Finding of No Significant Impact

Interstate 65 Interchange
at Proposed State Route 109

Robertson and Sumner Counties, Tennessee

Submitted pursuant to *42 U.S.C. 4332(2) (C)*

by the

U.S. Department of Transportation
Federal Highway Administration

and

Tennessee Department of Transportation
Environmental Division

Cooperating Agency:
U.S. Army Corps of Engineers

Finding of No Significant Impact

Interstate 65 Interchange
at Proposed State Route 109
Robertson and Sumner Counties, Tennessee

Submitted pursuant to *42 U.S.C. 4332(2) (C)*

by the

U.S. Department of Transportation
Federal Highway Administration

and

Tennessee Department of Transportation
Environmental Division

Cooperating Agency:
U.S. Army Corps of Engineers

The FHWA has determined that this project will not have any significant impact on the human environment. This Finding of No Significant Impact is based on the approved Environmental Assessment, which has been independently evaluated by the FHWA and determined to adequately and accurately discuss the need, environmental issues, and impacts of the proposed project and the appropriate mitigation measures. It provides sufficient evidence and analysis for determining that an environmental impact statement is not required. The FHWA takes full responsibility for the accuracy, scope, and content of the EA approved on January 6, 2010. This FONSI should not be reviewed independent of the approved EA.

26 Oct 2010
Date of Approval

Federal Highway Administration

The following persons may be contacted for additional information concerning the document:

Mr. Charles J. O'Neill
Planning and Program Management
Team Leader
Federal Highway Administration
Tennessee Division Office
404 BNA Drive, Suite 508
Nashville, TN 37217
(615) 781-5770

Mrs. Ann Andrews
Transportation Manager 2
Environmental Division
Tennessee Department of Transportation
James K. Polk Building
505 Deaderick Street, Suite 900
Nashville, Tennessee 37243-0334
(615) 532-9948

Executive Summary

General Project Description

The Tennessee Department of Transportation (TDOT) proposes to construct a new interchange on Interstate 65 (I-65) near the existing Lake Springs Road crossing in Robertson and Sumner Counties, Tennessee (henceforth referred to as the I-65 Interchange). The project will include relocating State Route (SR) 109 from existing SR-109 east of I-65 to I-65 just south of the existing Lake Springs Road crossing. A new interchange will be constructed at I-65 and the Relocated SR-109 alignment. As part of the new interchange configuration, Vaughn Road (located west of I-65) will be extended eastward to connect to the Relocated SR-109 at the new I-65 terminus.

The nearest interchange to the south of the proposed I-65 Interchange is located in Tennessee at SR-52, approximately 3.3 miles south. The adjacent interchange to the north is located where SR-41 (U.S. 31W) crosses I-65 north of the Tennessee/Kentucky State Line at a distance of approximately 2.5 miles. The closest urban development, Portland, is located approximately 5 miles southeast of the proposed project in Sumner County. The provision of an interchange at this location will provide direct access to expanding industrial parks located on both sides of I-65 and a better connection to existing SR-109 and the surrounding area, including northern portions of Portland.

The primary purpose of the I-65 Interchange project will be to provide improved interstate access in the area that is compatible with local and regional goals and objectives. The new interchange will provide safe and adequate transportation facilities for traffic projected to be generated by the existing and anticipated population and employment growth in the project vicinity, some of which is directly associated with industrial developments in the immediate area.

This project has been undertaken in accordance with the Federal Highway Administration's (FHWA) policy for granting new or modified interstate access. An "Interchange Justification Study" (IJS) was conducted for this project and received operational approval from the FHWA on November 29, 2006, subject to completion of the NEPA process. The IJS is a structured report on existing and anticipated traffic flow conditions that demonstrates that ramp merging and diverging associated with the proposed interchange will operate at acceptable levels of traffic service, that the proposed ramp junctions will not have any adverse effects on ramp operations at nearby interchanges, and that the ramp intersections on the crossroad may be adequately accommodated for the anticipated traffic demands.

The I-65 Interchange project and widening of SR-41 (U.S. 31W) are included in the Nashville Area Metropolitan Planning Organization (MPO) Transportation Improvement Program (TIP), Fiscal Years 2008-2011, adopted August 22, 2007 (TIP Projects #2006-416 and #2008-32-018). The projects are consistent with the MPO's "2030 Long Range Transportation Plan" (LRTP) adopted October 19, 2005, amended June 21, 2006 (LRTP Project #5017). The LRTP is consistent with local and regional transportation plans and programs and was determined to be in conformity with the Clean Air Act Amendments of 1990. The proposed interchange project is also consistent with the State Transportation Improvement Program (STIP), Fiscal Years 2008-2011 and the State's LRTP.

Summary of Alternatives

The alternatives that were under consideration in the "Environmental Assessment" (EA) included the No-Build Alternative and one Build Alternative (see Figure 1).

The Build Alternative includes construction of a modified diamond interchange at proposed SR-109/Vaughn Road near the existing Lake Springs Road overpass. A one-lane collector-distributor (C-D) road will be constructed along southbound I-65 to eliminate all weaving movements at that location and provide entrances and exits to the Welcome Center and SR-109/Vaughn Road. A one-lane (loop) off-ramp will be provided for vehicles traveling to east/southbound SR-109. This configuration also will provide a two-lane on-ramp that reduces to one lane before merging onto the southbound C-D road. The northbound I-65 exit ramp will consist of two-lanes due to the projected high ramp volumes. The northbound on-ramp is also two-lanes that reduce to one lane before merging onto I-65. This Build Alternative configuration will allow the existing Tennessee Welcome Center to remain in place. This alternative also provides for an ultimate fly-over ramp for northbound I-65 vehicles needing to enter the industrial park west of the proposed interchange along Vaughn Road. This optional fly-over ramp would be constructed at an unknown time in the future as traffic volumes increase and there is a need for the additional ramp. The recommended interchange design will meet or exceed all "American Association of State Highway and Transportation Officials" (AASHTO) criteria.

In addition to the construction of interchange ramps and structure, the following highway improvements, which will complement the new interchange, are being considered part of the Build Alternative for this project:

- Widening of I-65 to six lanes from near Highland Road to near the Kentucky State Line (approximately 1.5 miles);
- Construction of the proposed Relocated SR-109 from existing SR-109 east of I-65 to I-65 to directly connect existing SR-109 with the new interchange;
- Extension of Vaughn Road from existing Vaughn Road west of I-65 to I-65 at the proposed Relocated SR-109 connection;
- Widening of SR-41 (U.S. 31W) to five lanes from the proposed Relocated SR-109 north to near SR-259 (approximately 0.5 miles); and
- Addition of turn lanes on SR-41 (U.S. 31W) at the proposed Relocated SR-109.

Figure 1. Selected Alternative (Build Alternative) for the I-65 Interchange at Proposed SR-109.

Selected Alternative – Build Alternative

TDOT has selected the Build Alternative for the following reasons:

1. *Public Input and Support from Local Officials:* TDOT began studying the proposed I-65 Interchange project at the request of local officials. Based on those studies and early coordination efforts conducted in the initial planning stages of this project, it was determined that construction of a new interchange near the existing Lake Springs Road overpass was justified and will provide improved interstate access to and from the surrounding areas, including adjacent industrial sites. This access is needed to support continued growth in the area, including both industrial and residential growth, and to help alleviate traffic on some of the existing secondary routes used to gain access to I-65. In addition, the preponderance of people who provided comments following the Public Hearing for the EA supported the Build Alternative (see the Public Hearing Summary beginning on Page 12 of this FONSI).
2. *TDOT has determined that the proposed Build Alternative will meet the stated purpose and need*: The Build Alternative will improve access to and from I-65 for local industries and residents; improve safety and traffic conditions in the local area and region; enhance economic development opportunities; improve regional connectivity; reduce travel times; and increase property values, especially for adjacent properties.

Summary of Environmental Impacts

The primary beneficial impacts of the proposed project include: (1) improved access to I-65; (2) improved safety and traffic conditions in the local area and region; (3) enhanced economic development opportunities within the project area; (4) improved circulation among the cities and communities in the project area; (5) improved regional accessibility; (6) reduced travel times; (7) increased property values with new opportunities for economic development, especially for adjacent properties; and (8) long-term energy savings.

The primary adverse impacts of the proposed project include: (1) displacement of two residences and one business to accommodate the new right-of-way (ROW); (2) a long-term increase in noise levels in the immediate project area, especially for residences along existing and proposed SR-109 and proposed Vaughn Road; (3) impacts to surface waters and floodplains including up to 511 feet of stream channel modification and 0.9 acres of floodplain; (4) temporary construction impacts (fugitive dust, siltation, construction noise, etc.); and (5) conversion of undeveloped areas to developed or maintained areas within the proposed interchange ROW resulting in a minor loss of agricultural land, wildlife habitat, and open space. The improved access with implementation of this alternative will make adjacent land desirable for development, especially for commercial and industrial uses. This will result in indirect adverse impacts associated with future development of currently undeveloped areas in the project vicinity. The ROW requirements will be refined during the design phase of the project, and these refinements should reduce the adverse impacts presented in the EA.

Ecology, Conceptual Stage Relocation Plan, Air and Noise Study, Historic Architecture, and Archaeology studies have been conducted for this project. The Technical Reports are on file with the TDOT Environmental Division. The findings of each of these studies are summarized in the approved EA.

SAFETEA-LU Statute of Limitations on Filing Claims

A Federal Agency may publish a notice in the *Federal Register*, pursuant to *23 USC 139 (1)*, indicating that one or more Federal agencies have taken final action on permits, licenses, or approvals for a transportation project. If such notice is published, claims seeking judicial review of those federal agency actions will be barred unless such claims are filed within 180 days after the date of publication of the notice, or within such shorter time period as is specified in the Federal laws pursuant to which judicial review of the Federal agency action is allowed. If no notice is published, then the periods of time that otherwise are provided by the Federal laws governing such claims will apply.

ENVIRONMENTAL MITIGATION COMMITMENTS

The project will be developed in accordance with TDOT's "Standard Specifications for Road and Bridge Construction", which addresses sediment and erosion control and siltation; channelization; floodplains; construction impacts; utility relocation; and traffic maintenance and detours. Best Management Practices will be stringently implemented throughout the construction period.

Project-specific environmental commitments are outlined below:

Social Commitments

The Build Alternative is expected to cause the displacement of two residential properties and one business. In addition to the habitable dwellings that this project is expected to displace, there is a vacant residential dwelling located in the proposed ROW. All attempts will be made during the design phase of the project to further minimize the relocation impacts associated with the proposed project.

A study of the local residential real estate market indicates sufficient housing and property for sale or rent to accommodate the residential and business displacements of this project. TDOT can ensure that the relocatees will be offered decent, safe, and sanitary housing within their financial means. Within a reasonable amount of time prior to displacement, a comparable replacement dwelling will be available or provided for the displaced family who is the initial occupant, or an adequate replacement dwelling will be available or provided for subsequent occupants. The State Relocation Program is realistic and is adequate to provide orderly, timely, and efficient relocation of persons displaced by this project.

To minimize the unavoidable effects of ROW acquisition and displacement of people and businesses, TDOT will carry out a ROW and relocation program in accordance with the *Tennessee Uniform Relocation Assistance Act of 1972* and the *Uniform Relocation Acquisition Act of 1970*. Relocation resources are available to all residential and business relocatees without discrimination.

TDOT will provide advance notification of impending ROW acquisition and, before acquiring ROW, have all properties appraised on the basis of comparable sales and land values in the area. Owners of properties from which ROW will be acquired will be offered and paid fair market value for their property. Displacees will be interviewed during the acquisition phase, and more specific solutions will be made at the time all the facts are gathered. No person lawfully occupying real property will be required to move without at least 90 days written notice of the intended vacation date, and no occupant of residential property will be required to move until decent, safe, and sanitary replacement housing is made available. "Made available" means that either the affected person has by themselves obtained and has the right of possession of replacement housing or TDOT has offered the relocatee decent, safe, and sanitary housing that is within their financial means and is available for immediate occupancy.

TDOT will assign a relocation agent to the project to carry out the relocation assistance and payments program. A relocation agent will contact the household to be relocated to determine individual needs and desires and to provide information, answer questions, and give help in finding replacement property. Relocation services and payments are provided without regard to race, color, religion, sex, or national origin.

Farmland Commitments
During the ROW phase of the project, TDOT will assess damages to farm properties and will compensate property owners accordingly. This process will include the assessment of fragments of farmland created by the project.

Natural Resources Commitments
TDOT will attempt to avoid or minimize stream and wetland impacts to the extent possible during the design phase of the project. However, there will be at least some unavoidable stream impacts. TDOT will work closely with permitting agencies during the design and permitting process to determine the types of bridges and culverts that will be necessary for crossing any perennial or intermittent streams. The project's drainage system will be designed to adequately handle and convey any increased runoff from the additional pavement and structures. Project development will be consistent with *Executive Order 11988* concerning floodplains.

If in-stream disturbance is necessary, the stream composition and bottom elevations will be altered to the least extent possible. Tree removal will be minimized to maintain stream characteristics. Work within the stream impact area will be performed in the dry season (summer months) to the greatest extent possible. There are no wetlands anticipated to be impacted by this project, therefore wetland mitigation is not necessary.

Unavoidable stream impacts will be mitigated as required by applicable laws and regulations. In an effort to minimize sedimentation impacts, erosion and sediment control plans will be included in the project construction plans. TDOT will also implement its Standard Specifications for Road and Bridge Construction, which includes erosion and sediment control standards for use during construction. A "Stormwater Pollution Prevention Plan" will be prepared for the project.

Stream channels requiring relocation (channelization) should be replaced on site to the extent possible, using techniques that will replace existing stream characteristics, such as length, width, gradient, and tree canopy. Water body impacts that cannot be mitigated on-site, such as impacts to springs that require rock fill, will either be mitigated off-site by improving a degraded system or by making a comparable payment to an in-lieu-fee program. An in-lieu-fee program will perform off-site mitigation under the direction of state and federal regulatory and resource agencies.

The State of Tennessee sets water quality criteria for waters of the state. These standards must be met during construction of the proposed project. Therefore, the project is not expected to adversely affect water quality in the area. In addition, TDOT will coordinate with TDEC's Division of Ground Water Protection in order to protect the quality of groundwater in the area.

The following measures will be used to the extent possible to help prevent the introduction and spread of invasive species:

- Native grasses, shrubs, and trees will be planted for beautification purposes or to prevent erosion, wherever needed. Native species will be consistent with local community types.
- Whenever possible, all disturbed soil will be seeded with temporary annual species to reduce the ability of exotics to become established. This will also act to reduce erosion potential during stormwater events; and

- Consideration will be given to the types and quality of plants and soils at borrow sites. Soil from borrow sites used as project area fill could contain viable plant parts or seeds and could increase the spread of invasive species to new locations.

All reasonable precautions will be taken to minimize short-term and long-term impacts to plants and wildlife and their habitat. Several mitigation measures that avoid or minimize short-term and long-term adverse impacts to species will include:

- Streamside and in-stream construction work will occur during dry periods.
- Removal of vegetation near the streams will occur only as necessary to accomplish the proposed action. Where removal of vegetation is necessary, bank stabilization measures will be used. Streambank restoration measures will include seeding with native species and the placing of rip-rap or other bank stabilization techniques, as outlined in TDEC's "Riparian Restoration and Streamside Erosion Control Handbook" (TDEC, 1998a).
- Proper sediment control measures, such as silt fences, will be used as outlined in the "Tennessee Erosion and Sediment Control Handbook" (TDEC, 2001b) and "Reducing Nonpoint Source Water Pollution by Preventing Soil Erosion and Controlling Sediment on Construction Sites" (Smoot et al., 1992).

Cultural Resources Commitments
TDOT, in coordination with the State Historic Preservation Officer (SHPO), commits to making the requisite investigations and mitigation necessary to avoid, minimize, or mitigate potential impacts to any cultural resources sites that may be discovered in the project area during construction.

If remains, artifacts, or other archaeological material is uncovered during construction, all construction in the area of the find will cease. The Tennessee Division of Archaeology [(615)741-1588] and the recognized Native American tribes will be contacted immediately so representatives may have the opportunity to examine and evaluate the material.

Visual Commitments
Short-term visual impacts are expected with any construction project due to construction equipment, grading, and storage of materials on site. Most visual impacts due to construction typically end once a project is complete. One of the goals of most modern construction projects, including TDOT projects, is typically to provide structures or facilities that fit into the surrounding setting or context as well as possible so the visual affect is an improvement over existing conditions. If not perceived as an improvement, the goal will be to maintain the general visual quality in an area to the extent practical.

Mitigation measures for visual impacts will include but will not be limited to:

- Consideration of post-project aesthetic appeal during the project's functional design, surveying, and clearing; and
- Preparation of areas within the ROW to permit successful revegetation programs that accommodate, preserve, and capitalize on mature and semi-mature stands of vegetation. Where feasible native vegetation will be used

during revegetation efforts. This may be accomplished either naturally or through planned seeding.

Geotechnical Commitments

TDOT conducted a preliminary geotechnical investigation of the project area and located two small depressions/sinkholes within the project area, one of which is located within the proposed ROW limits near Eubanks Road.

Due to the surrounding karst terrain, the project area might be susceptible to future sinkhole developments from groundwater removing soil particles via underground streams, and to ground subsidence from the collapses of rock above possible voids and/or caverns. While this potential is not considered a serious hindrance to roadway construction, there are no assurances that future problems related to karst activity will not occur.

During the final design phase, TDOT will develop measures to ensure that the aquatic life and groundwater in the area during and after project construction are protected. TDOT will also obtain a Class V Injection Well Permit from TDEC for any impacts to sinkholes.

Public Hearing Summary

TDOT held a Public Hearing for the proposed project on April 27, 2010 from 5:00 p.m. to 7:00 p.m. at the Portland High School in Portland, Tennessee. Approximately 54 people attended the Public Hearing based on the meeting sign-in sheets and eleven TDOT representatives and consultants were present to assist the public at the hearing. Public officials present at the hearing included: State Representative Mike McDonald; Mayor of Portland - Mayor Ken Wilbur; Robertson County Mayor – Mayor Howard Blakely; Portland City Councilman Luther Bratton; Portland Alderman Erin McClarran; and Director of Community Development for the City of Portland - Denise Geminden.

A handout, which contained the Public Hearing agenda, project history, and summary information, and a comment sheet was provided to each person as they signed-in. After providing attendees time to review the handouts, a slide presentation was given that explained the history of the project, the NEPA process, the findings of the NEPA study, and the next steps in the project development process. Following the presentation, attendees were invited to participate in a formal question and answer session, view the project displays/maps, and to talk one-on-one with the TDOT representatives.

The Hearing attendees were given the option of returning their completed comment sheets before leaving the facility by placing them in a drop box or mailing the comment card and/or letters to TDOT by May 18, 2010. A Court Reporter was also present to record the discussion at the Public Hearing and to take comments from individuals wanting to make verbal comments.

The official record had a total of 37 comments. There were 10 comments that were received through statements during the question-and-answer period, and 7 comments made to the court reporter. Additionally, 20 comment cards were completed and submitted at the hearing or were mailed or e-mailed within the 21-day comment period.

Of the 20 people who expressed a preference on the official comment cards, 19 favored the Build Alternative and 1 favored the No-Build Alternative. A total of 10 of the respondents were concerned citizens, 6 were affected landowners, and 4 were affected businesses.

The most commonly expressed issues or concerns discussed at the Public Hearing or on comment cards received following the hearing are outlined and addressed in Table 1.

Table 1. Summary of Public Hearing Comments and Comment Cards

Comment	Disposition
Comments related to support for the Build Alternative and/or the beneficial effects the new interchange is expected to provide including improved access to I-65, economic benefits, improved safety, improved regional connectivity, and better traffic flow on area roads (*19 comments*).	These comments are consistent with the findings of the EA and stated purpose and need for the project. Please refer to the EA for more detailed discussions regarding both the beneficial and adverse impacts anticipated to occur as a result of this project.
Comments concerning noise/vibration impacts due to traffic that may be caused by the project and/or existing noise/vibration levels in the area (*8 comments*).	A total of 14 receptors were identified as being impacted by this project. However, it is not likely that noise barriers, such as noise walls, will be feasible for this project.
Comments related to concerns for health of nearby residents due to dust impacts caused by this project and/or other construction activities in the area (*3 comments*).	Contractors shall be subject to all applicable provisions of Section 107 of TDOT's "Standard Specifications for Road and Bridge Construction." Adequate dust-control measures will be maintained so as not to cause detriment to the safety, health, welfare, or comfort of any person or cause any damage to any property or business. The potential for fugitive dust emissions typically is associated with building demolition, ground clearing, site preparation, grading, stockpiling of materials, on-site movement of equipment, and transportation of materials. Dust and airborne dirt generated by construction activities will be controlled through dust control procedures or a specific dust control plan, when warranted. Techniques that may warrant consideration include measures, such as minimizing track-out of soil onto nearby publicly-traveled roads, reducing speed on unpaved roads, covering haul vehicles, and applying chemical dust suppressants or water to exposed surfaces, particularly those on which construction vehicles travel. Any adverse impacts due to dust will be temporary and confined to the construction phase of the project.

