Document Type: EA-Administrative Record
Index Field: Second Supplemental Environmental Assessment
Project Name: Phase 1 East Region Consolidation – Norris Properties
Project Number: 2019-33

PHASE 1 EAST REGION CONSOLIDATION – NORRIS PROPERTIES
FINAL SECOND SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT
Anderson County, Tennessee

Prepared by:
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February 2020

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Symbols, Acronyms, and Abbreviations

AADT	Average Annual Daily Traffic
APE	Area of Potential Effect
BMP	Best Management Practice
CFR	Code of Federal Regulations
CEC	Categorical Exclusion Checklist
CO	carbon monoxide
dB	decibel
dBA	A-weighted decibel
DNL	Day-Night Sound Level
EA	Environmental Assessment
EO	Executive Order
ITMA	Inspection, Testing, Monitoring, and Analysis
iPaC	Information for Planning and Consultation
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O_3	ozone
Pb	lead
$PM_{2.5}$	particulate matter particles less than 2.5 micrometers
PM_{10}	particulate matter particles less than 10 micrometers
SHPO	State Historic Preservation Officer
SO_2	sulfur dioxide
SR	state route
SWPPP	Stormwater Pollution Prevention Plan
TDEC	Tennessee Department of Environment and Conservation
TDOT	Tennessee Department of Transportation
TVA	Tennessee Valley Authority
U.S.	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VPD	vehicles per day
VOC	volatile organic compounds

PURPOSE OF AND NEED FOR ACTION

1.1 Introduction and Background

In 2013, the Tennessee Valley Authority (TVA) developed an internal valley wide real estate strategy to effectively and efficiently manage the agency-wide real estate portfolio to reduce costs and maximize the financial return on TVA's real estate assets[1] including office space. At present, TVA occupies two properties in the City of Norris, Anderson County, Tennessee as shown in Figure 1-1. TVA could achieve work process efficiencies and cost savings by consolidating similar functions in one physical location.

To meet office space requirements and consolidate the operations occurring in TVA's East Region in a more efficient and economical manner, TVA is proposing to relocate the Central Laboratories and Services program (formerly known as the Inspection, Testing, Monitoring, and Analysis [ITMA] program) from Summer Place Building in Knoxville TN, aquatic laboratory (lab) from Walnut Orchard, water quality lab from the Greenway Area Office building (Greenway) in Knoxville, TN, and associated equipment storage to the Norris Engineering Lab Complex (Engineering Lab). The consolidation effort would require interior renovations to some of the buildings at the Engineering Lab. Other buildings on the Engineering Lab property could be demolished to support the construction of new facilities. The consolidation effort would relocate up to 40 TVA staff to the Engineering Lab.

In January 2019, the Tennessee Valley Authority (TVA) issued a Finding of No Significant Impact (FONSI) and finalized the *Phase 1 East Region Consolidation – Norris Properties Environmental Assessment* (Phase 1 Final EA) which evaluated Phase 1 of TVA's proposal to consolidate certain operations to the Engineering Labs. The Phase 1 Final EA evaluated the potential impacts associated with certain interior renovations of structures at the Engineering Lab, and exterior work focused primarily in the southern and eastern portions of the property. Phase 1 interior renovations include: minimum renovations to Buildings D, G, N, and T, moderate renovations to Buildings B, Q1, and Q2, and major renovations to Building J. Phase 1 exterior actions include: the demolition of two small boat sheds and Building I, clearing of trees, installation of lights and cameras for security, construction of a stormwater detention pond, trenching and groundwork in the vicinity of Buildings B and I, repaving/reconfiguring of parking areas, and construction of a new boat shed(s) in the vicinity of Building I.

In February 2019, TVA identified the need for moderate renovations to the interior of Building C for remediation of water intrusion, mold, and asbestos, the need for grading and additional tree removal in the area north of Building I to accommodate the Phase 1 activities, and replanting of a vegetative barrier south of Building B. Therefore, TVA performed additional analysis of potential effects in the *Revised Phase 1 East Region Consolidation – Norris Properties*

[1] Title to real property held by TVA is in the name of the United States of America.

Environmental Assessment and issued a Revised FONSI in March 2019. The revised EA and revised FONSI are incorporated herein by reference.

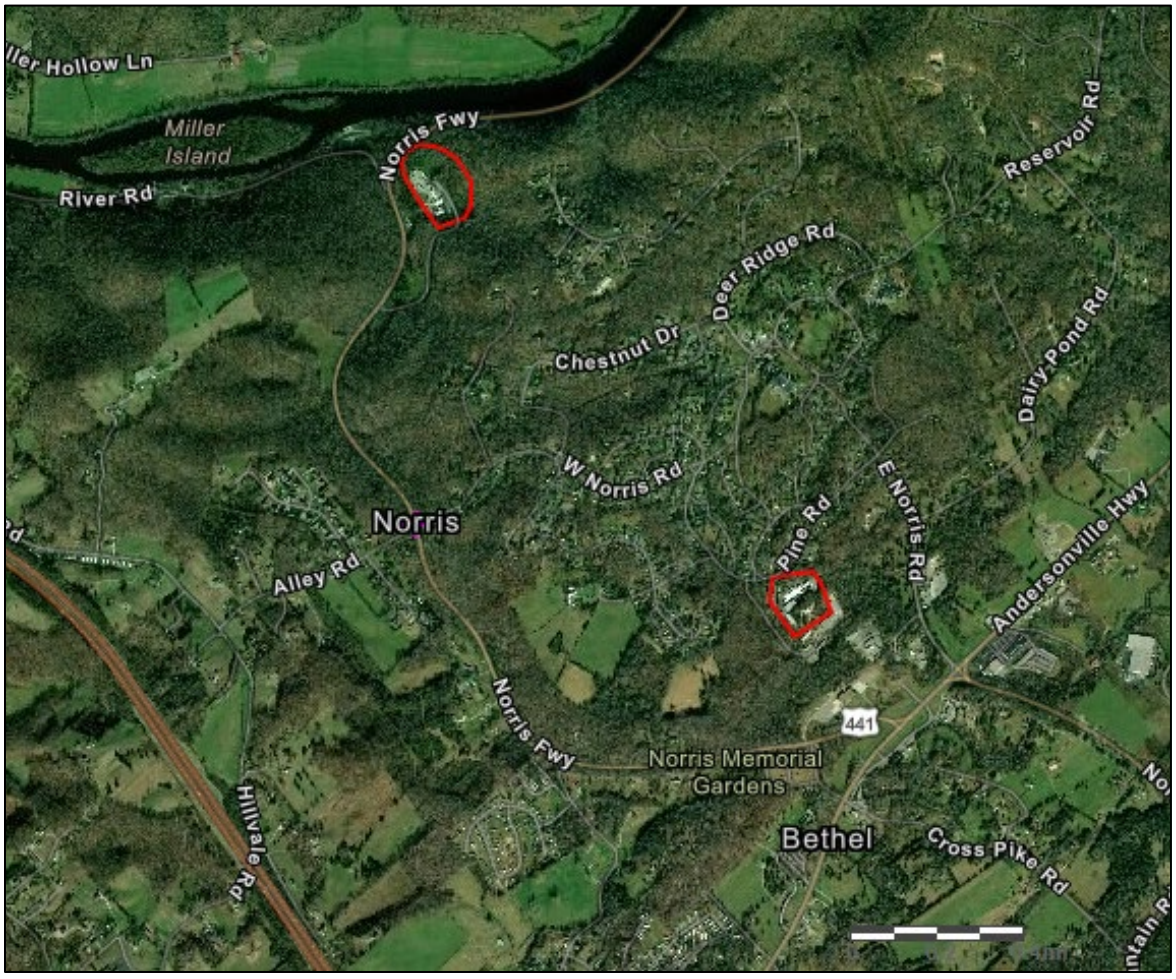

Figure 1-1. Norris Properties – Walnut Orchard (north) and Engineering Labs (south)

In May 2019, TVA discovered that approximately 500-750 cubic yards of removed overburden from the Phase 1 site, located within spoil piles on the site, contain contaminants at levels determined to be unsuitable for reuse as fill material and would need to be transported to an offsite waste landfill. The soil contained polychlorinated biphenyls (PCBs) and extracted petroleum hydrocarbons (PCBs) at levels unsuitable for reuse as fill. Additionally, TVA required approximately 1,800-2,000 cubic yards of fill material to fill the former Building D basement area at Walnut Orchard to remediate long-term stability and safety concerns.

The *Phase 1 Supplemental Environmental Assessment and Finding of No Significant Impact* (Phase 1 SEA and FONSI) was prepared in July 2019 to analyze impacts associated with the transport of approximately 500-750 cubic yards of soil from the Engineering Labs to be disposed at an offsite waste landfill and approximately 1,800-2,000 cubic yards of soil to be placed as fill material in the former Walnut Orchard Building D basement. In conducting this assessment,

TVA supplemented its prior assessments of January 2019 and March 2019 for the Phase 1 East Region Consolidation-Norris Properties project. Based on the findings of the First Phase 1 SEA and FONSI, incorporated herein by reference, and the Revised Phase 1 EA and FONSI, TVA concluded that the proposal to remove 500-750 cubic yards of soil containing contaminants and/or not suitable for reuse as fill to an offsite waste landfill as well as transporting 1,800-2,000 cubic yards of soil suitable for reuse from the Engineering Lab site to the Walnut Orchard site would not be a major federal action significantly affecting the environment.

The Revised Phase 1 EA assumed all soil would be remaining onsite. After completion of the Revised Phase 1 EA, and as construction contractors were finalizing plans for Phase 1 grading at the Engineering Labs, TVA identified the need to remove additional soil from the Phase 1 construction area (as shown on Figure 1-2) to accommodate the desired grading plan and construction. It is possible additional soil would also need to be brought into the site for use as stable fill material (the soil being removed from the site is unsuited for this use). Total soil moved to and from the Engineering Labs would be a maximum of 37,000 cubic yards. Additionally, further project planning has resulted in an alternative proposal for the stormwater detention pond. The stormwater detention pond is proposed for construction along the southern side of the property adjacent to the property line, near Buildings H and L. In the Revised Phase 1 EA, the stormwater detention pond evaluated was an open pond. Further project planning has identified the need for additional parking at the Engineering Lab. Therefore, this SEA evaluates a proposal to capture stormwater in buried chambers and construct parking on top of the chamber. Therefore, this Supplemental Phase 1 EA is being prepared to evaluate the proposed transport of up to 37,000 cubic yards of soil to or from the Engineering Labs and the proposed enclosed stormwater chamber.

Planning is currently underway for the Phase 2 East Region Consolidation – Norris Properties assessment. Phase 2 would be primarily driven by security updates needed to bring the facility into compliance with current TVA security measures and protocols and, additional consolidation related actions, such as renovations to various buildings onsite that were unknown at the time of the Phase 1 assessment and that may be necessary as a result of TVA's ongoing evaluation of the condition of the existing facilities and program needs. The Phase 2 activities will be evaluated in a separate, future NEPA analysis.

1.2 Purpose and Need

The project's overall purpose and need as defined in the Revised Phase 1 Final EA is to relocate portions of TVA operations from TVA's nearby Walnut Orchard property, the Summer Place Building, and the Greenway facility into one location at the Engineering Lab. This action would improve space utilization and reduce TVA cyclic operations and maintenance and capital project costs, which is consistent with TVA's real estate strategy. To achieve the overall project goal, TVA needs to transport soil unsuitable for reuse as stable fill material from the Engineering Lab property and transport soil that is suitable for use as stable fill material onto the property; a total of up to 37,000 cubic yards of soil would be transported. This movement of soil is needed to complete the construction previously proposed in the *Revised Phase 1 East Region Consolidation – Norris Properties FONSI*. Additionally, TVA needs to evaluate a proposed

enclosed stormwater chamber, in place of the originally evaluated stormwater pond, to provide room for additional surface parking above the chamber. This Supplemental Phase 1 EA is being prepared to evaluate this proposed soil removal and disposition and a new stormwater chamber and surface parking lot.

Figure 1-2. Engineering Lab Property (approximate property boundary in yellow) with Phase 1 construction and soil removal area highlighted in green (with red outline)

1.3 Decision to be Made

TVA must determine whether to transport and dispose of soil from the Engineering Lab to Walnut Orchard and/or a nearby landfill and whether to bring in stable fill material to accommodate planned Phase 1 construction activities at the Engineering Lab. TVA must also determine whether to construct an enclosed stormwater chamber with overlying parking, as an available option in lieu of a stormwater detention pond evaluated in the Phase I EA.

1.4 Other Environmental Reviews and Documentation

Related environmental documents and materials were reviewed concerning this assessment. The contents of these documents help describe the affected properties and are incorporated by reference as appropriate. These are listed below.

- Phase 1 East Region Consolidation – Norris Properties Supplemental Environmental Assessment and Finding of No Significant Impact (July 2019) – Environmental review for the removal of 500-750 cubic yards of soil containing contaminants and/or not suitable for reuse as fill to an offsite waste landfill as well as the transport of 1,800-2,000 cubic yards of soil suitable for reuse from the Engineering Lab site to fill the former Building D basement at the Walnut Orchard site.
- Revised Phase 1 East Region Consolidation – Norris Properties Environmental Assessment (March 2019) – Environmental review for interior modifications of Buildings B, C, D, G, J, N, Q1, Q2, and T and installation of exterior lights and cameras on specific structures; demolition of Building I and two boat sheds; construction of new boat sheds and a shop; repaving/reconfiguring of parking lots/pavement; establishment of a new stormwater detention pond; tree clearing, and various ground disturbing activities in the southern portion of the Engineering Labs property. The original Phase 1 EA and FONSI were published in January 2019.
- Categorical Exclusion Checklist (CEC) #40993 (May 2019) – Environmental review for the removal of an Underground Storage Tank at the Engineering Labs.
- CEC #40580 (March 2019) – Environmental review for fence line repair and maintenance. The project actions would include the trimming or removal of trees within 10 feet of the fence line.
- CEC #39785 (October 2018) – Environmental review for the demolition of Walnut Orchard Building C, installation for an underground electrical feeder from Building A to the trucks shed and drive gate areas, and backfilling of the former Building D area followed by grading of the Building D site to former contours.
- CEC #36889 (May 2017) - Environmental review covered the demolition and removal of Building F at the Engineering Lab due to fire damage.
- CEC #36913 (May 2017) - Environmental review for the demolition of 9 pole shed structures and Buildings B and E at Walnut Orchard.
- CEC #35080 (June 2016) - Environmental review for the demolition of Building D at Walnut Orchard.
- CEC #33138 (August 2015) - Environmental review covered renovations to Building A at the Engineering Labs to meet current building standards and utilize the facility as a meeting room.
- CEC #32915 (June 2015) - Environmental review covered renovations at the Greenway Transportation Garage.
- CEC #32170 (March 2015) - Environmental review covered the proposed divestment of Walnut Orchard and associated structures; approximately 4.6 acres. The proposed divestment was inconsistent with the TVA Land Policy and therefore was cancelled.
- CEC #30938 (August 2014) - Environmental review for the proposed sale of buildings and property associated with the Engineering Lab. TVA changed the scope of the proposed action and the environmental review for the CEC was not completed.
- CEC #30947 (August 2014) - Environmental review for the proposed sale of the Greenway buildings and associated property.
- CEC #10535 (August 2005) - Environmental review for the demolition of structures (sheds) K and Q at Walnut Orchard.

In addition to the completed environmental assessments and categorical exclusion checklists listed above, TVA is currently conducting the environmental assessment for Phase 2 of the East Region Consolidation.

1.5 Scope of the Environmental Assessment

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

- Land Use
- Terrestrial Wildlife including Threatened and Endangered Species
- Vegetation
- Surface Water
- Historic and Archaeological Resources
- Air Quality
- Noise
- Transportation
- Aesthetics
- Socioeconomics
- Environmental Justice
- Solid and Hazardous Waste

Additionally, TVA has determined that the following resources would not be affected by the proposed action:

- ***Floodplains*** – Both the Engineering Lab and Walnut Orchard locations are located outside of the 100-year floodplain; therefore, soil removed from the Lab and deposited at the Walnut Orchard would be consistent with Executive Order (EO) 11988. Soil could be hauled to an existing approved offsite landfill for disposal. To be consistent with EO 11988, material placed within the landfill must be located outside the 100-year floodplain. Chestnut Ridge, Riverside C&D, and Poplar View landfills are all potential places waste material from the project could be deposited. Riverside C&D and Poplar View are located outside identified 100-year floodplains. Chestnut Ridge is located in a portion of Anderson County, Tennessee, where the Flood Insurance Rate Map (FIRM) was not printed. Generally, a FIRM is not printed when there are no identified floodplains within the footprint of the FIRM. Therefore, TVA infers that Chestnut Ridge is located outside of identified 100-year floodplains. Although topographic maps depict streams crossing portions of all three landfills, the areas are now disturbed and aerial photography shows no evidence of perennial streams in the active areas of the landfills. To minimize adverse impacts, material hauled to the landfill should be placed in disturbed areas of the landfill on high ground. By incorporating the above mitigation measure, floodplains does not warrant additional review in

the SEA, and the proposed project would be consistent with EO 11988 and would have no significant impact on floodplains and their natural and beneficial values.

- ***Wetlands*** - No wetlands are present within the proposed project area at either the Engineering Lab or Walnut Orchard. No known wetlands are present at the potential landfills where the soil could be deposited. Therefore, wetlands do not warrant additional review in the SEA, and the proposed project would have no significant impact on wetlands.

- ***Aquatic Ecology*** – No streams or water bodies supporting aquatic ecology are present within the proposed project area at either the Engineering Labs or Walnut Orchard. No streams or water bodies supporting aquatic ecology are present at the potential landfills where the soil could be deposited. Therefore, aquatic ecology does not warrant additional review in the SEA, and the proposed project would have no significant impact on aquatic ecology.

- ***Prime Farmland*** – Because both the Engineering Lab and Walnut Orchard properties are already developed federal properties, there would be no conversion of prime farmland at these locations. The potential landfills where the soil could be deposited are existing, permitted landfills, therefore, there is also no conversion of prime farmland at these locations. Therefore, prime farmland does not warrant additional review in the SEA, and the proposed project would have no significant impact on prime farmland.

- ***Recreation*** – The proposed actions would be restricted to already developed federal property at the Engineering Lab and Walnut Orchard, or to an existing offsite permitted landfill where there are no recreation resources present. There are no developed recreational areas immediately adjacent to the Engineering Lab and Walnut Orchard Complexes, or the potential landfills where the soil could be deposited which could be affected by the proposed action. Natural resource conservation areas adjacent to the Walnut Orchard would not be affected by the proposed action. Therefore recreation does not warrant additional review in the SEA, and the proposed project would have no significant impact on recreation.

1.6 Necessary Permits, Licenses, or Notifications

In addition to the necessary approvals from TVA, the project would require the following permits, licenses, or notifications to be completed prior to commencing project activities:

- Coverage under Tennessee General National Pollutant Discharge Elimination System [NPDES] Permit for Discharges of Stormwater Associated with Construction Activities at both the Engineering Lab (TNR135805) and Walnut Orchard (TNR135883).

- Special Waste Application from the Tennessee Division of Solid Waste Management to dispose of contaminated soils.

CHAPTER 2 - ALTERNATIVES

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

2.5 Description of Alternative

The following are summaries for each alternative analyzed in this EA. The alternatives identified were evaluated based on a set of criteria including: cost, efficiency, sustainability, environmental impacts, and meeting TVA's commitment to demonstrate financial and environmental stewardship.

2.5.1 Alternative A – No Action Alternative

Under the No Action Alternative, TVA would not relocate and dispose of additional soil from the Engineering Labs and would not construct a stormwater chamber. Phase 1 construction could still proceed. However, because the removal of the soil from the Engineering Labs affects TVA's ability to complete the planned Phase 1 construction, this alternative would not meet the project's purpose and need. However, it is carried forward for analysis as it provides a baseline comparison for the proposed action alternatives.

2.5.2 Alternative B – Soil Deposition at Walnut Orchard and an Existing Offsite Landfill and Construction of a Stormwater Chamber

2.5.2.1 Soil Transport

Under this alternative, TVA would transport up to 37,000 cubic yards of soil to and/or from the Phase 1 project area at the Engineering Labs (Figure 1-2). Soil transported from the Engineering Lab offsite would be transported to TVA's Walnut Orchard facility (Figure 1-1) and/or an offsite existing permitted landfill within 30 miles of the Engineering Labs facility. Soil transported to the Engineering Lab would be used as stable fill material (the soil being removed from the site is unsuited for this use). This stable fill material could consist of clay or rock and would come from an existing, licensed, and qualified (Section 106 compliant) source location of from TVA's Walnut Orchard site. Total soil moved would be a maximum of 37,000 cubic yards. In preparation for the offsite transport of soil, TVA collected soil samples from Engineering Labs Phase 1 project area from the surface to a depth of 14 feet in accordance with the proposed site grading plan. TVA analyzed these soil samples for 8082A - Standard PCB List 9 Aroclors; Safe and Environmentally Responsible Waste Management, TN EPH-TPH C12-C40 standard Range; and 6010B – TCLP RCRA Metals List. Based on the sample results, soils deemed suitable for reuse as fill material would be eligible for transport to Walnut Orchard. Soils not deemed suitable would be transported to a permitted landfill within 30 miles of the Engineering Labs. Table 2-1 lists the possible landfill locations within 30 miles of the Engineering Labs. Figure 2-1 shows the location of these landfills relative to the Engineering Lab and Walnut Orchard.

Table 2-1. Landfill locations within 30 miles of the Engineering Labs

Landfill	Location	Approximate Distance from the Engineering Labs
Waste Management Chestnut Ridge Landfill	Heiskel, Tennessee	8-10 miles
Meridian Waste Riverside C&D Landfill	Knoxville, Tennessee	25-27 miles
Meridian Waste Poplar View Landfill	Knoxville, Tennessee	30-32 miles

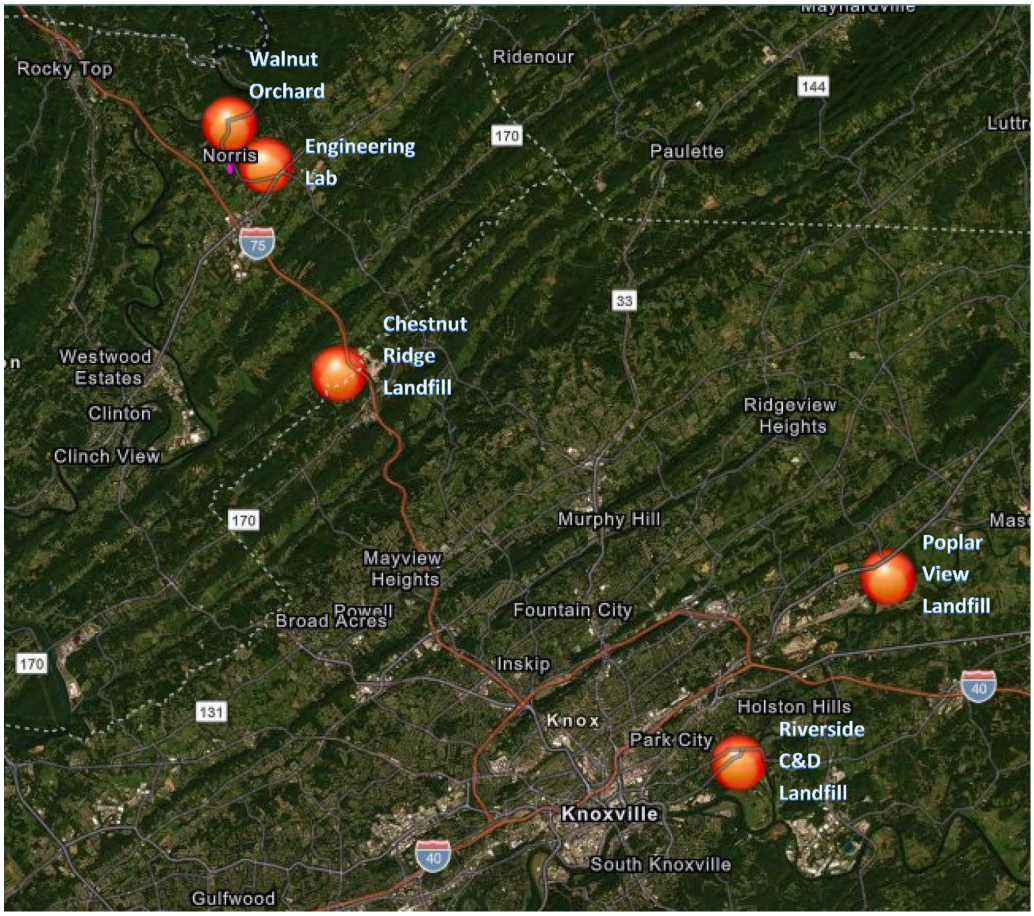

Figure 2-1. Norris Properties and Offsite Landfills

The soil transported from the Engineering Labs to Walnut Orchard would be deposited on currently vegetated areas of the Walnut Orchard property. All vegetation would be cleared and the location grubbed prior to deposition, any trees or brush removed would be hauled offsite or mulched and deposited onsite. A temporary access road would be constructed within the proposed project area at Walnut Orchard and all soil deposition related activities would be concentrated within this area and all related traffic restricted to this road. A portion of the existing security fence would need to be taken down to allow access to this new road; repairs and/or addition of a new security gate may be necessary. Existing building slabs would either be left in place or covered with soil. Topsoil at Walnut Orchard would be removed, and temporarily

stored onsite during the soil deposition activities. The topsoil would be redistributed on the newly deposited soil prior to reestablishing a vegetative cover of the area. Additional topsoil may need to be brought in to Walnut Orchard. The topsoil would come from an existing stockpile or meet the same environmental parameters as the stable fill material. TVA would prepare and comply with a Stormwater Pollution Prevention Plan (SWPPP) and project activities, therefore, could include erosion control measures such as sediment traps, soil fences, and other best management practices (BMP).

