Demolition

Alternative B would involve removal of potential contaminant sources and removal of certain structures. Demolition debris would be hauled to an offsite landfill either by truck or by rail. In addition to potential contaminants being hauled to an offsite hazardous waste landfill, Alternative B could result in up to 1,000 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 short-term impact on the LOS for roads in that area.

3.20.2.3 Alternative C – Demolition to Grade ("Brownfield")

Under this alternative, demolition debris would be hauled to an offsite landfill either by truck or by rail. Potential contaminants removed would be hauled to an offsite hazardous waste landfill either by truck or by rail. Alternative C 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, having a short-term impact on the LOS for roads in that area.

3.20.2.4 Alternative D – No Action

Under Alternative D, the power plant and associated structures would not be demolished nor would potential contaminants be removed. TVA would need to continue to provide security and maintenance personnel. Impacts to projected traffic volume increases would be negligible, with the LOS of the road system likely remaining the same.

3.21 Cumulative Impacts

Cumulative impacts are defined in the *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (Council on Environmental Quality 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."

This section discusses those resources and receptors that could result in perceivable, but insignificant, cumulative impacts from TVA's alternative actions. For proposed alternatives, no substantive cumulative impacts are expected for climate and greenhouse gas, air quality, aquatic ecological resources, vegetation, wildlife, threatened and endangered species, floodplains, wetlands, cultural and historic resources, land use and prime farmland, noise, and utilities and service systems.

The potential for cumulative impacts to groundwater and geology, solid waste and hazardous materials and waste, surface water, natural areas, parks and recreation, socioeconomics and environmental justice, visual resources, safety, and transportation are discussed further in the following sections.

3.21.1 Groundwater and Geology

There are no cumulative impacts with Alternative C, as potential sources of soil or groundwater contamination due to stored chemicals, oils, etc., would be removed from the site. Alternatives, A, B, and D would carry a risk of impacting the environment as materials in the structures, sumps, and shafts may have the potential to contaminate soil and groundwater following years of deterioration.

3.21.2 Solid Waste and Hazardous Materials and Waste

Alternatives A, B, and D would have some potential for cumulative impacts with regard to potential contamination of soil and groundwater due to stored chemicals, oils, etc., thereby affecting public health and safety. In addition, although the public would not be allowed to access the site, these three alternatives each have varying degrees of potential for becoming a nuisance or posing environmental risks as remaining site facilities deteriorate over time and hazardous materials remain onsite.

3.21.3 Surface Water

There is a potential for short-term adverse impacts from storm water discharges from Alternatives B and C. Surface water could be potentially impacted due to increased silt load resulting from runoff during soil disturbing activities. However, the impacts are not anticipated to be significant as storm water BMPs and controls would be in place. All alternatives would result in a continued discharge of storm water and potentially some discharges requiring an NPDES permit from the site until those sources are terminated (e.g., landfill leachate). The location of the discharge(s) and character of the discharge would depend on each alternative. Storm water discharge during demolition would be addressed by an SWPPP and appropriate BMPs. Shutting flow off from the CCW tunnel is proposed in Alternatives A, B, and C, but is not specified in Alternative D as long as TVA continues to inspect and maintain the detention dam.

3.21.4 Natural Areas, Parks and Recreation

The proposed deconstruction project alternatives would not impact the discharge channel bank fishing area. The campground and fishing area currently remain closed due to security reasons. TVA would reevaluate the fishing access area at JSF as a part of future NEPA activities at JSF for closure of the ash impoundments. Considerations including public safety, protection of ash disposal sites, long-term plant property maintenance and security concerns, and the recreational needs and concerns of the public would be included in these evaluations.

3.21.5 Socioeconomics and Environmental Justice

Under Alternatives A and D, 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 Alternative B could be similar to cumulative impacts posed by Alternatives A and D since the historic powerhouse and stacks would remain, preventing full redevelopment of the site. However, acreage gained by the demolition of the selected outer buildings would allow for some future development while retaining the powerhouse.

Cumulative impacts under Alternative C 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.

3.21.6 Visual Resources

Cumulative impacts caused by Alternative C 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 is currently planned for the site, it is inappropriate to speculate on the extent or manner of visual impacts at this time; however, it is fair to assume the property could be utilized for energy production or recreation at some time in the future.

3.21.7 Safety

Although the likelihood of contamination is low, Alternatives A, B, and D have some potential for cumulative impacts with regard to potential contamination of soil and groundwater and would affect public health and safety. Because much of JSF is currently not open to public access, the proposed actions would not generate objectionable levels of noise, odors, or light pollution. In addition, although the public would not be able to access the site, these three alternatives each have varying degrees of potential for becoming a nuisance or posing risk to the environment as remaining site facilities deteriorate over time and present a potential for vandalism.

3.21.8 Transportation

Alternatives A, B, and D would each have varying degrees of potential to cause short-term disruptions to normal traffic patterns in the area and to affect the LOS for area roads. Although these disruptions would be temporary for the most part, regular users of the local transportation system would feel the impacts.

3.22 Unavoidable Adverse Environmental Impacts

The proposed activities could cause some unavoidable adverse environmental effects. Specifically, demolition and transportation of demolition debris would generate fugitive dust. However, with the application of appropriate control methods, these effects would likely be minor.

The proposed activities would increase noise in the general area and the transportation of materials would result in a minor increase in traffic on public roads. With the application of appropriate control methods; however, these unavoidable adverse effects would be minor.

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

Short-term uses are those that generally occur on a year-to-year basis. Examples are wildlife use of forage, timber management, recreation, and uses of water resources. Long-term productivity is the capability of the land to provide resources, both market and nonmarket, for future generations. In this context, long-term impacts to site productivity would be those that last beyond the life of the project.

The project would affect a limited amount of short-term uses as access to the discharge channel for fishing would be restricted during demolition and construction activities. TVA would evaluate options for angler access as a part of future NEPA activities at JSF. Other short-term uses include the loss of bird nest sites on scaffolding of the building. This use is easily replaced by the large number of tall trees and other structures in the area.

The project would affect long-term productivity beneficially by demolishing and removing manmade structures and returning to the sites of those structures productivity of soil and vegetation.

3.24 Irreversible and Irretrievable Commitments of Resources

An irreversible or irretrievable commitment of resources would occur when resources would be consumed, committed, or lost because of the project. The commitment of resources would be irreversible if the project started a process (chemical, biological, or physical) that could not be stopped. Similarly, commitment of a resource would be considered irretrievable when the project would directly eliminate the resource, its productivity, or its utility for the life of the project and possibly beyond.

The demolition and removal of manmade structures would actually reverse previous commitments of resources. The sites of these structures would be reclaimed and re-vegetated. Thus, the soils at these sites would be returned to productive status.

3.25 Public Comment

A Draft EA was released for comment on December 4, 2014. The comment period closed on January 8, 2015. 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 for the Draft EA was published in newspapers serving the Rogersville area. Comments were also accepted through August 8, 2014, via TVA's website, mail, and e-mail.

TVA received three sets of comments: a resident, EPA, and collectively from the Southern Alliance for Clean Energy (SACE), Southern Environmental Law Center (SELC), Sierra Club, Environmental Integrity Project (EIP), Tennessee Clean Water Network (TCWN), and Earthjustice. TVA carefully reviewed the substantive comments that were received. Comments were categorized by author and summarized when appropriate for this document. The comments and TVA's responses are provided in Appendix E.

CHAPTER 4 - LIST OF PREPARERS

4.1 NEPA Project Management

Ashley Farless, PE, AICP (TVA)
Position: NEPA Specialist
Education: BS, Civil Engineering
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4.2 Other Contributors

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Experience:	1 year floodplains, 3 years river forecasting, 7 years compliance monitoring
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Kim Pilarski-Hall (TVA)

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Matthew Reed (TVA)

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Karen Utt (TVA)

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Experience:	23 years in environmental compliance, corporate carbon risk management, and climate change adaptation planning
Involvement:	Climate and Greenhouse Gas

CHAPTER 5 - ENVIRONMENTAL ASSESSMENT RECIPIENTS

5.1 Federal Agencies

National Park Service
U.S. Army Corps of Engineers
U.S. Fish and Wildlife Service

5.2 Federally Recognized Tribes

The following federally recognized Tribes were contacted regarding the availability of this EA:

Absentee Shawnee Tribe of Oklahoma
Alabama-Quassarte Tribal Town
Cherokee Nation
Eastern Band of Cherokee Indians
Eastern Shawnee Tribe of Oklahoma
Kialegee Tribal Town
Muscogee (Creek) Nation of Oklahoma
Shawnee Tribe of Oklahoma
The Chickasaw Nation
Thlopthlocco Tribal Town
United Keetoowah Band of Cherokee Indians in Oklahoma

5.3 State Agencies

Hawkins County Mayor
Hawkins County Mayor’s Office
Office of U.S. Representative Phil Roe
Office of U.S. Senator Bob Corker
Office of U.S. Senator Lamar Alexander
State Representative Mike Harrison
State Senator Frank Niceley
Tennessee Department of Environment and Conservation
Tennessee Wildlife Resources Agency

5.4 Individuals and Organizations

Isaac Coleman, Hawkins County, Tennessee
155 local power company general managers
TECA (Tennessee Electric Cooperative Association)
TMEPA (Tennessee Municipal Electric Power Association)
TVPPA (Tennessee Valley Public Power Association)
TVIC (Tennessee Valley Industrial Council)
The Rogersville Review

TVA Releases Draft Environmental Assessment
For Removal of John Sevier Fossil Plant Structures

ROGERSVILLE, Tenn. – The Tennessee Valley Authority has released a draft Environmental Assessment for the removal of buildings and structures associated with the retired John Sevier Fossil Plant.

The draft study considers the environmental effects of various alternatives to deconstructing the physical structures associated with the retired coal-fired plant units, including the powerhouse, coal handling facilities, and surrounding support buildings.

Four alternatives are being considered:

1. Assessing, closing and securing the site, leaving existing structures intact.
2. Selective demolition of one or more of the major structures at the site.
3. Demolishing all unneeded structures "to grade," returning the area to a "brownfield" condition.
4. Taking no action.

The draft Environmental Assessment is available online at the TVA website at http://www.tva.com/environment/reports/johnsevierdeconstruction/ or by contacting Ashley Farless, Tennessee Valley Authority, 1101 Market St., BR 4A, Chattanooga, TN, 37402. Comments on the draft Environmental Assessment, including the alternatives and affected environmental resources considered in the document, may be submitted until Jan. 8, 2015. Comments may be submitted online at the web address above or mailed to Ms. Farless.

TVA opened the John Sevier Fossil Plant in 1957 and used its four coal units to produce 800 megawatts of power until 2012. A new natural gas, combine-cycle plant began operation in April 2012 on the John Sevier reservation and now generates 880 megawatts while reducing carbon, nitrogen oxide and sulfur dioxide emissions.

The Tennessee Valley Authority is a corporate agency of the United States that provides electricity for business customers and local power distributors serving 9 million people in parts of seven southeastern states. TVA receives no taxpayer funding, deriving virtually all of its revenues from sales of electricity. In addition to operating and investing its revenues in its electric system, TVA provides flood control, navigation and land management for the Tennessee River system and assists local power companies and state and local governments with economic development and job creation.

\# # #

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Appendix A – Summary of Environmental Permits and Applicable Regulations

- 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 Tennessee Division of Air Pollution Control (APC) in accordance with the requirements of APC Rule Chapter 1200-3-9. Modification of the existing Title V Permit must be done in accordance with the requirements of TDEC Rule Chapter 1200-3-9-.02 and .04.

