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BELLEFONTE SITE UTLITY IMPROVEMENTS
ENVIRONMENTAL ASSESSMENT
Jackson County, Alabama

Prepared by:
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Knoxville, Tennessee

April 2014

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Symbols, Acronyms, and Abbreviations

AADT	Annual Average Daily Traffic
ADEM	Alabama Department of Environmental Management
ALDOT	Alabama Department of Transportation
APE	Area of Potential Effect
BLN	Bellefonte Nuclear Plant
BMP	Best Management Practices
CBMPP	Construction Best Management Practices Plan
CR	County Road
e.g.	Latin term, *exempli gratia*, meaning “for example”
EA	Environmental Assessment
EO	Executive Order
ESA	Endangered Species Act
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollution Discharge Elimination System
NRHP	National Register of Historic Places
PM	Particulate matter
$PM_{2.5}$	Particulate Matter Having a Diameter of Less Than or Equal to 2.5 Microns
PM_{10}	Particulate Matter Having a Diameter of Less Than or Equal to 10 Microns
PSO	Power Systems Operations
ROD	Record of Decision
ROW	Right-of-Way
WS&G	water, sewer and gas
SEIS	Supplemental Environmental Impact Statement
SHPO	State Historic Preservation Officer
SMZ	Streamside management Zone
TVA	Tennessee Valley Authority
TVARAM	Tennessee Valley Authority Rapid Assessment Method
U.S.	United States
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

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CHAPTER 1 – PURPOSE AND NEED FOR ACTION

1.1 Background

The Tennessee Valley Authority's (TVA) Bellefonte Nuclear Plant (BLN) is located in northeast Alabama on 1,600 acres adjacent to Guntersville Reservoir at Tennessee River Mile 392, near the town of Hollywood and the city of Scottsboro (Figure 1-1), in Jackson County. Construction permits for two nuclear units were issued in 1974. TVA halted construction in 1988 in response to decreased power demand. The plant was maintained in deferred status until 2005 when TVA withdrew its construction permits to facilitate consideration of other uses of the site. In August 2008, TVA requested reinstatement of the construction permits for Units 1 and 2 to give TVA the opportunity to evaluate the engineering and economic feasibility of completing those units. Both units are now being maintained and preserved in construction-deferred status.

Currently, approximately 150 employees located at the site are involved in site maintenance and operations. TVA's Power Systems Operations (PSO) Training Center, used year round, is also located on the BLN reservation. The training center and associated facilities have approximately 50 participants on site from time to time.

After a 2014 inspection of the site's utility infrastructure, TVA found that a portion of the existing waterline serving BLN is leaking. TVA also found that the sewer system for the BLN and the PSO Training Center require improvements. TVA's BLN sewer system is connected to the Jackson County waste water treatment plant (WWTP), which is above capacity. The PSO Training Center's sand filtration sanitary waste system test results show trends of increased total suspended solids and bacteria, which may indicate degradation within the system. The PSO Training Center's system has a direct outfall to the Tennessee River.

1.2 Proposed Action

TVA is proposing to improve water and sewer utilities at its BLN facilities. The improvements would include the installation of new sewer lines and replacement of a portion of an existing leaky waterline along Bellefonte Road. TVA, in partnership with Scottsboro Water, Sewer & Gas (WS&G), also proposes to install a new force main sewer line and pump station to connect its current system to the Scottsboro pump station northwest of the BLN site. TVA would also install a new force main sewer line to connect the PSO Training Center to the BLN site's newly proposed sewer system.

1.3 Decision to be Made

The decision before TVA is whether to approve the upgrade of water and sewer lines on the BLN site. These proposed activities are described in further detail in Section 2.0.

1.4 Related Environmental Reviews and Consultation Requirements

Several evaluations in the form of environmental reviews have been prepared for actions related to the construction and operation of the BLN site. These documents are available on request.

Construction of a nuclear plant at this site was addressed in the *Final Supplemental Environmental Impact Statement (SEIS) for the Construction and Operation of a Single*

Nuclear Unit at the Bellefonte Plant Site (TVA 2010). TVA issued a phase 1 record of decision (ROD) published on September 9, 2010, approving additional engineering, design, and licensing activities, as well as the procurement of long lead-time components for the partially complete Bellefonte Unit 1. On August 31, 2011 TVA issued a second ROD, which documented the TVA Board of Directors' approval to construct and operate Bellefonte Unit 1, a partially completed 1,260-megawatt Babcock and Wilcox-designed nuclear unit (Alternative B in the BLN final SEIS). The final SEIS provides a great deal of information about the affected environment on the BLN site, which is included within the project area for the proposed action.

1.5 Scope of the Environmental Assessment

TVA has prepared this environmental assessment (EA) to comply with National Environmental Policy Act of 1969 (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 are relevant to the decision to be made. Thus, potential effects to the following environmental resources are addressed in detail in this EA.

- Air quality
- Cultural and historic resources
- Surface water
- Wildlife, vegetation and aquatic ecology
- Threatened and endangered species
- Wetlands
- Floodplain
- Transportation

Potential effects related to wild and scenic rivers, recreation, land use, groundwater, geology, natural areas, socioeconomics and environmental justice, noise, hazardous and nonhazardous waste, visual resources, health and safety, and global climate change were also considered. However, potential effects were found to be absent or minor, and these resources do not require further evaluation in this EA.

The proposed action is unrelated to the completion of BLN Unit 1 and would be undertaken regardless of future plans for nuclear operations on site.

1.6 Public Involvement

TVA published a no-practicable alternative notice in the local newspaper (The Scottsboro Sentinel) and on TVA's website on April 15, 2014. The notice described potential wetland impacts associated with the proposed action (Appendix A) and provided the public ten days to comment. No comments were received.

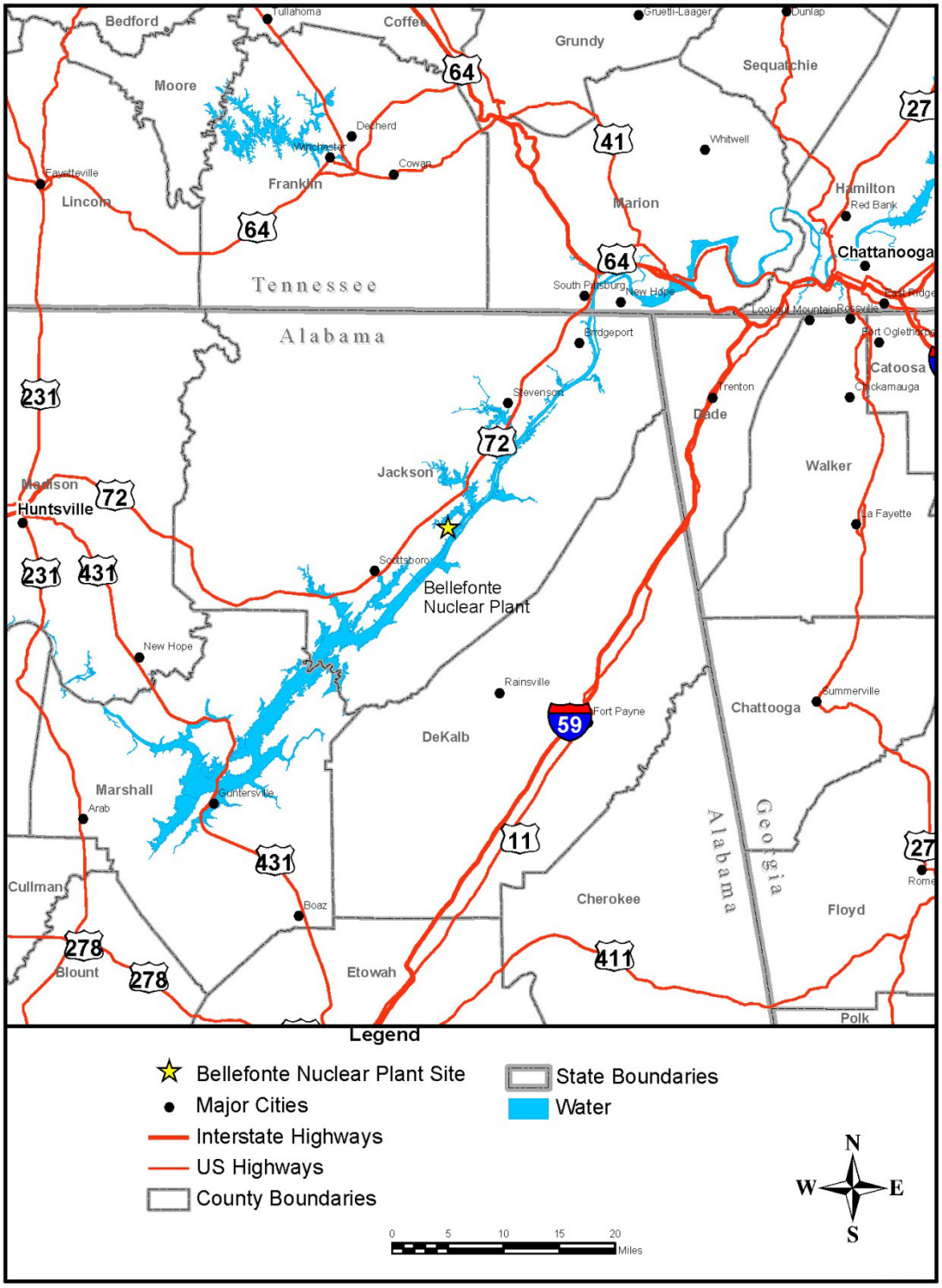

Figure 1-1 Bellefonte Site Locator Map

1.7 Permits, Licenses and Approvals

The proposed action would be subject to the following environmental permit requirements and regulations.

- Alabama Department of Environmental Management (ADEM) general National Pollution Discharge Elimination System (NPDES) Permit for discharges associated with construction activity.
- ADEM Construction Best Management Practices Plan (CBMPP) to outline effective erosion and sediment controls for the General NPDES Permit.
- US Army Corps of Engineers (USACE) Section 404 Permit for utility installation activities which involve mechanized land clearing in a forested wetland.
- Water quality certification under Section 401 of the Clean Water Act.

The proposed project was reviewed in accordance with Executive Order (EO) 11988 (Floodplain Management), EO 11990 (Protection of Wetlands), the National Historic Preservation Act (NHPA), the Endangered Species Act (ESA), and Section 404 of the Clean Water Act.

CHAPTER 2 – ALTERNATIVES

The proposed action and its alternatives are described and the environmental effects of each alternative are compared in this chapter. TVA's preferred alternative is also identified.

2.1 Description of Alternatives

Internal scoping by TVA has determined that there are two alternatives available to TVA: No Action and Proposed Action Alternative. The two alternatives are described below.

2.1.1 Alternative A - The No Action Alternative

Under Alternative A, TVA would not replace the portion of the waterline along Bellefonte Road. TVA would also not install a new sewer line to the Scottsboro pump station. The BLN site would continue to use the Jackson County WWTP, which is currently above capacity. The BLN site would therefore have an unreliable sewer system serving its on-site employees. The PSO Training Center would continue to use its sand filtration sanitary waste system; however, TVA would need to limit its use in order to maintain compliance with its NPDES permit. Environmental conditions in the project area would remain unchanged.

2.1.2 Alternative B - Proposed Action Alternative

Under Alternative B, TVA would proceed with the proposed utility improvements at the BLN site. The utility improvements would include the replacement of an existing waterline, the installation of a sewer line to connect its current system to the Scottsboro WWTP, and installation of a sewer line to connect the PSO Training Center to the BLN sewer system (Figure 2-1). For all projects, TVA would use a previously disturbed area for construction laydown to minimize impacts to the surrounding area. All disturbed areas would be revegetated with non-invasive species.

Waterline Replacement

TVA would install approximately 3,400 linear feet of an 8-inch waterline along Bellefonte Road to replace the existing leaking 8-inch waterline (Figure 2-1). The proposed design drawings are shown in Figure 2-2. The proposed ductile iron pipe waterline would be installed using a cut and fill method. The proposed line would be encased in concrete when it crosses an existing culvert on Bellefonte Road. Full stone backfill would be used for all open cut casing pipe installations with an 18 inch soil cover over the installed pipe to prevent freezing.

All work would occur within the right-of-way (ROW) of Bellefonte Road and County Road (CR) 33 with a disturbance area of 14 feet wide (7.5 feet from center of proposed waterline) by 3,400 linear feet long. An existing force main sewer line is also located along the ROW, TVA would maintain a 10-foot separation between the new and existing server lines. A new 4-inch master meter, wet tap and valve, and fire hydrant would be installed along CR 33 to maintain the tie into Jackson County Water Authority system. TVA would remove the existing fire hydrant and meter along CR 33 once the new equipment is installed. The existing galvanized steel waterline would be de-watered and abandoned in place once the installation of the new line is complete.

