APPENDIX A – ENVIRONMENTAL SCREENING CHECKLIST

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Environmental Screening Checklist

The goal of this program is to optimize the reuse of coal combustion residuals (CCR) currently produced and stored at TVA coal plants by programmatically evaluating the construction and operation of on-site CCR beneficiation processing facilities at TVA coal plants. This Environmental Screening Checklist is used to collect project information to determine whether proposed actions fall within the bounding parameters identified in Table 2-1 of the Programmatic Environmental Assessment (PEA).

A TVA National Environmental Policy Act (NEPA) Specialist/Environmental Program Manager will complete this checklist well before construction activities begin, in accordance with TVA's legal and policy requirements associated with this program. The NEPA Specialist and Environmental Program Manager will ensure that TVA Subject Matter Experts document input for their respective resource categories for final environmental review and site approval.

TVA NEPA Specialist (name): _____

TVA Environmental Program Manager (name): _____

Proposed Coal Plant Site Name/Address (or lat/long): _____

If the answer to any question below is *YES*, further review of environmental impacts by TVA may be required.

If TVA determines that the proposed project impacts sensitive resources beyond the bounded values assessed in the PEA associated with this checklist, the proposed project would be subject to a site-specific environmental review consistent with TVA NEPA procedures.

Facility Attributes	
☐ Yes ☐ No	Will the land requirements exceed 15 acres? Project area acreage:
☐ Yes ☐ No	Will more than 7 megawatts (MW) of power be needed?
☐ Yes ☐ No	Would new transmission facilities be needed?
☐ Yes ☐ No	Would the process water requirement be greater than 150 gallons per minute (GPM)?
☐ Yes ☐ No	Would the potable water requirement be greater than 25 GPM?
☐ Yes ☐ No	Would more than 50 GPM be discharged to publicly owned treatment works?
☐ Yes ☐ No	Would the total output capacity be greater than 1,000,000 tons of processed CCR per year?
☐ Yes ☐ No	Would raw material storage be greater than 15,000 cubic yards (yd^3)?
☐ Yes ☐ No	Would processed material storage be greater than 45,000 yd^3?

Construction-Phase Attributes	
☐ Yes ☐ No	Will the duration of construction exceed 18 months?
☐ Yes ☐ No	Will foundation piers exceed 40 feet in depth?
☐ Yes ☐ No	Is borrow material needed to support construction?
☐ Yes ☐ No	Will removal of trees with a trunk diameter greater than 3 inches at breast height be necessary? If so, how many trees or acres of trees will be cleared? _____ trees/acres If yes, how will the cleared trees be disposed (i.e. sold, hauled offsite, mulched, burned, etc.): _____
☐ Yes ☐ No	Can the project commit to tree clearing only within a winter window (approximately October 15-March 31 - dates may vary depending on site location)?
☐ Yes ☐ No	Will development of the site require filling in, or alterations to, wetlands or streams, or streamside management zones?
☐ Yes ☐ No	Will development of the site result in impacts to caves or sinkholes?
☐ Yes ☐ No	Will development – including laydown areas, fill, structures, buildings, and activities – be located within the Federal Emergency Management Agency (FEMA) 100-year floodplain as well as the area below the 100-year flood elevation?
Operational Characteristics	
☐ Yes ☐ No	Will operations exceed 50 weeks per year; 350 operating days per year?
☐ Yes ☐ No	Would storage requirements of natural gas/propane be greater than 100,000 gallons?
☐ Yes ☐ No	Would trucking of processed CCR product exceed 300 days per year?
☐ Yes ☐ No	Would daily truckloads of processed CCR product be greater than 125 (250 truck trips)?
☐ Yes ☐ No	Would solid waste generated be greater than 1,500 tons per year?
☐ Yes ☐ No	Would wastewater be discharged greater than 50 gallons per minute?
☐ Yes ☐ No	Would transport by rail or barge be utilized?
Air Quality/Greenhouse Gases (GHG)	
☐ Yes ☐ No	Is the site located in or contributing to an area that is designated as non-attainment for one or more criteria air pollutants (National Ambient Air Quality Standards)?
☐ Yes ☐ No	Will emissions exceed the following thresholds? Sulfur dioxide: 140 tons per year; nitrogen oxides and carbon monoxide: 120 tons per year; particulate matter: 120 tons/year; hazardous air pollutants (HAPs): Single HAP 10 tons/year or 25 tons/year for any combination of HAPs.

☐ Yes ☐ No	Will GHG emissions exceed the following thresholds? Carbon dioxide: 160,872 tons per year; methane: 0.07 tons per year; nitrous oxide: 0.01 tons per year; carbon dioxide equivalent: 161,000 tons per year.
Reasonably Foreseeable Future Actions	
☐ Yes ☐ No	Are other actions underway or proposed that, when combined with potential effects of construction and operation of the proposed project, could have a notable collective effect on human health or the environment?

TVA Subject Matter Experts reviewed the material presented in this checklist. Documentation of their review is attached.

In accordance with NEPA, TVA must evaluate and document whether the proposed action described within this document is already covered under an existing NEPA review. The following questions record the evaluation of four criteria for making this determination.

Determination of NEPA Adequacy	
☐ Yes ☐ No	Is the site-specific proposed action bounded by the proposed action as analyzed in the TVA Beneficiation Facility PEA? If no, describe:
☐ Yes ☐ No	Are there significant circumstances or information relevant to site-specific environmental concerns that would substantially change the analysis in the TVA Beneficiation Facility PEA? If yes, describe:
☐ Yes ☐ No	Are there effects that would result from the site-specific proposed action that were not addressed in the TVA Beneficiation Facility PEA? If yes, describe:
☐ Yes ☐ No	Is additional site-specific NEPA necessary? If yes, explain:

Based on the evaluation documented herein, I conclude that the TVA Beneficiation Facility PEA and Finding of No Significant Impact (FONSI) fully cover the proposed site-specific action and constitutes TVA's legal and policy requirements associated with this program. The site-specific project does not present significant changes to the proposed action or significant new circumstances or information relevant to environmental concerns that would require supplemental analysis. Impacts associated with the proposed action would be minor to moderate and are bounded by the conclusions of the Final PEA and FONSI. This form documents TVA's compliance with NEPA for this site-specific action.

_____ _____

NAME
Manager, NEPA Compliance
Tennessee Valley Authority

Date Signed

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APPENDIX B – SHPO CONSULTATION INITIATION

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TENNESSEE VALLEY AUTHORITY

400 West Summit Hill Drive, Knoxville, Tennessee 37902

December 30,2024

Mr. E. Patrick McIntyre, Jr.
Executive Director
and State Historic Preservation Officer
Tennessee Historical Commission
2941 Lebanon Road
Nashville, Tennessee 37243-0442

Dear Mr. McIntyre:

TENNESSEE VALLEY AUTHORITY (TVA), CONSTRUCTION AND OPERATION OF COAL COMBUSTION RESIDUAL (CCR) PROCESSING FACILITIES PROJECT, COLBERT AND JACKSON COUNTIES, ALABAMA; McCRACKEN AND MUHLENBERG COUNTIES, KENTUCKY; AND ANDERSON, HAWKINS, HUMPHREYS, ROANE, STEWART, AND SUMNER COUNTIES, TENNESSEE – INITIATION OF CONSULTATION

TVA is considering CCR processing facilities at one or more properties across the Tennessee Valley to prepare CCR for market. Since adoption in the 1970s the marketing and utilization of combustion by-products in innovative ways has been used to offset cost and manage storage. Residuals are often used as a supplementary component to agricultural fertilizers, cement and concrete, asphalt paving, wallboard such as sheetrock, and many other uses. The construction and operation of CCR processing facilities would improve and optimize TVA's CCR management by enabling utilization and marketing of more CCR, in an environmentally acceptable and sustainable manner. The construction and operation of CCR processing facilities would be done by a third party at various fossil plant sites within the Tennessee Valley. TVA has selected six potential sites for processing facilities in Tennessee, two in Alabama, and two in Kentucky; all sites would be within TVA fossil plant reservations (Figures 1-6).

Residuals could be processed using two different methods, thermal and non-thermal processing. Both methods include a control room building, small lab, maintenance area, ash storage domes and silos, parking, and office/meeting space. Reclaimed ash would be excavated prior to being placed in covered storage. From the storage location the material would be fed via a fully contained system to the processing center. The processing center would transform the raw ash into a marketable product by drying, classifying, and grinding material. Once transformed, the ash would cool in a baghouse that recycles heat to dry the feed material. Material ready for market and delivery would be dispensed via a load-out storage silo that would feed product into tanker trucks used for transportation outside of the reservation.

Thermal processing facilities would use propane storage tanks or liquified natural gas (LNG) delivered via a pipeline. In addition to the major equipment, thermal processing would require a sulfur dioxide scrubber to meet permit limitations. Dry scrubber material would be produced as a by-product, and TVA would send it to an off-site landfill for disposal. Should LNG be used the

pipeline would tie into an existing line within the TVA reservation. At this point, Cumberland (in Stewart County, Tennessee) is the only reservation being considered for thermal production based on existing infrastructure. Subsurface piles would be installed to support foundations for facility components, as required. At full buildout, the facility associated with either method would not exceed 15 acres on the reservation and structural elements would not exceed 140 feet in height.

Due to the nature of the project, potential sites would be limited to former or existing TVA fossil plants. Plans are still being developed, and at this time, TVA is unable to completely determine how many, or which, fossil plants would process CCR using this method. Whichever locations are chosen, the processing facilities would be confined to a disturbed setting or an area that has been surveyed for archaeological resources and no eligible or potentially eligible resources were identified. In order to ensure that the actions do not adversely effect historic properties, TVA proposes to choose sites that are found, after a Section 106 review and consultation, to not result in adverse effects on historic properties.

Due to the complexity of this undertaking TVA proposes to develop a project Programmatic Agreement (PA), as provided for under 36 CFR §800.14(b). This PA would set out a process for TVA to complete phased identification, evaluation of effect and resolution of adverse effects. TVA is seeking your agreement to develop a PA between our offices regarding the undertaking.

Pursuant to 36 CFR Part 800.3(f)(2), TVA is consulting with federally recognized Indian tribes regarding the program.

Please contact Tyler Parrott by email, stparrott@tva.gov with your comments.

Sincerely,

Steve C. Cole
Manager, Cultural Reviews—Energy
Cultural Resources

STP:ERB
Enclosures
cc (Enclosures):
Ms. Jennifer Barnett
Tennessee Division of Archaeology
1216 Foster Avenue, Cole Bldg. #3
Nashville, Tennessee 37210

TENNESSEE VALLEY AUTHORITY
400 West Summit Hill Drive, Knoxville, Tennessee 37902

December 30, 2024

Mr. Craig Potts
Executive Director
and State Historic Preservation Officer
Kentucky Heritage Council
300 Washington Street
Frankfort, Kentucky 40601

Dear Mr. Potts:

TENNESSEE VALLEY AUTHORITY (TVA), CONSTRUCTION AND OPERATION OF COAL COMBUSTION RESIDUAL (CCR) PROCESSING FACILITIES PROJECT, COLBERT AND JACKSON COUNTIES, ALABAMA; McCRACKEN AND MUHLENBERG COUNTIES, KENTUCKY; AND ANDERSON, HAWKINS, HUMPHREYS, ROANE, STEWART, AND SUMNER COUNTIES, TENNESSEE – INITIATION OF CONSULTATION

TVA is considering CCR processing facilities at one or more properties across the Tennessee Valley to prepare CCR for market. Since adoption in the 1970s the marketing and utilization of combustion by-products in innovative ways has been used to offset cost and manage storage. Residuals are often used as a supplementary component to agricultural fertilizers, cement and concrete, asphalt paving, wallboard such as sheetrock, and many other uses. The construction and operation of CCR processing facilities would improve and optimize TVA's CCR management by enabling utilization and marketing of more CCR, in an environmentally acceptable and sustainable manner. The construction and operation of CCR processing facilities would be done by a third party at various fossil plant sites within the Tennessee Valley. TVA has selected six potential sites for processing facilities in Tennessee, two in Alabama, and two in Kentucky; all sites would be within TVA fossil plant reservations (Figures 1 and 2).

Residuals could be processed using two different methods, thermal and non-thermal processing. Both methods include a control room building, small lab, maintenance area, ash storage domes and silos, parking, and office/meeting space. Reclaimed ash would be excavated prior to being placed in covered storage. From the storage location the material would be fed via a fully contained system to the processing center. The processing center would transform the raw ash into a marketable product by drying, classifying, and grinding material. Once transformed, the ash would cool in a baghouse that recycles heat to dry the feed material. Material ready for market and delivery would be dispensed via a load-out storage silo that would feed product into tanker trucks used for transportation outside of the reservation.

Thermal processing facilities would use propane storage tanks or liquified natural gas (LNG) delivered via a pipeline. In addition to the major equipment, thermal processing would require a sulfur dioxide scrubber to meet permit limitations. Dry scrubber material would be produced as a by-product, and TVA would send it to an off-site landfill for disposal. Should LNG be used the

pipeline would tie into an existing line within the TVA reservation. At this point, Cumberland (in Stewart County, Tennessee) is the only reservation being considered for thermal production based on existing infrastructure. Subsurface piles would be installed to support foundations for facility components, as required. At full buildout, the facility associated with either method would not exceed 15 acres on the reservation and structural elements would not exceed 140 feet in height.

Due to the nature of the project, potential sites would be limited to former or existing TVA fossil plants. Plans are still being developed, and at this time, TVA is unable to completely determine how many, or which, fossil plants would process CCR using this method. Whichever locations are chosen, the processing facilities would be confined to a disturbed setting or an area that has been surveyed for archaeological resources and no eligible or potentially eligible resources were identified. In order to ensure that the actions do not adversely effect historic properties, TVA proposes to choose sites that are found, after a Section 106 review and consultation, to not result in adverse effects on historic properties.

Due to the complexity of this undertaking TVA proposes to develop a project Programmatic Agreement (PA), as provided for under 36 CFR §800.14(b). This PA would set out a process for TVA to complete phased identification, evaluation of effect and resolution of adverse effects. TVA is seeking your agreement to develop a PA between our offices regarding the undertaking.

Pursuant to 36 CFR Part 800.3(f)(2), TVA is consulting with federally recognized Indian tribes regarding the program.

Please contact Tyler Parrott by email, stparrott@tva.gov with your comments.

Sincerely,

Steve C. Cole
Manager, Cultural Reviews—Energy
Cultural Resources

TENNESSEE VALLEY AUTHORITY

400 West Summit Hill Drive, Knoxville, Tennessee 37902

December 30, 2024

Ms. Lee Anne Hewitt
Deputy State Historic Preservation Officer
Alabama Historical Commission
468 South Perry Street
Montgomery, Alabama 36130-0900

Dear Ms. Hewett:

TENNESSEE VALLEY AUTHORITY (TVA), CONSTRUCTION AND OPERATION OF COAL COMBUSTION RESIDUAL (CCR) PROCESSING FACILITIES PROJECT, COLBERT AND JACKSON COUNTIES, ALABAMA; McCRACKEN AND MUHLENBERG COUNTIES, KENTUCKY; AND ANDERSON, HAWKINS, HUMPHREYS, ROANE, STEWART, AND SUMNER COUNTIES, TENNESSEE – INITIATION OF CONSULTATION

TVA is considering CCR processing facilities at one or more properties across the Tennessee Valley to prepare CCR for market. Since adoption in the 1970s the marketing and utilization of combustion by-products in innovative ways has been used to offset cost and manage storage. Residuals are often used as a supplementary component to agricultural fertilizers, cement and concrete, asphalt paving, wallboard such as sheetrock, and many other uses. The construction and operation of CCR processing facilities would improve and optimize TVA's CCR management by enabling utilization and marketing of more CCR, in an environmentally acceptable and sustainable manner. The construction and operation of CCR processing facilities would be done by a third party at various fossil plant sites within the Tennessee Valley. TVA has selected six potential sites for processing facilities in Tennessee, two in Alabama, and two in Kentucky; all sites would be within TVA fossil plant reservations (Figures 1 and 2).

Residuals could be processed using two different methods, thermal and non-thermal processing. Both methods include a control room building, small lab, maintenance area, ash storage domes and silos, parking, and office/meeting space. Reclaimed ash would be excavated prior to being placed in covered storage. From the storage location the material would be fed via a fully contained system to the processing center. The processing center would transform the raw ash into a marketable product by drying, classifying, and grinding material. Once transformed, the ash would cool in a baghouse that recycles heat to dry the feed material. Material ready for market and delivery would be dispensed via a load-out storage silo that would feed product into tanker trucks used for transportation outside of the reservation.

Thermal processing facilities would use propane storage tanks or liquified natural gas (LNG) delivered via a pipeline. In addition to the major equipment, thermal processing would require a sulfur dioxide scrubber to meet permit limitations. Dry scrubber material would be produced as a by-product, and TVA would send it to an off-site landfill for disposal. Should LNG be used the

pipeline would tie into an existing line within the TVA reservation. At this point, Cumberland (in Stewart County, Tennessee) is the only reservation being considered for thermal production based on existing infrastructure. Subsurface piles would be installed to support foundations for facility components, as required. At full buildout, the facility associated with either method would not exceed 15 acres on the reservation and structural elements would not exceed 140 feet in height.

Due to the nature of the project, potential sites would be limited to former or existing TVA fossil plants. Plans are still being developed, and at this time, TVA is unable to completely determine how many, or which, fossil plants would process CCR using this method. Whichever locations are chosen, the processing facilities would be confined to a disturbed setting or an area that has been surveyed for archaeological resources and no eligible or potentially eligible resources were identified. In order to ensure that the actions do not adversely effect historic properties, TVA proposes to choose sites that are found, after a Section 106 review and consultation, to not result in adverse effects on historic properties.

Due to the complexity of this undertaking TVA proposes to develop a project Programmatic Agreement (PA), as provided for under 36 CFR §800.14(b). This PA would set out a process for TVA to complete phased identification, evaluation of effect and resolution of adverse effects. TVA is seeking your agreement to develop a PA between our offices regarding the undertaking.

Pursuant to 36 CFR Part 800.3(f)(2), TVA is consulting with federally recognized Indian tribes regarding the program.

Please contact Tyler Parrott by email, stparrott@tva.gov with your comments.