There are two deposition grading options for deposition of the soil at Walnut Orchard as shown in Figures 2-2 and 2-3. Under both Alternative B1 and B2, the deposited soil would be placed and then compacted to ensure stability, the deposition of soil would raise the elevation of the area surrounding the main complex at Walnut Orchard. Currently the surface surrounding the Walnut Orchard complex slopes away from the complex. The fill would raise the elevation of this surrounding area. A construction access road would traverse the soil deposition area from the main entrance around to the former Building D site on the southwest side of the property as shown on Figures 2-2 and 2-3. This former Building D site has already been filled with soil transported from the Engineering Lab to Walnut Orchard, previously evaluated under the First SEA. The construction access road would minimize the number of trucks that would enter the main Walnut Orchard complex to avoid potential impacts to operational activities. The filled areas would be replanted with a mix of native and non-invasive vegetation potentially including grasses, shrubs, and trees in accord with the SWPPP.

The TVA road at Walnut Orchard would also be repaired following completion of soil transport activities. Road repair activities could entail fixing localized portions of the road or repairs of the full roadway including removal of existing pavement and replacement with upgraded pavement. The appropriate repairs would be determined at the completion of soil transport activities. For the purposes of this analysis, it is conservatively assumed the entire road would be replaced and repaved.

The costs associated with soil deposition at Walnut Orchard are significantly higher than the costs of disposing of the soil at an existing landfill. However, the transportation distances are shorter between the Engineering Lab and Walnut Orchard than between the Engineering Lab and an existing landfill, resulting in a shorter overall trucking duration. Additionally, deposition of soil at Walnut Orchard would create space that could be used for laydown and/or create more natural space.

Figure 2-2. Walnut Orchard Soil Deposition Alternative B1

Figure 2-3. Walnut Orchard Soil Deposition Alternative B2

2.5.2.2 Stormwater Chamber

Under this alternative, TVA would also consider the construction of an enclosed stormwater chamber at the same location as the stormwater detention pond that was evaluated in the Revised Phase 1 SEA. The stormwater chamber would be an underground system for the

collection and controlled release of stormwater from the Engineering Lab property. The outfall location for the stormwater chamber would be the same location as for the stormwater detention pond. The outfall would be located on the west side of the pond/chamber and discharge offsite to the west of the Engineering Lab property into an existing intermittent stream. The chamber consists of several individual parallel rows of cylindrical, arched chambers with inlets to allow the collection and storage of stormwater, and a single combined outlet that would control the release of the stormwater offsite to the western boundary of the Engineering Lab facility. The outfall could consist of a pipe placed in a concrete headwall at the western side of the pond or chamber emptying into a concrete flume with a riprap extension down a slope toward the western side of the site, emptying into the drainage that runs along that portion of the site. Alternatively, the outfall could discharge along a riprap only lined slope. The outfall could extend above or below an existing sanitary sewer line in the vicinity. Pavement would be placed above and adjacent to the chamber for installation of a parking lot. The chamber could be accessed for inspection and maintenance through access ports.

2.5.3 Alternative C – Soil Deposition at an Existing Offsite Landfill and Construction of a Stormwater Chamber

Under this alternative, TVA would transport up to 37,000 cubic yards of soil to and from the Engineering Labs; soil transported offsite would go to an existing landfill within 30 miles of the Engineering Labs, one of the three landfills identified in Table 2-1. As described under Alternative B, TVA would conduct soil sampling prior to disposal at the landfill. Also as described under Alternative B, it is possible additional soil would also need to be brought into the Engineering Labs site for use as stable fill material (the soil being removed from the site is unsuited for this use). This would come from an existing, licensed, and qualified (Section 106 compliant) source location or from Walnut Orchard. Total soil moved would be a maximum of 37,000 cubic yards.

Alternative C would also include the potential stormwater chamber option as described under Alternative B.

2.5.4 Alternatives Considered and Eliminated

In addition to the alternatives described above, TVA considered two additional alternatives for the reuse of the soils from the Engineering Labs.

2.5.4.1 Alternative D – Bull Run

TVA considered reusing the soil from the Engineering Labs as cover soil for the proposed Bull Run Fossil Plant ash impoundment closure project. As described under Alternative B, TVA would conduct soil sampling and only soil deemed suitable for reuse would have been eligible for transport for reuse as cover material at the Bull Run impoundment. If necessary, Engineering Lab soil would have been staged in a laydown area at Bull Run prior to final placement on the former impoundment. TVA eliminated this alternative from consideration because ongoing TVA's ongoing and porposed activities at Bull Run could result in increased vehicle traffic and

TVA wants to avoid potential cumulative effects to transportation in the vicinity and because of the ongoing monitoring activities at Bull Run.

2.5.4.2 Alternative E – Nearby Properties

TVA evaluated transporting the soil from the Engineering Labs and to one of three nearby private properties:

- Covenant Life Church in Clinton, Tennessee to fill in and level out an existing disturbed area for purposes of creating an RV campground on the church grounds. Soils would be transported by truck via similar routes as depicted in the Phase 1 SEA (July 2019)
- RTE Machine and Fabrication in Norris, Tennessee to fill in areas of lower elevation, or where rock crushing has occurred previously thus enhancing the property's development potential and providing opportunities for business expansion. Soils would be transported by truck via an access road constructed between the Engineering Labs and RTE.
- Perfect Polish Concrete in Norris Tennessee to fill in areas of lower elevation, enhancing the property's development potential and providing opportunities for business expansion. Soils would be transported by truck via an access road constructed between the Engineering Labs and Perfect Polish Concrete and/or via Pine Road to Sawmill Road.

For all three locations, as described under Alternative B, any existing vegetation would be removed and would need to be hauled offsite or mulched and deposited onsite. Topsoil would be excavated, stockpiled, and then redistributed over the fill. Soil erosion control BMPs would be utilized throughout project activities. Also as described under Alternative B, TVA would conduct soil sampling at the Engineering Lab and only soil deemed suitable for reuse as fill material would be eligible for transport. TVA would not acquire any property.

All of these offsite private locations were eliminated from consideration for the following reasons:

- Environmental conditions at the private locations could result in additional environmental analysis or permitting that could result in impacts to the project schedule.
    - Archaeological, biological, and ecological site surveys would be required to fully evaluate potential impacts associated with the proposed action. The time required to complete these reviews would significantly impact the project schedule and, consequently would impact other TVA schedules.
    - TVA would require additional soil sampling at the private properties to determine existing conditions at these locations. This could adversely affect the private property owners. This could also potentially impact the project schedule.
- Involving the private properties would impact the property owner's ability to take specific actions on their property during the time TVA was conducting the assessment.

- Cost and time for landowners to determine how much soil they could accept, where the soil would be placed, and final site disposition have the potential to impact the project schedule.
- Potential long-term risk/legal liability risk to TVA associated with donated soil.
- Certain permitting and planning steps would take longer due to the deposition of soil on a private property.

For these reasons, deposition of the soil from the Engineering Labs at an offsite private property was eliminated from consideration.

2.6 Alternatives Summary

The alternatives identified above were evaluated based on a set of criteria including: cost, efficiency, workplace design, sustainability, environmental impacts, and meeting TVA's commitment to demonstrate financial and environmental stewardship. All of the alternatives, with the exception of the No Action Alternative, partially met the project purpose and need,

TVA has determined that from the standpoint of NEPA, there are three alternatives that will be carried forward in the EA: Alternative A – the No Action Alternative, Alternative B – Soil Deposition at Walnut Orchard and an Existing Offsite Landfill, and Alternative C – Soil Deposition at an Existing Offsite Landfill, as described above.

2.7 Comparison of Alternatives

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

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

Resource Area	Impacts from Alternatives*		
	A (No Action)	**B (Walnut Orchard and Landfill)**	**C (Landfill)**
Land Use	None	None	None
Wildlife	None	None	None
Vegetation	None	None	None
Threatened and Endangered Species	None	None	None
Surface Water	Temporary and Minor	Temporary and Minor	None
Historic and Archaeological Resources	None	None	None
Aesthetics	Minor	Temporary and Minor	Temporary and Minor
Transportation	None	Temporary and Minor	Temporary and Minor

Resource Area	Impacts from Alternatives*		
	A (No Action)	B (Walnut Orchard and Landfill)	C (Landfill)
Air Quality	None	Temporary and Minor	Temporary and Minor
Noise	Temporary and Minor	Temporary and Minor	Temporary and Minor
Socioeconomics	None	None	None
Environmental Justice	None	None	None
Solid and Hazardous Waste	None	Temporary and Minor	Temporary and Minor

* Impacts listed in this table are considered adverse unless otherwise noted.

2.8 Identification of Mitigation Measure

TVA would implement various best management practices (BMPs) to minimize potential environmental impacts resulting from renovation and construction activities. Additionally, specific mitigation measures would be implemented to address specific impacts. These BMPs and mitigation measures are outlined below and discussed in further detail in Chapter 3.

2.8.1 Best Management Practices

TVA would implement BMPs throughout the soil transport and deposition activities including but not limited to:

- TVA has obtained coverage under A General Permit for Stormwater Discharges Associated with Construction Activities TNR100000 (TDEC 2016) and developed a project-specific SWPPP with regard to the Phase 1 project activities at both the Engineering Lab TNR135805 and Walnut Orchard TNR135883. The SWPPP includes erosion control measures such as sediment traps, soil fences, and other BMPs that would be implemented to reduce impacts to surface water quality from sedimentation and soil erosion. The SWPPP would be updated to provide coverage for the additional soil transport activities.
- Dust suppression mitigation BMPs such as covering trucks before they leave the site, and wet suppression of soil stockpiles and deposition areas would be implemented throughout the project activities to reduce fugitive dust emissions.
- Vehicles would be maintained in good operating order to minimize emission of pollutants.
- Spills of oils, fuels, or other potentially hazardous materials would be addressed immediately and BMPs such as secondary containment and spill kits maintained onsite during construction would be used to assure that hazardous substances would not be released to the environment.
- Truck wheels would be washed prior to leaving the site to minimize the spread of loose soil and mud onto the local roadways.

- To reduce impacts to air quality, all vehicles are properly maintained, that new emission control technologies are utilized on these vehicles to the extent possible, and that unnecessary heavy duty vehicle idling is minimized.

2.8.2 Mitigation Measures

To minimize and mitigate potential impacts to human health and the environment, TVA could employ the following mitigation measures.

- To minimize potential impacts to threatened and endangered bat species, tree removal would likely occur between November 15 and March 31 and TVA would implement the identified conservation measures identified in the bat strategy form in Appendix A.
- To minimize potential impacts to undiscovered archaeological resources at borrow locations, before authorizing the use of any soil borrow in connection with the proposed action, TVA would satisfy all requirements of Section 106 of the National Historic Preservation Act with regard to that borrow site.
- To minimize potential impacts to transportation resources, TVA could travel the transportation route with a representative of the City prior to construction to identify areas of concern that may have occurred between the date of the field investigation and the commencement of the hauling operations.
- TVA would designate a point of contact to address any issues that may develop during the hauling and construction operations.
- Once soil transport activities begin, if it is determined that the noise and vibration from truck traffic are a nuisance to the surrounding community or congestion is an issue for drivers during peak traffic hours, TVA could work with the City to adjust the times of hauling operations to avoid additional disturbances.
- To mitigate potential impacts to transportation resources, TVA could compensate the City as necessary, to prevent certain damages and to repair damages to infrastructure, if any, that would directly result or are directly resulting from TVA's activities associated with the transportation of the Engineering Lab and Walnut Orchard soil activities. Alternatively, with the appropriate approvals, TVA or its contractors conduct the repairs.
- Compensation associated with repairs following the completion of soil transport and construction activities is limited to repairs needed to bring the infrastructure back to existing conditions, after impacts resulting from TVA activities.
- To minimize the potential for impacts to utilities, TVA could place steel plates on the roads or could coordinate with the utility providers as needed to place steel plates to minimize the potential for impacts.
- TVA could monitor the potential for vibrations created by any soil compaction activities. Should vibrations be identified from the soil compaction activities which result in damage to buildings or property in the vicinity, TVA would stop compacting activities until appropriate mitigation measures are identified. Mitigation could include modifying compaction methods, installation of vibration monitors, taking photography and

maintaining documentation of existing damages to structures, if any, monitoring of changes in structures, if any, and/or the potential to provide compensation, as appropriate, should it be determined that structural damage, if any, was a direct result of the vibrations associated with TVA's activities.

2.9 Preferred Alternative

Alternative B, Soil Deposition at Walnut Orchard and an Existing Offsite Landfill and Construction of a Stormwater Chamber, has been identified as TVA's preferred alternative. This alternative provides TVA the greatest flexibility in potential use of soils suitable for reuse as fill while also maintaining the flexibility of disposing soils unsuitable for use as fill at an appropriate location. Construction of a stormwater chamber, rather than the previously considered stormwater pond, would allow for creation of additional needed parking helping meet the overall project purpose and need.

CHAPTER 3 - AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the affected environment (existing conditions of environmental resources in the project area) and the anticipated environmental consequences that would occur from adoption of the alternatives described in Chapter 2.

3.1 LAND USE

3.1.1 Affected Environment

The Engineering Lab and Walnut Orchard facilities are both located within City of Norris limits in Anderson County, Tennessee. The Engineering Lab is located in an area zoned by the City for industrial uses; however the parcel is owned by United States and as such is generally not subject to local zoning requirements. The Engineering Lab is an existing developed facility utilized for various purposes including laboratories, offices, and storage facilities. Construction of the Engineering Lab began in the early 1930s and was TVA's primary civil and mechanical engineering research facility from 1935 to 1968. Land cover is predominantly developed with some vegetated and landscaped areas surrounding the structures.

The Walnut Orchard site is located in an area zoned by the City as "government"; and the parcel is owned by TVA. It is zoned as "Project Operations" land (zone 2) in the Norris Reservoir Land Management Plan. TVA land immediately adjacent to the Walnut Orchard on the east side is known as the Clinch River Bluff Habitat Protection Area. The other surrounding TVA property is zoned as Natural Resources Conservation (Zone 4). A public boat ramp is present on TVA property to the northwest of Walnut Orchard, along the river. Walnut Orchard is an existing TVA developed facility utilized for various purposes including office space, laboratories, and boat and equipment storage. Land cover is predominantly developed with some vegetated and landscaped areas surrounding the structures.

All three existing offsite landfills referenced in this EA are permitted by the State of Tennessee for landfill operations.

3.1.2 Environmental Consequences

3.1.2.1 Alternative A – No Action

Under Alternative A, the No Action Alternative, TVA would not transport soil off of the Engineering Lab property. Land use at the Engineering Lab would remain unchanged, though modifications may be required in the Phase 1 construction activities and long-term plans due to the soil remaining onsite. No soil would be deposited at Walnut Orchard or any of the offsite landfills and the stormwater chamber would not be constructed. Therefore, no direct or indirect impacts to land use would occur as a result of the no action alternative. However, if the soils are not removed, the Phase 1 construction activities cannot be completed as planned.

3.1.2.2 Alternative B – Soil Deposition at Walnut Orchard and an Existing Offsite Landfill and Construction of a Stormwater Chamber

The transport of soil from the Engineering Lab to Walnut Orchard or any of the offsite landfills and the construction of a stormwater chamber at the Engineering Lab would not change land use at any of these facilities. At the Engineering Lab, land use would remain unchanged. The site would continue to be used for industrial purposes. While there would be some modification at the site in accordance with the activities evaluated under the Revised Phase 1 EA, the overall uses at the site would remain unchanged, thus, there would be no impacts to land use at the Engineering Lab.

The deposition of soil at the Walnut Orchard would not change land use at the site beyond that previously described and evaluated in the Revised Phase 1 EA. That evaluated is incorporated here by reference. Replacement of the TVA road at Walnut Orchard would not impact land use at the site.

Transfer of some of the soil from the Engineering Labs to an existing offsite landfill would not result in any land use changes or impacts at the landfill.

Should TVA require borrow from an offsite source, this material would be obtained from an existing, licensed and qualified location or from TVA property. Therefore, there would be no impacts to land use associated with obtaining borrow material for the Engineering Lab.

3.1.2.3 Alternative C – Soil Deposition at an Existing Offsite Landfill and Construction of a Stormwater Chamber

Under Alternative C, the transport of soil from the Engineering Lab to any of the offsite landfills and construction of a stormwater chamber would not change the land use at either the Engineering Lab facility nor at the landfills. Therefore, there would be no impacts to land use under Alternative C.

3.2 WILDLIFE

3.2.1 Affected Environment

Habitat for terrestrial animal wildlife in the action area at Norris Engineering Complex has been described in the Revised Phase 1 EA. Additional wildlife habitat that may be impacted by the actions proposed under this Second Supplemental EA consists of approximately 2.5 acres of mowed and bush hogged grassy areas with fragmented, forest edge and scattered trees at Walnut Orchard. Approximately 0.5 acres of this is forested habitat that has the potential to be cleared. This area has been previously disturbed and was previously reviewed under CEC #40580 in March 2019 for habitat suitability. Wildlife communities that may utilize mixed deciduous-evergreen forest fragments and maintained grassy areas are described in the Revised Phase 1 EA. Due to the proximity of the Engineering Lab and Walnut Orchard properties, the wildlife communities at each location would be very similar, therefore, the analysis in the Revised Phase 1 EA is applicable to both locations.

Review of the TVA Regional Natural Heritage database in August 2019 indicated that no additional caves or other unique or important terrestrial habitats were identified within three miles of the project area than those previously addressed in the Revised Phase 1 EA.

Review of the United States Fish and Wildlife (USFWS) Information for Planning and Consultation (IPaC https://ecos.fws.gov/ipac/; August 2019) resulted in two additional birds of conservation concern that have the potential to occur in the project area and that were not previously reviewed in the Revised Phase 1 EA: bald eagle (*haliaeetus leucocephalus*) and Canada warbler (*Cardellina canadensis*). Of all the migratory birds of conservation concern extracted from the IPaC over the current and previous NEPA reviews the project area contains potential habitat for Canada warbler, golden-winged warbler, Kentucky warbler, prairie warbler, red-headed woodpecker, wood thrush, and yellow-bellied sapsucker.

3.2.2 Environmental Consequences

3.2.2.1 Alternative A – No Action

Under Alternative A, TVA would not relocate and dispose of soil from the Engineering Labs and the stormwater chamber would not be constructed. No additional vegetation clearing would occur at Walnut Orchard. No direct, indirect, or cumulative impacts to wildlife would occur as a result of Alternative A. However, if the soils are not removed, the Phase 1 construction activities cannot be completed as planned.

3.2.2.2 Alternative B – Soil Deposition at Walnut Orchard and an Existing Offsite Landfill and Construction of a Stormwater Chamber

Under Alternative B, all impacts to terrestrial wildlife and their habitats found in the area of proposed excavation (Engineering Lab), including the proposed location for the stormwater chamber, have been reviewed in the Revised Phase 1 EA. TVA would excavate up to 37,000 cubic yards of soil from the Engineering Labs and transport that soil to Walnut Orchard and/or an existing, permitted, offsite landfill. The soil transported from the Engineering Labs to Walnut Orchard would be deposited on currently vegetated areas of the Walnut Orchard property. All vegetation would be cleared prior to deposition, any trees or brush removed would be hauled offsite or mulched and deposited onsite. The filled areas would be replanted with a mix of native and non-invasive vegetation potentially including grasses, shrubs, and trees in accord with the SWPPP. Proposed actions under this alternative could remove up to approximately 2.5 acres of maintained grassy and forest edge habitat at the Walnut Orchard depending on if Alternative B1 or B2 is selected. Impacts to wildlife species would be the same under either Alternative B1 or B2.

Common wildlife may utilize these areas for nesting and foraging. Direct effects to some individuals that are immobile during the time of vegetation removal may occur, particularly if construction activities transpire during breeding/nesting seasons. Removal of this vegetation also would remove foraging and future nesting sites for individuals utilizing the area. However, the actions are not likely to affect populations of species common to the area, as proposed

impacts occur over a relatively small area and similar habitat exists in the surrounding landscape.

Similarly, Canada warbler, golden-winged warbler, Kentucky warbler, prairie warbler, red-headed woodpecker, wood thrush, and yellow-bellied sapsucker may use the forested areas in the action area for foraging or nesting. Should vegetation removal occur during the nesting seasons of these birds, direct impacts to individuals may occur to some individuals that may be immobile at that time (i.e. nestlings or eggs). Removal of this vegetation also would remove foraging and future nesting sites for individuals utilizing the area. Similarly suitable habitat is prevalent across the landscape immediately surrounding the proposed action area. The small area of the proposed actions has led TVA biologists to determine that the proposed actions would not impact populations of migratory birds of conservation concern.

Replacement of the TVA road at Walnut Orchard would not affect any habitat as it would be a replacement of the existing roadway. Therefore, impacts to wildlife would not be anticipated in association with the road replacement.

Should TVA require borrow from an offsite source, this material would be obtained from an existing, permitted location. Therefore, there would be no new impacts to wildlife associated with obtaining borrow material for the Engineering Lab.

3.2.2.3 Alternative C – Soil Deposition at an Existing Offsite Landfill and Construction of a Stormwater Chamber

Under this alternative, all of the soil removed from the Engineering Lab would be transported to an existing offsite landfill within 30 miles of the Engineering Labs. All impacts to terrestrial wildlife and their habitats found in the area of proposed excavation (Engineering Lab), including the location for the proposed stormwater chamber, have been reviewed in the Revised Phase 1 EA and are incorporated here by reference and no new impacts would be anticipated. No impacts to wildlife are anticipated due to the transportation and deposition of fill material at an offsite landfill. As described for Alternative B, the construction and possible extension of the stormwater outfall could result in the removal of additional vegetation along the western side of the property and potential impacts would be the same as evaluated under the Revised Phase 1 EA.

3.3 VEGETATION

3.3.1 Affected Environment

Vegetation in the Phase 1 project area at the Engineering Lab, including the location for the proposed stormwater chamber, was evaluated in the Revised Phase 1 EA. The majority of that vegetation has been removed as a result of the Phase 1 construction.