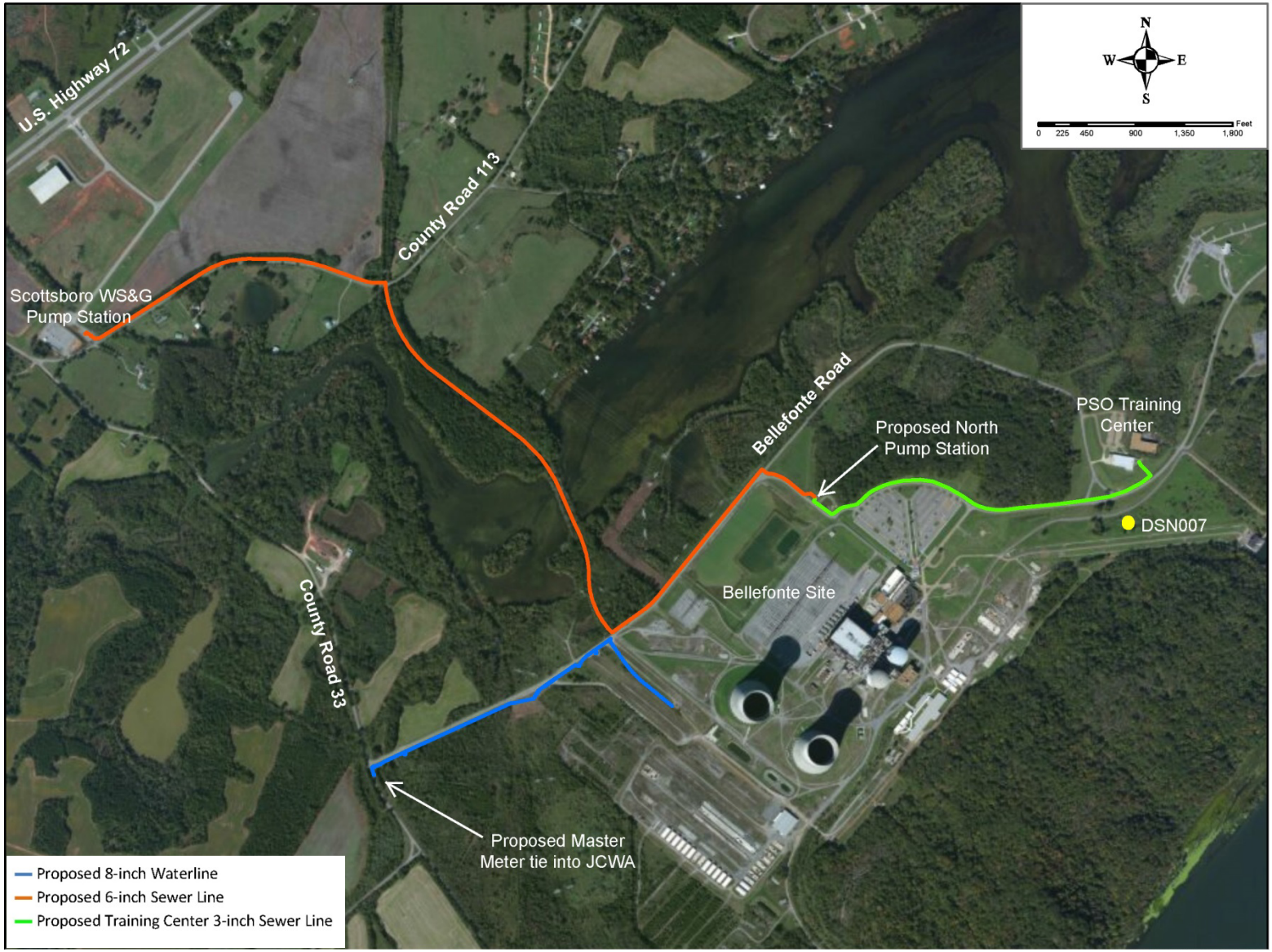

Figure 2-1. Overall Proposed Utilities Map

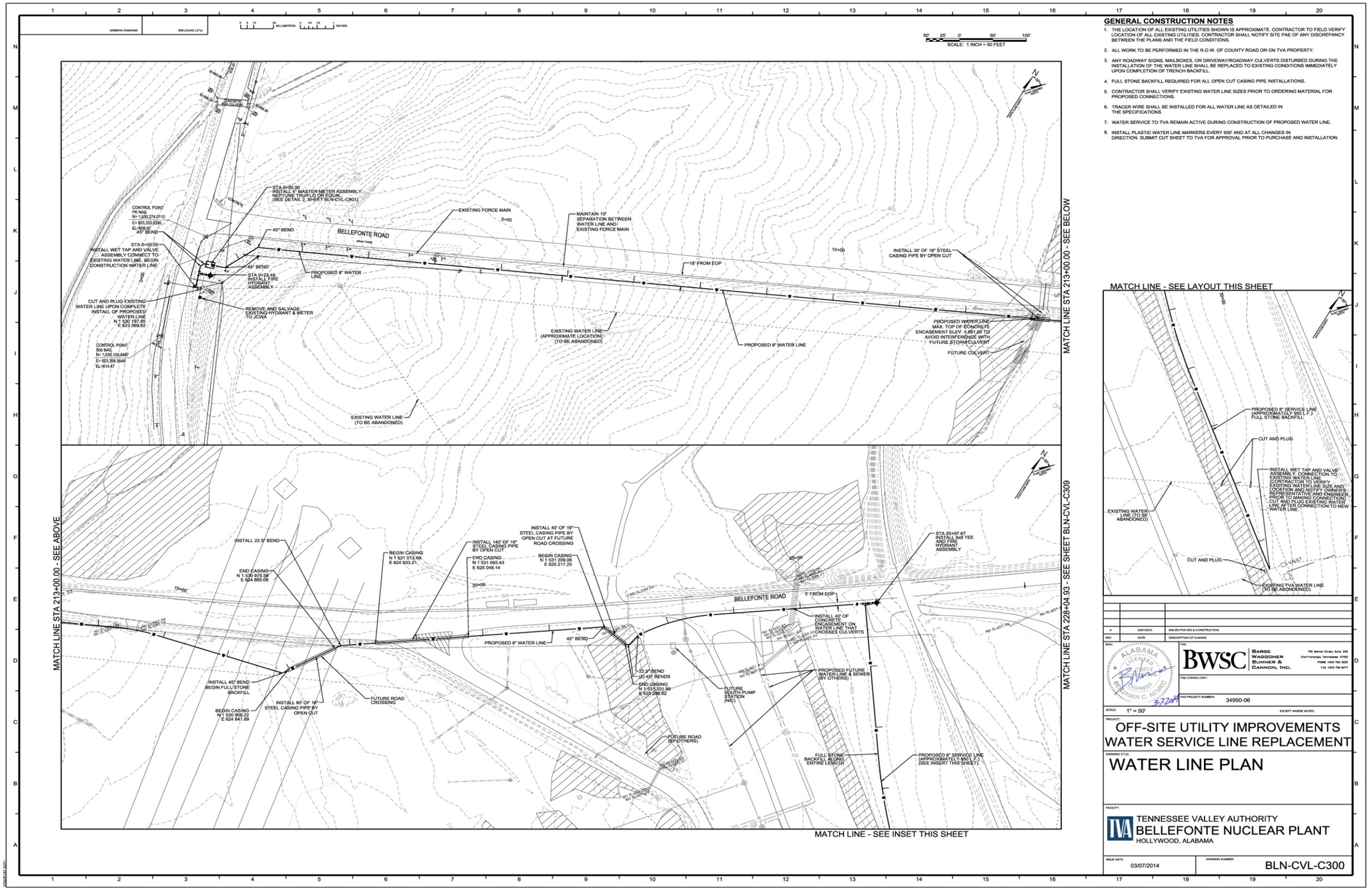

Figure 2-2 Proposed Waterline Plan

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BLN Site Sewer Line Installation

TVA would install the proposed sewer line on TVA property only. TVA currently has an agreement with Scottsboro WS&G, in which Scottsboro WS&G would be responsible for installing the proposed sewer line from its pump station, along the railroad ROW to Bellefonte Road (Figure 2-3). Scottsboro WS&G and TVA would each maintain and own the section of the sewer line it installs. TVA would provide the new 6-inch high-density polyethylene pipe to the Scottsboro WS&G and enter into a construction agreement, which would require Scottsboro WS&G to follow TVA mitigation measures. TVA owns the abandoned railroad and railroad ROW and would grant an easement to Scottsboro WS&G for installation of the sewer line on TVA property and future access for maintenance activities.

TVA would install approximately 2,700 linear feet and Scottsboro WS&G would install 7,100 linear feet of a new 6-inch force main sewer line connecting TVA's existing system to the Scottsboro pump station north of the BLN site. The sewer line would be installed using the trench and cover method. The new sewer line would be installed in the existing railroad ROW before crossing CR 113 and continuing along the CR 113 ROW (Figure 2-1). Installation activities would have a disturbance area of 14 feet in width (7.5 feet from center of proposed sewer line). Before installation of the proposed sewer line, the railroad tracks along 4,050 feet of the railroad ROW would be removed. The Railroad ROW crossing of Town Creek is accessible by land; therefore, no access from the water is necessary.

The proposed sewer line would be encased in concrete when it crosses an existing culvert on Bellefonte Road. Full stone backfill would be used for all open cut casing pipe installations with an 18 inch soil cover over the installed pipe to prevent freezing. The sewer line would be installed using a cut method when it crosses Bellefonte Road. The piping would be encased in concrete, and the roadway would be repaired to existing conditions once complete.

To install the sewer line at the railroad intersection with CR 113, Scottsboro WS&G would remove all railroad ties and tracks. When completed, all railroad crossing signage would be removed and Scottsboro WS&G would repave CR113 per Alabama Department of Transportation (ALDOT) standards. Approximately 1 acre of trees would be cleared by Scottsboro WS&G along CR 113 in order to install the proposed sewer line.

A new pump station (North Pump Station) would be installed by TVA in a previously disturbed area adjacent to the current pump station (Figure 2-4). The pump station would include two submersible sewage pumps, PVC piping, precast concrete valve vault, precast concrete wetwell, electrical equipment pad, and a new manhole (Figure 2-4). All of the proposed equipment would be located within a 22 foot by 27 foot, 8-inch thick compacted gravel pad area surrounded by an 8-foot chainlink fence. A 10 foot by 30 foot aluminum canopy would be installed to cover the electrical equipment. Once the new pump station is in service, the flow would be diverted from the existing pump station which would then be abandoned and filled with concrete.