Comment	Disposition
Comments regarding concerns that the project could negatively impact property values, impact their homes, or limit options to develop or expand businesses on the remaining property adjacent to their current structures (*3 comments*).	Property values could decrease in certain circumstances, but in other cases there could be a tendency for the property values to just hold steady and not escalate as rapidly as properties farther away from the project. This project may also result in immediate increases in property values for some properties due to the improved interstate access making the developable land in the project vicinity more desirable. Property values are subject to market fluctuations and other outside influences including new highways and other developments. Unfortunately, TDOT does not control these fluctuations. As the proposed project is currently designed, ROW will be acquired for roadway improvements. State law prohibits buying more property than that which is required for highway purposes. In regard to tracts where only a portion of the property is being acquired, the ROW appraisers will take this fact into consideration when assessing any damages. In order to minimize the unavoidable effects of ROW acquisition and the displacement of people and/or businesses, TDOT will carry out a ROW and Relocation Program in accordance with *Tennessee's Uniform Relocation Assistance Act of 1972*, and the *Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (PL91-646), as amended*. Owners of property to be acquired will be offered and paid fair market value, based on comparable sales and land use values in the area, for their property rights. Each person to be relocated will be contacted to determine individual needs and desires and to provide replacement property. Relocation services and payments are provided without regard to race, color, religion, or national origin.

Comment	Disposition
Comment related to concerns that the increased access to the area could potentially result in increased crime rates in the surrounding area and/or the need for additional security, if the interchange is constructed (*2 comments*).	Criminal matters are the responsibility of and under the jurisdiction of the local and/or county governments. The new interchange will provide improved access to the area for everyone, including shorter access and response times for emergency vehicles and law enforcement personnel compared to existing conditions.
Comments regarding the needs/desires for improvements to SR-109 beyond the limits of this proposed I-65 Interchange Build Alternative (*2 comments*).	The I-65 Interchange project is considered to have independent utility and is considered a necessary component of the transportation network based on existing regional plans, including those developed by Robertson and Sumner Counties and other local and regional planning organizations. Improvements to other roadways in the region will be identified and developed on an as need basis.
Comment regarding the potential for the project to exacerbate flooding near a small stream crossing along TGT Road near the proposed SR-109/TGT Road connector (*1 comment*).	The project's drainage system will be designed to adequately handle and convey any increased runoff from the additional pavement and structures. Slopes along the project will be seeded or sodded to prevent additional erosion. An erosion control plan will be developed and erosion control devices will be used during construction. Water quality permits will also be obtained and the provisions followed. Project development will be consistent with *Executive Order 11988* concerning floodplains.
Comment regarding support for the No-Build Alternative stating that the existing I-65 Interchanges to the north and south are adequate (*1 comment*).	Based on traffic studies, input from local officials and the public, and local/regional growth plans and projections, the proposed new interchange will provide several benefits to the area when compared to the No-Build Alternative. The Build Alternative will meet the purpose and need of the project and will not result in significant impacts.

Comment	Disposition
Comment regarding concerns that the project would result in additional traffic that would automatically result in increased traffic accidents in the area (*1 comment*).	Based on past accident statistics, TDOT believes this project will result in improvements in terms of traffic safety in the area by providing modern roadways that meet current design standards capable of handling increased traffic, including heavy truck traffic, when compared to existing roadways used in the area. Providing wider roadways and more direct interstate access for local truck traffic will help improve safety. In addition, improvements to some of the local roadways as part of this project will result in safer intersections in the area or rerouting of traffic from smaller roadways to new roadways of adequate design to handle the traffic. The project's design will incorporate all necessary safety features as stipulated in the appropriate state, federal, and AASHTO guidelines.
Comment regarding possible damage to buildings caused by use of dynamite in the area during the construction period (*1 comment*).	Contractors shall be subject to all applicable provisions of *Section 107* of TDOT's "Standard Specifications for Road and Bridge Construction" and of the *Tennessee Code Annotated, Title 68, Chapter 105, Parts 101-121*, including a free pre-blast survey for any dwelling house, public building, school, church, commercial, or institutional building normally occupied within 300 feet of any blast hole.

ENVIRONMENTAL ASSESSMENT

INTERSTATE 65 INTERCHANGE

at Relocated State Route 109
Robertson and Sumner Counties, Tennessee

Submitted Pursuant to the

National Environmental Policy Act of 1969

42 U.S.C. 4332(2)(c)

Lead Agencies:

U.S. Department of Transportation
Federal Highway Administration

Tennessee Department of Transportation

Cooperating Agency:

U.S. Army Corps of Engineers

Interstate 65 Interchange at Relocated State Route 109, Robertson and Sumner Counties, Tennessee

ENVIRONMENTAL ASSESSMENT

Submitted Pursuant to the National Environmental Policy Act of 1969
42 U.S.C. 4332(2)(c)
by
U.S. Department of Transportation, Federal Highway Administration and
Tennessee Department of Transportation, Environmental Division

In Cooperation with the U.S. Army Corps of Engineers

1/6/10
Date

Gary Fottrell
Federal Highway Administration

For additional information concerning this document, contact:

Mr. Gary Fottrell
Environmental Program Engineer
Federal Highway Administration
Tennessee Division Office
404 BNA Drive, Suite 508
Nashville, TN 37217
(615) 781-5770

Mr. Jim Ozment
Transportation Manager 2
Environmental Division
Tennessee Department of Transportation
505 Deaderick Street, Suite 900
Nashville, Tennessee 37243
(615) 741-5373

ENVIRONMENTAL ASSESSMENT SUMMARY

General Project Description

The Tennessee Department of Transportation (TDOT) proposes to construct a new interchange on Interstate 65 (I-65) near the existing Lake Springs Road crossing in Robertson and Sumner Counties, Tennessee (henceforth referred to as the I-65 Interchange). The project would include relocating State Route (SR) 109 from existing SR-109 east of I-65 to I-65 just south of the existing Lake Springs Road crossing. A new interchange would be constructed at I-65 and the Relocated SR-109 alignment. As part of the new interchange configuration, Vaughn Road (located west of I-65) would be extended eastward to connect to the Relocated SR-109 at the new I-65 terminus.

The nearest interchange to the south of the proposed I-65 Interchange is located in Tennessee at SR-52, approximately 3.3 miles south. The adjacent interchange to the north is located where SR-41 (U.S. 31W) crosses I-65 north of the Tennessee/Kentucky State Line at a distance of approximately 2.5 miles. The closest urban development, Portland, is located approximately 5 miles southeast of the proposed project in Sumner County. The provision of an interchange at this location would provide direct access to expanding industrial parks located on both sides of I-65 and a better connection to existing SR-109 and the surrounding area, including northern portions of Portland.

The primary purpose of the I-65 Interchange project would be to provide improved interstate access in the area that is compatible with local and regional goals and objectives. The new interchange would provide safe and adequate transportation facilities for traffic projected to be generated by the existing and anticipated population and employment growth in the project vicinity, some of which is directly associated with industrial developments in the immediate area.

This project has been undertaken in accordance with the Federal Highway Administration's (FHWA) policy for granting new or modified interstate access. An Interchange Justification Study (IJS) was conducted for this project and received operational approval from the FHWA on November 29, 2006, subject to completion of the NEPA process. The IJS is a structured report on existing and anticipated traffic flow conditions that demonstrates that ramp merging and diverging associated with the proposed interchange will operate at acceptable levels of traffic service, that the proposed ramp junctions will not have any adverse effects on ramp operations at nearby interchanges, and that the ramp intersections on the crossroad may be adequately accommodated for the anticipated traffic demands.

Summary of Alternatives

The No-Build Alternative and one Build Alternative were considered in this environmental assessment (EA).

No-Build Alternative

The No-Build Alternative would mean that no interchange would be provided near the location where Lake Springs Road crosses over I-65. Access to properties within the project vicinity would continue to be provided by existing local roadways, especially SR-41 (U.S. 31W). It is

likely that the continued urban growth anticipated in the project vicinity will result in increased traffic volumes that will likely result in a reduced level of service (LOS) and reduced safety on existing secondary roads currently used to provide access to I-65. The No-Build Alternative is used as a baseline comparison for the project Build Alternative.

Build Alternative

In addition to the No-Build Alternative, one Build Alternative is proposed for this project. The conceptual layout of the proposed Build Alternative includes a modified diamond interchange with a collector-distributor (C-D) road to eliminate all weaving movements on I-65. The one lane C-D road would provide entrances and exits to the Welcome Center and SR-109. A one-lane (loop) off-ramp would provide for vehicles traveling to SR-109. This configuration also would provide a two-lane on-ramp that reduces to one lane before merging onto the southbound C-D road. The northbound I-65 exit ramp would provide two-lanes due to the projected high ramp volumes. The northbound on-ramp is also two-lanes that reduce to one lane before merging onto I-65. This configuration would allow the existing Tennessee Welcome Center to remain in place. This alternative also provides for an ultimate fly-over ramp for northbound I-65 vehicles needing to enter the industrial park west of the proposed interchange. This fly-over ramp would be constructed at an unknown time in the future as traffic volumes increase and there is a need for the additional ramp. The recommended interchange design would meet or exceed all American Association of State Highway and Transportation Officials (AASHTO) criteria.

In addition to the construction of interchange ramps and structure, the following highway improvements, which would complement the new interchange, are being considered part of the Build Alternative for this project:

- Widening of I-65 to six lanes from near Highland Road to near the Kentucky state line (approximately 1.5 miles);
- Construction of the proposed Relocated SR-109 from existing SR-109 east of I-65 to I-65 to directly connect existing SR-109 with the new interchange;
- Extension of Vaughn Road from existing Vaughn Road west of I-65 to I-65 at the proposed Relocated SR-109 connection;
- Widening of SR-41 (U.S. 31W) to five lanes from the proposed Relocated SR-109 north to near SR-259 (approximately 0.5 miles); and
- Addition of turn lanes on SR-41 (U.S. 31W) at the proposed Relocated SR-109.

Summary of Environmental Consequences

The No-Build Alternative

The portion of Robertson and Sumner Counties surrounding the proposed I-65 Interchange location would continue to become more developed as urban growth continues to spread in the area. New industrial and residential developments are expected to continue in the project vicinity in the foreseeable future resulting in continued increases in traffic volumes, including truck traffic. Under the No-Build Alternative, access to the interstate would not be improved resulting in continued increases in traffic volumes on SR-41 (U.S. 31W) and the existing I-65 interchanges located north and south of the proposed project area. As traffic volumes increase, the existing secondary roads currently used as routes to and from I-65 would likely experience

reduced safety and decreased LOS. The No-Build Alternative would result in declining traffic service for those who currently depend on those secondary routes.

Build Alternative

The Build Alternative would have both beneficial and adverse impacts. The primary benefits of the Build Alternative include:

- improved access to I-65;
- improved safety and traffic conditions in the local area and region;
- enhanced economic development opportunities within the project area;
- improved circulation among the cities and communities in the project area;
- improved regional accessibility to the project area;
- reduced travel times; and
- increased property values with new opportunities for economic development, especially for adjacent properties.

The primary adverse impacts of the Build Alternative would include:

- displacement of residences and businesses to accommodate the new ROW;
- an increase in noise levels in some portions of the project area, especially for residences along existing Lake Springs Road and SR-41 (U.S. 31W) near the intersection with the proposed SR-109 intersection;
- temporary construction impacts (fugitive dust, siltation, construction noise, traffic detours, etc.);
- impacts to surface waters; and
- conversion of undeveloped areas to developed or maintained areas within the proposed interchange right-of-way (ROW) resulting in a minor loss of agricultural land, wildlife habitat, and open space.

In addition, the improved capacity and efficiency anticipated with implementation of the Build Alternative may make some of the land within the project area more desirable for development, including residential, retail/commercial, and industrial uses. This would result in indirect adverse impacts associated with future development of currently undeveloped areas along the adjacent highways, especially Vaughn Road, Lake Springs Road, TGT Road, SR-41 (U.S. 31W), and SR-109. Any impacts associated with this project would also be cumulative to other past, present, and reasonably foreseeable projects or activities that have occurred, are occurring, or will occur in the project vicinity. Local planners may be able to control the location, amount, and types of developments that occur in the area by establishing and implementing land use plans and zoning restrictions that ensure that the new interchange does not promote developments or land uses that conflict with local plans, goals, and objectives. The basic concepts discussed in the National Cooperative Highway Research Program (NCHRP) Report 466 “Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects” were used during the indirect impacts analyses.

Table S.1 provides summary information for the proposed I-65 Interchange Build Alternative. Chapter 3 of this document contains more details regarding the project’s affected environment and environmental consequences.

Table S.1. Summary of project data and resources present within the Interstate 65 Interchange study area in Robertson and Sumner Counties, Tennessee.

Resource	Build Alternative
Total Size of Study Area (acres)*	297
Land Uses/Wildlife Habitat Present:	
Forest (acres)**	15
Old Field (acres)	3
Pasture	41
Agriculture (acres)	97
Developed/Disturbed (acres)	140
Open Water (acres)	1
Residential Displacements	2
Business Displacements	1
Farmland Conversion Impact Rating Score (Robertson Co./Sumner Co.)	146/103
Noise Receptors Impacted	14
Aquatic Resources Present	
Streams Present/Impacted (number)	3
Stream Channel in Corridor (feet)	3,137
Streams Channelized (number of feet modified/encapsulated)	3 (511)
Ponds Present (number)	1
Wetlands (acres)	0.12
100-year Floodplain (acres)	0.9
Archaeological Sites Impacted (number)	0
Historic Sites Impacted (number)	0
Hazardous Materials Sites Impacted (number)	0

* Unless otherwise noted in the specific categories above, the study area for the land use and natural resources reported in this table was 500-foot wide (including 250-foot on either side of the centerline of each ramp or roadway segment making up the proposed interchange under the Build Alternative). Because the actual ROW would narrower than 500 feet, the actual impacts to many of the resources in this table would be less. This data characterizes the worst case scenario for the impacts that would occur under the Build Alternative. This data can be extrapolated to the narrower ROW boundary in most cases. Exact impacts to the various resources in this table will be refined following development of more detailed design plans.
Source: Parsons, 2009

Permits

The acquisition of permits would occur prior to initiating construction activities, pursuant to Section 69-3-108(a) of the Tennessee Water Quality Control Act of 1977 and other state and Federal laws and regulations. The following permits are likely to be required:

- Clean Water Act (CWA) Section 404 Permit – required for construction that involves the placement of dredge and fill material in waters of the U.S. Typical Waters of the U.S. include rivers, blueline streams, headwaters streams, and special aquatic sites, such as wetlands. Section 404 Permits would be required by the U.S. Army Corps of Engineers (USACE) prior to construction;
- Aquatic Resource Alteration Permit (ARAP) – required for any alterations of state waters, including wetlands, that do not require a Federal (Section 404) permit. ARAP permits are required for construction at locations where the proposed project involves placement of fill in the following: a pond that is spring fed or impacts springs; reservoirs; wetlands; blueline streams; intermittent blueline streams on the U.S. Geological Survey (USGS) quadrangle map; and any stream that supports any form of aquatic life or is in the vicinity of a State-listed endangered species. ARAP permits are issued by the Tennessee Department of Environment and Conservation (TDEC), Division of Water Pollution Control;
- National Pollutant Discharge Elimination System (NPDES) Stormwater Construction Permit – required for grubbing, clearing, grading, or excavation of one or more acres of land. NPDES permits are issued by TDEC's Division of Water Pollution Control; and
- Tennessee Construction General Permit for Stormwater Discharges from Construction Activities (TNCGP) – required by operators of construction sites in Tennessee.

In addition, the State of Tennessee may require water quality certification under Section 401 of the CWA. Section 401 certification ensures that activities requiring a Federal permit or license will not cause pollution in violation of state water quality standards.

SAFETEA-LU Statute of Limitations on Filing Claims

FHWA may publish a notice in the Federal Register, pursuant to 23 USC §139(l), indicating that one or more Federal agencies have taken final action on permits, licenses, or approvals for the subject transportation project. If such notice is published, claims seeking judicial review of those Federal agency actions will be barred unless such claims are filed within 180 days after the date of publication of the notice, or within such shorter time period as is specified in the Federal laws pursuant to which judicial review of the Federal agency action is allowed. If no notice is published, then the periods of time that otherwise are provided by the Federal laws governing such claims will apply.

Environmental Commitments

Social Commitments

Provision of bicycle or pedestrian accommodations will be determined during the remainder of the planning and final design phase of the project. TDOT will continue to work with local officials and citizens to determine what features can be included within the ROW of the new interchange, such as shoulders wide enough to accommodate pedestrians and bicyclists.

Farmland Commitments

During the ROW phase of the project, TDOT will assess damages to farm properties and will compensate property owners accordingly. This process will include the assessment of fragments of farmland created by the project.

Natural Resources Commitments

During development of final design plans, TDOT would attempt to avoid or minimize stream impacts to the extent possible. This would include avoiding rechanneling streams where possible. However, there would be at least some unavoidable stream and pond impacts associated with this project. TDOT will coordinate with regulatory agencies to obtain the appropriate permits to fill or drain the ponds, as necessary. As part of the permit process, TDOT would work with the appropriate regulatory agencies to determine what mitigation measures are required based on the specific impacts determined using final design plans developed during the design phase of the project.

Cultural Resources Commitments

TDOT in coordination with the SHPO commits to making the requisite investigations and mitigation necessary to avoid, minimize, or mitigate potential impacts to any cultural resources sites that may be discovered in the project area during construction. If remains, artifacts or other archaeological material is uncovered during construction, all construction in the area of the find will cease. The Tennessee Division of Archaeology and the recognized Native American tribes will be contacted immediately so representatives may have the opportunity to examine and evaluate the material.

Visual Commitments

Mitigation measures for visual impacts will include, but will not be limited to:

- Consideration of post-project aesthetic appeal during the project's functional design, surveying and clearing; and
- Preparation of areas within the ROW to permit successful revegetation programs that accommodate, preserve, and capitalize on mature and semi-mature stands of vegetation. Where feasible native vegetation will be used during revegetation efforts. This may be accomplished either naturally or through planned seeding.

TDOT will continue to work closely with the local officials and residents to obtain and develop ideas for designing and constructing a new interchange that fits the context of the area and with any future plans for the area.