Vegetation within the project area at Walnut Orchard consists of heavily disturbed herbaceous habitats (lawns), isolated trees, and fragmented woodlots. The habitats within the action area are common throughout the region and possess no conservation value. Vegetated areas are surrounded by development and contain a large coverage of invasive plant species.

3.3.2 Environmental Consequences

3.3.2.1 Alternative A – No Action

Under Alternative A, the No Action Alternative, no soil would be transported from the Engineering Lab to Walnut Orchard or an offsite landfill and the stormwater chamber would not be constructed. Phase 1 project activities would continue at the Engineering Lab and some vegetation would be replanted in certain areas at the site after the completion of Phase 1 construction. All vegetation would remain in place in its current state at Walnut Orchard. No direct, indirect, or cumulative impacts to vegetation would occur as a result of adopting Alternative A. However, if the soils are not removed, the Phase 1 construction activities cannot be completed as planned.

3.3.2.2 Alternative B – Soil Deposition at Walnut Orchard and an Existing Offsite Landfill and Construction of a Stormwater Chamber

Under Action Alternative B, there would be no new impacts to vegetation within the Phase 1 construction area at the Engineering Lab, including the proposed construction of the stormwater chamber, beyond those evaluated in the Revised Phase 1 EA which is incorporated here by reference. There would be additional removal of vegetation associated with the construction and possible extension of the stormwater outfall along the western side of the property. Impacts to vegetation associated with this action would be the same as described in the Revised Phase 1 EA. It is likely all of the approximately 2.5 acres of mowed and bush hogged grassy areas with fragmented, forest edge and scattered trees at Walnut Orchard would be impacted. However, all plant habitats present onsite are common and well represented throughout the region and possess no conservation value. The filled areas would be replanted with a mix of native and non-invasive vegetation potentially including grasses, shrubs, and trees. There would be no impacts to vegetation at any of the proposed offsite landfills as those are existing, permitted landfills. Replacement of the TVA road at Walnut Orchard would not affect any vegetation as it would be a replacement of the existing roadway. Overall, adoption of Alternative B would have no impact on the vegetation of the region.

Should TVA require borrow from an offsite source, this material would be obtained from an existing, permitted location. Therefore, there would be new no impacts to vegetation associated with obtaining borrow material for the Engineering Lab.

3.3.2.3 Alternative C – Soil Deposition at an Existing Offsite Landfill and Construction of a Stormwater Chamber

Impacts to vegetation under Alternative C would be the same at the Engineering Lab and the offsite landfills as described under Alternative B. There would be no impacts to vegetation at Walnut Orchard under Alternative C. No impacts to vegetation are anticipated due to the transportation and deposition of fill material at an offsite landfill.

3.4 THREATENED AND ENDANGERED SPECIES

3.4.1 Affected Environment

3.4.1.1 Threatened and Endangered Wildlife

The Revised Phase 1 EA addressed Threatened and Endangered wildlife and those results are incorporated here by reference. A review of the terrestrial animal species in the TVA Regional Heritage database in August 2019 result in records of one additional state-listed species (little brown bat) within three miles of the project footprint beyond those evaluated in the Revised Phase 1 EA. Records of one additional federally protected species (bald eagle) also came out of this August 2019 review. Descriptions of these species' habitat requirements are below. Descriptions of habitat requirements for previously identified terrestrial animal species of concern can be found in the Revised Phase 1 EA. Terrestrial animal species of conservation concern resulting from the 2017 and 2019 TVA database searches and reviewed for the proposed actions in this SEA are combined in Table 3.4-1.

Table 3.4-1. Federally listed terrestrial animal species reported from Anderson County, Tennessee and other species of conservation concern documented within three miles of Phase 1 East Region Consolidation – Norris Properties – Second Supplemental EA [1]

Common Name	Scientific Name	Status[2]	
		Federal	State (Rank[3])
Amphibians			
Hellbender	*Cryptobranchus alleganiensis*	PS	D(S3)
Birds			
Bald eagle	*Haliaeetus leucocephalus*	DM	D(S3)
Mammals			
Eastern small-footed bat	*Myotis leibii*	--	D(S2S3)
Gray bat	*Myotis grisescens*	LE	E(S2)
Indiana bat	*Myotis sodalis*	LE	E(S1)
Little brown bat	*Myotis lucifugus*	--	T(S3)
Northern long-eared bat	*Myotis septentrionalis*	LT	-(S1S2)
Smoky shrew	*Sorex fumeus*	--	D(S4)
Southeastern shrew	*Sorex longirostris*	--	D(S4)

[1] Source: TVA Regional Natural Heritage Database, extracted 8/30/2019; USFWS Information for Planning and Conservation (IPaC) resource list (https://ecos.fws.gov/ipac/), accessed 8/30/2019.
[2] Status Codes: D = Deemed in Need of Management; DM = Delisted but still being Monitored; E = Endangered; LE = Listed Endangered; LT = Listed Threatened; PS = Partial Status; T = Listed Threatened.
[3] State Ranks: S1 = Critically Imperiled; S2 = Imperiled; S3 = Rare; S4 = Apparently Secure.

Little brown bats primarily hibernate in caves and mines. During summer this species can be found in hot buildings where females form maternity colonies, hollow trees, and bridges. Colonies are usually close to water bodies where these bats prefer to forage. Foraging also

occurs among trees in open areas (Harvey et al, 2011, NatureServe 2019). The nearest known little brown bat record is from a cave approximately 1.4 miles from the proposed footprint. There are eight cave records within three miles, the nearest of which is approximately 1.3 miles from the project footprint. No caves were observed during field reviews in March 2019. No winter roosting habitat occurs in the proposed project area. The closest known summer roosting site is approximately 6.0 miles away in the roof of a floating cabin. No bridges or buildings would be impacted by the proposed actions. Suitable foraging habitat for little brown bat is present in the action area over and along forest edges.

Bald eagles are protected under the Bald and Golden Eagle Protection Act (USFWS 2013). This species is associated with larger mature trees capable of supporting its massive nests. These are usually found near larger waterways where the eagles forage (USFWS 2007). One bald eagle nest is known from Anderson County, Tennessee, approximately 3.6 miles away. No suitable habitat for bald eagle exists in the project action area. No bald eagle nests were observed within 660 feet of the action areas during field reviews.

3.4.1.2 Threatened and Endangered Vegetation

The Revised Phase 1 EA addressed Threatened and Endangered vegetation and those results are incorporated here by reference. An October 2018 review of the TVA Natural Heritage Database indicated that nine state-listed and no federally listed plants have been documented from within a five mile vicinity of the project area (Table 3.4-2). No federally listed plants are known to occur in Anderson County, Tennessee. All areas within the Engineering Lab, Walnut Orchard, and the offsite landfills are heavily disturbed and contain no habitats capable of supporting listed species.

Table 3.4-2. State and federally listed plant species previously documented from within a 5 mile vicinity of the East Region Consolidation – Norris Properties project area.[1]

Common Name	Scientific Name	Federal Status[2]	State Status[2]	State Rank[3]
Spreading False-foxglove	*Aureolaria patula*	-	S	S3
Tall Larkspur	*Delphinium exaltatum*	-	E	S2
Northern Bush-honeysuckle	*Diervilla lonicera*	-	T	S2
Butternut	*Juglans cinerea*	-	T	S3
Meehania Mint	*Meehania cordata*	-	T	S2
American ginseng	*Panax quinquefolius*	-	S-CE	S3S4
Large-leaved Grass-of-parnassus	*Parnassia grandifolia*	-	S	S3
Sullivantia	*Sullivantia sullivantii*	-	E	S1
Northern White Cedar	*Thuja occidentalis*	-	S	S3

[1] Source: TVA Natural Heritage Database, queried in October 2018.
[2] Status Codes: E = Listed Endangered; S = Listed Special Concern; S-CE = Listed Special Concern/ Commercially Exploited; T = Listed Threatened.
[3] State Ranks: S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable; S4 = Apparently secure S#S# = Denotes a range of ranks because the exact rarity of the element is uncertain (e.g., S1S2)

3.4.2 Environmental Consequences

3.4.2.1 Alternative A – No Action

Under Alternative A, TVA would not relocate and dispose of soil from the Engineering Labs and the stormwater chamber would not be constructed. All vegetation would remain in place in their current state at the Engineering Lab and Walnut Orchard. Therefore, no direct, indirect, or cumulative impacts to any threatened or endangered terrestrial species would occur as a result of Alternative A. However, if the soils are not removed, the Phase 1 construction activities cannot be completed as planned.

3.4.2.2 *Alternative B – Soil Deposition at Walnut Orchard and an Existing Offsite Landfill and Construction of a Stormwater Chamber*

Wildlife

Impacts to threatened and endangered wildlife in the area of proposed excavation (Engineering Lab), including the proposed location for the stormwater chamber, have been reviewed in the Revised Phase 1 EA, those impacts are incorporated here by reference. The change from a stormwater pond to a stormwater chamber would not affect any new habitats beyond those previously evaluated.

The soil transported from the Engineering Labs to Walnut Orchard would be deposited on currently vegetated areas of the Walnut Orchard property which would be cleared prior to deposition. The filled areas would be replanted with a mix of native and non-invasive vegetation potentially including grasses, shrubs, and trees. Species not previously addressed under the Revised Phase 1 EA were bald eagle and little brown bat. Because no suitable habitat for bald eagle exists at the Phase 1 construction site at the Engineering Lab, bald eagles would not be impacted by the proposed actions. Potentially suitable summer roosting and foraging habitat for little brown bat does occur in and around forested areas at the Engineering Lab, however no trees at the Engineering Lab would be removed in association with the soil transport activities. Therefore, direct effects would be avoided. Individuals disturbed by previous vegetation removal are expected to have flushed from the area to adjacent habitat where similarly suitable, if not more suitable, habitat exists. Therefore, proposed actions are not expected to impact populations of little brown bat at the Engineering Lab.

Proposed actions under this alternative could also remove up to 2.5 acres of maintained grassy and forest edge habitat at the Walnut Orchard depending on if Alternative B1 or B2 is selected. Impacts to threatened and endangered species would be the same under either Alternative B1 or B2. Approximately 0.5 acres of this 2.5 acre area of maximum limit of disturbance includes trees. Trees in the project area do not have suitable exfoliating bark, cracks, or crevices for tree-roosting bat species of concern identified in Table 3.4-1. None of the trees proposed for removal under Alternative B1 or B2 provide suitable summer roosting habitat for eastern small-footed bat, Indiana bat, little brown bat, or northern long-eared bat. A small amount of foraging habitat would be permanently removed under Alternative B. Similarly suitable forested foraging habitat occurs across the landscape. Due to the small size of the proposed project actions at Walnut

Orchard and the lack of suitable summer roosting habitat, populations of eastern small-footed bat and little brown bat are not expected to be impacted under Alternative B.

A number of activities associated with the proposed project were addressed in TVA's programmatic consultation with the U.S. Fish and Wildlife Service on routine actions and federally listed bats in accordance with ESA Section 7(a)(2) and completed in April 2018. For those activities with potential to affect bats, TVA committed to implementing specific conservation measures. These activities and associated conservation measures are identified on page 5 of the TVA Bat Strategy Project Screening Form (Appendix A) and need to be reviewed and implemented as part of the proposed project. With the implementation of the identified conservation measures, proposed actions would not significantly impact gray bat, Indiana bat, or northern long-eared bat.

Proposed actions at Walnut Orchard under this alternative would not impact any habitat for bald eagle or hellbender. Neither of these species would be impacted by the proposed actions under Alternative B.

Moderately suitable habitat may exist in the 2.5 acres of habitat within the project footprint at Walnut Orchard for smoky shrew and southeastern shrew. A small amount of habitat (heavy ground cover) may occur in the forested area in the northwest portion of the action area. More suitable habitat exists adjacent to the action area in more intact forested areas. Therefore nesting is less likely to occur in the areas proposed to be impacted, though foraging in these areas is still possible. Direct effects to some individuals may occur, though those individuals foraging in the areas are expected to flee when disturbed. Proposed actions are not likely to affect populations of either shrew species. Populations of smoky shrew and southeastern shrew would not be impacted by the proposed project activities.

Replacement of the TVA road at Walnut Orchard would not affect any habitat as it would be a replacement of the existing roadway. Therefore, impacts to threatened and endangered wildlife would not be anticipated.

Should TVA require borrow from an offsite source, this material would be obtained from an existing, permitted location. Therefore, there would be new no impacts to threatened and endangered species associated with obtaining borrow material for the Engineering Lab.

Vegetation

Under Action Alternative B, it is likely all of the approximately 2.5 acres of mowed and bush hogged grassy areas with fragmented, forest edge and scattered trees at Walnut Orchard would be impacted. No direct, indirect, or cumulative impacts to state or federally listed plants would occur with adoption of Alternative B because no such species are present in the action area at the Engineering Lab (including the proposed location of the stormwater chamber), Walnut Orchard, or any of the offsite landfills.

3.4.2.3 Alternative C – Soil Deposition at an Existing Offsite Landfill and Construction of a Stormwater Chamber

Wildlife

Under this alternative, all of the soil removed from the Engineering Lab would be transported to an existing offsite landfill within 30 miles of the Engineering Labs. Impacts to terrestrial animal species (except bald eagle and little brown bat) and potential habitat found in the area of proposed excavation, including the stormwater chamber location, have been reviewed in the Revised Phase 1 EA. No habitat for bald eagle exists at the excavation site. This species would not be impacted by actions proposed under Alternative C. No impacts to populations of little brown bat are anticipated under Alternative C.

Vegetation

Under Alternative C, there would be no impacts to threatened and endangered plants either at the Engineering Lab or any of the offsite landfill locations.

3.5 SURFACE WATER

3.5.1 Affected Environment

Surface water was evaluated in the Revised Phase 1 EA, the results of that analysis are applicable to the current project actions and are incorporated by reference. Both the Norris Engineering Labs and the TVA Walnut Orchard project area are located in Anderson County, Tennessee and drain to water ways within the (8-digit HUC 06010207) Lower Clinch River watershed. The surface water streams in the vicinity of this project are listed below in Table 3.5-1.

The ecological health of Norris Reservoir has been monitored using the same methodology since 1994. Ecological health evaluations focus on five indicators: dissolved oxygen, chlorophyll, sediment quality, benthic macroinvertebrate community (bottom life), and the fish assemblage. TVA monitors three locations on Norris Reservoir—the deep, still water near the dam, called the forebay (Clinch River Mile 80.0), and two mid-reservoir locations (Clinch River Mile 125.0 and Powell River Mile 30.0). These overall health ratings are displayed in Figure 3.5-1 and Table 3.5-1 below (TVA 2019).

Chlorophyll, fish, bottom life and sediment all rated good in the latest 2017 surveys. The most significant ecological health issue on Norris is low dissolved oxygen concentrations. Dissolved oxygen rated “poor” at all three monitoring locations because the lower half of the water column contained little oxygen (less than two milligrams per liter) during a portion of summer and autumn (TVA 2019).

This issue is mostly the result of the reservoir’s basic characteristics. Norris is a deep tributary storage reservoir with a long summer retention time; it can take more than 200 days for water to move through the reservoir. As the summer sun heats the surface of the reservoir, a warmer layer of water forms on top of a cooler layer. The layers do not mix, so the bottom layer

becomes devoid of oxygen as the oxygen is used up by decaying plants and other materials that settle to the bottom (TVA 2019).

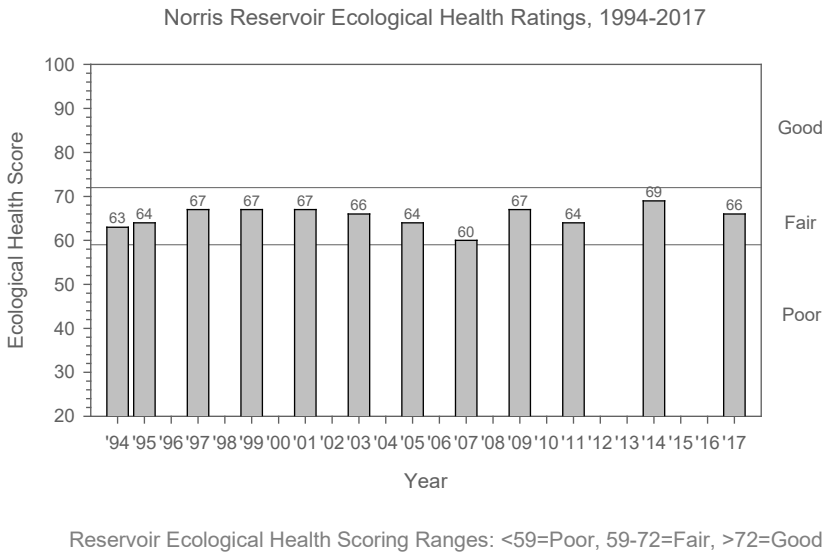

Figure 3.5-1 Norris Overall Health Rating for Norris Reservoir

Table 3.5-1 Norris 2017 Health Rating Results for Norris Reservoir

Monitoring location	Dissolved oxygen	Chlorophyll	Fish	Bottom life	Sediment
Forebay	Poor	Good	Good	Fair	Fair
Mid-reservoir (Clinch River)	Poor	Good	Good	Good	Good
Mid-reservoir (Powell River)	Poor	Good	Good	Fair	Good

As part of TVA's Reservoir Release Improvement Program, TVA has installed aeration equipment at Norris Dam to improve the quality of water downstream from the dam in the Clinch River (TVA 2019).

Precipitation in the general area of the proposed project averages about 54.12 inches per year. The wettest month is December with approximately 5.3 inches of precipitation, and the driest month is October with 2.91 inches. The average annual air temperature is 55.85 degrees Fahrenheit, ranging from a monthly average of 43.9 degrees Fahrenheit to 67.8 degrees Fahrenheit (US Climate Data 2016). Stream flow varies with rainfall and averages about 24.75 inches of runoff per year, i.e., approximately 1.82 cubic feet per second, per square mile of drainage area (USGS 2008).

The federal Clean Water Act requires all states to identify all waters where required pollution controls are not sufficient to attain or maintain applicable water quality standards and to establish priorities for the development of limits based on the severity of the pollution and the

sensitivity of the established uses of those waters. States are required to submit reports to the United States Environmental Protection Agency (USEPA). The term "303(d) list" refers to the list of impaired and threatened streams and water bodies identified by the state. The Clinch River in the vicinity of the project is currently listed on Tennessee's 303(d) list for temperature and flow alterations, due to upstream impoundment, Norris Dam (TDEC 2018). The Lower Clinch River in the vicinity of the project is also listed as an Exceptional Waters of Tennessee due to its classification as a State Scenic River. Buffalo Creek in the vicinity of the Engineering Lab Complex and Walnut Orchard is also listed on the 303(d) list for Nitrate + Nitrite, Total Phosphorus and E coli impairment, due to municipal point source and pasture grazing. There is an USEPA approved pathogen TMDL that address the pathogen pollutant. Table 3.5-2 provides a listing of local streams with their state (TDEC 2013) designated uses.

Table 3.5-2. Designations for Streams in the Vicinity of the Project Area

Stream	Use Classification[1]							
	NAV	DOM	IWS	FAL	REC	LWW	IRR	TS
Clinch River		X	X	X	X	X	X	X
Unnamed Tributary of Clinch River			X	X	X	X		
Buffalo Creek			X	X	X	X		

[1] Codes: DOM = Domestic Water Supply; IWS = Industrial Water Supply; FAL = Fish and Aquatic Life; REC = Recreation; LWW = Livestock Watering and Wildlife; IRR = Irrigation, NAV = Navigation, TS = Trout Stream
[2] Not in project area, shown for flow network.

3.5.2 Environmental Consequences

3.5.2.1 Alternative A – No Action

Under the No Action Alternative, TVA would not relocate and dispose of soil from the Engineering Lab and the stormwater chamber would not be constructed. Should soil need to be stockpiled onsite in a different configuration than the existing conditions, then with the implementation of BMPs to contain and reduce transport of the soil the impacts would be expected to be temporary and minimal at the Engineering Lab. As there would be no offsite transport of soil, there would be no impacts to surface water at Walnut Orchard or any of the landfills. However, if the soils are not removed, the Phase 1 construction activities cannot be completed as planned.

3.5.2.2 Alternative B – Soil Deposition at Walnut Orchard and an Existing Offsite Landfill and Construction of a Stormwater Chamber

Under Alternative B, a stormwater chamber system would be constructed in lieu of the stormwater pond proposed in the Revised Phase 1 EA. This system would be constructed under a parking area and would control the velocity of the water leaving the site. Construction would occur in the project area that was previously reviewed in the Revised Phase 1 EA and that review is incorporated here by reference. The outfall for the chamber system would be in the same location, the southwestern corner of the property, as proposed for the outfall of the stormwater pond previously evaluated in the Revised Phase 1 EA. Stormwater flows would be controlled in a similar fashion between the two systems. The outfall would consist of a pipe discharging from a concrete headwall into either a concrete flume with riprap extension or along

riprap only lined the slope to the unnamed creek along the western boundary of the property. The outfall could also be extended above or below the existing sanitary sewer line in that area to avoid potential erosional impacts to that line. Therefore, the change from a stormwater pond to a stormwater chamber system, would not be expected to result in any additional impacts beyond those previously evaluated.

The soil transported from the Engineering Labs to Walnut Orchard would be deposited on currently vegetated areas of the Walnut Orchard property. All vegetation would be cleared prior to deposition, any trees or brush removed would be hauled offsite or mulched and deposited onsite. A temporary access road would be constructed within the proposed project area and all soil deposition related activities would be concentrated within this area and all related traffic on this road. Topsoil would be removed, and temporarily stored onsite during the soil deposition activities, then topsoil would be redistributed on the newly deposited soil prior to reestablishing a vegetative cover of the area. TVA has coverage under a General Permit for Stormwater Discharges Associated with Construction Activities TNR100000 (TDEC 2016) and TVA has developed a project-specific SWPPP with regard to the Phase 1 project activities at both the Engineering Lab (TNR135805) and Walnut Orchard (TNR135883). TVA would update these permits and SWPPPs as needed to accommodate the proposed actions. TVA refers to the TDEC General Construction Stormwater permit (TDEC 2016) and the Tennessee Erosion and Sediment Control Handbook for BMP guidance and details (TDEC 2012) used in implementing these permits. The SWPPP includes erosion control measures such as sediment traps, soil fences, and other BMPs that would be implemented to reduce impacts to surface water quality from sedimentation and soil erosion.

Soil movement and grading activities would have similar impacts and would be covered under permits as previously discussed in the Revised Phase 1 EA. This transport would not directly impact surface water quality; however, fugitive dust emissions can contribute to sediment collection in waterways and also can be a safety concern on public roads. Therefore, dust suppression mitigation BMPs would be implemented during hauling practices to reduce fugitive emissions. If it is determined that additional water impacts would be triggered by the grading and soil transport activities then additional BMPs and/or permits would be implemented as deemed appropriate.

To ensure that soil would not contain contaminants that could potentially cause impacts to surface water and other resources, soil suitability for reuse was determined through testing associated with the First Phase 1 SEA as described in Chapter 1. All removed soils determined to be suitable for reuse as borrow could be transported offsite to Walnut Orchard. Unsuitable soils could only be deposited at the landfill.

Alternative B1 and Alternative B2- Under both Alternatives B1 and B2, the deposited soil would raise the elevation of the area surrounding the main complex at Walnut Orchard. Currently the surface surrounding the Walnut Orchard complex slopes away from the complex. The fill would raise the elevation of this surrounding area. The filled areas would be replanted with a mix of native and non-invasive vegetation potentially including grasses, shrubs, and trees in accord

with the SWPPP. Replacement of the TVA road at Walnut Orchard would be consistent with the existing grading and new soil disturbances would not be anticipated. The project would need to take into the account any changes in the stormwater conveyances and design the grading plan to ensure that neither of these options would create concentrated stormwater or flooding issues due to these contouring changes. No significant changes are expected in stormwater runoff or concentrated flow in association with the proposed actions. With the implementation of proper BMPs and the engineering of stormwater discharges, only temporary, minor impacts to surface water quality would be expected from the grading and deposition work. Transport of borrow by truck on existing roadway networks would not be expected to impact surface water quality under this alternative as long as dust suppression BMPs, such as cleaning of truck tires before they leave the Engineering Lab site, were implemented.