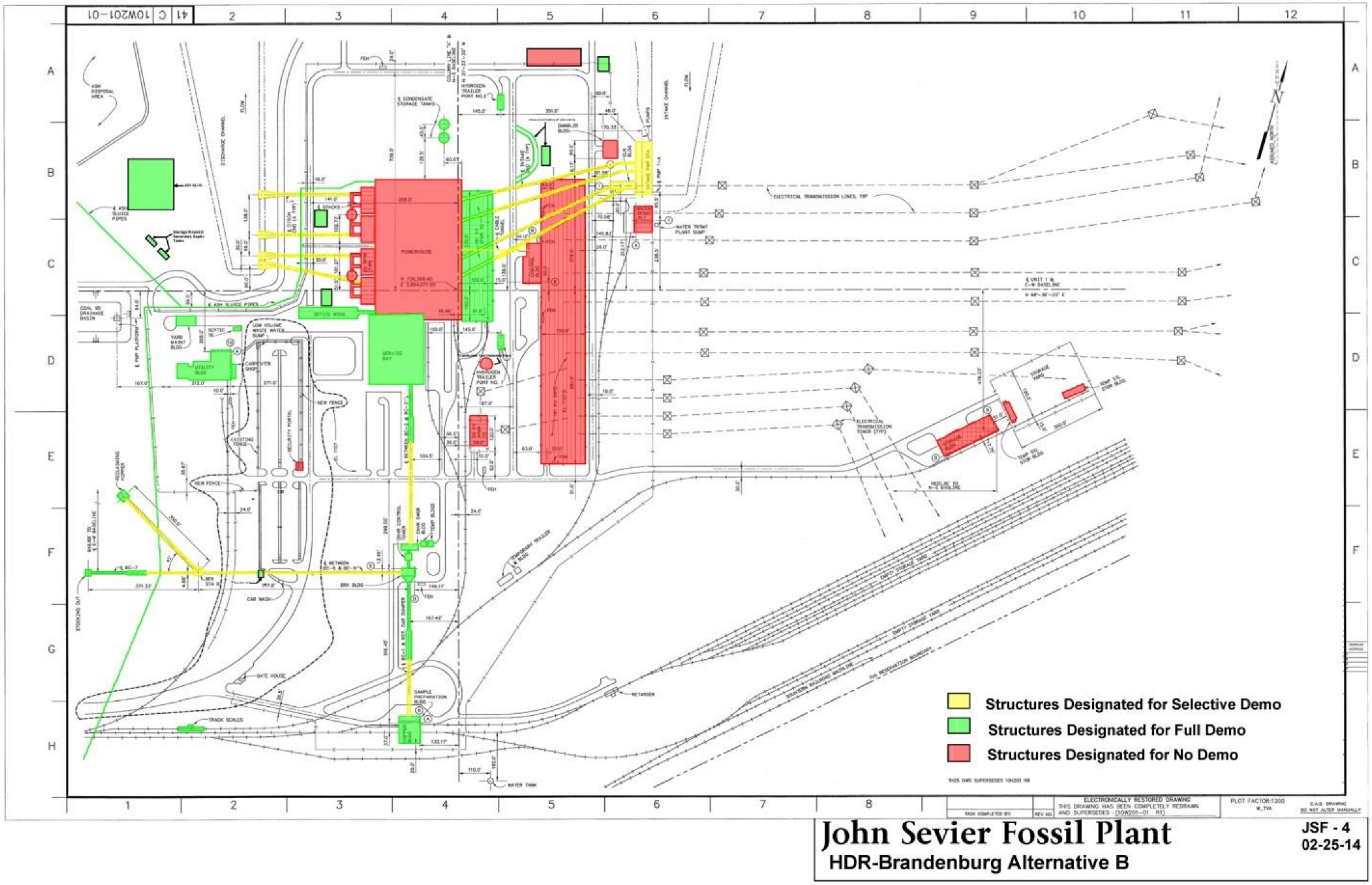
- Modification of the existing NPDES Permit for JSF involves submittal of the proper EPA Application Forms and must be done in accordance with the requirements of TDEC Rule Chapter 0400-40-01, 03, 04 and 05; TCA 69-3-108(b)(1), (2), (3), (4), and (6); and the Clean Water Act.

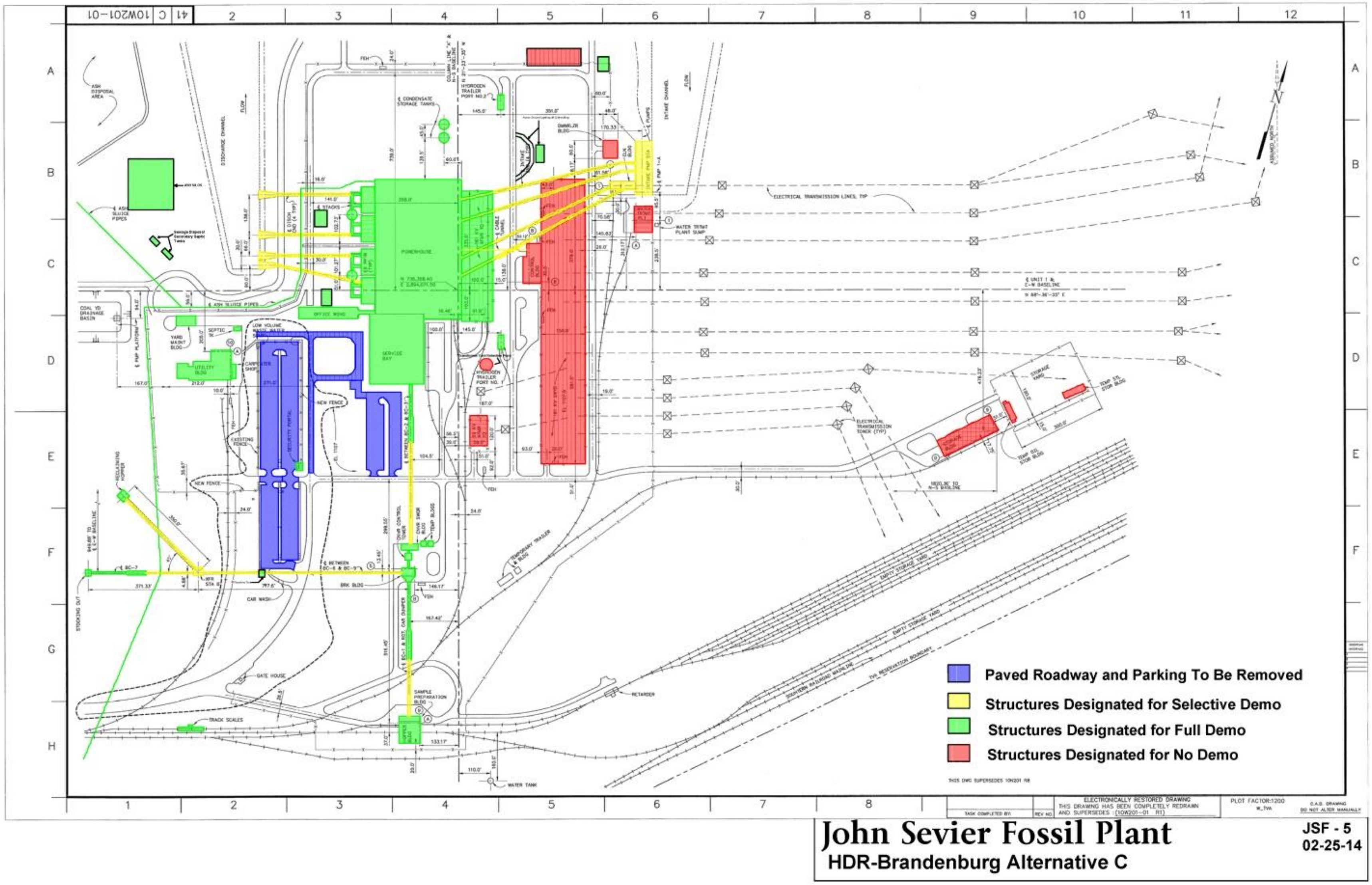
  Storm water runoff from construction sites is regulated under the NPDES program. Currently, construction projects where 1 acre or more of land will be disturbed require a NPDES Permit. The NPDES has its origin in the Clean Water Act. The program requires permits for the discharge of treated municipal effluent, treated industrial effluent, and storm water. The permits establish the conditions under which the discharge may occur and establish monitoring and reporting requirements. Application for coverage under the Tennessee General NPDES Permit for Discharges of Storm water Associated with Construction Activities, which will require preparation of an SWPPP.

- The addition of a storm water pond will require selection and implementation of standard Erosion Prevention and Sediment Control (EPSC) measures in accordance with the TDEC Erosion and Sediment Control Handbook (TDEC 2012b).

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

Appendix B – Description of Alternatives


Structures Designated for Selective Demo
Structures Designated for Full Demo
Structures Designated for No Demo
POWERHOUSE
SERVICE BAY
OFFICE WING
UTILITY BLDG
CONTROL BLDG
ELECTRICAL TRANSMISSION LINES TYP
EMPTY STORAGE YARD
ELECTRONICALLY RESTORED DRAWING
PLOT FACTOR:1200
C.A.D. DRAWING DO NOT ALTER MANUALLY
John Sevier Fossil Plant
HDR-Brandenburg Alternative B
JSF - 4
02-25-14


Paved Roadway and Parking To Be Removed
Structures Designated for Selective Demo
Structures Designated for Full Demo
Structures Designated for No Demo
John Sevier Fossil Plant
HDR-Brandenburg Alternative C
JSF - 5
02-25-14

Appendix C – Materials of Concern, Underground Storage Tanks and Hazardous Materials

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Table C-1. Summary of Materials of Concern by Structure

Building or Structure Name	Description of Materials of Concern Potentially Present
Lighting-off oil storage area	Diesel fuel stored in two 35,500-gal steel storage tanks
High voltage room – above precipitators	Used oil (150 gal)
Powerhouse, elevation 1110	
Power stores	Laboratory reagent chemicals stored in small unit quantities; oils, paints, sealants, and cements in unit quantities of 1 gal, 1 lb, or less; lubricating oil stored in containers of 5 gal or less
Steamfitter shop, electric shop, boilermaker and instrumentation shop	Cutting fluid, grease, oil, rubbing alcohol, acetone, fiberglass resin, lubricants, and cleaners in cans ranging from aerosol cans to 1-gal cans
Machine shop	Small quantities of paint, coolant, thinner, cutting oil, penetrant, spray paint, and other fluids stored in a small flammables/combustibles cabinet
Powerhouse, elevation 1096	
Oil storage room (power stores)	Compressor fluid and insulating oil stored in 55-gal drums, and cutting oil and lubricating oil in 5-gal containers; mineral spirits, parts cleaner solvent, and Ecolink dielectric solvent stored in 55-gal drums
Service bay, office wing basement	PCB insulating oil contained in two 200-gal transformers; one previously listed PCB transformer replaced by a dry-type transformer; 55-gal drum of PCB transformer oil and elevator hydraulic oil
Powerhouse, elevation 1089	
North wall	Sulfuric acid contained in lead-acid batteries, compressed gas cylinders, and mercury switches
Battery cabinet – 480V Common Board No. 2	Sulfuric acid contained in large lead-acid battery cells
Turbine bay	PCB insulating oil contained in one neutral reactor transformer; 110-gal clean oil mobile tank
Powerhouse, elevation 1070	
Turbine oil tanks and oil equipment coolers	Turbine oil in four 6,110-gal reservoirs, one per unit
Oil storage	Used oil drums and tanks (8,000 gal); turbine oil drums and tanks (8,000 gal)
Lower boiler bay	Mercury switches, hydraulic oil tank, used oil drums and tanks (2,000 gal), empty mixing tanks and day tanks for ammonia and Hydrazine; two PCB-containing transformers (395 gal)
Oil pump room	55-gal drum of used oil, mercury switches
Chemical laboratory	Liquid and granular laboratory reagents in containers of 1 lb or 1 gal in size; 5-gal drum of used oil; lead-acid battery
Basement transformers	PCB insulating oil contained in six transformers
Powerhouse station sump	The powerhouse station sumps are environmental control structures and not storage areas. There are eight station sumps (two per unit).
North of powerhouse basement (used oil accumulation area)	55-gal drums of used oil (oily water), 5-gal drums of flushing lubricant, and 55-gal drums of flushing lubricant are typically stored here. The oil is stored prior to shipment for recycling.
Urea storage tank next to powerhouse	50% aqueous urea is unloaded and stored in two 25,000-gal tanks south of the turbine bay.
Insulating oil storage area	Diesel fuel stored in two 35,500-gal steel storage tanks