Interstate 65 Interchange at Relocated State Route 109, Robertson and Sumner Counties, Tennessee

ENVIRONMENTAL ASSESSMENT

TABLE OF CONTENTS

ENVIRONMENTAL ASSESSMENT SUMMARY S-1

CHAPTER 1 - PURPOSE AND NEED 1

1.1 PROJECT STATUS 1

1.2 PURPOSE OF PROJECT 4

1.3 NEED FOR THE PROJECT 4

CHAPTER 2 - ALTERNATIVES 17

2.1 THE NO-BUILD ALTERNATIVE 17

2.2 THE BUILD ALTERNATIVE 17

2.3 ALTERNATIVES PREVIOUSLY CONSIDERED BUT ELIMINATED 20

CHAPTER 3 - ENVIRONMENTAL CONSEQUENCES 24

3.1 INTRODUCTION 24

3.2 SOCIAL/COMMUNITY AND ECONOMIC RESOURCES (HUMAN RESOURCES) AFFECTED ENVIRONMENT 25

3.3 ECOLOGICAL 45

3.4 CULTURAL RESOURCES 69

3.5 AIR QUALITY 72

3.6 NOISE 85

3.7 HAZARDOUS WASTE SITES 91

3.8 ENERGY 93

3.9 SECTION 4(F) PROPERTIES 95

3.10 CONSTRUCTION IMPACTS 95

3.11 INDIRECT AND CUMULATIVE IMPACTS ANALYSIS 97

3.12 SUMMARY OF ENVIRONMENTAL CONSEQUENCES 106

3.13 ENVIRONMENTAL PERMITS 108

CHAPTER 4 - PUBLIC INVOLVEMENT 109

4.1 INITIAL COORDINATION WITH FEDERAL, STATE, AND LOCAL AGENCIES 109

4.2 SUMMARY AND DISPOSITION OF COMMENTS RECEIVED FROM THE INITIAL COORDINATION 110

4.3 PUBLIC INVOLVEMENT MEETINGS 118

4.4 TENNESSEE ENVIRONMENTAL STREAMLINING AGREEMENT 119

APPENDIX A - INITIAL COORDINATION LETTERS A-1

APPENDIX B - CULTURAL RESOURCES COORDINATION EFFORTS AND COPIES OF LETTERS B-1

List of Tables

Table S.1. Summary of project data and resources present within the Interstate 65 Interchange study area in Robertson and Sumner Counties, Tennessee. S-4

Table 1.1. Traffic volume projections for the I-65 Interchange project area. 8

Table 3.1. Total land use acreages within the 500-foot study corridor of the I-65 Interchange Build Alternative. 26

Table 3.2. Population Data: Tennessee, Sumner County, Robertson County, and the City of Portland. 30

Table 3.3. Minority and Low-Income Populations within the I-65 Interchange Project Area in Robertson and Sumner Counties, Tennessee. 33

Table 3.4. Top Ten Manufacturers in Robertson and Sumner Counties, Tennessee, 2006. 40

Table 3.5. Retail Sales Trends within the I-65 Interchange Project Area in Robertson and Sumner Counties, Tennessee, 2001-2006 ($million). 41

Table 3.6. Real Property Appraised Values within Robertson and Sumner Counties, 2004-2008 ($Million)1 42

Table 3.7. Prime and unique farmland taken by the I-65 Interchange Build Alternative in Robertson and Sumner Counties, Tennessee. 45

Table 3.8. Streams located within the 500-foot Study Corridor for the I-65 Interchange Build Alternative in Robertson and Sumner Counties, Tennessee. 47

Table 3.9. State and Federally-listed Species known to occur in Robertson and Sumner Counties, Tennessee. 59

Table 3.10. Total habitat acreages potentially affected by the I-65 Interchange in Robertson and Sumner Counties, Tennessee. 65

Table 3.11. Summary of National Primary Ambient Air Quality Standards. 74

Table 3.12. Design Year 2031 VMT Projections on Affected Roadway Network 81

Table 3.13. Noise Abatement Criteria in 23 CFR 772. 87

Table 3.14. TDOT Criteria to Define Noise Increase. 87

Table 3.15. Year 2031 Design Hour Sound Levels – Undeveloped Areas 90

Table 3.16. Analysis Area by Resource Category Considered in the Cumulative Impacts Analyses for the I-65 Interchange Project. 99

Table 3.17. Summary data for the I-65 Interchange project in Robertson and Sumner Counties, Tennessee. 107

LIST OF FIGURES

Figure 1-1. Project Vicinity Map for the I-65 Interchange at Relocated SR-109 in Robertson and Sumner Counties, Tennessee. 3

Figure 1-2. Graphical Depiction of the Levels of Service (LOS) used to describe Roadway Capacity. 9

Figure 1-3. Comparison of traffic volume projections for the No-Build Alternative (existing conditions) and Build Alternative for the I-65 Interchange at Relocated SR-109. 11

Figure 2-1. Layout of the proposed Build Alternative for the Interstate 65 Interchange at Relocated State Route 109 in Robertson and Sumner Counties, Tennessee. 19

Figure 2-2. Previously Considered Alternate #1 from the 2007 Interchange Justification Study for the Interstate 65 Interchange Project. 21

Figure 2-3. Previously Considered Alternate #2 from the 2007 Interchange Justification Study for the Interstate 65 Interchange Project. 22

Figure 2-4. Previously Considered Alternate #3 from the 2007 Interchange Justification Study for the Interstate 65 Interchange Project. 23

Figure 3-1. Existing land uses within the I-65 Interchange Study Area. 27

Figure 3-2. Percent of Population that is Minority within the I-65 Interchange Project Area. 34

Figure 3-3. Percent of Population below Poverty within the I-65 Interchange Project Area. 35

Figure 3-4. Watercourses, Ponds, and Sinkholes within the I-65 Interchange Study Area. 49

Figure 3-5. 100-Year Floodplain in the I-65 Interchange Study Area. 57

Figure 3-6. U.S. Annual Vehicle Miles Traveled (VMT) vs. Mobile Source Air Toxics Emissions, 2000-2020* 77

Figure 3-7. Map of EPA regulated sites within the I-65 Interchange Vicinity. 92

CHAPTER 1 - PURPOSE AND NEED

1.1 Project Status

1.1.1 Project Description and Setting

The Tennessee Department of Transportation (TDOT) proposes to construct a new interchange on Interstate 65 (I-65) at Relocated State Route (SR) 109 near the existing Lake Springs Road crossing in Robertson and Sumner Counties, Tennessee (henceforth referred to as the I-65 Interchange). As part of the new interchange configuration SR-109 would be relocated from existing SR-109 to I-65. Vaughn Road (located west of I-65) would be extended eastward to connect to the Relocated SR-109 at the new I-65 terminus. The following roadway improvements, which would complement the I-65 Interchange, are also included in this I-65 Interchange Environmental Assessment (EA):

- Widening of I-65 to six lanes from near Highland Road to near the Kentucky state line (approximately 1.5 miles); and
- Widening of SR-41 (U.S. 31W) to five lanes from Relocated SR-109 north to near SR-259 near the Kentucky state line (approximately 0.5 miles). This project would include addition of turn lanes on SR-41 (U.S. 31W) at Relocated SR-109.

Aerial view of the I-65 Interchange project vicinity.

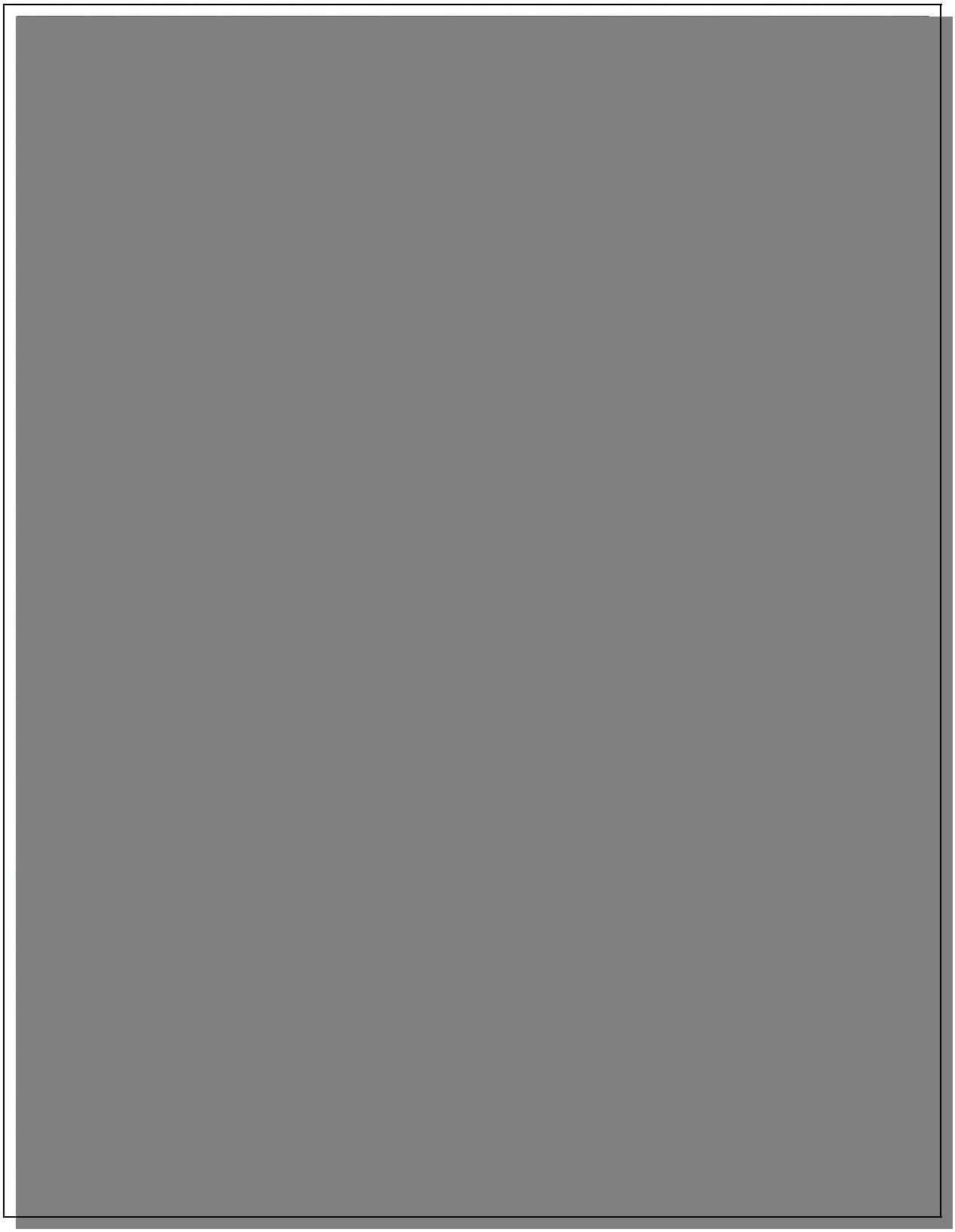
The nearest interchange to the south of the proposed I-65 Interchange is located in Tennessee at SR-52, approximately 3.3 miles south. The adjacent interchange to the north is located where SR-41 (U.S. 31W) crosses I-65 north of the Tennessee/Kentucky State Line at a distance of approximately 2.5 miles. The closest urban development, the City of Portland, is located approximately 5 miles southeast of the proposed project in Sumner County. The provision of an interchange at this location would provide direct access to expanding industrial parks located on both sides of I-65 and a better connection to existing SR-109 and the surrounding area, including northern portions of Portland. Figure 1-1 shows the project vicinity in Robertson and Sumner Counties, Tennessee.

The I-65 Interchange project and widening of SR-41 (U.S. 31W) are included in the Nashville Area Metropolitan Planning Organization (MPO) Transportation Improvement Program (TIP), Fiscal Years 2008-2011, adopted August 22, 2007 (TIP Projects #2006-416 and #2008-32-018). The projects are consistent with the MPO's 2030 Long Range Transportation Plan (LRTP) adopted October 19, 2005, amended June 21, 2006 (LRTP Project #5017). The LRTP is consistent with local and regional transportation plans and programs and was determined to be in conformity with the Clean Air Act Amendments of 1990. The proposed interchange project is also consistent with the State Transportation Improvement Program (STIP), Fiscal Years 2008-2011 and the State's LRTP.

1.1.2 Project History

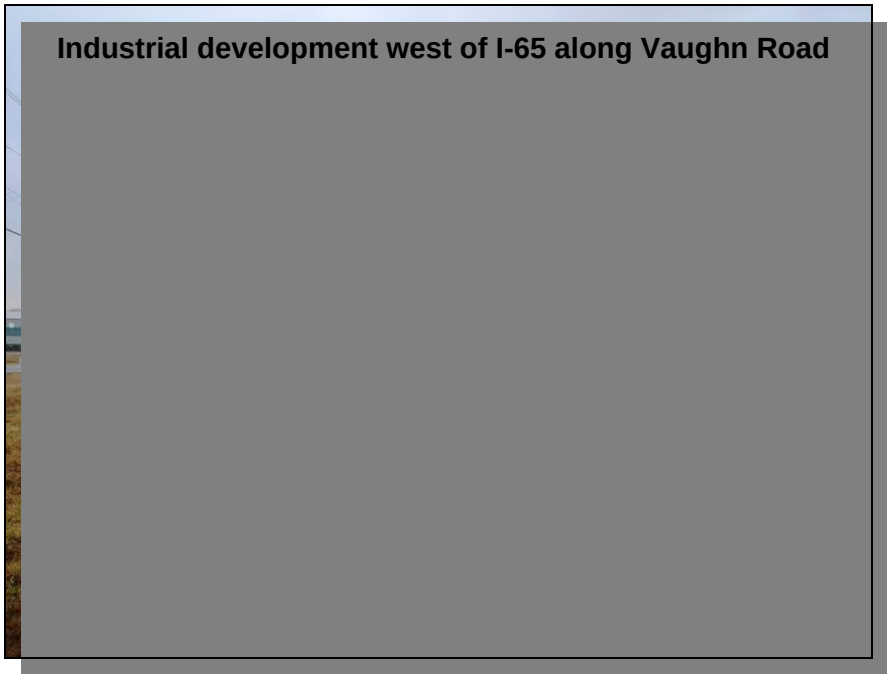
This project has been undertaken in accordance with the FHWA policy for granting new or modified interstate access. An Interchange Justification Study (IJS) was conducted for this project and received operational approval from the FHWA on November 29, 2006, subject to completion of the NEPA process. The IJS is a structured report on existing and anticipated traffic flow conditions that demonstrates that ramp merging and diverging associated with the proposed interchange will operate at acceptable levels of traffic service, that the proposed ramp junctions will not have any adverse effects on ramp operations at nearby interchanges, and that the ramp intersections on the crossroad may be adequately accommodated for the anticipated traffic demands.

Figure 1-1. Project Vicinity Map for the I-65 Interchange at Relocated SR-109 in Robertson and Sumner Counties, Tennessee.



1.2 Purpose of Project

The primary purpose of the proposed I-65 Interchange is to provide safe and adequate access to the surrounding area to address past and present industrial and residential development, and future development anticipated to occur. Due to the proximity of the project area to Nashville and I-65, it is anticipated that the area will continue to experience urban growth.



Industrial development west of I-65 along Vaughn Road

1.3 Need for the Project

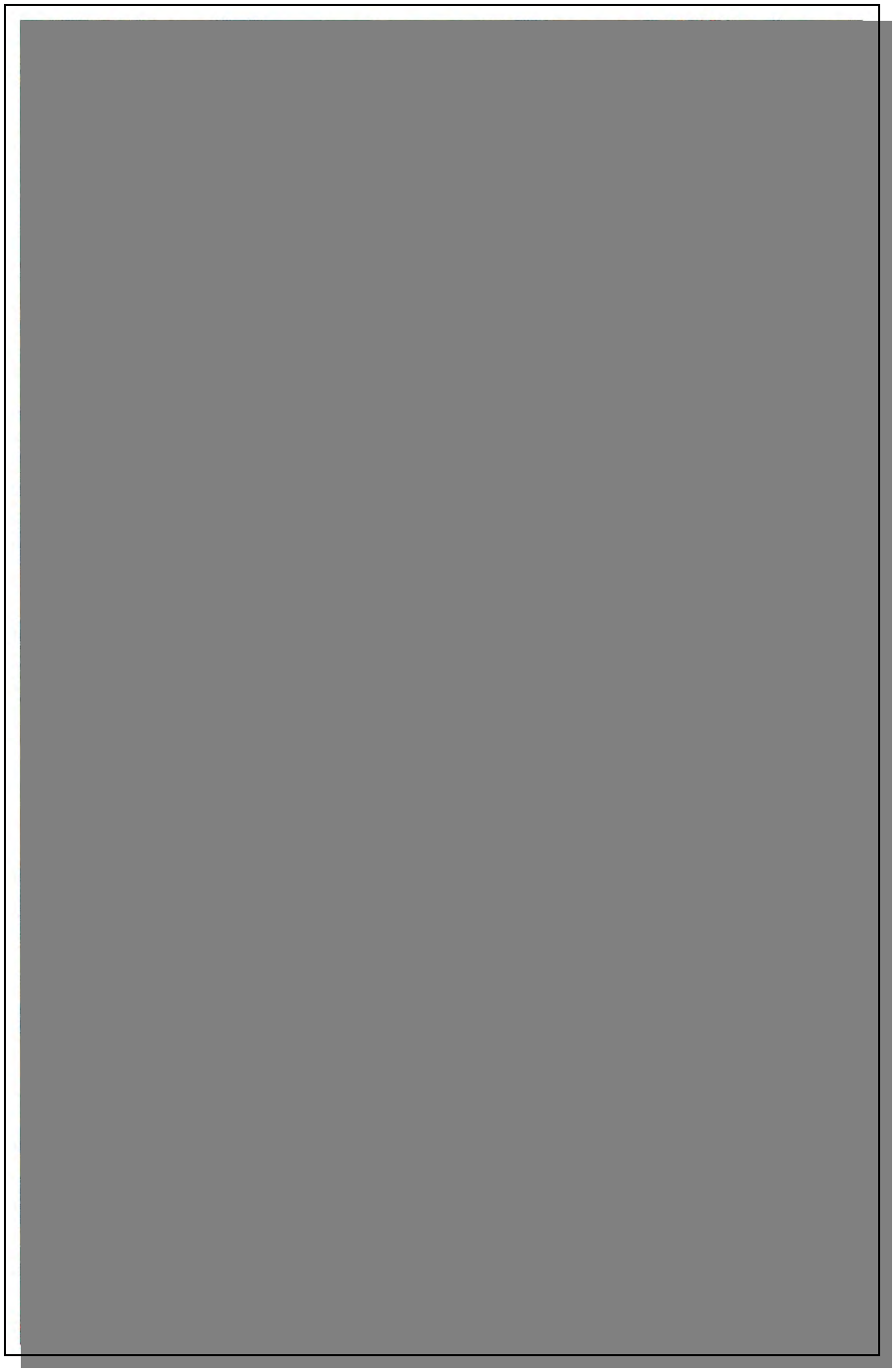
1.3.1 Transportation Demand

According to the MPO's 2030 LRTP, the demand for transportation within the region is directly related to the demographic, economic, and land use characteristics of the area. Because the area is within approximately forty minutes travel time to the Nashville Central Business District it is anticipated that residential developments will continue to occur in this area. Population and employment growth are expected to continue in the MPO's planning area, including the I-65 Interchange area. This growth is expected to increase the demand for transportation facilities. For instance Sumner County had a 35.6% increase in population from 1990-2002 with a 40.0% increase in employment during the same period. Populations in Sumner County are expected to increase by 61% by the year 2030 according to data presented in the LRTP. Employment is expected to increase by 62% in Sumner County. Population increases will continue to increase transportation demand in the area.

The proposed interchange would be adjacent to industrial developments on both the east and west sides of I-65. The industrial sites are expected to continue to generate more traffic volume in the area that would be further amplified by residential development. Without the proposed interchange, access to the industrial park and the area surrounding the proposed project site would be via local two-lane routes. This would result in an increase in overall Vehicle Miles Traveled (VMT) and an increased likelihood of crashes.

1.3.2 Existing and Future Conditions

Within the project area, I-65 currently consists of a rural four lane, controlled access facility with a grass median and approximately 280-300 feet of right-of-way (ROW). The current SR-109 is a non-access controlled rural two-lane road with a pavement width of 24 feet and approximately 50 to 70 feet of ROW. The current SR-41 (U.S. 31W) is a non-access controlled rural two-lane road with a pavement width of 24 feet and approximately 80 to 100 feet of right of way (ROW). Lake Springs Road is currently a non-access controlled rural two-lane road with a pavement width of 18 feet and approximately 50-60 feet of ROW.



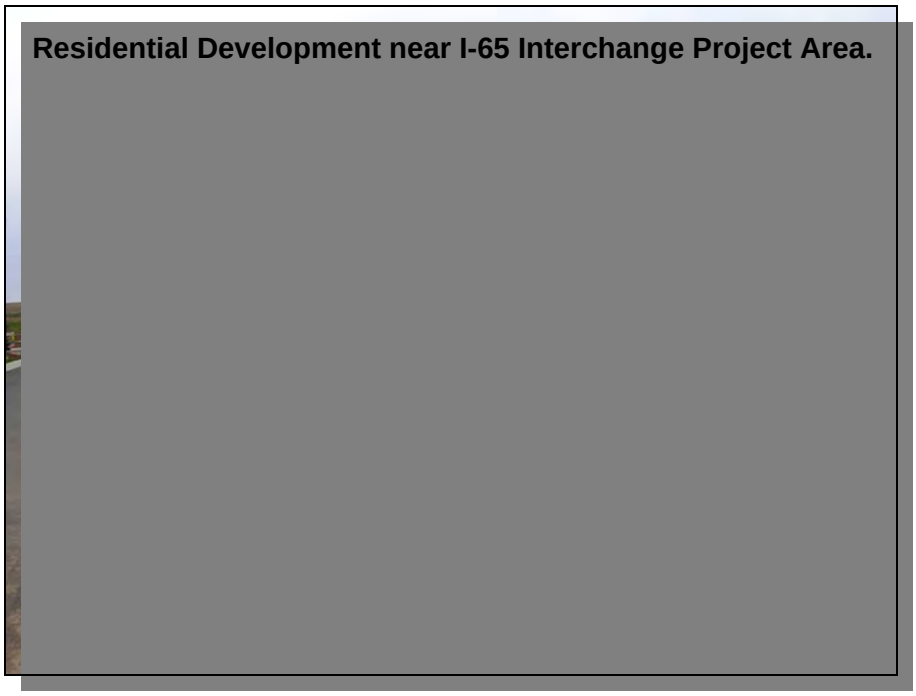
The adjacent interchanges are located a sufficient distance from the project and will not be adversely affected by the proposed new interchange. The adjacent interchange to the south is SR-52 at a distance of 3.3 miles. The adjacent interchange to the north is located where SR-41 (U.S. 31W) crosses I-65 north of the Tennessee/Kentucky State Line at a distance of approximately 2.5 miles. The forecasted traffic shows capacity problems for both of the adjacent interchanges unrelated to the proposed interchange project. The closest urban development, the City of Portland, is located five miles east of the proposed project in Sumner County.