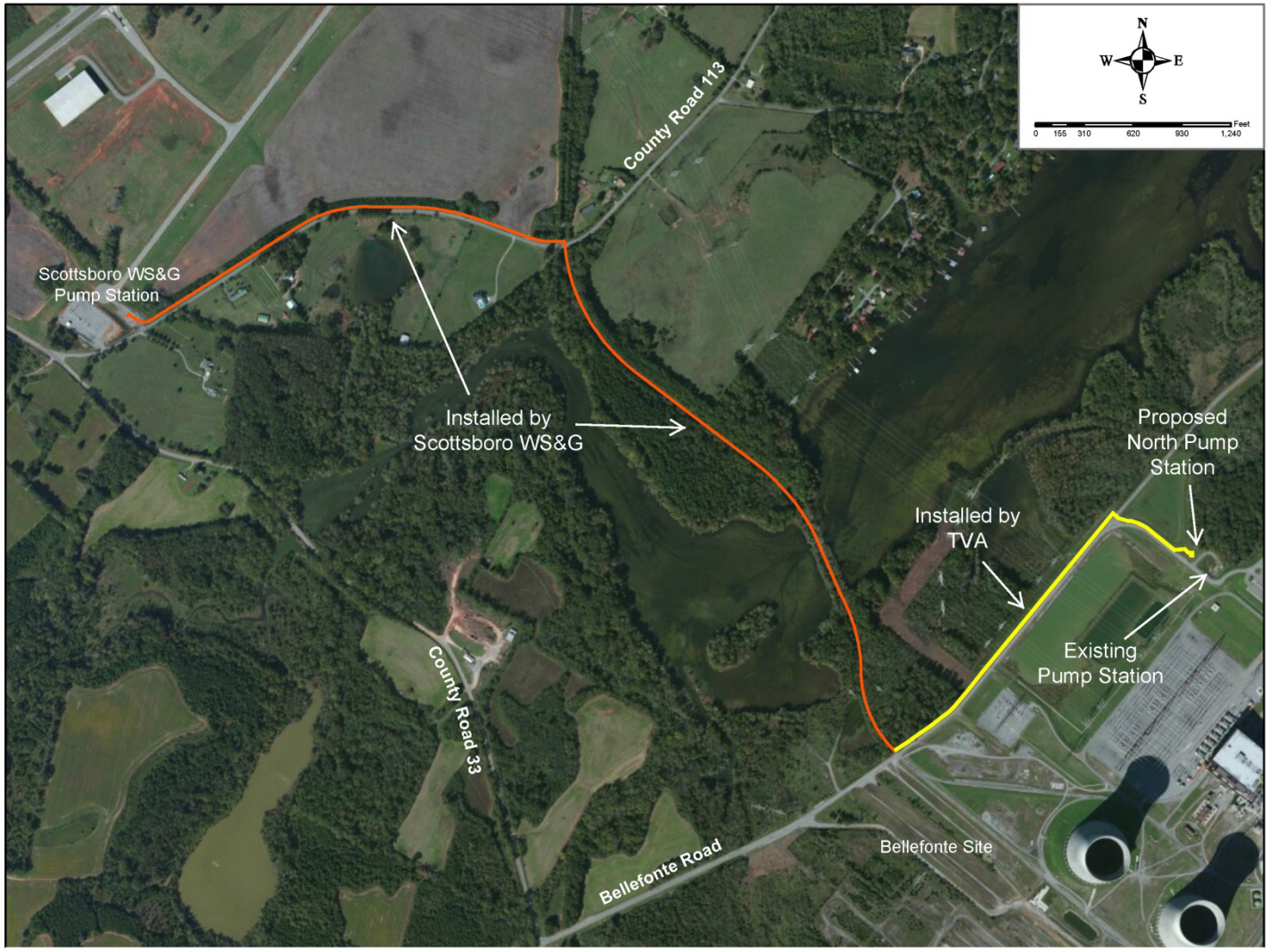

Figure 2-3. Proposed Sewer Line from Scottsboro Pump Station to Proposed North Pump Station

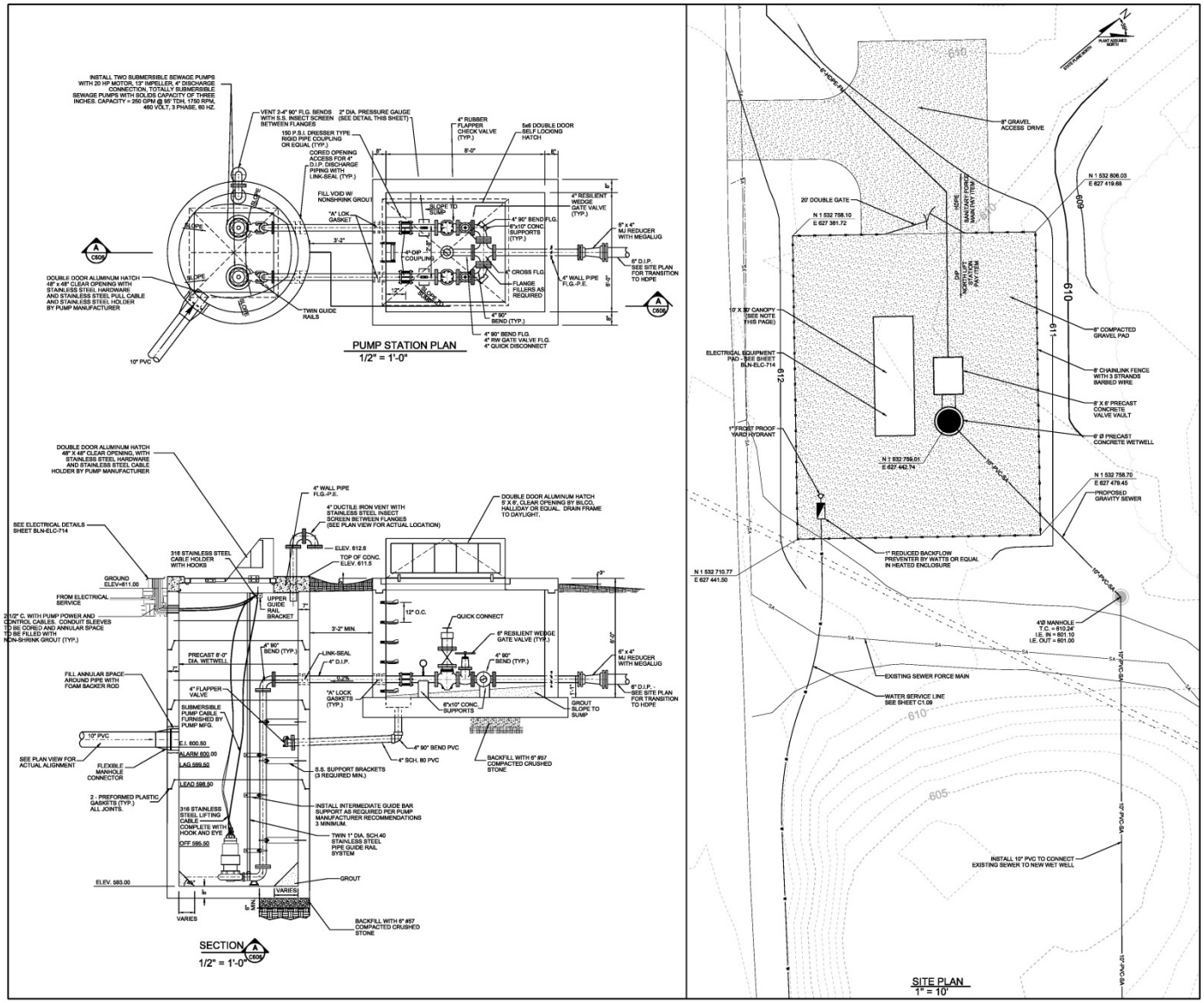

Figure 2-4 Pump Station Design and Layout

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PSO Training Center Sewer Line Installation

TVA would install approximately 2,500 linear feet of new 2 or 3-inch force main sewer line connecting the PSO training center to the new North Pump Station (Figure 2-1). The new sewer line would be installed within the Bellefonte Road ROW before crossing a maintained lawn to connect to the Training Center pump station. If necessary, the existing pump station would be replaced. Installation activities would have a disturbance area of 7 feet in width (3.5 feet from center of proposed sewer line). The trench and cover method would be utilized to install the sewer line. No trees would be cut down during these activities.

The existing sand filtration sanitary waste system and associated piping would be abandoned. TVA would request that ADEM modify the existing BLN NPDES permit to remove the associated outfall, DSN 007 (Figure 2-1).

2.1.3 Alternatives Considered but Eliminated From Further Discussion

Upgrading the Hollywood WWTP was studied by TVA, but was cost prohibitive at 5 to 6 million dollars. Alternative locations for the proposed sewer line to the Scottsboro WS&G pump station (along Bellefonte Road to CR33) were evaluated, but eliminated due to environmental and engineering concerns.

2.2 Comparison of Alternatives

A summary and comparison of impacts by alternative for each resource area evaluated is provided in Table 2-1.

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

Resource Area	Impacts From No Action Alternative	Impacts From Proposed Action Alternative
Air quality	None	Minor, temporary increase in fugitive dust and vehicular emissions Overall, no significant impacts
Cultural and historic resources	None	No significant impacts
Surface water	No significant impacts	No significant impacts
Vegetation	None	No significant impacts
Wildlife	None	No significant impacts
Aquatic ecology	None	No significant impacts
Threatened and endangered species	None	No effects to threatened and endangered species
Wetlands	None	No significant impacts
Floodplain	None	No significant impacts
Transportation	None	Short-term impacts to Bellefonte Road and CR 113 traffic during sewer line installation Overall, no significant long-term impacts

2.3 Identification of Mitigation Measures

Routine measures associated with the proposed action include the following:

- If necessary, TVA would use wet suppression to mitigate dust emissions from open soil areas, paved roads, and unpaved roads.

- All disturbed areas would be revegetated. Where soil disturbances would occur, the area would ultimately be stabilized and vegetated with native or nonnative, noninvasive grasses or trees as described in *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Transmission Construction and Maintenance Activities* (TVA 2012).

Compliance measures associated with the proposed action include:

- To ensure avoidance of site 1JA1073, TVA will flag the boundary of site 1JA1073 and provide a map of the area to be avoided prior to Scottsboro WS&G installing the sewer line. TVA will also require Scottsboro WS&G to certify that the site has been avoided once the project is complete.

2.4 The Preferred Alternative

TVA prefers Alternative B - the Proposed Action Alternative of proceeding with utility improvements at the BLN site, which includes replacing an existing waterline, installing a new sewer line to the Scottsboro pump station and installing a new sewer line to connect the PSO Training Center to the BLN system.

CHAPTER 3 – AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the nature, extent, and importance of environmental resources in their existing setting on the project area. It provides a baseline for the assessment of potential effects of the alternatives described in Chapter 2. This chapter also presents the anticipated environmental consequences that would occur to the various resources from the adoption of Alternative A – No Action and Alternative B – Proposed Action. Section 2.2 and Table 2-1 summarize this information.

In the environmental analysis, some environmental resources were determined to require no further or only limited consideration. The project area is located within three miles of two Natural Areas (Mud Creek Wildlife Management Area and Bellefonte Island TVA Small Wild Area). Due to the physical separation, the proposed action would not impact the Natural Areas. Likewise, no designated Wild and Scenic Rivers or their tributaries occur at or adjacent to the project area; thus, the proposed action is not anticipated to impact these designated waters. Noise from the proposed activities would be limited to daylight hours during construction, and would cause insignificant, short-term impacts. Minor beneficial socioeconomics to the BLN site would be realized as the infrastructure would be improved with the implementation of Alternative B. The proposed action is very unlikely to disproportionately affect any local minority or low income populations.

While the sewer and waterline improvements would be underground, the North Pump Station would be permanently seen in the landscape. Because new pump station would look very similar to the existing pump station, there would be little change in the visual elements seen in the landscape now by employees and visitors to the BLN site. There would be some minor, temporary visual discord during utility installation and pump station construction due to an increase in personnel and equipment.

The potential for cumulative impacts are discussed for each resource in Chapter 3. There are no foreseeable future projects in the area that would contribute to cumulative impacts. There are no resources that could be affected cumulatively by the utility improvement activities under Alternative B. When combined with other permitted discharges from outfalls into the Tennessee River, the continued increase in sediment load, dissolved oxygen, and bacteria associated with the existing Training Center's sanitary waste system could cumulatively impact surface water, but no significant cumulative impacts are anticipated under Alternative A.

3.1 Air Quality

3.1.1 Affected Environment

Air quality is a valuable environmental resource. Through its passage of the Clean Air Act, Congress mandated the protection and enhancement of our nation's air quality resources. National Ambient Air Quality Standards (NAAQS) for the following criteria pollutants have been set to protect the public health and welfare:

- sulfur dioxide
- ozone
- nitrogen dioxide
- particulate matter whose particles are less than or equal to 10 micrometers (PM_{10})
- particulate matter whose particles are less than or equal to 2.5 micrometers ($PM_{2.5}$)
- carbon monoxide
- lead

The primary NAAQS were promulgated to protect the public health, and the secondary NAAQS were promulgated to protect the public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air. Areas in violation of the NAAQS are designated as nonattainment areas. New sources to be located in or near these areas may be subject to more stringent air permitting requirements. A listing of the NAAQS is presented in Table 3-1. These ambient standards, other than annual standards, are not to be exceeded more than once per year (except where noted).

Based on available monitoring data, the ambient air quality near the project area is generally good. USEPA has designated Jackson County as partial nonattainment for $PM_{2.5}$ and in attainment for all other criteria pollutants.