Building or Structure Name	Description of Materials of Concern Potentially Present
Main transformer yard (Outfall F17)	Insulating oil contained in the four large main transformers, one spare transformer and in smaller transformers, grounding reactors, current limiting reactors, and other electrical equipment, mercury switches, and used oil (150 gal)
Hopper building yard	Former location of two 12,536-gal diesel fuel USTs formerly used for the car-thawer burners. Tanks were permanently closed as of May 17, 2005 (filled with sand).
Hopper building	The one PCB transformer previously listed for this building has been replaced by a dry-type transformer.
Switchgear building	The one PCB transformer previously listed for this building has been replaced by a dry-type transformer.
Surge bin building	Mercury switches, stored petroleum products, PCB transformer 100 gal
Hydrogen trailers	49,000 cubic feet of hydrogen gas stored in two trailer ports north and south of the main transformer yard
Yard equipment building	Used oil drums, fuel oil AST 2,000 gal, various 5 gal containers of lubricants and solvents; a locomotive engine; PCB transformer 210 gal; a fuel oil AST 250 gal. Outside the building there are three underground electrical vaults.
Laborers building	Assorted chemicals in flammables cabinet, several stored oil containers, fuel treatment chemicals, and a diesel fuel AST 550 gal
Out of service demineralizer building (habitat building)	No oil or petroleum-based products are stored or used in equipment or containers exceeding 55 gal in capacity at this location, nor do any toxic materials in quantities greater than or less than 55 gal used or stored at this location. Building now used by the insulators to clean asbestos vacuum. The building is also used by Facilities for storage of pesticides and flammables.
Water treatment building (also known as filter building)	50% by weight alum solution in five 260-gal plastic tanks are used in the Chemical Storage Room and one or two brine pits. PCB insulating oil is contained in two 390-gal transformers on the second floor. A 300-gal tote tank containing 12.5% hypochlorite and two 30-gal day tanks containing 12.5% hypochlorite solution
Stores oil storage warehouse (north of powerhouse)	Lubricating and hydraulic oils are stored in 55-gal drums and universal waste is stored in 55-gal drums. There can also be 330-gal totes stored here
Precipitator Bay	Stored chemicals (corrosive), AST 500-gal capacity, two inaccessible vaults
West of Precipitator Bay	AST 500-gal capacity (unknown contents), corrosive chemicals, compressed gas cylinders
Intake structure	80 gal of lubricating oil used in the bearing lubrication pots (two per motor) of the eight condenser motor cooling water pump motors located on the top deck of the intake structure
Coal unloading area	Coal particulates. There are three conveyer magnets in the conveyer system between the rail car dumper and the powerhouse (two 77-gal mineral oil magnets and one 190-gal PCB-contaminated magnet). There are also two “Out of Service” filled with sand, 12,536-gal diesel USTs.
Oil drum storage	Lubricating and hydraulic oils stored in 55-gal drums and universal waste stored in 55-gal drums

Table C-2. Facility Tank Storage Locations and Capacities

Facility Name or Location	Number of Tanks	Tank Type [a]	Oil Type [b]	Tank Capacity (gal)	Total Capacity (gal)
Exterior tanks (empty)	2	EPS		500,000	1,000,000
Lighting-off oil tanks	2	EPS	F	35,500	71,000
Insulating oil tanks	2	EPS	I	10,265	20,530
Powerhouse - Mezzanine					
Oil drums	6–12	IPD	L	55	660
Powerhouse - Basement					
Used oil storage	21	IPD	U	55	1155
Hydrazine day and mixing tanks	2	IPS		250	500
Ammonia day and mixing tanks	2	IPS		250	500
Oil tanks	2	IPS	L	8,000	16,000
Used oil collection	17	IPD	U	55	660
Transformer	6	IPS	I	455	2730
Powerhouse					
Turbine oil reservoir	4	IPS	L	6,110	24,440
BFP coupling	12	IPS	H	110	1,320
Pulley gear boxes	24	IPS	L	60	1,440
Laborers building					
AST	1	EPS	D	550	550
Yard equipment building					
Oil storage room					
Lube oil tanks	3	IPS	L	275	825
Lube oil drums	6–8	IPD	L	55	440
Shop area					
Tank	1	IPS	L	250	250
PCB Transformer	1	IPS	I	210	210
AST	1	IPS	F	2000	2000
Drums	5	IPD	L	55	250
Drums	5	IPD	U	55	250
Surge bin building					
Electrical transformer	1	EPS	I	100	100
Intake structure					
CCW pump motor brgs	8	ESP	L	75	600
TOMS building oil drums	2–4	IPD	L	55	220
Power stores					
Rectifiers	2	IPS	S	110	220
Conveyers					
Magnets	2	EPS	I	77	154
Service Building					
Electrical transformer	2	EPS	I	200	400
Elevator hydraulic oil	1	DS	H	100	100
Warehouse					
Transformer	1	IPS	I	438	438
Transformer yard					
Main transformers	6	EPS	I	15,288	91,728
Main transformers	4	EPS	I	2,040	8160
Oil drums	3	EPS	I	55	155
Precipitators					
AST	2	EPS		500	1000
Used oil	3	DS	U	55	150

Facility Name or Location	Number of Tanks	Tank Type [a]	Oil Type [b]	Tank Capacity (gal)	Total Capacity (gal)
Stored chemicals	10-20			5-10	100

[a] Tank type: The tank type code gives type of installation, corrosion protective system, and material or type of construction.

D = Steel drum	P = Painted
E = Exterior installation	S = Steel construction
I = Interior installation	U = Underground installation

[b] Oil type:

D = Diesel	L = Lubricating oil
F = No. 2 fuel oil	P = Propane
G = Gasoline	S = Silicone insulating oil
H = Petroleum hydraulic fluid	U = Used
I = Mineral insulating oil	

Table C-3. PCB and PCB-contaminated Oil Use and Storage Facilities

Location	Number of Transformers	PCB (ppm)	Trans. Capacity (gal)	Total Capacity (gal)
Powerhouse – basement				
Transformers	2	>500	395	1,185
Transformers	4	>500	485	1,455
Transformer yard				
Oil-filled electrical equipment	6	<50	15,288	91,728
Electrical transformer	4	<50	2,040	8160
Water treatment building				
Transformers	2	>500	390	780
Yard equipment building				
Transformer	1	>500	210	210
Conveyer magnet				
Electro magnet	1	>50	190	190
Service building				
Transformers	2	>500	200	400

Table C-4. Hazardous Substance Summary

Facility Name or Location	Hazardous Substance	Chemical Group [a]	Container Type	Container Capacity (gal or lb)	Container Number	Total Quantity Typically Present (gal or lb)
Storeroom, power stores	Various solvents, lubricants and cleaners	FL, C, R, V, T, HT, B, CB, O (*l, s*)	Var.	Var.		up to 55 gal
Shops	Various cutting fluids, grease, oil and solvents	FL, C, R, V, T, CB (*l*)	Var.	Var.		1-5 gal
Machine shop	Ecolink dielectric solvent	CB (*l*)	Drum	55	1	55
Janitor closet next to control room	Various cleaners and solvents	FL, C, R, V, T, HT, B, CB, O (*l, s*)	Var.	Var.		1-5 gal
Assorted laboratory reagents	Acids, bases and solvents	All	Bottles	1-5	20-30	100
Ammonia storage	35%-38% ammonia hydroxide	B, C, T (*l*)	Tote	300	1	300
Day tanks	Phosphate		Tanks	60	4	240
Day tank	Ammonia hydroxide	B, C, T (*l*)	Tanks	60	4	240
Mix tank	Ammonium hydroxide (0.5%)	B, C, T (*l*)	Tanks	250	1	250
Day tank	Hydrazine	B, C, T, *(l)*	Tanks	60	4	240
Mix tank	Hydrazine	B, C, T, *(l)*	Tanks	250	1	250
Lower boiler bay	Sulfuric acid (27%)	B, C, T (*l*)	Batteries	2	30	60
Temporary hazardous waste storage	Hazardous Waste and Nonhazardous Waste	FL, V, CB (*l, s*)	Drums	55	1-20	550 gal
Near powerhouse	Urea (50%)	B, V (*l*)	Tank	25,000	2	50,000

[a] Chemical Group:

Liquid (*l*)

B = Biodegradable or amenable to biological treatment

C = Corrosive

CB = Combustible

FL = Flammable

O = Oxidizer

R = Reactive

T = Toxic

V = Volatile

Solid (*s*)

B = Biodegradable or amenable to biological treatment

C = Corrosive

FL = Flammable

O = Oxidizer

R = Reactive

T = Toxic

V = Soluble

Gas (*g*)

C = Corrosive

FL = Flammable

HT = Highly Toxic

R = Reactive

T = Toxic

Appendix D – Cultural and Historic Resources Coordination

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Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, TN 37902

August 15, 2014

Mr. E. Patrick McIntyre, Jr.
Executive Director
Tennessee Historical Commission
2941 Lebanon Road
Nashville, Tennessee 37243-0442

Dear Mr. McIntyre:

TENNESSEE VALLEY AUTHORITY (TVA), JOHN SEVIER FOSSIL PLANT RETIREMENT / DECONSTRUCTION, HAWKINS COUNTY, TENNESSEE

TVA proposes to retire Units 3 and 4 at John Sevier Fossil Plant (JSF), in Hawkins County, Tennessee (36.377172N, 82.963073W), and to demolish some or all of the structures at JSF. This retirement and deconstruction project is an undertaking with potential to affect JSF, which our offices have agreed is eligible for listing in the National Register of Historic Places (NRHP). Under the retirement / deconstruction project, TVA is considering four alternatives, as follows:

A. Assess, close and secure site - TVA would remove high risk environmental and safety issues and would abandon the condenser cooling water intake and discharge tunnels in place by installing bulkheads.
B. Selective demolition - In addition to removing high risk environmental and safety issues TVA would also remove most outlying structures including the coal handling facilities. TVA may also repurpose one or more outbuildings or the office wing for community use.
C. Demolition to grade ("Brownfield") - If Alternative C were selected, TVA would remove all unneeded structures, roads and parking lots; assess and abate all environmental issues associated with said structures; backfill basements, pits and trenches up to surrounding grade; and install top soil and seed disturbed areas.
D. No action

For all of the alternatives, certain structures would be excluded from demolition. These include the Water Treatment Plant, the Power Service Shop Maintenance Building, the Facilities Maintenance Building, the Electrical Control Building and the Stores Shed Building. The 69kV and 161kV switchyard would remain operational and would continue to be utilized by the John Sevier Combined Combustion facility.

