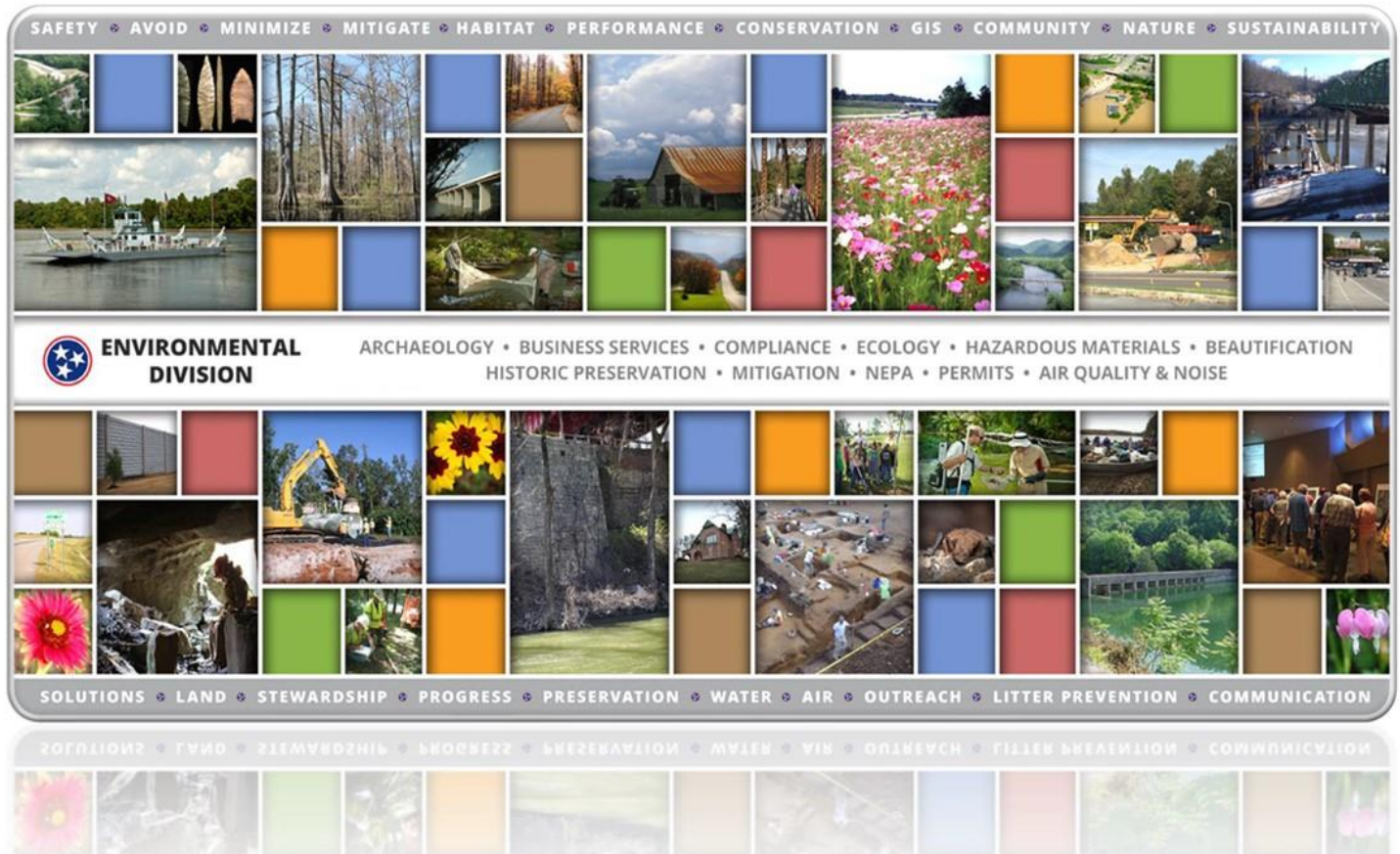




TECHNICAL STUDIES



The Cultural Resources, Ecology, and Hazardous Materials/Air Quality & Noise Sections are within the Environmental Technical Studies Office. The Cultural Resources Section focuses on archaeology, architectural history, and Native American Consultation. It ensures that TDOT is in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, and Section 4(f) of the U.S. Department of Transportation Act of 1966. The Ecology Section focuses on natural resources, threatened and endangered species, and habitats that may be impacted by a transportation project. It works with other sections within the Environmental Division and with Federal and state agencies to help TDOT carry out its mandates under the Clean Water Act, the Endangered Species Act, and other laws and regulations. The TDOT Hazardous Materials/Air Quality & Noise Section provides compliance with the National Highway Act of 1970, FHWA, and TDOT Noise Policies.