Currently travelers from the south wanting to access the industrial areas and other local destinations utilize the

SR-52 Interchange, then travel east on SR-52 to SR-41 (U.S. 31W), and then travel north to Lake Springs Road. From the north on I-65, the shortest route to the industrial areas is via the SR-41 (U.S. 31W) interchange in Kentucky, then south to Lake Springs Road. The level of service (LOS) on SR-41 (U.S. 31W) is already indicating this road is close to capacity due to the extra traffic.

At this time, public transit is not available in Robertson County. The Long Range Transportation Plan for the Nashville Metropolitan Planning Organization mentioned a study that was conducted identifying I-65 North from Nashville to Sumner County as one of the five radial corridors having the greatest potential to support HOV facilities. SR-41 (U.S. 31W) serves as a line between Robertson and Sumner Counties. The I-65 corridor lies just to the west of the county line within Robertson County. However, only parts of Robertson County are within the MPO boundary, and no specific plans for HOV lanes exist for the portion of I-65 affected by the proposed interchange project. The recommended interchange design would meet or exceed all American Association of State Highway and Transportation Officials (AASHTO) criteria.

1.3.2.1 Social or Economic Conditions



Population and employment growth are expected to continue in the MPO's planning area, including the I-65 Interchange area. Populations in Sumner County are expected to increase by 61% by the year 2030 according to data presented in the LRTP. Employment is expected to increase by 62% in Sumner County by the year 2030. Similar growth rates are considered likely in Robertson County, especially the eastern portion of the county with access to I-65. This continued growth in the area will require expansion and/or improvements to infrastructure, such as utilities, transportation facilities, and other services. The proposed interchange is expected to help support the growth in the region, because it will directly connect SR-109 to I-65. The SR-109 corridor is listed as a regional strategic corridor in the State's Long Range Transportation Plan. More detailed information regarding social and economic conditions and potential impacts to these resources are contained in Chapter 3 of this EA.

1.3.2.2 Land Use

Land use in the project area is primarily rural with scattered residential and industrial development. A large industrial park has recently been developed just west of I-65 in addition to the relatively recent industrial development located off of Fred White Road. These developments make an additional interchange access to I-65 highly desirable. The access point may also serve to accelerate the area's residential and commercial development. More detailed information regarding land use is contained in Chapter 3 of this EA.

According to the LRTP Sumner County is characterized by a concentration of commercial and industrial uses within or near primary cities and low-density residential developments in surrounding areas. The same types of land use trends are expected in the I-65 project area with industrial developments continuing in the immediate project vicinity and scattered residential developments in the broader area. The location of the project area being adjacent to I-65 with direct access to larger cities, such as Nashville, Tennessee and Bowling Green and Louisville, Kentucky make this an optimal area for industrial development. Because the project area is within approximately 40 minutes travel time to the Nashville Central Business District, it is anticipated that residential developments will continue to occur in this area.

Some highway-oriented commercial development, to include service stations, fast food restaurants, truck stops, and motels, would possibly occur in the immediate area, if the interchange were constructed. Potential impacts anticipated to be associated with those developments will be discussed in the EA along with the impacts associated with construction and use of the interchange.

Local planners can help promote controlled growth in the area by implementing local zoning and helping to identify important growth corridors or likely transportation needs as early as possible. In addition, any environmentally sensitive areas should be identified as soon as possible, so such areas can be protected as the area continues to grow, whether due to the new interchange, or due to the long-term growth anticipated in the region mentioned in the MPO's LRTP.

1.3.2.3 Traffic Analyses

The issues surrounding the proposed project location relate more to access issues than to Traffic Systems Management (TSM). However, a detailed traffic analysis was completed by TDOT as part of the IJS to determine future travel anticipated for the study area. This analysis indicated that the proposed interchange would have a beneficial impact on at least some components of the existing roadway network. That analysis included turning movement counts, machine tube counts, truck classification counts, etc. TDOT personnel also met with the industrial park developer for guidance concerning employment projections, truck trips, and total industrial park build-out plans. To address the truck traffic situation, the adjacent existing I-65 Interchanges were analyzed along with using ITE Trip Generation Software for the proposed development of an 800-acre industrial park. The Nashville MPO model was used for all forecasted annual average daily traffic (AADT) numbers. The model implemented growth and development out to the year 2030. Table 1.1 contains a summary of traffic volume projections under existing conditions (without the proposed new I-65 Interchange) for the I-65 Interchange project area.

Table 1.1. Traffic volume projections for the I-65 Interchange project area.

	Base Year (2011)	Design Year (2031)			
Roadway	**AADT**	**AADT**	**Percent Trucks in AADT**	**DHV**	**Percent Trucks in DHV**
I-65 (from south of SR-52 to north of U.S. 31W in KY.	52,990	78,660	41%	8,879	27%
SR-109 (from SR-52 to SR-41)	12,230	19,570	16%	2,556	11%
SR-41 (from SR-52 to I-65 in KY)	12,390	29,910	14%	3,221	10%

AADT = Annual Average Daily Traffic (number of vehicles)
DHV = Design Hour Volume (i.e., number of vehicles projected during peak traffic times)
Source: TDOT Project Planning Division, September *2006*

Local officials are anticipating residential development in the immediate vicinity in addition to the substantial proposed industrial development. Without an interchange, much of the development would likely still occur in the general vicinity, but access to the area would be via SR-41 (U.S. 31W). Traffic volumes are expected to more than double by 2031 on SR-41 (U.S. 31W) between SR-52 and I-65, the section within the proposed I-65 Interchange study area. This would result in increased traffic flow problems and decreased safety on SR-41 (U.S. 31W) and at the existing interchanges on I-65 at SR-52 to the south and at U.S. 31W in Kentucky.

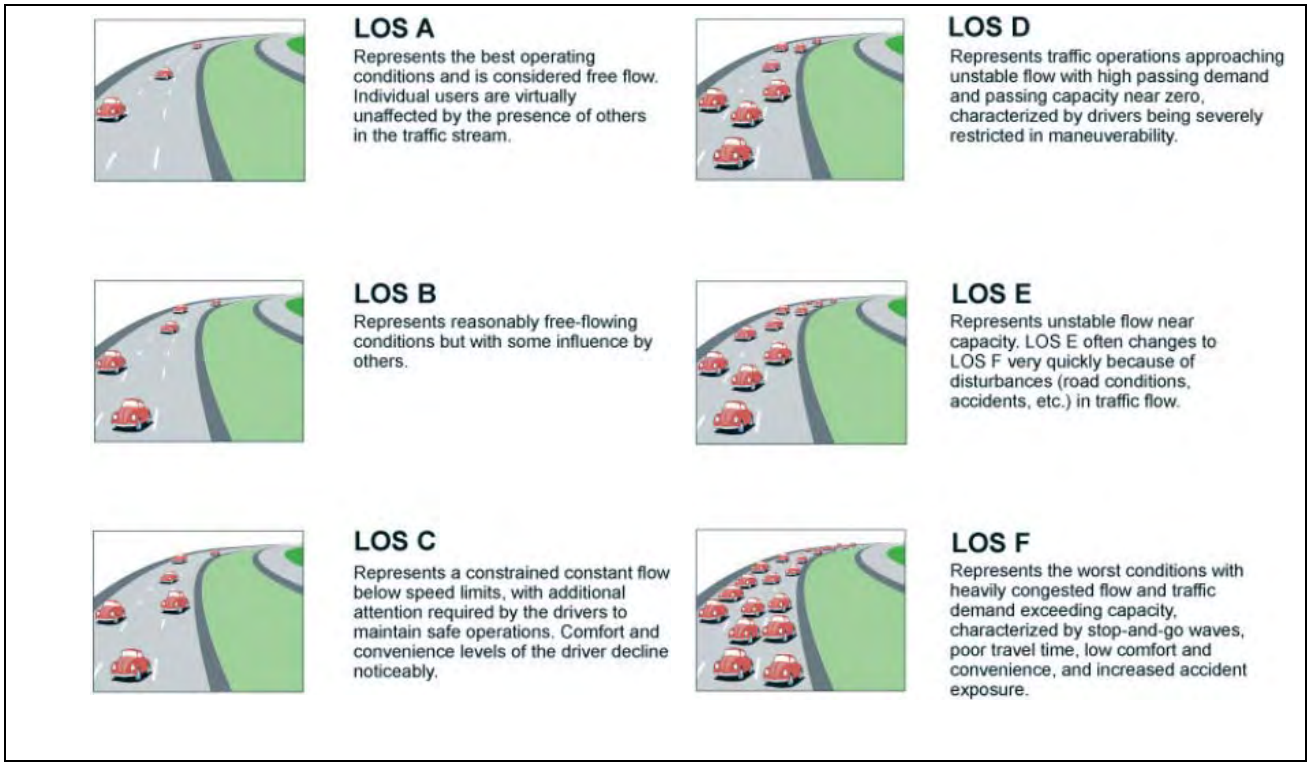
The proposed interchange would provide for all traffic movements. It would become the first I-65 interchange for motorists entering Tennessee from Kentucky. The proposed layout of the interchange would include provisions for the future widening of I-65 to six lanes. The proposed layout also accommodates continued service of the existing Tennessee Welcome Center/rest area that is on I-65 southbound just north of Lake Springs Road.

The anticipated character of future traffic flow was investigated using a process called "capacity analyses," which provides operational characteristics of a highway facility in terms of "Levels of Service" (LOS). The proficiency of roads is described by their LOS. The LOS criteria reflect the ability of roads to accommodate motor vehicle traffic and subsequent physical and psychological comfort levels of drivers. The LOS analysis incorporates several factors including traffic volumes, number of lanes, terrain, percent of no passing zones, directional split, heavy vehicles, and shoulder widths.

LOS is a qualitative measure that describes the character of traffic conditions related to speed and travel time, freedom to maneuver, traffic interruptions, etc. There are six levels ranging from “A” to “F” with “F” being the worst. Each level represents a range of operating conditions.

Figure 1-2 contains a graphical representation of the different LOS to show what each may look like in an everyday situation.

Figure 1-2. Graphical Depiction of the Levels of Service (LOS) used to describe Roadway Capacity.



Capacity analyses were conducted to determine the relative performance of the proposed interchange using an anticipated base year of 2011 and design year 2031. The Design Hour Volume (DHV) estimates were used in these analyses. The DHV is basically an estimate of the number of vehicles projected during the peak hour of traffic in both the morning (AM) and evening (PM).

Traffic Findings

The findings of the updated analyses revealed operational problems that could be improved through the development of the proposed interchange. Relevant findings from the IJS regarding anticipated freeway operations for No-build conditions on I-65 were confirmed. South of the proposed interchange, during peak traffic periods, I-65 is anticipated to decline from LOS C or LOS D to LOS F due to traffic congestion. This finding applies both to the I-65 freeway mainline and to ramp merging operations. North of the proposed I-65 interchange near the Kentucky border, the interstate has already been widened to six lanes so LOS are anticipated to remain at acceptable levels through the design year.

The IJS findings regarding anticipated interchange operations were reviewed for both of the nearby interchanges. At the I-65 interchange with SR-52, ramp terminal intersections on SR-52

are anticipated to operate at LOS F until they are signalized. If there are no geometric improvements, operations are anticipated at LOS F even if signalized conditions for the year 2031. At the I-65 interchange with U.S. 31W in Kentucky, the ramp termini intersections are currently signalized and operate at LOS C. They are anticipated to decline to LOS F operations by 2031.

It is apparent from the traffic operations analyses that the area has some deficiencies in the near term. The effects of anticipated increases in traffic volume are expected to result in substantial deficiencies in roadway capacity on segments of I-65, SR-41 (U.S. 31W), SR-109, and Lake Springs Road.

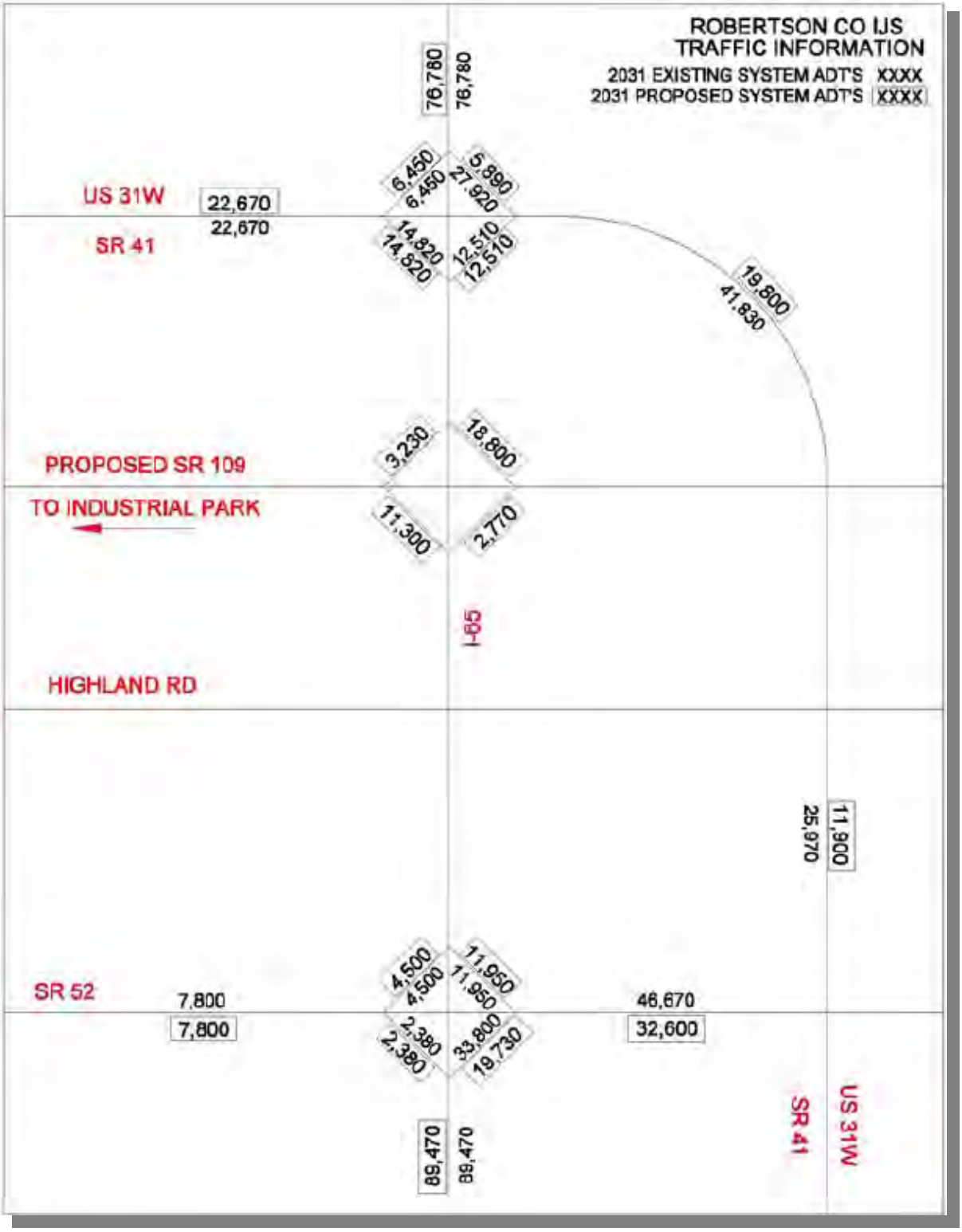
Currently I-65 experiences average daily travel that consists of over 38% trucks, and this is expected to grow to over 40% in the coming years. Existing SR-109 experiences approximately 16% truck travel on an average day. These high truck percentages contribute to expectations that these roadways will degrade to very poor LOS. The local travel on SR-41 (U.S. 31W), SR-109, and other local roads in Robertson and Sumner Counties will receive increased volumes of truck traffic associated with the industrial parks that are in development in the project vicinity. The proposed interchange would serve to reduce some of this truck travel, especially on SR-41 (U.S. 31W) and on other local roads.

Future Traffic Operations with the proposed new I-65 Interchange

Traffic volumes were projected to determine what effect the new I-65 Interchange would have on existing roadways and the adjacent interchanges that would be most effected. Comparing the 2031 existing and proposed system traffic volumes, the proposed interchange would redistribute traffic traveling to the industrial parks in the project study area and reduce the volumes along SR-52 and SR-41. The diagram contained in Figure 1-3 below displays the system traffic volumes that would be anticipated, if the project were constructed.

The primary effect of the new I-65 Interchange on traffic would be in reducing traffic volumes on SR-41 (U.S. 31W) in the section between the two adjacent interchanges to the north and south. Traffic volumes would also be reduced along SR-52 between I-65 and SR-41(U.S. 31W) to the east. Traffic volumes would be substantially reduced at the northbound on ramp from U.S. 31W to I-65. The northbound I-65 off-ramp at SR-52 would also experience a substantial reduction in traffic volume, if the new I-65 Interchange is constructed at Relocated SR-109.

Figure 1-3. Comparison of traffic volume projections for the No-Build Alternative (existing conditions) and Build Alternative for the I-65 Interchange at Relocated SR-109.



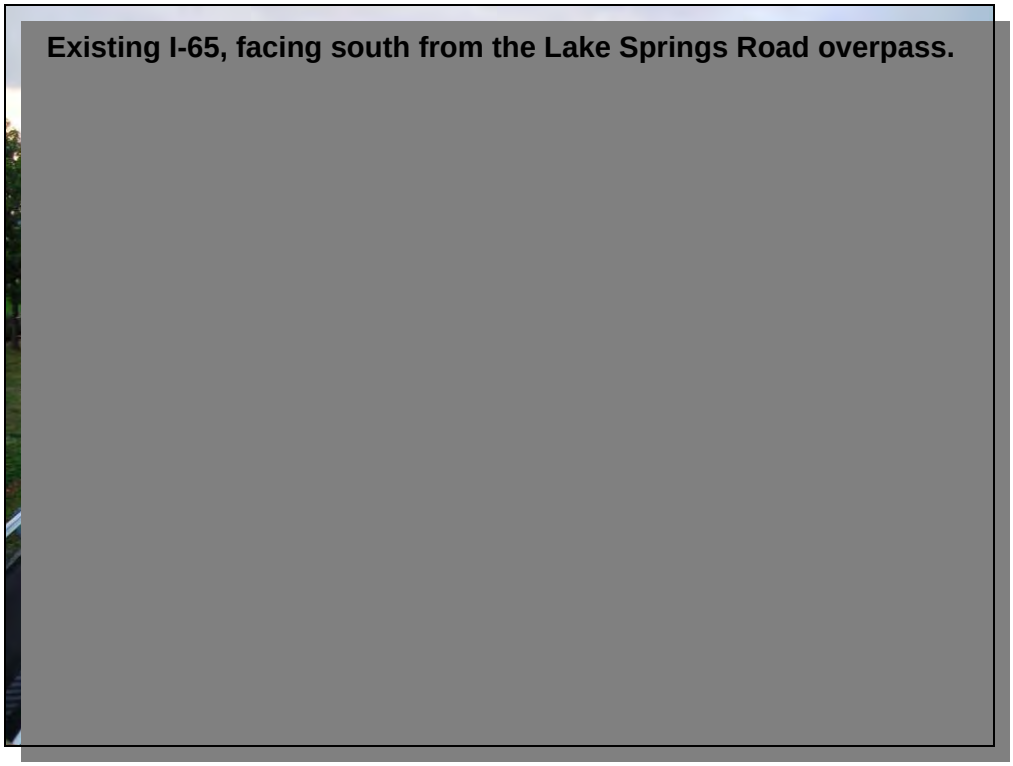
An operational analysis of current and future traffic was completed for all ramps and ramp termini within the limits of the interchange area. The forecasted traffic showed capacity problems for the adjacent interchanges as 2031 approaches that are unrelated to the proposed new interchange. The SR-52 interchange will experience LOS F, but that is related to increased traffic volumes along SR-52 unrelated to the industrial parks and other development near the proposed new I-65 Interchange. The U.S. 31W interchange LOS will remain similar to the existing system with some approaches improving due to the vehicles from the south using the new interchange.