Last year, in a separate undertaking, TVA decommissioned JSF. The decommissioning project included the retirement of Units 1 and 2, idling of Units 3 and 4, and a commitment to retire Units 3 and 4 by December 31, 2015, in accordance with TVA's agreement with the U.S. Environmental Protection Agency under the Clean Air Act. In June 2013, we initiated consultation with your office, federally-recognized Indian tribes, and local historic societies concerning the proposed decommissioning and retirement of JSF. Our offices agreed that the

Mr. E. Patrick McIntyre, Jr.
Page Two
August 15, 2014

decommissioning / retirement project would not affect any archaeological sites listed or eligible for listing in the NRHP, that JSF is eligible for listing in the NRHP, and that the project would have an adverse effect on JSF (letter from Jones to McIntyre dated June 11, 2013; letter from McIntyre to Jones dated June 24, 2013; and letter from McIntyre to Jones dated June 27, 2013). TVA received no objections to the undertaking.

In September 2013, TVA and your office entered into a Memorandum of Agreement (MOA) pursuant to 36 CFR Part 800 regarding the JSF decommissioning. The MOA addresses measures for the avoidance, minimization, and mitigation of adverse effects to JSF from the decommissioning / retirement project. Because the proposed retirement and deconstruction project is a separate undertaking (although clearly related to the decommissioning / retirement undertaking), TVA is initiating consultation with your office under Section 106 of the National Historic Preservation Act for this current undertaking.

TVA was unable to find measures for avoiding and / or minimizing adverse effects to JSF from decommissioning that were technically feasible and economically prudent. Therefore, as stipulated by the MOA, TVA has taken steps to mitigate the adverse effects to JSF. Those steps consist of (1) preparing documentation required for the Historic American Engineering Records (HAER) and submitting the documentation to the National Park Service for review; and (2) installing interpretive panels on TVA property at a location accessible to the public. TVA submitted an initial draft of Historic American Building Survey (HABS) documentation for JSF to NPS in May 2013 (based on TVA's initial understanding of the required documentation). NPS staff in Atlanta, Georgia decided to change this from HABS to HAER documentation and provided comments on the documentation. TVA revised the documentation, following the NPS comments, and then later made additional changes based on subsequent requests by NPS staff. TVA submitted the final HAER documentation on June 11, 2014. The final submission included all the changes that NPS has requested and closely follows the HABS/HAER guidelines published by NPS, as stipulated by the MOA.

TVA has hired the Tombras Group, a professional advertising agency, to design five interpretive panels, which present information about the history and architecture of JSF and its historical significance. The panels utilize images provided by the TVA Historian and text composed by TVA staff working closely with the Tombras Group. TVA has also designed a covered kiosk to house the panels, and plans to install these adjacent to a public parking area on TVA Road, a public road that leads to TVA's John Sevier Combined Combustion facility and a public fishing area. Local residents utilize the parking area to access a public walking track on TVA property. The panels will be installed by September 30, 2014.

TVA finds that, although the current undertaking has the potential to cause adverse effects on NRHP-eligible JSF, the steps that TVA has taken to mitigate adverse effects on JSF from the decommissioning / retirement project adequately mitigate any adverse effects from this current undertaking on JSF. TVA finds further that the proposed undertaking will not affect any archaeological sites listed in or eligible for listing in the NRHP. Pursuant to 36 CFR Part 800.4(d)(1), we are seeking your concurrence with these findings.

Mr. E. Patrick McIntyre, Jr.
Page Three
August 15, 2014

Should you have any questions or comments, please contact Richard Yarnell in Knoxville at wryarnel@tva.gov or (865) 632-3463.

Sincerely,

Clinton E. Jones, Manager
Biological and Cultural Compliance
Environmental Permits and Compliance
WT 11B-K

SCC:CSD
cc: Ms. Jennifer Barnett
Tennessee Division of Archaeology
1216 Foster Avenue, Cole Bldg. #3
Nashville, Tennessee 37210

INTERNAL COPIES, NOT INCLUDED WITH OUTBOUND LETTER:

Brenda Brickhouse, BR 4A-C
Ashley Farless, BR 4A-C
Khurshid Mehta, WT 6A-K
Richard Yarnell, WT11D-K
EDMS, WT CA-K

Dudley, Cynthia S

From:	Ezzell, Patricia Bernard
Sent:	Monday, August 18, 2014 3:32 PM
To:	'rallen@cherokee.org'; 'Tyler B. Howe (tylehowe@nc-cherokee.com)'; 'ukbthpo-larue@yahoo.com'; 'jjacobs@mcn-nsn.gov'; 'Emman Spain (ESpain@mcn-nsn.gov)'; 'P Bowlegs (pbowlegs@outlook.com)'; 'kara.gann@kialegeetribe.net'; 'Charles Coleman (chascoleman75@yahoo.com)'; ''joseph.blanchard@astribe.com' (joseph.blanchard@astribe.com)'; 'Robin Dushane (RDushane@estoo.net)'; 'Dee Gardner (dgardner@estoo.net)'; 'Kim Jumper (kjumper_shawneetribe@hotmail.com)'
Cc:	'Russell Townsend (RussellT@nc-cherokee.com)'; 'jfife@muscogeenation-nsn.gov'; 'Odette Freeman (ofreeman@mcn-nsn.gov)'; 'David Proctor (Davidp@mcn-nsn.gov)'
Subject:	TVA, JOHN SEVIER FOSSIL PLANT RETIREMENT/DECONSTRUCTION, HAWKINS COUNTY, TENNESSEE
Attachments:	JSF_Retirement-Decon_THPO_ltr 20140818.pdf

Good Afternoon,

I hope this email message finds you well. By this email, I am transmitting that attached letter regarding TVA's proposal to retire Units 3 and 4 at John Sevier Fossil Plant (JSF), in Hawkins County, Tennessee (36.377172N, 82.963073W), and to demolish some or all of the structures at JSF.

As always, please do not hesitate to contact me if you have any questions. Please respond by September 18, 2014, if you have any comments on the proposed undertaking.

Thank you.

Sincerely,

Pat

Pat Bernard Ezzell
Senior Program Manager
Tribal Relations and Corporate History
Tennessee Valley Authority
400 W. Summit Hill Drive
460 WT 7D-K
Knoxville, Tennessee 37902
Office Phone: (865) 632-6461
Cell phone: 865-304-9251
E-mail: pbezzell@tva.gov

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, TN 37902

August 18, 2014

To Those Listed:

TENNESSEE VALLEY AUTHORITY (TVA), JOHN SEVIER FOSSIL PLANT RETIREMENT / DECONSTRUCTION, HAWKINS COUNTY, TENNESSEE

TVA proposes to retire Units 3 and 4 at John Sevier Fossil Plant (JSF), in Hawkins County, Tennessee (36.377172N, 82.963073W), and to demolish some or all of the structures at JSF. This retirement and deconstruction project is an undertaking with potential to affect JSF, which our offices have agreed is eligible for listing in the National Register of Historic Places (NRHP). Under the retirement / deconstruction project, TVA is considering four alternatives, as follows:

A. Assess, close and secure site - TVA would remove high risk environmental and safety issues and would abandon the condenser cooling water intake and discharge tunnels in place by installing bulkheads.

B. Selective demolition - In addition to removing high risk environmental and safety issues TVA would also remove most outlying structures including the coal handling facilities. TVA may also repurpose one or more outbuildings or the office wing for community use.

C. Demolition to grade ("Brownfield") - If Alternative C were selected, TVA would remove all unneeded structures, roads and parking lots; assess and abate all environmental issues associated with said structures; backfill basements, pits and trenches up to surrounding grade; and install top soil and seed disturbed areas.

D. No action.

For all of the alternatives, certain structures would be excluded from demolition. These include the Water Treatment Plant, the Power Service Shop Maintenance Building, the Facilities Maintenance Building, the Electrical Control Building and the Stores Shed Building. The 69kV and 161kV switchyard would remain operational and would continue to be utilized by the John Sevier Combined Combustion facility.

Last year, in a separate undertaking, TVA decommissioned JSF. The decommissioning project included the retirement of Units 1 and 2, idling of Units 3 and 4, and a commitment to retire Units 3 and 4 by December 31, 2015, in accordance with TVA's agreement with the U.S. Environmental Protection Agency under the Clean Air Act. In June 2013, we initiated consultation with the Tennessee State Historic Preservation Office (TNSHPO), federally-recognized Indian tribes, and local historic societies concerning the proposed decommissioning and retirement of JSF. TVA and the TNSHPO agreed that the decommissioning / retirement project would not affect any archaeological sites listed or eligible for listing in the NRHP, that

To Those Listed
Page Two
August 18, 2014

JSF is eligible for listing in the NRHP, and that the project would have an adverse effect on JSF. TVA received no objections to the undertaking.

In September 2013, TVA and the TNSHPO entered into a Memorandum of Agreement (MOA) pursuant to 36 CFR Part 800 regarding the JSF decommissioning. The MOA addresses measures for the avoidance, minimization, and mitigation of adverse effects to JSF from the decommissioning / retirement project. Because the proposed retirement and deconstruction project is a separate undertaking (although clearly related to the decommissioning / retirement undertaking), TVA is initiating consultation with your office under Section 106 of the National Historic Preservation Act for this current undertaking.

TVA was unable to find measures for avoiding and / or minimizing adverse effects to JSF from decommissioning that were technically feasible and economically prudent. Therefore, as stipulated by the MOA, TVA has taken steps to mitigate the adverse effects to JSF. Those steps consist of (1) preparing documentation required for the Historic American Engineering Records (HAER) and submitting the documentation to the National Park Service for review; and (2) installing interpretive panels on TVA property at a location accessible to the public. TVA submitted an initial draft of Historic American Building Survey (HABS) documentation for JSF to NPS in May 2013 (based on TVA's initial understanding of the required documentation). NPS staff in Atlanta, Georgia, decided to change this from HABS to HAER documentation and provided comments on the documentation. TVA revised the documentation, following the NPS comments, and then later made additional changes based on subsequent requests by NPS staff. TVA submitted the final HAER documentation on June 11, 2014. The final submission included all the changes that NPS has requested and closely follows the HABS/HAER guidelines published by NPS, as stipulated by the MOA.

TVA has hired the Tombras Group, a professional advertising agency, to design five interpretive panels, which present information about the history and architecture of JSF and its historical significance. TVA has also designed a covered kiosk to house the panels, and plans to install these adjacent to a public parking area on TVA Road, a public road that leads to TVA's John Sevier Combined Combustion facility and a public fishing area. Local residents utilize the parking area to access a public walking track on TVA property. The panels will be installed by September 30, 2014.

TVA finds that, although the current undertaking has the potential to cause adverse effects on NRHP-eligible JSF, the steps that TVA has taken to mitigate adverse effects on JSF from the decommissioning / retirement project adequately mitigate any adverse effects from this current undertaking on JSF. TVA finds further that the proposed undertaking will not affect any archaeological sites listed in or eligible for listing in the NRHP.

Pursuant to §800.3(f)(2), TVA is consulting with the following federally recognized Indian tribes regarding historic properties within the proposed project's APE that may be of religious and cultural significance and are eligible for listing in the NRHP: Cherokee Nation, Eastern Band of Cherokee Indians, United Keetoowah Band of Cherokee Indians in Oklahoma, Muscogee (Creek) Nation of Oklahoma, Alabama-Quassarte Tribal Town, Kialegee Tribal Town,

To Those Listed
Page Three
August 18, 2014

Thlopthlocco Tribal Town, Absentee Shawnee Tribe of Oklahoma, Eastern Shawnee Tribe of Oklahoma, and the Shawnee Tribe.