TABLE OF CONTENTS

2 Technical Studies.....8

2.1 Cultural Resources.....8

2.1.1 Intent and Applicability.....8

2.1.1.1 Cultural Resources Categories.....8

2.1.1.1.1 Archaeology.....8

2.1.1.1.2 Historic Preservation.....9

2.1.1.1.3 Native American Consultation.....9

2.1.2 Key Laws, Regulations, and Guidance.....9

2.1.2.1 U.S. Department of Transportation Act of 1966.....9

2.1.2.2 National Historic Preservation Act.....10

2.1.2.3 Section 106 of the National Historic Preservation Act.....10

2.1.3 Key Regulatory Agencies, Resources, and Agreements.....11

2.1.4 Cultural Resources Process.....13

2.1.4.1 Archaeology13

2.1.4.2 Historic Preservation.....13

2.2 Ecology.....14

2.2.1 Intent and Applicability.....14

2.2.2 Key Laws, Regulations, and Guidance15

2.2.2.1 Clean Water Act15

2.2.2.2 Section 404 of the Federal Water Pollution Control Act of 197216

2.2.2.3 Tennessee Water Quality Control Act of 1977.....16

2.2.2.4 Executive Order 11990.....16

2.2.2.5 Endangered Species Act.....17

2.2.2.6 Tennessee Non-Game and Endangered or Threatened Wildlife Species Conservation Act of 1974.....17

2.2.2.7 Tennessee Rare Plant Protection and Conservation Act of 1985.....18

2.2.2.8 Migratory Bird Treaty Act.....18

2.2.2.9 Fish and Wildlife Coordination Act.....18

2.2.2.10 Bald and Golden Eagle Protection Act.....19

2.2.2.11 Executive Order 12962 (Recreational Fisheries)19

2.2.2.12 Executive Order 13112 (Invasive Species).....20

2.2.2.13 Executive Order 13186 (Migratory Birds)20

2.2.2.14 Rivers and Harbors Act of 1899.....21

2.2.3 Key Regulatory Agencies, Resources, and Agreements.....21

2.2.4 Ecology Process.....24

2.3 Hazardous Materials/Air Quality & Noise.....25

2.3.1 Noise25

 2.3.1.1 Intent and Applicability.....25

 2.3.1.2 Key Laws, Regulations, and Guidance.....26

 2.3.1.2.1 The Federal Aid Highway Act of 1970.....26

 2.3.1.2.2 Procedures for Abatement of Highway Traffic Noise and Construction Noise.....26

 2.3.1.2.3 FHWA Guidance.....26

 2.3.1.2.4 TDOT Noise Policy.....27

 2.3.1.3 Technical Documents27

 2.3.1.4 Noise Process.....28

2.3.2 Air Quality28

 2.3.2.1 Intent and Applicability.....28

 2.3.2.2 Key Laws, Regulations, and Guidance.....29

 2.3.2.2.1 Clean Air Act.....29

 2.3.2.2.2 NAAQS Designations.....29

 2.3.2.2.3 General Conformity Rule.....30

 2.3.2.2.4 National Ambient Air Quality Standards30

2.3.3 Hazardous Materials.....32

 2.3.3.1 Intent and Applicability.....32

 2.3.3.2 Key Laws, Regulations, and Guidance.....32

 2.3.3.2.1 Resource Conservation and Recovery Act 1976.....32

 2.3.3.2.2 Comprehensive Environmental Response, Compensation, and Liability Act of 1980.....33

 2.3.3.2.3 Superfund Amendments and Reauthorization Act of 1986.....33

 2.3.3.2.4 Emergency Planning and Community Right-To-Know Act.....33

 2.3.3.2.5 Spill Prevention, Control, and Countermeasure Regulation.....33

 2.3.3.2.6 Tennessee Petroleum Underground Storage Tank Act34

 2.3.3.2.7 The Brownfields and Land Revitalization Program.....34

2.4 Section 4(F)35

 2.4.1 Intent and Applicability.....35

2.4.2 Key Laws, Regulations, and Guidance Department of Transportation Act of 1966
 Section 4(F).....36

2.4.3 Key Regulatory Agencies, Resources, and Agreements.....36

2.4.4 Section 4(F) Process37

2.5 Section 6(F)37

2.5.1 Intent and Applicability.....37

2.5.2 Key Laws, Regulations, and Guidance.....38

 2.5.2.1 Land and Water Conservation Fund Act of 1965.....38

2.5.3 Key Regulatory Agencies, Resources, and Agreements.....38

2.5.4 Section 6(F) Process.....39

2.6 Environmental Justice.....40

2.6.1 Intent and Applicability.....40

2.6.2 Key Laws, Regulations, and Guidance.....40

 2.6.2.1 Title VI of the 1964 Civil Rights Act.....40

 2.6.2.2 Executive Order 12898.....41

 2.6.2.3 Department of Transportation Order 5610.2(A).....41

 2.6.2.4 FHWA Order 6640.23A41

2.6.3 Key Regulatory Agencies, Resources, and Agreements.....42

2.6.4 Environmental Justice Process.....43

2.7 Social and Community Impacts.....43

2.7.1 Intent and Applicability.....43

2.7.2 Key Laws, Regulations, and Guidance.....43

 2.7.2.1 CEQ NEPA Implementing Regulations.....43

 2.7.2.2 Americans with Disabilities Act of 1990.....43

 2.7.2.3 Uniform Relocation Assistance and Real Property Acquisition Act.....44

 2.7.2.4 Federal Aid Highway Act of 1970.....44

2.7.3 Key Regulatory Agencies, Resources, and Agreements.....44

2.7.4 Social and Community Impacts Process.....45

2.8 Land Use.....45

2.8.1 Intent and Applicability.....45

2.8.2 Key Laws, Regulations, and Guidance.....46

 2.8.2.1 FHWA Technical Advisory T6640.8A46

 2.8.2.2 CEQ NEPA Implementing Regulations 40 CFR 1502.16(A)(5).....46

 2.8.2.3 Tennessee Growth Policy Act46

2.8.3 Key Regulatory Agencies, Resources, and Agreements.....47

2.8.4 Land Use Process.....47

2.9 Farmland.....47

2.9.1 Intent and Applicability.....47

2.9.2 Key Laws, Regulations, and Guidance.....47

2.9.2.1 Farmland Protection Policy Act of 1981.....47

2.9.3 Key Regulatory Agencies, Resources, and Agreements.....48

2.9.4 Farmland Process.....48

2.10 Floodplain.....49

2.10.1 Intent and Applicability.....49

2.10.2 Key Laws, Regulations, and Guidance.....49

2.10.2.1 National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.....49

2.10.2.2 Executive Order 11988 Floodplain Management.....49

2.10.2.3 USDOT Order 550.2 Floodplain Management and Protection.....50

2.10.3 Key Regulatory Agencies, Resources, and Agreements.....50

2.10.4 Floodplain Process.....50

2.11 Visual and Aesthetics.....51

2.11.1 Intent and Applicability.....51

2.11.2 Key Laws, Regulations, and Guidance.....51

2.11.2.1 FHWA Guidelines for the Visual Impact Assessment of Highway Projects.....51

2.11.2.2 FHWA Technical Advisory T6640.8A.....51

2.11.3 Key Regulatory Agencies, Resources, and Agreements.....51

2.11.4 Visual and Aesthetics Process.....52

2.12 Economics and Business.....52

2.12.1 Intent and Applicability.....52

2.12.2 Key Laws, Regulations, and Guidance.....52

2.12.2.1 FHWA NEPA Regulations 23 CFR 771.105.....53

2.12.2.2 FHWA Technical Advisory T6640.8A.....53

2.12.3 Key Regulatory Agencies, Resources, and Agreements.....53

2.12.4 Economics and Business Process.....54

2.13 Wild and Scenic Rivers.....54

2.13.1 Intent and Applicability.....54

2.13.2 Key Laws, Regulations, and Guidance.....55

 2.13.2.1 Wild and Scenic Rivers Act 16 U.S.C 1271.....55

 2.13.2.2 Tennessee Scenic Rivers Act of 1968 TCA 11-13-101.....56

2.13.3 Key Regulatory Agencies, Resources, and Agreements.....57

2.13.4 Wild and Scenic Rivers Process.....57

2.14 Traffic and Safety.....58

 2.14.1 Intent and Applicability.....58

 2.14.2 Key Laws, Regulations, and Guidance.....58

 2.14.3 Key Regulatory Agencies, Resources, and Agreements.....58

 2.14.4 Traffic and Safety Process.....59

2.15 Multimodal/Bicycle & Pedestrian.....59

 2.15.1 Intent and Applicability.....59

 2.15.2 Key Laws, Regulations, and Guidance.....60

 2.15.2.1 Intermodal Surface Transportation Efficiency Act.....60

 2.15.2.2 USDOT Policy Statement on Bicycle and Pedestrian Accommodation
Regulations and Recommendations.....60

 2.15.2.3 TDOT’s Bicycle and Pedestrian Policy – Policy No. 530-01.....60

 2.15.3 Key Regulatory Agencies, Resources, and Agreements.....60

 2.15.4 Multimodal Process.....62

2.16 Geotechnical.....62

 2.16.1 Intent and Applicability.....63

 2.16.2 Key Laws, Regulations, and Guidance.....63

 2.16.3 Key Regulatory Agencies, Resources, and Agreements.....63

 2.16.4 Geotechnical Process.....63

2.17 Energy.....64

 2.17.1 Intent and Applicability.....64

 2.17.2 Key Laws, Regulations, and Guidance.....64

 2.17.2.1 CEQ NEPA Implementing Regulations 40 CFR 1502.16(A)(6).....64

 2.17.3 Key Regulatory Agencies, Resources, and Agreements.....64

 2.17.4 Energy Process.....65

TABLE LIST

Table 2-1 Key Regulatory Agencies and Resources.....11

Table 2-2 Agreements.....12

Table 2-3 Resource Types.....14

Table 2-4 Resource Table Agency Resources.....21

Table 2-5 Agreements.....23

Table 2-6 Key Regulatory Agencies, Resources, and Agreements.....27

Table 2-7 Key Regulatory Agencies, Resources, and Agreements.....31

Table 2-8 Key Regulatory Agencies, Resources, and Agreements.....35

Table 2-9 Key Regulatory Agencies and Resources.....37

Table 2-10 Key Regulatory Agencies and Resources.....39

Table 2-11 Key Regulatory Agencies and Resources.....42

Table 2-12 Key Regulatory Agencies and Resources.....45

Table 2-13 Key Regulatory Agencies, Resources, and Agreements.....48

Table 2-14 Key Regulatory Agencies, Resources, and Agreements.....50

Table 2-15 Key Regulatory Agencies, Resources, and Agreements.....52

Table 2-16 Key Regulatory Agencies, Resources, and Agreements.....53

Table 2-17 Key Regulatory Agencies, Resources, and Agreements.....57

Table 2-18 Key Regulatory Agencies, Resources, and Agreements.....59

Table 2-19 Key Regulatory Agencies, Resources, and Agreements.....62

Table 2-20 Key Regulatory Agencies and Resources.....63

Table 2-21 Key Regulatory Agencies and Resources.....65

2. TECHNICAL STUDIES

2.1 CULTURAL RESOURCES

2.1.1 INTENT AND APPLICABILITY

The construction of transportation projects, and other Tennessee Department of Transportation (TDOT) activities can potentially adversely affect significant Cultural Resources. State and federal rules and regulations require TDOT to take into account cultural resources. The TDOT Cultural Resources Section consists of archaeologists and historians who study the Area of Potential Effects (APE) and document resources in resource identification studies and effects assessments and work toward avoidance, minimization, or mitigation of the effects to historic properties within the APE.

2.1.1.1 CULTURAL RESOURCES CATEGORIES

2.1.1.1.1 ARCHAEOLOGY

Archaeology is the study of human history through the analysis of artifacts, excavation of sites, and other physical remains. Through Section 106 of the National Historic Preservation Act (NHPA), TDOT archaeologists study and document archaeology sites within the APE of proposed projects to avoid, minimize, or mitigate adverse effects to the National Register for Historic Places (NRHP) listed or eligible sites.



**Figure 2-1: Tennessee Council for Professional Archaeology
"Preserving our Past at TDOT"**

2.1.1.1.2 HISTORIC PRESERVATION

Historic Preservation is the study of above-ground resources that includes a variety of property types including houses, commercial or industrial buildings, districts, farms and cultural landscapes, and roads and bridges. Typically, properties eligible for the NRHP are at least 50 years old, possess architectural and/or historic significance, and retain their integrity (i.e., largely unaltered since their historic period).

2.1.1.1.3 NATIVE AMERICAN CONSULTATION

Native American Consultation is in accordance with Section 106 and in respect of tribal sovereignty and takes place when TDOT acts as FHWA's administrator for letters initiating early project coordination with any Native American Tribe that attaches religious and/or cultural significance to historic properties that may be affected by an undertaking. This reasonable and good faith effort extends throughout the duration of the undertaking with the Federal Highway Administration (FHWA) and TDOT entering into project agreements with Tribes to avoid, minimize, or mitigate adverse effects to historic properties under Section 106.

2.1.2 KEY LAWS, REGULATIONS, AND GUIDANCE

2.1.2.1 U.S. DEPARTMENT OF TRANSPORTATION ACT OF 1966 (49 U.S.C. §303 and 23 U.S.C. §138)

Section 4(f) refers to the original section within the U.S. Department of Transportation Act of 1966 that provided for consideration of publicly owned park and recreation lands, wildlife and waterfowl refuges, and historic sites during transportation project development. The law applies only to the U.S. Department of Transportation (US DOT) and is implemented by the FHWA, the Federal Transit Administration (FTA), and the Federal Railroad Administration (FRA) through the regulation 23 CFR 774. Before approving a project that uses Section 4(f) property, the US DOT modal agency (FHWA for highway projects) must determine that there is no feasible and prudent alternative that avoids the Section 4(f) property and that the project includes all possible planning to minimize harm to the Section 4(f) property. In 2005,

SAFETEA-LU (Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users) Section 6009 modified the existing law to allow for the approval of projects that have a *de minimis* impact of Section 4(f) properties.

2.1.2.2 NATIONAL HISTORIC PRESERVATION ACT (54 U.S.C. § 300101 et seq.)

In 1965, President Lyndon Johnson created a special committee for the purpose of historic preservation to address the removal of historic buildings during the time of urban renewal after World War II. The purpose of the NHPA of 1966, as amended, is to declare a national policy of historic preservation efforts to protect, restore, rehabilitate, and reuse properties considered significant in American history, architecture, culture, and archaeology. Historic properties can be defined as districts, sites, buildings, and structures; these resources are protected under the NHPA if they are eligible for listing on the NRHP (36 CFR 60), and can include any artifacts, records, or material property relating to a listed site or resource. Section 106 of the NRHP (36 CFR 800) requires federal agencies to assess the effect of a proposed undertaking on a property that is either listed on or eligible to be listed on the NRHP.

2.1.2.3 SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT (NHPA)

Section 106 requires federal agencies (or their designee) to identify historic properties; assess effects to those historic properties; and avoid, minimize, or mitigate adverse effects to those historic properties. TDOT Cultural Resources staff work in coordination with the Tennessee State Historic Preservation Office (SHPO) to determine the APE for a project based on the scale and nature of the federal undertaking.

Area of Potential Effect

The geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

36 CFR 800.16 (d)

A historic property, as defined in regulation 36 CFR 800.16(l)(1), is any cultural resource included in, or eligible for listing in, the NRHP. A cultural resource is eligible for listing in the NRHP if it meets one or more of the four NRHP Criteria and retains sufficient integrity to convey historic significance.

For Section 106 to apply to a TDOT project, a federal undertaking must occur. TDOT projects that include a federal undertaking are those that:

- use federal funds for any phase of the project including environmental analysis and documentation, engineering, right-of-way, and construction
- will modify access to an interstate
- will require federal approvals, permits or licenses (such as the U.S. Army Corps, National Park Service, etc.)
- dispose of or relinquish property financed with federal funds

2.1.3 KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

Coordination must be conducted with the SHPO, Native American Tribes, and interested parties in order to fulfill Section 106 and Section 4(f) requirements. The following table lists the agencies with which TDOT coordinates for cultural resources.

TABLE 2-1: KEY REGULATORY AGENCIES AND RESOURCES

NATIONAL HISTORIC PRESERVATION REGULATORY AGENCIES	
ADVISORY COUNCIL ON HISTORIC PRESERVATION (ACHP)	
https://www.achp.gov	
Jurisdiction/Interests	Key Items
The ACHP is an independent federal agency that issues regulations to implement Section 106. The council may provide federal agencies and other consulting parties with advice, assistance, and guidance regarding the conduct of Section 106 review, including help in resolving adverse effects.	<ul style="list-style-type: none"> • Review of all Adverse Effects to determine participation in the Resolution of Adverse Effects
TENNESSEE HISTORICAL COMMISSION (THC)/ TENNESSEE STATE HISTORIC PRESERVATION OFFICE (SHPO)	
https://www.tn.gov/historicalcommission.html	
Jurisdiction/Interests	Key Items
The THC houses the SHPO and provides background information and provides concurrence/ non-concurrence letters for all projects in the state of Tennessee.	<ul style="list-style-type: none"> • SHPO concurrence process

TENNESSEE DIVISION OF ARCHAEOLOGY (TDOA)	
https://www.tn.gov/environment/program-areas/arch-archaeology.html	
Jurisdiction/Interests	Key Items
The TDOA is a division of TDEC. The division provides resources and information on state laws and regulations pertaining to archaeology, including permits, site files, and publications.	<ul style="list-style-type: none"> • State Archaeological Site Files • State Archaeological Permits • State Archaeological Parks and Areas
NATIVE AMERICAN TRIBES	
https://www.fhwa.dot.gov/tribal/topics/historic/tcqa.htm	
Jurisdiction/Interests	Key Items
The federal government and Native American tribes have a unique government-to-government relationship, which is grounded in the U.S. Constitution, numerous treaties, statutes, federal case law, regulations, and executive orders that establish and define the federal government's relationship with Native American tribes.	<ul style="list-style-type: none"> • FHWA conducts the Tribal consultation with TDOT acting as the administrator for the coordination letters
FEDERAL HIGHWAY ADMINISTRATION (FHWA)	
https://www.environment.fhwa.dot.gov/legislation/section4f.aspx	
Jurisdiction/Interests	Key Items
The FHWA is the lead Federal Agency for Highway and Transportation related infrastructure. Provides Guidance on Transportation processes, including the environmental review process for federally assisted transportation projects. FHWA provides guidance and training on Section 4(f) and makes decisions regarding the use of Section 4(f) resources.	<ul style="list-style-type: none"> • Section 4(f) final rule (23 CFR 774) • Section 4(f) Policy Paper (Revised 20, 2012) • Section 4(f) Tutorial • Nationwide Section 4(f) Programmatic Evaluations: • Guidance on 4(f) Exemption for Federal Lands Transportation Facilities

TABLE 2-2: Agreements

ENVIRONMENTAL AGREEMENTS AND UNDERSTANDINGS		
PROGRAMMATIC AGREEMENT (PA) AMONG THE FEDERAL HIGHWAY ADMINISTRATION, THE TENNESSEE DEPARTMENT OF TRANSPORTATION, THE TENNESSEE STATE HISTORIC PRESERVATION OFFICER, AND THE ADVISORY COUNCIL REGARDING THE IMPLEMENTATION OF TRANSPORTATION PROJECTS		
Term	Topic	Parties Involved
07/31/2021-07/31/2026	In July 2021, a PA was executed that provides streamlining measures for routine projects and interactions that will not adversely affect historic properties.	<ul style="list-style-type: none"> • TDOT • FHWA • TN-SHPO • TDOA

MEMORANDUM OF UNDERSTANDING (MOU) BETWEEN THE TENNESSEE DEPARTMENT OF TRANSPORTATION AND THE TENNESSEE HISTORICAL COMMISSION (STATE HISTORIC PRESERVATION OFFICE) FOR FEDERALLY FUNDED OR PERMITTED MINOR TRANSPORTATION PROJECTS

Term	Topic	Parties Involved
05/19/2015-06/30/2025	Although superseded by the PA, the MOU will continue to apply to state-funded projects for historic preservation resources. This streamlining measure allows historians to apply the MOU to routine projects and interactions that will not adversely affect historic properties.	<ul style="list-style-type: none"> • TDOT • TN-SHPO

2.1.4 CULTURAL RESOURCES PROCESS

2.1.4.1 ARCHAEOLOGY

The archaeology group within the Cultural Resources Section documents compliance with Section 106 of the NHPA with a Phase I Report (Archaeological Survey), Phase II Report (Archaeological Evaluation), and/or Phase III Report (Data Recovery). The development of these documents is discussed in the Cultural Resources Handbook.

The archaeology group completes Archaeology investigations using Planning Reports and Preliminary ROW plans in order to:

- Identify and evaluate National Register eligibility for archaeology resources
- Determine effects to NRHP listed or eligible archaeology resources
- Resolve Adverse Effects (if any) to NRHP listed or eligible archaeology resources through avoidance, minimization, or mitigation

2.1.4.2 HISTORIC PRESERVATION

The historic preservation group within the Cultural Resources Section documents compliance with Section 106 of the NHPA and Section 4(f) of the US DOT Act. The historic preservation group completes Historic Preservation investigations using Planning Reports and Preliminary ROW plans in order to:

- Identify and evaluate National Register eligibility for historic properties

- Determine effects to NRHP historic resources
- Resolve Adverse Effects (if any) to NRHP listed or eligible historic properties through avoidance, minimization, or mitigation

2.2 ECOLOGY

2.2.1 INTENT AND APPLICABILITY

The construction of transportation projects and other TDOT activities can potentially alter the ecological and physical characteristics of streams and wetlands resulting in the loss or degradation of aquatic resource function for streams and wetlands. The Ecology Section aids TDOT in compliance with the Endangered Species Act (ESA), Executive Order 11990 Protection of Wetlands, the Clean Water Act, and the Tennessee Water Quality Control Act, among others. The TDOT Ecology Section is comprised of experts in water resources, wetlands, and vulnerable species. These specialists document TDOT’s compliance with all applicable state and federal laws, rules, and regulations through identification of natural resources, assessment of the project’s effect on those resources, and development of potential avoidance and mitigation measures.

TABLE 2-3: RESOURCE TYPES

ECOLOGY RESOURCE TYPES
<p style="text-align: center;">STREAMS</p> <p>A surface water that is not a wet weather conveyance</p>
<p style="text-align: center;">WETLANDS</p> <p>Areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.</p>
<p style="text-align: center;">WET WEATHER CONVEYANCES</p> <p>Man-made or natural watercourses, including natural watercourses that have been modified by channelization: that flow only in direct response to precipitation runoff in their immediate locality; whose channels are at all times above the ground water table; that are not suitable for drinking water supplies; and in which hydrological and biological analyses indicate that, under normal weather conditions, due to naturally occurring ephemeral or low flow there is not sufficient water to support fish, or multiple populations of obligate lotic aquatic organisms whose life cycle includes an aquatic phase of at least two months.</p>
<p style="text-align: center;">WATERFOWL REFUGES</p> <p>An area designated for the use of waterfowl species, these areas are often managed by the state or a private entity through a public private partnership.</p>
<p style="text-align: center;">FEDERAL AND/OR STATE LISTED THREATENED AND ENDANGERED SPECIES AND HABITATS</p>

Species protected under the ESA (discussed in section 13.3.2) and their habitats (including Federally Designated Critical Habitat under the ESA), animal species declared threatened, endangered, or deemed in need of management by the TWRA and their habitats, or plants declared threatened or endangered by the TDEC – Division of Natural Areas

WILDLIFE MANAGEMENT AREAS

Areas designated for the purpose of conservation of wildlife and often for recreational use.