Soil deemed not suitable for reuse as fill would be stockpiled, covered with a plastic layer and appropriate BMPs would be installed around the stockpiled area until it could be transported to the landfill. With the implementation of a management plan and BMPs to contain and reduce transport of this unsuitable soil, impacts would be expected to be temporary and minor, however having soil onsite would potentially cause risks of impacts to water resources if BMPs were not maintained or if a significant rain or flooding event were to take place.

Should TVA require borrow from an offsite source, this material would be obtained from an existing, permitted location. Therefore, there would be new no impacts to surface water associated with obtaining borrow material for the Engineering Lab.

3.5.2.3 Alternative C – Soil Deposition at Walnut Orchard and an Existing Offsite Landfill and Construction of a Stormwater Chamber

All soil would be transported via trucks from the Engineering Lab facility to an offsite, existing, and permitted landfill. The pre-existing landfill should have necessary permits that would be protective of water quality. There would be no anticipated changes from the existing environment within the landfill boundaries under this under this alternative. Transport of this soil by truck on existing roadway networks would not be expected to impact surface water quality under this alternative as long as dust suppression BMPs were implemented.

3.6 HISTORIC AND ARCHAEOLOGICAL RESOURCES

3.6.1 Affected Environment

Federal agencies are required by the National Historic Preservation Act (NHPA) and by the NEPA to consider the possible effects of their undertakings on historic properties. The term “undertaking” means any project, activity, or program that is funded under the direct or indirect jurisdiction of a federal agency or is licensed, permitted, or assisted by a federal agency. An agency may fulfill its statutory obligations under NEPA by following the process outlined in the regulations implementing

Section 106 of NHPA, at 36 Code of Federal Regulations (CFR) Part 800. Under these regulations, considering an undertaking’s possible effects on historic properties is accomplished

through a four-step review process: (1) initiation (defining the undertaking and the area of potential effects (APE), and identifying the consulting parties); (2) identification (studies to determine whether cultural resources are present in the APE and whether they qualify as historic properties); (3) assessment of adverse effects (determining whether the undertaking would damage the qualities that make the property eligible for the National Register of Historic Places [NRHP]); and (4) resolution of adverse effects (by avoidance, minimization, or mitigation). Throughout the process the agency must consult with the appropriate State Historic Preservation Officer (SHPO), federally-recognized Indian tribes that have an interest in the undertaking, and any other party with a vested interest in the undertaking.

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

An undertaking may have effects on a historic property that are not adverse, if those effects do not diminish the qualities of the property that identify it as eligible for listing on the NRHP. However, if the agency determines (in consultation) that the undertaking's effect on a historic property within the APE would diminish any of the qualities that make the property eligible for the NRHP (based on the criteria for evaluation at 36 CFR 60.4), the effect is said to be adverse. Examples of adverse effects would be ground disturbing activity in an archaeological site, or erecting structures within the viewshed of a historic building in such a way as to diminish the structure's integrity of feeling or setting. Federal agencies are required to resolve the adverse effects of their undertakings on historic properties. Resolution may consist of avoidance (such as choosing a project alternative that does not result in adverse effects), minimization (such as redesign to lessen the effects), or mitigation. Adverse effects to archaeological sites are typically mitigated by means of excavation to recover the important scientific information contained within the site. Mitigation of adverse effects to historic structures sometimes involves thorough documentation of the structure by compiling historic records, studies, and photographs. Agencies are required to consult with SHPOs, tribes, and others throughout the Section 106 process and to document adverse effects to historic properties resulting from agency undertakings.

3.6.1.1 Area of Potential Effects

The APE is the geographic area or areas within which the proposed undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist. The APE for the Phase 1 SEA soil transport activities includes the Engineering Lab, Walnut Orchard, and landfill sites (Figure 2-1).

3.6.2 Environmental Consequences

3.6.2.1 Alternative A – No Action

Under the No Action Alternative, no soil would be removed from the Engineering Labs complex or transported to and deposited at Walnut Orchard or any of the proposed landfills and the stormwater chamber would not be constructed, therefore, there would be no effects on historic properties. However, if the soils are not removed, the Phase 1 construction activities cannot be completed as planned.

3.6.2.2 Alternative B – Soil Deposition at Walnut Orchard and an Existing Offsite Landfill and Construction of a Stormwater Chamber

The entire APE at the Engineering Lab and Walnut Orchard has been surveyed for both archaeological and architectural resources. As described in Subsection 3.6.1.2, in December 2018 and March 2019, the SHPO concurred that the proposed Phase 1 actions would not have a significant effect on historic properties or adversely affect the NRHP-eligible Engineering Lab. As described in the Revised Phase 1 EA, no archaeological resources were identified in the Phase 1 construction area where ground disturbance would occur, including the proposed location for the stormwater chamber. Therefore, there would be no effect on archaeological or historic resources at the Engineering Lab associated with the removal of the soil from the Phase 1 construction area.

Also as described in Subsection 3.6.1.2, in February 2017 the SHPO concurred with TVA's finding of no adverse effect to historic properties at Walnut Orchard regarding previous activities at the site. Based on the low density of artifacts identified during previous surveys and the amount of prior disturbance to the area, TVA finds the deposition of soil under either Alternative B1 or B2 would have no effect on cultural resources and no further action will be necessary.

If additional stable fill material is required for the proposed construction activities at the Engineering Labs, TVA Cultural Compliance would have to review the proposed borrow source. If the acquisition of fill is less than 25 cubic yards and comes from a commercial source from an approved site holding valid permits and does not lead to horizontal expansion then no Section 106 review is required. If these conditions cannot be met, then acquisition of fill would require a Section 106 review. TVA Cultural Compliance would determine the APE for the borrow site and evaluate the borrow site's potential to contain historic properties. If the desktop review indicates that the APE has potential for archaeological sites and/or that potentially historic above-ground structures are present in the viewshed, Cultural Compliance would decide if a reconnaissance or Phase I cultural resources survey would be required. A survey would be required if:

- No prior cultural resources surveys have included the affected area.
- The affected area has not been included in any prior NHPA Section 106 review by another federal agency in consultation with the SHPO and federally-recognized Indian tribes with an interest in the affected area.

- Prior survey(s) have been conducted and indicate that archaeological sites are present that could be eligible for the NRHP.
- Prior historic architectural surveys have been conducted and indicate that above-ground cultural resources that could be eligible for the NRHP are located in the viewshed.
- The soil borrow site is within a known Trail of Tears route or associated site.

If the soil borrow site meets any of these criteria TVA would follow the steps outlined by 36 CFR Part 800.4-800.8 for identifying historic properties, assessing adverse effects, resolving adverse effects, solving a failure to resolve adverse effects, documenting TVA's decision, and coordinating the review and decisions with NEPA. Before authorizing the use of any soil borrow in connection with the proposed action, TVA would satisfy all requirements of Section 106 of the National Historic Preservation Act. Therefore, adverse effects to historic properties would not be anticipated with respect to the potential use of borrow at the Engineering Labs.

3.6.2.3 Alternative C – Soil Deposition at an Existing Offsite Landfill and Construction of a Stormwater Chamber

Under Alternative C, there would be no new impacts to historic properties as a result of the transport of soil from the Engineering Lab to any of the offsite landfills or the construction of the stormwater chamber.

3.6.2.4 Previous Surveys

The descriptions of the affected environment, background, previous work performed, and results presented in the Revised Phase 1 Final EA with respect to the Engineering Lab are incorporated into this document by reference. The area at the Engineering Labs from which the soil would be removed was previously reviewed by TVA Cultural Compliance staff, and no archaeological resources were recorded. TVA consulted with the SHPO in November 2018 and February 2019 regarding the proposed Phase 1 activities. In December 2018 and March 2019, the SHPO concurred with TVA's recommendation that the proposed actions would not have an adverse effect on historic properties or adversely affect the NRHP-eligible Engineering Lab. No new information has been obtained about the Engineering Lab relevant to the soil transport activities evaluated in this SEA.

Historic and archaeological resources at the Walnut Orchard facility have been previously reviewed by TVA Cultural Compliance staff (CECs 35080 and 35455). The facility was also surveyed for archaeological resources in 2016 by the University of Tennessee (Haygood and Cyr 2016) and one archaeological site was recorded. Site 40AN254 was considered to be a prehistoric occupation of unknown age. Based on the low density of artifacts and the amount of prior disturbance to the area, the site was recommended as ineligible for inclusion on the National Register of Historic Places. The Tennessee State Historic Preservation Office concurred with TVA's finding of no adverse effect to historic properties at Walnut Orchard on February 6, 2017.

3.7 AESTHETICS

3.7.1 Affected Environment

The Engineering Lab and Walnut Orchard are located within the City of Norris. The Engineering Lab is located in a heavily wooded area adjacent to a residential area. Industrial properties are located to the south of the Engineering Lab closer to U.S. Highway 61. Screened by trees, the Engineering Lab is not highly visible to any residential properties in the surrounding vicinity. It is possible that one or two of the closest residential properties may have a partial view of the Engineering Lab. The Engineering Lab is visible to the industrial properties on the southern and southeastern sides of the property. Walnut Orchard is screened from view on all sides. It is possible the church located west of Walnut Orchard along US-441 may have a partial view of a portion of the proposed soil deposition area through the screening vegetation.

3.7.2 Environmental Consequences

3.7.2.1 Alternative A – No Action

Under the No Action Alternative, no soil would be transported; all soil would remain onsite at the Engineering Labs and the stormwater chamber would not be constructed. Because Phase 1 construction activities previously evaluated in the Revised Phase 1 EA are already in progress, much of the surplus soil is currently stored in stockpiles around the Phase 1 construction area. Under the no action alternative, the soil in these stockpiles would remain onsite. Because of the surrounding vegetation, the stockpiles are not highly visible to the surrounding residential properties. One is visible to the industrial properties on the southern and southeastern sides of the Engineering Lab. Under the no action alternative, because of the permanent presence of the soil stockpiles, certain Phase 1 project activities may be unable to be completed. The stockpiles would be stabilized using BMPs to avoid soil runoff and a permanent cover (vegetation, concrete, pavement, etc.) would be installed to ensure long-term stability. Ultimately, following completion of the Phase 1 construction activities, the Phase 1 construction area on the Engineering Lab property would be converted to a semi-industrial appearance. The nature of activities and appearance of the site would be somewhat similar to the aesthetics of the neighboring industrial properties as well as to the remainder of the Engineering Labs site. Potential impacts to aesthetics would, therefore, be minor and confined primarily to the Engineering Lab and/or the neighboring industrial properties. As there would be no transport of soil offsite, there would be no aesthetic impacts at the Walnut Orchard, along the transportation routes, or at the offsite landfills associated with the no action alternative. However, if the soils are not removed, the Phase 1 construction activities cannot be completed as planned.

3.7.2.2 Alternative B – Soil Deposition at Walnut Orchard and an Existing Offsite Landfill and Construction of a Stormwater Chamber

Visual impacts associated with the proposed action would include minor, temporary impacts primarily associated with the transportation of soil to Walnut Orchard and the existing, permitted, offsite landfill and long-term changes to the viewshed associated with the deposition of soil at Walnut Orchard. Additional temporary and periodic aesthetic impacts may occur if any soil

removal activities need to occur at night requiring the use of temporary lighting. Aesthetics impacts associated with the bulk of the Phase 1 construction activities were evaluated in the Revised Phase 1 EA and are incorporated here by reference. At the Engineering Labs, soil loading activities would be primarily visible onsite and at the industrial properties located to the south of the property. The soil loading activities and the construction of the stormwater chamber would be consistent with the current construction activities occurring within the Phase 1 construction area, therefore, there would be no new aesthetic impacts to these industrial properties associated with the transportation activities.

Residents and businesses along both transportation routes would have a direct view of the trucks transporting the soil from the Engineering Lab until they reach the major roadways going to either Walnut Orchard or any of the offsite landfills. While truck traffic does utilize the local roadways, the numbers of vehicles which would be traversing either of these routes would be different than the normal traffic flow along either route. Therefore, residents and businesses along these routes could experience minor, adverse aesthetic impacts from the transportation activities.

Given the presence of screening vegetation at Walnut Orchard, aesthetic impacts associated with the transportation and deposition of the soil from the Engineering Lab and the replacement of the TVA road at Walnut Orchard would largely be concentrated on the site itself. The church located west of Walnut Orchard may have a partial view of deposition activities on the western side of the site, particularly in winter after leaves have dropped. Soil moving and road replacement activities would largely occur during the week or on Saturdays when fewer people would be present at the church. Therefore, given the partial screening and schedule, any aesthetic impacts at the church would be temporary and minor.

No aesthetic impacts would be anticipated along the major roadways between the Engineering Labs and any of the landfills. The major roadways in the vicinity experience high volumes of traffic of all types and sizes. The trucks transporting soil from the Engineering Labs would blend in with the existing traffic on these roadways. Additionally, no aesthetic impacts would be anticipated at any of the existing, permitted, offsite landfills. These landfills all accept waste on a daily basis. The additional truck traffic would blend in with the existing traffic. The loads of soil could actually be used to cover the other waste in these landfills, creating a minor beneficial effect. Therefore, once the trucks reach the major roadways, no adverse aesthetic impacts would be anticipated associated with transport of the soil to any of the landfills.

The residents and businesses adjacent to the Engineering Labs and Walnut Orchard facilities could experience temporary adverse impacts associated with the use of night lighting in the event soil transportation or stormwater chamber construction activities need to occur in early morning or nighttime hours prior to sunrise or after sunset. TVA anticipates the need for nighttime soil transport activities would be limited in occurrence. Lighting would be directed to the work areas, however could also be visible from offsite. Intervening vegetation and structures would likely screen some of the light from nearby residents and businesses. It is also possible that nearby business may not be affected if they are not operational at night. Overall, aesthetic impacts from nighttime lighting would be temporary and minor.

Should TVA require borrow from an offsite source, this material would be obtained from an existing, permitted location. Therefore, there would be no aesthetic impacts associated with obtaining borrow material for the Engineering Lab.

3.7.2.3 Alternative C – Soil Deposition at an Existing Offsite Landfill and Construction of a Stormwater Chamber

Impacts to aesthetics under Alternative C would be similar to, though less than those described under Alternative B. There would be no aesthetic impacts at or in the vicinity of Walnut Orchard as no soil would be transported to this facility. As described under Alternative B, there would be minor aesthetic impacts to residents along either transportation route from the Engineering Lab to the major roadways. Also as described under Alternative B, there would be no aesthetic impacts associated with the transport of the soil along the major roadways or associated with the deposition of borrow at the Engineering Lab or deposition of soil at any of the existing offsite landfills. There would be minor aesthetic impacts at both the Engineering Lab and possibly to residents and businesses in the immediate vicinity of these facilities should TVA require nighttime operations and the use of lighting within the soil transport or stormwater chamber construction area.

3.8 TRANSPORTATION

3.8.1 Affected Environment

Located in Norris, the project area is accessible from US-441 (State Route (SR)-71/Norris Freeway) which curves around the west side of the city and continues south for 21 miles before reaching Knoxville and north for 10 miles before terminating in Rocky Top. Interstate 75 passes 2 miles to the southwest of the city, with an exit providing access via SR-61. The remainder of the Norris roadway network is made up of local roads within predominately residential areas.

The proposed project would involve the transportation of soil from the Engineering Lab located off of Pine Road to Walnut Orchard or an existing, offsite landfill. Transport would occur along one of two haul routes from the Engineering Lab to the local highways and then to Walnut Orchard or an approved landfill. The two haul routes to Walnut Orchard are shown on Figure 3.8-1. Truckloads heading to any of the landfills would follow the same routes until reaching US-441 at which point the trucks would travel major highways or interstates.

Route A from the Engineering Lab to Walnut Orchard is approximately 2.0 miles one-way (4.0 miles roundtrip). Approximately 1.16 miles of Route A would be along Pine, Orchard, and West Norris Roads, the remainder would be on US-441 to Walnut Orchard Road. Travel time between the facilities along Route A would be approximately 6 minutes. Route B from the Engineering Lab to Walnut Orchard is 3.4 miles one-way (6.8 miles round-trip); approximately 1 mile of this route would be along Pine and East Norris Roads before turning onto US-441 and finally Walnut Orchard Road. Travel time between the facilities along Route B would be approximately 15 minutes. The distance between the Engineering Lab the offsite landfills are listed in Table 2-1.

Data available through the Tennessee Department of Transportation (TDOT) was reviewed to consider current vehicular traffic near the project area. TDOT estimates the Average Annual Daily Traffic (AADT) at select locations along major roadways. AADT estimates are based on a 24-hour, two directional vehicle count at specific measurement locations. Based on an axle correction factor, the raw traffic volume data is mathematically adjusted for vehicle type. The data is also statistically corrected for a seasonal variation factor that considers time of year and day of the week. AADT maps provide estimated traffic volumes at measurement station locations along major roadways for any given year for which data is available (TDOT 2019).

AADT data specific to Route A is not available as there are no traffic count stations on Sawmill, Orchard, Pine, West Norris, or Walnut Orchard Roads in the vicinity of the Engineering Lab. Route B offers two AADT station locations, one on US-441 (south of the Engineering Lab) and another along East Norris Road, north of the intersection with Pine Road as shown in Figure 3.8-1. Table 3.8-1 presents the AADT data for 2013-2017 at each of these stations.

Table 3.8-1. AADT from 2012-2017

Year	US-441/SR-71	East Norris Road
2017	1,727	3,314
2016	1,788	3,361
2015	1,737	3,298
2014	1,720	3,435
2013	1,718	3,464

Source: TDOT AADT

In 2017, the estimated AADT for US-441 was approximately 1,700 vehicles per day (VPD). That same year, East Norris Road reported an AADT of just over 3,300 VPD. As shown through the traffic counts over the last five years, AADT for both stations has remained relatively steady, experiencing slight dips in VPD between 2016 and 2017. Due to the constant AADTs within a relatively small geographical area, TVA can make the assumption that no specific areas of the Norris roadway network within the immediate project area have experienced a noticeable increase in traffic in recent years.

Given the short term nature of the proposed operation and the fact that traffic is not anticipated to be detoured to other routes, additional counts were not needed for this SEA.

A field investigation of the project area and proposed routes was conducted on August 29, 2019. Considering Route A, the investigation found a visually obvious seam running near the centerline of Orchard Road from Garden Road to West Norris Road and several breaks in the pavement at the intersection of West Norris Road and US-441.

The majority of the roadway surface of the proposed haul Route B appears to be in satisfactory condition, with the exception of some minor low spots or dips in the pavement (these may be rutting caused by the increased friction of various vehicles stopping at these intersections over time) near the intersection of Pine Road and Pine Place and near the intersection of East Norris Road and Dairy Pond Road.

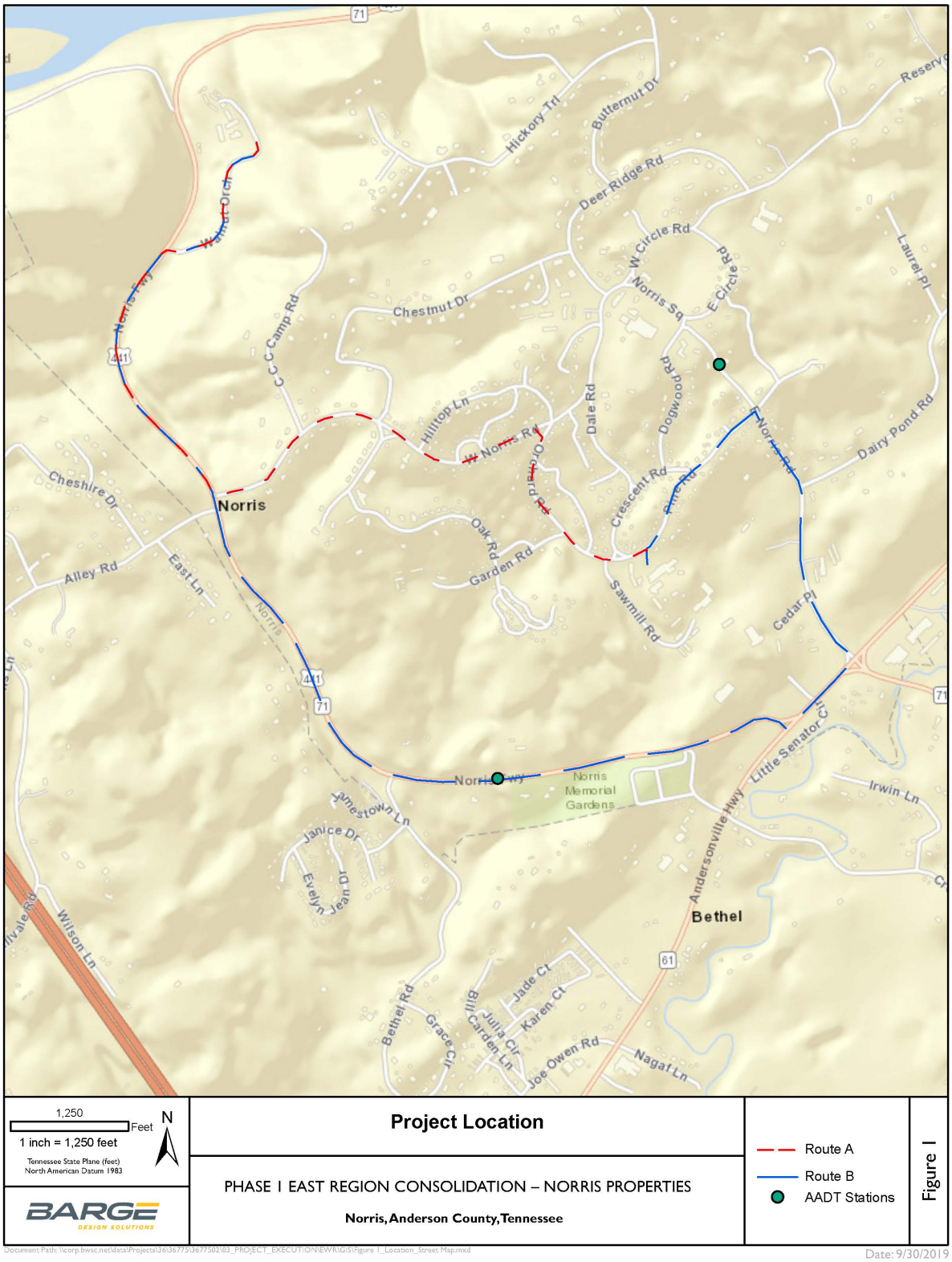

Figure 3.8-1. Soil transportation routes from the Engineering Lab to Walnut Orchard

Several utilities were observed on both of the proposed routes, including two culvert crossings near the intersection with Sawmill Road, potable water line crossings, and sanitary sewer lines running underneath Pine Road and Orchard Road.

3.8.2 Environmental Consequences

3.8.2.1 Alternative A – No Action

Under the No Action Alternative, no soil would be transported; all soil would remain onsite at the Engineering Labs, and the stormwater chamber would not be constructed. Phase 1 construction activities would continue and there would be no new transportation impacts beyond those evaluated in the Revised Phase 1 EA or the Supplemental EA/FONSI. However, if the soils are not removed, the Phase 1 construction activities cannot be completed as planned.

3.8.2.2 Alternative B – Soil Deposition at Walnut Orchard and an Existing Offsite Landfill and Construction of a Stormwater Chamber

Impacts to transportation associated with the Phase 1 construction activities and construction area including the proposed location for the stormwater chamber, were evaluated in the Revised Phase 1 EA. Additional impacts to transportation associated with the transport of up to approximately 2,000 cubic yards of soil from the Engineering Labs to Walnut Orchard and the Chestnut Ridge Landfill were evaluated in the first SEA and FONSI. The results of both of those analyses are incorporated here by reference. This second SEA evaluates new information associated with the transport of additional soil from the Engineering Lab to Walnut Orchard and an existing offsite landfill.