By this letter, TVA is providing notification of these findings and is seeking your comments regarding this undertaking and any properties that may be of religious and cultural significance and may be eligible for the NRHP pursuant to 36CFR § 800.2 (c)(2)(ii), 800.3 (f)(2), and 800.4 (a)(4)(b).

Should you have any questions please contact me via phone at 865/632-6461 or via e-mail at pbezzell@tva.gov. Please respond by September 18, 2014, if you have any comments on the proposed undertaking.

Sincerely,

Pat Bernard Ezzell

Patricia Bernard Ezzell
Senior Program Manager
Tribal Relations and Corporate History
Communications
WT 7D-K

SCC:CSD:PBE

IDENTICAL LETTER MAILED TO THE FOLLOWING ON AUGUST 18, 2014:

Dr. Richard Allen
Policy Analyst
Cherokee Nation
Post Office Box 948
Tahlequah, Oklahoma 74465

Mr. Joseph Blanchard
Tribal Historic Preservation Officer
Absentee Shawnee Tribe of Oklahoma
2025 S. Gordon Cooper
Shawnee, Oklahoma 74801

Mr. Pare Bowlegs
Cultural Preservation Coordinator
Alabama Quassarte Tribal Town
Post Office Box 187
Wetumka, Oklahoma 74883

Mr. Ace Buckner
Cultural Resources Director
Kialegee Tribal Town
Post Office Box 332
Wetumka, Oklahoma 74883

cc: Ms. Kara Gann
Assistant Cultural Resources Director
Kialegee Tribal Town
Post Office Box 332
Wetumka, Oklahoma 74883

Mr. Charles Coleman
NAGPRA Representative
Thlopthlocco Tribal Town
Route 1, Box 190-A
Weleetka, Oklahoma 74880

Ms. Robin DuShane
Tribal Historic Preservation Officer
Eastern Shawnee Tribe of Oklahoma
127 West Oneida
Seneca, Missouri 64865

Ms. Dee Gardner
NAGPRA/Cell Tower Coordinator
Eastern Shawnee Tribe of Oklahoma
127 West Oneida
Seneca, Missouri 64865

Mr. Tyler Howe
Historic Preservation Specialist
Eastern Band of Cherokee Indians
Post Office Box 45
Cherokee, North Carolina 28719

cc: Mr. Russell Townsend
Tribal Historic Preservation Office
Eastern Band of Cherokee Indians
Post Office Box 455
Cherokee, North Carolina 28719

Ms. Miranda Panther
NAGPRA Coordinator
Eastern Band of Cherokee Indians
Post Office Box 455
Cherokee, North Carolina 28719

Ms. Johnnie Jacobs
Manager
Cultural Preservation Department
Muscogee (Creek) Nation
P.O. Box 580
Okmulgee, Oklahoma 74447

cc: Mr. Jeff Fife
Assistant to the Second Chief
Muscogee (Creek) Nation
P.O. Box 580
Okmulgee, Oklahoma 74447

Ms. Odette Freeman
Assistant Manager
Cultural Preservation Department
Muscogee (Creek) Nation
Post Office Box 580
Okmulgee, Oklahoma 74447

Mr. David Proctor
Cultural Advisor
Cultural Preservation Department
Muscogee (Creek) Nation
Post Office Box 580
Okmulgee, Oklahoma 74447

Ms. Kim Jumper
Tribal Historic Preservation Officer
Shawnee Tribe
Post Office Box 189
Miami, Oklahoma 74355

cc: Jodi Hayes
NAGPRA Representative
Shawnee Tribe
PO Box 189
Miami, OK 74355

Mrs. Lisa C. LaRue-Baker
Acting Tribal Historic Preservation Officer
United Keetoowah Band
of Cherokee Indians in Oklahoma
Post Office Box 746
Tahlequah, Oklahoma 74464

Mr. Emman Spain
Deputy Tribal Historic Preservation Officer
Cultural Preservation Department
Muscogee (Creek) Nation
Post Office Box 580
Okmulgee, Oklahoma 74447

INTERNAL COPIES, NOT INCLUDED WITH OUTBOUND LETTER:

Brenda Brickhouse, BR 4A-C
Ashley Farless, BR 4A-C
Kathryn Hodges, WT 7D-K
Clinton Jones, WT11B-K
Khurshid Mehta, WT 6A-K
Gail Rymer, WT 7D-K
Richard Yarnell, WT11D-K
EDMS, WT CA-K

TENNESSEE HISTORICAL COMMISSION
STATE HISTORIC PRESERVATION OFFICE
2941 LEBANON ROAD
NASHVILLE, TENNESSEE 37214
OFFICE: (615) 532-1550
www.tnhistoricalcommission.org

September 11, 2014

Mr. Clinton E. Jones
Tennessee Valley Authority
400 W. Summet Hill Dr.
Knoxville, Tennessee, 37902-1499

RE: TVA, JOHN SEVIER FOSSIL PLANT RETIREMT., UNINCORPORATED, HAWKINS COUNTY

Dear Mr. Jones:

Pursuant to your request, received on Tuesday, August 19, 2014, this office has reviewed documentation concerning the above-referenced undertaking. This review is a requirement of Section 106 of the National Historic Preservation Act for compliance by the participating federal agency or applicant for federal assistance. Procedures for implementing Section 106 of the Act are codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739)

Based on the information provided, we find that the current documentation adequately mitigates project effects upon properties eligible for listing in the National Register of Historic Places as stipulated in the project Memorandum of Agreement (MOA).

Therefore, this office has no objection to the implementation of those project elements covered by the submitted documentation. Your continued cooperation is appreciated.

Sincerely,

E. Patrick McIntyre, Jr.
Executive Director and
State Historic Preservation Officer

EPM/jyg

Appendix E – Response to Public Comments

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A Draft Environmental Assessment (EA) was released for comment on December 4, 2014. The comment period closed on January 8, 2015. 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 for the Draft EA was published in newspapers serving the Rogersville area. Comments were also accepted through August 8, 2014, via TVA's website, mail, and e-mail.

TVA received three sets of comments: a resident, EPA, and collectively from the Southern Alliance for Clean Energy (SACE), Southern Environmental Law Center (SELC), Sierra Club, Environmental Integrity Project (EIP), Tennessee Clean Water Network (TCWN), and Earthjustice. TVA carefully reviewed the substantive comments that were received. Comments were categorized by author and summarized when appropriate for this document. The comments and TVA's responses are provided in this appendix.

EPA

TVA received comments from EPA on January 6, 2015. A copy of the comments is provided after the following responses.

<u>EPA Comment 1</u>:

The proposed action covers only the demolition of the physical structures associated with the retired coal-fired plant units, including the powerhouse, coal handling appurtenances, and surrounding support buildings. We also note that the closure of the fly ash stack, bottom ash pond, chemical treatment ponds, coal yard and waste stabilization pond (coal yard runoff pond) will be covered under a future separate NEPA analysis. EPA recommends that TVA provide clarification as to why these actions were separated and the anticipated level of significance of the action associated with closure of the fly ash stack, bottom ash pond, chemical treatment ponds, coal yard and waste stabilization pond (coal yard runoff pond). Does TVA anticipate that this second action will require an EIS?

<u>Response</u>:

Activities associated with closure of the fly ash stack, bottom ash pond, chemical treatment ponds, coal yard and waste stabilization pond (coal yard runoff pond) are separate and independent from deconstruction of the physical structures at the retired fossil plant. The impact of the closure of this other plant infrastructure will be evaluated in the future when any such closure activities are proposed. Deconstruction of the structures at the fossil plant does not dictate or involve the closure of the other infrastructure. It is not anticipated that an EIS would be required for the closure activities.

The fly ash stack is a permitted solid waste facility that TVA is closing in accordance with a permit issued by TDEC. It is anticipated that closure of the fly ash stack will be complete by the end of 2015. The NEPA documentation for closure of the fly ash stack was completed in November 2012.

EPA Comment 2:

In relation to fugitive dust emissions the following statement is made: “Approximately 95 percent (by weight) of fugitive emissions from vehicular traffic over paved roads is comprised mainly of particles that tend to be deposited near the roadways. The remaining fraction of the dust (5 percent or less) may be subject to transport beyond the property boundaries.” EPA recommends including a citation supporting this statement.

Response:

Buonicore, A.J. and W.T. Davis. 1992. *Air Pollution Engineering Manual*.

EPA Comment 3:

Table 3-2 – EPA notes that Table 3-2 provides location and depth information for water supply wells within a one-mile radius of the JSF site. EPA recommends that any water quality data associated with these wells be included in the table or discussion in this section.

Response:

Five public drinking water wells were identified within one mile of the JSF facility. These wells are private wells with no water quality data available.

EPA Comment 4:

As indicated, EPA investigations of the Saltville Waste Disposal Ponds Site (“Site”) in Virginia have found “…elevated mercury levels in sediment cores collected upstream of the JSF Detention Dam…”. More specifically, the text should note that the EPA Superfund Remedial Investigation (RI) of the Saltville Waste Disposal Ponds Site in Virginia has detected elevated levels of mercury associated with the subject Site in subsurface sediments just upstream of the JSF Detention Dam. The text should also note that, based on a preliminary evaluation of available RI results, EPA believes that mercury in the subsurface sediments of interest may potentially present an unacceptable risk to human health and/or the environment if the dam is deconstructed or if other activities disturb and/or mobilize the subject subsurface sediment. It is also worth noting that EPA has yet to complete the RI for this and other Holston River sediment (and the assessment of risk associated with this sediment) and that no Superfund remedy has been selected for the subject sediments by EPA in the event that a remedy is determined to be necessary. As noted, EPA may further investigate the sediments of concern as part of future RI work for the Saltville Waste Disposal Ponds Site. Based on a review of the draft EA, EPA understands there are no plans at this time to deconstruct the dam or modify the dam in a manner which would mobilize the sediment of concern in adverse manner.

Response:

As requested by EPA, TVA has revised Section 3.9.1.3 to include the expanded information regarding the status of EPA’s Superfund Remedial Investigation (RI) of the Saltville Waste Disposal Ponds Site and concern for associated mercury contaminated sediments just upstream of the JSF Detention Dam. As provided in the Draft EA, the deconstruction activity at JSF will not include the detention dam. The new John Sevier Combined Cycle gas plant, located next to the old coal plant, uses the coal plant's cooling water intake structure. That intake structure will remain as will the detention dam which pools water for intake withdrawal. There are no plans considered under this action to deconstruct or modify the dam.

EPA Comment 5:

This section (3.9.2.4) indicates that "the JSF/JCC detention dam is considered as an obstacle reducing the migration of mercury impacted sediment continuing downstream in the Holston River." It may be worth clarifying that, based on available information, EPA does not believe that the subsurface sediment referenced above presents a risk of concern at this time. However, if the dam is deconstructed or if the subsurface sediment of concern is otherwise mobilized, the sediment may present a risk of concern.

This section also notes that "…impacted sediment also may be located within the plant intake channel." EPA is not aware at this time of data which indicates that sediment within or immediately upstream of the plant intake channel may be contaminated with mercury. EPA plans to request that the TVA provide any such data as well as any other data regarding the extent of sediment contamination in front of the subject dam which is not available to EPA at this time. It is worth noting that, depending of the results of a Superfund RI and risk assessment for Holston River sediment, a Superfund remedy may be necessary for sediment within and/or upstream of the plant intake channel. Based on a review of the draft EA, EPA understands there are no plans at this time to conduct any activities which would disturb or mobilize sediment within or upstream of the intake channel.