Sincerely,

Steve C. Cole
Manager, Cultural Reviews—Energy
Cultural Resources
External Strategy & Regulatory Oversight

APPENDIX C – DETAILED DESCRIPTIONS OF GEOLOGY, GROUNDWATER, SURFACE WATERS, AND WILDLIFE RESOURCES WITHIN THE STUDY AREA

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Detailed Descriptions of Geology, Groundwater, Surface Waters, and Wildlife Resources within the Study Area

C.1 Geologic Setting

Physiographic provinces are areas of similar land surfaces resulting from similar geologic history. There are four physiographic provinces overlain by the Tennessee Valley Authority (TVA) coal plants considered in this programmatic environmental assessment (PEA), including the Valley and Ridge, the Appalachian Plateaus, the Interior Low Plateaus, and the Coastal Plains (Table C-1). The easternmost part of the study area includes the Valley and Ridge Province, which is characterized by alternating valleys and ridges that trend northeast to southwest. Ridges have elevations up to 3,000 feet above sea level and are generally capped by dolomites and resistant sandstones, while valleys have been formed in less resistant dolomites and limestones (TVA 2024b).

The Appalachian Plateaus Province is an elevated area between the Valley and Ridge and Interior Low Plateaus Provinces. It consists of two sections, the Cumberland Plateau and the Cumberland Mountains. The Cumberland Plateau rises about 1,000 to 1,500 feet above the adjacent provinces and is formed by layers of near horizontal Pennsylvanian sandstones, shales, conglomerates, and coals, and underlain by Mississippian and older shale and limestones. The sandstones are resistant to erosion and have produced a relatively flat landscape cut by deep stream valleys. Toward the northeast, the Cumberland Mountains section is more rugged due to extensive faults and several peaks exceeding 3,000 feet elevation. The province has a long history of coal mining and encompasses the Appalachian coal field (TVA 2024b).

The Interior Low Plateaus Province occupies most of Kentucky, much of central Tennessee, and northern Alabama. Bedrock of the Interior Low Plateaus Province includes Mississippian limestones, chert, shale, and sandstone. The terrain varies from hilly to relatively flat in the northwest and southeast. An oval area in middle Tennessee, the Central Basin, sits lower than the surrounding rock, with an elevation about 200 feet below the surrounding Highland Rim. The southern end of the Illinois Basin coal region (TVA 2024b) overlaps the province in northwest Kentucky and includes part of the TVA power service area (PSA). Bedrock is composed of generally flat lying limestone. Soil cover is typically thin, and streams cut into the limestone bedrock.

The Coastal Plains Province encompasses much of the southeastern United States, ranging from eastern Texas to Long Island, New York. The underlying geology is a mix of poorly consolidated gravels, sands, silts, and clays. Soils are primarily of windblown and alluvial (deposited by water), have low to moderate fertility, and are easily eroded. The terrain varies from hilly to flat in broad river bottoms. The Mississippi Alluvial Plain (i.e., Mississippi Embayment) occupies the western edge of the province and much of the historic floodplain of the Mississippi River. The New Madrid Seismic Zone, an area of large prehistoric and historic earthquakes, is located in the northern portion of the province (TVA 2024b).

Table C-1. Summary of Geologic and Soil Characteristics at TVA Coal Plants

Plant Name	Physiographic Province	Dominant Soil Types[1]
Bull Run Fossil Plant	Valley and Ridge	Udorthents; Collegdale silt loam-rock outcrop complex;
Colbert Fossil Plant	Interior Low Plateaus	Fullerton gravelly silt loam; Urban Land
Cumberland Fossil Plant	Interior Low Plateaus	Bodine gravelly silt loam; Lindell silt loam (occasionally flooded); Maury silty clay loam (eroded); Melvin silt loam (frequently flooded); Sengtown gravelly silt loam;
Gallatin Fossil Plant	Interior Low Plateaus	Udorthents; Barfield silty clay loam-Rock outcrop complex; Slickens
John Sevier Fossil Plant	Valley and Ridge	Holston loam-Urban land complex; Holston loam
Johnsonville Fossil Plant	Interior Low Plateaus	Paden silt loam (eroded)
Kingston Fossil Plant	Valley and Ridge	Urban land; Waynesboro loam; Dewey silt loam
Paradise Fossil Plant	Interior Low Plateaus	Fairpoint gravelly clay loam-Bethesda channery silty clay loam complex; Dumps (mine); Udorthents
Shawnee Fossil Plant	Coastal Plain	Dumps (coal and waste disposal areas); Newark silt loam-Lindside silt loam complex (frequently flooded); Wheeling silt loam (frequently flooded); Urban land-Udorthents complex
Widows Creek Fossil Plant	Appalachian Plateau	Lindside silt loam; Melvin silt loam; Limestone rockland rough; Capshaw silt loam (undulating and level phase); Etowah silt loam (level phase); Greendale cherty silt loam (undulating phase); Huntington silt loam; Taft silt loam; Tupelo silt loam (level and undulating phase); Waynesboro fine sandy loam (eroded, rolling phase); Etowah loam; Bruno fine sandy loam; Fullerton gravelly silt loam (eroded); Sequatchie fine sandy loam (undulating phase); Talbott silty clay loam (eroded, rolling phase); Covert silty clay (eroded, undulating phase); Melvin silty clay loam

Source: TVA 2016; NRCS 2001a; NRCS 2001b; NRCS 2004; NRCS 2007; NRCS 2012a; NRCS 2012b; NRCS 2015; NRCS 2024.

[1] The combination of listed soil types covers at least 50 percent of the respective coal plant site.

C.2 Ecoregions

Ecoregions are identified by analyzing the patterns and composition of biotic and abiotic phenomena that affect or reflect differences in ecosystem quality and integrity (Omernik 1987). These phenomena include geology, landforms, soils, vegetation, climate, land use, wildlife, and hydrology. The TVA PSA includes nine level III ecoregions: the Blue Ridge, the Ridge and Valley, the Central Appalachian, the Southwestern Appalachian, the Interior Plateau, the River Valley and Hills, the Southeastern Plains, Mississippi Valley Loess Plain,

and the Mississippi Alluvial Plain (Omernik 1987; TVA 2024b). Approximately 5,000 species of plants occur within the TVA PSA (TVA 2024b).

As shown in Table C-2, the PSA intersects four level III ecoregions in Alabama, Kentucky, and Tennessee (the states that contain coal plant sites evaluated in this PEA), including the Interior Plateau, the Ridge and Valley, the River Valleys and Hills, and the Southwestern Appalachians (Omernik 1987; Griffith et al. 2001).

The Interior Plateau Ecoregion occupies much of central Tennessee and parts of Kentucky and Northern Alabama and includes the Cumberland, Johnsonville, and Gallatin coal plants in Tennessee and the Colbert Fossil Plant in Alabama. This Ecoregion is a series of grassland plateaus and forested uplands with flat, carbonate bedrock and thin soil with globally uncommon ecosystems. Forests are predominantly mesophytic, with a high proportion of American beech (*Fagus grandifolia*), American basswood (*Tilia americana*), and sugar maple (*Acer saccharum*). Approximately 38 percent of the Interior Plateau is forested, 50 percent is agricultural land, and 9 percent is developed (TVA 2024b).

The Ridge and Valley Ecoregion occupies much of eastern Tennessee and includes the Kingston, Bull Run, and John Sevier coal plants. The landscape is characterized by a series of complex folds and faults with alternating valleys and ridges trending northeast to southwest. Roughly 56 percent of the land cover is forested, with mesophytic and Appalachian oak forest as the dominant sub-types (TVA 2024b).

Widows Creek Fossil Plant is located within the Southwestern Appalachian Ecoregion. This ecoregion ranges northeast to southeast across Alabama, Tennessee, and Kentucky. The bedrock is a sequence of near horizontal Pennsylvanian sandstones, shales, conglomerates, and coals, underlain by Mississippian and older shale and carbonates. The area underlain by the resistant Pennsylvania sandstones has produced a “table-top” landscape. These low mountains contain a mosaic of forest and woodland with some cropland and pasture. Mixed mesophytic forest is restricted to the deeper ravines and escarpment slopes, and the summit or tableland forests are dominated by mixed oaks with shortleaf pine (*Pinus echinata*) (Griffith et al. 2001).

The Paradise and Shawnee coal plants are located within a small portion of the Interior River Valley and Hills Ecoregion. This ecoregion can be found in northwest Kentucky, where it is made up of nearly level lowlands dominated by agriculture and forested hills. Bottomland deciduous forests and swamp forests were once extensive on poorly drained, nearly level, lowland sites, but most have been replaced by cropland and pastureland. Hilly uplands remain mostly forested (TVA 2024b).

Table C-2. Level III and IV Ecoregions of Coal Plant Sites Considered in the PEA

Site Name	Ecoregion (III)	Ecoregion (IV)	Vegetation
Cumberland Fossil Plant Johnsonville Fossil Plant	Interior Plateau	Western Highland Rim	Oak-hickory forest; somewhat transitional between the more xeric oak-hickory forest to the west and the more mesic mixed mesophytic forest to the east.
Colbert Fossil Plant		Eastern Highland Rim	Mostly oak-hickory, but transitional between the more xeric oak-hickory forest to the west and the more mesic mixed mesophytic forest to the east; some areas of cedar glades and bottomland hardwoods.
Gallatin Fossil Plant		Outer Nashville Basin	Mostly oak-hickory, but transitional between the more xeric oak-hickory forest to the west and the more mesic mixed mesophytic forest to the east.
Kingston Fossil Plant Bull Run Fossil Plant	Ridge and Valley	Southern Limestone/Dolomite Valleys and Low Rolling Hills	Appalachian oak forest (mixed oaks, hickory, pine, poplar, birch, maple); bottomland oak and mesophytic forests; cedar barrens.
John Sevier Fossil Plant		Southern Shale Valleys	Appalachian oak forest (mixed oaks, hickory, pine, poplar, birch, maple).
Shawnee Fossil Plant	Interior River Valley and Hills	Wabash-Ohio Bottomlands	Southern floodplain forest (dominants: Quercus, Nyssa, Taxodium)/ Bottomland mixed deciduous forests. Bottomland oak forests in wettest areas that are often flooded: bald cypress–tupelo forests.
Paradise Fossil Plant		Green River-Southern Wabash Lowlands	Oak-hickory forest/ On uplands: oak forest often dominated by white oak with post oak, southern red oak, cherrybark oak, and shingle oak. On mesic sites: forests dominated by yellow-poplar, sugar maple, and northern red oak. On bottomlands: bottomland oak forests with overcup oak, pin oak, silver maple, pecan, slippery elm, sweetgum, and red maple. In wettest areas that are often flooded: bald cypress.
Widows Creek Fossil Plant	Southwestern Appalachian	Sequatchie Valley	Mixed mesophytic forest (oak, elm, hickory, ash, maple, blackgum, pine, sweetgum, basswood, beech).

Source: Woods et al. 2002a, 2002b; Griffith et al. 2001

C.3 Groundwater Aquifers

Aquifers in the TVA PSA generally align with the major physiographic provinces shown in Figure 3-1 of the PEA. As described in Section C.1 of this appendix, the TVA coal plants considered for CCR BPFs are located across several physiographic provinces, including the Interior Low Plateaus, Southeastern Coastal Plain, Valley and Ridge, and Appalachian Plateaus, each of which has unique but relatively consistent hydrogeologic characteristics

C.3.1 Interior Low Plateaus Aquifers

The Interior Low Plateaus Province spans central Kentucky to northern Alabama and encompasses the Paradise, Cumberland, Colbert, Gallatin, and Johnsonville coal plants. The Interior Low Plateaus aquifers present within the TVA PSA include unconsolidated sand and gravel aquifers, Pennsylvanian sandstone aquifers, Ordovician carbonate aquifers, and Mississippian sandstone and carbonate rock aquifers (Lloyd and Lyke 1995). Precipitation is the primary source of recharge in the Interior Low Plateaus Province and groundwater discharges from springs are common.

Unconsolidated sand and gravel aquifers are only located along the Ohio River Valley and a few of its tributaries. Ranging from 25 to more than 300 feet in depth, the unconsolidated sand and gravel aquifers produce large yields from wells, particularly those hydraulically connected to the Ohio River. The water is generally hard with high concentrations of iron. Dissolved-solids concentrations may vary depending on the type of underlying bedrock (Lloyd and Lyke 1995).

Wells completed in Pennsylvanian sandstone aquifers range in depth from 25 to more than 400 feet below land surface and yield from 1 to 200 gallons per minute. These aquifers are susceptible to large water-level declines from small to moderate groundwater withdrawals due to low permeability, small areal extent, and limited recharge (Lloyd and Lyke 1995). Mississippian sandstone and carbonate aquifers are covered by as much as 150 feet of regolith containing clay, silt, sand, and pebble-sized limestone deposits that can store large quantities of water as it percolates slowly downward to recharge aquifers in the underlying consolidated limestone. Karst features are common throughout the Mississippian aquifers; facilitating recharge and groundwater transport (Lloyd and Lyke 1995). Ordovician carbonate aquifers are overlain and interspersed with confining units of shale, creating lower, middle, and upper rock groups throughout the aquifers. Wells can range from 50 to more than 1,400 feet below land surface and yield between 2 to more than 300 gallons per minute. In the Ordovician aquifers, the regolith is thinner and dissolution of rock features is less advanced than in Mississippian aquifers. Confining units are made of clay particles and can impede vertical movement of groundwater, isolating groundwater above and below the confining layers. Regionally, groundwater movement drains toward the nearest river system (Lloyd and Lyke 1995). Concentrations of dissolved solids, iron, and hardness in the sandstone and carbonate aquifers of Kentucky and Tennessee are less than or equal to the secondary maximum contaminant levels for drinking water established by the U.S. Environmental Protection Agency (EPA) (Lloyd and Lyke 1995; EPA 2024f). Groundwater in limestone aquifers is susceptible to contamination from discharges of solid and liquid wastes into sinkholes or from polluted stormwater runoff into losing streams or swallow holes. Additionally, water rapidly pumped from large-capacity wells can dislodge silt or clay resulting in high turbidity (Lloyd and Lyke 1995).

C.3.2 Southeastern Coastal Plains Aquifers

The Southeastern Coastal Plains aquifer system is complex and hydrogeologic units within the system may encompass multiple local aquifers, confining units, formations or parts of formations (Renken 1996). Generally, the Southeastern Coastal Plains aquifers are located throughout Alabama, Georgia, South Carolina, and Florida; with small sections wrapping north into the western edges of Tennessee and Kentucky (Lloyd and Lyke 1995; Miller 1995). More specifically, the Shawnee Fossil Plant is located on the northern end of the Southeastern Coastal Plains Province, along the Ohio River. The Southeastern Coastal Plains aquifers are primarily comprised of semiconsolidated sand and separated by clayey confining units (Miller 1995). The Shawnee Fossil Plant is located in an area where the Southeastern Coastal Plains aquifer system grades into parts of the Mississippi Embayment aquifer system (Lloyd and Lyke 1995; Miller 1995). Recharge into the Southeastern Coastal Plain aquifers occurs from precipitation onto outcrop areas. Groundwater movement occurs laterally and discharges into small streams, with only a small part of the water percolating downward into the aquifer system (Miller 1995). Groundwater within the Southeastern Coastal Plains predominantly contains dissolved solids, dissolved iron, and dissolved chloride. Dissolved-solids concentrations generally remain below Secondary Drinking Water Maximum Contaminant Levels established by the EPA; however, when freshwater mixes with saltwater, concentrations rise well above the Secondary Drinking Water Maximum Contaminant Levels (Miller 1995; EPA 2024f). In recharge areas, concentrations of dissolved iron are lower than the EPA Secondary Drinking Water Maximum Contaminant Levels but are in exceedance further downgradient (Miller 1995; EPA 2024f).

C.3.3 Valley and Ridge Aquifers

The Valley and Ridge aquifers extend from Alabama and Georgia to as far north as New York and encompass the Bull Run, John Sevier, and Kingston coal plants. The Valley and Ridge aquifers consist primarily of carbonate rocks with recharge occurring from direct connections with rivers and lakes. Groundwater movement predominantly occurs in valleys and is localized to shallow, isolated groundwater flow systems within 300 feet of the land surface. Yields throughout the Valley and Ridge aquifers ranges from 1 to 2,500 gallons per minute (Lloyd and Lyke 1995). Groundwater within the Valley and Ridge aquifers is hard and contains dissolved solids with concentrations below the EPA's Secondary Maximum Contaminant Levels for Drinking Water (Lloyd and Lyke 1995; EPA 2024f). Carbonate aquifers are susceptible to contamination from the land surface, especially if overlying residuum is thin. Solution openings in carbonate rocks can result in the rapid and widespread transport of contaminated groundwater (Lloyd and Lyke 1995).

C.3.4 Appalachian Plateaus Aquifers

The Appalachian Plateaus aquifers extend from the northeastern corner of Ohio to the northeastern corner of Alabama, along the west of the Appalachian Mountains and encompassing the Widows Creek Fossil Plant. Like the Interior Low Plateaus aquifers, the Appalachian Plateaus aquifers are made of carbonate and sandstone aquifers of Mississippian and Pennsylvanian age; however, in the southern reaches of the Appalachian Plateaus Province, Pennsylvanian sandstone aquifers overlie Mississippian limestone aquifers. Because the limestone isn't exposed, precipitation must percolate through joints and fractures in the sandstone before it reaches the limestone (Miller 1995). Groundwater movement and yield is largely dependent on the interconnectedness of fractures within the overlying sandstone, resulting in restricted circulation of groundwater movement through the underlying carbonate rocks (Lloyd and Lyke 1995; Miller 1995). Water availability in Alabama, near the Widows Creek Fossil Plant, is generally poor to fair with yields ranging

from less than 5 to 60 gallons per minute from wells 100 to 250 feet deep in sandstone aquifers, and less than 5 to 150 gallons per minute from wells 200 feet deep in limestone aquifers (Miller 1995). Water in the sandstone and carbonate aquifers of the Appalachian Plateaus Province is suitable for most uses with minimal treatment (Lloyd and Lyke 1995; Miller 1995). Groundwater in sandstone aquifers is generally softer than groundwater found in limestone aquifers which contain more dissolved solids. Additionally, carbonate aquifers often have higher concentrations of dissolved solids (Lloyd and Lyke 1995).

C.4 Surface Waters and Wetlands

The affected environment that could be impacted by the proposed action would span several hydrologic subregions, including those associated with the Tennessee River, the Cumberland River, the Ohio River, and the Green River. These watersheds are described further in the following subsections.