Table 3-1 National Ambient Air Quality Standards

Pollutant	Primary and Secondary Standards	Averaging Time	Level	Form
Carbon Monoxide	Primary	8-hour	9 ppm	Not to be exceeded more than once per year
		1-hour	35 ppm	
Lead	Primary and secondary	Rolling 3 month average	0.15 µg/m^3 (1)	Not to be exceeded
Nitrogen Dioxide	Primary	1-hour	100 ppb	98th Percentile, averaged over 3 years
	Primary and secondary	Annual	53 ppb (2)	Annual mean
Ozone	Primary and secondary	8-hour	0.075 ppm (3)	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particulate Matter ($PM_{2.5}$)	Primary and secondary	Annual	15 µg/m^3	Annual mean, averaged over 3 years
		24-hour	35 µg/m^3	98th Percentile, averaged over 3 years
Particulate Matter (PM_{10})	Primary and secondary	24-hour	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide	Primary	1-hour	75 ppb (4)	99th Percentile of 1hour daily maximum concentrations, averaged over 3 years
	Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year on average over 3 years

Source: USEPA 2012

Abbreviations: PM = particulate matter, ppb = parts per billion, ppm = parts per million, µg/m^3 = micrograms per cubic meter.

Notes:

(1) Final rule signed on October 15, 2008. The 1978 lead standard (1.5 micrograms per cubic meter [µg/m^3] as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

(2) The official level of the annual nitrogen dioxide standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.

(3) Final rule signed on March 12, 2008. The 1997 ozone standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, the United States Environmental Protection Agency revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.

(4) Final rule signed on June 2, 2010. The 1971 annual and 24-hour sulfur dioxide standards were revoked in that same rulemaking. However, these standards remain in effect until one year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.

3.1.2 Environmental Consequences

Alternative A

Under Alternative A, TVA would not proceed with the proposed utility improvements. Environmental conditions in the project area would not change and no direct or indirect impacts to air quality would occur.

Alternative B

Under Alternative B, installation of utilities and construction of the pump station would likely generate fugitive dust. Hauling materials on-site using trucks driven on paved and unpaved surfaces would also generate fugitive dust. In addition, small amounts of pollutants would be emitted in the exhaust from internal combustion engines powering the machinery used for utility installation activities and construction of the North Pump Station.

Fugitive emissions from installation of the proposed utilities would produce particles that would be deposited primarily in the project area. Ninety five percent (by weight) of fugitive emissions from vehicular traffic over paved roads would be deposited beyond the property boundaries or roadway ROW. In contrast, a large fraction of fugitive emissions from vehicle traffic in unpaved areas would be deposited near the unpaved areas. If necessary, emissions from open demolition areas, paved roads, and unpaved roads would be mitigated using wet suppression techniques. Wet suppression can reduce fugitive dust emissions by as much as 95 percent from roadways and unpaved roads.

Combustion of gasoline and diesel fuels by internal combustion engines (construction equipment) would generate temporary local emissions of PM, nitrogen oxides, carbon monoxide, volatile organic compounds, and sulfur dioxide. The total amount of these emissions would be small and would result in minimal off-site impacts.

Air quality impacts from installation and construction activities would be temporary and dependent on both man-made factors (e.g., intensity of activity, control measures, etc.) and natural factors (e.g., wind speed, wind direction, soil moisture, etc.). Even under unusually adverse conditions, these emissions would have, at most, minor, temporary on- and off-site air quality impacts and would not cause exceedence of the applicable NAAQS. Consequently, the direct, indirect and cumulative air quality impacts under Alternative B would not be significant.

3.2 Cultural and Historic Resources

Cultural resources include, but are not limited to, prehistoric and historic archaeological sites, historic structures, and historic sites at which important events occurred. Cultural resources are finite, non-renewable, and often fragile. They are frequently threatened by industrial, commercial, and residential development, as well as construction of roads and other infrastructure. TVA is mandated by the NHPA and the Archaeological Resources Protection Act of 1979 to preserve significant cultural resources (i.e., archaeological sites and historic structures) located on TVA lands or such resources that would be affected by TVA undertakings. The NHPA addresses the preservation of “historic properties,” which is defined under the Act as any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places (NRHP).

Two broad categories of cultural resources are archaeological resources and historic architecture. Some examples of archaeological resources are earthworks, weapons and projectiles, human remains, rock carvings, and remains of subsurface structures such as domestic fire pits. Historic architecture consists of standing structures that are 50 years old

or older. Consistent with Section 106 of NHPA, such structures, as well as archaeological resources, must meet certain criteria to qualify for inclusion on the NRHP.

3.2.1 Affected Environment

For archaeological resources, the area of potential effect (APE) includes all areas within which ground disturbing activities associated with the proposed actions (such as trenching, boring, excavation, vegetation clearing, or use of heavy equipment in moist soil conditions) could occur. For historic structures, the affected area includes any area within one-half mile of the proposed pumping station that would have a direct line of sight to the pump station.

Cultural resources have been documented in the vicinity of the APE. As noted in previous environmental reviews, the area surrounding the BLN property has been occupied by humans for more than 15,000 years. Archaeological sites associated with each period of occupation are recorded throughout Jackson County. Prehistoric archaeological sites tend to be concentrated along preserved alluvial landforms near the Tennessee River and its major tributaries, while historic archaeological sites and structures occur most frequently along old roadways and within old cities and towns.

The majority of the APE has been disturbed by various past activities including construction of CR 113, a railroad, and the existing BLN facilities. TVA previously has completed cultural resources surveys of the portions of the APE within BLN (Deter-Wolf 2007; Gaffin 2011; Jenkins 2008) in order to identify historic properties pursuant to Section 106 of the NHPA, in connection with other proposed TVA actions. These surveys resulted in the identification of five archaeological sites within the BLN reservation. TVA has determined all five of these sites ineligible for listing in the NRHP, in consultation with the Alabama State Historic Preservation Officer (SHPO). No previously recorded sites are located within the current archaeological APE.

A Phase I archaeological survey was completed by Jacksonville State University (Windham and Young 2005), along the north side of CR 113 from the railroad crossing to US Highway 72/Lee Highway, in association with a proposed Jackson County Industrial Park. That survey identified one site, 1JA1073, adjacent to the APE. This site is a mid- to late-eighteenth century Euroamerican habitation with remnants of a domestic dwelling, and non-diagnostic aboriginal artifacts. The investigators recommended the site be considered potentially eligible for listing in the NRHP. They recommended further that any proposed actions in connection with the then-proposed industrial park occurring within 15 meters of the site boundary would require additional investigations to determine if the site is eligible.

A historic architectural survey was previously conducted in connection with TVA's application for a Combined Operating License for Bellefonte Nuclear Plant (Jenkins 2008). The architectural APE for that study was a circle one-mile in radius, centered on the BLN cooling towers. This APE included the project area for the currently proposed actions. Fifteen historic properties were identified, of which three were determined eligible for the NRHP by TVA in consultation with the Alabama SHPO (Jenkins 2008). None of these resources is within the area where the proposed actions would result in permanent changes to the visual environment (area within one-half mile of the proposed North Pump Station).

In summary, the APE contains no archaeological or architectural properties listed in, or eligible for inclusion in, the NRHP.

3.2.2 Environmental Consequences

Direct and cumulative impacts to archaeological sites, if any were present within the APE, could include: compaction and ground disturbance from the use of heavy equipment; or direct impacts from trenching or boring for buried utilities. Impacts to historic architectural properties listed in or eligible for listing in the NRHP, if any were present in the APE, could include damage to the setting resulting from the introduction of new visual elements to the viewshed.

Alternative A

There would be no project-related effects to historic or archaeological resources under this alternative because no physical work would be completed. Likewise, no direct, indirect or cumulative effects to these resources are anticipated under Alternative A.

Alternative B

It is TVA's opinion that the lack of identified cultural resources in the APE established by the above-cited previous studies, indicates that the proposed actions would not affect any historic properties.

TVA would avoid impacts to site 1JA1073 by confining the proposed sewer force main to the existing CR 113 ROW. This ROW has been previously disturbed by road construction and is outside the boundary of 1JA1073. To ensure avoidance of site 1JA1073, TVA will flag the boundary of site 1JA1073 and provide a map of the area to be avoided prior to Scottsboro WS&G installing the sewer line. TVA will also require Scottsboro WS&G to certify that the site has been avoided once the project is complete. By routing the sewer force main within the road ROW, avoiding any physical work in the site boundary and following the above avoidance measure, the proposed action would avoid effects to 1JA1073.

The proposed water main and pump station would have no effects on archaeological sites listed in or eligible for listing in the NRHP because no such resources occur in the APE. The proposed pump station would have no effects on historic structures listed in or eligible for listing in the NRHP because no such resources occur in the architectural affected area. Therefore, the proposed actions would not result in direct, indirect or cumulative impacts to any historic properties.

3.3 Surface Water

The APE for surface water is defined as the area extending from the proposed project area southward to the Tennessee River. This includes Town Creek, the Tennessee River and other surface water bodies.

3.3.1 Affected Environment

The Tennessee River is the primary surface water drainage feature in Jackson County and northeastern Alabama. Locally, natural flow of the Tennessee River is to the southwest. Guntersville Dam, located approximately 48 miles southwest of the project area, has impounded the Tennessee River to form the 76-mile long Guntersville Reservoir.

The project area is located on a peninsula formed by the Town Creek embayment on the descending right (western) bank of Guntersville Reservoir. During 2014 field surveys seven watercourses were identified on or adjacent to the BLN site; three perennial streams (Town Creek and unnamed tributaries), one intermittent, and three wet weather conveyances. The Town Creek originates approximately 3 miles southwest of the project area and flows

northwestward into Guntersville Reservoir at Tennessee River Mile 393.4. The drainage area of Town Creek at the project area is approximately 6 square miles.

According to the 2012 Alabama Final 303(d) List, Guntersville Reservoir (Lake Guntersville) is listed as impaired due to elevated mercury levels, which does not support designated beneficial uses (swimming, fish and wildlife habitat, and public water supply) (ADEM 2012). Guntersville Reservoir is considered impaired over an approximately 2,700 acre area between Pump Spring Branch (approximately 15 miles upstream of project area) and the Alabama-Tennessee state line (approximately 24 miles upstream of project area). The listing is a result of a fish consumption advisory issued by the Alabama Department of Public Health in 2010. The presence of elevated concentrations of mercury is attributed to atmospheric deposition. Total maximum daily levels for mercury have not been established for Guntersville Reservoir (ADEM 2012). Town Creek is not listed as impaired.

TVA is currently authorized to discharge the Training Center treated sanitary, equipment room floor drains, and laboratory wastewaters at DSN007 (Figure 2-1).

3.3.2 Environmental Consequences

Alternative A

Under Alternative A, existing resource trends would continue. Limited amounts of sediment would continue to be transported to Town Creek and its tributaries from current sources of erosion. Guntersville Reservoir is anticipated to remain impaired. The Training Center's sanitary waste system would continue to be released into the Tennessee River. However, TVA would limit its use to remain in compliance with its NPDES permit. There would be minor, insignificant direct and indirect impacts to surface water are anticipated under Alternative A. The continued increase in sediment load, dissolved oxygen, and bacteria (within NPDES permit limits) associated with the outfall could cumulatively impact surface water.

Alternative B

The abandoning of the current outfall for the Training Center's sanitary waste system is anticipated to have long-term, beneficial impacts on water quality within the Tennessee River. Connecting the Training Center to the BLN site sewer system, would reduce the potential for the continued increase in sediment load, dissolved oxygen, and bacteria from being placed in Guntersville Reservoir. The proposed action would not contribute to the removal of the Tennessee River from the ADEM 303 (d) listing.

Operation of construction equipment could lead to minor leaks of fuel, lubricating, or hydraulic liquids in areas adjacent to Town Creek. Leaks of these types, however, are not expected with the implementation of BMPs required by TVA-SPP-05.41 (Water and Waste Water Compliance). With the required containment precautions, should a leak occur it would be unlikely to reach surface waters. Consequently, direct impacts to Town Creek water quality are anticipated to be negligible to minor.

The proposed water and sewer lines cross Town Creek and its unnamed tributaries. There is potential to impact these streams during installation activities directly by the alteration of streams or indirectly due to storm water runoff. As discussed in Section 1.5, TVA would submit a notice of intent to ADEM for coverage under the General NPDES Permit for Discharges of Storm Water Associated with Construction Activities for the entire project area and would obtain a Section 401 water quality certification. As part of the NPDES application, a CBMPP would be developed and implemented to control and confine

sediment to the project area. With proper implementation of BMPs and additional measures outlined in the CBMPP, there would be no direct, indirect or cumulative impacts to surface water under Alternative B.