CAVES

A naturally formed hollow space or opening in a rock structure or below the ground.

SPRINGS

A water resource formed when the side of a hill, a valley bottom or other excavation intersects a flowing body of groundwater at or below the local water table, below which the subsurface material is saturated with water. A spring is the result of an aquifer being filled to the point that the water overflows onto the land surface.

SINKHOLES

A cavity in the ground, often found in limestone bedrock, that is caused by water erosion and allows surface water to disappear underground.

2.2.2 KEY LAWS, REGULATIONS, AND GUIDANCE

2.2.2.1 CLEAN WATER ACT (40 C.F.R 100-149 and 33 U.S.C § 1251-1388)

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the Waters of the United States and regulating quality standards for surface waters. The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the act was significantly reorganized and expanded in 1972. "Clean Water Act" became the Act's common name after the amendments in 1972.

Under the CWA, several pollution-control programs, such as setting wastewater standards, have been implemented by the EPA, as well as national water quality criteria for surface waters.

The CWA made it unlawful to discharge any pollutant from a point source into navigable waters unless a permit was obtained. EPA's National Pollutant Discharge Elimination System (NPDES) permit program controls discharges. Point sources are discrete conveyances such as pipes or man-made ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters.

2.2.2.2 SECTION 404 OF THE FEDERAL WATER POLLUTION CONTROL ACT OF 1972, AS AMENDED BY THE CLEAN WATER ACT (1977 AND 1987)

The purpose of Section 404 is to restore and maintain the chemical, physical and biological integrity of the nation's waters through prevention, reduction, and elimination of pollution. It created a program for the regulation of pollution, which did not permit the discharge of dredged or fill materials into waterways and wetlands. Under this program no fill or discharge to wetlands or waterways may be permitted if there is a prudent and feasible alternative that is less damaging to the aquatic environment or if the fill or discharge would cause significant harm or damage to the aquatic environment. Section 404 provides permits to projects that have shown that they have avoided the area to the extent practicable, minimized any potential effects to the wetland/waterway, and provided or plan to provide proper mitigation for the impacts. Each project eligible for a permit must be submitted individually on a case-by-case basis to the U.S. Army Corps of Engineers (USACE) for approval.

2.2.2.3 TENNESSEE WATER QUALITY CONTROL ACT OF 1977: T.C.A. 69-3-101 ET. SEQ.

The Tennessee Department of Environment and Conservation (TDEC) is the agency that administers the Tennessee Water Quality Control Act. The Waters of Tennessee are the property of the state and are held in public trust for the use of the people of the state. The people of Tennessee as beneficiaries of this trust are given the right to have clean, unpolluted waters. The state government has an obligation to take all prudent and feasible steps to protect and preserve this right. The state government should also abate existing pollution in state waters and prevent future pollution. Through the preservation of clean waters, the state is able to qualify for full participation in the National Pollutant Discharge Elimination System (NPDES).

2.2.2.4 EXECUTIVE ORDER 11990: PROTECTION OF WETLANDS

The purpose of EO 11990 is to "minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands". To meet these objectives, the EO requires federal agencies, in planning their actions, to consider alternatives to construction in wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided. The EO applies to: acquisition, management, and disposal of federal lands and facilities, construction and improvement projects which are undertaken,

financed or assisted by federal agencies, and federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing activities. Under this EO, the lead federal agency is responsible for evaluating proposed projects on federally owned wetlands and attaching appropriate restrictions to the uses of property or withholding properties to minimize disposal of wetlands.

2.2.2.5 ENDANGERED SPECIES ACT (ESA) (16 U.S.C. § 1531 ET SEQ.)

The Endangered Species Act (ESA) was passed by Congress in 1973 to recognize the “esthetic, ecological, educational, recreational, and scientific value to our Nation and its people.” The act provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found throughout the U.S. The lead federal agencies for implementing ESA are the U.S. Fish and Wildlife Service (USFWS) and the National Oceanographic and Atmospheric Administration (NOAA) Fisheries Service. The USFWS maintains a current list of U.S. species complete with the level of concern (no concern, vulnerable, threatened, endangered) associated with each species. Species include birds, insects, fish, reptiles, mammals, crustaceans, flowers, grasses, and trees.

2.2.2.6 TENNESSEE NON-GAME AND ENDANGERED OR THREATENED WILDLIFE SPECIES CONSERVATION ACT OF 1974 (T.C.A. 70-8-101 ET. SEQ.)

The Tennessee Nongame and Endangered or Threatened Wildlife Species Conservation Act of 1974 prohibits the take, potential take, transportation, possession, as well as the sale or purchase of nongame species within the state of Tennessee. In accordance with the act’s main goals listed above, wildlife management plans are developed based on the latest information. Nongame threatened and endangered species determinations are made by the Tennessee Wildlife Resources Commission (formerly the Fish and Wildlife Commission) after full review of all statistics and information. The list must be reviewed and revised every two years, and all wildlife management plans must be consistent with the list. Also, the act established funding for wildlife management areas and the Watchable Wildlife Endowment Fund. The Watchable Wildlife Endowment Fund was created to receive donations from the public for the funding of programs conserving wildlife and the habitats of wildlife for the purpose of non-consumptive wildlife use.

2.2.2.7 TENNESSEE RARE PLANT PROTECTION AND CONSERVATION ACT OF 1985 (T.C.A. 70-8-301 ET. SEQ.)

The Tennessee Rare Plant Protection and Conservation Act of 1985 identifies rare plants and establishes the process for which plants can become listed as rare in the state of Tennessee. Plants can be listed as rare based on, but not limited to, the following criteria:

- Species distribution
- Number of populations throughout the species' range
- Population size and viability
- Known threats to the species
- Number of populations currently protected
- Difficulty of protection efforts
- Biological factors such as reproductive barriers or disturbance response

Any concerned individual can nominate a plant species for listing; once nominated, a committee of botanists will make a determination, in conjunction with an opportunity for public comment, as to whether a species will be listed.

2.2.2.8 MIGRATORY BIRD TREATY ACT (16 U.S.C §§ 703-712)

The Migratory Bird Treaty Act of 1918 implements four international conservation treaties that the U.S. entered with Canada in 1916, Mexico in 1936, Japan in 1972, and Russia in 1976. It is intended to ensure the sustainability of populations of all protected migratory bird species.

The act prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species, as well as any parts, nests, or eggs of migratory species, without prior authorization by the USFWS. There are some exceptions for take that require a permit from the federal agency and permits are strictly for educational, scientific, or degradational control measures.

2.2.2.9 FISH AND WILDLIFE COORDINATION ACT (16 USC 661-666) (FWCA)

The Fish and Wildlife Coordination Act requires that the USFWS be consulted whenever the "waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted . . . or otherwise controlled or modified" when a federal permit or license is involved. Consultation is to be undertaken for the purpose of "preventing loss of and

damage to wildlife resources." There are no regulations that implement the FWCA.

2.2.2.10 BALD AND GOLDEN EAGLE PROTECTION ACT (16 U.S.C 668-668C)

Enacted in 1940, and amended several times since, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald or golden eagles, including their parts (including feathers), nests, or eggs. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part (including feathers), nest, or egg thereof."

The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." Regulations further define "disturb" as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (50 CFR 22.6).

In addition to immediate impacts, this definition also covers effects that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death, or nest abandonment.

2.2.2.11 EXECUTIVE ORDER 12962 (RECREATIONAL FISHERIES)

Improves the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities. Requires Federal Agencies, in part and to the extent permitted by law and where practicable, and in cooperation with States and Tribes, to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities by: (a) developing and encouraging partnerships between governments and the private sector to

advance aquatic resource conservation and enhance recreational fishing opportunities.

2.2.2.12 EXECUTIVE ORDER 13112 (INVASIVE SPECIES)

Prevents the introduction of invasive species, provides for their control, and minimizes the economic, ecological, and human health impacts that invasive species cause. Requires, in part, that any Federal agency whose actions may affect the status of invasive species shall, to the extent practicable and permitted by law and subject to the availability of appropriations, and within Administration budgetary limits, use relevant programs and authorities to: prevent the introduction of invasive species; detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner; monitor invasive species populations accurately and reliably; provide for restoration of native species and habitat conditions in ecosystems that have been invaded; conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species; promote public education on invasive species and the means to address them; and not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.

2.2.2.13 EXECUTIVE ORDER 13186 (MIGRATORY BIRDS)

Promotes the conservation of migratory bird populations. Requires, in part, each Federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement, a Memorandum of Understanding (MOU) with the Fish and Wildlife Service (Service) that shall promote the conservation of migratory bird populations and support the conservation intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions.

2.2.2.14 RIVERS AND HARBORS ACT OF 1899 (SECTION 9 AND SECTION 10) (33 U.S.C § 401)

Protects navigable waters in the U.S. Grants the US Army Corps of Engineers (USACE) authority over work on structures in navigable waterways and over the discharge of dredged or fill material under Section 404 of the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500). This latter requirement applies to wetlands and other valuable aquatic areas throughout the United States.

2.2.3 KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

TABLE 2-4: RESOURCES TABLE AGENCY RESOURCES

ENVIRONMENTAL PROTECTION AGENCY (EPA)	
https://www.epa.gov/	
Jurisdiction/Interests	Key Items
Develops and interprets policy, guidance, and environmental criteria used to evaluate permit applications; reviews and comments on individual permit applications	<ul style="list-style-type: none"> • Clean Water Act • National Environmental Policy Act • Floodplain Management
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION (TDEC) WATER RESOURCES DIVISION	
https://www.tn.gov/environment/program-areas/wr-water-resources-home.htm	
Jurisdiction/Interests	Key Items
Lead state agency for conservation and the environment. The Water Resources Division is responsible for managing, protecting and enhancing the quality of the state's water resources through voluntary, regulatory and educational programs; and enforces the TN Water Quality Control Act and TN Safe Drinking Water Act among others.	<ul style="list-style-type: none"> • Tennessee Water Quality Control • Watershed Stewardship
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION (TDEC) NATURAL AREAS – NATURAL HERITAGE PROGRAM	
https://www.tn.gov/environment/program-areas/na-natural-areas/na-natural-heritage-inventory-program.html	
Jurisdiction/Interests	Key Items

<p>Lead state agency for conservation and the environment. The Natural Areas Division is dedicated to the protection and proper management of native plants, animals, and natural communities across Tennessee. The Natural Heritage Program is dedicated to inventorying and storing information regarding rare and endangered species throughout the state.</p>	<ul style="list-style-type: none"> • Natural Heritage Inventory Program • Natural Areas Program
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US FISH AND WILDLIFE SERVICE (USFWS)

<https://www.fws.gov/ecological-services/habitat-conservation/wetlands-conservation.html>
<https://www.fws.gov/law/bald-and-golden-eagle-protection-act>

Jurisdiction/Interests	Key Items
<p>Federal agency under the Department of Interior responsible for evaluating impacts on fish and wildlife of federal projects, including projects subject to the requirements of Section 404. Elevates specific cases or policy issues.</p>	<ul style="list-style-type: none"> • Clean Water Act • National Environmental Policy Act • Fish and Wildlife Coordination Act • Endangered Species Act • Bald and Golden Eagle Protection Act

UNITED STATES ARMY CORPS OF ENGINEERS (USACE)

<https://www.epa.gov/cwa-404>

Jurisdiction/Interests	Key Items
<p>Section 404</p>	<ul style="list-style-type: none"> • Section 404 of the Clean Water Act

FEDERAL HIGHWAY ADMINISTRATION – TENNESSEE DIVISION

<https://www.fhwa.dot.gov/tndiv/>

Jurisdiction/Interests	Key Items
<p>Lead Federal Agency for Highway and Transportation related infrastructure. Provides Guidance on Transportation processes, including the environmental review process for federally assisted transportation projects.</p>	<ul style="list-style-type: none"> • ESA • Migratory Bird Treaty Act • Fish and Wildlife Coordination Act • Bald and Golden Eagle Protection Act • Executive Orders: 12962, 13112, 13186. • Clean Water Act • National Environmental Policy Act

TENNESSEE WILDLIFE RESOURCES AGENCY (TWRA)

<https://www.tn.gov/twra.html>
<https://www.tn.gov/content/tn/twra/wildlife/action-plan.html>

Jurisdiction/Interests	Key Items
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The TWRA mission is to preserve, conserve, manage, protect, and enhance the fish and wildlife of the state and their habitats for the use, benefit, and enjoyment of the citizens of Tennessee and its visitors. TWRA is charged with the management of “certain nongame wildlife to ensure their perpetuation as members of ecosystems, for scientific purposes, and for human enjoyment” and with the protection of threatened or endangered species or subspecies within the state in a manner that maintains and, to the extent possible, expands those species’ populations.