Traffic analysis for 2011 indicated an acceptable LOS for all ramps at the proposed I-65 Interchange at Relocated SR-109, assuming that I-65 will be widened to 6 lanes. It is understood that market forces will dictate the rate at which the industrial park will become fully occupied and how soon additional residential developments will expand into the area. It is anticipated that both types of development will occur gradually based on present economic conditions. Should conditions strengthen, development could occur at a faster pace.

The LOS on northbound I-65 will be LOS C or D in the base year 2011. All other locations within the interchange study area will operate at equal or better LOS. There will be substantial increases in traffic volume by 2031, and there will be a corresponding worsening of the LOS regardless of the new interchange being constructed or not. While the proposed interchange should not have an adverse impact upon the safety and operation of I-65, the substantial increases in I-65 traffic volumes will bring about LOS F by 2031. This would occur with or without the proposed new interchange.

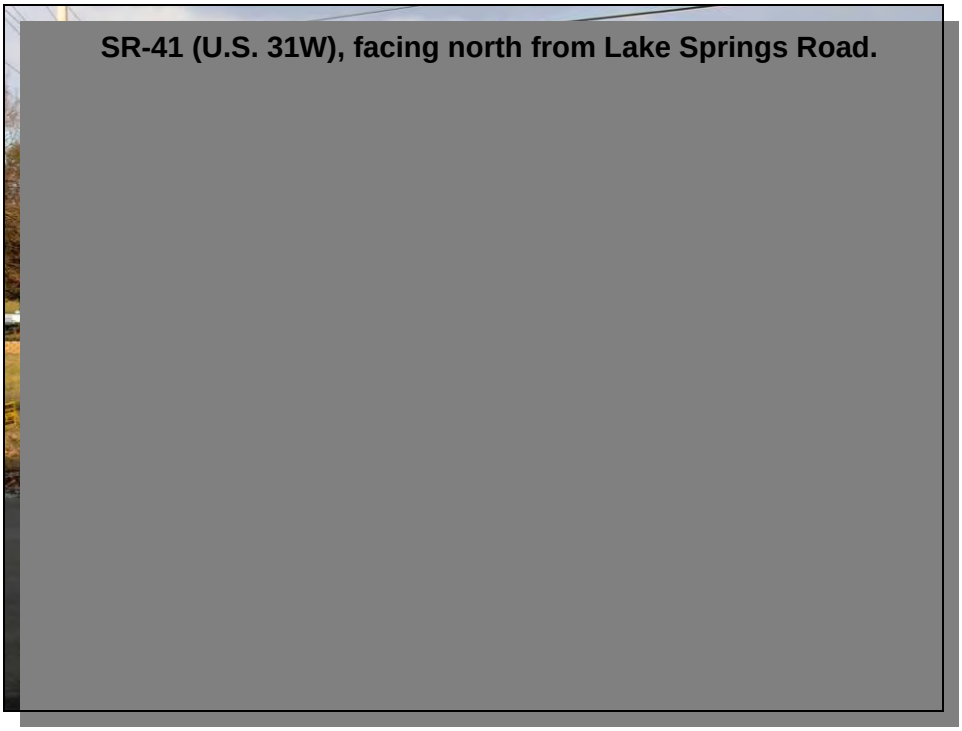
1.3.3 Roadway Deficiencies

This project is primarily being developed to deal with access issues and existing and anticipated industrial and residential growth in the region rather than being due to roadway deficiencies on existing routes. However, it is apparent from the traffic operations analyses that the area has some



Existing I-65, facing south from the Lake Springs Road overpass.

deficiencies in the near term. The effects of anticipated increases in traffic volume are expected to result in substantial deficiencies in roadway capacity on segments of I-65, SR-41 (U.S. 31W), SR-109, and Lake Springs Road. The new interchange has potential to substantially reduce traffic volumes through the design year on SR-41 (U.S. 31W) between SR-52 and its intersection with I-65 in Kentucky. This would reduce the potential safety and operational impacts due to any design deficiencies that may exist along that portion of the route.



SR-41 (U.S. 31W), facing north from Lake Springs Road.

Construction of a new interchange would alleviate some of the traffic from the adjacent interchanges to the north and south of the proposed new interchange. It would also remove some of the truck traffic from those areas by providing a more direct route to industrial areas located in the immediate project vicinity and some of the sites in the northern portions of Portland.

Lake Springs Road west of SR-41 (U.S. 31W), facing west.

Within the project area, I-65 currently consists of a rural four lane, controlled access facility with a grass median and approximately 280-300 feet of right-of-way (ROW). SR-109 is currently a non-access controlled rural two-lane road with a pavement width of 24 feet and approximately 50 to 70 feet of ROW. SR-41 (U.S. 31W) is a non-access controlled rural two-lane road with a pavement width of 24 feet and approximately 80 to 100 feet of ROW. Lake Springs Road is currently a non-access controlled rural two-lane road with a pavement width of 18 feet and approximately 50-60 feet of ROW.

There are foreseeable deficiencies of I-65 within the immediate project area. It is expected that I-65 will need to be widened to continue to provide adequate capacity for increasing traffic volumes and to provide route continuity with the Kentucky portion of I-65. Kentucky has recently widened I-65 to six lanes in Kentucky just north of the project area. There is currently no interchange at the Lake Springs Road crossing over I-65. The existing Lake Springs Road is a narrow roadway that is not ideal for truck and other traffic using the roadway to gain access to the growing industrial areas west of I-65. The proposed project, including the construction of SR-109 from existing SR-109 to Vaughn Road east of I-65 would remove traffic from the narrow Lake Springs Road and provide a much safer and efficient route. The new roadway would be designed with adequate lane and shoulder widths capable of handling the current and anticipated truck traffic.

Other secondary routes used to access the area from the existing I-65 interchanges are also showing signs of operational deficiencies due to increasing traffic volumes, especially truck traffic. Those trends are expected to continue as the area continues to become more developed. In association with the other roadway improvements projects identified earlier in this document, the new interchange would help to alleviate some of the stress on portions of the existing roadways.

Depending on the amount of growth that occurs, some anticipated access and traffic issues might conceivably be solved by implementing Traffic Systems Management (TSM) projects on the existing secondary routes. However, it is anticipated that providing the proposed additional access point to I-65 would be more of a long-term proactive solution and would likely supersede the need for some of the other potential future TSM-related projects that would likely be needed without the new interchange.

It is possible other improvement projects to the local roadway system would become necessary due to construction of the proposed interchange. The new interstate access point may promote additional secondary developments in the area that could put additional traffic volumes on some of the local roadways not designed to handle high volumes of traffic. The necessity of such improvements would be identified on a case-by-case basis depending on where and how developments occur. Local planners can help identify the need for such improvements as they arise.

1.3.4 Safety

Even without the proposed interchange, much of the anticipated growth and development would still likely occur in the general project vicinity, but access to the land would be via secondary, less direct routes. The issues surrounding the proposed project location relate more to access

issues than to safety concerns at the present time. However, as the anticipated growth occurs in the area and more traffic is generated, there is a possibility that safety issues could be identified as a secondary need for this project. The improved interstate access and other improvements associated with this project will improve safety in the area due to improved roadway designs that are better suited for heavy trucks and increasing traffic volumes in general.

1.3.5 System Linkage

The existing transportation system in the project area consists of I-65 as the main artery connecting the area to Nashville, Tennessee to the south and Bowling Green, Kentucky and eventually Louisville, Kentucky to the north. As described earlier, other routes in the area are SR-109, which provides a connection from SR-41 (U.S. 31W) southward to Portland and continues to the south to I-40 east of Nashville, and SR-41 (U.S. 31W). SR-41 (U.S. 31W) is a two-lane road that runs north-south parallel to I-65 and provides access to Franklin, Kentucky to the north and the Nashville area to the south. Lake Springs Road is a small rural two-lane road that currently serves as a primary access point to Vaughn Road and the large industrial developments located west of I-65 near the proposed project area.

Currently travelers from the south wanting to access the industrial areas and other local destinations utilize the SR-52 Interchange, then travel east on SR-52 to SR-41 (U.S. 31W), and then travel north to Lake Springs Road. From the north on I-65, the shortest route to the industrial areas is via the SR-41 (U.S. 31W) interchange in Kentucky, then south to Lake Springs Road.

The proposed interchange would provide an important link in the overall transportation system in the region by providing more direct access to the existing and future industrial and residential developments surrounding the proposed site. The new interchange and associated secondary components of the project would improve the entire area's access to I-65 and relieve some of the traffic from the secondary roads in the area, especially truck traffic needing access to the adjacent industrial sites. Directly connecting SR-109 to the interstate would also serve to improve the transportation linkage in the entire region. SR-109 is considered a regional Strategic Corridor according to the State's Long Range Transportation Plan. This route would provide better access to I-65 to the north, via the proposed new interchange, and I-40 to the south, east of Nashville. This project would complement other separate improvements to SR-109 between I-65 and the Portland area that have occurred or are anticipated to occur in the future.

1.3.6 Modal Relationships

The CSX Transportation railroad lies just east of the proposed project area and east of SR-109 between Portland, Tennessee and Franklin, Kentucky. The railroad continues southward through Nashville and northward through Bowling Green, Kentucky. It is not anticipated that measurable intermodal benefits would be derived from the proposed project, because there are no existing intermodal facilities in the project vicinity. However, with increasing development of industrial areas in the project vicinity, it is possible that a railroad spur or other intermodal connections could be developed in the future.

It is not anticipated that this project would result in measurable effects to the safety or operation of existing railroad crossings in the area, such as the SR-259 crossing in Mitchellville. Potential safety and traffic flow impacts of existing railroad crossings will be considered in the EA.

CHAPTER 2 - ALTERNATIVES

A No-Build Alternative and one Build Alternative are being studied as part of this I-65 Interchange EA.

2.1 The No-Build Alternative

The No-Build Alternative would mean that no interchange would be provided at or near the existing Lake Springs Road crossing of I-65. Access to properties within the project vicinity would continue to be provided by existing local roadways. It is likely that the continued urban growth and industrial development anticipated in the project vicinity will result in increased traffic volumes that will result in reduced LOS and reduced safety on existing secondary roads used to provide access to the interstate. The No-Build Alternative would not meet the stated purpose and need of this project.

Within the project area, I-65 currently consists of a rural four-lane, controlled access facility with a grass median and approximately 280-300 feet of right-of-way (ROW). SR-109 is currently a non-access controlled rural two-lane road with a pavement width of 24 feet and approximately 50-70 feet of ROW. SR-41 (U.S. 31W) is a non-access controlled rural two-lane road with a pavement width of 24 feet and approximately 80-100 feet of ROW. Lake Springs Road is currently a non-access controlled rural two lane road with a pavement width of 18 feet and approximately 50-60 feet of ROW. Under the No-Build Alternative it is likely that only minor maintenance and safety improvements would be made to these roadways within the immediate project area.

Analyses conducted for the No-Build Alternative takes into account what, if any, consequences would occur in the project area if the I-65 Interchange were not constructed. In this EA, the No-Build Alternative serves as a baseline comparison for the proposed Build Alternative, which would have inherent adverse and beneficial consequences.

2.2 The Build Alternative

In addition to the No-Build Alternative, one Build Alternative is proposed for this project. The proposed Build Alternative was identified as “Alternate #4” in the IJS. The conceptual layout of the proposed Build Alternative includes a modified diamond interchange with a collector-distributor (C-D) road to eliminate all weaving movements on I-65. The one lane C-D road would provide entrances and exits to the Welcome Center and SR-109. A one-lane (loop) off-ramp would provide access for vehicles traveling south on I-65 and needing to gain access to SR-109 or Vaughn Road. This configuration also would provide a two-lane on-ramp that reduces to one lane before merging onto the southbound I-65 C-D road. The northbound I-65 exit ramp would provide two-lanes due to the projected high ramp volumes. The northbound on ramp is also two-lanes that reduce to one lane before merging onto I-65. This configuration would allow the existing Tennessee Welcome Center to remain in place. This alternative also provides for an ultimate fly-over ramp for northbound I-65 vehicles needing to enter the industrial park west of the proposed interchange. This fly-over ramp would be constructed at an unknown time in the future as traffic volumes increase the need for the additional ramp. The

recommended interchange design would meet or exceed all AASHTO criteria. Figure 2-1 shows the general conceptual layout of the proposed new interchange and associated improvements.

In addition to the construction of interchange ramps and structure, the following highway improvements, as shown on Figure 2-1, are being considered part of the Build Alternative for this project:

- Widening of I-65 to six lanes from near Highland Road to near the Kentucky state line (approximately 1.5 miles);
- Construction of the proposed Relocated SR-109 from existing SR-109 east of I-65 to I-65 to directly connect existing SR-109 with the new interchange;
- Extension of Vaughn Road from existing Vaughn Road west of I-65 to I-65 at the proposed Relocated SR-109 connection;
- Widening of SR-41 (U.S. 31W) to five lanes from the proposed Relocated SR-109 north to near SR-259 (approximately 0.5 miles); and
- Addition of turn lanes on SR-41 (U.S. 31W) at the proposed Relocated SR-109.

The Build Alternative layout was slightly altered from the IJS following the August 2008 Field Review meeting that involved FHWA, TDOT, and several Participating Agencies. The change involved moving the small connector road that connects the proposed Relocated SR-109 alignment to TGT Road, just east of the TGT Road/SR-41 (U.S. 31W) intersection. The original connector road would have required direct impacts to a small stream that flows under TGT Road. The new connector road was moved east to avoid or minimize those direct stream channel impacts.

Figure 2-1. Layout of the proposed Build Alternative for the Interstate 65 Interchange at Relocated State Route 109 in Robertson and Sumner Counties, Tennessee.

2.3 Alternatives Previously Considered but Eliminated

In addition to the Build Alternative discussed above, which was labeled as Alternate #4 in the January 2007 IJS, three additional alternatives were studied as part of the IJS for this project.

The IJS Alternate # 1 consisted of standard diamond interchange with a two-lane on-ramp that reduced to one lane before entering southbound I-65 traffic and a two-lane off-ramp for northbound traffic exiting I-65. The other ramps were one-lane on and off-ramps. This alternate configuration would have required the relocation of the Tennessee Welcome Center. Alternate #1 eliminated the weaving segment with the existing Welcome Center due to it being relocated (possible sites identified in a previous study). Alternate #1 provided an ultimate fly-over ramp for northbound I-65 to westbound SR-109 traffic entering the industrial park. Figure 2-2 shows the configuration of the IJS Alternative #1.

Alternate #2 in the IJS consisted of a modified diamond interchange with a two-lane on-ramp that reduced to one lane before entering southbound I-65 traffic and a two-lane off-ramp for northbound traffic exiting I-65. A single-lane loop ramp would have been provided for southbound exiting traffic and a two-lane on-ramp that reduced to one lane would have served traffic entering northbound I-65. The southbound (loop) off-ramp was located 1,600 feet south of the existing Tennessee Welcome Center on-ramp. This 1600-foot weaving area along I-65 would have served traffic exiting the Welcome Center and traffic using the loop ramp. This configuration would have allowed the existing Tennessee Welcome Center to remain in place. An ultimate fly-over ramp for northbound I-65 to westbound SR-109 would have been constructed when traffic volumes met the need. Figure 2-3 shows the configuration of the IJS Alternative #2.

Alternate #3 from the IJS was a diamond interchange with a two-lane off-ramp for northbound traffic exiting I-65 and two-lane on-ramp that reduced to one lane before entering northbound I-65. The southbound off-ramp would also have been two lanes to accommodate the volumes traveling to the existing rest area and SR-109. The southbound on-ramp would have collected the existing rest area traffic and SR-109 traffic before merging onto I-65 southbound. Alternate #3 provided slip ramps for access to the Welcome Center. This alternate would have allowed the existing Welcome Center to remain in its current location. The ramps were separated from I-65 by a barrier wall until all Welcome Center and ramp merging was completed. This alternate would have provided for an ultimate fly-over ramp for northbound I-65 vehicles wanting to enter the western industrial park as traffic volumes met such a need. Figure 2-4 shows the configuration of the IJS Alternative #3.

Figure 2-2. Previously Considered Alternate #1 from the 2007 Interchange Justification Study for the Interstate 65 Interchange Project.

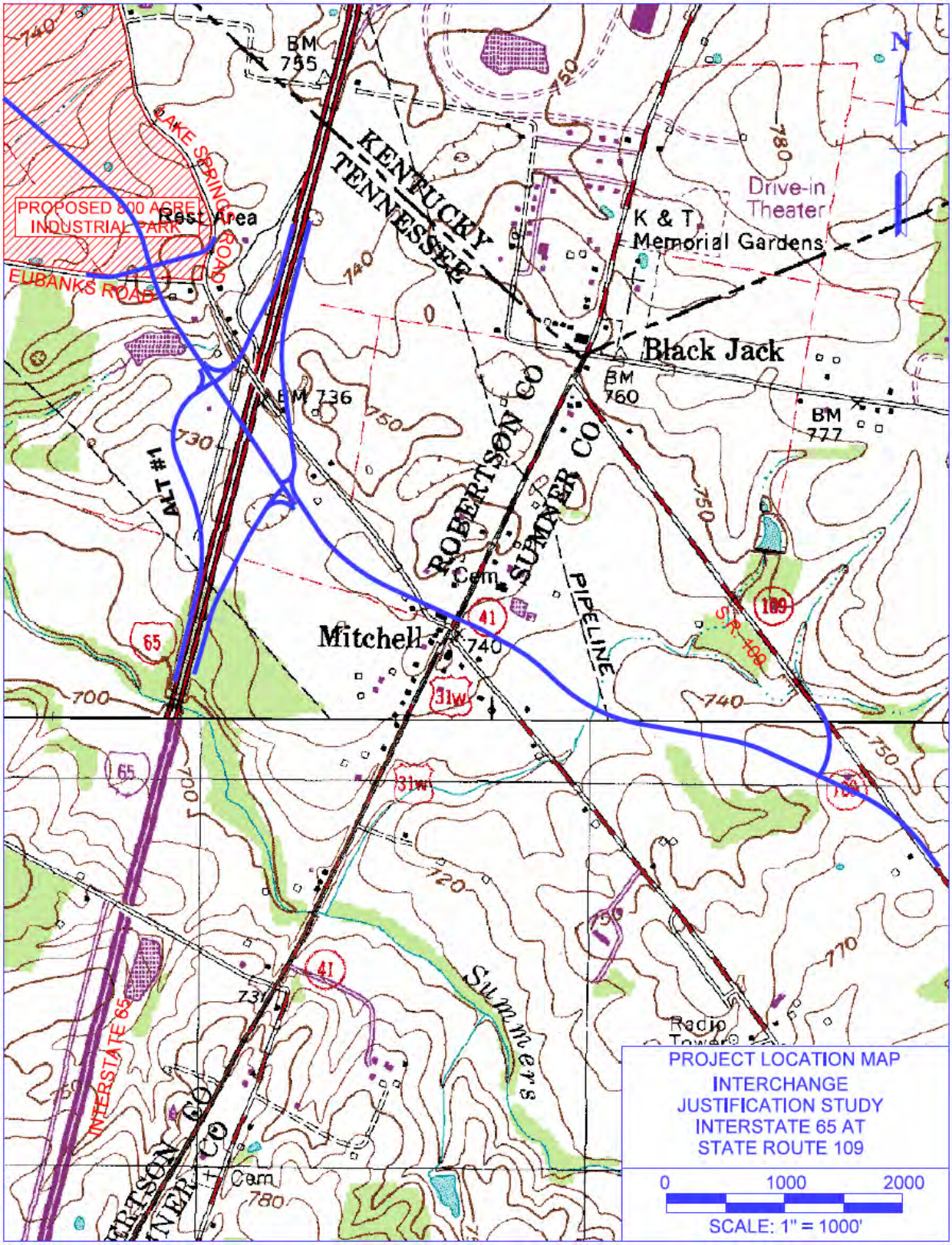


Figure 2-3. Previously Considered Alternate #2 from the 2007 Interchange Justification Study for the Interstate 65 Interchange Project.