3.4 Vegetation

3.4.1 Affected Environment

The project area is located on the west bank of the Tennessee River and lies within the Sequatchie Valley, a subregion of the Southwestern Appalachian Ecoregion. The Sequatchie Valley extends from the Tennessee border to nearly one hundred miles southwest into Alabama. In the north, the open, rolling, valley floor, 600 feet in elevation, is nearly 1,000 feet below the top of the Cumberland Plateau and Sand Mountain. South of Blountsville, the topography becomes more hilly and irregular with higher elevations. The Tennessee River flows through the Sequatchie Valley, until it turns west near Guntersville where it leaves the valley. Similar to parts of the Ridge and Valley, this is an agriculturally productive region, with areas of pasture, hay, soybeans, small grain, corn, and tobacco (Griffith et al. 2001).

The terrestrial plant communities were assessed during the various environmental reviews for the construction and operation of BLN Units 1 and 2 (TVA 1974, TVA 1997, NRC 2008; TVA 2010). The majority of BLN construction occurred on previously disturbed young forest and agricultural fields (TVA 1974) within the Bellefonte reservation. An ecological assessment was completed in 1997 within the remaining natural habitat of the Bellefonte reservation. Most recent field reviews and the Land Use/Land Cover map provided for the BLN final SEIS (TVA 2010), concur with the previous assessments that described five terrestrial vegetative communities existing within or adjacent to BLN. The five terrestrial vegetative communities are: lawns and grassy fields, bottomland/riparian hardwood forests, mixed hardwood forests, pine-hardwood forests, and scrub-shrub-thickets. These terrestrial plant communities are common and representative within region of the Sequatchie Valley.

During the February 2014 field visit to assess the project area along Bellefonte Road, CR 33 and CR 113, no additional terrestrial communities were observed. Based on maps and field visits, no globally rare or uncommon terrestrial plant communities are known to occur within the project area.

Invasive Non-Native Species (Plants)

Most lands in and around the TVA power service area have been affected by introduced non-native plant species. Non-native plants are known to occur across Southern Appalachian forests, accounting for 15-20 percent of the documented flora (Miller et al. 2010). According to Morse et al. (2004), invasive non-native species are the second leading threat to imperiled native species. Not all non-native species pose threats to our native ecosystems. Many species introduced by European settlers, are naturalized additions to our flora and considered to be non-native, non-invasive species. These “weeds” have very little negative impacts to native vegetation. Examples of these are Queen Anne’s lace and dandelion. However, other non-native species are considered to be Exotic Invasive Species and do pose threats to the natural environment. EO 13112, defines an invasive species as any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem; and whose introduction does or is likely to cause economic or environmental harm or harm to human health (USDA 2011).

The Alabama Invasive Plant Council (2006) reports six of the top 10 Alabama worst weeds as occurring in Jackson County, Alabama, and two additional species are found in DeKalb County. These exotic weeds which pose a severe threat to native ecosystems are: Alligator weed, Eurasian water milfoil, cogon grass, Chinese privet, hydrilla, kudzu, multiflora rose, and tropical soda apple. Cogongrass, hydrilla, and tropical soda apple are also on Federal Noxious Weed list (USDA 2010). Field observations made in 2007, 2008, 2011 and 2014 within the BLN reservation noted an abundance of Chinese privet and Japanese honeysuckle along with dandelion, Japanese stiltgrass, mimosa, multiflora rose, sericea lespedeza and tall fescue.

3.4.2 Environmental Consequences

Alternative A

Under Alternative A, TVA would not undertake the proposed BLN utility improvements. The project area would likely remain in its current condition. Terrestrial communities present within the project area would not be directly or indirectly affected by any project-related actions. In addition, invasive plant species present on site would not be disturbed; therefore, this alternative would not contribute to the spread or introduction of exotic invasive plant species.

Alternative B

Under Alternative B, TVA would proceed with the utility improvements which would result in clearing of some vegetation along CR 113. Since the terrestrial communities present in and around BLN are common and representative of the region and due to the limited nature of the proposed disturbance, impacts to the terrestrial plant ecology of the area are expected to be minor and insignificant under Alternative B.

Since construction activities would result in ground disturbance, there is the potential for these activities to contribute to the introduction and spread of invasive non-native species. In order for TVA to remain in compliance with EO 13112, disturbed areas would be revegetated with native or non-native, non-invasive species, to ensure that construction activities do not introduce or spread exotic species into or out of the proposed action areas.

No additional direct, indirect, or cumulative impacts are expected to the vegetation of the region from the proposed actions under Alternative B.

3.5 Wildlife

3.5.1 Affected Environment

Habitat assessments along the proposed routes for the water and sewer lines were conducted in February 2014. The project area occurs in a landscape partially disturbed and shaped by prior TVA activities on the BLN site and maintenance of associated infrastructure (e.g., ROW for railroad, road and transmission lines). Low-quality forested edge habitats comprise the majority of the proposed routes.

Approximately seventy-five percent (2,550 feet) of the proposed route for the waterline would occur within an existing ROW for both Bellefonte Road and an adjacent transmission line. The ROW is comprised of low-cut grass and gravel and runs east to west. The remaining twenty-five percent (approximately 850 feet) of the proposed route would then turn south into an existing maintained herbaceous field and runs parallel to a drainage ditch. The proposed route along Bellefonte Road is bordered by impervious (asphalt) road to the north and dense forest dominated by loblolly pine, black cherry, black locust, and

white ash, with an herbaceous layer dominated by privet and Japanese stiltgrass characterize habitat to the south. The remainder of the proposed waterline route is surrounded by extensive herbaceous field.

Habitat within the area proposed for the North Pump Station of the sewer line is mature mixed evergreen-deciduous forest that is adjacent to maintained herbaceous field and an unimproved gravel road that crosses the field. From the pump station, the sewer line would run north over a maintained open lawn, then west northwest along a combination of grass and gravel (maintained ROW adjacent to Bellefonte Road). The route would then turn north traverse through low-quality forested edge habitats (i.e., existing railroad bed) that cross over Town Creek, and continue northwest along CR 113, where dense, young, mixed evergreen-deciduous vegetation, dominated by eastern red-cedar, privet, sweetgum and boxelder, occurs. The proposed route would terminate at a graveled site (i.e., already cleared and in use for industrial purposes) on CR 113. Habitat along the proposed sewer line for the PSO Training Center is comprised entirely of maintained, early-successional herbaceous field within the ROW associated with Bellefonte Road.

Birds commonly observed in early successional and forest-field edge habitat include Carolina wren, tufted titmouse, northern mockingbird, northern cardinal, eastern towhee, eastern bluebird, brown thrasher, field sparrow, and eastern meadowlark. Red-tailed hawk and American kestrel also forage along road ROWs. Barred owl and black vultures were detected during field surveys. Mammals frequently observed in this type of habitat include Virginia opossum, eastern cottontail, striped skunk, white-tailed deer, eastern mole, woodchuck, and rodents such as white-footed mouse and hispid cotton rat. Common reptiles include black racer, black rat snake and eastern garter snake. River cooters were observed basking along Town Creek.

Forested stands adjacent to the section of the proposed route that follows the old railroad bed are comprised of moderately aged mixed evergreen-deciduous trees. The habitat may be too fragmented and isolated to support most common forest animal species. However, birds in small forested areas typically include American crow, Carolina chickadee, tufted titmouse, American goldfinch, blue-gray gnatcatcher, red-bellied woodpecker, and downy woodpecker. Yellow-rumped warbler and pine warbler were observed adjacent to the railroad bed. Belted kingfishers were observed along riparian banks and numerous waterfowl (e.g., American coot, canvasback, and American wigeon) were observed in Town Creek. Mammals such as eastern chipmunk and eastern gray squirrel occur in these forested areas. Armadillo was detected during field surveys. Slimy salamanders, eastern box turtle, and black rat snake may occur in these forests as well.

Mature forest adjacent to the proposed North Pump Station is dominated by oak and ash species. This patch of forest provides habitat for a variety of woodland wildlife. Bird species likely found in this area include pileated-woodpecker, white-breasted nuthatch, and northern flicker, and neotropical migratory birds including wood thrush, white-eyed vireo, and numerous warbler species. This area also would provide habitat for common species such as opossum, raccoon, and cottontail rabbit. Amphibian and reptile species found in this habitat include ring-necked snake, gray rat snake, five-line skink, copperhead, four-toed salamander, and spotted salamander.

A heron colony is located more than two miles from the project area. No new heronries or other aggregations of migratory birds were found during field surveys. No suitable habitat for heron colonies is available within the project footprint.

One cave has been documented within 3 miles of the project area, located approximately 2.5 miles northwest of the Scottsboro Pump Station. No caves or unique habitats were observed during the 2014 field surveys of the project area.

3.5.2 Environmental Consequences

Alternative A

Under Alternative A, the proposed sewer and water pipelines and associated actions would not occur, and the project area would likely remain in its current condition. Wildlife and wildlife habitats would not be directly, indirectly or cumulatively affected by any project-related actions.

Alternative B

Much of the route is along early successional habitats that are regularly maintained and traverse areas maintained and accessed for industrial use. Clearing of approximately 1 acre of young dense, forested habitat would occur along CR 113. This would slightly increase the proportion of early successional habitats in the project area. The majority of the pipeline is proposed to be placed along existing road ROW. Changes to habitat would therefore not be significant. Although terrestrial animal individuals may move into surrounding similar habitat during construction activities, they would likely continue using the area afterwards.

One cave and one heronry occur within three miles of the proposed project area. Both are at an adequate distance from the project area (greater than 2 miles), and the proposed action is not expected to impact these resources under this alternative. The proposed action would not affect aggregations of migratory birds.

Overall, direct and indirect impacts to terrestrial wildlife would be minor and insignificant under Alternative B. There would be no cumulative impacts to terrestrial wildlife.

3.6 Aquatic Ecology

3.6.1 Affected Environment

The proposed site activities would occur at the BLN site at Tennessee river mile 391.5 on a peninsula formed by the Town Creek embayment on the right bank of Guntersville Reservoir. During 2011 and 2014 surveys along the proposed water and sewer line routes, a total of seven watercourses including three perennial streams, one intermittent stream, and three ephemeral streams were documented. The location of each of these was recorded using a global positioning system, and a habitat assessment form was completed for each stream. Because the proposed activities could mainly affect riparian conditions and in-stream habitat, TVA evaluated the condition of both of these at the streams in the project area, excluding ephemeral streams (Table 3-2). From these habitat assessments, a riparian condition was assigned to one of three classes to indicate the current condition of streamside vegetation in the project area (Table 3-2).

Table 3-2. Stream and Pond Crossings along the Proposed Bellefonte Utility Improvements

Stream ID	Stream Type	Riparian Condition[1]	Streamside Management Zone Category	Stream Name	Field Notes
001	Perennial	Partially forested	Category A (50 ft)	Unnamed stream	3-4 ft. wide, culvert not present at proposed waterline crossing, 1-2 ft. banks, water present, sand/gravel substrate
002	Perennial	Non-forested	Category A (50 ft)	Town Creek	Culvert, rail/road present crossing Town Creek embayment
003	Intermittent	Non-forested	Category A (50 ft)	Unnamed stream	2-3 ft. wide, culvert present at road
004	Perennial	Partially forested	Category A (50 ft)	Unnamed stream	3-4 ft. wide, culvert not present at proposed waterline crossing, 1-2 ft. banks, water present, sand/gravel substrate

[1] Partially forested – Although not forested, sparse trees and/or scrub-shrub vegetation is present within a wider band of riparian vegetation (20 to 60 feet). Disturbance of the riparian zone is apparent.; Non-forested – No or few trees are present within the riparian zone. Significant clearing has occurred, usually associated with pasture or cropland.