- Tennessee Nongame and Endangered or Threatened Wildlife Species Conservation Act
- ESA
- EXECUTIVE ORDER 12962
- TN Wildlife Action Plan

TABLE 2-5: Agreements

ENVIRONMENTAL AGREEMENTS AND UNDERSTANDINGS		
INTERAGENCY DATA SHARING AGREEMENT BETWEEN TDOT AND TDEC - DIVISION OF NATURAL AREAS		
Term	Topic	Parties Involved
01/01/2021 to 12/31/2025	Division of Natural Areas for the provision of Division of Natural Areas digital files of Natural Heritage Data that include rare species and conservation sites.	<ul style="list-style-type: none"> • TDOT • TDEC DNA
PROGRAMMATIC CONSULTATION FOR SALE OR USE OF EXCESS LAND		
Term	Topic	Parties Involved
09/02/2020 to 08/31/2025	Letter Agreement for the disposal of excess land. Outlines the requirements for project reviews conducted for the sale or use of excess lands.	<ul style="list-style-type: none"> • TDOT • FHWA • USFWS
PROGRAMMATIC CONSULTATION FOR ADDRESSING CLIFF SWALLOWS AND BARN SWALLOWS ON TRANSPORTATION PROJECTS		
Term	Topic	Parties Involved
09/16/2020 to 08/31/2025	The purpose of addressing cliff swallows and barn swallow nesting sites found on TDOT projects to ensure compliance with the Migratory Bird Treaty Act (16 U.S.C §§ 703-712).	<ul style="list-style-type: none"> • TDOT • FHWA • USDOT • USFWS
RENEWAL OF DESIGNATION OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION AS THE FEDERAL HIGHWAY ADMINISTRATION’S NON-FEDERAL REPRESENTATIVE		
Term	Topic	Parties Involved

01/25/2021 to 12/31/2024	Designating TDOT as the non-federal representative for Section 7 Endangered Species Act consultation. Provides streamlining of federal consultation requirements for TDOT projects.	<ul style="list-style-type: none"> • TDOT • FHWA • USFWS
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MEMORANDUM OF AGREEMENT BETWEEN TDOT, FHWA TN-DIVISION OFFICE, AND TDEC DIVISION OF NATURAL AREAS

Term	Topic	Parties Involved
3/15/2022 to 02/28/2027	To help streamline TDEC coordination on TDOT projects and activities which typically result in no adverse effects to state listed plant species or their habitats in Tennessee.	<ul style="list-style-type: none"> • TDOT • FHWA • TDEC

GROUPED PROGRAMMATIC NO EFFECT ACTIVITIES AGREEMENT

Term	Topic	Parties Involved
03/02/2022 to 02/28/2027	Recognized categories of activities that typically result in no adverse effects to federally listed "threatened/endangered" plant or animal species and/or designated critical habitats resulting in a "no effects" determination under the ESA. No project review by the USFWS is required for this determination.	<ul style="list-style-type: none"> • TDOT • FHWA

MEMORANDUM OF AGREEMENT BETWEEN FHWA TN-DIVISION OFFICE, TDOT, AND TWRA

Term	Topic	Parties Involved
	To help streamline project review and interagency coordination on TDOT projects and activities which typically result in no adverse effects to state listed animal species or their habitats in Tennessee.	<ul style="list-style-type: none"> • TDOT • FHWA • TWRA

2.2.4 ECOLOGY PROCESS

The Ecology Section identifies all environmental features in the study area and assesses the project for potential impacts to those features. This information is documented in an Environmental Boundaries Report (EBR). The EBR also includes endangered species reports, water resource (stream and wetland) documentation, and site mapping of water resources within the project area. Species coordination is conducted with applicable federal and/or state agencies, including TWRA, TDEC, and/or USFWS and included in the final EBR. For more detail on ecology technical documents, please see the Ecology Handbook (found on the TDOT Environmental Division website, Resources page).

2.3 HAZARDOUS MATERIALS/AIR QUALITY & NOISE

2.3.1 NOISE

2.3.1.1 INTENT AND APPLICABILITY

Noise from highway construction and continuing highway use is an environmental impact that affects the human and the natural environments. Noise must be considered in all project phases from planning to operations, especially in areas classified as noise sensitive. Noise analyses are performed based on FHWA noise standards in conjunction with TDOT's noise abatement policy.

TDOT recognizes that highway traffic noise is an important environmental impact consideration in the improvement and development of the state's highway system. Noise impacts are taken into consideration in the planning, location, design and construction phases of highway project development. Decisions made during each of the project development phases attempt to minimize impacts from highway traffic noise on noise-sensitive areas. Noise impacts are analyzed by the noise specialists in TDOT's Hazardous Materials/Air Quality & Noise Section within the Environmental Technical Studies Office.



Figure 2-2: Example Noise abatement/wall (TDOT)

2.3.1.2 KEY LAWS, REGULATIONS, AND GUIDANCE

2.3.1.2.1 THE FEDERAL AID HIGHWAY ACT OF 1970 (PL 91-605 AND 42 USC § 7641)

The Federal-Aid Highway Act of 1970 (FAHA 1970) mandated that FHWA develop noise standards for identifying noise impacts and evaluating noise mitigation for federal projects. The FAHA also stipulated that FHWA should not approve plans and specifications for federal projects unless the project includes adequate noise abatement measures to comply with the standards.

2.3.1.2.2 PROCEDURES FOR ABATEMENT OF HIGHWAY TRAFFIC NOISE AND CONSTRUCTION NOISE (23CFR772)

FHWA developed noise standards in response to the requirements set forth in the FAHA. The goal of the noise standards is primarily to protect the health and welfare of the public, in doing so, FHWA created Noise Abatement Criteria (NAC) and established requirements for information to be given to local officials for use in the planning and design of highways.

Noise Abatement Criteria (NAC)

NAC provide the associated noise levels of different activities with verbal communication. The NAC are not arbitrary. The NAC are based upon noise levels associated with interference of speech communication and are a compromise between noise levels that are desirable and those that are achievable. The NAC should not be viewed as desirable noise levels, and they should not be used as design goals for noise barrier construction.

2.3.1.2.3 FHWA GUIDANCE

On June 12, 1995, FHWA issued a memorandum requiring states to adopt written statewide noise policies. These written state policies must be approved by FHWA and demonstrate “substantial compliance” with FHWA’s noise standards contained in 23 CFR 772. FHWA concurrently published the document, *Highway Traffic Noise Analysis and Abatement: Policy and Guidance* (FHWA’s Guidance), to aid states in developing their policies. This guidance document was updated in 2010 to ensure

consistency with the July 13, 2010 revision of 23 CFR 772. State agencies have some flexibility in establishing their highway traffic noise policies and procedures in accordance with 23 CFR 772. However, all policies must be reviewed and approved by FHWA before they can become effective.

2.3.1.2.4 TDOT NOISE POLICY

TDOT’s Noise Policy, *Policy on Highway Traffic Noise Abatement*, was developed in accordance with 23 CFR 772 (July 13, 2010) and FHWA’s Guidance (December 2010). TDOT’s Noise Policy was approved by FHWA on April 19, 2011 and became effective on July 13, 2011. TDOT’s Noise Policy outlines the process that TDOT uses to make decisions on highway traffic noise abatement and to justify the expenditure of public funds in the most cost-effective manner when addressing the total needs of the state’s highway system.

All Type I and Type II projects require a noise analysis. Type III projects do not, regardless of the level of environmental document. TDOT’s Noise Policy guides decisions on highway traffic noise abatement and helps ensure the most cost-effective application of public funds when addressing the total needs on the state’s highway system. (TDOT Noise Policy can be found on the TDOT Environmental Division website, Resources page, under Toolkit.)

2.3.1.3 TECHNICAL DOCUMENTS

TABLE 2-6: Key Regulatory Agencies, Resources, and Agreements

FEDERAL HIGHWAY ADMINISTRATION HIGHWAY TRAFFIC AND CONSTRUCTION NOISE	
https://www.fhwa.dot.gov/environment/noise/	
Jurisdiction/Interests	Key Items
Provides regulations and guidance on highway noise, including criteria for noise abatement. Oversees the traffic noise model versions used for all federal-aid highway projects.	<ul style="list-style-type: none"> • Procedures for Abatement of Highway Traffic Noise and Construction Noise • FHWA Highway Noise Barrier Design Handbook • Traffic Noise Model (TNM) Noise Measurement Field Guide
TENNESSEE DEPARTMENT OF TRANSPORTATION (TDOT)	
https://www.tn.gov/tdot/environmental-home/transportation-environmental-analysis-office/transportation-environmental-air-noise.html	
Jurisdiction/Interests	Key Items

TDOT is responsible for all transportation related projects throughout the state of Tennessee. TDOT is responsible for noise policy and compliance on highway infrastructure projects during all projects phases.

- TDOT Policy on Highway Traffic Noise Abatement

2.3.1.4 NOISE PROCESS

Agency coordination is not required for noise studies. However, the public is consulted when a project's noise impacts warrant the evaluation of noise abatement, and that noise abatement has been determined to be both reasonable and feasible. TDOT's Noise Policy requires that the views of the benefited property owners and residents be considered in making final noise abatement decisions. If noise barriers are determined to be both feasible and reasonable at the final design stage of a project, TDOT will include a note in the public hearing or meeting advertisement indicating that noise barriers are proposed and that public comments will be solicited and received at the meeting or hearing. If significant opposition exists and there is not clear support for the construction of the proposed noise barriers, TDOT will conduct a certified mail survey to solicit the views of the benefited residents and/or property owners that would be protected by the barrier. TDOT will conclude that a community desired the construction of a noise barrier unless a majority (at least 51 percent) of the impacted property owners and residents indicate that they do not want the proposed noise barrier.

2.3.2 AIR QUALITY

2.3.2.1 INTENT AND APPLICABILITY

Transportation projects have the potential to affect air quality by changing the volume, mix, and location of motor vehicle traffic. The potential effects that a project may have on air quality must be assessed during the NEPA process. Air Quality regulations are set forth by the Environmental Protection Agency (EPA) and include consideration of air quality effects, Mobile Source Air Toxics (MSATs), greenhouse gas (GHG) emissions, and National Ambient Air Quality Standards (NAAQS). Consideration must be given to the potential effects of a project on air quality related to all emission types; the best way to evaluate air quality is through transportation conformity standards, usually in the form of NAAQS.

2.3.2.2 KEY LAWS, REGULATIONS, AND GUIDANCE

2.3.2.2.1 CLEAN AIR ACT (CAA) (42 U.S.C § 7401)

The Clean Air Act (CAA) was enacted in 1970, with revisions taking place in 1977 and 1990, as a reaction to heavy smog and air pollution in industrialized areas and cities. The purpose of the act was to protect and enhance air quality and to assist state and local governments with air pollution prevention programs. The CAA established six criteria pollutants called Mobile Source Air Toxics (MSATs) and required the EPA to set National Ambient Air Quality Standards (NAAQS) for these criteria pollutants. In addition to the implementation of these new standards, the CAA aimed to address the harmful effects of hazardous toxins, acid rain, and regional haze, which restricts visibility and can pose a safety hazard.

The CAA was amended in 1977 to set new goals for achieving attainment of NAAQS. This amendment also required a qualitative discussion of the air quality impacts of transportation projects and any transportation control measures (TCMs) that may be used to mitigate the air quality impacts attributable to the project.

The CAA amendments of 1990 were intended to meet unaddressed or insufficiently addressed problems such as acid rain, ground level ozone, air toxics, and stratospheric ozone depletion. Specific criteria were established for areas that did not meet the NAAQS for each criteria pollutant. The use of market-based innovative solutions to air pollution, alternative clean energy sources, and the overwhelming need for energy conservation to further prevent detrimental air quality impacts were main themes proposed. The amendments also mandated the development and implementation of State Implementation Policies (SIPs) and specific timetables for implementing mobile source emission control strategies. If the criteria are not met, EPA can impose sanctions on all or part of the state. The following sections describe some of the specific regulations and standards set forth by the CAA.

2.3.2.2.2 NAAQS DESIGNATIONS

The CAA established three designations for areas based on ambient measured concentrations for each criteria pollutant:

- Attainment Area: A geographic area that meets the NAAQS for the pollutant.
- Nonattainment Area: an area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the NAAQS for the pollutant.
- Maintenance Area: an area with a history of nonattainment, but that is now consistently meeting the NAAQS. Maintenance areas have been re-designated by EPA from "nonattainment" to "attainment with a maintenance plan." Maintenance areas are required to have a plan to remain in attainment for at least 20 years.

Nonattainment areas may also be given classifications based on the magnitude of the area's air quality problem. Nonattainment classifications are used to specify certain regulatory requirements, establish deadlines for states to submit air quality plans, and determine when an area must comply (attainment) with the NAAQS. For ozone (O₃), the nonattainment classifications are marginal, moderate, serious, severe, and extreme. For carbon monoxide (CO) and particulate matter (PM), the classifications are moderate and serious.

2.3.2.2.3 GENERAL CONFORMITY RULE; SECTION 176(C) OF THE CLEAN AIR ACT

The General Conformity Rule established under Section 176(c)(4) of the CAA (codified at 42 U.S.C. 7506(c)) prohibits federal entities from taking actions in nonattainment or maintenance areas that do not conform to the SIP.

The purpose of the General Conformity Rule is to:

- Ensure that federal activities do not interfere with the budgets in the SIPs
- Ensure that actions do not cause or contribute to new violations
- Ensure the attainment and maintenance of the NAAQS

2.3.2.2.4 NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS): (40 CFR 50.9)

Under the CAA, the EPA establishes NAAQS to protect public health, including the health of sensitive populations such as people with

asthma, children, and older adults. The EPA also sets secondary standards to protect public welfare. This includes protecting ecosystems, including plants and animals, from harm, as well as protecting against decreased visibility and damage to crops, vegetation, and buildings. NAAQS are updated every five years. To ensure the EPA's decision is grounded in the best science, the EPA will review scientific data provided by the Clean Air Scientific Advisory Committee (CASAC).

TABLE 2-7: KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

ENVIRONMENTAL PROTECTION AGENCY (EPA)	
https://www3.epa.gov/airquality/	
Jurisdiction/Interests	Key Items
Leading federal environmental agency provides specific text from laws and regulations as well as procedures and guidelines for environmental processes. EPA is responsible for establishing air quality standards and regulating the emissions of hazardous air pollutants.	<ul style="list-style-type: none"> • General Information for Transportation and Conformity • Clean Air Act • EPA & USDOT MOU (2000) • NAAQS
FEDERAL HIGHWAY ADMINISTRATION (FHWA)	
https://www.fhwa.dot.gov/environment/air_quality/	
Jurisdiction/Interests	Key Items
Lead Federal Agency for Highway and Transportation related infrastructure. Provides Guidance on Transportation processes, including the environmental review process for federally assisted transportation projects. FHWA provides guidance and training on air quality analyses.	<ul style="list-style-type: none"> • Interim Guidance on Air Toxic Analysis in NEPA Documents • Congestion Mitigation and Air Quality (CMAQ) Improvement Program
AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) CENTER OF ENVIRONMENTAL EXCELLENCE	
https://environment.transportation.org/education/environmental-topics/air-quality/	
Jurisdiction/Interests	Key Items
Developed in partnership with FHWA and AASHTO to promote environmental stewardship among environmental professionals in the transportation industry. AASHTO provides guidance on how infrastructure intersects with environmental issues and addressing air quality issues.	<ul style="list-style-type: none"> • Practitioners Handbooks: #18 Addressing Air Quality Issues in the NEPA Process for Highway Projects
TENNESSEE DEPARTMENT OF TRANSPORTATION (TDOT)	
https://www.tn.gov/tdot/long-range-planning-home/air-quality-planning.html	
Jurisdiction/Interests	Key Items

TDOT is responsible for all transportation related projects throughout the state of Tennessee. TDOT is responsible for ensuring air quality compliance in regard to state and federal air quality standards and laws.