Response:

Comment noted. TVA sampled and analyzed intake sediment in 2003. The 2003 analysis revealed the presence of mercury at concentrations above laboratory method detection levels, but below the screening levels for industrial preliminary remediation guidelines for soils established by Region IX EPA.

There are no plans considered under this action to deconstruct or modify the JSF Detention Dam; or otherwise carry out activities that would disturb or mobilize sediment within the river segment impounded by the detention dam; including the area within the intake channel.

EPA Comment 6:

Consistent with Executive Order 12898 entitled "Federal Actions to Address Environmental Justice In Minority Populations and Low-income Populations" TVA provided an Environmental Justice (EJ) analysis in section 3.13.1.2 of the draft EA. EPA appreciates TVA including this analysis in the EA.

Response:

Comment noted.

<u>EPA Comment 7</u>:

The proposed action at the JSF site includes demolition of several NRHP-eligible structures. EPA notes that TVA has appropriately coordinated with the SHPO and has agreed to mitigate adverse impacts as a result of the preferred alternative.

<u>Response</u>:

Comment noted.

Mr. Isaac Armstrong III

<u>Armstrong Comment 1</u>:

Being a life long resident of the Tennessee Valley and a career with the TVA both in construction and as an annual employ at SQN my brief comment below has some real to life convictions.

I believe the 4 to 5 generations to whom the power plant served owes the future generations a land NOT blotched with relics of long since useless sites of problems for which they too will have no use.

Therefore, Action number 3, Demolish all unneeded structures “to grade,” returning the area to a “brownfield” condition should be the only acceptable solution from this TVA.

The TVA made a choice during the Twentieth Century to utilize the natural resources of both land and waterway at that location, and now it is time to return the land and waterway to near natural condition as possible. Feasible or not.

<u>Response</u>

Comment noted.

Southern Alliance for Clean Energy, Southern Environmental Law Center, Sierra Club, Tennessee Clean Water Network, Environmental Integrity Project, Earthjustice

TVA received a letter from the parties listed above on January 8, 2015. Comments that are relevant to this project are summarized and addressed below. A copy of the letter is provided following these responses to comments.

<u>SACE Comment 1</u>:

TVA Has Failed to Notify the Public Regarding Actions Taken at JSF, Circumventing NEPA Requirements.

Overall, Commenters are concerned that this Draft EA represents the first opportunity for public engagement concerning the shut-down of generation at JSF, the closure of ash ponds onsite and overall retirement of the plant.

Response:

The retirement of the four JSF units resulted from an agreement between TVA and US EPA and a similar consent decree to which TVA, four States, and three environmental advocacy groups, including the Sierra Club, were parties that resolved a dispute about TVA's compliance with the Clean Air Act's New Source Review program. The public was provided a 30-day period to comment on the proposed resolution. See 76 Fed. Reg. 22095 (April 20, 2011)

Retirement of TVA coal-fired generation capacity also was addressed in TVA's 2011 Integrated Resources Plan (IRP) Environmental Impact Statement (EIS). For that EIS process, TVA provided numerous opportunities for public review and comment, including two written comment periods, five public meetings, and several webcasts during which participants could make comments and ask questions. TVA also established a review group consisting of various stakeholders including users and distributors of TVA electricity, state agencies, academia, the Department of Energy, and environmental advocacy groups (the Sierra Club and the Southern Alliance for Clean Energy). Individuals on this review group met frequently throughout the IRP process with TVA staff preparing the IRP and EIS and provided comments on TVA's analyses and results on an ongoing basis. Volume 2 of the IRP EIS contains the comments TVA received and TVA's responses to them. The IRP EIS can be found at http://www.tva.com/environment/reports/irp/archive/index.htm.

See response to EPA Comment # 1.

SACE Comment 2:

This Draft EA focuses primarily on the dismantling of buildings and structures and does not address several significant environmental issues and impacts associated with retirement and demolition of JSF, such as legacy coal ash contamination and surface water impacts.

Response:

See response to EPA Comment #1

SACE Comment 3:

In September 2013, TVA closed campgrounds and shoreline near JSF to the public in order to cap and permanently stabilize the JSF's ash impoundments. At the time, TVA alerted the public that it would be closing these recreation areas. At no time during this process did TVA release an environmental assessment or inform the public of its plans for capping the ash impoundments. Now, TVA claims it will release NEPA analysis of its ash closure plans sometime in the future - a seemingly incomprehensible assertion seeing as how TVA has already begun the process of capping the ash ponds in place.

Response:

The proximity of the campground to the ash impoundments raised safety concerns because of the anticipated closure of those ponds, but the reason TVA closed the campground was the lack of security at the campground. TVA has not proposed to close the ash impoundments yet. TVA is currently closing the dry fly ash stack in accordance with the solid waste closure plan issued to TVA by TDEC. The NEPA analysis for closure of the fly ash stack was completed in November 2012. Closure of the ponds will be evaluated under NEPA in future at the time any such pond closure activities are proposed.

<u>SACE Comment 4</u>:

The Draft EA Improperly Segments the Examined Project, and thereby Unlawfully Fails to Consider JSF's Legacy Coal Ash Storage Facilities. It is a bedrock principle of NEPA law that an agency must consider the entirety of a project, and may not regard a mere subset of an overall project; accordingly, TVA cannot do as it has done here in the draft EA and ignore John Sevier's legacy coal ash ponds while analyzing alternatives for closing down John Sevier.

Under NEPA, actions must be considered together if, for example, one action "[a]utomatically trigger[s]" another, one action "[c]annot or will not proceed unless" another action is "taken previously or simultaneously" or the actions "[a]re interdependent parts of a large action."5 Such actions must be considered together as part of a proper NEPA analysis. In other words, "[a]n agency may not segment a project into smaller projects . . . simply to expedite the NEPA process or avoid addressing environmental impacts."

<u>Response</u>:

See response to EPA Comment #1. Closure of the ash impoundments are not related to nor dependent upon the deconstruction of the structures at the plant (the subject of this EA). They are independent actions.

<u>SACE Comment 5</u>:

The EA acknowledges that the demolition and grading will alter the flow of surface and storm water. Yet the EA completely fails to analyze how these alterations in surface and stormwater flows impact the coal ash storage areas.

<u>Response</u>:

The stormwater in areas where plant deconstruction activities will be conducted does not mingle with the stormwater at or around the facility ponds. This is not expected to affect operation of the ash storage areas.

<u>SACE Comment 7</u>:

The Draft EA improperly excludes analysis of groundwater contamination caused by JSF's ash disposal areas and analysis of remediation efforts to remove known contamination.

<u>Response</u>:

See response to EPA's comment #1. Demolition of structures at the site under Alternative C will not affect the groundwater at the plant site. TVA anticipates that the environmental review for closure of the ash impoundments when that is proposed will consider any groundwater contamination that may be associated with those impoundments.

SACE Comment 8:

Commenters support TVA's preferred alternative and recommend construction of solar generation facilities on the brownfield site.

Response:

Comment noted.

From: Holliman, Daniel [mailto:Holliman.Daniel@epa.gov]
Sent: Tuesday, January 06, 2015 4:15 PM
To: Farless, Ashley Robin
Cc: Okorn, Barbara; Ostrauskas, Darius; Mueller, Heinz; Zeller, Craig
Subject: John Sevier Fossil Plant Deconstruction Draft Environmental Assessment – Hawkins County, Tennessee

This message originated outside of TVA. Use caution when opening attachments, clicking links or responding to requests for information.

Ms. Farless:

Consistent with Section 102(2)(c) of the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the U.S. Environmental Protection Agency (EPA) appreciates the opportunity to provide comments on the referenced project. It is our understanding that the above referenced draft Environmental Assessment (EA) was submitted for a proposed project to deal with the disposition of the physical structures associated with the retired coal-fired plant units, including the powerhouse, coal handling appurtenances, and surrounding support buildings at the John Sevier Fossil Plant (JSF) site. It is also our understanding that the closure of the fly ash stack, bottom ash pond, chemical treatment ponds, coal yard and waste stabilization pond (coal yard runoff pond) is a separate action and will be covered under an independent NEPA analysis.

The draft EA examines four alternatives: 1) Alternative A – Assess, Close, and Secure Site, 2) Alternative B – Selective Demolition, 3) Alternative C - Demolition to Grade ("Brownfield"), and 4) Alternative D - No Action Alternative. We understand that the preferred alternative is Alt C, demolition to grade (Brownfield), and that this alternative is considered as having the least environmental impact of the alternatives considered in the draft EA.

EPA has the following NEPA comments regarding the proposed project:

- EPA notes that the proposed action covers only the demolition of the physical structures associated with the retired coal-fired plant units, including the powerhouse, coal handling appurtenances, and surrounding support buildings. We also note that the closure of the fly ash stack, bottom ash pond, chemical treatment ponds, coal yard and waste stabilization pond (coal yard runoff pond) will be covered under a future separate NEPA analysis. EPA recommends that TVA provide clarification as to why these actions were separated and the anticipated level of significance of the action associated with closure of the fly ash stack, bottom ash pond, chemical treatment ponds, coal yard and waste stabilization pond (coal yard runoff pond). Does TVA anticipate that this second action will require an EIS?

- Section 3.2.2.2 – In relation to fugitive dust emissions the following statement is made "Approximately 95 percent (by weight) of fugitive emissions from vehicular traffic over paved roads is comprised mainly of particles that tend to be deposited near the roadways. The remaining fraction of the dust (5 percent or less) may be subject to transport beyond the property boundaries." EPA recommends including a citation supporting this statement.

•Section 3.3.1 – Table 3-2 – EPA notes that Table 3-2 provides location and depth information for water supply wells within a one mile radius of the JSF site. EPA recommends that any water quality data associated with these wells be included in the table or discussion in this section.

•Section 3.9.1.3 – As indicated, EPA investigations of the Saltville Waste Disposal Ponds Site ("Site") in Virginia have found "…elevated mercury levels in sediment cores collected upstream of the JSF Detention Dam…". More specifically, the text should note that the EPA Superfund Remedial Investigation (RI) of the Saltville Waste Disposal Ponds Site in Virginia has detected elevated levels of mercury associated with the subject Site in subsurface sediments just upstream of the JSF Detention Dam. The text should also note that, based on a preliminary evaluation of available RI results, EPA believes that mercury in the subsurface sediments of interest may potentially present an unacceptable risk to human health and/or the environment if the dam is deconstructed or if other activities disturb and/or mobilize the subject subsurface sediment. It is also worth noting that EPA has yet to complete the RI for this and other Holston River sediment (and the assessment of risk associated with this sediment) and that no Superfund remedy has been selected for the subject sediments by EPA in the event that a remedy is determined to be necessary. As noted, EPA may further investigate the sediments of concern as part of future RI work for the Saltville Waste Disposal Ponds Site. Based on a review of the draft EA, EPA understands there are no plans at this time to deconstruct the dam or modify the dam in a manner which would mobilize the sediment of concern in adverse manner.

•Section 3.9.2.4 - This section indicates that "the JSF/JCC detention dam is considered as an obstacle reducing the migration of mercury impacted sediment continuing downstream in the Holston River." It may be worth clarifying that, based on available information, EPA does not believe that the subsurface sediment referenced above presents a risk of concern at this time. However, if the dam is deconstructed or if the subsurface sediment of concern is otherwise mobilized, the sediment may present a risk of concern.