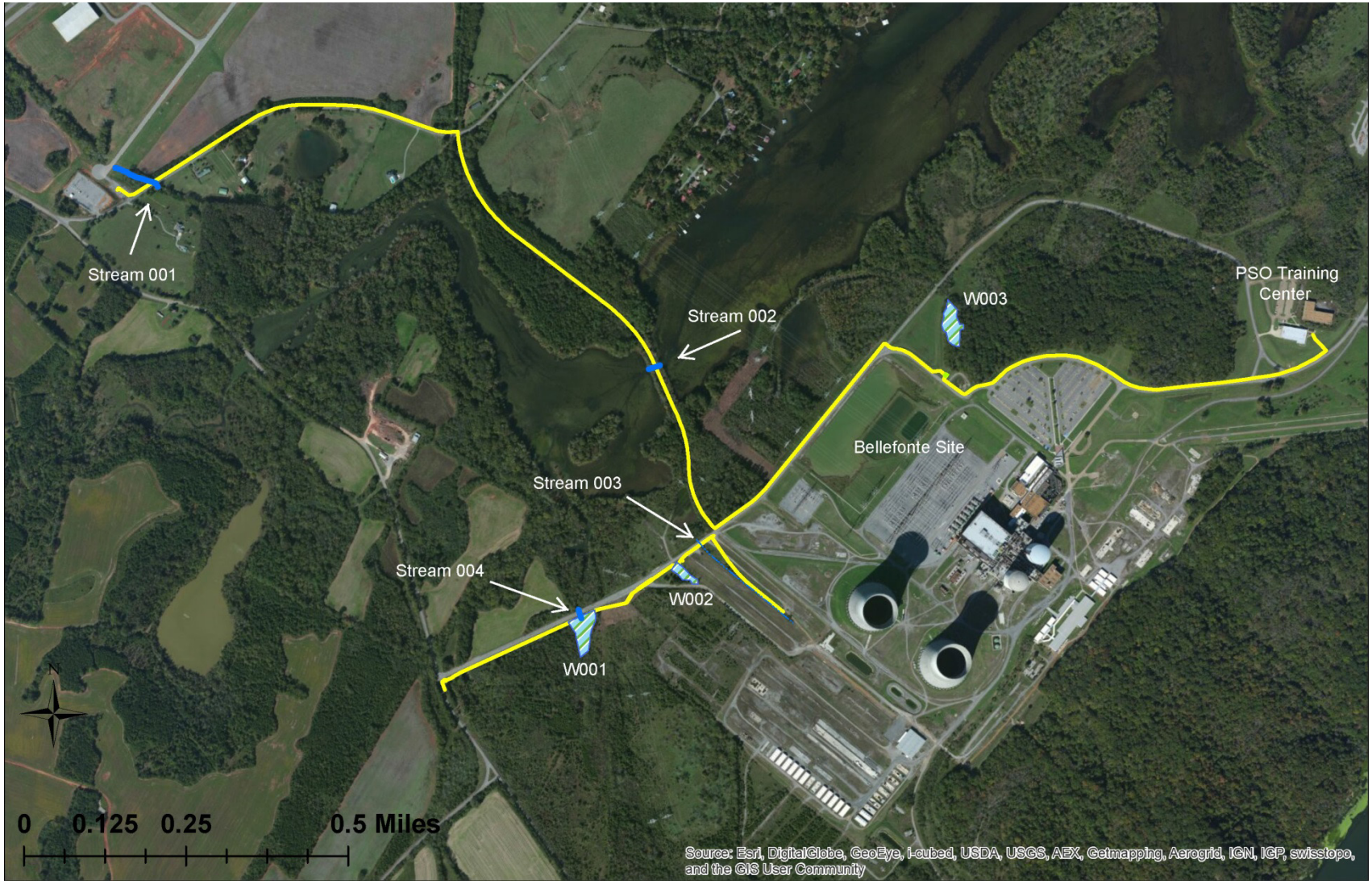

Figure 3-1 2014 Stream and Wetland Survey Results

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3.6.2 Environmental Consequences

Alternative A

Under Alternative A, TVA would not undertake the proposed utility improvements at its BLN site; therefore no direct, indirect or cumulative impacts to aquatic ecology would occur as a result of TVA actions. However, changes to aquatic life would likely occur over the long term due to factors such as population growth and land use changes within the area.

Alternative B

Under Alternative B, TVA would proceed with the proposed utility improvements at its BLN site. Aquatic life could be affected by the proposed action either directly by the alteration of habitat conditions within the streams or indirectly due to modification of the riparian zone and storm water runoff resulting from construction activities. Potential impacts due to removal of streamside vegetation within the riparian zone include increased erosion and siltation, loss of in-stream habitat, and increased stream temperatures.

Watercourses that convey only surface water during storm events such as ephemeral streams and that could be affected by the proposed utility improvements would be protected by standard BMPs. BMPs are designed in part to minimize disturbance of riparian areas, and subsequent erosion and sedimentation that can be carried to streams.

In order to minimize potential impacts to streams, TVA assigns appropriate streamside management zones (SMZ) and BMPs based upon these evaluations and other considerations, such as proximity of state impaired waters (i.e., streams recognized on the State of Alabama 303(d) list 2012) and presence of endangered or threatened aquatic species. All perennial and intermittent streams identified within the project area would be protected by SMZ as defined in TVA 2012. The width of the SMZs is determined by the type of watercourse, primary use of the water resource, topography, or other physical barriers (TVA 2012). Implementation of these measures minimizes the potential for impacts to water quality and in-stream habitat for aquatic organisms.

As part of the project, a CBMPP would be developed and implemented to control and confine sediment to the project site as part of the General NPDES Permit. This plan would identify specific BMPs to address construction-related activities that would be adopted to minimize storm water impacts. TVA would also obtain a Section 401 water quality certification for the project. With proper implementation of BMPs and SMZ protection, potential direct and indirect impacts to aquatic life from implementing the proposed actions would be minor and insignificant. There would be no cumulative impacts to aquatic species under Alternative B.

3.7 Threatened and Endangered Species

The ESA provides broad protection for species of fish, wildlife, and plants that are listed as threatened or endangered in the United States or elsewhere. The Act outlines procedures for federal agencies to follow when taking actions that may jeopardize federally listed species or 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 Act's purposes.

The State of Alabama provides protection for species considered threatened, endangered, or deemed in need of management within the state other than those federally listed under the ESA. The listing is handled by the Alabama Department of Conservation and Natural Resources; however, the Alabama Natural Heritage Program and TVA both maintain

databases of aquatic animal species that are considered threatened, endangered, special concern, or tracked in Alabama.

3.7.1 Affected Environment

Aquatic Species

Based on a February 2014 review of the TVA Regional Natural Heritage database, three federally listed endangered and an additional five state-listed aquatic species are known to occur within a 10-mile radius of the project area (Table 1 in Appendix B). The orange-foot pimpleback, sheepnose, and winged mapleleaf, all federally endangered mussel species, are known from historic records in Guntersville Reservoir (TVA 2010). Thirteen federally listed and eighteen state-listed aquatic species are known to occur in Jackson County, Alabama (Table 1 in Appendix B). The federally listed species include two fish, one snail, and eleven mussels. There are also historic records of six other federally listed mussels in Jackson County, but those species are presumed extirpated from Guntersville Reservoir. Only one federally protected species recently occurring in Jackson County, the pink mucket, has been documented in Guntersville Reservoir in the vicinity of the BLN site (TVA 2010). However, it was determined that this portion of Guntersville Reservoir was poor habitat quality for the pink mucket. Potential habitat for state-listed species does not occur in the project area.

The pink mucket is a medium sized freshwater mussel that can exceed 50 years in age. It prefers sand, gravel and pockets between rocky ledges in high velocity areas and mud and sand in slower moving waters. Known host fishes are Sauger, Freshwater Drum, Largemouth Bass, Spotted Bass, Smallmouth Bass, and Walleye (Parmalee and Bogan 1998).

Wildlife Species

Based on a February 2014 review of the TVA Regional Natural Heritage database for records of terrestrial animals, one federally protected species (bald eagle) and no Alabama state-listed species have been documented within three miles of the project area. Records for two federally-listed species (gray bat, Indiana bat) occur within Jackson County, Alabama, but not within three miles of the project area (Table 2 in Appendix B) The project footprint falls within the range of northern long-eared bat, which was proposed for listing as federally endangered in October 2013 (USFWS 2013a). No federally or state-listed terrestrial animal species were observed during field surveys conducted in February 2014.

Bald eagles are protected under the Bald and Golden Eagle Protection Act. The act prohibits harm to eagles or their nests. Bald Eagles nest in forested areas near large bodies of water, such as rivers and reservoirs, where they forage (Bryan et al. 2005). The species is prevalent on Guntersville Reservoir, active nests occur upstream and downstream of the facility. The closest documented active nest is greater than two miles from the proposed project area and would not be impacted by the proposed actions (USFWS 2007). Suitable habitat is not available for the bald eagle within the project area or its immediate vicinity.

Gray bats roost in caves year-round and typically forage over streams, rivers, and reservoirs (Tuttle 1976). Gray bats are prevalent on Guntersville Reservoir (Best et al. 1995). Although the species does not roost in caves within three miles of the project, gray bats readily forage throughout the reservoir, including aquatic areas surrounding the Bellefonte site. Roosting habitat for gray bats does not occur on the project site.

Indiana bats hibernate in caves during the winter and roost in forested habitat during summer. Roosts of maternity colonies, males, and non-reproductive females may occur in the cracks and crevices of damaged trees or under sloughing bark on dead or live trees (Tuttle and Kennedy 2002, Harvey 2002, Kurta et al. 2002). Unlike gray bats, Indiana bats typically forage over forest canopies. Indiana bats have been documented hibernating in three caves during the winter in Jackson County. The closest cave is approximately 9 miles from the project area. Although no bats were observed during the last recorded survey (1993), this cave was considered important to the species in the 1970s. Indiana bats are found over most of the eastern half of the United States. Federal action agencies are directed under Section 7 of the ESA to assess the suitability of habitat, and potential impacts to Indiana bat within project footprints that occur within the potential range (USFWS 2013b). This increased vigilance is based on the continued decline of Indiana bat and the recent and continued impact of white-nose syndrome on cave-dwelling bat species. Since 2006, when white-nose syndrome was first observed in a cave in New York, the associated fungus, *Geomyces destructancs*, has adversely impacted cave-dwelling bat species up and down the eastern seaboard and impacts are spreading further south and west, with close to 100 percent mortality in affected caves after 2-3 years (USFWS 2012). Indiana bat is one of the species that has experienced mortality due to white-nose syndrome.

A site visit was conducted in February 2014, to assess the suitability of habitat for Indiana bat within the project footprint. No caves were identified within the proposed routes. Three dead trees and two live trees potentially suitable for summer roosting by Indiana bat were identified at the proposed site for the North Pump Station. Neither dead tree had any remaining exfoliating bark but both had broken tops. Both live trees were shagbark hickories, 8 and 12 inches in diameter, with suitable exfoliating bark on the lower 20- and 40-foot sections of the trunks, respectfully, of the trees. The proposed route for the sewer line adjacent to the proposed pump station was relocated to avoid the need to remove these trees identified as having suitable roost characteristics. Forest proposed for clearing along CR 113 may provide marginally suitable foraging habitat, but this habitat is young and dense and would amount to less than 2 acres total removal of woody vegetation.

Northern long-eared bat is found in the United States from Maine to North Carolina on the Atlantic Coast, westward to eastern Oklahoma and north through the Dakotas, reaching into eastern Montana and Wyoming, and extending southward to parts of southern states from Georgia to Louisiana. Suitable winter habitat (hibernacula) includes underground caves and cave-like structures (e.g. abandoned or active mines, railroad tunnels). These hibernacula typically have large passages with significant cracks and crevices for roosting; relatively constant, cool temperatures (0-9 degrees Celsius) and with high humidity and minimal air currents. During summer this species roosts singly or in colonies in cavities, underneath bark, crevices, or hollows of both live and dead trees and/or snags (typically greater than or equal to 3 inches diameter at breast height). Males and non-reproductive females may also roost in cooler places, like caves and mines. Northern long-eared bat forages in upland and lowland woodlots, tree-lined corridors, and water surfaces, feeding on insects. In general, habitat use by northern long-eared bat is believed to be similar to that by Indiana bat, although northern long-eared bats appear to be more opportunistic in selection of summer habitat (USFWS 2014). No caves were identified within the proposed footprint. In addition to trees identified as suitable for Indiana bat during the February 2014, site visit, which likely would be suitable for summer use by northern long-eared bat, 1 additional dead tree was identified as potentially suitable for northern long-eared bat within the proposed footprint for the North Pump Station. This tree was a live shagbark hickory with exfoliating bark on the lower 10 feet of the trunk. The proposed route for the sewer line

was rerouted to avoid having to remove these trees identified as having suitable roost characteristics.

Plant Species
A February 2014 review of the TVA heritage database indicated there are 24 Alabama state-listed plant species known to occur within 5 miles of the project area and five federally-listed plant taxa are reported from Jackson County, Alabama (Table 3 in Appendix B). A discussion of each federally listed species found within Jackson County can be found in the Bellefonte final SEIS (TVA 2010).

Based on field reviews conducted in 2007, 2008, 2011 and 2014, no plant species of conservation concern were found within or adjacent to the project area and there are no USFWS-designated critical habitats for federal-listed plant protection present in the region of BLN.

3.7.2 Environmental Consequences

Alternative A
Under Alternative A, TVA would not undertake the proposed utility improvements at its BLN site. No changes to environmental conditions would occur; therefore, no direct, indirect or cumulative impacts to terrestrial (plant and wildlife) or aquatic threatened and endangered species are anticipated under Alternative A.