- Long Range Planning Division; SIP

2.3.3 HAZARDOUS MATERIALS

2.3.3.1 INTENT AND APPLICABILITY

Hazardous Materials analysis for transportation related projects is prepared to identify, document, and ensure proper removal and handling of all materials that can be deemed hazardous to the (human and natural) environment.

2.3.3.2 KEY LAWS, REGULATIONS, AND GUIDANCE

2.3.3.2.1 RESOURCE CONSERVATION AND RECOVERY ACT 1976 (RCRA) (42 U.S.C § 6901) (40 CFR 239 – 282)

The Resource Conservation and Recovery Act (RCRA), signed into law October 21, 1976, gives the EPA the authority to regulate the ongoing manufacture, storage, use, treatment, transportation, and disposal of hazardous substances/wastes from manufacture to final disposal of hazardous materials. Per amendments made in 1986, RCRA provides a framework for the proper disposal of non-hazardous solid waste and environmental issues resulting from underground storage tanks (USTs), in addition to the regulation of hazardous materials.

- Subtitle D (40 CFR 258) encourages states to develop their own comprehensive plans for non-hazardous solid waste and municipal waste/waste facilities. Under this subtitle the unlawful and open dumping of solid waste is prohibited.
- Subtitle C (40 CFR 264 and 265) establishes the hazardous waste program which establishes a set of standards for the management of hazardous materials from creation to disposal.
- Subtitle I (40 CFR 280) establishes a set of standards for the proper management of USTs containing hazardous materials and/or petroleum.

2.3.3.2.2 COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980 (CERCLA) (42 U.S.C § 9601 ET SEQ.)

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 is designed to control, clean up, and designate liability for abandoned, uncontrolled, or inactive waste sites. The EPA cleans up hazardous waste sites when the responsible party or owner cannot be designated or located and seeks out financial compensation for reparations and cleanup costs once the financially viable responsible party is identified.

2.3.3.2.3 SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA OR SUPERFUND) (42 U.S.C. § 9601 ET SEQ.)

The Superfund Amendments and Reauthorization Act (SARA) of 1986 expanded the defenses to liability under CERCLA to provide a defense for both private and public “innocent landowners” of land upon which hazardous waste attributed to a previous owner is discovered.

2.3.3.2.4 EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT (EPCRA) OF 1986 (42 U.S.C. §11001 ET SEQ.)

The Emergency Planning and Community Right-To-Know Act (EPCRA) was established under SARA. It is an effort to help local communities protect public health and welfare and calls for local governments and states to establish an emergency response commission to be contacted and deployed in a hazardous waste spill or event.

2.3.3.2.5 SPILL PREVENTION, CONTROL, AND COUNTERMEASURE (SPCC) REGULATION (40 CFR PART 112)

Through its Spill Prevention, Control, and Countermeasure (SPCC) regulations, the EPA requires oil/petroleum facilities to develop and maintain an action plan for hazardous materials spills should they

occur. Due to the dangers and lasting effects that can be caused by oil spills, all agencies handling such materials must have a plan to prevent them and to promptly clean them up should they occur. Both on-shore and off-shore facilities fall under the SPCC. The main goal of the regulation is to educate employees and operators of these potentially catastrophic occurrences and how to avoid spills before they occur.

2.3.3.2.6 TENNESSEE PETROLEUM UNDERGROUND STORAGE TANK ACT (T.C.A 68-215-101)

The intent of the Tennessee Petroleum Underground Storage Tank Act (“Act”) is to protect the health and welfare of both humans and the environment in regard to petroleum USTs. The Act creates a coordinated statewide program for the management and disposal of USTs used for housing petroleum, such as those found at service stations in the state of Tennessee. The following are the main goals designated by the Act;

- Safe storage of petroleum and petroleum products
- Establishment of a statewide petroleum management plan in cooperation with federal, state, and local agencies responsible for the prevention, control, or abatement of air, water, and land pollution such that adequate control is achieved without unnecessary duplication of regulatory programs
- The development of long-range plans for adequate petroleum UST systems to meet future demands
- Provide a process for remediation of environmental pollution due to releases from UST systems
- Provide a comprehensive investigation and clean-up fund to address the problems caused by releases from USTs, including remediation of imminent and substantial threats to public health and/or the environment, and to provide a mechanism to assist the financial responsibility requirements for owners/operators of USTs

2.3.3.2.7 THE BROWNFIELDS AND LAND REVITALIZATION PROGRAM

The Brownfields and Land Revitalization Program (“Program”) is administered by the EPA in effort to aid and provide incentives and liability protection to states, local communities, and the private sector for the assessment, clean-up, and economic reuse of brownfields.

Brownfields are defined by the EPA as “a property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.” Tens of thousands of brownfield sites exist across the US; the Program aims to make use of these sites for economic development and community revitalization. TDOT, in conjunction with FHWA, supports this program by encouraging participation in transportation projects that include the use and redevelopment of contaminated sites when appropriate.

TABLE 2-8: KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

ENVIRONMENTAL PROTECTION AGENCY (EPA)	
https://www.epa.gov/superfund/superfund-cercla-overview https://www.epa.gov/rcra	
Jurisdiction/Interests	Key Items
Lead federal environmental agency with authority to control hazardous wastes. The EPA website provides specific text from laws and regulations as well as procedures and guidelines for environmental processes.	<ul style="list-style-type: none"> Resource Conservation and Recovery Act (RCRA) laws and regulations Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as Superfund
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION (TDEC)	
https://www.tn.gov/environment.html	
Jurisdiction/Interests	Key Items
TDEC’s Division of Remediation identifies and investigates hazardous substance sites and uses practical and effective measures to stabilize, remediate, contain, monitor, and maintain those sites.	<ul style="list-style-type: none"> Hazardous Waste Program

2.4 SECTION 4(F)

2.4.1 INTENT AND APPLICABILITY

For projects receiving funding from or requiring approval from a USDOT modal agency (FHWA for highway projects), potential impacts to any significant publicly owned parks or recreation areas, wildlife or waterfowl refuges, or any publicly or privately owned historic sites listed or eligible for listing on the NRHP must be considered pursuant to Section 4(f) of the U.S. Department of Transportation (DOT) Act of 1966. Section 4(f) is an original section in the U.S. DOT Act of 1966. Section 4(f) applies when a USDOT action proposes to use a publicly owned park, recreation area, wildlife or waterfowl refuge, and/or any historic site listed or eligible for listing on the NRHP. The three main types of use are:

- Permanent incorporation by outright acquisition of the land or a permanent easement
- Temporary occupancy where there is a temporary use of property that is adverse in terms of Section 4(f)'s preservation purpose
- Constructive use when the proximity impacts of the project on the Section 4(f) resource, even without acquisition, would be so great that the activities, features, and attributes of the Section 4(f) resources would be substantially impaired

Exceptions to the requirement for Section 4(f) approval can be found at 23 CFR 774.13.

The use of a Section 4(f) property cannot be approved unless:

- there is no feasible and prudent avoidance alternative to the use of the property and the action includes all possible planning to minimize harm to the property that may result from such use, **or**
- FHWA determines that the use of the property will have a *de minimis* impact.

The TDOT Cultural Resources Section is responsible for Section 4(f) compliance for potential impacts to historic resources. All other Section 4(f) reviews are conducted by TDOT's NEPA Programs Office.

2.4.2 KEY LAWS, REGULATIONS, AND GUIDANCE DEPARTMENT OF TRANSPORTATION ACT OF 1966, SECTION 4(F) (49 U.S.C § 303 AND 23 U.S.C § 138 AND 23 CFR 774)

Section 4(f) refers to the original section in the U.S. DOT Act of 1966. Section 4(f) calls for consideration of publicly owned park and recreation lands, wildlife and waterfowl refuges, and any publicly or privately owned historic site listed or eligible for listing on the NRHP to be considered throughout project development. The law applies only to the USDOT and is implemented by FHWA, FTA, and FRA through 23 CFR 774. Before approving a project that uses Section 4(f) property, the USDOT modal agency (FHWA for highway projects) must determine that there is no feasible and prudent alternative that avoids the Section 4(f) property and that the project includes all possible planning to minimize harm to the Section 4(f) property.

2.4.3 KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

TABLE 2-9: KEY REGULATORY AGENCIES AND RESOURCES

FEDERAL HIGHWAY ADMINISTRATION (FHWA)	
https://www.environment.fhwa.dot.gov/legislation/section4f.aspx	
Jurisdiction/Interests	Key Items
Lead federal agency for highway and transportation related infrastructure. Provides guidance on transportation processes, including the environmental review process for federal transportation projects. FHWA administers Section 4(f) for highway projects and provides approvals for Section 4(f) uses.	<ul style="list-style-type: none"> • Section 4(f) Policy Paper • Section 4(f) Nationwide Programmatic • Section 4(f) Final Rule (23 CFR 774)
AASHTO CENTER FOR ENVIRONMENTAL EXCELLENCE	
https://environment.transportation.org/resources/practitioners-handbooks/	
Jurisdiction/Interests	Key Items
Handbook addressing the full range of Section 4(f) compliance options, including individual Section 4(f) evaluations, de minimis impact determinations, and programmatic Section 4(f) evaluations.	<ul style="list-style-type: none"> • Practitioner’s Handbook Chapter 11: Complying with Section 4(f) of the U.S. DOT Act

2.4.4 SECTION 4(F) PROCESS

Where a Section 4(f) property is within the study area for a project, there are four paths forward: a finding of no use, a *de minimis* impact determination, a Programmatic 4(f) evaluation, and an Individual 4(f) evaluation. With the exception of a finding of no use, all of the above-described Section 4(f) paths require some level of coordination and consultation with the official(s) with jurisdiction (OWJs). OWJs include federal, state, or local agencies that own and/or administer the property in question and/or entities who are empowered to represent the agency on matters related to the property. Section 4(f) process is described in the NEPA and Cultural Resources handbooks found on the TDOT Environmental Division website, Resources page.

2.5 SECTION 6(F)

2.5.1 INTENT AND APPLICABILITY

Section 6(f) prohibits the conversion of property acquired or developed with Land and Water Conservation Fund (LWCF) grants to uses other than public outdoor recreation without the approval of the United States Department of the Interior's (DOI) National Park Service (NPS).

When acquisition is required, Section 6(f) directs US DOI to ensure that replacement lands of at least equal fair market value and of reasonably equivalent usefulness and location are provided as a condition of such conversions. Consequently, where conversions of Section 6(f) lands are proposed for highway projects, replacement lands are required.

2.5.2 KEY LAWS, REGULATIONS, AND GUIDANCE

2.5.2.1 LAND AND WATER CONSERVATION FUND ACT (LWCFA) OF 1965 (54 USC 200301 AND 36 CFR 59.3)

The Land and Water Conservation Fund Act (LWCFA) was set in place to assist in the preservation, development, and accessibility of all U.S. citizens, both present and future, to enjoy outdoor recreation resources. The Land and Water Conservation Fund (LWCF) promotes two main functions: funding and authorizing the use of federal funding to states for the purpose of planning, development, and acquisition of natural areas, and providing funds for the federal acquisition and development of natural areas for public use. The LWCF funds are not from federal tax dollars but rather from a portion of the fees taken from offshore oil and gas drilling.

The LWCF provides matching grants to states and local governments through the US DOI, NPS for the acquisition and development of public outdoor recreation areas and facilities. To protect these federal investments and the quality of any resources developed with LWCF assistance, and to protect grant-assisted areas from conversions to other uses, Section 6(f)(3) of the Act contains provisions that state:

No property acquired or developed with assistance under this section shall, without the approval of the Secretary, be converted to other than public outdoor recreation uses. The Secretary shall approve such conversion only if he finds it to be in accord with the then existing comprehensive statewide outdoor recreation plan and only upon such conditions as he deems necessary to assure the substitution of other recreation properties of at least equal fair market value and reasonably equivalent usefulness and location.

2.5.3 KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

TABLE 2-10: KEY REGULATORY AGENCIES AND RESOURCES

FEDERAL HIGHWAY ADMINISTRATION ENVIRONMENTAL TOOLKIT	
https://www.environment.fhwa.dot.gov/env_topics/other.aspx#6f	
Jurisdiction/Interests	Key Items
Lead federal agency for highway and transportation related infrastructure. Provides guidance on transportation processes, including the environmental review process for federal transportation projects.	<ul style="list-style-type: none"> LWCF Program Assistance
LAND AND WATER CONSERVATION FUND (LWCF)	
https://www.lwcfcoalition.com/	
Jurisdiction/Interests	Key Items
Provides funding for the preservation of natural habitats, most of which reside on Section 6(f) protected land.	<ul style="list-style-type: none"> All
NATIONAL PARK SERVICE	
https://www.nps.gov/index.htm	
https://www.nps.gov/subjects/lwcf/lwcf-in-your-neighborhood.htm	
Jurisdiction/Interests	Key Items
The service entrusted to protect the national parks of the U.S, and preservation of unimpaired natural environments and cultural resources, as well as educating the public on these sites.	<ul style="list-style-type: none"> 6(f) properties database
TDEC DIVISION OF RECREATIONAL SERVICES	
https://www.tn.gov/environment/program-areas/res-recreation-educational-services/res-recreation-educational-services.html	
Jurisdiction/Interests	Key Items
State agency responsible for administering federal and state recreational grant programs to local and state governments. The Division of Recreational Services administers the Land and Water Conservation Fund (LWCF) grant process, among others.	<ul style="list-style-type: none"> Land and Water Conservation Fund (LWCF)

2.5.4 SECTION 6(F) PROCESS

The US DOI has delegated most review, consultation, and assessment of Section 6(f) impacts and conversions to specified state recreation offices/departments. For LWCF resources in Tennessee, these consultations are with TDEC, Division of Recreational Services. Unless TDEC and the US DOI agree that a conversion meets their criteria for a Temporary Non-Conforming Use, replacement land of “reasonably equivalent usefulness and location” must be found for any property that will be converted. Section 6(f) process is described in the NEPA handbook found on the TDOT Environmental Division website, Resources page.