C.4.1 Tennessee River Watershed

The Tennessee River watershed covers approximately 41,000 square miles over 129 counties in Tennessee, Alabama, Kentucky, Georgia, Mississippi, North Carolina, and Virginia. The Tennessee River watershed begins with headwaters in the mountains of western Virginia, North Carolina, eastern Tennessee, and northern Georgia. At Knoxville, Tennessee, the Holston and French Broad rivers join to form the Tennessee River, which then flows southwest through the state, gaining water from three other large tributaries: the Little Tennessee, Clinch, and Hiwassee rivers. The Tennessee River eventually flows into Alabama, where it picks up another large tributary, the Elk River. At the northeast corner of Mississippi, the river turns north and re-crosses Tennessee, picking up the Duck River, and continues to Paducah, Kentucky where it enters the Ohio River.

The entire length of the Tennessee River is regulated by a series of nine locks and dams built mostly in the 1930s and 1940s. All the major tributaries have at least one dam, creating 14 multipurpose storage reservoirs and seven single-purpose power reservoirs. This system of dams and their operation is the most significant factor affecting water quality and aquatic habitats in the Tennessee River and its major tributaries.

Major water quality concerns within the Tennessee River drainage basin include point and non-point sources of pollution that degrade water quality at several locations on mainstream reservoirs and tributary rivers and reservoirs. Toxic substances have been found in sediment and fish in reservoirs along the Tennessee River that otherwise have good water quality. Other water quality concerns include occurrences of low dissolved oxygen levels downstream of dams, which stresses aquatic life and limits the ability of the water to assimilate wastes.

Point and non-point sources of pollution within TVA reservoirs and watersheds include:

- Heat-releases – Utility and industrial plants may release water into streams or lakes that have been heated above the ambient temperature of the body of water.
- Wastewater discharges – Sewage treatment systems, utilities, industry, and others discharging waste into streams and lakes or using outdated or damaged infrastructure.
- Physical alterations – channelization and vegetation removal.
- Runoff from agriculture, urban uses and development, landfills, and mined land.

- Air pollution – Pollutant concentrations in the air can affect surface waters through rain and deposition (TDEC 2024).

C.4.2 Cumberland River

The Cumberland River travels from its headwaters in Lechter County, Kentucky, across almost 700 miles to its mouth on the Ohio River, draining a watershed of 18,000 square miles. More than 300 miles of the Cumberland River flow through Tennessee collecting water from 11,000 square miles of watershed (Troplovich 2017).

Generally, water quality in the Cumberland River is good (KYEEC 2000). The Cumberland River and its tributaries exhibit moderate to high concentrations of calcium and magnesium and a slightly alkaline pH because much of the basin consists of limestone and dolomitic bedrock. Additionally, the mainstream Cumberland River exhibits lower suspended solids concentrations than its tributaries. Water quality concerns within the Cumberland River basin are primarily attributed to agriculture and livestock, such as sedimentation and fecal contamination, but can also be attributed to physical stream alterations, land disposal of wastes, municipal and industrial discharges, mining, and urban runoff (KYEEC 2000).

C.4.3 Lower Ohio River

The headwaters of the Ohio River originate in Pittsburgh, Pennsylvania at the confluence of the Allegheny and Monongahela Rivers, and flow southwesterly to its confluence with the Mississippi River in Cairo, Illinois. The lower Ohio River receives drainage from an extensive, 204,000-square-mile watershed that reaches into 13 states, encompassing much of the east central United States. A series of locks and dams allows commercial navigation along the entire 981-mile length of the river from the Mississippi River to Pittsburgh, Pennsylvania. It forms the northern boundary of Kentucky for a distance of 664 stream miles (ORSANCO 2022).

The upper Ohio Valley is highly industrialized and sources of pollution from industrial and municipal sources are many and varied. Non-point source pollution, primarily from agricultural runoff and mining, contributes to sediment and nutrient contamination of the Ohio River whereas point source pollution from industrial discharges or illegal dumping contributes to heavy metal contamination (KYEEC 2024). The Ohio River Valley Water Sanitation Commission is responsible for evaluating water quality in the main stream. Fish consumption advisories have been placed on paddlefish (*Polyodon spathula)*, paddlefish eggs (harvested for caviar), channel catfish (*Ictalurus punctatus*), carp (Cyprinidae), and white bass (*Morone chrysops*) along the entire length of the Ohio River bordering Kentucky because of chlordane (a pesticide) and polychlorinated biphenyl (PCB) contamination.

C.4.4 Green River

The Green River Basin is located in south central Kentucky and north central Tennessee. The drainage area is 9,273 square miles, of which 377 square miles are in Tennessee. The Green River originates in Lincoln and Casey counties in Kentucky and flows generally westward for 330 miles to its confluence with the Ohio River just upstream from Henderson, Kentucky. A system of seven locks and dams enables navigation on the downstream portion of the Green River. The upper basin is characterized by rugged, hilly terrain. The central part of the basin drains the karst region, an area that is interlaced with large cave systems. In the karst region, surface streams are almost non-existent and most of the water drainage is subterranean, eventually draining to the Green River via large springs.

Concentrations of chloride in the upper basin of the Green River are higher than those recorded at other locations in the basin and have been associated with brines from oil production. Additionally, concentrations of sulfate were low in samples collected from 1987 through 1989. Nitrite levels were among the highest for Kentucky's monitoring locations possibly due to agricultural and urban runoff and municipal wastewater discharges; however, water quality in the Green River Basin is good overall. Major non-point sources of basin contamination are attributed to agriculture (sediment, nutrients, and pesticides) and urban stormwater runoff (sediments); whereas point source contamination is attributed to mining or drilling (chloride, sediments, total dissolved solids) and municipal or industrial wastewater discharges (chlorine, dissolved oxygen, PCBs) (KYEEC 2001, 2024).

C.4.5 Wetlands

The PEA study area intersects all or portions of 10 Hydrologic Unit Code (HUC)-8 sub-basins. Wetland characteristics within these sub-basins are described in Table C-3.

Table C-3. Wetland Characteristics by HUC-8 Sub-basin

Site	Watershed[1]	Area (square miles)[1]	Watershed Characteristics[1]
		Tennessee	
Cumberland Fossil Plant; Stewart County	Lower Cumberland River	2,333.7	Wetlands account for roughly 6% of the total land area of the Lower Cumberland watershed. Roughly 77% of wetlands are classified as riverine, lake, and freshwater pond. Roughly 20% are classified as freshwater forested/shrub wetland and roughly 3% are classified as freshwater emergent wetland.
Johnsonville Fossil Plant; Humphreys County	Kentucky Lake	1,185.0	Wetlands account for roughly 16% of the total land area of the Kentucky Lake watershed. Roughly 70% of wetlands are classified as riverine, lake, and freshwater pond. Roughly 28% are classified as freshwater forested/shrub wetland and roughly 2% are classified as freshwater emergent wetland.
Gallatin Fossil Plant; Sumner County	Lower Cumberland-Old Hickory Lake	985.7	Wetlands account for roughly 5% of the total land area of the Lower Cumberland-Old Hickory Lake watershed. Roughly 91% of wetlands are classified as riverine, lake, and freshwater pond. Roughly 8% are classified as freshwater forested/shrub wetland and roughly 1% are classified as freshwater emergent wetland.
Kingston Fossil Plant; Roane County	Emory River	866.2	Wetlands account for roughly 3% of the total land area of Emory watershed. Roughly 82% are classified as riverine, lake, and freshwater pond. Roughly 17% are classified as freshwater forested/shrub wetland and roughly 1% are classified as freshwater emergent wetland.

Site	Watershed[1]	Area (square miles)[1]	Watershed Characteristics[1]
Bull Run Fossil Plant; Anderson County	Lower Clinch River	636.2	Wetlands account for roughly 4% of the total land area of the Lower Clinch watershed. Roughly 89% are classified as riverine, lake, and freshwater pond. 10% are classified as freshwater forested/shrub wetland and roughly 1% are classified as freshwater emergent wetland.
John Sevier Fossil Plant; Hawkins County	Holston River	1,000.0	Wetlands account for roughly 7% of the total land area of Hoston watershed. Roughly 95% are classified as riverine, lake, and freshwater pond. Roughly 3% are classified as freshwater forested/shrub wetland and roughly 2% are classified as freshwater emergent wetland.
		Kentucky	
Shawnee Fossil Plant; McCracken County	Lower Ohio River	923.6	Wetlands account for roughly 13% of the total land area of the Lower Ohio watershed. Roughly 48% are classified as riverine, lake, and freshwater pond. Roughly 49% are classified as freshwater forested/shrub wetland and roughly 3% are classified as freshwater emergent wetland.
Paradise Fossil Plant; Muhlenberg County	Middle Green River	1,027.6	Wetlands account for roughly 5% of the total land area of the Middle Green watershed. Roughly 50% are classified as riverine, lake, and freshwater pond. Roughly 46% are classified as freshwater forested/shrub wetland and roughly 4% are classified as freshwater emergent wetland.
		Alabama	
Colbert Fossil Plant; Colbert County	Pickwick Lake	2,282.4	Wetlands account for roughly 11% of the total land area of Pickwick Lake. Roughly 42% are classified as riverine, lake, and freshwater pond. Roughly 54% are classified as freshwater forested/shrub wetland and roughly 4% are classified as freshwater emergent wetland.
Widow's Creek Fossil Plant; Jackson County	Guntersville Lake	1,997.5	Wetlands account for roughly 8% of the total land area of Guntersville Lake. Roughly 83% are classified as riverine, lake, and freshwater pond. Roughly 16% are classified as freshwater forested/shrub wetland and roughly 1% are classified as freshwater emergent wetland.
		Combined Wetlands	
TVA PSA Total Land Cover[2]		~80,000.0	Within above-mentioned HUC-8 sub-basins, wetlands account for roughly 9% of the total land area. Roughly 66% are classified as riverine, lake, and freshwater pond. Roughly 31% are classified as freshwater
Total Land Cover in HUC8 sub-basins surrounding TVA Fossil Plant Reservations		13,867.8	

Site	Watershed[1]	Area (square miles)[1]	Watershed Characteristics[1]
Total wetlands in HUC8 sub-basins surrounding TVA Fossil Plant Reservations		1,019.8	forested/shrub wetland and roughly 3% are classified as freshwater emergent wetland. Wetlands within these sub-basins account for roughly 1.5% of the total land cover of the TVA PSA.

Source: [1]USFWS 1982; [2]TVA 2024b

C.5 Wildlife Habitat

TVA manages an extensive reservoir system across the PSA. The construction of the TVA and U.S. Army Corps of Engineers reservoir systems created large areas of habitat for waterfowl, herons and egrets, ospreys, gulls, and shorebirds, especially in the central and eastern portions of the TVA PSA where this habitat was historically limited. Riparian habitats associated with the Tennessee River and its tributaries provide important habitats for wildlife. Coupled with unique features such as vernal pools, oxbows, bluffs, and islands, these areas provide a diverse array of nesting and foraging habitats (TVA 2024b). Review of the TVA Regional Natural Heritage database in December 2024 indicated osprey nests are known within 3 miles of all of the coal plant sites evaluated in the PEA.

Populations of white-tailed deer (*Odocoileus virginianus*), wild turkey (*Meleagris gallopavo*), coyote (*Canis latrans*), and beaver (*Castor canadensis*) have shown significant population increases in the TVA PSA (TVA 2024b). Species associated with river corridors such as osprey (*Pandion haliaetus*), herons and egrets (Ardeidae), and the Canada goose (*Branta canadensis*) have also shown notable recoveries. Recent surveys show that shorebirds and waterfowl communities are quite diverse in portions of the PSA, especially during autumn and spring migrations. However, numbers of several species of songbirds continue to decline in the region, especially those species typically found in grassland or unfragmented forests (TVA 2011).

Review of the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) website indicated 22 migratory bird species of conservation concern (BCC) have the potential to occur at the coal plants evaluated in this PEA (Table C-4). Suitable foraging or nesting habitat for these species could occur within some of the coal plant reservation areas, particularly in areas where ecologically significant sites occur on or near the plant sites. The number of BCCs to potentially occur within individual plant sites ranges from five species within the Widows Creek coal plant area to 17 species within the Johnsonville and Shawnee coal plant sites, respectively (Table C-4).

Table C-4. Birds of Conservation Concern in the Vicinity of TVA Coal Plant Sites

Common Name	Scientific Name	Coal Plant Site[1]
Swifts		
Chimney swift	*Chaetura pelagica*	BRF, COF, CUF, GAF, JSF, JOF, KIF, PAF, SHF, WCF
Woodpeckers		

Common Name	Scientific Name	Coal Plant Site[1]
Red-headed Woodpecker	*Melanerpes erythrocephalus*	BRF, COF, CUF, GAF, JSF, JOF, KIF, PAF, SHF, WCF
Nightjars		
Eastern Whip-poor-will	*Antrostomus vociferus*	BRF, COF, CUF, JOF, KIF, PAF, SHF
Chuck-will's-widow	*Antrostomus carolinensis*	BRF
Shorebirds		
Lesser Yellowlegs	*Tringa flavipes*	COF, GAF, JOF, KIF, PAF, SHF
Semipalmated Sandpiper	*Calidris pusilla*	GAF, JOF, KIF, PAF, SHF
Least Tern	*Sternula antillarum antillarum*	JOF, SHF
Black-billed Cuckoo	*Coccyzus erythropthalmus*	BRF, JSF, JOF, SHF
Perching Birds		
Rusty Blackbird	*Euphagus carolinus*	BRF, COF, CUF, JSF, JOF, KIF, PAF, SHF, WCF
Wood Thrush	*Hylocichla mustelina*	BRF, COF, CUF, GAF, JSF, JOF, KIF, PAF, SHF
Bobolink	*Dolichonyx oryzivorus*	BRF, COF, JOF, SHF
Brown-headed Nuthatch	*Sitta pusilla*	JOF
Warblers		
Kentucky Warbler	*Geothylpis Formosa*	BRF, COF, CUF, GAF, JSF, JOF, KIF, PAF, SHF, WCF
Prairie Warbler	*Setophaga discolor*	BRF, COF, CUF, GAF, JSF, JOF, KIF, PAF, SHF, WCF
Prothonotary Warbler	*Protonotaria citrea*	BRF, COF, CUF, GAF, JSF, JOF, KIF, PAF, SHF
Cerulean Warbler	*Setophaga cerulea*	BRF, JSF, SHF
Canada Warbler	*Cardellina canadensis*	JOF
Golden-winged Warbler	*Vermivora chrysoptera*	BRF
Sparrows		
Field Sparrow	*Spizella pusilla*	COF, CUF, GAF, JOF, KIF, PAF, SHF
Grasshopper Sparrow	*Ammodramus savannarum perpallidus*	COF, GAF, JOF, KIF, PAF, SHF
Henslow's Sparrow	*Centronyx henslowii*	BRF, KIF, PAF, SHF
Le Conte's Sparrow	*Ammospiza leconteii*	COF, JOF

Source: USFWS Information for Planning and Consultation (IPaC) resource list (https://ecos.fws.gov/ipac/), accessed 12/20/2024.

[1] Coal plant names are as follows: BRF= Bull Run Fossil Plant, COF= Colbert Fossil Plant, CUF=Cumberland Fossil Plant, GAF= Gallatin Fossil Plant, JSF=John Sevier Fossil Plant, JOF=Johnsonville Fossil Plant, KIF= Kingston Fossil Plant, PAF= Paradise Fossil Plant, SHF= Shawnee Fossil Plant, WCF= Widows Creek Fossil Plant.

C.6 Literature Cited

Literature cited within this appendix is listed in Appendix G.

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APPENDIX D – DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS OF THE POPULATIONS WITHIN THE STUDY AREA

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Demographic and Economic Characteristics of the Study Area

D.1 Demographic and Economic Characteristics

The estimated population of the Tennessee Valley Authority (TVA) power service area (PSA) was 10.5 million in 2022 (TVA 2024b). This represents a 7.4 percent increase over the 2010 population (approximately 9.8 million). The rate of increase from 2010 to 2022 is greater than the 7.0 percent increase for the United States as a whole. However, in more recent years, the rate of population increase has declined in both the TVA PSA and the nation. The annual rate of population growth in the TVA PSA declined from 0.72 percent between 2010 and 2020 to 0.1 percent between 2020 and 2022. Between 2022 and 2040, the annual rate of population growth in the TVA PSA is projected to be 0.69 percent, greater than the projected growth rate of the nation of 0.4 percent (TVA 2024b).