This section also notes that "…impacted sediment also may be located within the plant intake channel." EPA is not aware at this time of data which indicates that sediment within or immediately upstream of the plant intake channel may be contaminated with mercury. EPA plans to request that the TVA provide any such data as well as any other data regarding the extent of sediment contamination in front of the subject dam which is not available to EPA at this time. It is worth noting that, depending of the results of a Superfund RI and risk assessment for Holston River sediment, a Superfund remedy may be necessary for sediment within and/or upstream of the plant intake channel. Based on a review of the draft EA, EPA understands there are no plans at this time to conduct any activities which would disturb or mobilize sediment within or upstream of the intake channel.

•Consistent with Executive Order 12898 entitled "Federal Actions to Address Environmental Justice In Minority Populations and Low-income Populations" TVA provided an Environmental Justice (EJ) analysis in section 3.13.1.2 of the draft EA. EPA appreciates TVA including this analysis in the EA.

•The proposed action at the JSF site includes demolition of several NRHP-eligible structures. EPA notes that TVA has appropriately coordinated with the SHPO and has agreed to mitigate adverse impacts as a result of the preferred alternative.

We appreciate the opportunity to provide comments on this draft EA. Should you have NEPA related questions, feel free to coordinate with me or if you have Superfund related questions (relative to the Saltville Facility comments), please coordinate with Darius Ostrauskas at 215-814-3360 or at Ostrauskas.Darius@epa.gov

Sincerely,
Dan

Dan Holliman
USEPA Region 4 | NEPA Program Office
61 Forsyth Street SW | Atlanta, GA 30303

tel 404.562.9531 | holliman.daniel@epa.gov

Region 4 NEPA: http://www.epa.gov/region4/opm/nepa/index.html

Name: Isaac Armstrong III

Comments: Being a life long resident of the Tennessee valley and a career with the TVA both in construction and as an annual employ at SQN my brief comment below has some real to life convictions.

I believe the 4 to 5 generations to whom the power plant severed owes the future generations a land NOT blotched with relics of long since useless sites of problems for which they too will have no use.

Therefore, Action number 3, Demolish all unneeded structures "to grade," returning the area to a "brownfield" condition should be the only acceptable solution from this TVA.

The TVA made a choice during the Twentieth Century to utilize the natural resources of both land and waterway at that location, and now it is time to return the land and waterway to near natural condition as possible. Feasible or not.

Thanks for the opportunity to post my sincere concern.

A REAL COMMUNITY ACT OF SERVICE.

I. Coleman Armstrong
Field Engineer-Refurb Group
WBN-Trlr 137
423-452-4424
Endeavor to Persevere

close window

Ashley R. Farless, NEPA Compliance Specialist
Tennessee Valley Authority
1101 Market Street, BR 4A
Chattanooga, Tenesseee 37402
(423) 751-2361
arfarless@tva.gov

January 8, 2015

Via electronic mail

Re: John Sevier Fossil Plant Deconstruction Draft Environmental Assessment

Dear Ms. Farless:

Thank you for the opportunity to provide the following comments on the Draft Environmental Assessment ("Draft EA") the Tennessee Valley Authority ("TVA") is undertaking pursuant to the National Environmental Policy Act ("NEPA") for Deconstruction of the John Sevier Fossil Plant ("JSF") located in Hawkins County, Tennessee. On behalf of the Southern Alliance for Clean Energy ("SACE"), Southern Environmental Law Center ("SELC"), Sierra Club, Environmental Integrity Project ("EIP"), Tennessee Clean Water Network ("TCWN") and Earthjustice (collectively referred to as "Commenters") we submit these comments, highlighting the inconsistencies and insufficiencies in the Draft EA.

A. TVA Has Failed to Notify the Public Regarding Actions Taken at JSF, Circumventing NEPA Requirements.

Overall, Commenters are concerned that this Draft EA represents the first opportunity for public engagement concerning the shut-down of generation at JSF, the closure of ash ponds on-site and overall retirement of the plant. This Draft EA focuses primarily on the dismantling of buildings and structures and does not address several significant environmental issues and impacts associated with retirement and demolition of JSF, such as legacy coal ash contamination and surface water impacts.

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In the Draft EA, TVA states "[t]he closure of the Fly Ash Stack, Bottom Ash Pond, Chemical Treatment Ponds, Coal Yard and Waste Stabilization Pond (Coal Yard Runoff Pond) are independent actions that, from a NEPA perspective, will be evaluated separately."[1] In September 2013, however, TVA closed campgrounds and shoreline near JSF to the public in order to cap and permanently stabilize the JSF's ash impoundments.[2] At the time TVA alerted the public that it would be closing these recreation areas, TVA's Public Relations spokesperson, Travis Bickey, stated "[r]ight now we're focusing on capping the ash. We have to cap that."[3] At now time during this process did TVA release an environmental assessment or inform the public of its plans for capping the ash impoundments.

Now, TVA claims it will release NEPA analysis of its ash closure plans sometime in the future—a seemingly incomprehensible assertion seeing as how TVA has already begun the process of capping the ash ponds in place. Not only did TVA bypass the NEPA process back in September 2013, it continues to try and circumvent NEPA by failing to include ash pond closure plans and impacts in this Draft EA. As far back as January 2012, environmental groups, including some of the same groups commenting here, submitted a letter outlining concerns with TVA's actions concerning closure of JSF's ash facilities despite the fact that there was no formal public comment period or opportunity to engage otherwise.[4] As explained below TVA cannot continue to bypass NEPA regulations and should include analysis of environmental impacts associated with closure of JSF's ash waste facilities.

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[1] *See* Draft EA at 1.
[2] *See* "John Sevier Campground, fishing access slated to close in September" Times News, July 15, 2013, *available at* http://www.timesnews.net/article/9065004/john-sevier-campground-fishing-access-slated-to-close-in-september.
[3] *Id.*
[4] *Public Comment Regarding TVA John Sevier Main Ash Pond Closure, NPDES Permit No. TN0005436* submitted to the Tennessee Department of Environment and Conservation on behalf of SACE, EIP, TCWN and Earthjustice, January 20, 2012, *available at* http://www.cleanenergy.org/wp-content/uploads/20120120_SACE-et-al-comments-on-JSF-ash-closure-plan.pdf.

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B. The Draft EA Improperly Segments the Examined Project, and thereby Unlawfully Fails to Consider JSF's Legacy Coal Ash Storage Facilities.

It is a bedrock principle of NEPA law that an agency must consider the entirety of a project, and may not regard a mere subset of an overall project; accordingly, TVA cannot do as it has done here in the draft EA and ignore John Sevier's legacy coal ash ponds while analyzing alternatives for closing down John Sevier.

Under NEPA, actions must be considered together if, for example, one action "[a]utomatically trigger[s]" another, one action "[c]annot or will not proceed unless" another action is "taken previously or simultaneously" or the actions "[a]re interdependent parts of a large action."[5] Such actions must be considered together as part of a proper NEPA analysis. In other words, "[a]n agency may not segment a project into smaller projects . . . simply to expedite the NEPA process or avoid addressing environmental impacts."[6]

The Draft EA's purpose is to address the legacy structures and potential pollution in place left behind after the retirement of the John Sevier coal plant after six decades of operation.[7] The EA is to consider, then, all of the structures, storage areas, material handling mechanisms, and combustion residual and pollutant disposal systems at John Sevier: all of the "physical structures" associated with the coal fired units. Nonetheless, without support, and contrary to NEPA, TVA proposes to exclude from its analysis numerous such physical structures, including "the Fly Ash Stack," the "Bottom Ash Pond" the chemical treatment ponds, the "Coal Yard," and the coal yard runoff pond.[8] This is the very definition of improper segmenting: selecting only a

[5] 40 C.F.R. § 1508.25(a)(1); *see also* 40 C.F.R. § 1508.27(b)(7) ("Significance cannot be avoided by . . . breaking [an action] down into small component parts.").
[6] *W. N.C. Alliance v. N.C. Dep't of Transp.*, 312 F. Supp. 2d 765, 774-75 (E.D.N.C. 2003).
[7] *See* Draft EA at 1 (identifying its purpose as the determination of "the future disposition of the physical structures associated with the retired coal-fired units.").
[8] *Id.*

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subset of the overall project to be examined, so as to limit the scope of environmental impacts actually addressed.[9]

Any decisions regarding the "physical structures associated with the retired coal-fired units" will necessarily impact the runoff ponds and ash handling facilities, thus requiring analysis under NEPA. For example, the EA acknowledges that the demolition and grading will alter the flow of surface and storm water.[10] [11] Yet the EA completely fails to analyze how these alterations in surface and stormwater flows impact the coal ash storage areas. Further, the demolition activities considered in Alternatives B and C could themselves have an impact on the ash storage areas.[12] By not addressing these issues at all—as well as failing to analyze the timing of implementation of the coal ash pond closure plan and how that might coordinate with the demolition—the draft EA is deficient. As such, before the Draft EA is finalized, TVA must include analysis of alternatives for addressing the legacy physical structures of the coal and ash handling, storage, and treatment systems, rather than segmenting them from analysis as the Draft does now.

C. The Draft EA Improperly Excludes Analysis of Groundwater Contamination Caused by JSF's Ash Disposal Areas and Analysis of Remediation Efforts to Remove Known Contamination.

The coal ash disposal areas at John Sevier have contaminated the groundwater beneath the plant, and will continue to do so unless TVA remediates the site. Figure 1, below, provides a visual description of current ash disposal operations. TVA originally disposed of coal ash from

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[9] *See W. N.C. Alliance*, 312 F. Supp. 2d at 774-75.

[10] *See, e.g.*, Draft EA at 30 (potential impacts of grading on aquatic ecology include increased erosion and siltation and loss of instream habitat due to changes in surface flows); *id.* at 44 (Alternative C demolition will affect offsite surface waters and stormwater flows); *id.* at 70-71 (Alternative C does not include stormwater pond for area around former coal buildings and will create additional sheet flow discharges).

[11] *See, e.g.*, Draft EA at 30 (potential impacts of grading on aquatic ecology include increased erosion and siltation and loss of instream habitat due to changes in surface flows); *id.* at 44 (Alternative C demolition will affect offsite surface waters and stormwater flows); *id.* at 70-71 (Alternative C does not include stormwater pond for area around former coal buildings and will create additional sheet flow discharges).

[12] *See, e.g.*, Draft EA at 60 (proposed demolition activities include use of explosives, compactors, front loaders, backhoes, graders and trucks); *id.* at 26 (noting temporary increased truck traffic through the project area).