2.6 ENVIRONMENTAL JUSTICE

2.6.1 INTENT AND APPLICABILITY

As part of the development of a NEPA document, TDOT’s NEPA Programs Office screens the project area for Environmental Justice (EJ) populations and conducts any warranted analyses, outreach, coordination, and documentation.

There are three guiding principles of EJ as described in the USDOT Environmental Justice Strategy (November 15, 2016):

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority populations and low-income populations.

Compliance with Executive Order 12898 *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* is required on all TDOT projects that are federally funded or have a federal nexus.

2.6.2 KEY LAWS, REGULATIONS, AND GUIDANCE

2.6.2.1 TITLE VI OF THE 1964 CIVIL RIGHTS ACT (42 U.S.C. 2000D *et seq.*)

Title VI of the 1964 Civil Rights Act states that "No person shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." Title VI prohibits recipients of federal funds from taking actions that reflect intentional discrimination or that exhibit adverse disparate impact discrimination, such as policies that appear neutral but have an adverse effect on a specific group of people, on the basis of race, ethnicity or national origin. The purpose of this Act is to ensure that all communities receive the same benefits, and that a minority community does not receive lesser benefits from federal programs or federally funded assistance programs.

2.6.2.2 EXECUTIVE ORDER 12898: FEDERAL ACTIONS TO ADDRESS ENVIRONMENTAL JUSTICE IN MINORITY POPULATIONS AND LOW-INCOME POPULATIONS

In 1994, President Clinton signed Executive Order 12898 *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. This order requires that each federal agency, to the greatest extent allowed by law, administer and implement its programs, policies, and activities that affect human health or the environment so as to identify and avoid "disproportionately high and adverse" effects on minority and low-income populations. The Executive Order broadened the EJ definition outlined in Title IV, by adding low-income, non-minority populations. The Executive Order not only directs federal agencies to identify these EJ populations, but also develop a plan to address the EJ populations and promote nondiscrimination in federal programs regarding human health specifically to EJ populations.

2.6.2.3 DEPARTMENT OF TRANSPORTATION ORDER 5610.2(A)

DOT Order 5610.2(a) defines the USDOT policy to consider environmental justice principles in all USDOT programs, policies, and activities. It describes how the objectives of environmental justice will be integrated into planning and programming, rulemaking, and policy formulation. The Order defines steps to prevent disproportionately high and adverse effects to minority or low-income populations through Title VI analyses and environmental justice analyses conducted as part of Federal transportation planning and NEPA provisions. It also describes the specific measures to be taken to address instances of disproportionately high and adverse effects and sets forth relevant definitions.

2.6.2.4 FHWA ORDER 6640.23A

In 2012, FHWA issued the *FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* directive, which establishes policies and procedures for FHWA to use in complying with Executive Order 12898. This order superseded FHWA's 1998 Order 6640.23 addressing EJ. The updated order clarifies the definitions used in FHWA's management of EJ, the agency's policies concerning EJ, FHWA's responsibilities, and how the EJ principles should be integrated into existing operations. Order 6640.23A affirms the importance of considering EJ principles as part of early planning activities in order to avoid disproportionately high and adverse effects.

2.6.3 KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

TABLE 2-11: KEY REGULATORY AGENCIES AND RESOURCES

ENVIRONMENTAL PROTECTION AGENCY (EPA)	
https://www.epa.gov/environmentaljustice/ej-tools	
Jurisdiction/Interests	Key Items
Lead federal environmental agency provides specific text from laws and regulations as well as procedures and guidelines for environmental processes. EPA offers several tools for use in EJ analysis, including the EJSCREEN screening and mapping tool	<ul style="list-style-type: none"> EJSCREEN
FEDERAL HIGHWAY ADMINISTRATION (FHWA)	
https://www.fhwa.dot.gov/legsregs/directives/orders/664023a.cfm	
Jurisdiction/Interests	Key Items
Provides guidance on transportation processes, including the environmental review process for federally funded transportation projects. FHWA provides EJ impact analysis support.	<ul style="list-style-type: none"> FHWA Order 6640.23A
U.S. DEPARTMENT OF TRANSPORTATION	
https://www.transportation.gov/transportation-policy/environmental-justice/environmental-justice-strategy	
Jurisdiction/Interests	Key Items
	<ul style="list-style-type: none"> USDOT Environmental Justice Strategy
U.S. CENSUS BUREAU	
https://www.census.gov/ https://www.census.gov/programs-surveys/acs	

Jurisdiction/Interests	Key Items
Houses demographic information of the U.S, analysis tools, and government resources pertaining to demographic and community composition. Provides decennial counts, and 5-year American Community Survey data releases.	<ul style="list-style-type: none"> • Census Bureau data sets • American Community Survey (ACS) 5-Year Estimates

2.6.4 ENVIRONMENTAL JUSTICE PROCESS

For any projects demonstrating the presence of EJ populations, the planner will determine the potential for adverse effect and, if present, will determine if that effect is disproportionately high and adverse. This effort, as appropriate, will include outreach to the affected community(ies) and review of potential mitigation. Information and documentation from EJ screening efforts, analyses, outreach, and coordination is provided to TDOT's Civil Rights Division for review and comment. Where warranted, outreach to potentially affected EJ populations may be required. Environmental Justice process is described in the NEPA handbook found on the TDOT Environmental Division website, Resources page.

2.7 SOCIAL AND COMMUNITY IMPACTS

2.7.1 INTENT AND APPLICABILITY

Social and community impacts should be evaluated to determine the potential effects of a transportation project on a community, its cohesiveness, and the quality of life of those individuals that comprise a given community. In many cases, this is more acutely relevant for projects that propose right-of-way acquisition, especially in such cases where displacements may occur. In general, an evaluation of potential social and community impacts may address issues such as mobility, employment effects, relocation/displacement, isolation, and other community issues.

2.7.2 KEY LAWS, REGULATIONS, AND GUIDANCE

2.7.2.1 CEQ NEPA IMPLEMENTING REGULATIONS (40 CFR § 1508.1(G) AND (M))

The Council on Environmental Quality (CEQ) NEPA implementing regulations define effects or impacts as reasonably foreseeable changes to the human environment as a result of the proposed action or alternatives. The human environment is further defined as, comprehensively, the natural and physical

environment and the relationship of present and future generations of Americans with that environment.

2.7.2.2 AMERICANS WITH DISABILITIES ACT OF 1990 (42 U.S.C § 12101 OR PUB. L 101-336)

The Americans with Disabilities Act of 1990 is a civil rights law that prohibits discrimination against individuals with disabilities in all areas of public life, including jobs, schools, transportation, and all public and private places that are open to the general public. The purpose of the law is to make sure that people with disabilities have the same rights and opportunities as everyone else. The ADA gives civil rights protections to individuals with disabilities similar to those provided to individuals on the basis of race, color, sex, national origin, age, and religion. It guarantees equal opportunity for individuals with disabilities in public accommodations, employment, transportation, state and local government services, and telecommunications. The ADA defines a disabled person as someone “who has a physical or mental impairment that substantially limits one or more major life activities, a person who has a history or record of such an impairment, or a person who is perceived by others as having such an impairment”.

2.7.2.3 UNIFORM RELOCATION ASSISTANCE AND REAL PROPERTY ACQUISITION ACT (UNIFORM ACT) (42 USC 4601 *et seq.*)

For federally funded projects, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, requires that people whose real property is acquired, or who move as a result of projects receiving federal funds, are treated fairly and equitably and receive just compensation for, and assistance in moving from, the property they occupy.

2.7.2.4 FEDERAL-AID HIGHWAY ACT OF 1970 (23 USC 109(H))

The Federal Aid Highway Act of 1970 requires that the development of federal-aid transportation projects be made in the best overall public interest, taking into consideration the need for fast, safe and efficient transportation, public services, and the costs of eliminating or minimizing adverse effects on the human environment.

2.7.3 KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

TABLE 2-12: KEY REGULATORY AGENCIES AND RESOURCES

U.S. CENSUS BUREAU	
https://www.census.gov/ https://www.census.gov/programs-surveys/acs	
Jurisdiction/Interests	Key Items
<p>Federal source of demographic information of the U.S, analysis tools, and government resources pertaining to demographic and community composition. Obtaining employment and community demographic information is a key factor in understanding the community a project is being developed in and can provide supporting data in transportation decision making.</p>	<ul style="list-style-type: none"> • Community Demographics: Population, Household, and Income data • American Community Survey
FEDERAL HIGHWAY ADMINISTRATION	
https://www.fhwa.dot.gov/livability/cia/quick_reference/index.cfm https://www.environment.fhwa.dot.gov/env_topics/other.aspx	
Jurisdiction/Interests	Key Items
<p>Provides guidance on transportation processes, including the environmental review process for federally funded transportation projects. Includes FHWA information and tools for conducting community impact assessments and considering impacts of the human environment.</p>	<ul style="list-style-type: none"> • Community Impact Assessment: A Quick Reference for Transportation

2.7.4 SOCIAL AND COMMUNITY IMPACTS PROCESS

Coordination should be conducted as early as possible in the jurisdictions and communities in the project area. Coordination should start with local sources familiar with the characteristics and needs of the community. Examples of local sources are local officials, land use and planning agencies/departments, city engineers, chambers of commerce and economic development boards, realtors, community groups and neighborhood associations, civic groups, and social services organizations. Social and Community Impacts process is described in the NEPA handbook found on the TDOT Environmental Division website, Resources page.

2.8 LAND USE

2.8.1 INTENT AND APPLICABILITY

The intent of including a land use assessment is to determine whether proposed transportation improvements align with adopted land use plans and policies. If the proposed action would not be consistent, analysis is required to ensure a holistic approach was taken with regard to potential community concerns and impacts. NEPA documents should include a high-level discussion of current land uses and, where relevant, discuss whether and the extent to which the proposed project is consistent with current and future land use plans. These analyses are standard for an EIS and may also be prepared for an EA. CEs rarely include a land use analysis.

2.8.2 KEY LAWS, REGULATIONS, AND GUIDANCE

2.8.2.1 FHWA TECHNICAL ADVISORY T6640.8A

This FHWA Technical Advisory provides guidance on the development of environmental documentation pursuant to CEQ and FHWA NEPA regulations. Section V.G.1. of this advisory provides a high-level discussion on Land Use impacts as a potential environmental consequence of transportation projects that should be discussed within the environmental document when the potential for this type of impact exists.

2.8.2.2 CEQ NEPA IMPLEMENTING REGULATIONS 40 CFR 1502.16(A)(5)

The CEQ regulations on the implementation of NEPA direct that the environmental consequences discussion within an environmental document include a discussion on “possible conflicts between the proposed action and the objectives of Federal, regional, State, Tribal, and local land use plans, policies and controls for the area concerned.”

2.8.2.3 TENNESSEE GROWTH POLICY ACT (PUBLIC CHAPTER 1101) TCA 6-58-106

In reaction to population growth throughout Tennessee at the time, the Tennessee General Assembly created a framework for the development of a growth policy in 1998 by enacting Public Chapter 1101, the Growth Policy Act. The law required local officials within each of the 92 non-metropolitan counties

to work together to shape growth policy through the development of 20-year growth plans and the definition of urban growth boundaries. An urban growth boundary is an officially adopted and mapped line that separates an urban area from its surrounding greenbelt of open lands, including farms, watersheds and parks.

Public Chapter 1101 requires that each municipality prepare a growth plan that places parameters on growth within the municipality, identified as municipal urban growth boundaries, county planned growth areas, and rural areas. These delineations are based on land needs and public service capabilities of each area and have their own growth plan requirements depicted in the table below. The result is intended to guide growth within each county in a more efficient manner.

2.8.3 KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

The following are agencies often involved in coordination efforts to determine potential land use impacts:

- Local County and City Government Planning Departments
- Tennessee Development Districts
- Metropolitan/Transportation Planning Organization (as applicable)
- TDOT, TDEC, TWRA, Tennessee Valley Authority (TVA) and other applicable state agencies
- Natural Resources Conservation Service

2.8.4 LAND USE PROCESS

Coordination includes a review of any adopted land use plans and a discussion within the environmental document of whether and to what extent the proposed project is consistent with those plans. Land Use process is described in the NEPA handbook found on the TDOT Environmental Division website, Resources page.

2.9 FARMLAND

2.9.1 INTENT AND APPLICABILITY

The purpose of a farmland evaluation is to determine the extent to which a federally assisted project would contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses, based on a farmland conversion impact rating

score. If a farmland conversion impact rating score for a proposed project exceeds the recommended allowable level set by the US Department of Agriculture’s National Resources Conservation Service (NRCS), measures to minimize impacts should be evaluated and included in the proposed action where appropriate.

2.9.2 KEY LAWS, REGULATIONS, AND GUIDANCE

2.9.2.1 FARMLAND PROTECTION POLICY ACT OF 1981 (FPPA) 7 U.S.C. 4201

In 1981, Congress passed the Agriculture and Food Act of 1981 (Public Law 97-98), which included the Farmland Protection Policy Act subtitle I of Title XV, Section 1539-1549. The FPPA was in response to ongoing large buy-ups of farmland for the conversion to urban uses. Final rules and regulations were published in the Federal Register in 1994.

The FPPA aims to minimize the occurrence or likelihood of federal projects and programs converting farmland to nonagricultural uses. The NRCS is the agency responsible for administering the provisions of the FPPA.