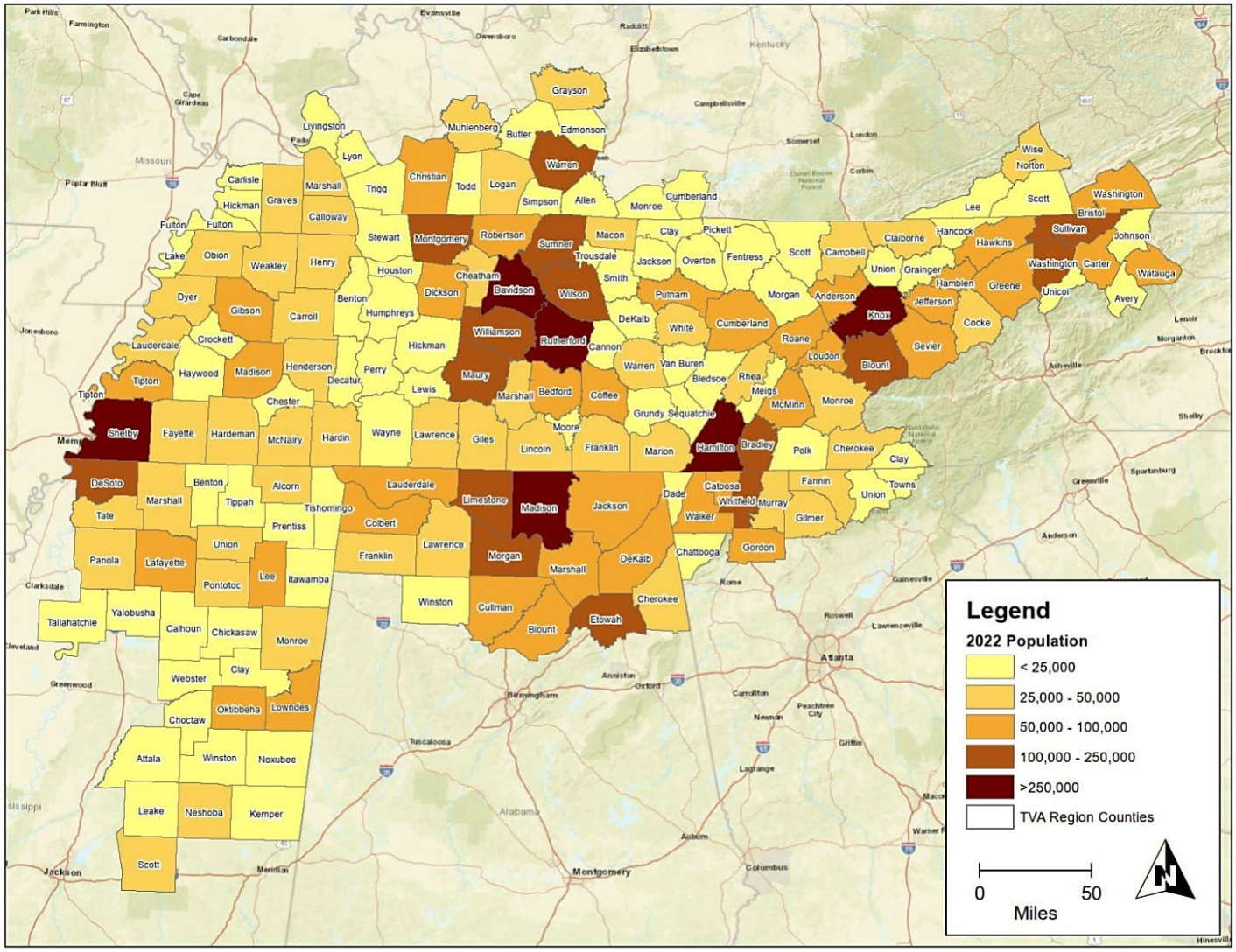
Population varies greatly among the counties in the PSA (Figure D-1). The larger population concentrations tend to be located along major river corridors: the Tennessee River and its tributaries from northeast Tennessee through Knoxville and Chattanooga into north Alabama; the Nashville area around the Cumberland River; and the Memphis area on the Mississippi River. Low population counties are scattered around the region, but most are in Mississippi, the Cumberland Plateau of Tennessee, and the Highland Rim of Tennessee and Kentucky (TVA 2024b).

Socioeconomic characteristics of the 10 counties containing TVA coal plants considered in this PEA are summarized in Table D-1 and Table D-2. Although most of the TVA PSA's total population live in metropolitan areas (68.2 percent in 2022) (TVA 2024b), only four of the 10 TVA coal plants considered in this PEA are located in designated metropolitan areas.

- Colbert Fossil Plant is located in Colbert County, in the Florence-Muscle Shoals, Alabama metropolitan area.
- John Sevier Fossil Plant is located in Hawkins County, in the Kingsport-Bristol-Bristol, Tennessee-Virginia metropolitan area.
- Kingston Fossil Plant is located in Roane County, in the Knoxville, Tennessee metropolitan area.
- Gallatin Fossil Plant is located in Sumner County, in the Nashville-Davidson-Murfreesboro-Franklin, Tennessee metropolitan area.

Furthermore, although the above listed plants are included within the boundaries of the metropolitan areas, the coal plant reservations are generally located in the more remote, less populated regions of these metropolitan areas.

Estimates of population within counties outside of the metropolitan areas ranged from 13,657 in Humphreys County, Tennessee to 77,123 in Anderson County, Tennessee, in 2022. As with the coal-fired power plants located in the metropolitan areas, plants outside of metropolitan areas are also generally located in less populated areas of the county.



Source: TVA 2024b

Figure D-1. Variation in Population of Counties in the TVA PSA

In general, the population in the 10 counties with coal plants under consideration in this PEA has remained relatively consistent, with the exception of Sumner County, Tennessee which increased by 22.2 percent between 2010 and 2020. Over the same period, five of the remaining nine counties had growth rates between 2.4 and 5.1 percent, while four counties experienced population declines, ranging from 0.2 to 1.8 percent (Table D-1 and Table D-2). Apart from Sumner County, the study area has experienced less population growth since 2010 than the TVA PSA and the nation.

The TVA 2025 Integrated Resource Plan (IRP) Draft Environmental Impact Statement (TVA 2024b) identified minority populations within the PSA at the county level. The minority population (i.e., all nonwhite racial groups combined and Hispanic or Latino) of the TVA PSA, as of 2022, was approximately 26.7 percent of the region's total population of 10.5 million (TVA 2024b). This is well below the national average minority population of 42.1 percent (USCB 2020). Within the PSA, the Black or African American population comprised the largest single minority or ethnic group, with 15.7 percent of the total population (TVA 2024b). As shown in Figure D-2, minority populations are largely concentrated in the metropolitan areas in the western half of the region and in rural counties in Mississippi and western Tennessee. Total minority populations within the 10 counties comprising the study area range from 6.9 percent to 24.4 percent of the population. All of these counties are below the TVA PSA average.

Racial characteristics in the 10 counties that contain TVA coal plants are predominantly white alone (not Hispanic or Latino), with Black or African Americans typically comprising the largest single minority or ethnic group, which is consistent with the state-wide percentages for Alabama, Kentucky, and Tennessee (see Tables D-1 and D-2) and the TVA PSA. McCracken County, Kentucky has slightly higher percentages of Black and African American residents, and those that identify as two or more races, than the state. Other minority racial and ethnic groups present in the 10-county study area are generally at or below comparative rates for their respective states.

The TVA 2025 IRP Draft Environmental Impact Statement defined low-income populations as those with poverty rates above the TVA PSA average rate of 14.8 percent. As shown in Figure D-3, 124 counties and two independent cities in the PSA had poverty rates above the PSA average (TVA 2024b). Per capita income in the study area counties ranged from $27,695 to $40,419 in 2022. These are below the nation's per capita income of $41,261, which is typical for the TVA PSA, where only five counties had per capita incomes above the nation's (TVA 2024b).

Within the 10-county study area, the percentage of the population living below the poverty level ranges from 9.4 percent to 18.6 percent. Humphreys, Stewart, Sumner, and Roane counties in Tennessee have poverty rates below the TVA PSA average rate of 14.8 percent. This is higher than the national average of 12.5 percent (USCB 2022). Colbert and Jackson counties in Alabama, McCracken and Muhlenberg Counties in Kentucky, and Anderson and Hawkins counties in Tennessee have poverty rates that exceed the TVA PSA average; however, none of them fall within the highest poverty rate category (greater than 19.7 percent) depicted in Figure D-3. In 2022, the average unemployment rate for the TVA PSA was five percent, lower than the nation (5.3 percent) during the same time period (TVA 2024b). The total civilian labor force within the 10 counties that contain TVA coal plants is 294,019. Unemployment rates in the study area are largely similar to that of the PSA as a whole, though a few counties have somewhat higher rates, the highest of which is Humphreys County, Tennessee at 10.2 percent (see Tables D-1 and D-2).

Table D-1. Summary of Demographic Data for Counties in Alabama and Kentucky Containing TVA Coal Plants

Demographic Characteristics	Colbert County, AL	Jackson County, AL	State of Alabama	McCracken County, KY	Muhlenberg County, KY	State of Kentucky
Population[1,2,3]						
Population, 2020	57,227	52,579	5,024,279	67,875	30,928	4,505,836
Population, 2010	54,428	53,227	4,779,736	65,565	31,499	4,339,367
Percent Change 2010-2020	5.1%	-1.2%	5.1%	3.5%	-1.8%	3.8%
Persons Under 18 years, 2022	20.9%	20.6%	22.1%	21.8%	20.8%	22.5%
Persons 65 Years Over, 2022	20.0%	20.6%	17.3%	20.1%	19.8%	16.8%
Racial Characteristics[2]						
Not Hispanic or Latino						
White alone, 2020[(a)]	75.6%	85.8%	63.1%	79.3%	91.2%	81.3%
Black or African American, 2020[(a)]	16.1%	3.1%	25.6%	11.1%	3.9%	7.9%
American Indian and Alaska Native, 2020[(a)]	0.4%	1.3%	0.5%	0.3%	0.2%	0.2%
Asian, 2020[(a)]	0.8%	0.4%	1.5%	1.0%	0.2%	1.6%
Native Hawaiian and Other Pacific Islander, 2020[(a)]	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%
Some Other Race alone (2020)[(a)]	0.2%	0.2%	0.3%	0.3%	0.2%	0.3%
Two or More Races, 2020	3.9%	6.0%	3.7%	4.9%	2.5%	3.9%
Hispanic or Latino, 2020	3.0%	3.2%	5.3%	3.1%	1.8%	4.6%
Economic and Employment Characteristics[3]						
Per Capita Income in Past 12 months, 2022	$30,724	$27,695	$33,344	$36,401	$31,621	$33,515
Persons Below Poverty Level, 2022	15.9%	18.6%	15.7%	15.2%	16.3%	16.1%
Civilian Labor Force, 2022	26,492	21,717	2,329,696	31,073	13,169	2,133,954
Percent Employed, 2022	96.6%	94.0%	94.8%	96.4%	95.1%	94.9%
Percent Unemployed, 2022	3.4%	6.0%	5.2%	3.6%	4.9%	5.1%

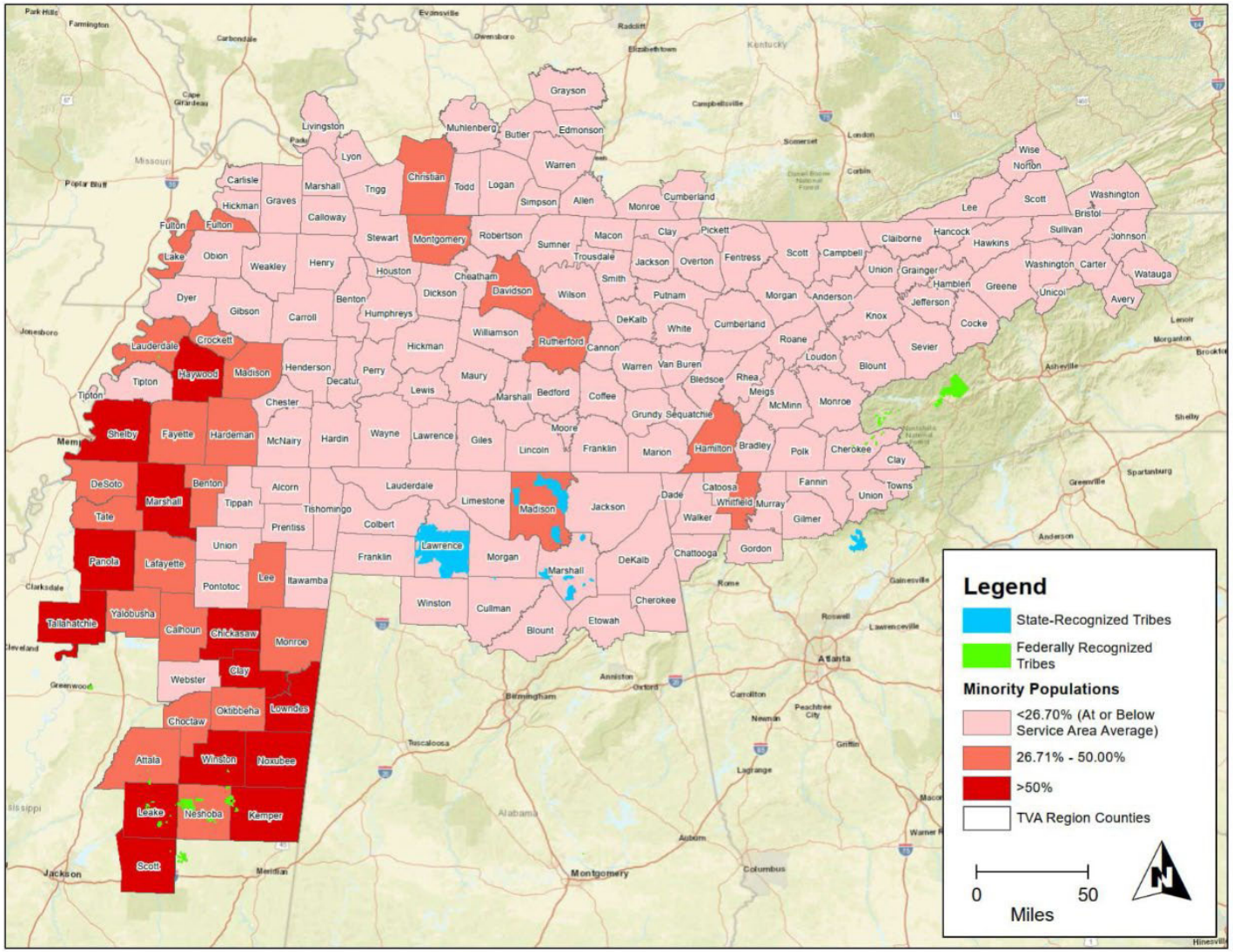
Sources: 1. USCB 2010, 2. USCB 2020, 3. USCB 2022

[(a)] Includes persons reporting only one race

Table D-2. Summary of Demographic Data for Counties in Tennessee Containing TVA Coal Plants

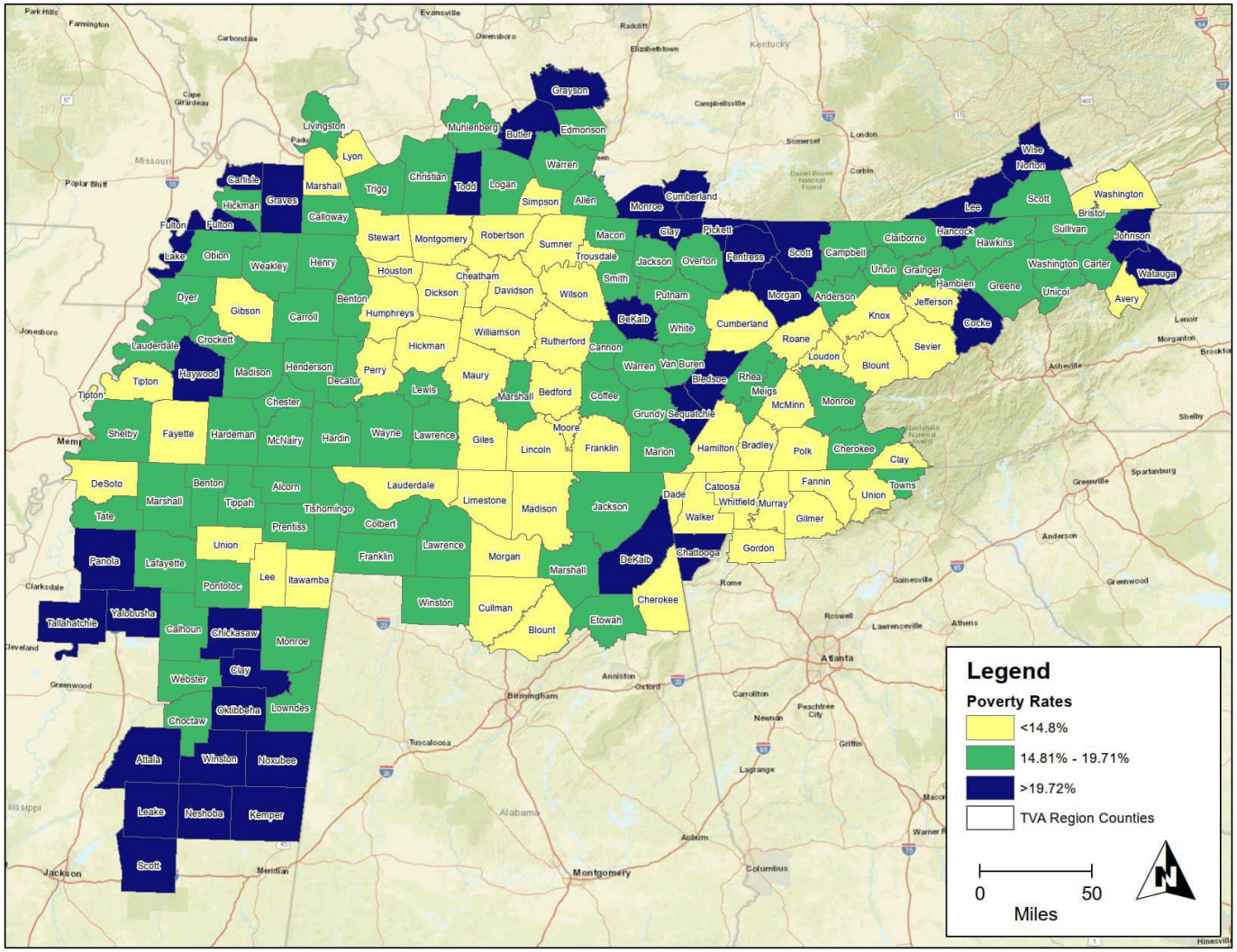
Demographic Characteristics	Anderson County	Hawkins County	Humphreys County	Roane County	Stewart County	Sumner County	State of Tennessee
Population[1,2,3]							
Population, 2020	77,123	56,721	18,990	53,404	13,657	196,281	6,910,840
Population, 2010	75,129	56,833	18,538	54,181	13,324	160,645	6,346,105
Percent Change 2010-2020	2.7%	-0.2%	2.4%	-1.4%	2.5%	22.2%	8.9%
Persons Under 18 years, 2022	21.2%	19.3%	22.2%	18.7%	22.0%	23.2%	22.0%
Persons 65 Years Over, 2022	20.2%	21.5%	20.2%	23.0%	20.5%	16.3%	16.7%
Racial Characteristics[1]							
Not Hispanic or Latino							
White alone, 2020[(a)]	85.6%	93.1%	90.1%	90.1%	90.2%	79.1%	70.9%
Black or African American, 2020[(a)]	3.7%	1.2%	2.6%	2.4%	1.3%	7.9%	15.7%
American Indian and Alaska Native, 2020[(a)]	0.3%	0.2%	0.2%	0.3%	0.5%	0.2%	0.2%
Asian, 2020[(a)]	1.3%	0.5%	0.3%	0.6%	0.6%	1.5%	1.9%
Native Hawaiian and Other Pacific Islander, 2020[(a)]	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Some Other Race alone (2020) [(a)]	0.4%	0.2%	0.4%	0.3%	0.3%	0.3%	0.3%
Two or More Races, 2020	5.1%	3.3%	4.1%	4.3%	4.6%	4.3%	3.9%
Hispanic or Latino, 2020	3.7%	1.6%	2.4%	1.9%	2.5%	6.6%	6.9%
Economic and Employment Characteristics[3]							
Per Capita Income in Past 12 months, 2022	$32,803	$28,648	$29,561	$36,579	$28,362	$40,419	$36,040
Persons Below Poverty Level, 2022	15.4%	16.9%	12.0%	12.2%	11.5%	9.4%	14.0%
Civilian Labor Force, 2022	34,837	23,986	8,678	24,887	5,833	103,347	3,430,845
Percent Employed, 2022	94.6%	91.4%	89.8%	95.1%	96.2%	96.5%	95.0%
Percent Unemployed, 2022	5.4%	8.6%	10.2%	4.9%	3.8%	3.5%	5.0%

Sources: 1. USCB 2010, 2. USCB 2020, 3. USCB 2022 [(a)] Includes persons reporting only one race



Source: TVA 2024b

Figure D-2. Minority Populations at the County Level in the TVA PSA



Source: TVA 2024b

Figure D-3. Poverty Rates of Counties in the TVA PSA

D.2 Literature Cited

Literature cited within this appendix is listed in Appendix G.