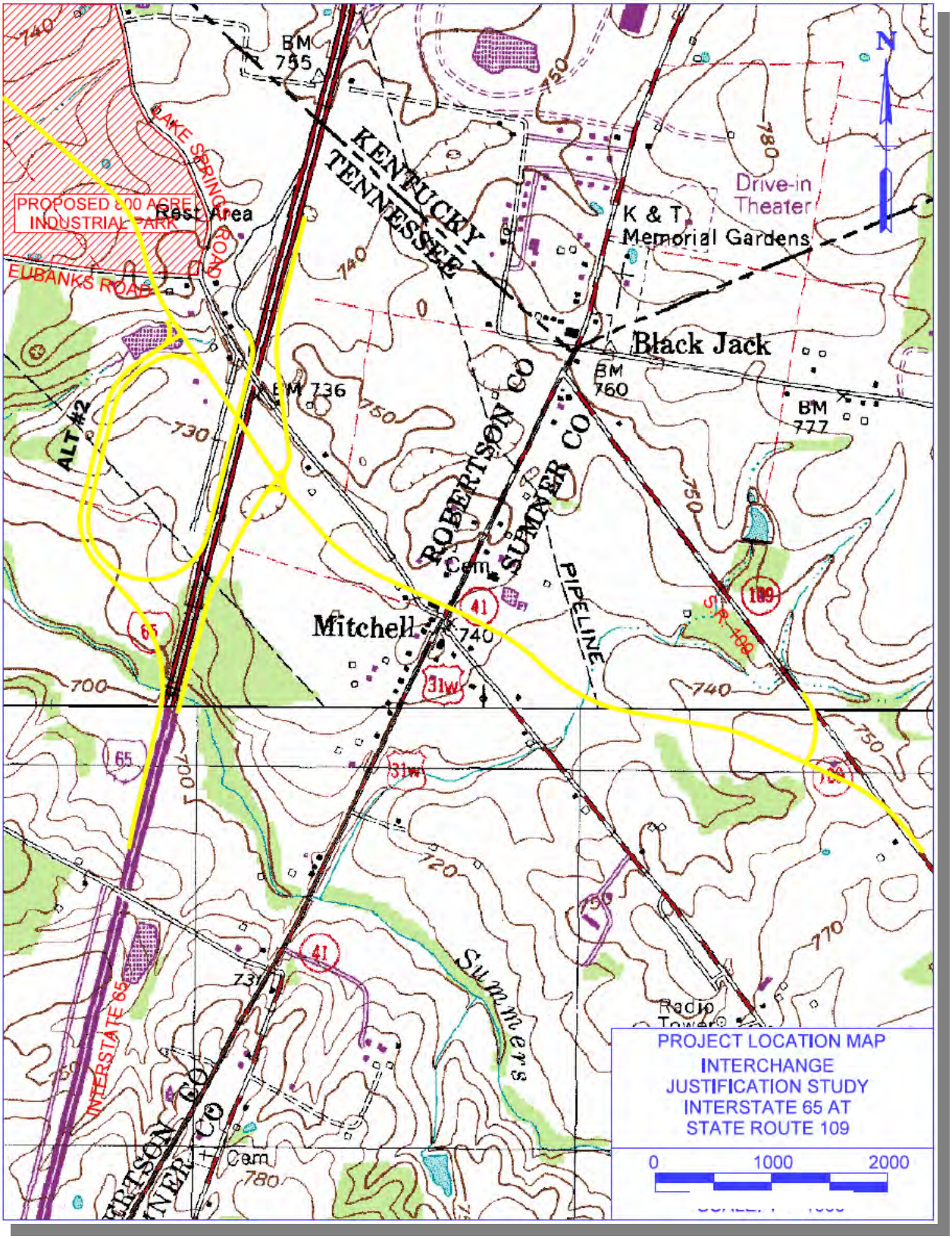
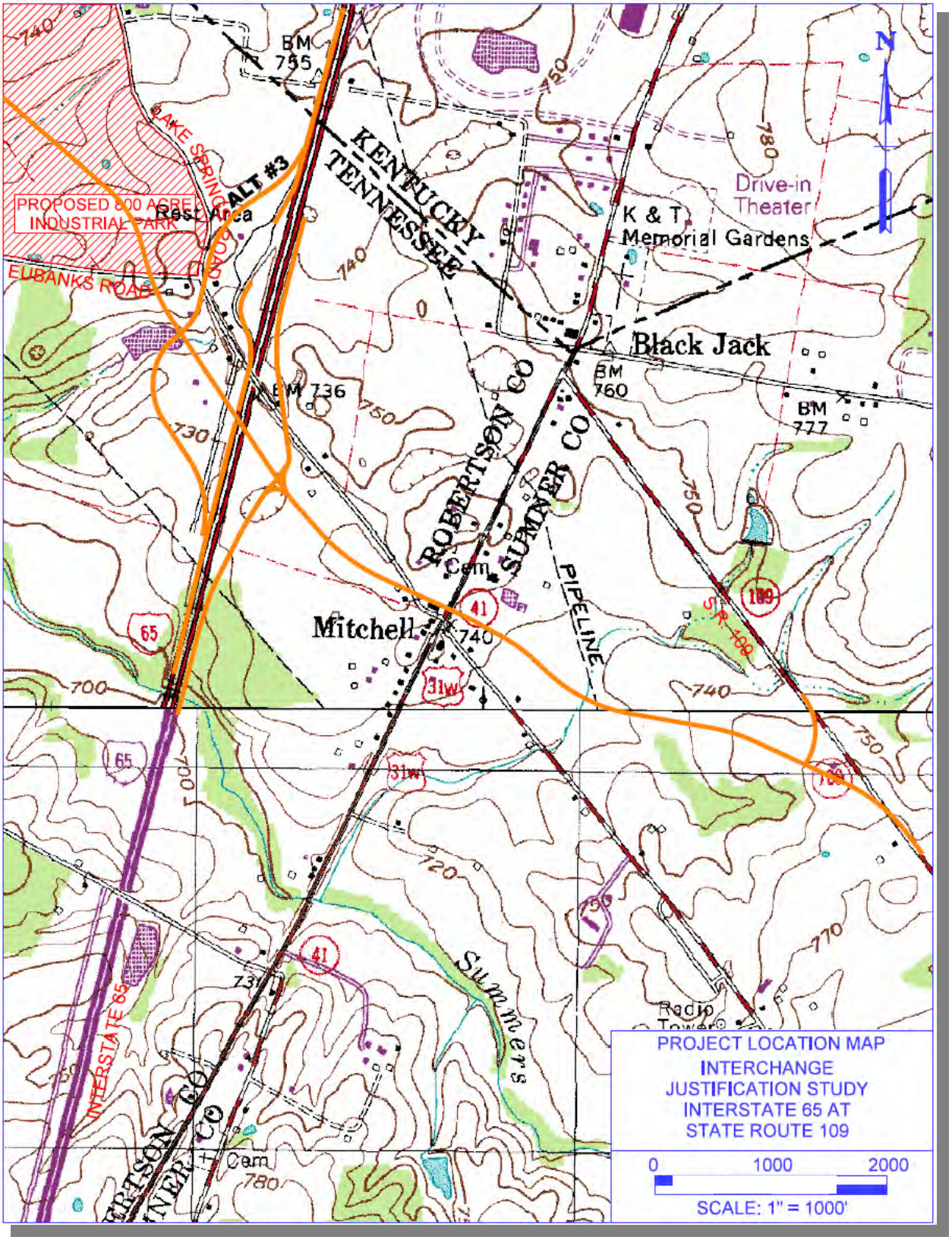


Figure 2-4. Previously Considered Alternate #3 from the 2007 Interchange Justification Study for the Interstate 65 Interchange Project.



CHAPTER 3 - ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

This chapter of the EA will describe the existing social/community, economic, cultural, and natural resources in the project vicinity (affected environment), followed by a discussion of the potential impacts (environmental consequences) this project may have on those resources. Following the discussion of environmental consequences, mitigation measures are discussed, where appropriate, to explain what efforts have been or would be taken to avoid, minimize, and/or mitigate for environmental consequences resulting from this project. Table 3.17 contains summary data for resources expected to be impacted by this project.

3.1.1 Environmental Consequences

An environmental consequence (hereafter referred to in this document as an impact) is defined as a noticeable change in a resource from the existing environmental baseline conditions caused by the proposed action. The discussion concentrates on aspects of the environment that could potentially be affected by construction and operation of the proposed project.

The analysis of impacts associated with each project alternative has been further divided into direct, indirect, and cumulative impacts. Direct impacts anticipated to occur with implementation of this project are discussed under each resource category discussed throughout Chapter 3. A direct impact is caused by the proposed action and occurs at the same time and place.

Discussions related to potential indirect and cumulative impacts are included in Section 3.11.

3.1.2 Avoidance, Minimization, and Mitigation of Project Impacts

After the potential impacts of the proposed project have been identified, a determination is made as to whether mitigation is appropriate or required. Mitigation measures will be planned and developed to protect or maintain the baseline conditions of the resources that are identified in the affected environment discussions in this chapter.

Because planning for the I-65 Interchange is being developed through the NEPA process, which involves interagency coordination and input provided by private citizens and local, state, and federal stakeholders, it is anticipated that all potential impacts to the social, cultural, and natural environment will be identified thoroughly and fully disclosed to the public and regulatory agencies. This NEPA study has been and will continue to be conducted in a manner that allows for all potential adverse impacts to be addressed in the planning process so that proactive efforts can be made to avoid, minimize, or mitigate impacts during final design phases of the project.

The resources in the I-65 Interchange project area have been identified through intensive survey efforts along with input from regulatory agencies, landowners, and the general public. Unavoidable adverse impacts to the environment associated with construction of the new interchange will be mitigated to the extent practical. Mitigation for project impacts will be determined through continued coordination with appropriate regulatory agencies.

Anticipated mitigation efforts are identified, where appropriate, under each of the individual resource categories discussed in this chapter of the EA. The mitigation discussion for each resource occurs after the discussion of the environmental impacts of the project alternatives. Final detailed mitigation plans and actions will be developed during the regulatory permit acquisition phase of the project that would occur after final design plans are approved but prior to initiation of any construction activities.

3.2 Social/Community and Economic Resources (Human Resources) Affected Environment

3.2.1 Land Use and Infrastructure

3.2.1.1 Land Use Plans and Policies

A portion of the project study area occurs within the City Limits of Portland and is considered part of the Portland Planning Region. The remaining land east of SR-41 (U.S. 31W) falls within the Sumner County Planning Area and land west of SR-41 (U.S. 31W) is in Robertson County. Most of the land in the I-65 Interchange project area is zoned for industrial and agricultural land uses with areas of residential and commercial uses along the existing roadways.

The state growth policy law (Public Chapter 1101, Growth Management Law, 1998) mandates all city and county governments to designate an Urban Growth Boundary (UGB) to anticipate and plan for 20 years of growth and change within and around a municipality. Included among the purposes of this legislation are the encouragement of compact and contiguous development and the establishment of acceptable and consistent levels of public services and community facilities in newly annexed or growth areas. Each growth policy plan identifies the following three distinct types of areas:

- “Urban Growth Boundaries” (UGB), or those areas that are contained within a municipality’s corporate limits, and adjoining unincorporated land where growth is expected to occur, and which can be provided infrastructure and other urban services by an adjacent municipality, and where annexation or new incorporations may occur;
- “Planned Growth Areas” (PGA), or reasonably compact areas outside incorporated municipalities where growth is expected to occur, and which are well suited for urban and suburban development; and
- “Rural Areas” (RA), or those areas which are to be preserved for agriculture, recreation, forest, wildlife, and uses other than high-density commercial or residential development.

All of the land in northwestern Sumner County falling within the I-65 Interchange study area falls within either the UGB of Portland or is considered PGA by Sumner County. Therefore, it is expected that this area will continue to become more developed in the reasonably foreseeable future. The portion of the project area within Robertson County is already experiencing substantial industrial growth, and additional industrial growth is expected to continue.

3.2.1.2 Existing Land Use

Land use within the I-65 Interchange project area consists of a combination of agriculture, industrial, commercial, and residential uses. Land uses were broken into five basic categories for comparison purposes. The categories include:

- **Forest** - including all forest types and including small forest fragments;
- **Agriculture** - including corn, soybean, and tobacco fields;
- **Pasture -** including pastures and hayfields;
- **Old Field/Shrub-scrub** - including all habitats containing a mixture of non-grazed grassland and shrub-scrub;
- **Open Water** – including ponds; and
- **Developed/Disturbed** – including existing highways and associated maintained/mowed ROW areas, residential and industrial areas and associated mowed lawns, and other heavily disturbed areas lacking vegetation.

Table 3.1 lists the total land use acreages within the 500-foot study corridor of the Build Alternative being considered. Figure 3-1 displays the layout of the current land uses within the study area.

Table 3.1. Total land use acreages within the 500-foot study corridor of the I-65 Interchange Build Alternative.

Alternative	Agriculture	Forest	Old Field	Pasture	Open Water	Developed/ Disturbed	Total
Build Alternative	96.7	14.8	2.46	41.2	1.42	140.1	296.7

Note: Land use areas shown as acres.

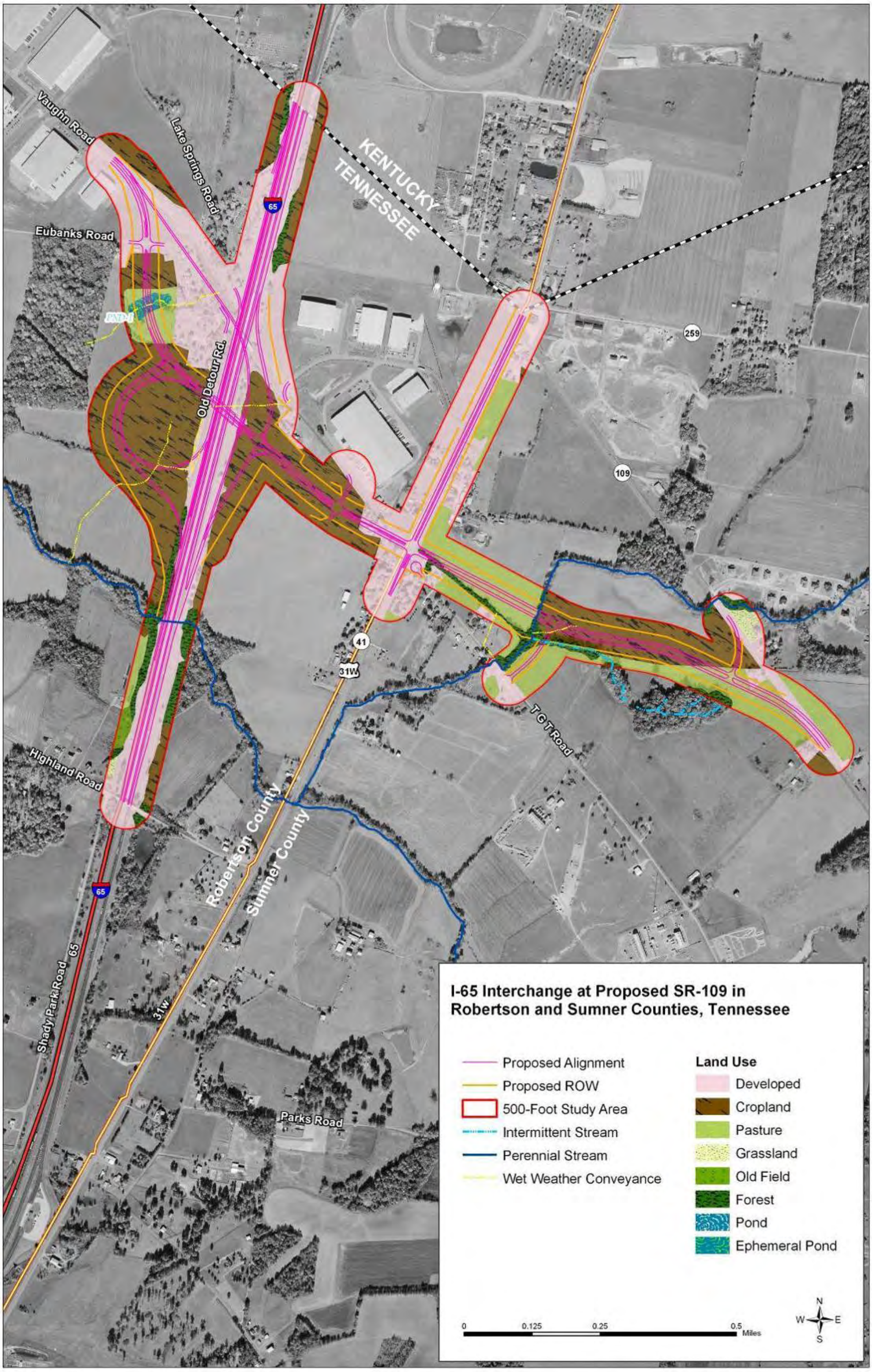
Note: These acreage amounts were calculated based on lands within the 500-foot study corridor for the Build Alternative and are provided to show the basic land uses in the study area. Not all of the acreages shown in this table would actually be impacted by construction of this project. The amount of land required for new ROW would be less than the amounts shown in this table. Only lands needed for actual construction or work zones would be cleared or disturbed. Therefore, this data represents the worst-case scenario.

Source: Parsons, 2009.

3.2.1.3 Highway and Roadway Network

The existing transportation facilities within the project vicinity include a network of federal, state, and county highways. This system of roadways provides a well-developed interconnection between the rural residential areas and surrounding urban areas, including Nashville, Tennessee and Franklin, Kentucky. However, as the population rises in the region, the existing network will need to be improved and/or added to in order to provide adequate capacity to handle increased traffic volumes and provide access to areas that are currently undeveloped.

Figure 3-1. Existing land uses within the I-65 Interchange Study Area.



3.2.1.4 Land Use and Infrastructure Impacts

Potential Land Use and Infrastructure Impacts Associated with the No-Build Alternative

Under the No-Build Alternative, not providing the proposed I-65 Interchange would have several adverse long-term direct impacts. The anticipated growth and development in the project vicinity will result in increases in traffic volumes in the reasonably foreseeable future, especially on SR-41 (U.S. 31W). The increased numbers of vehicles on that route will result in traffic congestion issues and decreased safety. In addition, the existing rural Lake Springs Road, which is currently used to connect Vaughn Road to SR-41 (U.S. 31W), will continue to deteriorate due to the number of large trucks and other vehicles using the roadway. The design of the existing roadway is not suited for the amount of truck traffic that currently exists and will not be able to handle future traffic volumes as the areas to the west continue to become developed.

The anticipated benefits that the improved access to I-65 would provide would not be realized under the No-Build Alternative. Providing the proposed new interchange is expected to alleviate some of the anticipated traffic issues on the secondary routes by providing better, more direct access for many of the commuters currently traveling to and from the surrounding areas.

Although some land use changes would be expected to occur in the general project area regardless of the new interchange being constructed, it is not expected that land use changes would occur as quickly in the immediate project area, if the interchange is not constructed. The PGAs near the new interchange would likely be slower to develop, and the northern portion of the City of Portland would also be slower to develop. Therefore, not constructing the new interchange may result in slower economic growth in the City of Portland and other nearby communities such as Mitchellville.

Potential Land Use and Infrastructure Impacts Associated with the Build Alternative

The proposed I-65 Interchange will play an important role in the transportation system by providing a more direct route to the industrial and residential developments in northern portions of Portland and surrounding areas. This will help reduce traffic on some of the secondary routes currently used to funnel traffic to that area, especially SR-41 (U.S. 31W). The relocation of the northern section of SR-109, which will result in directly connecting the State Route to I-65 will provide an important connection in the regional transportation system. This improvement will complement other improvements to SR-109, which is designated as a Strategic Corridor in the state transportation system. Relocating the northern termini of SR-109 will provide a direct connection between I-65 north of Nashville and I-40 east of Nashville.

Implementation of the proposed I-65 Interchange under the Build Alternative would complement the anticipated growth in the project vicinity within the northwest portion of Sumner County including the PGAs east of SR-41 (U.S. 31W) and within the City of Portland UGBs. This project would also complement existing and planned growth in the northeastern portion of Robertson County, especially in areas along Vaughn Road and the surrounding vicinity. The new interchange would provide several potential beneficial long-term direct impacts. A more efficient and safer transportation infrastructure would yield greater user benefits in respect to vehicle operating costs and travel time. An improved transportation link would be provided

between northwest Sumner County and northeast Robertson County and the City of Nashville for the commuting public.