2.9.3 KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

TABLE 2-13: KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

NATURAL RESOURCES CONSERVATION SERVICE (NRCS)	
https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/fppa/ https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1045394.pdf	
Jurisdiction/Interests	Key Items
Part of the U.S. Department of Agriculture having responsibility for the conservation of natural land areas and farmlands. Provides contracts, resources, and links for landowners, users, and policy makers. Farmland and soil mapping and data information available through NRCS aids in the decision-making process and allows planners to make decisions based on prime farmland impacts.	<ul style="list-style-type: none"> • FPPA • Web Soil Survey • CPA-106 Form

2.9.4 FARMLAND PROCESS

For any federally assisted projects that have the potential to convert farmland to a nonagricultural use, except where certain exceptions may apply, coordination with the NRCS is required. For this coordination, NEPA planners or consultants evaluate the impacts to farmland by completing an NRCS Farmland Conversion Impact Rating Form to determine an impact rating score. If that score exceeds the threshold set by the NCRS, FHWA and TDOT must examine alternatives to minimize the impacts. Farmland process is described in the NEPA handbook found on the TDOT Environmental Division website, Resources page.

2.10 FLOODPLAIN

2.10.1 INTENT AND APPLICABILITY

A floodplain is a generally flat area of land adjacent to a river or stream that experiences flooding during periods of high discharge (such as heavy rains). The purpose of a floodplain analysis is to determine whether a proposed transportation project would encroach into the 100-year base floodplain or the floodway. The goal is to avoid first, then, if avoidance is not possible, to minimize the use of floodplains or floodways for the purposes of highway or bridge construction.

Floodplain analysis is required for any federal action, including federally funded projects. Such projects must make a diligent effort to avoid incompatible floodplain development, minimize the impact of actions that adversely affect the floodplain or floodway, restore and preserve the natural and beneficial floodplain values, and be consistent with the standards/criteria of the National Flood Insurance Program.

2.10.2 KEY LAWS, REGULATIONS, AND GUIDANCE

2.10.2.1 NATIONAL FLOOD INSURANCE ACT OF 1968 AND THE FLOOD DISASTER PROTECTION ACT OF 1973 (42 U.S.C. 4001 *ET SEQ.*)

Congress passed the National Flood Insurance Act of 1968 (Title XIII of the Housing and Urban Development Act of 1968 (P.L. 90-448, 8-1-68)) to protect people and property located in a floodway. This act was amended by the Flood Disaster Protection Act of 1973 (Public Law 93-234, 87 Stat. 975).

These Acts created the National Flood Insurance Program (NFIP) and the Federal Insurance Administration (FIA) within the Department of Housing and

Urban Development. The NFIP established an insurance program as an alternative to disaster relief, distributed responsibility for floodplain management to all levels of government and the private sector, set a national standard for regulating new development in floodplains, and began a comprehensive floodplain mapping program.

2.10.2.2 EXECUTIVE ORDER 11988 FLOODPLAIN MANAGEMENT

President Jimmy Carter issued EO 11988 on May 24, 1977, requiring agencies, to the extent practicable, to avoid any short- or long-term adverse effects to floodplains. This includes development within floodplains or near floodplains that could cause lasting effects to both the natural and built environment. A floodplain determination must be made prior to decision making activities and development within a floodplain must be evaluated and taken into consideration in every project receiving federal aid or funding.

2.10.2.3 USDOT ORDER 550.2 FLOODPLAIN MANAGEMENT AND PROTECTION

USDOT Order 550.2 (1979) establishes policies and procedures to ensure that consideration is given to the protection of floodplains and the proper mitigation of impacts to floodplains should they occur in projects sponsored by the USDOT. The order states that floodplains must be identified, and encroachments must be delineated and avoided where practicable. Flood Insurance Rate Maps (FIRMs) or Flood Hazard Boundary Maps (FHBM) are used to determine possible alternatives and areas to avoid. The order further notes that, where any of a project’s proposed alternatives are proposed in the base floodplain, public involvement and appropriate consideration for floodplains shall be provided in the environmental review process.

2.10.3 KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

TABLE 2-14: KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)	
https://www.fema.gov/ https://msc.fema.gov/portal/search	
Jurisdiction/Interests	Key Items

Federal agency tasked with responding to emergencies and natural disasters and assisting and coordinating a response should they occur. Firms provided through FEMA is used in environmental documents and provides valuable information as to floodways in the project area and if additional permits are necessary.

- National Flood Insurance Program
- FIRM Mapping

2.10.4 FLOODPLAIN PROCESS

If a proposed project warrants a floodway revision, TDOT coordinates with FEMA and the applicable local floodplain regulatory agency to confirm that the revision would be acceptable. This coordination may or may not occur during the NEPA process. Floodplain process is described in the NEPA handbook found on the TDOT Environmental Division website, Resources page.

2.11 VISUAL AND AESTHETICS

2.11.1 INTENT AND APPLICABILITY

The intent of a visual impact assessment is to identify and consider potential effects of a project on the visual and aesthetic quality and characteristics of the project area. The public nature and visual importance of highways necessitates that visual impacts (beneficial as well as adverse) be adequately assessed and considered when a highway project is developed. Visual impact assessments are conducted when a proposed project would trigger impacts to the visual resources of the project area. If there would be no noticeable visible changes to visual resources, viewers, or visual quality, an assessment would not be needed. Visual assessments are often used in EISs and EAs and, though rare, may be necessary in CEs.

2.11.2 KEY LAWS, REGULATIONS, AND GUIDANCE

2.11.2.1 FHWA GUIDELINES FOR THE VISUAL IMPACT ASSESSMENT OF HIGHWAY PROJECTS

Though no statute or regulation prescribes any specific requirements for evaluating visual impacts, in January 2015, FHWA issued a set of guidelines to reflect the agency's latest thinking on best practices on the topic. The FHWA online Environmental Review Toolkit contains the document, *Guidelines for the Visual Impact Assessment of Highway Projects*, which includes a step-by-step

tool, a training resource, and a reference book for use by state DOTs and other project sponsors.

2.11.2.2 FHWA TECHNICAL ADVISORY T6640.8A

This FHWA Technical Advisory provides guidance on the development of environmental documentation pursuant to CEQ and FHWA NEPA regulations. Section V.G.21. of this advisory provides a high-level discussion on visual impacts as a potential environmental consequence of transportation projects that should be discussed within the environmental document when the potential for this type of impact exists.

2.11.3 KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

TABLE 2-15: KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

FEDERAL HIGHWAY ADMINISTRATION (FHWA)	
https://www.environment.fhwa.dot.gov/env_topics/other_topics/VIA_Guidelines_for_Highway_Projects.aspx	
Jurisdiction/Interests	Key Items
Provides guidance on transportation processes, including the environmental review process for federally funded transportation projects. Provides guidance for conducting visual impact assessments.	<ul style="list-style-type: none"> Guidelines for the Visual Impact Assessment of Highway Projects

2.11.4 VISUAL AND AESTHETICS PROCESS

Coordination and consultation may occur with federal agencies, Tribes, or state agencies, depending upon the potential for impacts to resources under the responsibility of those agencies/tribes. Local coordination with elected officials, agencies, and civic leaders, as well as with members of the public may occur as part of the NEPA process to fully understand how a visual impact may disrupt the community. Visual and Aesthetics process is described in the NEPA handbook found on the TDOT Environmental Division website, Resources page.

2.12 ECONOMICS AND BUSINESS

2.12.1 INTENT AND APPLICABILITY

Transportation undertakings can have substantial impacts to the businesses within and surrounding the community where the project is taking place. Where

appropriate based on the scope and potential effects of the project, an economic impact analysis is conducted to identify and evaluate the potential effect a transportation project may have on the local and regional economy and businesses in the project area and to identify measures to minimize potential adverse effects.

Economic and business analyses are prepared when a project would directly or indirectly affect established or planned businesses and economic activity. These analyses are standard for an EIS and may also be prepared for an EA. CEs rarely include an economic impact analysis.

2.12.2 KEY LAWS, REGULATIONS, AND GUIDANCE

2.12.2.1 FHWA NEPA REGULATIONS 23 CFR 771.105 ET. SEQ.

Throughout the FHWA regulations on the implementation of NEPA are references to the requirement to analyze and disclose the economic impacts of a proposed action. These regulations state that “it is the policy of the Administration that... [a]lternative courses of action be evaluated and decisions be made in the best overall public interest based upon a balanced consideration of the need for safe and efficient transportation; of the social, economic, and environmental impacts of the proposed transportation improvement; and of national, State, and local environmental protection goals.”

2.12.2.2 FHWA TECHNICAL ADVISORY T6640.8A

This FHWA Technical Advisory provides guidance on the development of environmental documentation pursuant to CEQ and FHWA NEPA regulations. Section V.G.5. of this advisory provides a high-level discussion on economic impacts as a potential environmental consequence of transportation projects that should be discussed within the environmental document when the potential for this type of impact exists.

2.12.3 KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

TABLE 2-16: KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

U.S. CENSUS BUREAU	
www.Census.gov	
Jurisdiction/Interests	Key Items

Federal source of demographic information of U.S, analysis tools, and government resources pertaining to demographic and community composition.	<ul style="list-style-type: none"> Income Data Employment Data
TENNESSEE DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT	
https://www.tn.gov/workforce.html	
Jurisdiction/Interests	Key Items
State agency responsible for employment and workforce development in Tennessee, including data analysis, job listings, and opportunities throughout the state.	<ul style="list-style-type: none"> Labor Force Data Unemployment Data
TENNESSEE DEPARTMENT OF ECONOMIC AND COMMUNITY DEVELOPMENT	
https://tnecd.com/	
Jurisdiction/Interests	Key Items
A resource for economic and industry data throughout Tennessee. The site provides data and statistics on state and some regional/local economic data.	<ul style="list-style-type: none"> Community Profiles
LOCAL ENTITIES AND GOVERNMENTS	
website will vary based on project location	
Jurisdiction/Interests	Key Items
Local governments and business bureaus provide more specific knowledge of businesses and business demographics in the project area.	<ul style="list-style-type: none"> Community Profiles Local Business and Industries Planned Development Data

2.12.4 ECONOMICS AND BUSINESS PROCESS

There are no coordination or consultation requirements for the evaluation of economic and business impacts. However, the US Census and the Tennessee Department of Labor and Workforce Development have economic data on businesses and industries, unemployment, and labor force. These types of analyses often include coordination with the potentially affected industries and businesses as well as state and local officials. Economics and Business process is described in the NEPA handbook found on the TDOT Environmental Division website, Resources page.

2.13 WILD AND SCENIC RIVERS

2.13.1 INTENT AND APPLICABILITY

Consideration of designated Wild and Scenic Rivers and Tennessee Scenic Rivers in the transportation development process is part of TDOT's responsibility to avoid, minimize, or mitigate impacts to these rivers. Wild and Scenic Rivers are federally designated and protected via the federal Wild and Scenic Rivers Act of 1968. Pursuant to this act, federal support for actions such as the construction of dams or other instream activities that would harm the river's free-flowing condition, water quality, or outstanding resource values are prohibited.

Each project should be reviewed to determine if Wild and Scenic Rivers or Tennessee Scenic Rivers are present within the project area or may be impacted by the project. Documentation and a full analysis are only necessary when a designated river segment is present within the project corridor.

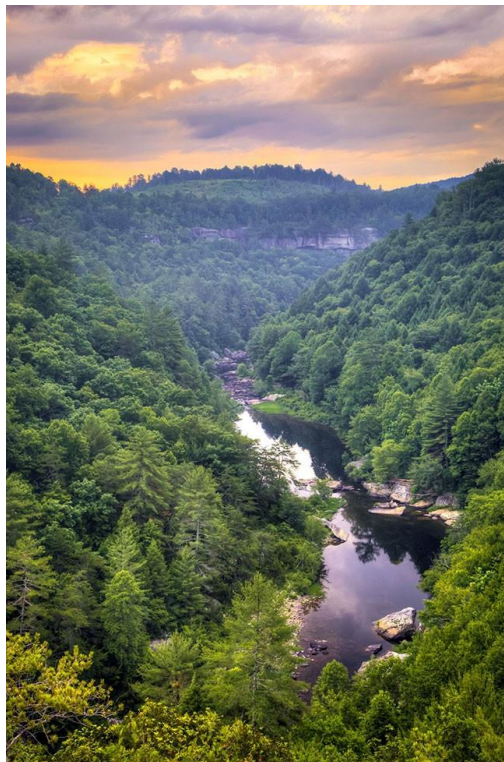


Figure 2-4: Obed River, Cumberland Plateau (NPS)

2.13.2 KEY LAWS, REGULATIONS, AND GUIDANCE

2.13.2.1 WILD AND SCENIC RIVERS ACT 16 U.S.C 1271 ET SEQ.

In 1968, Congress passed the Wild and Scenic Rivers Act to preserve rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. In the Wild and Scenic Rivers system, there are three classifications of rivers that are protected by the act:

- Wild River Areas - rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.
- Scenic River Areas - rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
- Recreational River Areas - rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Each designated river is maintained by the lead federal or state agency in the area. The designated boundary of a wild and scenic river is a quarter mile in the lower 48 states and half a mile on rivers outside of national parks in Alaska. This boundary is created in an effort to protect the river-related values of the land.

The Wild and Scenic Rivers Act safeguards the special character of these rivers, while also recognizing the potential for their appropriate use and development. It encourages river management that crosses political boundaries and promotes public participation in developing goals for river protection. The act requires the federal government to closely monitor and balance dams and construction along the river to ensure permanent protection of the unique designated segment. While designation does not give the federal government the right to manage or prohibit development of the river on private property, it does prohibit federal assistance in construction of dams or other activities that may harm the free-flowing nature water quality or the outstanding nature of these rivers.

The Obed River, Tennessee's only river segment designated under the National Wild and Scenic Rivers Act, is in TDOT Regions 1 and 2. It is managed cooperatively by the National Park Service and TDEC.

2.13.2.2 TENNESSEE SCENIC RIVERS ACT OF 1968 TCA 11-13-101 *ET SEQ.*

Under the Tennessee Scenic Rivers Act there are three scenic river classifications.