APPENDIX E – SYMBOLS, ACRONYMS, AND ABBREVIATIONS

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Symbols, Acronyms, and Abbreviations

ADEM	Alabama Department of Environmental Management
APE	Area of Potential Effect
ASTM	American Society for Testing and Materials
BCC	Birds of Conservation Concern
BCE	Before Common Era
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practice
BPF	beneficiation processing facility
BRF	Bull Run Fossil Plant
CAA	Clean Air Act
CBMPP	Construction Best Management Practices Plans
CCR	coal combustion residuals
CE	Common Era
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
COF	Colbert Fossil Plant
CUF	Cumberland Fossil Plant
CWA	Clean Water Act
dB	decibel(s)
dBA	a-weighted decibel
DEP	Kentucky Department for Environmental Protection
DOW	Kentucky Division of Water
EA	environmental assessment
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right to Know Act
ESA	Endangered Species Act
ETSZ	East Tennessee Seismic Zone
F	Fahrenheit
FEMA	Federal Emergency Management Agency
FGD	flue gas desulfurization
FHWA	Federal Highway Administration
FONSI	finding of no significant impact
FR	Federal Register
FRP	Flood Risk Profile
g	gravitation pull
GAF	Gallatin Fossil Plant
GHG	greenhouse gas
GPM	gallons per minute
HPA	habitat protection area
HUD	U.S. Department of Housing and Urban Development
IPaC	Information for Planning and Consultation
IRP	Integrated Resource Plan
JOF	Johnsonville Fossil Plant
JSF	John Sevier Fossil Plant
KIF	Kingston Fossil Plant
KYEEC	Kentucky Energy and Environment Cabinet
L_{dn}	day-night sound level
L_{eq}	equivalent sound level
LOI	loss on ignition

MBTA	Migratory Bird Treaty Act
MCF	thousand cubic feet
MOA	Memorandum of Agreement
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMSZ	New Madrid Seismic Zone
NO_2	nitrogen dioxide
N_2O	nitrous oxide
NPDES	National Pollution Discharge Elimination System
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
O_3	ozone
OSHA	Occupational Safety and Health Administration
PA	Programmatic Agreement
PAF	Paradise Fossil Plant
PM	particulate matter
PGA	peak ground acceleration
POTW	Publicly Owned Treatment Works
PSA	Power Service Area
RCRA	Resource Conservation and Recovery Act
SHF	Shawnee Fossil Plant
SHPO	State Historic Preservation Office
SO_2	sulfur dioxide
SWPPP	Stormwater Pollution Prevention Plan
TDEC	Tennessee Department of Environment and Conservation
tpy	tons per year
TVA	Tennessee Valley Authority
TWRA	Tennessee Wildlife Resources Agency
USACE	U.S. Army Corps of Engineers
USCB	U.S. Census Bureau
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VdB	vibration decibels
VSMP	Vital Signs Monitoring Program
WCF	Widows Creek Fossil Plant
WMA	Wildlife Management Area
WOTUS	Waters of the U.S.
WQC	Water Quality Certification
WWC	wet weather conveyance
yd^3	cubic yards

APPENDIX F – LIST OF PREPARERS

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List of Preparers

NEPA Project Management

Name:	**Brittany Kunkle**
Education:	B.S., Environmental and Soil Science
Project Role:	TVA Project Manager, TVA NEPA Coordinator, NEPA Compliance
Experience:	6 years of professional experience in NEPA and environmental compliance

Name:	**Carol Butler Freeman, PG**
Education:	M.S., Geological Sciences and B.S., Geology
Project Role:	TVA NEPA Specialist
Experience:	17 years managing and performing NEPA compliance

Name:	**Tara Masterson**
Education:	M.S. Mechanical Engineering, B.S. Chemical Engineering
Project Role:	Beneficial Reuse Strategy and Business Development
Experience	15 years of experience in management of beneficial use of CCR materials

Name:	**Rebecca Porath**
Education:	M.S. and B.S., Wildlife and Fisheries Sciences
Project Role:	WSP Project Manager. Chapters 1 and 2; Overall technical reviews and coordination
Experience	23 years of experience in NEPA and/or ecological studies, and preparation of technical documents

Other Contributors

TENNESSEE VALLEY AUTHORITY

Name:	**Fallon Parker Hutcheon**
Education:	M.S., Environmental Studies; B.S., Biology
Project Role:	Wetland Biologist
Experience:	6 years in wetland assessment, impact analysis, and compliance

Name:	**Kenneth McMahan**
Education:	B.S., Wildlife and Fisheries Science
Project Role:	Aquatic Community Ecologist
Experience:	4 years in aquatic resource/wetland assessment, impact analysis, and compliance; 2 years in ESA compliance

Name:	**Tyler Parrott**
Education:	B.S., Anthropology
Project Role:	Cultural Resources
Experience:	15 years of experience in Archaeology and Cultural Resources Management

Name:	**Jesse Troxler**
Education:	M.S. and B.S., Wildlife and Fisheries Science
Project Role:	Terrestrial Ecology (Wildlife), Threatened and Endangered Species (Wildlife)
Experience:	19 years conducting field biology, 10 years technical writing, 8 years NEPA & ESA compliance

Name:	**Chloe Sweda**
Education:	B.S., Earth and Environmental Science
Project Role:	Managed and Natural Areas
Experience:	5 years of experience in Natural Resource Management

Name:	**R. Ryan Gupton**
Education:	B.S., Environmental Science
Project Role:	Recreational Areas
Experience:	1 year of experience in Outdoor Recreation Management

Name:	**Carrie Williamson, P.E. (TN), CFM**
Position:	Program Manager, Flood Risk
Education:	M.S., Civil Engineering; B.S., Civil Engineering
Project Role:	Floodplains and Flood Risk
Experience:	12 years in Floodplains and Flood Risk; 3 years in River Forecasting; 11 years in Compliance Monitoring

WSP USA

Name:	**Erin Alsop**
Education:	B.S., Environmental Science
Project Role:	Transportation, Cumulative Impacts
Experience:	8 years of experience in NEPA analysis and documentation

Name:	**Sarah Bailey**
Education:	M.F.A., B.A. English and Comparative Literature
Project Role:	Technical Editing
Experience:	10 years editing experience; 5 years technical, scientific, and NEPA editing experience

Name:	**Karen Boulware**
Education:	M.S., Resource Planning and B.S., Geology
Project Role:	Technical Review
Experience:	30 years of professional experience in NEPA

Name:	**Bailey Hickey**
Education:	B.S., Environmental Engineering
Project Role:	Surface Water Resources, Geology and Groundwater
Experience:	6 years of experience in engineering consulting and environmental planning

Name:	**Andrea Johnston**
Education:	B.S., Environmental Science
Project Role:	Solid and Hazardous Waste, Public Health and Safety, Land Use, Managed and Natural Areas, Recreation, Threatened and Endangered Species, Geology
Experience:	3 years of experience in NEPA analysis and scientific studies

Name:	**Chris Musselman**
Education:	B.S. Biology and M.S. Fisheries and Aquatic Ecology
Project Role:	Preparation of Chapters 1-2, Aquatic Ecology, Surface Water Resources, Wetlands, Mitigation Measures, Technical Review
Experience:	Over 10 years of experience in NEPA analysis and environmental permitting

Name:	**Natalie Reiss**
Education:	B.A., Biology
Project Role:	Technical Review, Socioeconomics, Noise, Visual Resources
Experience:	10 years of experience in NEPA analysis and documentation

Name:	**Leah Stephens**
Education:	B.A., Environmental Studies
Project Role:	Socioeconomics, Noise, Visual Resources, Solid and Hazardous Waste
Experience:	5 years of experience in NEPA analysis and documentation

Name:	**David Tamsky**
Education:	B.A., Environmental Studies
Project Role:	Wetlands, Wildlife, Vegetation
Experience:	1 year of experience in NEPA analysis

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APPENDIX G – LITERATURE CITED

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APPENDIX H – PUBLIC AND AGENCY COMMENTS AND TVA RESPONSES ON THE DRAFT PEA

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Appendix H
Public and Agency Comments and TVA's Responses to Comments on the TVA Construction and Operation of Beneficiation Processing Facilities Draft Programmatic Environmental Assessment (PEA)

The Draft PEA was released for a 30-day public comment period on April 14, 2025. To solicit public input, the availability of the Draft PEA was announced in regional and local newspapers and shared by TVA regional communicators on social media accounts. A media advisory was issued. The Draft PEA was posted on TVA's website, and hard copies were made available by request. TVA's agency involvement included sending notices to local, state, and federal agencies and federally recognized tribes to inform them of the availability of the Draft PEA. Comments on the Draft PEA were accepted via mail, email, and the online comment system through May 14, 2025.

TVA received a total of 22 comment submissions, including one from the Tennessee Department of Environment and Conservation (TDEC), one from the Sierra Club, and the remainder from industry officials or members of the public. Nine of the comments are supportive of the project, four comments are opposed to it, and seven comments are neutral or off-topic.

TVA carefully reviewed all the substantive comments that were received for consideration in the Final PEA and revised text in the Final PEA and in the Environmental Screening Checklist, as appropriate. Summarized comments and TVA's responses are included in Table H-1. Original comment submissions follow Table H-1 and will be retained as part of the project's Administrative Record.

Table H-1. TVA Construction and Operation of Beneficiation Processing Facilities Draft PEA Comments and TVA Responses

Comment No.	Organization / Affiliation	Comment	Response
1	TDEC	Division of Air Pollution Control - Air Quality Impacts: Several actions could negatively impact air quality on a short-term basis. TDEC recommends that TVA evaluate such potential impacts prior to any clearing, demolition, or construction. Such impacts may include, but are not limited to, air pollution from construction equipment, open burning associated with land clearing activities, and fugitive dust. Local air quality conditions are available online at https://www.airnow.gov/. The PEA states that the coal plants are located in attainment counties, but the TVA Bull Run and TVA Kingston facilities are located near counties with monitored exceedances of the PM2.5 NAAQS. Similarly, the TVA Gallatin Fossil Plant is in a county that is barely attaining the ozone NAAQS – the fourth highest ozone concentration for Sumner County was 76 ppb in 2023 and 72 ppb in 2024, and if the fourth highest concentration is greater than 65 ppb in 2025, the three-year design value will exceed the NAAQS. Finally, the TVA Widows Creek site in Alabama could impact the nearby monitors in the Chattanooga area (Tennessee and Georgia). TDEC recommends that TVA consider the impact of source operation and associated emissions from stationary and mobile sources upon these counties. Idling: Truck traffic associated with construction projects generate emissions of PM, CO, NO2, SO2, VOC, and CO2, and TDEC recommends the operation of trucks with up-to-date emission control technologies and proper maintenance to minimize vehicle and equipment	The attainment status information described in the PEA is based on official designations published in EPA's Green Book website. TVA would however verify attainment status and examine local air quality conditions during completion of the Environmental Screening Checklist as part of the site-specific regulatory review. TVA would follow applicable air permitting application process for each selected site in consultation with TDEC, ADEM or KYDAQ. TVA would require construction vehicles be maintained in good condition and that idling be minimized to the extent practicable. TVA would also encourage the use of vehicles with up-to-date emission control technologies.

Comment No.	Organization / Affiliation	Comment	Response
		emissions. TDEC also recommends the adoption of best practices to minimize vehicle idling to minimize the impact of mobile source emissions on ambient air quality.	
2	TDEC	Division of Water Resources - The proposed project will require NPDES general (or individual) permits for stormwater discharges, including site-specific Stormwater Pollution Prevention Plans. It is also noted that Aquatic Resource Alteration Permits (ARAP) may be required under certain circumstances where water resources could be impacted, and additional NPDES discharge permits may be necessary if new outfalls are required. Because, as proposed, water will come from public water systems or existing wells, there are no anticipated direct surface water withdrawals associated with the proposed project.	TVA would obtain or modify as appropriate the applicable permits for water resources and stormwater discharges.
3	TDEC	TDEC appreciates the opportunity to provide comment on the draft PEA. Please note that these comments are not indicative of approval or is approval of the proposed projects or activities contained within.	Comment noted.
4	Sierra Club	The purpose of TVA's proposed action is to optimize the reuse of CCR currently produced and stored at TVA coal plants. While the Sierra Club believes that the best way to address coal ash pollution is to not create it in the first place, it is nonetheless vital that TVA dispose of the millions of tons of accumulated coal ash at their fossil plants in an environmentally beneficial manner.	Comment noted.
5	Sierra Club	1. Based on their "bounding" analysis, TVA concludes that the project would result in only minor impacts to air quality, climate change, water resources, and public health. The PEA does not demonstrate any analysis to determine whether	TVA would analyze the site-specific impacts of individual projects through use of the Environmental Screening Checklist and additional analyses.

Comment No.	Organization / Affiliation	Comment	Response
		the project may adversely and disproportionately impact site-adjacent communities that are already overburdened by pollution. TVA must analyze the site-specific impacts of any project that uses or emits any environmentally impactful substances. The PEA does not disclose localized impacts to air quality, water resources, or other impacts relevant to site-adjacent communities. Accordingly, TVA does not disclose enough information for the public to understand the potential impacts to local environmental resources. TVA has not satisfied its NEPA obligations to consider inherently site-specific impacts of air pollution, water resources, community health, and other impacts. TVA's "bounding" analysis, combined with its failure to consider a single alternative to its proposed action, obscures the potential impacts of the proposed action.	
6	Sierra Club	2. TVA largely proposes the use of thermal BPFs as a carbon treatment approach. As project-specific EAs or EISs are developed, we urge TVA to evaluate chemical and electrostatic alternatives to thermal treatment as potential primary methods of carbon removal. While TVA briefly notes the potential of "Chemical Passivation," this treatment method is only discussed as a supplemental effort for ash already within industry specifications. The thermal treatment process essentially involves reburning coal ash, which releases substantial carbon and other harmful air pollution to the atmosphere as the ash combusts. With electrostatic or chemical treatment, the primary source of air pollution is the natural gas combustion necessary for the drying process. A	Chemical passivation does not change the carbon level of CCR; therefore, it is not an appropriate method to treat CCR material that is not already within industry specifications. TVA continues to evaluate technologies and vendors as we develop and refine our strategy for beneficial reuse of CCRs. TVA would adapt the processes to align with the most appropriate and beneficial solutions and regulatory compliance throughout the process.

Comment No.	Organization / Affiliation	Comment	Response
		2023 EPRI report shows that using coal ash as cement replacement has the most lifecycle greenhouse gas benefit when a non-thermal carbon treatment process is implemented.	
7	Sierra Club	The PEA argues the greenhouse gas emissions would be negligible compared to the overall emissions throughout the TVA region, but we suggest that is not the case, and regardless of how significant one considers ~161,000 tons of CO2 to be, the PEA is misleading in using this calculation; because CO2 lingers in the atmosphere for at least 100 years, for the purposes of calculating climate change impacts the true calculation must be for the entire 236 million tons of CCR that are proposed to be beneficiated over the lifetime of the project.	TVA does consider GHG emissions on a lifetime basis. There are two types of beneficiation processes considered in this PEA, thermal and non-thermal beneficiation. Only the thermal beneficiation process would result in production of GHGs during facility operations. The thermal beneficiation process would only be suitable at select locations depending on the nature of the CCR material to be processed. Additionally, while it is possible that up to 236 million tons of CCR could be available for beneficiation at all of the identified TVA coal plants, the current market for CCR beneficiation is only 1.3-1.4 million tons per year in Tennessee and is assumed to be at similar levels in Alabama and Kentucky. Therefore, the thermal beneficiation process would be used for only a fraction of the total CCR, which is not currently reasonably foreseeable and therefore not within TVA's scope of analysis requirements for a programmatic NEPA approach. TVA would consider the site-specific GHG impacts, including long-term impacts, for any proposed thermal BPF during preparation of the Environmental Screening Checklist. TVA would comply with all applicable permit requirements for air emissions for all regulated emissions at each site ultimately selected to pursue construction and operation of a thermal beneficiation processing facility.
8	Sierra Club	3. While the PEA indicates there would be no impact to land use, the discussion makes no mention of the land occupied by the coal ash impoundments and landfills and what would be done to remediate the areas formerly filled or covered by raw coal ash. Nor does it discuss where the presumed borrow soils to refill the emptied impoundments would come from and what remediation steps would be taken to reclaim	Closure of impoundments have been, or will be, reviewed under separate environmental reviews. Closure activities and future use of those sites are outside of the scope of this review.