Alternative B would involve the transport of up to 37,000 cubic yards of soil. Transport would include some soil unsuitable for reuse as stable fill material removed from the Engineering Lab and transported for deposition of soil at Walnut Orchard or an existing offsite landfill. Additionally, a portion of the soil transported would be borrow material suitable for use as stable fill material brought to and deposited at the Engineering Lab. The transportation of this quantity of soil or fill material would require approximately 2,642-3,700 one-way (5,285-7,400 round-trip) truck trips, each carrying approximately 10-14 cubic yards of material, to move all of the soil/fill required, including rock fill required for the construction of the stormwater chamber. At maximum capacity, TVA could load and route one truck in and out of the Engineering Lab every 5 minutes from 6:30 am to 6:30 pm on a weekday and on Saturdays; approximately 12 trucks per hour and up to 144 truck trips per day one-way from the Engineering Lab to Walnut Orchard or a landfill. Trucks would also unload at Walnut Orchard or the landfill and return to the Engineering Lab in approximately 5 minutes resulting in an additional approximately 144 truck trips per day; therefore, up to approximately 288 truck trips could occur between the Engineering Lab and Walnut Orchard and/or the landfill each day between 6:30 am and 6:30 pm Monday through Saturday at maximum operating capacity. At this rate, TVA could potentially complete the transfer of soil from the Engineering Lab to Walnut Orchard and/or the landfill in approximately 19-26 days depending on the total capacity moved and how much goes to either Walnut Orchard or to a landfill. Conversely, fewer hours worked each day or reduced loads per truck could lengthen the time needed to successfully transport the soil.

It can be assumed that TVA would not be able to operate at maximum capacity for the entire time soil transport is required. Intervening factors such as daylight hours, weather, construction progress on the site, and unpredictable external factors could influence the ability to route trucks into and out of the Engineering Labs site every 5 minutes and or change the operational hours of the soil transport. Therefore, TVA conservatively assume it may require up to 3 months (from start date) to move all of the soil from the Engineering Lab to Walnut Orchard and one of the offsite landfills. During this period there may be times when the trucks are being routed at maximum capacity every 5 minute, however there also will be times when the truck traffic operating at a slower rate. There may even be days where no truck traffic is routed for various reasons including weather delays.

This increase in truck traffic between the Engineering Lab and Walnut Orchard or the landfill could cause impacts along the local residential roadways, specifically Pine, Orchard, and West Norris Roads. Though AADT data is not available, it can be assumed these local roadways have less traffic than the US-441 and East Norris Road. The maximum of approximately 288 truck trips per day would constitute an approximately 16.7 percent increase in traffic on US-441 and an approximately 8.7 percent increase in traffic on East Norris Road along Route B. It can be assumed this would result in a greater increase in traffic along Pine, Orchard, and West Norris Roads.

Though existing traffic volumes on the local roadways are unknown, it can be assumed that up to 24 extra vehicles per hour (at maximum capacity 12 trucks per hour one-way/24 trucks round trip) on the residential streets would be noticeable, though it would not be anticipated to result in increased congestion on the local roadways during most hours of the day. Residents should not be significantly impeded from reaching their homes or from being able to enter and exit the residential areas under normal traffic conditions. It is possible that traffic congestion or safety could be a concern during peak traffic hours. If this were to become an issue, TVA could reduce truck traffic during these peak hours (approximately 6:30 am – 9 am and 4:30 pm – 6:30 pm). Restricting truck traffic during these peak hours could reduce the number of daily truck trips by up to 42 one-way (84 round-trip) reducing the maximum total number of truck trips per day up to approximately 204 per route. Additionally, TVA could alternate the use of both potential haul routes to minimize potential traffic congestion. With the reduction of truck traffic, as needed, during the morning and noon rush, congestion-related impacts would be considered minor and temporary.

In addition to increased traffic volumes, residents in houses along Pine, Orchard, East Norris, and West Norris Roads would be subject to an increase in traffic noise from the truck traffic. Dump trucks produce road noise and can produce vibrations more discernible to surrounding receptors than smaller passenger vehicles and this could potentially be noticeable to residents in the homes along either Route A or Route B. The increased noise and potential vibrations would likely be more noticeable to residents during early morning hours on weekdays and particularly on Saturdays when more residents may sleep later in the mornings. Truck noise would be a moderate, though temporary impact to residents. To minimize potential impacts associated with elevated noise levels from the truck traffic, TVA could restrict the truck trips to a reduced set of hours (for example 8 am to 5 pm weekdays and 10 am to 4 pm on Saturdays).

Restricting truck traffic to these hours would reduce the maximum number of daily truck trips 108 one-way (216 round-trip) per week day and 72 one-way (144 round-trip) per day on Saturdays. Additionally, TVA could alternate sending trucks along both potential haul routes to minimize impacts along either route. As TVA would anticipate the transportation activities requiring up to 26 days of steady activity when operating at maximum capacity or up to 3 months operating at a reduced capacity, these impacts would be temporary and moderate to minor. During TVA's review of the Phase 1 First SEA, the City of Norris expressed a preference for the transportation route that would be the shortest distance between the Engineering Lab and Walnut Orchard.

The residential roadways in Norris are not designed for high levels of industrial traffic. The utilities underlying these residential roadways could potentially be impacted by high volumes of heavy truck traffic. Deformation of the pavement, commonly called rutting, where heavy vehicles stop and make turning movements could occur. To minimize potential impacts to these underlying utilities, TVA could place steel plates or other mitigation efforts over areas of concern or could coordinate with the utility companies so that the utilities could take such measures to minimize the potential for impacts during the transportation work. Steel covers would help distribute the weight of the trucks and minimize the potential for impacts to the underlying utilities. The total of up to 3,700 one-way/7,400 round-trip truckloads could lead to the need for repairs such as repaving. Should any road damages occur during the soil transport period as a result of TVA activities, TVA could also compensate the City for any repair that might be needed. TVA expects that the City would organize, plan, and conduct the repair work, if any. Alternatively, with the appropriate approvals, TVA or its contractors could conduct the repairs. Repair efforts could include temporary lane closures to allow for repaving and repair efforts. These lane closures would be coordinated with the use of BMPs including appropriate signage, lane markers, flaggers where needed, and other measures to minimize potential impacts to travelers and to maximize safety. With the commitment to compensate for damages if needed, and limited to efforts needed to bring the roadway back up to the previously existing conditions, impacts to roadways and utilities would be considered minor and temporary.

Overall, the transportation of up to 37,000 cubic yards of soil to either Walnut Orchard and/or any of the landfills would require approximately 2,642-3,700 total truck loads (one-way). Operating one truck in and out of the Engineering Lab every 5 minutes from 6:30 am to 6:30 pm on a weekday would require approximately 19 to 26 work days to complete soil removal, depending on the selected alternative working at maximum capacity or up to 3 months at reduced capacity depending on the project schedule and pending weather or other complicating factors. The use of either Route A or Route B is unlikely to result in significant impacts to human health and/or the environment, however, the use of Route B would likely lessen impacts to the pavement as it relies on more miles of roadways that are better designed and maintained for frequent trucking. During coordination on the First Phase 1 SEA, the City of Norris expressed a preference for Route A which covers a shorter total distance.

Considering the existing conditions and increase in truckloads associated with the proposed soil transport activities, the following steps could be taken to limit and mitigate impacts:

- To minimize potential impacts to transportation resources, TVA could travel the transportation route with a representative of the City prior to construction to identify areas of concern that may have occurred between the date of the field investigation and the commencement of the hauling operations.
- TVA would designate a point of contact to address any issues that may develop during the hauling and construction operations.
- Once soil transport activities begin, if it is determined that the noise and vibration from truck traffic are a nuisance to the surrounding community or congestion is an issue for drivers during peak traffic hours, TVA could work with the City to adjust the times of hauling operations to avoid additional disturbances.
- To mitigate potential impacts to transportation resources, TVA could compensate the City as necessary, to prevent certain damages and to repair damages to infrastructure, if any, that would directly result or are directly resulting from TVA's activities associated with the transportation of the Engineering Lab and Walnut Orchard soil activities. Compensation associated with repairs following the completion of soil transport and construction activities is limited to repairs needed to bring the infrastructure back to existing conditions, after impacts resulting from TVA activities. Alternatively, with the appropriate approvals, TVA or its contractors could conduct the repairs.
- To minimize the potential for impacts to utilities, TVA could place steel plates or other mitigation efforts or could coordinate with the utility providers as needed to place steel plates to minimize the potential for impacts.

TVA has determined that with the opportunities described above for minimizing and mitigating impacts, if necessary, the additional truck traffic would not result in new impacts beyond those previously considered in the First Phase 1 SEA and would not alter TVA's conclusion in the SEA and FONSI for Phase 1.

3.8.2.3 Alternative C – Soil Deposition at an Existing Offsite Landfill and Construction of a Stormwater Chamber

Alternative C would involve the transportation of up to 37,000 cubic yards of soil to an approved offsite landfill and brought into the Engineering Lab for use as stable fill material for portions of the Phase 1 construction area including the stormwater chamber. The closest landfill is the Chestnut Ridge landfill which is used as an example for this analysis. The Chestnut Ridge landfill is open from 7:00 am to 3:00 pm on weekdays and 7:00 am to 10:30 am on Saturdays. At maximum capacity, TVA could load and route one truck in and out of the Engineering Lab every 5 minutes. This would result in a maximum of approximately 12 trucks per hour and up to 96 one-way (192 round trip) truck trips per weekday and 42 one-way (84 round trip) truck trips on Saturday. Operating at maximum capacity, and assuming the most amount of soil transport – 37,000 cubic yards, TVA could potentially complete the transfer of all of the soil from the Engineering Lab to the Chestnut Ridge Landfill in 39 days. As with Alternative B, intervening factors such as weather, the project schedule, or unanticipated issues could result in delays. It is assumed, as with Alternative B, that the majority of soil transport would be able to be

completed within 3 months. Shorter work days could lengthen the time needed to complete the soil disposal. Transport to the other offsite landfills would require additional time due to the greater distance. Also similar to Alternative B, fewer materials to transport would result in less time needed to accomplish the disposal.

For trucks destined for nearby landfills, the main issue would be the commute along largely residential roads from the Engineering Lab to US-441, a roadway that is built for high traffic volume and heavy loads. Once at US-441, the trucks would have the option of taking I-75, less than two miles from the signalized East Norris Road and US-441 intersection, or continuing along US-441.

Transportation related impacts would be the same under Alternative C as described under Alternative B, moderate and temporary lasting for up to approximately 3 months. For Alternative C, Route B would provide a more direct and faster route to any of the offsite landfills as compared to Route A.

3.9 AIR QUALITY

3.9.1 Affected Environment

Ambient air quality is determined by the type and amount (concentration) of pollutants emitted into the atmosphere, the size and topography of the air basin in question, and the prevailing meteorological conditions in that air basin. Through its passage of the Clean Air Act of 1970 and its amendments, Congress has mandated the protection and enhancement of our nation's air quality. The USEPA has established the National Ambient Air Quality Standards (NAAQS) for the following criteria pollutants to protect the public health and welfare: sulfur dioxide (SO_2), ozone (O_3), nitrogen dioxide (NO_2), 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 (CO), and lead (Pb).

The primary NAAQS were promulgated to protect public health, and the secondary NAAQS were promulgated to protect public welfare (e.g., visibility, crops, forests, soils and materials) from any known or anticipated adverse effects of air pollutants. Areas in compliance with the NAAQS are designated "attainment" areas. Areas in violation of the NAAQS are designated as "nonattainment" areas, and new sources being located in or near these areas may be subject to more stringent air permitting requirements. Nonattainment areas are usually defined by county. National standards, other than annual standards, are not to be exceeded more than once per year (except where noted). Areas that cannot be classified on the basis of available information for a particular pollutant are designated as "unclassifiable" and are treated as attainment areas unless proven otherwise.

Anderson County is in attainment with the National Ambient Air Quality Standards for criteria pollutants established under the Clean Air Act. Additionally, Anderson County is in an area identified as a partial ozone maintenance area, part of the former Knoxville 2008, 8-Hour ozone nonattainment area, and is identified as a whole county maintenance area for the Knoxville $PM_{2.5}$ 1997 annual and Knoxville $PM_{2.5}$ 2006 24 Hour nonattainment areas (USEPA 2019).

3.9.2 Environmental Consequences

3.9.2.1 Alternative A – No Action

Under the No Action Alternative, no soil would be transported; all soil would remain onsite at the Engineering Labs and the stormwater chamber would not be constructed. No vehicle emissions would be created as a result of the transport of soil to offsite locations. Because Phase 1 construction activities previously evaluated in the Revised Phase 1 EA are already in progress, much of the surplus soil is currently stored in stockpiles around the Phase 1 construction area. Under the no action alternative, these stockpiles would remain in place and would be required to be stabilized using BMPs to avoid soil runoff. A permanent cover (vegetation, concrete, pavement, etc.) would be installed to ensure long-term stability and to prevent mobilization of fugitive dust at the Engineering Lab. Consequently, there would be no adverse impacts to air quality as a result of implementation of no action alternative at the Engineering Lab. Additionally, as there would be no soil transported offsite, there would be no air quality impacts associated with the transport of soil to or the deposition of soil at the Walnut Orchard or any of the existing offsite landfills. However, if the soils are not removed, the Phase 1 construction activities cannot be completed as planned.

3.9.2.2 Alternative B – Soil Deposition at Walnut Orchard and an Existing Offsite Landfill and Construction of a Stormwater Chamber

Air quality impacts associated with the majority of the Phase 1 construction activities, including excavation of the stormwater detention pond, were previously evaluated in the Revised Phase 1 EA incorporated here by reference. The primary mechanisms for causing potential effects to local air quality considered in this assessment are transport and deposition of soil from the Engineering Labs to Walnut Orchard and any of the landfills, the construction of the stormwater chamber, and the removal and replacement of the TVA road at Walnut Orchard. Loading/unloading soil and fill material into/from the trucks at the Engineering Lab and unloading it at Walnut Orchard, compaction activities, and excavation of the road at Walnut Orchard would mobilize dust locally. Fugitive dust is commonly measured by the size of particulate matter. As necessary, fugitive dust emissions from the soil loading and deposition activities would be mitigated using BMPs including wet suppression, as needed. Additionally, truck wheels would be washed prior to leaving the site to minimize the spread of loose soil and mud onto the local roadways. Therefore, impacts to air quality associated with soil loading and deposition would be expected to be temporary and minor.

Movement of the trucks through the construction area at the Engineering Labs and Walnut Orchard and within the landfill would mobilize additional dust. Truck loads would be covered, therefore, dust mobilization during transport is not anticipated, though if covers become loosened during transport some dust mobilization could occur. Therefore, impacts to air quality associated with transport of the soil would be anticipated to be minor and temporary.

No noticeable direct or indirect impacts to air quality or regional climate would be associated with the soil transport and construction of the stormwater chamber activities. Exhaust from internal combustion engines used to power trucks can also affect local air quality, particularly if

the engines are not properly maintained. Approximately 95 percent (by weight) of fugitive emissions from vehicular traffic over paved and unpaved roads would be comprised mainly of particles that would be deposited near the roadways along the transportation routes. These vehicles would cause a minor temporary increase in greenhouse gas emissions during the soil transport activities. Combustion of gasoline and diesel fuels by internal combustion engines (haul trucks and off-road vehicles) would generate local emissions of PM, nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOCs), and sulfur dioxide (SO_2). All diesel equipment would use low sulfur fuel and be equipped with all required pollution controls. The increase in emissions from the construction equipment and vehicles would be temporary and within the daily variation of mobile emissions from a construction site and would be consistent with existing emissions from vehicular activity in the area. Impacts would be minimized by ensuring all vehicles are properly maintained, that new emission control technologies are utilized on these vehicles to the extent possible, and that unnecessary heavy duty vehicle idling is minimized.

Should TVA require borrow from an offsite source, this material would be obtained from an existing, permitted location. Therefore, there would be no new impacts to air quality associated with obtaining borrow material for the Engineering Lab.

Overall impacts to air quality associated with Alternative C are anticipated to be temporary and minor.

3.9.2.3 Alternative C – Soil Deposition at an Existing Offsite Landfill and Construction of a Stormwater Chamber

Impacts to air quality under Alternative C would be similar to, though less than those described under Alternative B. There would be no air quality impacts at or in the vicinity of Walnut Orchard as no soil would be transported to this facility. As described under Alternative B., there would be minor air quality impacts from the mobilization of fugitive dust during soil loading, transport, and deposition activities at the Engineering Labs, along the roadways, and at any of the landfills and from the use of fossil fuel powered construction equipment and vehicles. Soil loading and deposition impacts to air quality would be minimized through the implementation of best management practices to control mobilization of fugitive dust. Impacts to air quality associated with transportation of the soil would be minimized through covering of the soil loads and maintaining the vehicles. Construction equipment and vehicles would be maintained properly and diesel engines would utilize low sulfur fuel and be equipped with required pollution controls. Therefore, overall impacts to air quality associated with Alternative C are anticipated to be temporary and minor.

3.10 NOISE AND VIBRATION

3.10.1 Affected Environment

3.10.1.1 Noise

Noise is generally described as unwanted sound, which can be based either on objective effects (hearing loss, damage to structures, etc.) or subjective judgments (such as community annoyance). Sound is usually represented on a logarithmic scale with a unit called the decibel (dB). Sound on the decibel scale is referred to as sound level. The threshold of human hearing is approximately 0 dB, and the threshold of discomfort or pain is around 120 dB.

Noise levels are computed over a 24-hour period and adjusted for nighttime annoyances to produce the day-night average sound level (DNL). DNL is the community noise metric recommended by the EPA and has been adopted by most federal agencies. A DNL of 65 A-weighted decibel (dBA) is the level most commonly used for noise planning purposes and represents a compromise between community impact and the need for activities like construction. (The A-weighted sound level, used extensively in the U.S. for the measurement of community and transportation noise, represents the approximate frequency response characteristic of the average young human ear.) Areas exposed to a DNL above 65 dBA are generally not considered suitable for residential use. A DNL of 55 dBA was identified by the USEPA as a level below which there is no adverse impact. Additionally, to avoid potential long-term effects to hearing, USEPA established a 24-hour exposure level of 70 dBA (USEPA 1974).

Noise occurring at night generally results in a greater annoyance than do the same levels occurring during the day. It is generally agreed that people perceive intrusive noise at night as being 10 dBA louder than the same level of noise during the day. This perception is largely because background environmental sound levels at night in most areas are about 10 dBA lower than those during the day.

The Noise Control Act of 1972 directs federal agencies to comply with applicable federal, state, and local noise control regulations. The Engineering Lab and Walnut Orchard facilities are located within Norris City Limits. The Norris Municipal Code prohibits construction noise during the hours of darkness[2] on week days and Saturdays except in the case of urgent necessity in the interest of public health and safety. Additionally, the City of Norris sets a limit of 65 dB at the common lot line for industrial areas excluding noise from cars, trucks, or motorcycles (Municipal Technical Advisory Service 1996). Sound limits for vehicles within the City of Norris are as shown in Table 3.10-1:

[2] The hours of darkness are defined as one half hour after official sunset and one half hour before official sunrise.

Table 3.10-1. Vehicle Sound Level Limits within Norris City Limits

Sound Level in Decibels (dB)	Type of Vehicle	Where Measured
87	Buses and trucks over 10,000 pounds	At 50 feet
93	Buses and trucks over 10,000 pounds	At 25 feet
80	Buses and trucks under 10,000 pounds	At 50 feet
86	Buses and trucks under 10,000 pounds	At 25 feet
78	Passenger cars	At 50 feet
84	Passenger cars	At 25 feet
87	Motorcycles (includes other vehicles)	At 50 feet
93	Motorcycles (includes other vehicles)	At 25 feet

Source: Municipal Technical Advisory Service 1996

3.10.1.2 Vibration

Vibration refers to groundborne noise and perceptible motion; the energy of vibration is transmitted in waves through the soil and bedrock. The movement of vehicles along roadways and construction activities both create vibrations, either continuous or transient in nature. Vibration can result in impacts to the human built environment such as movement of building walls or floors, rattling of windows, and shaking of items on walls, shelves, or surfaces, etc.. Additionally, vibration can result in impacts to the natural environment associated with shaking of trees, triggering of landslides or liquefaction, etc. As with noise, vibration attenuates with distance due to the spreading of the energy and frictional loss.

Vibratory ground motion may be assessed to determine peak particle velocity (PPV) measured in both the horizontal and vertical directions, typically in inches per second. The PPV is defined as the maximum instantaneous peak of the vibration signal. Therefore, the PPV can be measured to determine the potential for damage to various buildings and structures. Federal Transit Authority guidelines (2006) established the construction vibration damage criterion for non-engineered timber and masonry buildings to be 0.2 inches per second and for reinforced-concrete, steel, or timber buildings and structures the PPV is 0.5 inches per second. Damage thresholds for continuous vibration sources are approximately half of the thresholds for transient vibration sources.

In addition to the potential for damaging structures, vibration can cause annoyance to occupants within the vicinity, though it is generally more noticeable to those within structures as compared to outdoors. The effect of vibration on the human body is most frequently stated as the average pf the squared amplitude of the signal. That is approximately 70 percent of the PPV for a single frequency vibration. The threshold for perception of vibration is typically around 64 VdB (the vibration velocity level in decibel scale).

3.10.2 Environmental Consequences

3.10.2.1 Alternative A – No Action

Under the No Action Alternative, no soil would be transported; all soil would remain onsite at the Engineering Labs, and the stormwater chamber would not be constructed. No new noise would be generated at the Engineering Lab beyond that created by the Phase 1 construction activities previously evaluated in the Revised Phase 1 EA and Phase 2 activities described in Chapter 1

and Section 3.10 and no new noise would be generated at all at Walnut Orchard or any of the landfills. Noise receptors in the vicinity of each facility would continue to experience ambient noise from the environment; normal activities at the Engineering Lab, Walnut Orchard, and any of the landfills; ongoing construction related activities at the Engineering Lab; local traffic; and recreational activities in the vicinity. There would be no new noise or vibration along local roadways associated with the transport of soil.

Because the Phase 1 construction activities are already in progress, much of the surplus soil is currently stored in stockpiles around the Phase 1 construction area. Under the no action alternative, these stockpiles would remain onsite. The stockpiles would be required to be stabilized using BMPs to avoid soil runoff and a permanent cover (vegetation, concrete, pavement, etc.) would be installed to ensure long-term stability. Stabilization of the stockpiles could include the use of soil compacting equipment which can induce both noise and vibration. Vibrations created by such activities have the potential to affect nearby facilities and structures as well as be a source of annoyance to people in the vicinity. TVA would monitor the vibrations created by any soil compaction activities. Should vibrations be identified which are resulting in damage to buildings or affecting people in the vicinity, TVA could stop compacting activities until appropriate mitigation measures are identified. Mitigation could include modifying compaction methods, installation of vibration monitors, taking photography and maintaining documentation of existing damages to structures, if any, monitoring of changes in structures, if any, and/or the potential to provide compensation, as appropriate, should it be determined that structural damage, if any, was a direct result of the vibrations associated with TVA's activities at the Engineering Lab. Noise and vibration associated with compaction activities would be short-term. Therefore, noise and vibration impacts associated with the no action alternative at and in the vicinity of the Engineering Lab would be expected to be moderate and temporary. As there would be no transport of soil offsite under the no action alternative, there would be no noise or vibration related impacts associated with soil transport or at the Walnut Orchard or any of the existing offsite landfills. However, if the soils are not removed, the Phase 1 construction activities cannot be completed as planned.

3.10.2.2 Alternative B – Soil Deposition at Walnut Orchard and an Existing Offsite Landfill and Construction of a Stormwater Chamber

The impacts associated with the noise from the Phase 1 construction activities was evaluated in the Revised Phase 1 EA. Soil/fill transport activities at the Engineering Lab would not contribute any additional noise above that already occurring as a result of the Phase 1 construction activities.