Although some land use changes would be expected to occur in the general project area regardless of the new interchange being constructed, it is expected that the new interchange would promote land use changes sooner. As a result of this transportation improvement and recurring benefits, development would be expected to increase in the project vicinity. Enhanced development opportunities would occur in strategic areas, such as near the proposed new interchange along SR-109, SR-41 (U.S. 31W), Vaughn Road, and surrounding areas, that would become more easily accessible. This new development would result in land use changes, shifting from the more rural, agricultural land uses to more urban land uses including higher density residential areas, commercial developments, and expansion of industrial areas. These changes correspond with the local and regional growth plans. It is expected that the land use changes would ultimately increase revenue for the Cities of Portland and Mitchellville.

The primary direct adverse land use impact would be the loss of farmland in the immediate project area. Loss of farmland would occur within the proposed new ROW as well as in areas where induced growth occurs.

Construction of the I-65 Interchange and the corresponding land use changes expected under the Build Alternative would have immediate beneficial long-term impacts in terms of increases in property values and tax revenues in the general area. Property values would be expected to increase at strategic locations, particularly on property suitable for highway-oriented commercial and higher density residential uses. Real property tax revenues would initially decrease as a result of public acquisition of private property for additional highway ROW. However, it would be anticipated that new businesses established within the project area would increase jobs, income, and tax revenues in the affected communities and counties in the long term.

3.2.1.5 Mitigation of Land Use and Infrastructure Impacts

Mitigation measures, as defined by the Council on Environmental Quality (CEQ) 40 CFR 1508.20, include avoiding impacts, minimizing impacts, rectifying impacts, reducing or eliminating the impact over time, and compensating for the impact. Sumner and Robertson Counties both have mechanisms in effect to minimize, mitigate, or avoid adverse impacts of project implementation. Such issues as land use, buffering, noise mitigation, etc. can be addressed through implementation and application of the county growth policy plan, city zoning, and any subdivision ordinances, design guidelines, and other special ordinances and/or policies that may be in effect or that may be developed as the area continues to grow.

All land acquisitions and any other affected party would be administered in accordance with the provisions and procedures of the Tennessee Uniform Relocation Assistance Act of 1972, and the Uniform Relocation Assistance and Real Property Acquisition Act of 1970 (Public Law 91-646).

3.2.2 Social Environment and Community Resources

The geographic area considered for analysis of existing social conditions and environmental consequences consists of Robertson and Sumner Counties. Since a portion of the project is

within the city limits of Portland, additional data and analysis are included where appropriate. Environmental Justice issues were analyzed in further detail on the census tract, block group, and block level.

3.2.2.1 Population and Housing

Population and Population Trends

According to the 2000 U.S. Census, the population in Sumner County was 130,449 and the population of Robertson County was 54,433. The population of the City of Portland was 8,458. According to the 2000 U.S. Census the population density within Sumner County was 246 persons per square mile. This compares to 114 persons per square mile in Robertson County. The populations in Sumner County were classified as 69% urban and 31% rural. Populations in Robertson County were classified as 42% urban and 58% rural. The trend toward more urbanized populations is anticipated to continue in both of these counties due to the proximity to Nashville. Population projections for 2010 and beyond indicate continuing steady population growth within the project area. Table 3.2 contains population data for Sumner and Robertson Counties, and the City of Portland.

Table 3.2. Population Data: Sumner County, Robertson County, and the City of Portland, Tennessee.

Geographic Area	Population		
	1990	2000 (% change from 1990)	2008 Estimated* (% change from 2000)
Tennessee	4,877,185	5,689,270 (17%)	6,214,888 (9%)
Sumner County	103,281	130,449 (26%)	155,474 (19%)
Robertson County	41,492	54,433 (31%)	64,898 (19%)
City of Portland	5,165	8,458 (63%)	10,986 (30%)

Source(s): Tennessee Department of Economic and Community Development, 2009 and
**U.S. Census Bureau: State and County QuickFacts.*

The age distribution of the population reflects the typical population age pyramid with a greater share of the population being at the young (under 18) and middle-age categories (25-64). There are no substantial differences in age distribution of the population in Robertson or Sumner Counties compared to the state.

3.2.2.2 Housing and Household Characteristics

According to the U.S. Census Bureau, there were 62,007 housing units in Sumner County in 2007, which is an increase of 20% over 1999. Robertson County had 25,069 housing units in 2007, representing a 19% increase since 1999. The construction of additional new housing units is expected to continue, although rates of new development may be slower in the short term due to the current national economic conditions.

Single family residential is the dominant housing type, comprising over 75% of the total housing units within both counties. Manufactured housing (mobile homes) comprises approximately 7% of the housing units in Sumner County and 12% in Robertson County. Approximately 71% of the housing units in Sumner County contained two-three bedrooms, compared with 80% in Robertson County. Approximately 5% more units in Sumner County had four or more bedrooms compared with Robertson County.

The owner-occupancy rate for both Sumner County and Robertson County was over 75% in 2007. The median value of owner-occupied housing was $157,900 in Sumner County and 139,400 in Robertson County in 2007. The overall housing vacancy rate was approximately 6%.

3.2.2.3 Environmental Justice and Non-discrimination

On February 11, 1994, President Clinton issued Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations. This EO was issued to provide that “each federal agency shall make achieving environmental justice part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.” A minority community is classified by the U.S. Census as African American, Hispanic American, Asian and Pacific American, American Indian, Eskimo, or Aluet, and other non-white persons.

According to the Final U.S. DOT Order, a minority population means any readily identifiable groups of minority persons that live in geographic proximity. CEQ guidelines state that a minority population should be identified where either (a) the minority population of the affected area exceeds 50%, (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis. Information on race and ethnicity could be analyzed down to the Census Block level utilizing the U.S. Census data. Census Block level data are the most detailed level of population data made available by the U.S. Bureau of Census.

The Final U.S. DOT Order defines low-income persons as those whose "median household income is below the United States Department of Health and Humans Services poverty guidelines." CEQ Guidelines uses the Bureau of the Census definition that identifies low-income populations with the annual statistical poverty thresholds. A low-income community or population was classified as having an aggregated mean annual income level for a family of four correlating to $21,203 in 2007, adjusted for inflation.

A Presidential memorandum that accompanied EO 12898 specified that federal agencies “shall analyze the environmental effects, including human health, economic and social effects, of federal actions, including effects on minority communities and low-income communities, when such analysis is required by the NEPA of 1969.” The memorandum further stated that federal agencies “shall provide opportunities for community input into the NEPA process, including identifying potential effects and mitigation measures in consultation with affected communities.”

The initial step in this process is the identification of minority and low-income populations that might be affected by implementation of the proposed action. For environmental justice considerations, those populations are defined as individuals or groups of individuals that are subject to an actual or potential health, economic, or environmental threat arising from existing or proposed federal actions and policies.

Environmental justice data, including minority and low-income populations within the I-65 Interchange study area is shown on Table 3.3. Data for the affected counties and the State of Tennessee are also presented for comparison to the populations within the study area. This information is from the Environmental Protection Agency (EPA) Environmental Justice Geographic Assessment Tool. Based on this data, there are no minority or low-income populations in the project vicinity that would be disproportionately affected by this project. Figure 3-2 displays the percentage of the population in the project vicinity that is minority and Figure 3-3 displays the percentage of the population that is low-income.

According to the U.S. Census Bureau, 2005-2007 American Community Survey, the median household income within Sumner County was $51,247 according in 2007. This is slightly higher than the median household income for the State of Tennessee, which was $42,389 in 2007. Median household income for Robertson County in 2007 was $50,528, also higher than the State of Tennessee. The median household income within the City of Portland was $39,251, which is 31% lower than the Sumner County and 8% lower than the State of Tennessee levels.

Table 3.3. Minority and Low-Income Populations within the I-65 Interchange Project Area in Robertson and Sumner Counties, Tennessee.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Environmental Justice Geographic Assessment Tool

Recent Additions | Contact Us | Print Version Search: GO

EPA Home > EnviroMapper > Environmental Justice Geographic Assessment Tool

County and State Comparison

Overview

	Study Area	ROBERTSON County, TN	SUMNER County, TN	TENNESSEE
Total Persons:	49	54433	130449	5689283
Population Density:	82.32 /sq mi	114.24 /sq mi	246.45 /sq mi	138.03 /sq mi
Percent Minority:	7.7%	12.6%	9.4%	20.8%
Persons Below Poverty Level:	3 (6.1%)	4840 (8.9%)	10463 (8%)	746789 (13.1%)
Households in Area:	17	19906	48941	2232905
Households on Public Assistance:	0	554	1146	77153
Housing Units Built <1970:	25%	33%	29%	40%
Housing Units Built <1950:	12%	14%	8%	14%

Figure 3-2. Percent of Population that is Minority within the I-65 Interchange Project Area.

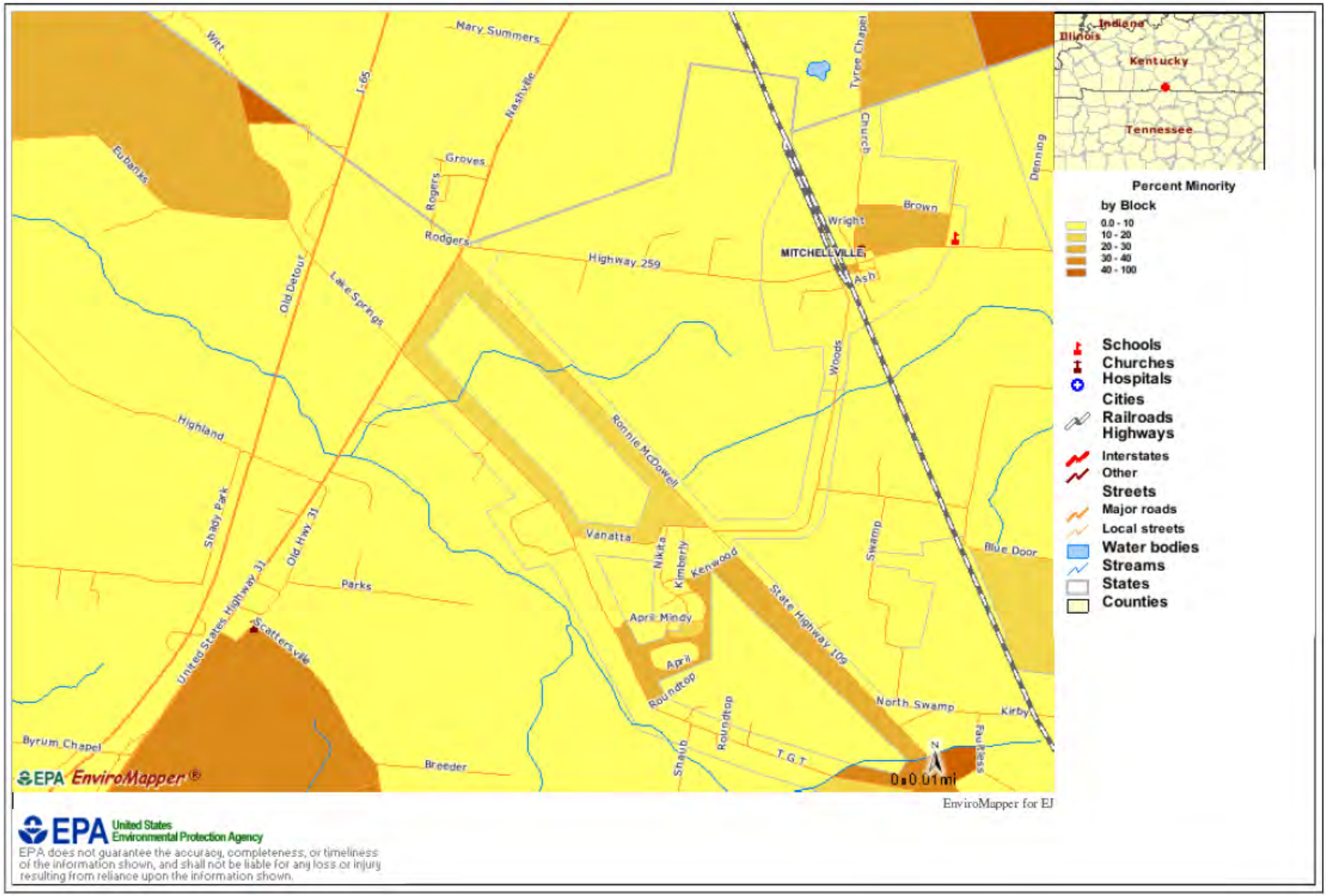
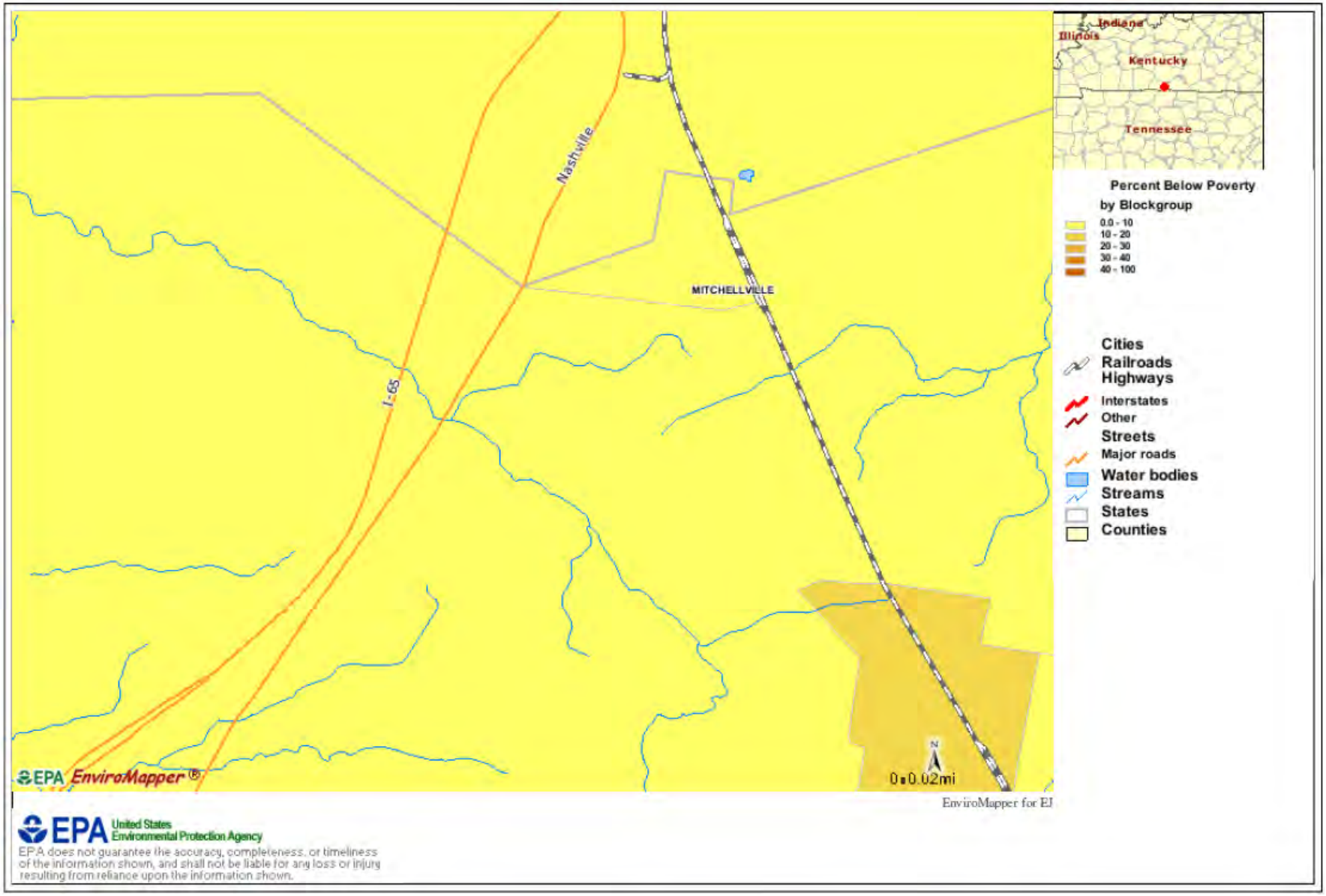


Figure 3-3. Percent of Population below Poverty within the I-65 Interchange Project Area.



3.2.2.4 Displacements and Relocations

Field surveys were conducted along the proposed ROW of the Build Alternative of the I-65 Interchange to determine residential, business, and public/non-profit displacements that could potentially occur because of the proposed construction.

The surveys indicated that there are two residential displacements associated with the Build Alternative. This includes one single-family residence and one mobile home. The dwellings appeared to be in average condition, and the residents are believed to be owner occupants. In addition to the habitable dwellings that this project is expected to displace, there is a vacant residential dwelling located in the proposed ROW. A study of the real estate market in the project area indicates that the market is adequate to provide housing for sale and for rent to accommodate those residents displaced by this project.

This project is expected to cause one business displacement. The displaced business is a seasonal retail operation believed to employ fewer than five employees. A study of the real estate market in the project area indicates sufficient property both for sale and for rent to accommodate the single business displacement.

No non-profit or farm displacements are expected, although some farmland will be affected.

Procedures and Assurance for Assistance to Displaced Persons

TDOT will make relocation assistance available to all eligible persons impacted by this project, including residences, businesses, farm operations, non-profit organizations, and those requiring special services or assistance. The Regional Relocation Staff will administer the relocation program under the rules, policies, and procedures set forth in the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended; the Uniform Relocation Assistance Act of 1972; implementing federal regulations TCA 13-11-101 through 119; The State of Tennessee Relocation Assistance Brochure; and Chapter Nine of the TDOT Right of Way Manual. TDOT's relocation program is practical and will allow for the efficient relocation of all eligible displaced persons in accordance with State and Federal guidelines.

3.2.2.5 Travel Efficiency

One of the main goals of the I-65 Interchange project is to provide improved access and improve travel efficiency for residents living in the adjacent area and communities. The average commuting time for citizens of Mitchellville is 23.7 minutes and Portland is 23.3 minutes (City-Data.com, 2009). Commuters from the immediate project area primarily use I-65 to travel to jobs in urban and suburban Nashville areas. To do this, many of them utilize I-65 and gain access to it using the adjacent I-65 Interchanges located north and south of the proposed new interchange location. Commuters also utilized secondary routes including SR-109 and SR-41 (U.S. 31W). Access to and from the large industrial/warehousing site located along Vaughn Road west of I-65 is provided primarily by using SR-41 (U.S. 31W).

As discussed in Chapter 1 of this EA, traffic volumes are projected to increase along the existing secondary routes and result in reduced travel efficiency and safety in the long term. Reduced travel efficiencies can result in both social and economic consequences including

increased commuting times, increased response time for emergency vehicles, lower fuel efficiency, and potential impacts on property values as the area could become less desirable to new residents due to traffic issues. The proposed interchange would be expected to improve all of these areas, including increases in property values in the area.

3.2.2.6 Considerations Relating to Pedestrians and Bicyclists

Due to the somewhat rural setting of the project area, no bicycle lanes or sidewalks currently exist along the existing roadways that would be impacted by this project, including SR-41 (U.S. 31W), SR-109, Lake Springs Road, and TGT Road. Pedestrians and bicyclists are allowed to use existing roadways, but there are limited shoulders provided in most areas so they must use the existing traffic lanes or the unpaved shoulders. Pedestrians and bicycles are prohibited on I-65 due to safety issues associated with the high speeds along interstates.

No bicycle lanes or sidewalks are planned for the new roadways associated with the I-65 Interchange project. However, the new overpass will provide wide enough shoulders to accommodate pedestrians and bicycles wishing to cross over I-65 on SR-109/Vaughn Road.

3.2.2.7 Visual Quality

Visually desirable open space, agricultural land, and forests have been increasing in relative importance, because development has diminished their abundance. Any primary or secondary effects during and after highway construction should be examined with these trends in mind.

Roadway projects can have a negative effect on the visual quality due to loss of undeveloped habitats, modification of naturally flowing streams, and alteration of natural topography from cut-and-fill activities. Improper preparation of sites for construction activities can also have aesthetic consequences. Examples of improper preparation include inappropriately located disposal sites, damage to trees, and poorly located access and haul roads.