Comment No.	Organization / Affiliation	Comment	Response
		those areas. Presumably, the land areas vacated by the excavated coal ash would be eligible for some form of reuse or reclamation, yet the PEA includes no discussion of this issue.	
9	Sierra Club	4. Commenters are pleased to see that TVA recognizes the importance of worker safety and health, and that the PEA includes a statement that "operations of the CCR BPF would adhere to established OSHA and applicable state health and safety requirements." We recognize that the PEA does not go into great detail, and we want to be clear that any NEPA analysis omitted from the PEA must be subsequently analyzed in site-specific EAs or EISs, including enforceable provisions in project contracts that would require the contractors to adhere to specific standards governing workers' health and safety. In any case, we offer the linked document, "PROTECTING WORKERS DURING COAL ASH HANDLING AND CLEAN UP," for consideration as necessary criteria. These policies were developed by community members and worker families in East Tennessee. We strongly urge TVA to incorporate them into project-specific BMPs and job site safety plans. To address both workers' and the broader public's health and safety, we additionally urge TVA to require the installation of particulate air pollution monitors around the perimeter of the facility sites, as well as along the transportation routes that will be utilized by coal ash transport trucks.	The safety of our workers – both our employees and contract workforce – is always TVA's top priority. We take every precaution necessary to keep our workers safe during our operations. That includes working with our contractors and regulators to determine and provide the proper protective gear for the workers and implementing multiple channels to report safety and health concerns. Please see section 3.20 of the Final EA for information regarding Public Health and Safety.
10	Sierra Club	The PEA estimates some 1,500 tons per year of flue gas desulfurization (FGD) waste would need to be trucked to landfills. Commenters are somewhat confused here. Are these not the same	Only wet flue gas desulfurization (FGD) systems produce calcium sulfate dihydrate (FGD gypsum), the material commonly used to produce wallboard. This is due to the wet process and the forced oxidation of sulfite to sulfate in the final steps of the process. Dry

Comment No.	Organization / Affiliation	Comment	Response
		sort of FGD wastes that are beneficially reused from coal plant operations to make sheetrock? If so, could TVA divert the 1,500 tons per year from landfills and also beneficially reuse these wastes? If the wastes are qualitatively different from coal plant FGD wastes, please explain the difference and why these wastes would not be suitable for beneficial reuse processing. Again, following the reasoning in paragraph 2, if TVA considers 1,500 tons/year to be not enough to consider practical to reuse, the total amount over the lifetime of the project should be significant enough to consider diverting from landfills.	scrubbers, like those proposed for the beneficial use facility, produce mainly calcium sulfite. While FGD gypsum is a stable, marketable material commonly used to make wallboard, calcium sulfite lacks the properties needed for such applications. As a result, there is currently no beneficial use for the dry scrubber material, making it unsuitable for reuse
11	Sierra Club	The PEA indicates noise levels from operation of the CCR BPFs would be limited to 65 decibels at the site boundaries consistent with HUD guidelines. Commenters note the HUD guidelines date back to 1985 and are not as conservative as EPA guidelines of 55 dBA. We recommend TVA adopt the more conservative EPA guidelines as more protective of surrounding communities and additionally recommend TVA consider planting borders of trees along adjacent roadways and at site perimeters that border residential areas to not dampen noise levels but serve to visually screen industrial facilities from view.	TVA would conduct site-specific noise and visual reviews during completion of the Environmental Screening Checklists. Noise levels are expected to remain consistent with the existing industrial nature of the TVA coal sites and other ongoing activities at these sites. TVA would consider visual impacts and possible mitigation measures such as vegetative screening as appropriate during the site-specific reviews and completion of the Environmental Screening Checklist. Generally, it is assumed that the BPF would be constructed on already disturbed areas within the plant site and therefore would not result in a marked change in the viewshed for the surrounding area.
12	Sierra Club	In conclusion, we request the draft PEA be revised before finalization to incorporate Commenters concerns as discussed above.	Sections 1.1, 1.5, 3.12, 3.14, and 3.17 have been revised in the Final PEA in response to the Sierra Club and other commenters' concerns regarding NEPA review of closure activities, land remediation and future land use, air quality attainment status, and noise and visual impacts. The Environmental Screening Checklist also has been revised to address air quality attainment status during site-specific reviews.

Comment No.	Organization / Affiliation	Comment	Response
13	Linda Kowalewski	Since the Kingston facility is scheduled to switch from a coal to gas facility, the connection to and processing of coal ash should not be inflicted on this town. Historically, Kingston has shouldered a heavy burden when it comes to the residual effects of having the current plant in town. From the devastating event which polluted the land and waters making up Roane County and Watts Bar to the daily view of stacks towering over the town as they emit questionable gases/toxins, this town has done enough, sacrificed enough. The ongoing polluntants will forever cast a shadow over this area. This community has served TN and the country. It's time to stop perpetrating environmental hazards upon a town and people who are at the mercy of an organization as powerful as the TVA. No, coal ash should not be processed in Kingston, TN.	The purpose of TVA's proposed action is to facilitate and optimize the reuse of CCR, a waste historically and currently produced and stored at TVA coal plants. This is considered a beneficial reuse of the CCR material as it minimizes the amount of CCR being stored in a landfill. Bringing CCR to market specifications would enable TVA to remove CCR currently stored at TVA coal plants. Therefore, it has a minor beneficial impact on the local environment, including water resources and carbon emissions associated with concrete production.
14	Josh Burson	TVA should be focused on renewable energy. Coal is dead. Coal has been dead. TVA has the resources to actually improve our energy. Instead they let Russian agent Marsha Blackburn bitch and moan about shit she knows nothing about. We should be focused on protecting our great state and country. We can restore our environments that we rely on to survive. Clean water is what we need to live. Clean air is needed to live. Why would we further pollute our environment? Only stupid morons would think coal is good. Only idiots with no IQ would think its ok to poison our drinking water.	The proposed project is not an energy generation project. See response to Comment #13.
15	Stephen Black	CCR's contain significant amounts of Rare Earth Elements (REE) and critical materials (CM) such as gallium & germanium. Recent research indicates that US coal ash alone could hold 11	TVA has partnered with several different entities performing research under DOE grants into the recovery of REEs from coal ash. At this time there is no viable technology to recover REEs from coal ash on a commercial scale that results in an ash that

Comment No.	Organization / Affiliation	Comment	Response
		million tons of REEs, valued at around $8.4 billion. This is nearly eight times the current US domestic reserves. These materials underly many aspects of high technology, from infrared optics to solar panels, telecommunications and radar. The US is almost totally dependent on China for many of these materials, and China is taking steps to limit supplies available to the US. Studies including pilot production facilities sponsored by the department of energy have demonstrated the feasibility of recovering these materials from CCRs. It is surprising that this study is totally silent on the option of recovering REE and CM from TVA's CCR stockpiles.	can be beneficially used. If research efforts demonstrate a commercially available technology to recover REEs from CCR, and if market conditions and TVA's mission needs support it, TVA could evaluate REE recovery in a future environmental review.
16	Dwayne Oxford	Should've been done MANY years ago, better late than never.	The proposed action is an expansion of the CCR beneficial reuse program that TVA has been engaged with since 1956. TVA began reusing CCR in its own construction program in 1956, using dry fly ash collected from the Johnsonville Fossil Plant to construct additional units at that location (TVA 1987); fly ash was used as an additive (i.e., pozzolan) to improve the durability of the concrete. In addition to its own uses, TVA started commercial marketing of CCR in 1976.
17	Ewell Maurice Owen	Go with the coal!!!	See response to Comments #13 and #14.
18	Sean Ross	China has cutoff our rare earths. Why is the coal ash going into asphalt and drywall. There is higher concentrations of rear earths aluminum oxide and precious metals in that ash than in nature. After reclamation the rest can go into whatever. Google how much the average pile is worth. Ga power has several with trillions of $$ of minerals to be extracted.	TVA's coal ash is currently sold as a replacement for Portland cement in concrete, the largest beneficial use for fly ash in the United States. See response to Comment #15.
19	Otis Armstrong	During work for Texas Guv EAC we found that fly ash from Wyoming & New Mexico Coals could	See response to Comment #15.

Comment No.	Organization / Affiliation	Comment	Response
		have substantial trace amounts of rare earths & other metals. Such elements will be specific to each coal deposit. A suitable leach method is using Ammonium Carbonate & catalyst H2O2, which C.Clifts used insitu Uranium extraction. A review of trace elements in your fly ash may prove helpful in the supply of rare earths.	
20	Marie Gunther	I have serious concerns about the environmental impact of these projects. The Duke Energy coal ash spill into the Dan River in NC had long lasting negative impacts on the environment there. What is the TVA's plan for these proposed sites to ensure something like that will not happen again. You can also look at the rate of cancer in the residents in Lake Norman as a case study for foundations built with the coal ash byproduct. There certainly comes a point in time when you need to ask yourself if a short term economic boost is worth sacrificing clean waterways for future generations. I oppose this project. If it moves forward I hope to see strong plans in place to address the pollution of our beautiful waterways.	See response to Comment #13. Per the 2019 memorandum issued by the North Carolina Department of Health and Human Services, “there are no published studies to support an association between coal ash exposure and thyroid cancer”. This statement and a reference to this 2019 memorandum have been added to Section 3.20 of the Final PEA to establish that there is no known association between coal ash exposure and cancer.
21	Donna Terry	Please keep Memphis plant on clean energy!!!	The proposed action is not an energy production project; additionally, the Allen Fossil Plant is not being considered as a potential site for a beneficiation processing facility.
22	Jack Sullivan	If it has not already been done, coal ash should be chemically analyzed for heavy metals such as gold, silver, rare earth, and actinide elements. Coal ash is thought to contain uranium an actinide metal. Radon is a decay product of uranium and has been detected in some concretes. The	See response to Comment #15.

Comment No.	Organization / Affiliation	Comment	Response
		knowledge of the contents of coal ash might lead to profitable processes to recover rare elements.	
23	Jylie Bledsoe	My question to TVA and Its contractors is will you protect the workers? Will the men and women doing the work to recycle the coal ash be provided respiratory protection. Coal Ash contains many dangerous ingredients and I wonder if you will consider the health of the workers. Will you consider your neighbors and the community? Will you put profits before people?	Please see section 3.20 of the Final EA for information regarding Public Health and Safety.
24	Karen Moore	I beg you to please reconsider approving this. I live right across the street on Walnut Valley Rd. My son and his three daughters just bought the house next door two years ago when they found out Bull Run would shut down. do not want them living across the street from hazardous materials flying in the air or in our water supply. I have lived her for 26 years and until Kingston spill we were lied to and told the ash was safe. you did all kinds of public meetings asking the community what we would like to see built on the site and then y decide to do a nuclear fusion whatever type place. We feel the meetings were all for show and you already had planned this well before them. Haven't you polluted our community enough. how many coal plants do you have with people living so close? If this is something you r going to add to whatever else you've decided to do here I think you need to buy our neighborhoods out so we can get fair market value and save our health. My husband at 64 just died of cancer. My neighbor had parkinson's two people across the street had heart attacks. I don't know what you think I can come up with for solutions to this proposal except to say please don't do this here. Claxton has had	See response to Comment #13.

Comment No.	Organization / Affiliation	Comment	Response
		over 50 years of pollution. I'm sure you can find another way to do this but again I beg you not to do this to our community. This is a government facility owned by the people who pay taxes. This time listen to what we want there not what the CEO's want. Thank You.	
25	Theresa Bumpus	This email is in response to the ad in The Messenger, the newspaper in Union City Tn, dated Wed 30 April. Yes, I am all for the construction of facilities to process and reuse CCRs. I get power from Gibson Electric, My utility district buys power from you folks. I am somewhat familiar with coal mines and the mess they create. I have been to mines in Illinois and Kentucky, and also to a coal powered plant in Kansas. All this was as a driver for railroad workers. I prefer smaller, more local plants. This lowers material transportation costs and travel for employees-both of which lowers risks of accidents and resulting damage and costs. Processing plants located near mines also allows for use of railroads for completed materials for resale. Concrete and Drywall have a ready made market. And personally, I think this is a good way to increase employment, in both manufacturing and housing, in this country. The problems I foresee are with the physical locations. I see such things as rivers, elevation, slope, adequate drainage, water table and such, because I see the risks and costs of flooding, facility maintenance, and future expansion. Nearby roads, railroads, rivers, and other means of transportation, as well as the labor force also should be considered. I am thankful there are future minded folks who think of these things. Thank you for the opportunity to provide	Comment noted.

Comment No.	Organization / Affiliation	Comment	Response
		input and my opinion at the front end instead of after when it is much too late.	
26	Jim Bolton	I am a small family owned precast concrete manufacturer in Johnson City, TN. Flyash Benefits for Bolton Concrete Products - As the owner of Bolton Concrete Products, here in Johnson City, TN using Flyash from the Kingston, TN facility brings measurable benefits for our business, our customers, and our community: For Our Business - Flyash enhances the strength, durability, and workability of our concrete while reducing material costs. It extends the life of our forms and improves finish quality—helping us deliver a better product with greater efficiency. For Our Customers = Flyash concrete resists cracking, scaling, and chemical damage, offering a longer-lasting, higher-performing product. Customers benefit from improved quality and sustainability without added cost. For Tennessee - By sourcing Flyash locally, we're turning a byproduct into a valuable resource, reducing landfill waste, and cutting down on CO_2 emissions. This supports a cleaner environment and promotes responsible use of Tennessee's industrial resources. Flyash isn't just smart business—it's good stewardship for our customers and our state.	Comment noted.
27	Alan Sparkman	I am writing today to support TVA's efforts to increase their beneficial reuse of coal ash. The concrete industry has a long, well-established track record as the largest beneficial consumer of fly ash, a common residual product left over after burning coal to produce electric power. What is perhaps unique about incorporating fly ash into concrete mixtures is the triple win that results from	Comment noted.

Comment No.	Organization / Affiliation	Comment	Response
		such use. The first win is that fly ash utilized in concrete mixtures no longer has to be stored or managed by TVA or other utilities. Once utilized inside of concrete, the fly ash becomes a permanent part of the concrete and is chemically bound into the concrete. No one has to worry about future disposal or contamination related to the fly ash, even when the concrete structure may eventually be demolished. The second win is for the concrete mixture. Concrete containing fly ash is not compromised, or downcycled - it is improved in significant and measurable ways. Concrete mixtures made with fly ash are stronger, less permeable and more durable. The use of fly ash is a primary strategy to lower the embodied carbon of concrete mixtures, as well as to increase the service life of concrete structures. The third win is allowing TVA to produce financial benefit for their rate payers. Fly ash has value in the concrete value stream and concrete producers pay to obtain that value. In addition, TVA benefits financially as they decrease the cost of managing existing fly ash storage impoundments over time, and TVA achieves a significant reduction in the risk of future environmental problems related to such storage. On behalf of the concrete industry in Tennessee we strongly urge TVA to pursue beneficial reuse as their primary and preferred strategy for all existing fly ash storage locations in the state of Tennessee.	
28	Ricky Merritt	I applaud TVA's move toward the beneficial use of currently landfilled coal ash. As a member of the construction industry, we experience the economic benefit in concrete production which in turn is past on to our customer (which often is the	Comment noted.

Comment No.	Organization / Affiliation	Comment	Response
		taxpayer). The greater gain is the permanent environmental solution which current and future generations will enjoy. All are winners! Thank you!	
29	Eric Barger	I am writing to express my strong support for using fly ash in our company's concrete mixes. This practice significantly improves our concrete's longevity and quality while reducing the final product cost. By substituting up to 30% of cement with fly ash, we enhance the durability and performance of our concrete. This also allows us to offer a more cost-effective product to our customers. Thank you for considering this critical practice	Comment noted.
30	Donald Childress	Our company is a proponent of TVA managing flyash that is already in the ground as a resource, not a waste product. We see this as an opportunity for TVA to show a strong commitment to preserving the environment while providing a sustainable building material back into the building industry.	Comment noted.
31	Kyle Flynn – Separation Technologies LLC	I am writing to provide my comments on the Draft Programmatic Environmental Assessment (PEA) for the construction and operation of coal combustion residual (CCR) beneficiation processing facilities by the Tennessee Valley Authority (TVA). I appreciate the opportunity to contribute to this important discussion and would like to advocate for the incorporation of a non-thermal CCR processing method for carbon loss on ignition (LOI) reduction using Separation Technologies, LLC (ST) electrostatic separation. ST is a trusted partner in coal ash beneficiation technology, enabling the recycling of high volumes of quality supplementary cementitious materials	TVA appreciates the explanation of your beneficiation technology and your previous experience in beneficial reuse. As we develop and refine our strategy for beneficial reuse of CCRs we will continue to evaluate technologies and vendors. TVA would adapt the processes and documents to align with the most appropriate and beneficial solutions throughout the process.

Comment No.	Organization / Affiliation	Comment	Response
		(SCM) into the cement and concrete sectors. Our team has successfully implemented fly ash beneficiation technology in North America, Europe, and Asia, processing and selling over 25 million tons of coal ash under the brand name ProAsh®. Our proven fly ash beneficiation process has been commercially operational since 1995, with hundreds of machine-years of operating experience. Core to our technology is the capability to offer a solution that does not rely on thermal combustion of residual unburned carbon (LOI). Our electrostatic coal ash processing technology allows for multiple outlets for beneficial reuse of fly ash materials, with an emphasis on use in high-value concrete markets as well as portland cement kiln raw feed and alternative fuel. We believe our processing and marketing expertise could greatly benefit TVA's coal ash beneficiation project, while greatly reducing the environmental footprint, power consumption and installation cost over a thermal combustion alternative. Rationale for Non-Thermal Carbon Removal Processing Methods: 1. Environmental Benefits: Reduced Emissions: Non-thermal processing methods, such as ST electrostatic separation, do not involve combustion, thereby significantly reducing greenhouse gas emissions and other pollutants associated with thermal processes. Energy Efficiency: Electrostatic separation is an energy-efficient process that requires less energy compared to thermal methods, leading to a lower carbon footprint. 2. Economic Advantages: Cost-Effectiveness: The ST process is cost-effective due to its lower installation cost, reduced energy	

Comment No.	Organization / Affiliation	Comment	Response
		consumption and reduced operational costs. ST believes this will result in significant savings for TVA and its stakeholders. Market Viability: The high-quality fly ash produced through electrostatic separation meets and exceeds ASTM C618 industry standards for use in concrete, generating a consistent fly ash which is highly desired by the ready-mix concrete industry. 3. Operational Efficiency: Scalability: The ST electrostatic separation process is modular and highly scalable and can be easily integrated into a CCR beneficial use project of any size required. Flexibility: The ST electrostatic fractionation process allows TVA to access multiple beneficial use markets including ready-mix concrete grade fly ash as well as cement kiln feed and/or cement kiln feed alternative fuel, or even supplemental fuel for a TVA utility boiler. Conclusion: Incorporating the ST electrostatic separation method into TVA's CCR beneficiation strategy aligns with the goals of environmental sustainability, economic efficiency, and operational effectiveness. I strongly urge TVA to consider this non-thermal processing alternative in the final PEA and subsequent implementation plans. Thank you for considering my comments. I look forward to TVA's continued commitment to innovative and sustainable practices in CCR management.	
32	Brett D. Ruffing – Kentucky Concrete Association	I am writing to express my support for the expanded use and acceptance of harvested and reclaimed fly ash as a supplemental cementitious material (SCM) in concrete. As both industry professionals and environmental stewards seek to lower the carbon footprint of construction practices, the reuse of previously landfilled or	Comment noted.