As described in Subsection 3.10.1, soil transport to/from the Engineering Lab and to Walnut Orchard or an existing offsite landfill would generate new vehicle noise and vibration from the passage of the trucks along either route from the Engineering Lab to the major roadways. The movement of up to 3,000 one-way trips/6,000 round-trip truck trips for 11-34 days at maximum capacity and up to 3 months at reduced capacity along the local roadways would generate additional noise and vibration beyond the baseline. Residents in houses along Pine, Orchard, East Norris, and West Norris Roads would be subject to an increase in traffic noise from the

truck traffic. The adjacent businesses to the south of the Engineering Lab would also experience noise from the soil excavation and loading activities. Dump trucks produce road noise and can produce vibrations more discernible to surrounding receptors than smaller passenger vehicles and this could potentially be noticeable to residents in the homes along either Route A or Route B. The increased noise and potential vibrations would likely be more noticeable to residents during early morning hours on weekdays and particularly on Saturdays when more residents may sleep later in the mornings. Occasional truck noise would not constitute a significant impact to residents. To minimize potential impacts associated with elevated noise levels from the truck traffic, TVA could restrict the truck trips to occur within a reduced set of hours (for example 8 am to 5 pm weekdays and 10 am to 4 pm on Saturdays). Restricting truck traffic to these hours could reduce the maximum number of daily truck trips 108 one-way (216 round-trip) per week day and 72 one-way (144 round-trip) per day on Saturdays. Additionally, TVA could alternate sending trucks along both potential haul routes to minimize impacts along either route. As TVA would anticipate the transportation activities requiring up to 34 days of steady activity when operating at maximum capacity or up to 3 months operating at a reduced capacity, these impacts would be temporary and minor. TVA would consider use of the route that is shortest in distance between the Engineering Lab and Walnut Orchard before commencing soil transport operations.

Construction of the stormwater chamber at the Engineering Lab would result in different noise than the construction of the stormwater detention pond as construction of the chamber includes the deposition of rock fill surrounding the chamber modules. Deposition of the fill would produce noise in the immediate vicinity of the deposition activities. This noise would be most perceptible to the workers installing the fill material. Given the proximity of the stormwater chamber location to the southern property boundary, it is possible some noise from this activity would be perceptible at the neighboring industrial properties to the south. This noise would be short term and temporary and would be anticipated to be minor.

At Walnut Orchard the soil deposition and TVA road repair activities, would result in short-term increases in noise levels at the project site. This increase would typically occur between the hours of 6:30 am and 6:30 pm on weekdays. The nearest noise receptor to Walnut Orchard is the church located to the east.

Noise sources would include a variety of construction equipment, examples of which are listed in Table 3.10-2. Table 3.10-2 describes noise emission levels at a distance of 50 feet for common construction equipment expected to be used during the soil deposition activities. As can be seen from this table, the anticipated noise levels at 50 feet from the noise source range from 75 dBA to 87 dBA based on data from the Federal Highway Administration (Federal Highway Administration 2006). As the majority of project actions would occur within the Walnut Orchard property and not on the common lot boundary, and as noise attenuates over distance, TVA anticipates that noise generated as a result of soil deposition activities at Walnut Orchard would attenuate to below the 65 dB limit at the property boundary as decreed in the Norris city noise ordinance.

Table 3.10-2. Maximum noise levels at 50 feet for common construction equipment

Equipment Type	Maximum Noise Level (L_{max}) at 50 Feet (dBA, slow[1])
Backhoe	78
Clam Shovel (dropping)	87
Compactor (ground)	83
Dozer	82
Dump Truck	76
Flat Bed Truck	74
Jackhammer	85
Mounted Impact Hammer (hoe ram)	90
Paver	85
Pickup Truck	75
Vibratory Concrete Mixer	80
Warning Horn	83

Source: Federal Highway Administration 2006

1 Slow response as measured on the A scale of a sound level meter or time-weighted average.

Construction personnel, especially equipment operators, would use appropriate personal hearing protection to limit exposure and ensure compliance with federal health and safety regulations.

During and at the completion of soil deposition activities at Walnut Orchard, and possible placement of stable fill material at the Engineering Lab it is possible that the soil would be stabilized using soil compacting equipment which can induce both noise and vibration. Vibrations created by such activities can have the potential to affect nearby facilities and structures as well as be a source of annoyance to people in the vicinity. TVA would monitor the vibrations created by any soil compaction activities. Should vibrations be identified which are resulting in damage to buildings or affecting people in the vicinity, TVA could stop compacting activities until appropriate mitigation measures are identified. Mitigation could include modifying compaction methods, installation of vibration monitors, taking photography and maintaining documentation of existing damages to structures, if any, monitoring of changes in structures, if any, and/or the potential to provide compensation, as appropriate, should it be determined that structural damage, if any, was a direct result of the vibrations associated with TVA's activities at the Engineering Lab and Walnut Orchard.

Both noise and vibration associated with soil moving and compaction activities would be short-term. Therefore, noise and vibration impacts associated with Alternative B in the vicinity of Walnut Orchard would be expected to be moderate. Impacts would be expected to be largely temporary unless unrepairable damage were to occur which is not expected.

Following completion of soil deposition and TVA road repair activities at Walnut Orchard, the ambient sound environment would be expected to return to near ambient levels. Noise levels at

the industrial properties adjacent to the Engineering Lab's southern boundary would be 65 dB or less at the property boundary in accordance with the local ordinance. As TVA activities at the Engineering Lab would be similar to previous existing operations (office space, laboratory space, boat storage and maintenance) as prior to commencement of consolidation activities, it is assumed the overall ambient environment at the Engineering Lab would return to similar levels after completion of construction. Based on the nature of the activities at the Engineering Labs in comparison to the neighboring industrial land uses, it is assumed noise levels would also be 65 dB or less by the edge of the Engineering Lab property. Walnut Orchard is located within a zoned government area and there is not an established ordinance for this zoning type; therefore TVA conservatively would apply the 65 dB industrial ordinance. Existing activities at both sites are similar and, therefore, the ambient noise environments are also similar. As land use at Walnut Orchard would not change under this Alternative, noise levels at Walnut Orchard would be expected to return to equivalent levels experienced at this site at present. Noise would be anticipated to typically be below the 65 dbA and compliant with the Norris City noise ordinance for industrial properties. Overall, noise impacts under Alternative B at and in the vicinity of Walnut Orchard are anticipated to be temporary and minor.

There would be no new noise or vibration impacts generated at any of the offsite landfills as a result of Alternative B. These landfills already experience noise related to the transport and dumping of material to these sites. The contribution of soil from the Engineering Lab would be equivalent to the existing noises.

Should TVA require borrow from an offsite source, this material would be obtained from an existing, permitted location. Therefore, there would be no new noise or vibration related impacts at the borrow site associated with obtaining borrow material for the Engineering Lab. The transport of the soil from the borrow location to the Engineering Lab would result in additional truck traffic along the same routes used to transport soil off the Engineering Lab property. This would result in noise and vibration from truck traffic along those routes. These impacts would be minor and temporary, lasting only as long as the borrow would need to be transported.

3.10.2.3 Alternative C – Soil Deposition at an Existing Offsite Landfill and Construction of a Stormwater Chamber

Noise and vibration related impacts under Alternative C would be the same as described under Alternative B. Soil/fill transported to/from the Engineering Labs would traverse the same local roadways in the same quantities and over a similar period of time. Noise created by the construction of the stormwater chamber would be the same as described under Alternative B. Therefore, noise and vibration impacts under Alternative C would be minor and temporary.

3.11 SOCIOECONOMICS

3.11.1 Affected Environment

The Engineering Lab and Walnut Orchard are located in the City of Norris, in Anderson County, Tennessee. The City of Norris is located approximately 21 miles northwest of Knoxville, Tennessee and 21 miles northeast of Oak Ridge, Tennessee.

Based on the U.S. Census Bureau American Community Survey 2013-2017 estimate, approximately 1,622 people live in the City of Norris. In contrast, approximately 75,538 people live in Anderson County, Tennessee (U.S. Census Bureau 2016a). Of the population residing in the City of Norris, approximately 649 individuals above the age of 16 are civilian employees in a variety of fields, with the largest field constituting approximately 226 individuals working in the education, health care, and social services industry (U.S. Census Bureau 2016b). Approximately 64.8 of those workers are employed at jobs within Anderson County (including within the City of Norris), the remainder work outside of the county (U.S. Census Bureau 2016c).

There are approximately 745 housing units available in the City of Norris, of which, approximately 67 are vacant. Out of the approximately 678 occupied housing units, approximately 474 are owner-occupied and 204 are renter-occupied (U.S. Census Bureau 2019d).

3.11.2 Environmental Consequences

3.11.2.1 Alternative A – No Action

Under the No Action Alternative, normal activities at the Engineering Lab, Walnut Orchard, and any of the landfill sites would continue, including ongoing construction activities at the Engineering Lab, the numbers employees working at all of these facilities would remain unchanged. As there would be no changes in the numbers of employees at the site, there would be no impacts to socioeconomics associated with the no action alternative. However, if the soils are not removed, the Phase 1 construction activities cannot be completed as planned.

3.11.2.2 Alternative B – Soil Deposition at Walnut Orchard and an Existing Offsite Landfill and Construction of a Stormwater Chamber

Under Alternative B, normal activities would continue at the Engineering Lab, Walnut Orchard, and any of the landfill sites, including ongoing construction activities. The impacts to socioeconomics associated with the ongoing Phase 1 construction activities were evaluated in the Revised Phase 1 EA and are incorporated here by reference. Additionally, soil transport activities would commence from the Engineering Lab to Walnut Orchard and a landfill. Soil/fill transport activities could require up to 3,700 one-way truck trips over the course of the project. This quantity of truck traffic would likely require additional drivers above those construction workers already engaged at the Engineering Labs. It is expected that these truck drivers would be supplied by the existing contracting company at the Engineering Labs or companies in the area using existing employees who may be currently engaged in other work. No new jobs would be created at the Engineering Lab, Walnut Orchard, or any of the landfills as a result of the soil transport or TVA road replacement activities at Walnut Orchard. Additionally, there would be no job loss. Therefore, there are no anticipated impacts to socioeconomics as a result of the proposed action.

Should TVA require borrow from an offsite source, this material would be obtained from an existing, permitted location or from TVA property. Therefore, there would be no new impacts to socioeconomics associated with obtaining borrow material for the Engineering Lab.

3.11.2.3 Alternative C – Soil Deposition at an Existing Offsite Landfill and Construction of a Stormwater Chamber

Impacts under Alternative C would be the same as described under Alternative B. The same number of truck trips and the same number of truck drivers would be required to transport the soil/fill to the landfill and Engineering Lab only. As with Alternative B, no new jobs would be created at the Engineering Lab, Walnut Orchard, or the landfill as a result of the soil transport activities. Therefore, there are no anticipated impacts to socioeconomics as a result of the proposed action.

3.12 ENVIRONMENTAL JUSTICE

3.12.1 Affected Environment

Executive Order (EO) 12898 directs federal agencies to identify and address, as appropriate, potential disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. While TVA is not subject to this EO, TVA typically assesses environmental justice impacts in its NEPA reviews. The Council on Environmental Quality has provided guidance for addressing environmental justice in *Environmental Justice: Guidance under the National Environmental Policy Act* (Council on Environmental Quality 1997). TVA conducted a review of environmental justice in the Revised Phase 1 EA and that analysis is incorporated here by reference.

3.12.2 Environmental Consequences

3.12.2.1 Alternative A – No Action

Under the No Action Alternative, normal activities at the Engineering Lab, Walnut Orchard, and any of the landfill sites would continue, including ongoing construction activities at the Engineering Lab; the numbers employees working at all of these facilities would remain unchanged. The impacts to environmental justice communities assocaited with the ongoing Pahse 1 construction activities were evaluated in the Revised Phase 1 EA and are incorporated here by reference. As the population of the City of Norris does not constitute either a minority or low-income population, it is not an environmental justice community. Therefore, there would be no impacts to environmental justice associated with the no action alternative. However, if the soils are not removed, the Phase 1 construction activities cannot be completed as planned.

3.12.2.2 Alternative B – Soil Deposition at Walnut Orchard and an Existing Offsite Landfill and Construction of a Stormwater Chamber

Under the proposed action, normal activities would continue at the Engineering Lab, Walnut Orchard, and any of the landfill sites, including ongoing construction activities at the Engineering Lab. The impacts to environmental justice communities associated with the ongoing Phase 1

construction activities were evaluated in the Revised Phase 1 EA and are incorporated here by reference. As the population of the City of Norris does not constitute either a minority or low-income population, it is not an environmental justice community. Therefore, there would be no impacts to environmental justice as a result of the soil transport and deposition or TVA road replacement activities under Alternative B.

Should TVA require borrow from an offsite source, this material would be obtained from an existing, permitted location or from TVA Property. Therefore, there would be no new impacts to environmental justice associated with obtaining borrow material for the Engineering Lab.

3.12.2.3 Alternative C – Soil Deposition at an Existing Offsite Landfill and Construction of a Stormwater Chamber

Impacts under Alternative C would be the same as described under Alternative B. Therefore, there are no anticipated impacts to environmental justice as a result of Alternative C.

3.13 SOLID AND HAZARDOUS WASTE

3.13.1 Affected Environment

Solid waste is more commonly referred to as trash or garbage and is generated by normal, day-to-day operations. It is generally managed in a variety of ways including reduction, recycling and disposal in landfills. Reduction considers the design, production, and use of materials to reduce the amount of waste; recyclables are those items diverted from the solid waste stream such as paper, glass, plastic, and metals; and disposal refers to the placement of solid waste in engineered areas designed to protect the environment from contaminants. Solid waste is generally considered low risk and may be disposed of in dumpsters pending removal from site by the contracted municipal waste hauler for disposal in a licensed landfill. Most construction debris, such as cleared trees, packing materials, and scrap lumber and metals would also fall into this category.

Hazardous materials are solids, liquids, or gases that have properties that pose the potential to harm people, other living organisms, property, or the environment. Hazardous materials have the potential to become or to create hazardous waste. Hazardous materials include materials that are radioactive, flammable, explosive, corrosive, oxidizing, asphyxiating, biohazardous, toxic, pathogenic, or allergenic as defined by U.S. Department of Transportation regulations. These materials pose a risk to health, safety, and property when transported in commerce (49 CFR 172.101, Hazardous Materials Table). The National Fire Protection Association, in Section 704 of the National Fire Code, uses a different system for identifying the hazards associated with materials developed primarily with the needs of fire protection agencies in mind.

Hazardous waste refers to a class of wastes specifically defined in the Resource Conservation and Recovery Act (RCRA). These wastes contain certain toxic chemicals or have certain characteristics that cause them to be a significant risk to the environment and/or human health with respect to storage, transportation, or disposal. Hazardous waste may be classified as

hazardous because of toxicity, reactivity, ignitability, or corrosivity. Certain types of wastes are "listed" or identified as hazardous by the EPA in 40 CFR 263.

Solid and or hazardous waste currently generated at the Engineering Lab and Walnut Orchard are disposed in accordance with all appropriate local, state, and federal requirements. For the proposed project, any additional waste will be disposed in accordance with Solid and Hazardous Waste Rules and Regulations of the State of Tennessee (TDEC DSWM Rule 004 Chapters 11 and 12)

TVA analyzed the soil to be removed from Norris for 8082A - Standard PCB List 9 Aroclors; Safe and Environmentally Responsible Waste Management, TN EPH-TPH C12-C40 standard Range; and 6010B – TCLP RCRA Metals List, and the results of the analysis indicated that there were approximately 500-750 cubic yards of soils with polychlorinated biphenyls (PCBs) and extracted petroleum hydrocarbons (EPHs) unsuitable for reuse as fill. The soil identified with PCBs and EPHs was addressed in the *Phase 1 Supplemental Environmental Assessment and Finding of No Significant Impact* (July 2019) and was disposed of at the Chestnut Ridge Landfill referenced in 2.5.2.1 Table 2-1 after the Special Waste application was completed and submitted to TDEC DSWM for approval.

Any additional soil identified as unsuitable for reuse will be disposed in one of the three landfills referenced in 2.5.2.1 Table 2-1 after the Special Waste application has been completed and submitted to TDEC DSWM for approval.

If any of the soil deemed unsuitable for fill is to be considered for alternate daily cover at one of the three landfills, TVA will complete the alternative daily cover approval process with TDEC DSWM prior to such use.

3.13.2 Environmental Consequences

3.13.2.1 Alternative A – No Action

Under the No Action Alternative, no soil would be transported; all soil would remain onsite at the Engineering Labs and the stormwater chamber would not be constructed. No new solid or hazardous waste would be created as a result of the transport of soil to offsite locations. Consequently, there would be no solid or hazardous waste impacts associated with the no action alternative.

3.13.2.2 Alternative B – Soil Deposition at Walnut Orchard and an Existing Offsite Landfill and Construction of a Stormwater Chamber

The Revised Phase 1 EA analyzed the solid and hazardous waste impacts associated with the construction activities at the Engineering Lab. Those results are incorporated in this SEA by reference.

As described in Subsection 2.1.2, in preparation for the offsite transport of soil, TVA collected soil samples from Engineering Labs Phase 1 project area from the surface to a depth of 14 feet

in accordance with the proposed site grading plan. TVA analyzed these soil samples for 8082A - Standard PCB List 9 Aroclors; Safe and Environmentally Responsible Waste Management, TN EPH-TPH C12-C40 standard Range; and 6010B – TCLP RCRA Metals List. Based on the sample results, soils deemed suitable for reuse as fill material would be eligible for transport to Walnut Orchard. Soils not deemed suitable would be transported to a permitted landfill within 30 miles of the Engineering Labs. The soils unsuitable for fill material would be considered waste material. Additionally, as soil excavation proceeds, some buried debris such as tree roots, concrete, or other materials may be found which would be unsuitable for use as fill. This soil and material would be characterized prior to disposal. This material would also be designated for deposition at one of the offsite landfills.

During construction, a minor temporary increase in hazardous waste would occur due to the use of heavy equipment and other machinery. Potential hazardous waste items could include petroleum fuels, hydraulic fluids, testing supplies, vehicle batteries and paints. This increase would be minor and temporary. Any spills would be immediately addressed and BMPs such as secondary containment and spill kits maintained onsite during construction would be used to assure that hazardous substances would not be released to the environment. Therefore, impacts associated with hazardous materials during construction would be minor.

Construction of the stormwater chamber would not be anticipated to generate any significant quantities of new waste beyond those previously evaluated in the Revised Phase 1 EA and consistent with typical construction projects of this size.

Replacement of the TVA road could result in the generation of concrete/asphalt material that would need to be hauled to an offsite landfill. This material would be nonhazardous and would be disposed in accordance with all local, state, and federal regulations. Therefore, no impacts would be anticipated as a result of the generation of this waste.

Upon completion of the soil transport project, waste handling at the Engineering Lab and Walnut Orchard would return to levels similar to at present. TVA's current procedures for handling of these wastes would continue. There would be no anticipated new impacts in association with solid and hazardous waste in association with operations at the Engineering Lab or Walnut Orchard.

Table 2-1 in Subsection 2.5.2.1 lists the three offsite landfills (Chestnut Ridge Landfill, Riverside Landfill, and Poplar View Landfill) which could be utilized for the deposition of any soils not suitable for reuse as fill at Walnut Orchard. Riverside Landfill would not be used for Special Waste. As the offsite landfills are designated, permitted waste disposal areas, and as TVA would obtain appropriate disposal agreements with the respective landfill(s) as needed, there would be no new solid or hazardous waste related impacts at the landfills associated with the soil transport activities.

Should TVA require borrow from an offsite source, this material would be obtained from an existing, permitted location or from TVA property. Therefore, there would be no new solid and hazardous waste impacts associated with obtaining borrow material for the Engineering Lab.

3.13.2.3 Alternative C – Soil Deposition at an Existing Offsite Landfill and Construction of a Stormwater Chamber

Impacts under Alternative C would be similar to those described under Alternative B at the Engineering Lab, landfills, and any potential offsite borrow source. There would be no new waste related impacts at the Walnut Orchard. Overall, waste related impacts under Alternative C would be temporary and minor.

3.14 CUMULATIVE IMPACTS

Cumulative impacts are defined in the Council on Environmental Quality's regulations at 40 C.F.R. § 1508.7 as follows:

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

Past actions that have already occurred and present actions are integrated into the existing baseline conditions discussed above and include the activities evaluated in the Revised Phase 1 EA and the first SEA. Potential future projects in the vicinity of the Engineering Lab and Walnut Orchard are described below:

- ***Phase 2 Consolidation Activities at the Engineering Lab*** – TVA is currently conducting the NEPA analysis for Phase 2 construction at the Engineering Lab. Phase 2 is primarily driven by security updates needed to bring the facility into compliance with current TVA security measures and protocols. Phase 2 would also address additional consolidation-related actions that may be necessary as a result of TVA's ongoing evaluation of the condition of the existing facilities and program needs; this includes renovations to Building C and the need to relocate additional staff and functions from the Summer Place Building in Knoxville, and parking modifications that were unknown at the time of the Phase 1 assessment. Phase 2 construction activities could begin in early 2020 and would potentially continue throughout 2020-2021.

- ***Walnut Orchard Building Demolition*** – TVA has evaluated the demolition of Buildings B, C, and E at Walnut Orchard under CECs 36913 (May 2017) and 39795 (October 2018). The purpose of the demolition would be to support TVA's valley wide real estate strategy to effectively and efficiently manage the agency-wide real estate portfolio to reduce costs and maximize the financial return on TVA's real estate assets. These buildings would be demolished after the functions have been moved to the Engineering Lab. Demolition would most likely occur in 2020-2021.

- ***Extension of Sawmill Road*** – The City of Norris is currently coordinating with the Tennessee Department of Transportation to plan and implement the extension of Sawmill Road, located on the west side of the Engineering Lab, south to SR-61. The

purpose of the extension would be to link the industrial properties of the Engineering Lab, RTE, and Perfect Polish to SR-61 so that the industrial traffic would have a more direct route to these facilities, avoiding the more residential roadways (along Pine, Orchard, and West Norris Roads) currently utilized to access all of these facilities.

TVA has determined there would be no cumulative impacts to land use, wildlife, vegetation, threatened and endangered species, historic and archaeological properties, aesthetics, socioeconomics, and environmental justice associated with the soil transport activities in conjunction with these potential future projects. TVA has also determined there would be potential cumulative impacts to surface water, transportation, air quality, noise, and solid and hazardous waste associated with the soil transport activities and these potential future projects. These impacts are described below.

- ***Surface Water*** – Cumulative impacts to surface water could result from soil excavation and runoff associated with the soil transport, Phase 2, Walnut Orchard demolition, and Sawmill Road construction activities. TVA would continue to maintain and revise as needed SWPPPs including erosion control measures such as sediment traps, soil fences, and other BMPs that would be implemented for each respective project to reduce impacts to surface water quality from sedimentation and soil erosion in association with the activities at the Engineering Lab and Walnut Orchard. Therefore, cumulative impacts to surface water from the combined projects would be anticipated to be minor and temporary.

- ***Transportation*** – Cumulative noise and vibration-related impacts could result from the combined soil transport, Phase 2, Walnut Orchard demolition, and Sawmill Road construction activities. The soil transport, Phase 2, and Sawmill Road construction activities would generate increased construction truck traffic along the local roadways (Pine, Orchard, and West Norris Roads) which could result primarily in increased stress along these roadways, potentially resulting in damage to the roadways. TVA would mitigate the impacts of roadway damage by compensating the City of Norris for any necessary repairs to return the roadways to their current state. Therefore, these cumulative impacts would be temporary and minor lasting only the length of the combined projects.

- ***Air Quality*** – Cumulative impacts to air quality could occur in association with the combined soil transport, Phase 2, Walnut Orchard demolition, and Sawmill Road construction activities. Each of these projects would temporarily mobilize fugitive dust as a result of ground disturbance and/or soil moving activities. The fugitive dust would be control at each project as needed using BMPs such as dust suppression from water trucks. Consequently, air quality impacts associated with dust mobilization from the combined projects would be minor and temporary. Additionally, exhaust from internal combustion engines used to power trucks and construction equipment on the combined projects could also affect local air quality, particularly if the engines are not properly maintained. TVA would ensure contractors properly maintain all construction vehicles and equipment. Overall, the exhaust from these vehicles would be a minor contribution

to air quality impacts given the scale and short-term duration of these projects. Therefore, cumulative impacts to air quality in association with the combined projects would be anticipated to be minor and temporary.