Alternative B
Under Alternative B, TVA would proceed with the proposed utility improvements at its BLN site.

Aquatic Species
No state- or federally listed aquatic animals are documented to occur on the BLN site or in the Town Creek watershed. There is no designated critical habitat for federally protected species within Guntersville reservoir or within 10 miles of project area. During recent mussel surveys by Lewis (2008) and Dinkins (2009) adjacent to BLN site in Guntersville Reservoir, only one live individual of the pink mucket was located. There were no other federal or state-listed aquatic species collected. Since the pink mucket does not occur in the Town Creek system and has only been found in the main channel of the Tennessee River, the proposed project would have no effect on the pink mucket or its habitat.

Because no listed aquatic species or designated critical habitat are known from the BLN site or the Town Creek watershed, and appropriate BMPs and SMZs would be implemented during utility installation activities, no impacts to federal or state listed aquatic species are anticipated to occur.

Wildlife Species
The closest documented nesting bald eagles occur greater than 2 miles from the project area. Impacts to nests thus are not expected to occur as a result of proposed actions.

Suitable habitat for gray bat would not be affected by construction of the waterline or sewer lines. Impacts to gray bat would not occur as a result of proposed actions.

Suitable habitat for foraging and travel for Indiana bat and northern long-eared bat occurs within and adjacent to the project area. These habitat types are abundant immediately surrounding the project site. Given the abundance and proximity of suitable habitat for

foraging and travel, removal of 1 acre of young, dense forested habitat would be discountable. Indiana bats may avoid the project area during construction activities if these occur during the spring and summer seasons and utilize similarly suitable habitat in adjacent areas. A total of six trees with suitable roost characteristics (5 potentially suitable for Indiana bat, 1 potentially suitable for northern long-eared bat) were initially identified as occurring within the proposed project area in the forested habitat near the proposed North Pump Station. The project design was subsequently modified such that removal of these 6 trees would not need to occur. TVA has determined impacts to Indiana bat or northern long-eared bat would not occur as a result of proposed actions.

Plant Species
No Federal or State-listed threatened or endangered plant species or habitat to support them is known to occur in or around the project area. Therefore, no direct, indirect or cumulative impacts are expected to these sensitive botanical resources.

3.8 Wetlands

3.8.1 Affected Environment

Wetlands are those areas inundated by surface or groundwater such that vegetation adapted to saturated soil conditions is prevalent. Examples include swamps, marshes, bogs, and wet meadows. Wetland fringe areas are also found along the edges of most watercourses and impounded waters (both natural and man-made). Field surveys were conducted in February 2014 to delineate wetland areas within the project area.

Wetland determinations were performed according to the USACE standards, which require documentation of hydrophytic (wet-site) vegetation, hydric soil, and wetland hydrology (USACE 2010; Environmental Laboratory 1987; Reed 1997; United States Department of Defense and USEPA 2003). Broader definitions of wetlands, such as that used by the USFWS (Cowardin et al. 1979), and the TVA Environmental Review Procedures definition (TVA 1983) were also considered in this review. A TVA-developed modification of the Ohio Rapid Assessment Method (Mack 2001) specific to the TVA region (Tennessee Valley Authority Rapid Assessment Method or “TVARAM”) was used to categorize wetlands by their functions, sensitivity to disturbance, rarity, and ability to be replaced. The categorization was used to evaluate impacts and to determine the appropriate levels of mitigation, if necessary.

TVARAM scores are used to classify wetlands into three categories. Category 1 wetlands are considered “limited quality waters.” They represent degraded aquatic resources having limited potential for restoration with such low functionality that lower standards for avoidance, minimization, and mitigation can be applied. Category 2 includes wetlands of moderate quality and wetlands that are degraded but have reasonable potential for restoration. Avoidance and minimization are the preferred mitigation measures for Category 2 wetlands. Category 3 generally includes wetlands of very high quality or of regional/statewide concern, such as wetlands that provide habitat for threatened or endangered species.

The proposed water and sewer lines would be installed within the road ROW and an abandoned railroad ROW. The landscape is dominated by pastureland, second growth forest, and dissected by sporadic drainage features. Three wetlands were delineated within the proposed project area during the February 2014 field survey (Figure 3-1 and Table 3-3).

Table 3-3. Wetlands in the Proposed Project Area

Wetland Identifier	Type[1]	Wetland Acreage	Wetland Acreage in the Project Right-of-Ways	TVARAM Category (score)
W001	PFO1E	0.98	0.06	2
W002	PEM1E	0.31	0.012	1
TOTAL		1.29	0.072	

[1]Classification codes as defined by Cowardin et al. (1979): E= Seasonally flooded/saturated; PEM1=Palustrine emergent, persistent vegetation; PFO1=Palustrine, forested, broadleaf deciduous.

Wetland 1 (W001) is a forested wetland associated with a stream on the BLN site southwest of an existing transmission line ROW along Bellefonte Road. Dominant vegetation includes sycamore, hackberry, privet, and soft rush.

Wetland 2 (W002) is an emergent wetland northeast of W001 along Bellefonte Road. Dominant vegetation included soft rush, spike rush, and fescue.

Wetland 3 (W003) is a 0.39 acre forested wetland associated with a stream just northwest of the North Pump Station. Dominant vegetation included hackberry, sycamore, black gum, and privet. As discussed in Section 3.7.2, the project was redesigned to avoid clearing suitable roost trees. Wetland 3 is no longer within the project area.

3.8.2 Environmental Consequences

Wetlands are protected under Sections 404 of the Clean Water Act and by EO 11990. In order to conduct specific activities in wetlands, authorization under a Section 404 permit from the USACE may be required depending on the wetland's size and hydrologic connectivity to a navigable waterway. EO 11990 requires all federal agencies to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities.

Alternative A

Under Alternative A, TVA would not undertake the proposed utility improvements and no changes to the environmental conditions would occur. Therefore, no direct, indirect or cumulative impacts to wetlands would occur under Alternative A.

Alternative B

Under Alternative B, TVA would implement the proposed utility improvements. This action would temporarily impact approximately 0.073-acre of wetland during construction. Impacts of this magnitude (less than 0.10-acre) are not regulated under state and federal wetland regulations. Implementation of standard BMPs, would minimize impacts to surrounding wetlands. Approximately 0.06-acres of forested wetlands would be converted to scrub-shrub emergent wetlands. Given the temporary and minor nature of wetland impacts associated with Alternative B, overall direct, indirect, and cumulative wetland impacts would be insignificant.

3.9 Floodplains

3.9.1 Affected Environment

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

The BLN site is located on a peninsula formed by the Town Creek Embayment and the Tennessee River on Guntersville Reservoir in Jackson County, Alabama. Portions of the proposed water and sewer line project would be located within the 100-year floodplain of Town Creek, a tributary to the Tennessee River. For Town Creek in the vicinity of the proposed project, the 100-year floodplain is the area lying below elevation 601.4 feet mean sea level. Jackson County, Alabama participates in the National Flood Insurance Program and all development would be consistent with this program. There are no floodways published for this reach of Town Creek (TVA 1997).

3.9.2 Environmental Consequences

As a federal agency, TVA is subject to the requirements of 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" (United States 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.

Alternative A

Under Alternative A, TVA would not proceed with the utility improvement project. Therefore, there would be no direct, indirect or cumulative impacts to floodplains because there would be no physical changes to the current conditions found within the local floodplains under Alternative A.

Alternative B

Portions of the proposed water and sewer lines would cross 100-year floodplains. The proposed North Pump Station would be located outside the 100-year floodplain. Consistent with EO 11988, underground water and sewer lines are considered to be repetitive actions in the 100-year floodplain that should result in no significant impacts to floodplains. Therefore, there would be no direct, indirect or cumulative impacts to the floodplain under Alternative B.

3.10 Transportation

3.10.1 Affect Environment

Access to the project area is provided from US-72 by Bellefonte Road from the northeast and CR-33 from the southwest. CR-33 from US-72 to the south plant entrance serves as the primary access route for plant traffic.

US-72, the closest major road to the project area, is a four-lane divided highway that runs east across Jackson County. CR 113 is a local county road running parallel with US 72 about one-half mile to the south. It begins at an intersection with CR 33, crosses Bellefonte Road, and ends at US 72 east of the Bellefonte Road intersection. CR 113 serves a small residential community north of the BLN site and is approximately 2.2 miles in length.

The proposed sewer line would need to cross CR 113 to reach the Scottsboro pump station. No traffic data exists for CR113. The closest Alabama Department of Transportation (ALDOT) traffic station with average annual daily traffic (AADT) data is located on US-72 approximately 2 miles northwest of CR 113. This counter recorded 17,109 AADT in 2011 (ALDOT 2011). It is estimated

that this number is substantially higher than the estimated AADT for CR113 because CR113 is only used by local residences. For the purpose of this analysis a conservative AADT of 100 vehicles per day was used for CR113.

3.10.2 Environmental Consequences

Alternative A

Under Alternative A, TVA would not proceed with the utility improvement activities. The environmental and physical conditions would not change. Therefore, no direct, indirect, or cumulative transportation impacts would occur under Alternative A.

Alternative B

A portion of CR 113 would need to be closed in order to install the proposed sewer line. Scottsboro WS&G would remove the existing railroad rails at the intersection with CR113, install the sewer line, and then repave/repair the road. The proposed road closure would temporarily impact CR113 traffic for no more than a week. However, traffic would be able to bypass the road closure via an alternative route accessing CR113 by US-72. It would take an additional 3 to 8 minutes to travel the 1.0 to 3.0 miles around the closure on the alternate route. The proposed road closure would increase the number of cars on US-72 by approximately 100. This change created by the road closure represents an approximately 0.5 percent increase in traffic along US-72.

Once installation of the proposed sewer line is complete, Scottsboro WS&G would repair the portion of the road per ALDOT standards. Potential impacts to traffic would be temporary and minor during installation of the sewer line across CR 113.

The portion of Bellefonte Road within the project area is primarily used by TVA employees for access to the BLN site and the PSO Training Center. During the installation of the proposed water and sewer line within the Bellefonte Road ROW, there would be minor disruption of traffic. TVA would not need to close the entire road, but may close one lane during installation activities. These closures would temporarily impact Bellefonte Road traffic and no significant impacts are anticipated under Alternative B. No cumulative transportation impacts are anticipated under Alternative B.

3.11 Unavoidable Adverse Environmental Impacts

The proposed activities could cause some unavoidable environmental effects. Specifically, installation and transportation of the water and sewer lines would generate fugitive dust, but not to significant levels. The proposed installation of the sewer line by Scottsboro WS&G would clear approximately 1 acre of young dense, forested habitat would occur along CR 113. This would slightly increase the proportion of early successional habitats in the project area; however, changes to habitat would not be significant.

3.12 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 non-market, for future generations.

For the proposed utility improvements, short-term uses generally are those that are expected to occur during the site preparation and construction (several months), while the long-term impacts refers to the operation of the utilities (e.g. 20 years or more). The vegetation and soil would be temporarily disturbed during construction and installation of

the utility infrastructure. However, the site would revert back to previous conditions once installation is complete.

3.13 Irreversible and Irretrievable Commitments of Resources

For the purpose of this analysis, the term “irreversible” applies to the commitment of environmental resources (e.g., permanent use of land) that cannot by practical means be reversed to restore the environmental resources to their former state. In contrast, the term “irretrievable” applies to the commitment of material resources (e.g., irradiated steel, petroleum) that, once used, cannot by practical means be recycles or restored for other uses.

The proposed action would have no irretrievable commitments of resources. The proposed action would install water and sewer lines and some of the project area would be removed from vegetative production. Thus, the loss of this production would be an irretrievable commitment of resources for the life of the utility infrastructure. The commitment would not be irreversible; however, because productivity of the soil and vegetation could return if the infrastructure were removed. The construction activities would result in the irreversible commitment of certain fuels, energy, and construction materials.