Comment No.	Organization / Affiliation	Comment	Response
		ponded fly ash presents a unique opportunity to advance sustainability while maintaining the quality and durability of concrete infrastructure. Environmental and Sustainability Benefits - Reclaimed fly ash enables the beneficial reuse of industrial byproducts. Recovering this material diverts it from long-term storage sites, reducing risks of groundwater contamination and structural failure associated with impoundments. Furthermore, its use in concrete significantly reduces the need for cement in concrete mixes which also reduces carbon emissions. This substitution directly lowers greenhouse gas emissions associated with construction and supports climate resilience goals. Technical and Performance Advantages - Fly ash—whether freshly produced or reclaimed—enhances concrete performance by improving workability, reducing permeability, and increasing long-term strength. When properly processed and tested, reclaimed fly ash can meet ASTM C618 specifications, ensuring its suitability for critical applications. The inclusion of fly ash has been extensively validated in both laboratory studies and decades of real-world use, showing improvements in sulfate resistance, reduced alkali-silica reactivity (ASR), and better lifecycle performance. Economic and Supply Chain Implications - As coal-fired power plants continue to decline, the availability of freshly produced fly ash is shrinking. Reclaimed fly ash helps address this supply gap, providing a consistent and geographically diverse source of material that supports regional markets and job creation in beneficiation and recovery operations. This shift	

Comment No.	Organization / Affiliation	Comment	Response
		also helps stabilize SCM markets, reduce construction material costs, and support local economies. Policy Recommendations - To fully unlock the potential of reclaimed fly ash, I respectfully urge agencies to: Encourage and streamline permitting for reclamation and beneficiation projects; Recognize reclaimed fly ash in state and federal procurement standards; Support research and demonstration projects that validate reclaimed material performance; and Remove regulatory barriers that treat reclaimed fly ash differently from freshly generated material despite equivalent outcomes. Thank you for the opportunity to comment. Supporting the use of reclaimed fly ash is a forward-looking policy choice that balances environmental responsibility, infrastructure performance, and economic benefit.	

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
NASHVILLE, TENNESSEE 37243-0435

DAVID W. SALYERS, P.E.
COMMISSIONER

BILL LEE
GOVERNOR

May 14, 2025

Via Electronic Mail to nepa@tva.gov.

Brittany Kunkle
NEPA Specialist
brkunkle@tva.gov
865-632-6470
400 West Summit Hill Drive, WT 11B
Knoxville, TN 37902

Dear Brittany Kunkle:

The Tennessee Department of Environment and Conservation (TDEC) appreciates the opportunity to provide comments on the Tennessee Valley Authority (TVA)'s draft Programmatic Environmental Assessment (draft PEA) for the construction and operation of coal combustion residual (CCR) beneficiation processing facilities (BPFs). The stated purpose of this proposed action is to optimize the reuse of CCR currently produced and stored at TVA's former and existing coal-fired power plant sites through programmatically evaluating the construction and operation of on-site BPFs at various TVA facilities within the TVA Power Service Area.

The draft PEA evaluates the environmental impacts associated with the following two alternatives:

- Alternative A, No Action Alternative –Under Alternative A, TVA would not establish a program to programmatically review, construct, and operate CCR BPFs at TVA coal plants. TVA would continue to market CCR that meets commercial and industry specifications for beneficial reuse without processing and would continue to store remaining CCR in an environmentally acceptable manner consistent with all applicable regulations and permit requirements.
- Alternative B, Construction and Operation of CCR Beneficiation Processing Facilities – Under Alternative B, TVA would establish a program to programmatically review the construction and operation of CCR BPFs using the implementation of a programmatic Environmental Screening Checklist. The Environmental Screening Checklist would be used to evaluate the location and physical characteristics of the proposed project, document potential environmental and social impacts, determine applicable permits required, and consider whether construction and operation of the facility could support a finding of no significant impact. Following the screening and then approval process, the proposed project would entail the construction of CCR BPFs at one or more TVA properties across the TVA Power Service Area to meet commercial and industry specifications for beneficial reuse. In most cases, the BPFs would be constructed by TVA but operated by a selected vendor. Two types of CCR BPFs are being considered in the programmatic Environmental Screening Checklist: thermal and nonthermal.

Only one facility type would be constructed at selected sites, depending on need. The facilities would consist of three primary areas including: raw CCR material storage; a process island; and product storage and load out. Major facility elements include a control room, small lab, maintenance area, employee parking, storage domes, storage silos, and any required office space.

TDEC is the environmental and natural resource regulatory agency in Tennessee with delegated responsibility from the U.S. Environmental Protection Agency (EPA) to regulate sources of air pollution; solid and hazardous waste; underground storage tanks; and water resources. TDEC has reviewed the draft PEA and offers the following comments regarding the proposed project:

Division of Air Pollution Control

Air Quality Impacts: Several actions could negatively impact air quality on a short-term basis. TDEC recommends that TVA evaluate such potential impacts prior to any clearing, demolition, or construction. Such impacts may include, but are not limited to, air pollution from construction equipment, open burning associated with land clearing activities, and fugitive dust. Local air quality conditions are available online at https://www.airnow.gov/.

The PEA states that the coal plants are located in attainment counties, but the TVA Bull Run and TVA Kingston facilities are located near counties with monitored exceedances of the $PM_{2.5}$ NAAQS. Similarly, the TVA Gallatin Fossil Plant is in a county that is barely attaining the ozone NAAQS – the fourth highest ozone concentration for Sumner County was 76 ppb in 2023 and 72 ppb in 2024, and if the fourth highest concentration is greater than 65 ppb in 2025, the three-year design value will exceed the NAAQS. Finally, the TVA Widows Creek site in Alabama could impact the nearby monitors in the Chattanooga area (Tennessee and Georgia). TDEC recommends that TVA consider the impact of source operation and associated emissions from stationary and mobile sources upon these counties.

Idling: Truck traffic associated with construction projects generate emissions of PM, CO, NO_2, SO_2, VOC, and CO_2, and TDEC recommends the operation of trucks with up-to-date emission control technologies and proper maintenance to minimize vehicle and equipment emissions. TDEC also recommends the adoption of best practices to minimize vehicle idling to minimize the impact of mobile source emissions on ambient air quality.

Division of Water Resources

The proposed project will require NPDES general (or individual) permits for stormwater discharges, including site-specific Stormwater Pollution Prevention Plans. It is also noted that Aquatic Resource Alteration Permits (ARAP) may be required under certain circumstances where water resources could be impacted, and additional NPDES discharge permits may be necessary if new outfalls are required. Because, as proposed, water will come from public water systems or existing wells, there are no anticipated direct surface water withdrawals associated with the proposed project.

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
NASHVILLE, TENNESSEE 37243-0435

DAVID W. SALYERS, P.E.
COMMISSIONER

BILL LEE
GOVERNOR

TDEC appreciates the opportunity to provide comment on the draft PEA. Please note that these comments are not indicative of approval or disapproval of the proposed projects or activities contained within. Please contact me should you have any questions regarding these comments.

Sincerely,

Emma Bartolo (May 14, 2025 07:50 CDT)

Emma Bartolo
Policy Analyst
Office of Policy and Planning
Emma.Bartolo@tn.gov

SIERRA CLUB

May 14, 2025

Submitted via electronic mail to nepa@tva.gov

Brittany Kunkle
NEPA Specialist
400 West Summit Hill Drive, WT 11B
Knoxville, TN 37902

Re: Public Comments on Draft Programmatic Environmental Assessment (PEA) for the Construction and Operation of Beneficiation Processing Facilities

Dear Ms. Kunkle:

On April 14, 2025, the Tennessee Valley Authority (TVA) released the draft programmatic environmental assessment (PEA) for the Construction and Operation of Beneficiation Processing Facilities. The intent of the PEA is to programmatically assess the effects of the construction and operation of beneficiation processing facilities (BPFs) to improve the quality of the Coal Combustion Residuals (CCR) to meet commercial and industry specifications for beneficial reuse at one or more TVA coal plants.

The Sierra Club respectfully submits these comments on the draft PEA. The purpose of TVA's proposed action is to optimize the reuse of CCR currently produced and stored at TVA coal plants. While the Sierra Club believes that the best way to address coal ash pollution is to not create it in the first place, it is nonetheless vital that TVA dispose of the millions of tons of accumulated coal ash at their fossil plants in an environmentally beneficial manner.

Commenters have some suggestions on the draft PEA and concerns we wish to share. These concern the PEA's heavy reliance on a "bounding" analysis to consider environmental effects based on "scenarios with the most significant potential impacts" across the region TVA serves, potential alternatives to thermal carbon treatment and impacts on land, public and worker health and safety, solid waste disposal, and noise pollution.

1. Based on their "bounding" analysis, TVA concludes that the project would result in only minor impacts to air quality, climate change, water resources, and public health. The PEA does not demonstrate any analysis to determine whether the project may adversely and disproportionately impact site-adjacent communities that are already overburdened by pollution. TVA must analyze the site-specific impacts of any project that uses or emits any environmentally

impactful substances. The PEA does not disclose localized impacts to air quality, water resources, or other impacts relevant to site-adjacent communities. Accordingly, TVA does not disclose enough information for the public to understand the potential impacts to local environmental resources. TVA has not satisfied its NEPA obligations to consider inherently site-specific impacts of air pollution, water resources, community health, and other impacts. TVA's "bounding" analysis, combined with its failure to consider a single alternative to its proposed action, obscures the potential impacts of the proposed action.

2. TVA largely proposes the use of thermal BPFs as a carbon treatment approach. As project-specific EAs or EISs are developed, we urge TVA to evaluate chemical and electrostatic alternatives to thermal treatment as potential primary methods of carbon removal. While TVA briefly notes the potential of "Chemical Passivation," this treatment method is only discussed as a supplemental effort for ash already within industry specifications. The thermal treatment process essentially involves reburning coal ash, which releases substantial carbon and other harmful air pollution to the atmosphere as the ash combusts. With electrostatic or chemical treatment, the primary source of air pollution is the natural gas combustion necessary for the drying process. A 2023 EPRI[1] report shows that using coal ash as cement replacement has the most lifecycle greenhouse gas benefit when a non-thermal carbon treatment process is implemented. The PEA argues the greenhouse gas emissions would be negligible compared to the overall emissions throughout the TVA region, but we suggest that is not the case, and regardless of how significant one considers ~161,000 tons of CO_2 to be, the PEA is misleading in using this calculation; because CO_2 lingers in the atmosphere for at least 100 years, for the purposes of calculating climate change impacts the true calculation must be for the entire 236 million tons of CCR that are proposed to be beneficiated over the lifetime of the project.

3. While the PEA indicates there would be no impact to land use, the discussion makes no mention of the land occupied by the coal ash impoundments and landfills and what would be done to remediate the areas formerly filled or covered by raw coal ash. Nor does it discuss where the presumed borrow soils to refill the emptied impoundments would come from and what remediation steps would be taken to reclaim those areas. Presumably, the land areas vacated by the excavated coal ash would be eligible for some form of reuse or reclamation, yet the PEA includes no discussion of this issue.

4. Commenters are pleased to see that TVA recognizes the importance of worker safety and health, and that the PEA includes a statement that "operations of the CCR BPF would adhere to established OSHA and applicable state health and safety requirements." We recognize that the PEA does not go into great detail, and we want to be clear that any NEPA analysis omitted from the PEA **must** be subsequently analyzed in site-specific EAs or EISs, including enforceable provisions in project contracts that would require the contractors to adhere to specific standards governing workers' health and safety. In any case, we offer the linked document, "PROTECTING WORKERS DURING COAL ASH HANDLING AND CLEAN UP," for consideration as necessary criteria. These policies were developed by community members and worker families in East Tennessee. We strongly urge TVA to incorporate them into

[1] *Harvested Coal Ash Used as a Cement Replacement in Concrete: Life-Cycle Impacts. EPRI, Palo Alto, CA: 2023. 3002024165.*

project-specific BMPs and job site safety plans. To address both workers' and the broader public's health and safety, we additionally urge TVA to require the installation of particulate air pollution monitors around the perimeter of the facility sites, as well as along the transportation routes that will be utilized by coal ash transport trucks.

The PEA estimates some 1,500 tons per year of flue gas desulfurization (FGD) waste would need to be trucked to landfills. Commenters are somewhat confused here. Are these not the same sort of FGD wastes that are beneficially reused from coal plant operations to make sheetrock? If so, could TVA divert the 1,500 tons per year from landfills and also beneficially reuse these wastes? If the wastes are qualitatively different from coal plant FGD wastes, please explain the difference and why these wastes would not be suitable for beneficial reuse processing.

Again, following the reasoning in paragraph 2, if TVA considers 1,500 tons/year to be not enough to consider practical to reuse, the total amount over the lifetime of the project should be significant enough to consider diverting from landfills.

The PEA indicates noise levels from operation of the CCR BPFs would be limited to 65 decibels at the site boundaries consistent with HUD guidelines. Commenters note the HUD guidelines date back to 1985 and are not as conservative as EPA guidelines of 55 dBA. We recommend TVA adopt the more conservative EPA guidelines as more protective of surrounding communities and additionally recommend TVA consider planting borders of trees along adjacent roadways and at site perimeters that border residential areas to not dampen noise levels but serve to visually screen industrial facilities from view.

In conclusion, we request the draft PEA be revised before finalization to incorporate Commenters concerns as discussed above.

Respectfully,

Bonnie Swinford
Campaign Organizing Strategist
Sierra Club

Patrick Cupples
Director
Tennessee Chapter of Sierra Club

[redacted]

From: Wufoo <no-reply@wufoo.com>
Sent: Monday, April 14, 2025 2:57 PM
To: nepa
Subject: Construction and Operation of Beneficiation [#3]

Name	Linda Kowalewski
City	Kingston
State	TN
Email	[redacted]
Phone Number	[redacted]

Please provide your comments by uploading a file or by entering them below. *

Since the Kingston facility is scheduled to switch from a coal to gas facility, the connection to and processing of coal ash should not be inflicted on this town. Historically, Kingston has shouldered a heavy burden when it comes to the residual effects of having the current plant in town. From the devastating event which polluted the land and waters making up Roane County and Watts Bar to the daily view of stacks towering over the town as they emit questionable gases/toxins, this town has done enough, sacrificed enough. The ongoing polluntants will forever cast a shadow over this area. This community has served TN and the country. It's time to stop perpetrating environmental hazards upon a town and people who are at the mercy of an organization as powerful as the TVA. No, coal ash should not be processed in Kingston, TN.

[redacted]

From: Wufoo <no-reply@wufoo.com>
Sent: Monday, April 14, 2025 1:11 PM
To: nepa
Subject: Construction and Operation of Beneficiation [#1]

Name	Josh Burson
City	Knoxville
State	Tennessee
Email	[redacted]
Phone Number	[redacted]

Please provide your comments by uploading a file or by entering them below. *

TVA should be focused on renewable energy. Coal is dead. Coal has been dead. TVA has the resources to actually improve our energy. Instead they let Russian agent Marsha Blackburn bitch and moan about shit she knows nothing about. We should be focused on protecting our great state and country. We can restore our environments that we rely on to survive. Clean water is what we need to live. Clean air is needed to live. Why would we further pollute our environment? Only stupid morons would think coal is good. Only idiots with no IQ would think its ok to poison our drinking water.

[redacted]

From: Wufoo <no-reply@wufoo.com>
Sent: Monday, April 14, 2025 1:47 PM
To: nepa
Subject: Construction and Operation of Beneficiation [#2]

Name	Stephen Black
City	Tennessee Ridge
State	Tennessee
Email	[redacted]
Phone Number	[redacted]

Please provide your comments by uploading a file or by entering them below. *

CCR's contain significant amounts of Rare Earth Elements (REE) and critical materials (CM) such as gallium & germanium. Recent research indicates that US coal ash alone could hold 11 million tons of REEs, valued at around $8.4 billion. This is nearly eight times the current US domestic reserves. These materials underly many aspects of high technology, from infrared optics to solar panels, telecommunications and radar. The US is almost totally dependent on China for many of these materials, and China is taking steps to limit supplies available to the US. Studies including pilot production facilities sponsored by the department of energy have demonstrated the feasibility of recovering these materials from CCRs. It is surprising that this study is totally silent on the option of recovering REE and CM from TVA's CCR stockpiles.

[redacted]

From: Wufoo <no-reply@wufoo.com>
Sent: Tuesday, April 15, 2025 5:52 AM
To: nepa
Subject: Construction and Operation of Beneficiation [#4]

Name	Dwayne Oxford
City	Holladay
State	Tennessee
Email	[redacted]
Phone Number	[redacted]
Please provide your comments by uploading a file or by entering them below. *	Should've been done MANY years ago, better late than never.

[redacted]

From: Wufoo <no-reply@wufoo.com>
Sent: Tuesday, April 15, 2025 6:26 AM
To: nepa
Subject: Construction and Operation of Beneficiation [#5]

Name	Ewell Maurice Owen
City	Paris
State	Tennessee
Organization	U. S. Army (Retired)
Email	[redacted]
Phone Number	[redacted]
Please provide your comments by uploading a file or by entering them below. *	Go with the coal!!!