- ***Noise and Vibration*** – Cumulative noise and vibration related impacts could result from the combined soil transport, Phase 2, Walnut Orchard demolition, and Sawmill Road construction activities. The soil transport, Phase 2, and Sawmill Road construction activities would generate increased construction truck traffic along the local roadways as described under Transportation. Additionally, compaction of soils at the Engineering Lab and Walnut Orchard could result in vibrations that affect neighboring properties. These vibrations could contribute to cumulative effects on structures such as increasing stress on the structure or propagating previously existing damage. These cumulative impacts would be moderate minor and temporary lasting only the length of the combined projects. At Walnut Orchard there could be cumulative noise and vibration impacts at and in the immediate vicinity of the site related to the combined projects. These impacts would also be moderate to minor and temporary lasting only the length of the combined projects.

- ***Solid and Hazardous Waste*** – Cumulative solid and hazardous waste-related impacts could result from the soil transport, Phase 2, Walnut Orchard demolition, and Sawmill Road construction activities. Each of these projects would generate varying quantities and types of waste material. Wastes associated with the soil transport activities would be limited to soil, debris and material found within the soil, and possible fluids and materials associated with the construction and transportation equipment. Wastes associated with the Phase 2 and Walnut Orchard activities would be similar to those described in the Revised Phase 1 EA for the Phase 1 activities at the Engineering Lab. While the environmental analyses for these potential future projects are still in progress, it can be assumed that such wastes would be handled in accordance with all appropriate local, state, and federal regulations. Therefore, while the combined projects would generate additional quantities of solid and hazardous waste above that normally generated at the Engineering Lab and Walnut Orchard, these wastes would be treated and disposed appropriately and at existing permitted facilities designed to accept such waste. Therefore, the cumulative impacts of the combined projects with regard to solid and hazardous waste would be minor and temporary.

3.15 Unavoidable Adverse Environmental Impacts

Unavoidable adverse impacts are the effects of the proposed action on natural and human resources that would remain after mitigation measures or BMPs have been applied. Mitigation measures and BMPs are typically implemented to reduce a potential impact to a level that would be below the threshold of significance as defined by the Council for Environmental Quality and the courts. Impacts associated with the proposed activities have the potential to cause unavoidable adverse effects to several environmental resources.

Specifically, temporary impacts to water quality from runoff could impact nearby receiving water bodies during soil stockpiling and deposition activities. Adverse impacts would also in association with removing the trees and vegetation at the Walnut Orchard site. In addition, soil excavation and transport of soil would generate noise, vibrations, and fugitive dust. Noise, vibration, and dust impacts along local roadways would be temporary, occurring only as individual trucks pass by and lasting only the length of the proposed actions. Noise, vibration, and dust impacts at the Engineering Lab and Walnut Orchard would also be temporary and would be managed through BMPs such as dust control or mitigated by conducting vibration monitoring and performing repairs as necessary. Transportation-related impacts from the transport of the soil would also be temporary and minor. TVA would evaluate any damages to local roadways as a result of its activities and appropriately mitigate any permanent impacts.

With the application of appropriate BMPs and mitigation measures in addition to adherence to permit requirements, all of these unavoidable adverse effects would be minor.

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

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

The proposed action would remove some vegetation. Short-term impacts to productivity could include disruptions to wildlife in the vicinity of the project area (terrestrial) as a result of construction notice and temporary disturbances. Following completion of soil transport activities, there would be more operational activity at both the Engineering Lab and Walnut Orchard sites, however the majority of this activity would occur within the disturbed areas of the sites. Therefore, it is anticipated that wildlife use of the surrounding area would return to previous levels once the noise and disruptions associated with the construction and soil transport activities cease. Therefore, only minor impacts would be anticipated to short-term uses of the Engineering Lab and Walnut Orchard sites. No short-term impacts would be anticipated at any of the landfill sites as these are already operating as waste disposal areas and would continue to do so for some time after completion of the soil transport activities.

Long-term impacts would continue to be associated with the operation of the Engineering Lab and Walnut Orchard. While there would be a minor increase in activity around both sites, the majority of the long-term productivity impacts would have been associated with the initial construction of the sites. Therefore, no new impacts to long-term productivity would be anticipated. Long-term impacts would continue to be associated with the operation of the respective landfills, however these impacts would not be associated with any TVA activities as those impacts would continue regardless of TVA’s soil transport activities.

3.17 Irreversible and Irretrievable Commitments of Resources

As used here, irreversible commitments of resources include the use or consumption of non-renewable resources because of a decision or implementing a proposed action. For example,

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

Implementation of the proposed action would result in the irreversible or irretrievable commitments of resources associated with the soil transport activities. Gas, oils, and fluids would be utilized in the trucks used to move and transport the soils. These materials are generally considered as an irreversible and irretrievable use.

CHAPTER 4 - LIST OF PREPARERS

4.1 NEPA Project Management

Cindy Light, PMP

Project Role:	Project Manager – Strategic Real Estate
Education:	M.B.A., Business Administration; B.S., Organizational Management; M.C.R., Masters of Corporate Real Estate
Experience:	22 years in Project Planning and Performance; 16 years in Utility Industry

Ruth Horton

Position:	Environmental Program Manager
Education:	B.A, History; NEPA Certification Training
Experience:	41 years in Public Policy, Planning, and Environment, including 21 years in Environmental Compliance

Carol Butler Freeman, PG

Project Role:	NEPA Specialist
Education:	MS, Geological Sciences; BS, Geology
Experience:	11 years in NEPA compliance

4.2 Other Contributors

Paul G. Avery

Project Role:	Historic and Archaeological Resources
Education:	MA, Anthropology; BA, Anthropology; BS, Forensic Investigations
Experience:	19 years as a professional archaeologist

Elizabeth Hamrick

Project Role:	Wildlife and Threatened and Endangered Species
Education:	MS, Wildlife; BS, Biology
Experience:	18 years conducting field biology, 13 years technical writing, 11 years compliance with NEPA and ESA

Jonathan W. Smith, P.E., IMSA TS II

Project Role:	Transportation Analysis
Education:	BS, Civil Engineering
Experience:	16 years in Civil Engineering specializing in traffic operations, signal design, and traffic studies

A. Chevales Williams

Project Role:	Surface Water
Education:	B.S., Environmental Engineering
Experience:	13 years of experience in water quality monitoring and compliance; 12 years in NEPA planning and environmental services.

Carrie Williamson

Project Role:	Floodplains
Education:	B.S., Environmental Engineering
Experience:	13 years of experience in water quality monitoring and compliance; 12 years in NEPA planning and environmental services.

CHAPTER 5 - LITERATURE CITED

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APPENDIX A

Agency Consultation

Project Review Form - TVA Bat Strategy *(06/2019)*

*This form should **only** be completed if project includes activities in Tables 2 or 3 (STEP 2 below). This form is not required if project activities are limited to Table 1 (STEP 2) or otherwise determined to have no effect on federally listed bats. If so, include the following statement in your environmental compliance document (e.g., add as a comment in the project CEC): "Project activities limited to Bat Strategy Table 1 or otherwise determined to have no effect on federally listed bats. Bat Strategy Project Review Form NOT required." This form is to assist in determining required conservation measures per TVA's ESA Section 7 programmatic consultation for routine actions and federally listed bats.*[1]

Project Name: Phase 1 East Region Consolidation - Norris Properties Second SEA **Date:** 9/18/2019

Contact(s): Carol Freeman **CEC#:** **Project ID:** 2019-33

Project Location (City, County, State): Norris, Anderson County, Tennessee

Project Description:

The project would relocate up to 31,000 cubic yards of soil from the Engineering Labs to a) Walnut Orchard to a currently undeveloped area, b) an existing offsite permitted landfill, or c) both Walnut Orchard and an existing offsite permitted landfill.

SECTION 1: PROJECT INFORMATION - ACTION AND ACTIVITIES

STEP 1) Select TVA Action. If none are applicable, contact environmental support staff, Environmental Project Lead, or Terrestrial Zoologist to discuss whether form (i.e., application of Bat Programmatic Consultation) is appropriate for project:

- ☐ 1 Manage Biological Resources for Biodiversity and Public Use on TVA Reservoir Lands
- ☐ 2 Protect Cultural Resources on TVA-Retained Land
- ■ 3 Manage Land Use and Disposal of TVA-Retained Land
- ☐ 4 Manage Permitting under Section 26a of the TVA Act
- ☐ 5 Operate, Maintain, Retire, Expand, Construct Power Plants
- ☐ 6 Maintain Existing Electric Transmission Assets
- ☐ 7 Convey Property associated with Electric Transmission
- ☐ 8 Expand or Construct New Electric Transmission Assets
- ☐ 9 Promote Economic Development
- ☐ 10 Promote Mid-Scale Solar Generation

STEP 2) Select all activities from Tables 1, 2, and 3 below that are included in the proposed project.

TABLE 1. Activities with no effect to bats. Conservation measures & completion of bat strategy project review form NOT required.

☐ 1. Loans and/or grant awards	☐ 8. Sale of TVA property	☐ 19. Site-specific enhancements in streams and reservoirs for aquatic animals
☐ 2. Purchase of property	☐ 9. Lease of TVA property	☐ 20. Nesting platforms
☐ 3. Purchase of equipment for industrial facilities	☐ 10. Deed modification associated with TVA rights or TVA property	☐ 41. Minor water-based structures (this does not include boat docks, boat slips or piers)
☐ 4. Environmental education	☐ 11. Abandonment of TVA retained rights	■ 42. Internal renovation or internal expansion of an existing facility
☐ 5. Transfer of ROW easement and/or ROW equipment	☐ 12. Sufferance agreement	☐ 43. Replacement or removal of TL poles
☐ 6. Property and/or equipment transfer	☐ 13. Engineering or environmental planning or studies	☐ 44. Conductor and overhead ground wire installation and replacement
☐ 7. Easement on TVA property	☐ 14. Harbor limits delineation	☐ 49. Non-navigable houseboats

TABLE 2. Activities not likely to adversely affect bats with implementation of conservation measures. Conservation measures and completion of bat strategy project review form REQUIRED; review of bat records in proximity to project NOT required.

■ 18. Erosion control, minor	☐ 57. Water intake - non-industrial	☐ 79. Swimming pools/associated equipment
☐ 24. Tree planting	☐ 58. Wastewater outfalls	☐ 81. Water intakes – industrial
☐ 30. Dredging and excavation; recessed harbor areas	☐ 59. Marine fueling facilities	☐ 84. On-site/off-site public utility relocation or construction or extension
■ 39. Berm development	☐ 60. Commercial water-use facilities (e.g., marinas)	☐ 85. Playground equipment - land-based
☐ 40. Closed loop heat exchangers (heat pumps)	☐ 61. Septic fields	☐ 87. Aboveground storage tanks
☐ 45. Stream monitoring equipment - placement and use	☐ 66. Private, residential docks, piers, boathouses	☐ 88. Underground storage tanks
☐ 46. Floating boat slips within approved harbor limits	☐ 67. Siting of temporary office trailers	☐ 90. Pond closure
■ 48. Laydown areas	☐ 68. Financing for speculative building construction	☐ 93. Standard License
☐ 50. Minor land based structures	☐ 72. Ferry landings/service operations	☐ 94. Special Use License
☐ 51. Signage installation	☐ 74. Recreational vehicle campsites	☐ 95. Recreation License
☐ 53. Mooring buoys or posts	☐ 75. Utility lines/light poles	☐ 96. Land Use Permit
☐ 56. Culverts	☐ 76. Concrete sidewalks	

Table 3: Activities that may adversely affect federally listed bats. Conservation measures AND completion of bat strategy project review form REQUIRED; review of bat records in proximity of project REQUIRED by OSAR/Heritage eMap reviewer or Terrestrial Zoologist.

☐ 15. Windshield and ground surveys for archaeological resources	■ 34. Mechanical vegetation removal, includes trees or tree branches > 3 inches in diameter	☐ 69. Renovation of existing structures
☐ 16. Drilling	■ 35. Stabilization (major erosion control)	☐ 70. Lock maintenance/ construction
■ 17. Mechanical vegetation removal, does not include trees or branches > 3" in diameter (in Table 3 due to potential for woody burn piles)	■ 36. Grading	☐ 71. Concrete dam modification
☐ 21. Herbicide use	■ 37. Installation of soil improvements	☐ 73. Boat launching ramps
■ 22. Grubbing	■ 38. Drain installations for ponds	☐ 77. Construction or expansion of land-based buildings
☐ 23. Prescribed burns	☐ 47. Conduit installation	☐ 78. Wastewater treatment plants
☐ 25. Maintenance, improvement or construction of pedestrian or vehicular access corridors	☐ 52. Floating buildings	☐ 80. Barge fleeting areas
■ 26. Maintenance/construction of access control measures	☐ 54. Maintenance of water control structures (dewatering units, spillways, levees)	☐ 82. Construction of dam/weirs/ levees
☐ 27. Restoration of sites following human use and abuse	☐ 55. Solar panels	☐ 83. Submarine pipeline, directional boring operations
☐ 28. Removal of debris (e.g., dump sites, hazardous material, unauthorized structures)	☐ 62. Blasting	☐ 86. Landfill construction
☐ 29. Acquisition and use of fill/borrow material	☐ 63. Foundation installation for transmission support	☐ 89. Structure demolition
☐ 31. Stream/wetland crossings	☐ 64. Installation of steel structure, overhead bus, equipment, etc.	☐ 91. Bridge replacement
☐ 32. Clean-up following storm damage	☐ 65. Pole and/or tower installation and/or extension	☐ 92. Return of archaeological remains to former burial sites
☐ 33. Removal of hazardous trees/tree branches		

STEP 3) Project includes one or more activities in Table 3? ◉ **YES (Go to Step 4)** ○ **NO (Go to Step 13)**

STEP 4) Answer questions *a* through *e* below (applies to projects with activities from Table 3 ONLY)

a) Will project involve continuous noise (i.e., ≥ 24 hrs) that is greater than 75 decibels measured on the A scale (e.g., loud machinery)?

- (•) **NO** (NV2 does not apply)
- ( ) **YES** (NV2 applies, subject to records review)

b) Will project involve entry into/survey of cave?

- (•) **NO** (HP1/HP2 do not apply)
- ( ) **YES** (HP1/HP2 applies, subject to review of bat records)

c) If conducting **prescribed burning** (**activity 23**), estimated acreage**:** _____ and timeframe(s) below; ☒ **N/A**

STATE	SWARMING	WINTER	NON-WINTER	PUP
GA, KY, TN	☐ Oct 15 - Nov 14	☐ Nov 15 - Mar 31	☐ Apr 1 - May 31, Aug 1- Oct 14	☐ Jun 1 - Jul 31
VA	☐ Sep 16 - Nov 15	☐ Nov 16 - Apr 14	☐ Apr 15 - May 31, Aug 1 – Sept 15	☐ Jun 1 - Jul 31
AL	☐ Oct 15 - Nov 14	☐ Nov 15 - Mar 15	☐ Mar 16 - May 31, Aug 1 - Oct 14	☐ Jun 1 - Jul 31
NC	☐ Oct 15 - Nov 14	☐ Nov 15 - Apr 15	☐ Apr 16 - May 31, Aug 1 - Oct 14	☐ Jun 1 - Jul 31
MS	☐ Oct 1 - Nov 14	☐ Nov 15 - Apr 14	☐ Apr 15 - May 31, Aug 1 – Sept 30	☐ Jun 1 - Jul 31

d) Will the project involve vegetation piling/burning?

- ( ) **NO** (SSPC4/ SHF7/SHF8 do not apply)
- ( ) **YES** (SSPC4/SHF7/SHF8 applies, subject to review of bat records)

e) If **tree removal (activity 33 or 34)**, estimated amount: _____ (•)**ac** ( )**trees** ( )**N/A**

STATE	SWARMING	WINTER	NON-WINTER	PUP
GA, KY, TN	☐ Oct 15 - Nov 14	☒ Nov 15 - Mar 31	☐ Apr 1 - May 31, Aug 1- Oct 14	☐ Jun 1 - Jul 31
VA	☐ Sep 16 - Nov 15	☐ Nov 16 - Apr 14	☐ Apr 15 - May 31, Aug 1 – Sept 15	☐ Jun 1 - Jul 31
AL	☐ Oct 15 - Nov 14	☐ Nov 15 - Mar 15	☐ Mar 16 - May 31, Aug 1 - Oct 14	☐ Jun 1 - Jul 31
NC	☐ Oct 15 - Nov 14	☐ Nov 15 - Apr 15	☐ Apr 16 - May 31, Aug 1 - Oct 14	☐ Jun 1 - Jul 31
MS	☐ Oct 1 - Nov 14	☐ Nov 15 - Apr 14	☐ Apr 15 - May 31, Aug 1 – Sept 30	☐ Jun 1 - Jul 31

If warranted, does project have flexibility for bat surveys (May 15-Aug 15): (•) **MAYBE** ( ) **YES** ( ) **NO**

**** For **PROJECT LEADS** whose projects will be reviewed by a Heritage Reviewer (Natural Resources Organization only), **STOP HERE**. Click File/ Save As, name form as "ProjectLead_BatForm_CEC-or-ProjectIDNo_Date", and submit with project information. Otherwise continue to Step 5. ****

SECTION 2: REVIEW OF BAT RECORDS (applies to projects with activities from Table 3 ONLY)

STEP 5) Review of bat/cave records conducted by Heritage/OSAR reviewer?

( ) **YES** ( ) **NO** (Go to Step 13)

Info below completed by:

☐ **Heritage Reviewer**	(name)		Date	
☐ **OSAR Reviewer**	(name)		Date	
☐ **Terrestrial Zoologist**	(name)		Date	

Gray bat records: ☐ None ☐ Within 3 miles* ☐ Within a cave* ☐ Within the County

Indiana bat records: ☐ None ☐ Within 10 miles* ☐ Within a cave* ☐ Capture/roost tree* ☐ Within the County

Northern long-eared bat records: ☐ None ☐ Within 5 miles* ☐ Within a cave* ☐ Capture/roost tree* ☐ Within the County

Virginia big-eared bat records: ☐ None ☐ Within 6 miles* ☐ Within the County

Caves: ☐ None within 3 mi ☐ Within 3 miles but > 0.5 mi ☐ Within 0.5 mi but > 0.25 mi* ☐ Within 0.25 mi but > 200 feet* ☐ Within 200 feet*

Bat Habitat Inspection Sheet completed? ( ) **NO** ( ) **YES**

Amount of SUITABLE habitat to be removed/burned (may differ from STEP 4e): _____ **(**( )**ac** ( )**trees)*** ( )**N/A**

STEP 6) Provide any additional notes resulting from Heritage Reviewer records review in Notes box below then . . . . . Go to Step 13

Notes from Bat Records Review (e.g., historic record; bats not on landscape during action; DOT bridge survey with negative results):

STEPS 7-12 To be Completed by Terrestrial Zoologist (if warranted):

STEP 7) Project will involve:

- ☐ Removal of suitable trees within 0.5 mile of P1-P2 Indiana bat hibernacula or 0.25 mile of P3-P4 Indiana bat hibernacula or any NLEB hibernacula.
- ☐ Removal of suitable trees within 10 miles of documented Indiana bat (or within 5 miles of NLEB) hibernacula.
- ☐ Removal of suitable trees > 10 miles from documented Indiana bat (> 5 miles from NLEB) hibernacula.
- ☐ Removal of trees within 150 feet of a documented Indiana bat or northern long-eared bat maternity roost tree.
- ☐ Removal of suitable trees within 2.5 miles of Indiana bat roost trees or within 5 miles of Indiana bat capture sites.
- ☐ Removal of suitable trees > 2.5 miles from Indiana bat roost trees or > 5 miles from Indiana bat capture sites.
- ☐ Removal of documented Indiana bat or NLEB roost tree, if still suitable.
- ☐ N/A

STEP 8) Presence/absence surveys were/will be conducted: ○ **YES** ○ **NO** ○ **TBD**

STEP 9) Presence/absence survey results, on _____ ○ **NEGATIVE** ○ **POSITIVE** ○ **N/A**

STEP 10) Project ○ **WILL** ○ **WILL NOT** require use of Incidental Take in the amount of _____ ○ **acres or** ○ **trees** proposed to be used during the ○ **WINTER** ○ **VOLANT SEASON** ○ **NON-VOLANT SEASON** ○ **N/A**

STEP 11) Available Incidental Take (prior to accounting for this project) as of _____

TVA Action	Total 20-year	Winter	Volant Season	Non-Volant Season
3 Manage Land Use and Disposal of TVA-Retained Land				

STEP 12) Amount contributed to TVA's Bat Conservation Fund upon activity completion: $ _____ OR ○ **N/A**

TERRESTRIAL ZOOLOGISTS, after completing SECTION 2, review Table 4, modify as needed, and then complete section for Terrestrial Zoologists at end of form.

SECTION 3: REQUIRED CONSERVATION MEASURES

STEP 13) Review Conservation Measures in Table 4 and ensure those selected are relevant to the project. If not, manually override and uncheck irrelevant measures, and explain why in ADDITIONAL NOTES below Table 4.

Did review of Table 4 result in ANY remaining Conservation Measures in **RED**?

- ○ **NO** (Go to Step 14)
- ○ **YES** (STOP HERE; Submit for Terrestrial Zoology Review. Click File/Save As, name form as "ProjectLead_BatForm_CEC-or-ProjectIDNo_Date", and submit with project information).

Table 4. TVA's ESA Section 7 Programmatic Bat Consultation Required Conservation Measures

The Conservation Measures in Table 4 are automatically selected based on your choices in Tables 2 and 3 but can be manually overridden, if necessary. To Manually override, press the button and enter your name.

Manual Override

Check if Applies to Project	Activities Subject To Conservation Measure	Conservation Measure Description
☑	15, 16, 17, 18, 22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 45, 47, 48, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 90, 91, 92, 93, 94, 95, 96	**NV1** - Noise will be short-term, transient, and not significantly different from urban interface or natural events (i.e., thunderstorms) that bats are frequently exposed to when present on the landscape.
☑	16, 25, 26, 37, 47, 52, 62, 63, 64, 65, 70, 71, 73, 78, 80, 82, 83, 86, 91	**NV2** - Drilling, blasting, or any other activity that involves continuous noise (i.e., longer than 24 hours) disturbances greater than 75 decibels measured on the A scale (e.g., loud machinery) **within a 0.5 mile radius of documented winter and/or summer roosts** (caves, trees, unconventional roosts) will be conducted when bats are absent from roost sites.
☑	16, 26, 62	**NV3** - Drilling or blasting **within a 0.5 mile radius of documented cave** (or unconventional) roosts will be conducted in a manner that will not compromise the structural integrity or alter the karst hydrology of the roost site.
☑	16, 26, 62	**NV4** - Drilling or blasting **within 0.5 miles of a documented roost site** (cave, tree, unconventional roost) that needs to occur when bats are present will first involve development of project-specific avoidance or minimization measures in coordination with the USFWS.
☑	15, 26, 92	**HP1** - Site-specific cases in which potential impact of human presence is heightened (e.g., conducting environmental or cultural surveys within a roost) will be closely coordinated with staff bat biologists to avoid/ minimize impacts below any potential adverse effect. Any take from these activities would be covered by TVA's Section 10 permit.
☑	15, 26, 92	**HP2** - Entry into roosts known to be occupied by federally listed bats will be communicated to the USFWS when impacts to bats may occur if not otherwise communicated (i.e., via annual monitoring reports per TVA's Section 10 permit). Any take from these activities would be covered by TVA's section 10 permit.
☐	23	**SHF1** - Fire breaks will be used to define and limit burn scope.
☑	17, 23, 34	**SHF2** - Site-specific conditions (e.g., acres burned, transport wind speed, mixing heights) will be considered to ensure smoke is limited and adequately dispersed away from caves so that smoke does not enter cave or cave-like structures.
☐	23	**SHF3** - Acreage will be divided into smaller units to keep amount of smoke at any one time or location to a minimum and reduce risk for smoke to enter caves.
☑	17, 23, 34	**SHF4** - If burns need to be conducted during April and May, when there is some potential for bats to present on the landscape and more likely to enter torpor due to colder temperatures, burns will only be conducted if the air temperature is 55° or greater, and preferably 60° or greater.
☐	23	**SHF5** - Fire breaks will be plowed immediately prior to burning, will be plowed as shallow as possible, and will be kept to minimum to minimize sediment.
☐	23	**SHF6** - Tractor-constructed fire lines will be established **greater than 200 feet from cave entrances**. Existing logging roads and skid trails will be used where feasible to minimize ground disturbance and generation of loose sediment.
☑	17, 22, 23, 32, 33, 34, 35, 36	**SHF7** - Burning will only occur if site specific conditions (e.g. acres burned, transport wind speed, mixing heights) can be modified to ensure that smoke is adequately dispersed away from caves or cave-like structures. This applies to prescribed burns and burn piles of woody vegetation.
☑	17, 22, 23, 32, 33, 34, 35, 36	**SHF8** - Brush piles will be burned a **minimum of 0.25 mile from documented, known, or obvious caves or cave entrances** and otherwise in the center of newly established ROW when proximity to caves on private land is unknown.