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CHAPTER 4 – LIST OF PREPARERS

4.1 NEPA Project Management

Loretta McNamee

Position:	Contract NEPA Specialist
Education:	B.S., Biology
Experience:	6 years in NEPA Compliance
Involvement:	NEPA Compliance and Document Preparation

4.2 Other Contributors

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Education:	Ph.D., Anthropology (Archaeology)
Experience:	3 years in Cultural Compliance, 10 years in Cultural Resource Management
Involvement:	Cultural Resources

Patricia B. Cox

Position:	Botanist, Specialist
Education:	Ph.D., Botany (Plant Taxonomy and Anatomy); M.S. and B.S., Biology
Experience:	32 years in Plant Taxonomy at the Academic Level; 9 years in Rare Species Monitoring, Environmental Assessment, and NEPA Compliance
Involvement:	Threatened and Endangered Species Compliance, Invasive Plant Species, and Terrestrial Ecology

Kim Pilarski-Hall

Position:	Wetlands Biologist
Education:	M.S., Geology, Minor Ecology
Experience:	17 years in Wetlands Assessments and Delineation Wetlands
Involvement:	Wetlands

Andrew Henderson

Position:	Aquatic Endangered Species Biologist
Education:	M.S. and B.S., Fisheries Science
Experience:	10 years Imperiled Aquatic Species Surveys & Monitoring; 1 year in Environmental Reviews
Involvement:	Aquatic Ecology/Threatened and Endangered Species

Holly LeGrand

Position:	Biologist/Zoologist
Education:	M.S., Wildlife; B.S., Biology
Experience:	10 years in Biological Surveys, Natural Resource Management, and Environmental Reviews
Involvement:	Terrestrial Ecology and Threatened and Endangered Species

Carrie C. Mays, P.E.

Position:	Civil Engineer, Flood Risk
Education:	B.S. and M.S., Civil Engineering
Experience:	1 year Floodplain Evaluations; 2 years River Forecasting; 1 year NEPA Specialist; 11 years Compliance Monitoring
Involvement:	Floodplains

CHAPTER 5 – ENVIRONMENTAL ASSESSMENT RECIPIENTS

5.1 Federal Agencies

U.S. Army Corps of Engineers, Nashville District
U.S. Fish and Wildlife Service, Daphne Field Office

5.2 Federally Recognized Tribes

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

5.3 State and Local Agencies

Alabama Department of Agriculture and Industries
Alabama Department of Conservation and Natural Resources
Alabama Department of Economic and Community Affairs
Alabama Department of Environmental Management
Alabama Forestry Commission
Alabama Historical Commission

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Appendix A – Wetlands No-Practicable Alternative Notification

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Request for Public Comment

Bellefonte Site Utility Improvements
No Practicable Alternative

After a 2014 inspection of the Bellefonte Nuclear Plant site's utility infrastructure, the Tennessee Valley Authority (TVA) found that various improvements were needed to support the current staff located onsite. The proposed improvements include the installation of new sewer lines and replacement of a portion of an existing leaky waterline along Bellefonte Road. The proposed waterline installation would impact approximately 0.073 acre of wetlands during construction, converting them to scrub-shrub emergent wetlands. TVA redesigned the proposed project to avoid impacting an additional 0.39 acre of forested wetlands. The impacted wetlands are located within existing or abandoned rights of way that already have been disturbed. TVA would employ best management practices to further reduce potential wetland impacts. In accordance with Executive Order No. 11990, TVA has determined there is no practicable alternative that would allow TVA to avoid these impacts.

TVA requests comments on these proposed impacts and its determination. To be considered, comments must be received no later than ten (10) days from the date of publication of this notice. Any comments, including names and addresses, will become part of the administrative record and will be available for public inspection. Written comments may be mailed, faxed, or emailed to:

Amy B. Henry
Tennessee Valley Authority
400 West Summit Hill Drive, WT11A
Knoxville, TN 37828
Fax: 865-632-3146
Email: abhenry@tva.gov

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Appendix B – Federal and State Listed Species

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Table 1 Records of federal and state-listed aquatic animal species from Jackson County, Alabama and/or within a 10-mile radius of the Project Area[1]

Common Name	Scientific Name	Element Rank[2]	Status[3]	
			Federal	State (Rank)[4]
Crayfish				
Southern Cave Crayfish	*Orconectes australis australis*	E		TRKD (S3)
Fishes				
Blotched Chub	*Erimystax insignis*	E		TRKD (S2)
Blotchside Logperch	*Percina burtoni*	E		TRKD (S1)
Palezone Shiner	*Notropis albizonatus*	E	LE	PROT (S1)
Southern Cavefish	*Typhlichthys subterraneus*	E		PROT (S3)
Insects				
A Caddisfly	*Rhyacophilia alabama*	E		PROT (S1)
A Glossosomatid Caddisfly	*Agapetus hessi*	E		TRKD (S1)
Mussels				
Alabama Lampmussel	*Lampsilis virescens*	E	LE	PROT (S1)
Alabama Rainbow	*Villosa nebulosa*	E		TRKD (S3)
Black Sandshell	*Ligumia recta*	E		TRKD (S2)
Butterfly	*Ellipsaria lineolata*	E		TRKD (S3)
Cumberland Moccasinshell	*Medionidus conradicus*	E		PROT (S1)
Deertoe	*Truncilla truncata*	E		TRKD (S1)
Elktoe	*Alasmidonta marginata*	H		EXTI (SX)
Fine-rayed Pigtoe	*Fusconaia cuneolus*	E	LE	PROT (S1)
Flutedshell	*Lasmigona costata*	H		PROT (S2)
Hickorynut	*Obovaria olivaria*	H		EXTI (SX)
Kidneyshell	*Ptychobranchus fasciolaris*	E		TRKD (S2)
Long-solid	*Fusconaia subrotunda*	E		TRKD (S1)
Monkeyface	*Quadrula metanevra*	E		TRKD (S3)
Mucket	*Actinonaias ligamentina*	E		TRKD (S2)
Narrow Catspaw	*Epioblasma lenior*	H		EXTI (SX)
Ohio Pigtoe	*Pleurobema cordatum*	E		TRKD (S2)
Orange-foot Pimpleback	*Plethobasus cooperianus*	H	LE	PROT (S2)

Common Name	Scientific Name	Element Rank[2]	Status[3] Federal	Status[3] State (Rank)[4]
Painted Creekshell	*Villosa taeniata*	E		TRKD (S3)
Pale Lilliput	*Toxolasma cylindrellus*	E	LE	PROT (S1)
Pheasantshell	*Actinonaias pectorosa*	E		TRKD (S1)
Pink Mucket	*Lampsilis abrupta*	E	LE	END (S2)
Purple Lilliput	*Toxolasma cylindrellus*	E	LE	PROT (S1)
Pyramid Pigtoe	*Pleurobema rubrum*	H		PROT (S2)
Rabbitsfoot	*Quadrula cylindrica cylindrica*	E	LT	PROT (S1)
Rainbow	*Villosa iris*	E		TRKD (S3)
Round Hickorynut	*Obovaria subrotunda*	E		TRKD (S2)
Sheepnose	*Plethobasus cyphyus*	H	LE	PROT (S1)
Shiny Pigtoe	*Fusconaia cor*	E	LE	PROT (S1)
Slabside Pearlymussel	*Lexingtonia dolabelloides*	E	LE	PROT (S1)
Slippershell Mussel	*Alasmidonta viridis*	E		PROT (S1)
Snail Darter	*Percina tanasi*	E	LT	PROT (S1)
Snuffbox	*Epioblasma triquetra*	E	LE	TRKD (S1)
Spike	*Elliptio dilatata*	E		TRKD (S1)
Tennessee Clubshell	*Pleurobema oviforme*	E		TRKD (S1)
Tennessee Heelsplitter	*Lasmigona holstonia*	E		TRKD (S1S2)
Tennessee Pigtoe	*Fusconaia barnesiana*	E		TRKD (S1)
Wavyrayed Lampmussel	*Lampsilis fasciola*	E		TRKD (S1S2)
White Heelsplitter	*Lasmigona complanata*	H		TRKD (S2S3)
Winged Mapleleaf	*Quadrula fragosa*	H		PROT (S1)
Snails				
Anthony's River Snail	*Athearnia anthonyi*	E	LE	PROT (S1)
Corpulent Hornsnail	*Pleurocera corpulenta*	E		TRKD (S1)
Spiny Riversnail	*Io fluvialis*	H		EXTI (SX)
Varicose Rocksnail	*Lithasia verrucosa*	E		TRKD (S3)

[1]Source: TVA Natural Heritage Database, access February 2014
[2]Element Rank: H = Historical Record occurrence is greater than 25 years old, E = Extant Record occurrence less than 25 years old. [3]Federal and State Status Codes: LE = Listed Endangered; LT=Listed threatened; PE = Proposed Endangered; PROT = State protected; EXTI = Listed Extirpated or Extinct; TRKD = Tracked by Alabama Natural Heritage Program. [4]State Ranks: S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable; SX = Presumed Extirpated.

Table 2 Federally Listed or Protect Terrestrial Animal Species for Jackson County, Alabama, and other species of Conservation Concern, Documented or with Potential to Occur within Three Miles of the Project Area.[1]

		Status[2]	
Common Name	**Scientific Name**	**Federal**	**State (Rank[3])**
Birds			
Bald eagle	*Haliaeetus leucocephalus*	DM	PROT (S3)
Mammals			
Gray bat	*Myotis grisescens*	LE	PROT (S2)
Northern Long-eared Bat	*Myotis septentrionalis*	PE	TRKD (S2)
Indiana Bat	*Myotis sodalis*	LE	PROT (S2)

[1] Source: TVA Natural Heritage Database, accessed February 2014;
[2] Status Codes: DM = Delisted but still being monitored; LE = Listed Endangered; PE = Proposed Endangered; PROT = Protected; TRKD = Tracked by the Alabama Natural Heritage Program
[3] Status Ranks: S2 = Imperiled, S3 = Vulnerable

Table 3 Plants of conservation concern found within 5 miles of the project area[1]

Common Name	Scientific Name	Status Federal[2]	Status State (Rank)[3]
Alabama Snow-wreath	*Neviusia alabamensis*	--	SLNS (S2)
*American Hart's-tongue Fern	*Asplenium scolopendrium var. americanum*	LT	SLNS(S1)
American Smoke-tree	*Cotinus obovatus*	--	SLNS (S2)
Appalachian Quillwort	*Isoetes engelmannii*	--	SLNS(S3)
Butler's Quillwort	*Isoetes butleri*	--	SLNS (S2)
Canada Violet	*Viola canadensis*	--	SLNS(S2)
Carolina Silverbell	*Halesia carolina*	--	SLNS(S2)
Creeping Aster	*Eurybia surculosa*	--	SLNS(S1)
Cumberland Rosinweed	*Silphium brachiatum*	--	SLNS(S2)
Goldenseal	*Hydrastis canadensis*	--	SLNS(S2)
*Green Pitcher Plant	*Sarracenia oreophila*	LE	SLNS(S2)
Harper's Dodder	*Cuscuta harperi*	--	SLNS(S2)
Horse-gentian	*Triosteum angustifolium*	--	SLNS(S1)
Michaux Leavenworthia	*Leavenworthia uniflora*	--	SLNS(S2)
*Monkey-face Orchid	*Platanthera integrilabia*	C	SLNS(S2)
*Morefield's Leather-flower	*Clematis morefieldii*	LE	SLNS(S1S2)
Nuttall's Rayless Golden-rod	*Bigelowia nuttallii*	--	SLNS(S3)
One-flowered Broomrape	*Orobanche uniflora*	--	SLNS(S2)
*Price's Potato-bean	*Apios priceana*	LT	SLNS(S2)
Sedge	*Carex purpurifera*	--	SLNS(S2)
Spotted Mandarin	*Disporum maculatum*	--	SLNS(S1)
Sunnybell	*Schoenolirion croceum*	--	SLNS(S2)
Tennessee Bladderfern	*Cystopteris tennesseensis*	--	SLNS(S2)
Tennessee Leafcup	*Polymnia laevigata*	--	SLNS(S2S3)
Twinleaf	*Jeffersonia diphylla*	--	SLNS(S2)
Wahoo	*Euonymus atropurpureus*	--	SLNS(S3)
White-leaved Sunflower	*Helianthus glaucophyllus*	--	SLNS(SH)
Wister Coral-root	*Corallorhiza wisteriana*	--	SLNS(S2)
Woodland Tickseed	*Coreopsis pulchra*	--	SLNS(S2)
Yellowwood	*Cladrastis kentukea*	--	SLNS(S3)

* Federally-listed species in the county, but not within 5 miles of the project area
[1] Source: TVA Natural Heritage Database, accessed February 2014;
[2]Federal status abbreviations: C=candidate, LE=Listed endangered, LT=Listed threatened
[3]State rank abbreviations: S1 – critically imperiled often with 5 or fewer occurrences, S2 – Imperiled often with <20 occurrences, S3 – rare or uncommon often with <80 occurrences, S4--apparently secure in the state with many occurrences.
State status: Alabama does not give status to state listed species; SLNS =State-listed, No Status