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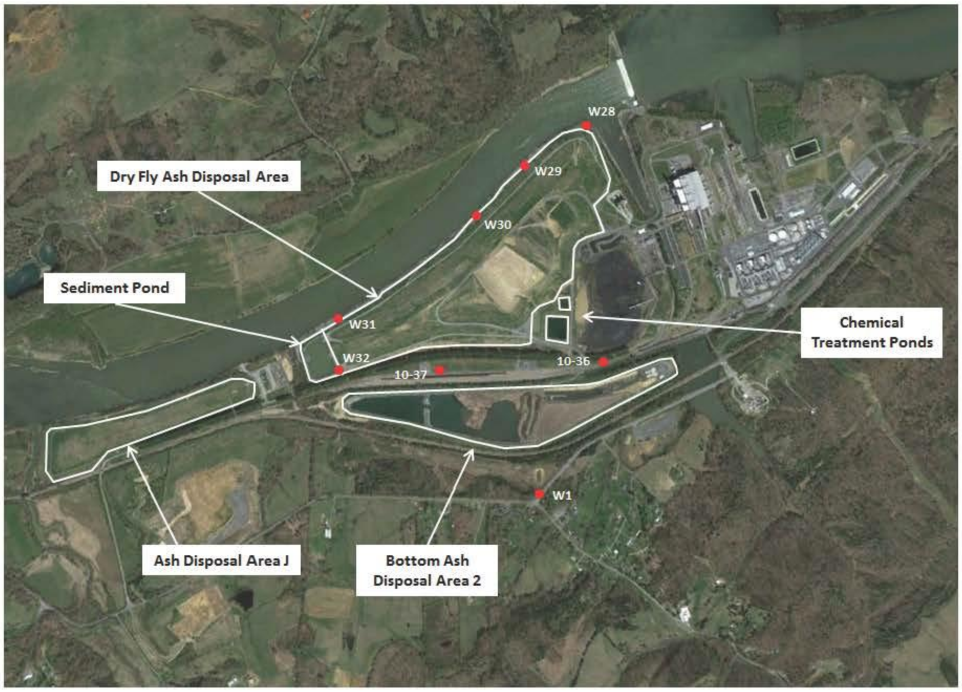
John Sevier in a series of ponds located along the Holston River, in the area now covered by the dry fly ash disposal area and the sediment pond. In 1979, TVA started using Area 2 as a bottom ash pond and started disposing of dry fly ash on top of the fly ash and bottom ash in the old ash ponds. Ash Disposal Area J had a shorter lifespan: TVA started using Area J as a fly ash settling pond in 1982, converted to dry stacking in 1988, and closed the area in 1999.

Figure 1: Groundwater wells at John Sevier Fossil Plant (approximate locations)



The site is vulnerable because the ash disposal areas are unlined, allowing contaminants to freely migrate into groundwater. In addition, the dikes around the original ash ponds, now the dry fly ash disposal area, were poorly built. After a section of the northern dike collapsed in 1973, TVA observed that:

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> A large percent of ash was used as material to raise the dikes. DED had recommended that ash not be used in dike building at John Sevier since the ash there is not suitable for this purpose because a significant portion is not stable when wet and it erodes easily.[13]

The dikes were also too steep to be structurally sound; the same memo went on to observe that "the entire dike system at John Sevier has the same inadequacies."[14] As a result of this poor construction, John Sevier has had a history of dike failures, sloughing, and seepage.[15]

1. Monitoring

TVA currently monitors eight wells at John Sevier, mainly around the dry fly ash disposal area. Wells along the north dike of the dry fly ash disposal area show unsafe concentrations of boron, manganese, and sulfate, and in some cases cobalt (wells W28 and W30). Well W31 also showed very high concentrations of molybdenum in April 2008, but molybdenum has not been measured since then (see Data Gaps section below). When compared to upgradient background water quality, all of the wells around the dry fly ash disposal area have shown significantly elevated concentrations of boron, sulfate, and many other contaminants in recent years.[16] Although results for well W31 suggest cadmium contamination, TVA tested water from that well at three different labs in 2011, and only one of the three has reported such high concentrations.[17] TVA suggested that the high readings at one lab were caused by

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[13] TVA, *John Sevier Steam Plant – Inspection of Ash Disposal Pond Dikes*, memo to file from R. J. Bowman, Principal Civil Engineer (June 8, 1973) (reproduced in Stantec Consulting Services Inc., *Report of Geotechnical Exploration – John Sevier Fossil Plant*, Appendix A – historical documents, Feb. 8, 2010).

[14] *Id.*

[15] *See generally* Stantec Consulting Services Inc., *Report of Phase 1 Facility Assessment, Tennessee, Appendix F – John Sevier Fossil Plant*, Dry Fly Ash Area pages 2-6 and Sediment Pond West page 2; Parsons Energy and Chemicals Group Inc., *Fly Ash Pond Dike Slope Stability Evaluation – Phase One Report* (Dec. 9, 1999).

[16] For example, the April 2012 groundwater report noted that there were exceedances (significant departures from upgradient water quality) for the following analytes in the following downgradient wells: Alkalinity (all wells), aluminum (W31 and W32), ammonia (W29), boron (all wells), fluoride (W30 and W31), manganese (W28- W30), pH (all wells), sodium (W28-W31), specific conductivity (all wells), strontium (wells W28-W31), and sulfate (all wells). TVA, *John Sevier Fossil Plant Dry Fly Ash Landfill Groundwater Assessment Monitoring Report – April 2012*, 6 (May 28, 2012).

[17] TVA, *John Sevier Fossil Plant Dry Fly Ash Landfill Groundwater Assessment Monitoring Report – April 2011*, 7-9 (June 15, 2011).

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interference from elevated molybdenum levels.[18] This explanation seems plausible, but it raises another issue: if there is elevated molybdenum in this well, then TVA should be regularly measuring and reporting molybdenum concentrations.

Monitoring around the bottom ash disposal pond, Area 2, has been recent and limited; concentrations of most pollutants were below health-based thresholds. Manganese, which was only measured in April 2011, was higher than the Lifetime Health Advisory and higher than upgradient concentrations. Table 1 provides a carefully restricted[19] list of the primary pollutants of concern and maximum concentrations in each affected well.

Table 1: Pollutants exceeding health-based guidelines between April 2008 and November 2013 in wells likely to be affected by coal ash.

Well	**Pollutants exceeding health-based guidelines (maximum concentration)**
Well W28	Boron (3.1 mg/L), Cobalt (6.4 ug/L), Manganese (4 mg/L), Sulfate (890 mg/L)
Well W29	Manganese (8.3 mg/L)
Well W30	Boron (5.65 mg/L), Cobalt (5 ug/L), Manganese (3.8 mg/L), Sulfate (1,100 mg/L)
Well W31	Boron (18 mg/L), Cadmium (8.2 ug/L), Molybdenum (4,420 ug/L), Sulfate (1,800 mg/L)

[18] *Id.*

[19] We made a conservative assessment of the data by filtering out groundwater results that potentially reflected natural contamination, or man-made sources other than coal ash. We began by eliminating all downgradient wells that had boron concentrations less than 1 mg/L and sulfate concentrations less than 150 mg/L. One mg/L is the maximum boron value seen in upgradient TVA wells. The maximum sulfate concentration in upgradient TVA wells (aside from three potentially contaminated upgradient wells at the Paradise plant) was 150 mg/L. In the remaining wells, we identified all pollutants that exceeded their respective health-based guidelines one or more times during the past five years (2008-2013). We did not count exceedances that appeared to be outliers (e.g., one high value for a pollutant that is usually below detection in a particular well), and we did not count exceedances for pollutants where the mean concentration in the downgradient well was lower than the mean concentration in the relevant upgradient well.

2. *Data gaps*

There are gaps at each of John Sevier's three ash disposal areas; filling these data gaps may reveal more extensive contamination:

- There are no groundwater wells upgradient or downgradient of ash disposal Area J, so we have no information about the extent to which that abandoned ash pond is leaching pollutants into groundwater and the Holston River.
- The bottom ash disposal area (Area 2) is currently monitored with one upgradient well (W1) and two downgradient wells (10-36 and 10-37). The downgradient wells, however, were only recently installed. Moreover, TVA does not regularly monitor these wells for many pollutants of concern, including boron, chloride, manganese, and sulfate. TVA once monitored an additional well south of Area 2 and west of well W1; it is not clear why this well was removed.[20]
- The dry fly ash disposal area is the best-monitored of the three areas. However, it has a history of dike failures, sloughing, and seeping along the north dike. The 1973 dike failure occurred in the area between wells W30 and W31 (see Figure 7-1 below), and both of these wells show clear evidence of contamination. The distance between these two wells is roughly 0.4 miles. An additional well in this area would provide important information about the rate of leaching in parts of the dike that have a history of weakness and instability.

As a site-wide matter, molybdenum is essentially unmonitored at John Sevier. The only data that we have on file for wells W1-W32 are from one round of results in April 2008 and more recent monitoring in late 2013; molybdenum has apparently not been measured at all in wells 10-36 and 10-37. Yet there are several reasons why molybdenum should be a pollutant of concern at John Sevier: First, according to a U.S. EPA risk assessment, molybdenum is a coal ash pollutant that may pose a health risk near coal ash impoundments and landfills.[21] Second, molybdenum is elevated in groundwater at other TVA coal plants. Third, molybdenum

[20] Meeting Minutes, John Sevier Fossil Plant Ash Disposal – Tennessee Solid Waste Permit (Mar. 3, 1987) (showing two wells south of Area 2:W1 and W2).
[21] *See, e.g.*, U.S. EPA, Draft *Human and Ecological Risk Assessment of Coal Combustion Wastes*, 2-4 (Apr. 2010) (listing molybdenum as a coal ash constituent of potential concern); id. at ES-6 – ES-7 (showing significant 90th percentile risks for molybdenum through the groundwater-to-drinking water pathway for landfills and surface impoundments); U.S. EPA co-proposed Subtitle D coal ash regulations, 75 Fed. Reg. 35,128, 35,253 (June 21, 2010) (listing molybdenum as an assessment monitoring constituent).

concentrations in well W31 have been as high as 2,200 ug/L, over 50 times higher than the concentration that is safe to drink. Finally, molybdenum has been blamed for causing artificially high cadmium results in the same well (see Monitoring section above). TDEC clearly should require TVA to regularly measure molybdenum concentrations across the site.

3. Failure to regulate

Recent data show clear evidence of coal ash leachate migrating from the dry fly ash disposal area to the Holston River via the local groundwater. Specifically, concentrations of boron, manganese, strontium, sulfate and other pollutants are much higher than background in wells along the thin strip of land between the disposal area and the river. The source of the contamination is likely to be the ash that was sluiced to the ponds beneath the current dry disposal area and left in place, though the dry fly ash stacks may be contributing as well. As far as we know, TDEC is not requiring TVA to do anything about this legacy waste issue, and has decided to allow the problem to persist indefinitely.

D. Commenters Support TVA's Preferred Alternative and Recommend Construction of Solar Generation Facilities on Brownfield Site.

TVA's preferred alternative is Alternative C, Demolition to Grade ("Brownfield"), which has the least environmental impact of the four alternatives included in the Draft EA.[22] Commenters support this preferred alternative, as it includes removal of all structures on-site and would not require long-term maintenance costs associated with upkeep and security of buildings.[23] TVA states that "[i]f Alternative C is chosen, the site would be converted from an industrial facility to a brownfield totaling approximately 47 usable acres. The resulting brownfield would have the potential for redevelopment as a site for renewable or alternative

[22] Draft EA at 10.
[23] Commenters support Alternative C but contend that it is still insufficient in that it does not include analysis of closure of ash facilities, remediation of groundwater or impacts of demolition on surrounding surface water.

sources of energy and sustainable land use in compliance with the TVA 2008 Environmental Policy."[24] Commenters support and encourage TVA to develop renewable energy generation resources, such as a solar installation, on the brownfield site after demolition is completed. By developing renewable energy on the brownfield site, TVA will increase its in-state solar generation and help Tennessee reduce carbon emissions in accordance with new carbon emission limits in the Environmental Protection Agency's ("EPA") Clean Power Plan. Additionally, EPA supports renewable energy development on formerly contaminated lands.[25]

Thank you for the opportunity to submit comments and please do not hesitate to reach out with any questions regarding these comments.

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[24] Draft EA, Section 3.15.2.3 at 57.
[25] For more information on EPA's recommendations for development of renewable energy resources on brownfield sites, see "RE-Powering America's Land" and the "RE-Powering America's Land: Fact Sheet," as well as EPA and National Renewable Energy Laboratory's ("NREL") Feasibility Study on Solar Technology, available at http://www.epa.gov/oswercpa/rd_studies.htm - solar.

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