■	17, 23, 34	**SHF9** - A **0.25 mile buffer of undisturbed forest** will be maintained around documented or known gray bat maternity and hibernation colony sites, documented or known Virginia big-eared bat maternity, bachelor, or winter colony sites, Indiana bat hibernation sites, and northern long-eared bat hibernation sites. Prohibited activities within this buffer include cutting of overstory vegetation, construction of roads, trails or wildlife openings, and prescribed burning. Exceptions may be made for maintenance of existing roads and existing ROW, or where it is determined that the activity is compatible with species conservation and recovery (e.g., removal of invasive species).
■	33, 34	**TR1*** - Removal of potentially suitable summer roosting habitat during time of potential occupancy has been quantified and minimized programmatically. TVA will track and document alignment of activities that include tree removal (i.e., hazard trees, mechanical vegetation removal) with the programmatic quantitative cumulative estimate of seasonal removal of potential summer roost trees for Indiana bat and northern long-eared bat. Project will therefore communicate completion of tree removal to appropriate TVA staff.
■	33, 34	**TR2** - Removal of suitable summer roosting habitat **within 0.5 mile of Priority 1/Priority 2 Indiana bat hibernacula, or 0.25 mile of Priority 3/Priority 4 Indiana bat hibernacula or any northern long-eared bat hibernacula** will be prohibited, regardless of season, with very few exceptions (e.g., vegetation maintenance of TL ROW immediately adjacent to a known cave).
■	33, 34	**TR3*** - Removal of suitable summer roosting habitat within documented bat habitat (i.e., within 10 miles of documented Indiana bat hibernacula, within 5 miles of documented northern long-eared bat hibernacula, within 2.5 miles of documented Indiana bat summer roost trees, within 5 miles of Indiana bat capture sites, within 1 mile of documented northern long-eared bat summer roost trees, within 3 miles of northern long-eared bat capture sites) will be tracked, documented, and included in annual reporting. Project will therefore communicate completion of tree removal to appropriate TVA staff.
■	33, 34	**TR4*** - Removal of suitable summer roosting habitat within potential habitat for Indiana bat or northern long-eared bat will be tracked, documented, and included in annual reporting. Project will therefore communicate completion of tree removal to appropriate TVA staff.
■	33, 34	**TR5** - Removal of any trees **within 150 feet of a documented Indiana bat or northern long-eared bat maternity summer roost tree** during non-winter season, range- wide pup season or swarming season (if site is within known swarming habitat), will first require a site-specific review and assessment. If pups are present in trees to be removed (determined either by mist netting and assessment of adult females, or by visual assessment of trees following evening emergence counts), TVA will coordinate with the USFWS to determine how to minimize impacts to pups to the extent possible. May include establishment of artificial roosts before removal of roost tree(s).
■	33, 34	**TR6** - Removal of a documented Indiana bat or northern long-eared bat roost tree that is still suitable and that needs to occur during non-winter season, range-wide pup season, or swarming season (if site is within known swarming habitat) will first require a site-specific review and assessment. If pups are present in trees to be removed (determined either by mist netting and assessment of adult females, or by visual assessment of trees following evening emergence counts), TVA will coordinate with USFWS to determine how to minimize impacts to pups to the extent possible. This may include establishment of artificial roosts before removal of roost tree(s).
■	33, 34	**TR7** (**Existing Transmission ROW only**) - **Tree removal within 100 feet of existing transmission ROWs will be limited to hazard trees**. On or adjacent to TLs, a hazard tree is a tree that is tall enough to fall within an unsafe distance of TLs under maximum sag and blowout conditions and/or are also dead, diseased, dying, and/or leaning. Hazard tree removal includes removal of trees that 1) currently are tall enough to threaten the integrity of operation and maintenance of a TL or 2) have the ability in the future to threaten the integrity of operation and maintenance of a TL.
■	33, 34	**TR8** (**TVA Reservoir Land only**) - Requests for removal of hazard trees on or adjacent to TVA reservoir land will be inspected by staff knowledgeable in identifying hazard trees per International Society of Arboriculture and TVA's checklist for hazard trees. Approval will be limited to trees with a defined target.
■	33, 34	**TR9** - If removal of suitable summer roosting habitat occurs when bats are present on the landscape, a funding contribution (based on amount of habitat removed) towards future conservation and recovery efforts for federally listed bats would be carried out. Project can consider seasonal bat presence/absence surveys (mist netting or emergence counts) that allow for positive detections without resulting in increased constraints in cost and project schedule. This will enable TVA to contribute to increased knowledge of bat presence on the landscape while carrying out TVA's broad mission and responsibilities.

☐	69, 77, 89, 91	**AR1** - Projects that involve structural modification or demolition of buildings, bridges, and potentially suitable box culverts, will require assessment to determine if structure has characteristics that make it a potentially suitable unconventional bat roost. If so a survey to determine if bats may be present will be conducted. Structural assessment will include: ○ Visual check that includes an exhaustive internal/external inspection of building to look for evidence of bats (e.g., bat droppings, roost entrance/exit holes); this can be done at any time of year, preferably when bats are active. ○ Where accessible and health and safety considerations allow, a survey of roof space for evidence of bats (e.g., droppings, scratch marks, staining, sightings), noting relevant characteristics of internal features that provide potential access points and roosting opportunities. Suitable characteristic may include: gaps between tiles and roof lining, access points via eaves, gaps between timbers or around mortise joints, gaps around top and gable end walls, gaps within roof walling or around tops of chimney breasts, and clean ridge beams. ○ Features with high-medium likelihood of harboring bats but cannot be checked visually include soffits, cavity walls, space between roof covering and roof lining. ○ Applies to box culverts that are at least 5 feet (1.5 meters) tall and with one or more of the following characteristics. Suitable culverts for bat day roosts have the following characteristics: • Location in relatively warm areas • Between 5-10 feet (1.5-3 meters) tall and 300 ft (100 m) or more long • Openings protected from high winds • Not susceptible to flooding • Inner areas relatively dark with roughened walls or ceilings • Crevices, imperfections, or swallow nests ○ Bridge survey protocols will be adapted from the Programmatic Biological Opinion for the Federal Highway Administration (Appendix D of USFWS 2016c, which includes a Bridge Structure Assessment Guidance and a Bridge Structure Assessment Form). ○ Bat surveys usually are NOT needed in the following circumstances: • Domestic garages /sheds with no enclosed roof space (with no ceiling) • Modern flat-roofed buildings • Metal framed and roofed buildings • Buildings where roof space is regularly used (e.g., attic space converted to living space, living space open to rafters) or where all roof space is lit from skylights or windows. Large/tall roof spaces may be dark enough at apex to provide roost space
☐	69, 77, 89, 91	**AR2** - Additional bat P/A surveys (e.g., emergence counts) conducted if warranted (i.e., when AR1 indicates that bats may be present).
☐	91	**AR3** - Bridge survey protocols will be implemented, either by permittee (e.g., state DOT biologists) or qualified personnel. If a bridge is determined to be in use as an unconventional roost, subsequent protocols will be implemented.
☐	69, 89	**AR4** - Removal of buildings with suitable roost characteristics within six miles of known or presumed occupied roosts for Virginia big-eared bat would occur between Nov 16 and Mar 31. Buildings may be removed other times of the year once a bat biologist evaluates a buildings' potential to serve as roosting habitat and determines that this species is not present and/or is not using structure(s).

■	16, 17, 18, 21, 22, 24, 25, 26, 27, 28, 29, 31, 32, 33, 34, 35, 36, 37, 38, 39, 48, 50, 51, 56, 61, 62, 63, 64, 65, 67, 69, 84, 89	**SSPC1** (**Transmission only**) - Transmission actions and activities will continue to Implement A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities. This focuses on control of sediment and pollutants, including herbicides. Following are key measures: o BMPs minimize erosion and prevent/control water pollution in accordance with state-specific construction storm water permits. BMPS are designed to keep soil in place and aid in reducing risk of other pollutants reaching surface waters, wetlands and ground water. BMPs will undertake the following principles: • Plan clearing, grading, and construction to minimize area and duration of soil exposure. • Maintain existing vegetation wherever and whenever possible. • Minimize disturbance of natural contours and drains. • As much as practicable, operate on dry soils when they are least susceptible to structural damage and erosion. • Limit vehicular and equipment traffic in disturbed areas. Keep equipment paths dispersed or designate single traffic flow paths with appropriate road BMPs to manage runoff. • Divert runoff away from disturbed areas. • Provide for dispersal of surface flow that carries sediment into undisturbed surface zones with high infiltration capacity and ground cover conditions. • Prepare drainage ways and outlets to handle concentrated/increased runoff. • Minimize length and steepness of slopes. Interrupt long slopes frequently. • Keep runoff velocities low and/or check flows. • Trap sediment on-site. • Inspect/maintain control measures regularly & after significant rain. • Re-vegetate and mulch disturbed areas as soon as practical. o Specific guidelines regarding sensitive resources and buffer zones: • Extra precaution (wider buffers) within SMZs is taken to protect stream banks and water quality for streams, springs, sinkholes, and surrounding habitat. • BMPs are implemented to protect and enhance wetlands. Select use of equipment and seasonal clearing is conducted when needed for rare plants; construction activities are restricted in areas with identified rare plants. • Standard requirements exist to avoid adverse impacts to caves, protected animals, unique/ important habitat (e.g., cave buffers, restricted herbicide use, seasonal clearing of suitable habitat).
■	16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 48, 50, 51, 52, 53, 54, 55, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 70, 71, 73, 76, 77, 78, 80, 81, 82, 83, 86, 87, 88, 89, 90	**SSPC2** - Operations involving chemical/fuel storage or resupply and vehicle servicing will be handled outside of riparian zones (streamside management zones) in a manner to prevent these items from reaching a watercourse. Earthen berms or other effective means are installed to protect stream channel from direct surface runoff. Servicing will be done with care to avoid leakage, spillage, and subsequent stream, wetland, or ground water contamination. Oil waste, filters, other litter will be collected and disposed of properly. Equipment servicing and chemical/fuel storage will be limited to locations greater than 300-ft from sinkholes, fissures, or areas draining into known sinkholes, fissures, or other karst features.

■	16, 17, 18, 21, 22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 48, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 61, 62, 63, 64, 65, 66, 67, 69, 70, 71, 73, 76, 77, 80, 81, 82, 83, 84, 86, 87, 88, 89, 90, 91	**SSPC3** (**Power Plants only**) - Power Plant actions and activities will continue to implement standard environmental practices. These include: ○ Best Management Practices (BMPs) in accordance with regulations: • Ensure proper disposal of waste, ex: used rags, used oil, empty containers, general trash, dependent on plant policy • Maintain every site with well-equipped spill response kits, included in some heavy equipment • Conduct Quarterly Internal Environmental Field Assessments at each sight • Every project must have an approved work package that contains an environmental checklist that is approved by sight Environmental Health & Safety consultant. • When refueling, vehicle is positioned as close to pump as possible to prevent drips, and overfilling of tank. Hose and nozzle are held in a vertical position to prevent spillage ○ Construction Site Protection Methods • Sediment basin for runoff - used to trap sediments and temporarily detain runoff on larger construction sites • Storm drain protection device • Check dam to help slow down silt flow • Silt fencing to reduce sediment movement ○ Storm Water Pollution Prevention (SWPP) Pollution Control Strategies • Minimize storm water contact with disturbed soils at construction site • Protect disturbed soil areas from erosion • Minimize sediment in storm water before discharge • Prevent storm water contact with other pollutants • Construction sites also may be required to have a storm water permit, depending on size of land disturbance (>1ac) ○ Every site has a Spill Prevention and Control Countermeasures (SPCC) Plan and requires training. Several hundred pieces of equipment often managed at the same time on power generation properties. Goal is to • Minimize fuel and chemical use Ensure proper disposal of waste, ex: used rags, used oil, empty containers, general trash, dependent on plant policy • Maintain every site with well-equipped spill response kits, included in some heavy equipment • Conduct Quarterly Internal Environmental Field Assessments at each sight • Every project must have an approved work package that contains an environmental checklist that is approved by sight Environmental Health & Safety consultant. • When refueling, vehicle is positioned as close to pump as possible to prevent drips, and overfilling of tank. Hose and nozzle are held in a vertical position to prevent spillage ○ Construction Site Protection Methods • Sediment basin for runoff - used to trap sediments and temporarily detain runoff on larger construction sites • Storm drain protection device • Check dam to help slow down silt flow • Silt fencing to reduce sediment movement ○ Storm Water Pollution Prevention (SWPP) Pollution Control Strategies • Minimize storm water contact with disturbed soils at construction site • Protect disturbed soil areas from erosion • Minimize sediment in storm water before discharge • Prevent storm water contact with other pollutants • Construction sites also may be required to have a storm water permit, depending on size of land disturbance (>1ac) ○ Every site has a Spill Prevention and Control Countermeasures (SPCC) Plan and requires training. Several hundred pieces of equipment often managed at the same time on power generation properties. Goal is to minimize fuel and chemical use
■	17, 22, 32, 33, 34, 35, 36	**SSPC4** (**Transmission only**) - Woody vegetation burn piles associated with transmission construction will be placed in the center of newly established ROWs to minimize wash into any nearby undocumented caves that might be on adjacent private property and thus outside the scope of field survey for confirmation. Brush piles will be burned a **minimum of 0.25 miles from documented caves** and otherwise in the center of newly established ROW when proximity to caves on private land is unknown.

☑	17, 18, 21, 22, 24, 25, 26, 30, 31, 33, 34, 35, 36, 40, 46, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 66, 67, 68, 69, 70, 72, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 87, 88, 91, 93, 95, 96	**SSPC5** (**26a, Solar, Economic Development only**) - Section 26a permits and contracts associated with solar projects, economic development projects or land use projects include standards and conditions that include standard BMPs for sediment and contaminants as well as measures to avoid or minimize impacts to sensitive species or other resources consistent with applicable laws and Executive Orders.
☐	21, 54	**SSPC6** - Herbicide use will be avoided **within 200 ft of portals associated with caves, cave collapse areas, mines and sinkholes** are capable of supporting cave-associated species. Herbicides are not applied to surface water or wetlands unless specifically labeled for aquatic use. Filter and buffer strips will conform at least to federal and state regulations and label requirements.
☑	17, 21, 25, 26, 27, 28, 29, 31, 32, 33, 34, 35, 36, 37, 38, 54, 55	**SSPC7** - Clearing of vegetation **within a 200-ft radius of documented caves** will be limited to hand or small machinery clearing only (e.g., chainsaws, bush-hog, mowers). This will protect potential recharge areas of cave streams and other karst features that are connected hydrologically to caves.
☑	16, 26, 36, 37, 38, 39, 48, 50, 52, 59, 60, 62, 66, 67, 69, 72, 75, 77, 78, 79, 86	**L1** - Direct temporary lighting away from suitable habitat during the active season.
☑	16, 26, 36, 37, 38, 39, 48, 50, 52, 59, 60, 62, 66, 67, 69, 72, 75, 77, 78, 79, 86	**L2** - Evaluate the use of outdoor lighting during the active season and seek to minimize light pollution when installing new or replacing existing permanent lights by angling lights downward or via other light minimization measures (e.g., dimming, directed lighting, motion-sensitive lighting).

[1]Bats addressed in consultation (02/2018), which includes gray bat (listed in 1976), Indiana bat (listed in 1967), northern long-eared bat (listed in 2015), and Virginia big-eared bat (listed in 1979).

Hide All Unchecked Conservation Measures

- ○ HIDE
- ○ UNHIDE

Hide Table 4 Columns 1 and 2 to Facilitate Clean Copy and Paste

- ○ HIDE
- ○ UNHIDE

NOTES (additional info from field review, explanation of no impact or removal of conservation measures).

STEP 14) Save completed form (Click File/Save As, name form as "ProjectLead_BatForm_CEC-or-ProjectIDNo_Date") in project environmental documentation (e.g. CEC, Appendix to EA) AND send a copy of form to batstrategy@tva.gov
Submission of this form indicates that Project Lead/Applicant:

_____ (name) is (or will be made) aware of the requirements below.

- Implementation of conservation measures identified in Table 4 is required to comply with TVA's Endangered Species Act programmatic bat consultation.
- TVA may conduct post-project monitoring to determine if conservation measures were effective in minimizing or avoiding impacts to federally listed bats.

For Use by Terrestrial Zoologist Only

☐ Terrestrial Zoologist acknowledges that Project Lead/Contact (name) _____ has been informed of any relevant conservation measures and/or provided a copy of this form.

☐ For projects that require use of Take and/or contribution to TVA's Bat Conservation Fund, Terrestrial Zoologist acknowledges that Project Lead/Contact has been informed that project will result in use of Incidental Take _____ ○ ac ○ trees and that use of Take will require $ _____ contribution to TVA's Conservation Fund upon completion of activity (amount entered should be $0 if cleared in winter).

APPENDIX B

Public Comments and Responses

APPENDIX B – PUBLIC COMMENTS AND RESPONSES

The Phase 1 East Region Consolidation – Norris Properties Second Supplemental Environmental Assessment was released for comment on November 25, 2019. The comment period closed on December 10, 2019. The Draft EA was posted on TVA's public National Environmental Policy Act (NEPA) review website (http://www.tva.gov/nepa). A notice of availability including a request for comments on the Draft EA was published in newspapers serving the City of Norris, Tennessee. TVA also transmitted notification of availability of the Draft EA to various agencies. Comments were accepted through December 10, 2019, via TVA's website, mail, and e-mail.

One comment was submitted by email from TDEC. This comment letter is included at the end of this appendix. There were a total of eight comments. Comments concentrated on impacts to air resources and solid waste. TVA's responses to comments raised in these documents are provided below.

Comment 1 (Air Resources): Currently Anderson County is classified as "attaining" the national Ambient Air Quality Standards (NAAQS) and is in an area identified as a partial ozone maintenance area part of the former Knoxville 2008, 8-Hour ozone nonattainment area and is identified as a whole county maintenance area for the Knoxville PM2.5 1997 annual and Knoxville PM2.5 2006 24 Hour nonattainment areas. TDEC encourages TVA to include discussion relating to the NAAQS air quality designations for the Anderson County area in the Final SEA. (*Commenter: Tennessee Department of Environment and Conservation [TDEC]*).

> **Response 1:** Section 3.9.1 has been updated to include a discussion of all of Anderson County's NAAQS air quality designations.

Comment 2 (Air Resources): TVA includes descriptions and details of the measures designed to mitigate fugitive dust emissions likely to be generated during the phases of the project. If asbestos removal or demolition is also planned to occur additional consideration should be given to ensure that demolition related emissions are minimized, that any asbestos containing material (ACM) is identified and managed properly during demolition and that the appropriate notifications be provided prior to any renovation/demolition activity. TDEC encourages TVA to include these considerations in the Final SEA. (*Commenter: TDEC*).

> **Response 2:** No asbestos removal or demolition will occur as part of the Phase 1 Second SEA project activities. TVA will consider this comment in relation to actions related to the Phase 2 project activities.

Comment 3 (Air Resources): The amount of material to be moved is substantial and will require a significant number of dump trucks and related loading vehicles for use on site. The use of truck wheel washing stations and wetting will likely reduce the possible track-out of

fugitive dust generating materials onto local roads and highways leading to the construction location.

Response 3: Comment noted. As described in Subsection 2.8.1, TVA is committed to the use of a truck wheel washing station. Subsection 3.9.2 has been updated to include this commitment.

Comment 4 (Air Resources): TDEC encourages TVA to include discussions of the proposed locations for offsite disposal of the unsuitable soils, which could be presented along with a discussion of the alternative locations in the region where disposal could be accomplished (*Commenter: TDEC*).

Response 4: A discussion of the offsite landfills that could be used for the disposal of soils not suitable for use as fill has been added to Subsection 3.13.2.2. Additionally, the *Phase 1 East Region Consolidation - Norris Properties Supplemental Environmental Assessment and Finding of No Significant Impact* dated July 9, 2019 includes a discussion of 500-750 cubic yards of soil determined to be unsuitable for reuse as fill due to the presence of extracted petroleum hydrocarbons (EPH) and polychlorinated biphenyls (PCBs) that needed to be transferred to Chestnut Ridge Landfill in Heiskel, Tennessee. The soil was since disposed of through Special Waste Permit SNL 01-0160.

Comment 5 (Solid Waste): Providing discussion of the anticipated emissions generated by the gasoline and diesel fueled trucks and construction equipment used on and offsite and how they are expected to be minimized through the use of proper maintenance and new emissions control technologies and fuels is encouraged along with the minimization of unnecessary heavy duty vehicle idling is encouraged. (*Commenter: TDEC*).

Response 5: Anticipated emissions from the vehicles used for soil transport and construction activities is provided in Subsection 3.9.2.2. The discussion in Subsection 3.9.2.2 has been updated to emphasize the use of proper maintenance, emission control technologies, and minimization of idling as methods for minimizing impacts.

Comment 6 (Solid Waste): With respect to the disposal of potentially contaminated soils in a Class I Landfill in Tennessee, TVA would need to obtain approval from TDEC's Division of Solid Waste Management (DSWM) through the Special Waste Program.[5] TDEC encourages TVA to reflect these considerations in the Final SEA. (*Commenter: TDEC*).

Response 6: As mentioned in Response 4, a discussion of soils with presence of EPH and PCBs are detailed in the *Phase 1 East Region Consolidation - Norris Properties Supplemental Environmental Assessment and Finding of No Significant Impact* dated July 9, 2019. Subsection 3.13.1 of the current EA has been updated to reflect that if contaminated soils are identified, a Special Waste application will be submitted to TDECS DSWM for approval prior to disposal in one of the landfills identified in 2.5.2.1 Table 2-1.

Comment 7 (Solid Waste): It is important to note that there is a formal alternate daily cover (ADC) approval process regardless of soil sampling results. Prior to any decision pertaining to the use of soil as ADC, TDEC DSWM will need to complete a formal review of the results and address any substantial contaminant issues that may arise. TDEC encourages TVA to include these considerations in the Final SEA (*Commenter: TDEC*).

> **Response 7:** Subsection 3.13.1 has been updated to reflect that if soil deemed unsuitable for fill is to be considered for ADC, TVA will complete the ADC approval process with TDEC DSWM prior to use.

Comment 8 (Solid Waste): TDEC recommends that the Final SEA consider and explicitly reflect that any wastes associated with such activities in Tennessee be managed in accordance with the Solid and Hazardous Waste Rules and Regulation of the State of Tennessee (TDEC DSWM Rule 0400 Chapters 11 and 12, respectively). (*Commenter: TDEC*).

> **Response 8:** Subsection 3.13.1 has been updated to reflect that all waste disposal will comply with Solid and Hazardous Waste Rules and Regulation of the State of Tennessee (TDEC DSWM Rule 0400 Chapters 11 and 12).