[redacted]

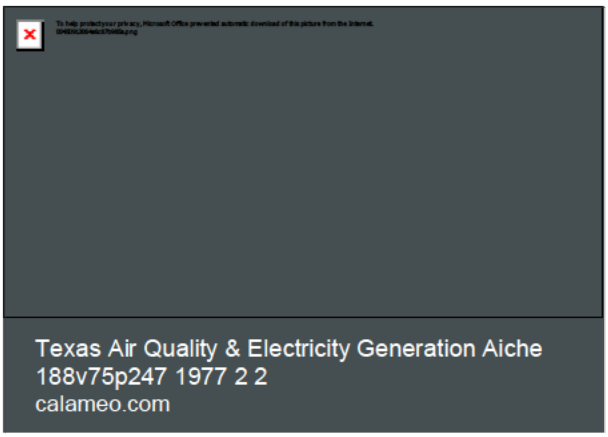
From: Wufoo <no-reply@wufoo.com>
Sent: Tuesday, April 15, 2025 1:24 PM
To: nepa
Subject: Construction and Operation of Beneficiation [#6]

Name	Sean ross
City	Barnesville
State	Ga
Organization	Concerned citizens
Email	[redacted]
Phone Number	[redacted]
Please provide your comments by uploading a file or by entering them below. *	China has cutoff our rare earths Why is the coal ash going into asphalt and drywall There is higher concentrations of rear earths aluminum oxide and precious metals in that ash than in nature After reclamation the rest can go into whatever Google how much the average pile is worth Ga power has several with trillions of $$ of minerals to be extracted

[redacted]

From: otis armyalso [redacted]
Sent: Tuesday, April 15, 2025 2:09 PM
To: nepa
Subject: Beneficiation Processing Facility PEA

During work for Texas Guv EAC we found that fly ash from Wyoming & New Mexico Coals could have substantial trace amounts of rare earths & other metals. Such elements will be specific to each coal deposit. A suitable leach method is using Ammonium Carbonate & catalyst H2O2, which C.Clifts used insitu Uranium extraction
A review of trace elements in your fly ash may prove helpful in the supply of rare earths.



Sent from Otis Armstrong PE iPh7

[redacted]

From: Wufoo <no-reply@wufoo.com>
Sent: Wednesday, April 16, 2025 9:38 AM
To: nepa
Subject: Construction and Operation of Beneficiation [#7]

Name	Marie Gunther
City	Murphy
State	NC
Email	[redacted]
Phone Number	[redacted]

Please provide your comments by uploading a file or by entering them below. *

I have serious concerns about the environmental impact of these projects. The Duke Energy coal ash spill into the Dan River in NC had long lasting negative impacts on the environment there. What is the TVA's plan for these proposed sites to ensure something like that will not happen again. You can also look at the rate of cancer in the residents in Lake Norman as a case study for foundations built with the coal ash byproduct.

There certainly comes a point in time when you need to ask yourself if a short term economic boost is worth sacrificing clean waterways for future generations.

I oppose this project. If it moves forward I hope to see strong plans in place to address the pollution of our beautiful waterways.

From: Wufoo
To: nepa
Subject: Construction and Operation of Beneficiation [#8]
Date: Sunday, April 20, 2025 2:26:50 PM

Name	Donna Terry
City	Memphis
State	TN
Organization	[redacted]
Email	[redacted]
Phone Number	[redacted]
Please provide your comments by uploading a file or by entering them below. *	Please keep Memphis plant on clean energy!!!

From: jack sullivan
To: nepa
Subject: Coal Ash
Date: Saturday, April 19, 2025 10:34:09 AM

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5-19-25

Ms. Kunkle,

If it has not already been done, coal ash should be chemically analyzed for heavy metals such as gold, silver, rare earth, and actinide elements. Coal ash is thought to contain uranium an actinide metal. Radon is a decay product of uranium and has been detected in some concretes.

The knowledge of the contents of coal ash might lead to profitable processes to recover rare elements.

Jack Sullivan,

Florence, AL.

From: Wufoo
To: nepa
Subject: Construction and Operation of Beneficiation [#9]
Date: Sunday, May 4, 2025 4:59:33 PM

Name	Jylie Bledsoe
City	Powell
State	Tn
Organization	Wife of Kingston Coal Ash Worker
Email	[redacted]
Phone Number	[redacted]
Please provide your comments by uploading a file or by entering them below. *	My question to TVA and Its contractors is will you protect the workers? Will the men and women doing the work to recycle the coal ash be provided respiratory protection. Coal Ash contains many dangerous ingredients and I wonder if you will consider the health of the workers. Will you consider your neighbors and the community? Will you put profits before people?

From: Wufoo
To: nepa
Subject: Construction and Operation of Beneficiation [#10]
Date: Sunday, May 4, 2025 7:01:23 PM

Name	Karen Moore
City	Clinton
State	TN
Email	[redacted]
Phone Number	[redacted]

Please provide your comments by uploading a file or by entering them below. *

I beg you to please reconsider approving this. I live right across the street on Walnut Valley Rd. My son and his three daughters just bought the house next door two years ago when they found out Bull Run would shut down. do not want them living across the street from hazardous materials flying in the air or in our water supply. I have lived her for 26 years and until Kingston spill we were lied to and told the ash was safe. you did all kinds of public meetings asking the community what we would like to see built on the site and then y decide to do a nuclear fusion whatever type place. We feel the meetings were all for show and you already had planned this well before them. Haven't you polluted our community enough. how many coal plants do you have with people living so close? If this is something you r going to add to whatever else you've decided to do here I think you need to buy our neighborhoods out so we can get fair market value and save our health. My husband at 64 just died of cancer. My neighbor had parkinson's two people across the street had heart attacks. I don't know what you think I can come up with for solutions to this proposal except to say please don't do this here. Claxton has had over 50 years of pollution. I'm sure you can find another way to do this but again I beg you not to do this to our community. This is a government facility owned by the people who pay taxes. This time listen to what we want there not what the CEO's want. Thank You.

From: theresa bumpus
To: nepa
Subject: Coal Combustion Residuals (CCRs) use facilities
Date: Monday, May 5, 2025 10:14:15 AM

TVA Folks,
This email is in response to the ad in The Messenger, the newspaper in Union City Tn, dated Wed 30 April. Yes, I am all for the construction of facilities to process and reuse CCRs. I get power from Gibson Electric, My utility district buys power from you folks. I am somewhat familiar with coal mines and the mess they create. I have been to mines in Illinois and Kentucky, and also to a coal powered plant in Kansas. All this was as a driver for railroad workers. I prefer smaller, more local plants. This lowers material transportation costs and travel for employees-both of which lowers risks of accidents and resulting damage and costs. Processing plants located near mines also allows for use of railroads for completed materials for resale. Concrete and Drywall have a ready made market. And personally, I think this is a good way to increase employment, in both manufacturing and housing, in this country. The problems I foresee are with the physical locations. I see such things as rivers, elevation, slope, adequate drainage, water table and such, because I see the risks and costs of flooding, facility maintenance, and future expansion. Nearby roads, railroads, rivers, and other means of transportation, as well as the labor force also should be considered. I am thankful there are future minded folks who think of these things. Thank you for the opportunity to provide input and my opinion at the front end instead of after when it is much too late.
Thank You,
Ms Theresa Bumpus
[redacted]

From: Jim Bolton
To: nepa
Subject: Beneficiation Processing Facility PEA
Date: Tuesday, May 6, 2025 9:40:24 AM

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This is an EXTERNAL EMAIL from outside TVA. THINK BEFORE you CLICK links or OPEN attachments. If suspicious, please click the “Report Phishing” button located on the Outlook Toolbar at the top of your screen.

I am a small family owned precast concrete manufacturer in Johnson City, TN.

Flyash Benefits for Bolton Concrete Products

As the owner of Bolton Concrete Products, here in Johnson City, TN using Flyash from the Kingston, TN facility brings measurable benefits for our business, our customers, and our community:

For Our Business

Flyash enhances the strength, durability, and workability of our concrete while reducing material costs. It extends the life of our forms and improves finish quality—helping us deliver a better product with greater efficiency.

For Our Customers

Flyash concrete resists cracking, scaling, and chemical damage, offering a longer-lasting, higher-performing product. Customers benefit from improved quality and sustainability without added cost.

For Tennessee

By sourcing Flyash locally, we’re turning a byproduct into a valuable resource, reducing landfill waste, and cutting down on CO_2 emissions. This supports a cleaner environment and promotes responsible use of Tennessee’s industrial resources.

Flyash isn’t just smart business—it’s good stewardship for our customers and our state.

Jim Bolton

From: Alan Sparkman
To: nepa
Subject: Beneficiation Processing Facility PEA
Date: Monday, May 5, 2025 5:31:00 PM

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This is an EXTERNAL EMAIL from outside TVA. THINK BEFORE you CLICK links or OPEN attachments. If suspicious, please click the "Report Phishing" button located on the Outlook Toolbar at the top of your screen.

I am writing today to support TVA's efforts to increase their beneficial reuse of coal ash.

The concrete industry has a long, well-established track record as the largest beneficial consumer of fly ash, a common residual product left over after burning coal to produce electric power. What is perhaps unique about incorporating fly ash into concrete mixtures is the triple win that results from such use.

The first win is that fly ash utilized in concrete mixtures no longer has to be stored or managed by TVA or other utilities. Once utilized inside of concrete, the fly ash becomes a permanent part of the concrete and is chemically bound into the concrete. No one has to worry about future disposal or contamination related to the fly ash, even when the concrete structure may eventually be demolished.

The second win is for the concrete mixture. Concrete containing fly ash is not compromised, or downcycled - it is improved in significant and measurable ways. Concrete mixtures made with fly ash are stronger, less permeable and more durable. The use of fly ash is a primary strategy to lower the embodied carbon of concrete mixtures, as well as to increase the service life of concrete structures.

The third win is allowing TVA to produce financial benefit for their rate payers. Fly ash has value in the concrete value stream and concrete producers pay to obtain that value. In addition, TVA benefits financially as they decrease the cost of managing existing fly ash storage impoundments over time, and TVA achieves a significant reduction in the risk of future environmental problems related to such storage.

On behalf of the concrete industry in Tennessee we strongly urge TVA to pursue beneficial reuse as their primary and preferred strategy for all existing fly ash storage locations in the state of Tennessee.

Alan Sparkman, CAE, LEED AP, CCPf
Executive Director
Tennessee Concrete Association
3026 Owen Drive, Suite 101
Antioch, TN 37013
O: 615-360-7393
C: 615-975-6696

LISTEN TO TCA's PODCAST - Listen and subscribe by clicking here.

https://profed.utk.education/alan-sparkman

From: Ricky Merritt
To: nepa
Subject: Beneficiation Processing Facility PEA
Date: Tuesday, May 6, 2025 10:24:34 AM

You don't often get email from [redacted] Learn why this is important

This is an EXTERNAL EMAIL from outside TVA. THINK BEFORE you CLICK links or OPEN attachments. If suspicious, please click the "Report Phishing" button located on the Outlook Toolbar at the top of your screen.

Ms. Kunkle,

I applaud TVA's move toward the beneficial use of currently landfilled coal ash. As a member of the construction industry, we experience the economic benefit in concrete production which in turn is past on to our customer (which often is the taxpayer). The greater gain is the permanent environmental solution which current and future generations will enjoy. All are winners! Thank you!

Ricky Merritt
General Manager
Ross Prestress
2701 Independence Lane
P.O. Box 6299
Knoxville, TN 37914
office 865-524-1485
cell 865-705-3392
Building America One Bridge At A Time!

From: Eric Barger
To: nepa
Subject: Beneficiation Processing Facility PEA Public Comments
Date: Tuesday, May 6, 2025 11:08:21 AM

To whom it may concern,

I am writing to express my strong support for using fly ash in our company's concrete mixes. This practice significantly improves our concrete's longevity and quality while reducing the final product cost.

By substituting up to 30% of cement with fly ash, we enhance the durability and performance of our concrete. This also allows us to offer a more cost-effective product to our customers.

Thank you for considering this critical practice.

Regards,

Eric

Eric Barger | BargerPrecast.com | NPCA Certified Plant
O 865.270.8080

From: Childress, Donald L (Harrison Construction)
To: nepa
Subject: Beneficiation Processing Facility PEA
Date: Tuesday, May 6, 2025 11:55:35 AM

Greetings!

Our company is a proponent of TVA managing flyash that is already in the ground as a resource, not a waste product.

We see this as an opportunity for TVA to show a strong commitment to preserving the environment while providing a sustainable building material back into the building industry.

Best Regards,

Don Childress
Concrete Quality Control Manager

Harrison Construction Company
A CRH COMPANY
1431 Centerpoint Blvd Ste. #100
Knoxville, TN 37932

O (865) 934-6552
C (865) 257-4319
E dchildress@harrisoncc.com

www.harrisoncc.com

Separation Technologies LLC
A Titan America Business

Corporate Center
5700 Lake Wright Drive, Suite 300
Norfolk, VA 23502
1-888-4-PROASH
www.proash.com

Public Comment to TVA CONSTRUCTION AND OPERATION OF BENEFICIATION PROCESSING FACILITIES PROGRAMMATIC ENVIRONMENTAL ASSESSMENT
Alabama, Kentucky, and Tennessee
EAXX-455-00-000-1742393871

Subject: Public Comment - Incorporating Non-Thermal Electrostatic Separation Processing Method for Coal Ash Beneficiation

To Whom It May Concern:

I am writing to provide my comments on the Draft Programmatic Environmental Assessment (PEA) for the construction and operation of coal combustion residual (CCR) beneficiation processing facilities by the Tennessee Valley Authority (TVA). I appreciate the opportunity to contribute to this important discussion and would like to advocate for the incorporation of a non-thermal CCR processing method for carbon loss on ignition (LOI) reduction using Separation Technologies, LLC (ST) electrostatic separation.

ST is a trusted partner in coal ash beneficiation technology, enabling the recycling of high volumes of quality supplementary cementitious materials (SCM) into the cement and concrete sectors. Our team has successfully implemented fly ash beneficiation technology in North America, Europe, and Asia, processing and selling over 25 million tons of coal ash under the brand name ProAsh®. Our proven fly ash beneficiation process has been commercially operational since 1995, with hundreds of machine-years of operating experience.

Core to our technology is the capability to offer a solution that does not rely on thermal combustion of residual unburned carbon (LOI). Our electrostatic coal ash processing technology allows for multiple outlets for beneficial reuse of fly ash materials, with an emphasis on use in high-value concrete markets as well as portland cement kiln raw feed and alternative fuel.

We believe our processing and marketing expertise could greatly benefit TVA's coal ash beneficiation project, while greatly reducing the environmental footprint, power consumption and installation cost over a thermal combustion alternative.

Rationale for Non-Thermal Carbon Removal Processing Methods:

1. **Environmental Benefits:**

- **Reduced Emissions:** Non-thermal processing methods, such as ST electrostatic separation, do not involve combustion, thereby significantly reducing greenhouse gas emissions and other pollutants associated with thermal processes.
- **Energy Efficiency:** Electrostatic separation is an energy-efficient process that requires less energy compared to thermal methods, leading to a lower carbon footprint.

2. **Economic Advantages:**

- **Cost-Effectiveness:** The ST process is cost-effective due to its lower installation cost, reduced energy consumption and reduced operational costs. ST believes this will result in significant savings for TVA and its stakeholders.
- **Market Viability:** The high-quality fly ash produced through electrostatic separation meets and exceeds ASTM C618 industry standards for use in concrete, generating a consistent fly ash which is highly desired by the ready-mix concrete industry.

3. **Operational Efficiency:**

- **Scalability:** The ST electrostatic separation process is modular and highly scalable and can be easily integrated into a CCR beneficial use project of any size required.
- **Flexibility:** The ST electrostatic fractionation process allows TVA to access multiple beneficial use markets including ready-mix concrete grade fly ash as well as cement kiln feed and/or cement kiln feed alternative fuel, or even supplemental fuel for a TVA utility boiler.

Conclusion:
Incorporating the ST electrostatic separation method into TVA's CCR beneficiation strategy aligns with the goals of environmental sustainability, economic efficiency, and operational effectiveness. I strongly urge TVA to consider this non-thermal processing alternative in the final PEA and subsequent implementation plans.

Thank you for considering my comments. I look forward to TVA's continued commitment to innovative and sustainable practices in CCR management.

Sincerely,
Kyle Flynn
Vice President, Business Development
Separation Technologies LLC
101 Hampton Ave
Needham, MA 02494

KENTUCKY CONCRETE ASSOCIATION

Beneficiation Processing Facility PEA

May 12, 2025

Brittany Kunkle
Tennessee Valley Authority
400 West Summit Hill Drive, WT-11B-K
Knoxville, TN 37902

Dear Ms. Kunkle,

I am writing to express my support for the expanded use and acceptance of harvested and reclaimed fly ash as a supplemental cementitious material (SCM) in concrete. As both industry professionals and environmental stewards seek to lower the carbon footprint of construction practices, the reuse of previously landfilled or ponded fly ash presents a unique opportunity to advance sustainability while maintaining the quality and durability of concrete infrastructure.

Environmental and Sustainability Benefits
Reclaimed fly ash enables the beneficial reuse of industrial byproducts. Recovering this material diverts it from long-term storage sites, reducing risks of groundwater contamination and structural failure associated with impoundments. Furthermore, its use in concrete significantly reduces the need for cement in concrete mixes which also reduces carbon emissions. This substitution directly lowers greenhouse gas emissions associated with construction and supports climate resilience goals.

Technical and Performance Advantages
Fly ash—whether freshly produced or reclaimed—enhances concrete performance by improving workability, reducing permeability, and increasing long-term strength. When properly processed and tested, reclaimed fly ash can meet ASTM C618 specifications, ensuring its suitability for critical applications. The inclusion of fly ash has been extensively validated in both laboratory studies and decades of real-world use, showing improvements in sulfate resistance, reduced alkali-silica reactivity (ASR), and better lifecycle performance.

Economic and Supply Chain Implications
As coal-fired power plants continue to decline, the availability of freshly produced fly ash is shrinking. Reclaimed fly ash helps address this supply gap, providing a consistent and geographically diverse source of material that supports regional markets and job creation in beneficiation and recovery operations. This shift also helps stabilize SCM markets, reduce construction material costs, and support local economies.

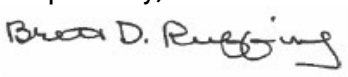
Policy Recommendations
To fully unlock the potential of reclaimed fly ash, I respectfully urge agencies to:

- Encourage and streamline permitting for reclamation and beneficiation projects;

- Recognize reclaimed fly ash in state and federal procurement standards;
- Support research and demonstration projects that validate reclaimed material performance; and
- Remove regulatory barriers that treat reclaimed fly ash differently from freshly generated material despite equivalent outcomes.

Thank you for the opportunity to comment. Supporting the use of reclaimed fly ash is a forward-looking policy choice that balances environmental responsibility, infrastructure performance, and economic benefit.

Respectfully,



Brett D. Ruffing, LEED Green Associate
Executive Director
Kentucky Concrete Association
1 HMB Circle
Frankfort, KY 40601
[redacted]
502-695-1535