- **Natural River Areas** are rivers or sections of rivers that are free flowing, unpolluted and with shorelines and scenic vistas essentially primitive and generally inaccessible except by trail.
- **Pastoral River Areas** are rivers or sections of rivers that are free flowing, unpolluted and with shorelines and scenic vistas partially or predominately used for agricultural and other recreational activities which do not interfere with public use and enjoyment of the river and shores.
- **Partially Developed River Areas** are rivers or sections of rivers that are free flowing, unpolluted and with shorelines and vistas essentially more developed.

There are ecological, aesthetic, and other scientific reasons that priority must be given to undeveloped, natural, and unspoiled river areas. The intent of this act is to provide the proper management and protection for the recreational, wildlife, and other qualities and values of selected rivers or river segments within the state of Tennessee.

The Tennessee Scenic Rivers system protects more than 400 miles of 13 rivers in 18 counties. These rivers or river segments are managed by TDEC with the support of TWRA in some cases. The 13 designated state scenic rivers are mapped and discussed on the TDEC website at: [Scenic River Classifications \(tn.gov\)](https://www.rivers.gov/).

2.13.3 KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

TABLE 2-17: KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

NATIONAL PARK SERVICE (NPS)	
https://www.rivers.gov/	
Jurisdiction/Interests	Key Items
The NPS National Wild and Scenic Rivers System has a national database for information on the national wild and scenic river act and system. Provides background, history, updates, and data for the national wild and scenic river system in the U.S.	<ul style="list-style-type: none"> • Obed River • Map and GIS Data

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION (TDEC)	
https://www.tn.gov/environment/program-areas/na-natural-areas/natural-areas-redirect/na-sr-scenic-rivers/na-sr-river-classifications.html TDEC Map Viewers: https://www.tn.gov/environment/program-areas/wr-water-resources/water-quality/water-resources-data-map-viewers.html Department of Finance and Administration GIS resources: https://tnmap.tn.gov/	
Jurisdiction/Interests	Key Items
Leading state agency for conservation and the environment. The site provides several resources including guidelines, state laws and regulations for which TDEC is the regulating agency, environmental procedures, and best management practices. TDEC's Division of Natural Areas manages the Tennessee Scenic Rivers Program.	<ul style="list-style-type: none"> • Scenic River Classifications and Lists • Maps and GIS Data

2.13.4 WILD AND SCENIC RIVERS PROCESS

Coordination with the National Park Service (NPS) is required when dealing with Wild and Scenic Rivers and coordination should occur as early as possible. The Tennessee Department of Environment and Conservation (TDEC) and Tennessee Wildlife Resources Agency (TWRA) should be consulted regarding project impacts on state designated rivers. Wild and Scenic Rivers process is described in the NEPA handbook found on the TDOT Environmental Division website, Resources page.

2.14 TRAFFIC AND SAFETY

2.14.1 INTENT AND APPLICABILITY

Traffic and Safety data and analysis provides a comprehensive understanding of the current traffic and safety conditions for an existing roadway or network and the projected future traffic levels. This information helps to determine whether a traffic or safety-based need exists. Where such a need is identified, traffic and/or safety analyses can be used to demonstrate whether and the extent to which the proposed project can alleviate or eliminate the noted deficiencies. Thereby, supporting the purpose and need of the proposed project. Traffic and Safety analysis is considered in all transportation projects undertaken by TDOT.

2.14.2 KEY LAWS, REGULATIONS, AND GUIDANCE

There are no regulations applicable to environmental procedures; however, the FHWA and TDOT have a set of standards and specifications for highways and roads in Tennessee. These can be found in the FHWA Traffic Analysis Toolbox on the FHWA site.

2.14.3 KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

TABLE 2-18: KEY REGULATORY AGENCIES AND RESOURCES

FEDERAL HIGHWAY ADMINISTRATION (FHWA)	
https://ops.fhwa.dot.gov/trafficanalysistools/index.htm	
Jurisdiction/Interests	Key Items
Provides Guidance on the transportation processes, including the environmental review process for federally funded transportation projects. Sets Federal standards and guidelines for traffic and safety.	<ul style="list-style-type: none"> • Policy and Guidance • Center Traffic Analysis Tools
TENNESSEE DEPARTMENT OF TRANSPORTATION	
https://www.tn.gov/tdot/long-range-planning-home/longrange-road-inventory/longrange-road-inventory-traffic.html https://www.tn.gov/tdot/traffic-operations-division/traffic-engineering-office/operations-and-safety.html	
Jurisdiction/Interests	Key Items
Sets and regulates standards for traffic and safety throughout the state of Tennessee.	<ul style="list-style-type: none"> • Traffic Data • Operations and Safety
AASHTO CENTER OF ENVIRONMENTAL EXCELLENCE	
http://onlinepubs.trb.org/onlinepubs/nchrp/docs/nchrp17-50_userguide.pdf	
Jurisdiction/Interests	Key Items
A nonprofit association representing state highway and transportation departments. Serves as a liaison between state departments of transportation and the federal government. Sets technical standards for all phases of high system development	<ul style="list-style-type: none"> • Highway Safety Manual

2.14.4 TRAFFIC AND SAFETY PROCESS

Coordination between the TDOT Strategic Transportation Investments Division (STID) and the planner or consultant writing the environmental document is important to obtain the comprehensive data needed for proper traffic and safety analysis. Traffic and Safety process is described in the NEPA handbook found on the TDOT Environmental Division website, Resources page.

2.15 MULTIMODAL/ BICYCLE & PEDESTRIAN

2.15.1 INTENT AND APPLICABILITY

It is the policy of the USDOT to “incorporate safe and convenient walking and bicycling facilities into transportation projects.” Further, USDOT declares that it is the responsibility for each modal agency and for state DOTs to further this objective. Multimodal evaluation aims to incorporate safe and convenient multimodal transportation facilities, including walking and biking, into transportation projects. Multimodal uses are considered for all projects that include or could lead to construction of a transportation facility.



Figure 2-5: Shows possible bike and pedestrian facilities along a roadway alignment

2.15.2 KEY LAWS, REGULATIONS, AND GUIDANCE

2.15.2.1 INTERMODAL SURFACE TRANSPORTATION EFFICIENCY ACT (ISTEA) PUB. L 102-240

The Intermodal Surface Transportation Efficiency Act (ISTEA) included a spending package that increased the responsibilities of local and state governments to plan and implement bicycle and pedestrian facilities. The funding infusion provided by ISTEA and continued by the Transportation Efficiency Act for the 21st Century (TEA-21) in turn fueled even stronger efforts to build trails and to renovate streets and roadways for bicycling and walking. More information on ISTEA can be found in Chapter 2.1 Federal Laws and Regulations.

2.15.2.2 USDOT POLICY STATEMENT ON BICYCLE AND PEDESTRIAN ACCOMMODATION REGULATIONS AND RECOMMENDATIONS

The purpose of the policy statement, signed in 2010, was to reflect the USDOT's support for the development of fully integrated active transportation networks to accommodate people of all ages and abilities, including people too young to drive, people who cannot drive, and people who choose not to drive.

With the adoption of this policy statement, FHWA encouraged states, local governments, and public and private agencies and organizations to adopt similar policy statements and to go beyond minimum design standards and requirements to create safe, attractive, sustainable, accessible, and convenient bicycling and walking networks.

2.15.2.3 TDOT'S BICYCLE AND PEDESTRIAN POLICY - POLICY NO. 530-01

TDOT's Multimodal Access Policy (Policy No. 530-01, adopted July 31, 2015) "encourages safe access and mobility for users of all ages and abilities through the planning, design, construction, maintenance, and operation of new construction, reconstruction, and retrofit transportation facilities that are state or federally funded." The policy anticipates full consideration for multimodal accommodations in all projects but acknowledges that some conditions may make such accommodations imprudent, as further outlined in that policy document.

2.15.3 KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

TABLE 2-19: KEY REGULATORY AGENCIES AND RESOURCES

FEDERAL HIGHWAY ADMINISTRATION (FHWA)	
https://www.fhwa.dot.gov/environment/bicycle_pedestrian/	
Jurisdiction/Interests	Key Items
Leading Federal Agency for Highway and Transportation related infrastructure. Provides guidance on transportation processes, including the environmental review process for federally funded transportation projects. Sets federal standards and guidelines for bicycle/pedestrian facilities on the federal level.	<ul style="list-style-type: none"> • Bicycle and Pedestrian Policy • Bicycle, and Pedestrian Planning, Program, and Project Development Guidance • Bicycle Facilities and the Manual on Uniform Traffic Control Devices
TENNESSEE DEPARTMENT OF TRANSPORTATION	
https://www.tn.gov/tdot/multimodal-transportation-resources/bicycle-and-pedestrian-program.html	
Jurisdiction/Interests	Key Items
The Multimodal Transportation Resources Division's Bicycle and Pedestrian Program sets state standards and guidelines for accommodating bicycle/pedestrian facilities throughout the state	<ul style="list-style-type: none"> • Bicycle and Pedestrian Policy • Bicycle and Pedestrian Laws • Bicycle Routes • Statewide Active Transportation Plan

2.15.4 MULTIMODAL PROCESS

Each State has a State Bicycle and Pedestrian Coordinator, and each FHWA Division Office has an FHWA Bicycle and Pedestrian Coordinator point of contact. The Multimodal Transportation Resources Division manages the Bicycle and Pedestrian Program for the state. The planner must consult with the Multimodal Transportation Resources Division on all transportation projects especially those that may have a substantial positive or negative impact on bicyclists and pedestrians and the facilities that serve them. Multimodal process is described in the NEPA handbook found on the TDOT Environmental Division website, Resources page.

2.16 GEOTECHNICAL

2.16.1 INTENT AND APPLICABILITY

Geotechnical studies are done on most transportation and infrastructure projects to determine the quality and characteristics of project surroundings, based on the geologic and soil properties. This information is used as part of the project design and location.

A Preliminary Geotechnical Study (PGS) is conducted by TDOT's Materials and Tests Division to identify geotechnical features (soils, geology, etc.) along the proposed transportation alignment, or several alignments, at a higher level, so as to aid in the selection of the preferred alternative. The PGS provides a preliminary assessment of the geologic feasibility of the project location, or possibly several locations, and provides a description of the study area from a geologic perspective, noting geology features along the proposed alignment that could result in geoenvironmental or geotechnical risk. This information generally includes the area's topography, soil types, subsurface formations, areas of unstable materials, caves, and sinkholes. Recommendations are also made to address any geotechnical issues identified.

The identification of and potential mitigation for any noted issues may require coordination with the TDOT Design Division. Some of these issues may result in alignment shifts and others, such as acid-producing rock (APM), will require commitments to be made in the NEPA document as to how the material will be handled and disposed of properly. The planner will summarize the results of the study for the NEPA document and will include any agreed-upon minimization or mitigation measures. The geotechnical study should be included in the project files. Following NEPA approval, in-depth geotechnical studies may be undertaken, as warranted, as the project is further developed.

2.16.2 KEY LAWS, REGULATIONS, AND GUIDANCE

There are no regulations applicable to environmental procedures regarding soils and geology; however, the geotechnical studies can inform the geologic feasibility of the proposed improvements and is therefore relevant to the review and determination of whether the proposed improvements can reasonably be constructed.

2.16.3 KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

TABLE 2-20: KEY REGULATORY AGENCIES AND RESOURCES

TENNESSEE DEPARTMENT OF TRANSPORTATION	
https://www.tn.gov/tdot/materials-and-tests/geo-technical-operations.html	
Jurisdiction/Interests	Key Items
The Materials and Test Division, Geotechnical Engineering Section (GES) provides geotechnical services in support of transportation improvement programs, and maintenance projects. GES has a set of	<ul style="list-style-type: none"> • Geotechnical Manual • Standard Operating Procedures

standards as well as a manual for geological requirements and soil stability.

2.16.4 GEOTECHNICAL PROCESS

The TDOT Materials and Tests Division has minimal coordination requirements related to the NEPA process; coordination often occurs with the environmental, design, and construction divisions within TDOT. No external coordination is required. Geotechnical process is described in the NEPA handbook found on the TDOT Environmental Division website, Resources page.

2.17 ENERGY

2.17.1 INTENT AND APPLICABILITY

Energy analysis is prepared to assess whether the energy that goes into the construction and design of a project does not exceed reasonable and practicable limits for large-scale transportation projects. A detailed energy analysis, including computations of BTU (British Thermal Unit) requirements, etc., may be needed for large-scale projects. For these projects, the NEPA document discusses in general terms the construction and operational energy requirements and conservation potential of the project alternative(s) and covers the major direct and/indirect energy impacts and conservation potential of each alternative. Direct energy impacts refer to the energy consumed by the vehicles using the facility. Indirect energy impacts include construction energy for the project and/or changes in type of vehicle usage or numbers of vehicles.

2.17.2 KEY LAWS, REGULATIONS, AND GUIDANCE

2.17.2.1 CEQ NEPA IMPLEMENTING REGULATIONS 40 CFR 1502.16(A)(6)

The CEQ regulations on the implementation of NEPA direct that the environmental consequences discussion within an EIS include a discussion on “energy requirements and conservation potential of various alternatives and mitigation measures.”

2.17.3 KEY REGULATORY AGENCIES, RESOURCES, AND AGREEMENTS

TABLE 2-21: KEY REGULATORY AGENCIES AND RESOURCES

ENVIRONMENTAL PROTECTION AGENCY (EPA)	
https://www.epa.gov/nepa/energy-efficiency-guidance-national-environmental-policy-act-reviews	
Jurisdiction/Interests	Key Items
EPA sets energy standards and specifications for all major projects and best management practices for promoting energy efficiency.	<ul style="list-style-type: none"> • Energy Efficient Guidance for NEPA Reviews

2.17.4 ENERGY PROCESS

No specific coordination is required for energy impacts; however, the EPA, when serving as a participating or cooperating agency for a NEPA document, is tasked with providing comments on energy related issues for the action under review. Energy process is described in the NEPA handbook found on the TDOT Environmental Division website, Resources page.