Roadway projects can also result in improvements to visual quality if the new roadway is constructed in areas otherwise perceived as rundown or poorly maintained. Also, replacing older roadways with newer, better designed features, may also be perceived by some individuals as an improvement over the existing, older more run-down facility.

The I-65 Interchange project area consists primarily of existing roadways, agricultural land, scattered residences, pasture, and small wooded areas along existing streams and scattered in small blocks in other areas. The I-65 project footprint will primarily be in an area that the viewshed has been altered by past land uses and construction of the existing roadways. No large forested areas or scenic waterways are present in the project area. Some of the existing open space in the project area would likely be converted to developed land, if highway oriented businesses are developed adjacent to the new interchange. It is likely that much of the developable open space in the area would be converted to more urbanized land uses in the foreseeable future regardless of the new interchange being constructed due to the expected growth of the area and its proximity to Nashville.

3.2.2.8 Social Environment and Community Impacts

Potential Social/Community Impacts Associated with the No-Build Alternative

The No-Build Alternative would not provide the necessary transportation improvements needed to support the anticipated growth of the area, including industrial growth and residential growth. The No-Build Alternative would not provide improved access or transportation efficiency for commuters in the surrounding area or for truck traffic entering and leaving the large industrial warehousing center located west of I-65 along Vaughn Road. The No-Build Alternative would not alleviate traffic along secondary routes used to gain access to I-65, especially SR-41 (U.S. 31W). Therefore, travel cost savings would not occur. Local roads would continue to become more crowded as population levels increase. This would result in decreased LOS on local roadways. Safety issues would also likely become a bigger concern on the local roadways as traffic increases, especially along the routes used to gain access to I-65. Reduced LOS and travel efficiency would adversely impact response times for emergency vehicles.

The existing residents in the project vicinity would not gain any of the expected benefits the new I-65 Interchange would be expected to provide. The No-Build Alternative would not provide more opportunities for low-income households that would be expected if the new interchange were constructed. One of the potential benefits of the new interchange would be increasing property and home values, which could promote more profits on any sales of those assets. Also, it would be expected that the new interchange would promote creation of additional jobs closer to home providing more employment opportunities and easier access to work. Without the new interchange, the baseline conditions and trends within the project area would continue. Therefore, the potential positive social benefits of economic growth would be slower to be achieved in the project vicinity.

Potential Social/Community Impacts Associated with the Build Alternative

There would be two residences and one business displaced under the Build Alternative. These displacements are necessary to provide adequate ROW to meet the purpose and need of this project. Based on the local real estate market, there are adequate numbers of replacement homes and business sites available to allow the displaced residents and business owners to remain in the area. TDOT will work with the residents and business owners to ensure that the relocation process is efficient and fair.

Direct long-term adverse impacts would result from increased traffic along SR-109 and Vaughn Road due to the improved access to the area. Those impacts would be due to traffic related noise, night-time glare, and other visual effects associated with the increased traffic. Those properties immediately adjacent or in proximity to these roadways would be most adversely impacted. It is expected that the majority of traffic-related adverse impacts would be associated with heavy truck traffic.

The Build Alternative would not adversely impact, split, disrupt or isolate any low-income, minority, social, or ethnic group. There is no concentration of any of these groups within, adjacent, or in the near vicinity of the proposed ROW. The census blocks within the project area contain less than 50% minority populations overall. Therefore, any burden associated with the project would be shared relatively equal among all demographics including minority and

non-minority populations. The benefits of the project would be shared equally, and there would be no disproportional impacts to minority or low income populations. This project complies with EO 12898

This document has been reviewed by the TDOT Civil Rights Staff (Department) in accordance with Title VI of the Civil Rights Act of 1964. The Department will comply with Title VI to ensure that "No person shall be, on the grounds of race, color, or national origin, excluded from participation in, denied the benefits of, or subject to discrimination under any program or activity receiving federal assistance." The Department notifies the public of proposed highway projects, and the availability of environmental documents for public inspection is published in local newspapers.

This project is not expected to sever any existing or proposed pedestrian or bicycle routes in the project area. The new overpass over I-65 would accommodate pedestrian and bicycles by providing paved shoulders.

Long-term beneficial impacts are anticipated as related to improved access, travel efficiency, traffic safety, public services, and facilities. Current traffic and future traffic demands would be served in a more efficient and safe manner by construction of the proposed new interchange.

The provision of public services, such as police, fire, and emergency medical, would be beneficially impacted in the long-term under the Build Alternative. Improved accessibility and increased efficiency in the transportation system would result in faster response times for these services. Overall, accessibility to public services and facilities would not be adversely impacted under this build alternative. Disruptions to utility services would be minimized under the Build Alternative as it is standard policy for TDOT to coordinate all utility relocations with the affected utility companies.

The I-65 Interchange project may promote adjacent land use changes, generating visual impacts away from the proposed highway. Secondary developments would likely result in loss of open space and/or clearing of vegetation and replacing it with man-made structures. These changes may be perceived as negative by some and positive by others, depending on the types of land use changes that occur. Some view the rural setting as a valuable resource and do not like to see those areas developed, while others view new construction as a sign of progress that can benefit the community as a whole.

3.2.3 Economic Environment

3.2.3.1 Economic Conditions and Trends

Various key indicators of economic conditions and growth within an area include changes in labor force, employment, capital investment, retail sales, and property values. These economic variables are discussed in the context of the Robertson and Sumner Counties project area.

The annual labor force approximated 32,706 in Robertson County and 79,221 in Sumner County between 2005 and 2007 (American Community Survey, 2009). For Robertson County, this represents a 7.6% increase from 2002 when the labor force was estimated at 30,220. For Sumner County, this represents a 9.6% increase from 2002 when the labor force was estimated

at 71,650. The annual unemployment rate in Robertson County in 2006 was 4.6% compared to a statewide unemployment rate of 5.2%. The annual unemployment rate in Sumner County in 2006 was 4.3%. Total employment within Robertson and Sumner Counties is lower than the resident labor force. Total employment in Robertson County approximated 31,090 in 2006, while Sumner County had a total of 74,610 total employment. As a result many workers commute to neighboring counties for employment.

In 2006, the manufacturing, retail trade, and leisure/hospitality industries employed the most people in Robertson County, while the manufacturing, retail trade, and education/health services industries employed the most people in Sumner County. These occupation types make up over 40% of the employment in both counties. Overall, the project area has a balanced and diversified employment base. The top ten manufacturers for each county are listed on Table 3.4. Most of the top manufacturers in Robertson County are currently located in the Cities of Springfield and White House. The top Sumner County manufacturers are located in Portland, Gallatin, and Hendersonville.

Table 3.4. Top Ten Manufacturers in Robertson and Sumner Counties, Tennessee, 2008.

Robertson County		Sumner County	
Employer	**Number of Employees**	**Employer**	**Number of Employees**
Electrolux Home Products Inc.	750	R R Donnelley	800
Collins & Aikman Carpet and Acoustics	433	Unipress USA Inc.	600
Unarco Material Handling Inc.	370	Maple Leaf Bakery	450
Saia-Burgess Automotive Actuators Inc.	258	Robert Bosch Corp.	400
Thyssenkrupp Fabco Inc.	235	Magnatrax Corp.	320
Ingersoll-Rand Co.	180	Fleetwood Homes of Tennessee Inc.	302
Leggett & Platt Inc.	150	Kirby Building Systems Inc.	293
Highland Graphics Inc.	135	G F Office Furniture Ltd LP	250
All American Homes of Tennessee LLC	120	Magnatrax Corp	250
Trico Products Corp.	120	Scott Fetzer Co.	250

Source: Tennessee Department of Economic and Community Development, Robertson and Sumner County Data Sheets, 2008.

Development Trends

Housing

Recent development trends indicate that annual growth in both Robertson and Sumner Counties has increased substantially since 2001. Building permits were issued for 3,498 single family new housing units between 2001 and 2006, for an average of 583 permits annually during the six-year period. In Sumner County, a total of 8116 permits, for an average of 1,353 permits annually, were obtained during the same time period. The number of single family new house construction building permits was higher than the state average in both counties during the same time period.

Industrial

Trends in industrial growth investment (i.e. manufacturing, distribution and selected service projects) during a 10-year period from 1999-2008 were evaluated. Approximately $508 million were invested in the form of 7 new plants and expansion of 132 existing facilities in Robertson County. In Sumner County, approximately $683 million invested in 30 new plants and expansion of 292 existing facilities.

Retail Sales

Retail sales trends within Robertson and Sumner Counties for the 2001-2006 period are shown on Table 3.5. Retail sales increased 32% during this period in Robertson County and 37% in Sumner County.

Table 3.5. Retail Sales Trends within the I-65 Interchange Project Area in Robertson and Sumner Counties, Tennessee, 2001-2006 ($million).

County	2006	2005	2004	2003	2002	2001
Robertson	597	545	327	292	409	407
Sumner	1,422	1,231	811	728	924	893
Source: Tennessee Department of Economic and Community Development, Community Profiles.						

Property Valuation

Property value increases reflect primarily real property and improvements through new construction and expansion of buildings and facilities that are added to the tax rolls. Therefore, property valuation trends are a good indicator of economic growth and construction activity within a jurisdiction.

Real property value trends for the 2004-2008 period for Robertson and Sumner Counties are shown on Table 3.6. Both Counties registered a 29% increase in total real property value during this period.

Table 3.6. Real Property Appraised Values within Robertson and Sumner Counties, 2004-2008 ($Million)[1]

County	% Change 2004-2008	2008[2]	2007	2006	2005	2004[3]
Robertson	29	4,488.3	4,360.9	3,462.0	3,331.6	3,195.6
Sumner	29	12,397.9	11,793.2	11,086.7	9,317.0	8,828,5

[1] Appraised values include land and improvement appraised values.
Source: Tennessee Comptroller of the Treasury, Division of Property Assessments.

3.2.3.2 Potential Economic Impacts Associated with the No-Build Alternative

Potential Economic Impacts Associated with the No-Build Alternative

Improvements in regional/local accessibility and traffic movement would not occur under the No-Build Alternative, thereby not realizing a potential increase in travel efficiency and associated travel cost savings in the northwestern Sumner and northeastern Robertson County areas. In order to spur continued economic growth in the area, the transportation network needs to be continuously improved to keep up with development. Without the new I-65 Interchange, it is anticipated that growth will be slower than if the interchange was constructed. This slower growth will impact total revenues for the Counties and the individual communities in the area. The potential for an increased tax base and tax revenues would be minimized as a result of the lack of improved accessibility and enhanced movement of goods and people. In addition, property values could fail to appreciate at expected levels, if travel efficiency to the area makes it less desirable for new residents or businesses to locate there.

Potential Economic Impacts Associated with the Build Alternative

There are two basic categories of economic impacts of major highway investments or improvements, such as the I-65 Interchange. These categories are: transportation user or operational impacts; and economic impacts. The Build Alternative would result in operational impacts by providing a more efficient roadway system that reduces operating costs, improves travel times, and enhances safety.

Long-term economic benefits may be realized by implementation of the Build Alternative. Improved accessibility and travel efficiency would enhance the potential for new highway-oriented and community-based development. In most instances, both an increase and redistribution of economic activity occurs when a major highway investment is made. Thus, it can logically be expected that the I-65 Interchange could cause some relocation of existing business activity in addition to the generation of new business activity within the immediate area. Much of the land in the project vicinity would be considered easily suited for development, except certain areas within the 100-year floodplain along Summers Branch or other areas with natural constraints or man-made constraints, including gas pipeline corridors in the area.

The new interchange would provide expanded opportunities for commercial and industrial growth, and an associated expanded employment base. Business growth can occur in the manufacturing, service, wholesale, and retail sectors of the economy through the expansion of

existing businesses; attraction of new businesses to the area; reduction in the cost of moving goods and raw materials; and the servicing of inter-regional traffic flows that can encourage development of travel-related businesses. The impacts on business are reflected in increases in sales, income, employment, and other economic indicators. An overall growth in employment could attract additional workers and families to an area, thereby creating an increased demand for housing. Any substantial new potential development would create a demand for an expansion of existing and new public infrastructure and services (e.g., utilities, police, and fire).

Property values within the vicinity of the I-65 Interchange project area may appreciate due to better access and improved transportation efficiency making the area more attractive for residential, retail, and industrial uses. The specific impacts on property values would depend on the proximity of a property in relation to the proposed project and the suitability of the land for development. In general, the further away from the proposed I-65 Interchange a property is, the lower the chance of experiencing changes to property values, either positive or negative.

Short-term benefits would result during the construction phase of the I-65 Interchange project due to employment generated by project construction activities and due to potential retail sales for local businesses while construction activities are occurring.

3.2.3.3 Mitigation of Economic Impacts

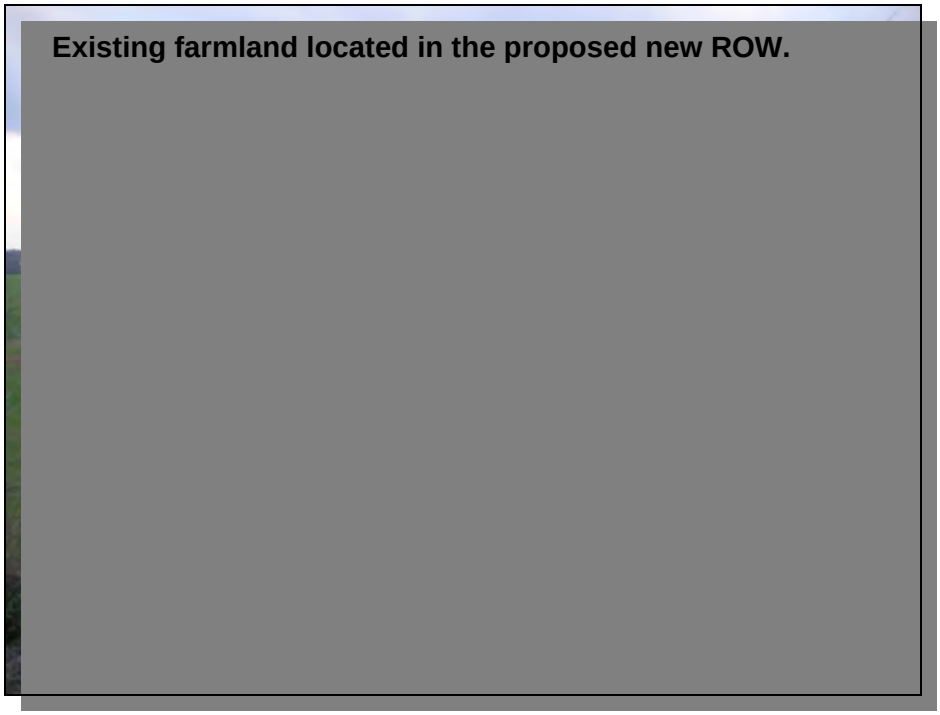
Mitigation measures where necessary and feasible would be utilized to avoid, minimize, reduce, or compensate for local and individual adverse economic impacts. TDOT would provide just compensation or a monetary payment equivalent to the fair market value of the property for each property acquired for the new ROW. Every attempt would be made to minimize the creation of uneconomical parcel remnants and landlocked parcels. Temporary access roads would be constructed to maintain access to farm fields and parcels that serve an economic function.

3.2.4 Farmland

The Farmland Protection Policy Act of 1981 (FPPA) seeks to "minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses, and to insure that federal programs are administered in a manner that, to the extent practicable, would be compatible with state and local government, and private programs and policies to protect farmland."

In accordance with the FPPA, a Farmland Conversion Impact Rating Form was submitted to the USDA, Natural Resources Conservation Service (NRCS), and an assessment score was determined for the Build Alternative. This score is determined by numerous factors including the agricultural value of the land. The score is used to determine which areas should receive the highest level of protection from conversion to non-agricultural uses. The higher the numerical score given to a proposed alternative, the more protection the farmland affected by it would receive. The highest rating possible is 260. Sites receiving a total score of 160 points or less typically do not require further evaluation. If the site receives a score higher than 160 points, alternatives should be developed that would avoid or minimize impacts to farmland.

The Build Alternative ROW was evaluated in accordance with the FPPA. Some soils classified as prime or unique farmland are found within the project area. The approximate amount of prime and unique farmland, as identified by the NRCS for the proposed Build Alternative, is shown on Table 3.7. The NRCS correspondence and Farmland Conversion Rating Forms are included in Appendix A.



Existing farmland located in the proposed new ROW.

Table 3.7. Prime and unique farmland taken by the I-65 Interchange Build Alternative in Robertson and Sumner County, Tennessee.

Alternative	Acres of Prime and Unique Farmland Taken[1]		Overall Farmland Conversion Impact Rating Assessment Score	
	Robertson County	Sumner County	Robertson County	Sumner County
Build Alternative	46	22	146	103

[1] The highest possible overall score is 260. Scores over 160 points may require further evaluation and additional efforts to avoid or reduce impacts.
Source: USDA, 2009

3.2.4.1 Potential Farmland Impacts

Potential Farmland Impacts Associated with the No-Build Alternative

The No-Build Alternative would not result in any substantial changes to farmland impacts. Current land uses and development trends would continue in the project area. However, the growth rate in the area could slow as traffic levels increase on secondary routes currently used to access I-65 from the surrounding area. Any new developments that do occur would possibly result in conversion of farmland into non-farm related uses.

Potential Farmland Impacts Associated with the Build Alternative

The farmland impact rating scores for Robertson and Sumner Counties (146 and 103 points) were below the 160 point threshold discussed above. There would be some unavoidable farmland impacts due to construction of the new interchange. A total of 68 acres of prime or unique farmland could be impacted by the project. Most farmland impacts associated with the Build Alternative would involve direct loss of farmland located within the proposed ROW.

Soils in the project area would be disturbed during construction of the project as earth moving equipment would be used to grade the area. Grading of the project area would primarily involve borrowing soil from existing land in the project area to produce the fill needed to support the new interchange ramps and overpass. Some erosion of soils is expected to occur during the construction phase of the project as exposed soils are unavoidable. Best management techniques would be utilized to control erosion and subsequent sedimentation in and adjacent to the project area. The mitigation section below provides more detail regarding the general actions that would be taken to control soil erosion during and following construction.

3.3 Ecological

3.3.1 Aquatic Resources

3.3.1.1 Water Quality

The primary law to protect water quality in the United States is the Clean Water Act (CWA). Section 303(d) of the CWA requires states to develop a list of streams and lakes that are “water

quality limited." "Water quality limited" waterbodies do not meet one or more water quality standards and are not supporting designated uses.

Summers Branch and a small unnamed tributary to Summers Branch, both located in the project study area, are listed on the 303(d) list as not meeting its designated uses due to nutrients, siltation, organic enrichment (low dissolved oxygen), and pathogens [*Escherichia coli* (*E. coli*)]. Figure 3-4 shows the location of the 303(d) listed streams. The portion of Summers Branch located just downstream of the proposed I-65 crossing appears to be improving in condition. Riffle/Run/Pool sequences are present, and caddisflies and mayflies, which are water quality sensitive species, were observed in the stream. Although both of these streams would be crossed by the proposed project alignments, it is not expected that the I-65 Interchange project would change or impact any of the use designations for any of the streams in the study area. Mitigation measures described in section 3.3.1.5 are expected to be adequate to protect the streams from any substantial further degradation due to this project.

3.3.1.2 Streams and Waterbodies

Summers Branch facing downstream just west of I-65.

Drainage in the study area is primarily via three small streams, one intermittent and two perennial. The slope of the study area tends to be to the west toward the primary watershed in the vicinity, the Red River Watershed (HUC-12 ID = 051302060101). The water resources known to occur in the project area are shown on Figure 3-4. Summers Branch (STR-1) is the primary stream in the immediate study area. A second stream (STR-2), located in the project area, is a low order perennial stream that has been altered due to channelization. At the proposed alignment crossing, this unnamed stream has steeply incised banks, very shallow water, and no riffle/run/pool sequence. A third stream (STR-3) crossed by the project alignment is an unnamed, intermittent stream that originates from several small seeps just south of the proposed ROW in a small wooded area. This stream has been dammed to form a farm pond, and it has been channelized. The proposed alignment spur to TGT Road crosses this stream. At the proposed crossing this stream has steeply incised banks, very shallow water, and no riffle/run/pool sequence.

In addition to the three streams, a total of six wet weather conveyances (WWC) were located within the project study limits. Table 3.8 shows stream information for the proposed Build Alternative. The Ecology Study Technical Appendix prepared for this project contains more detailed descriptions of each of the watercourses potentially impacted by this project and is available upon request from TDOT.

Stream Channelization

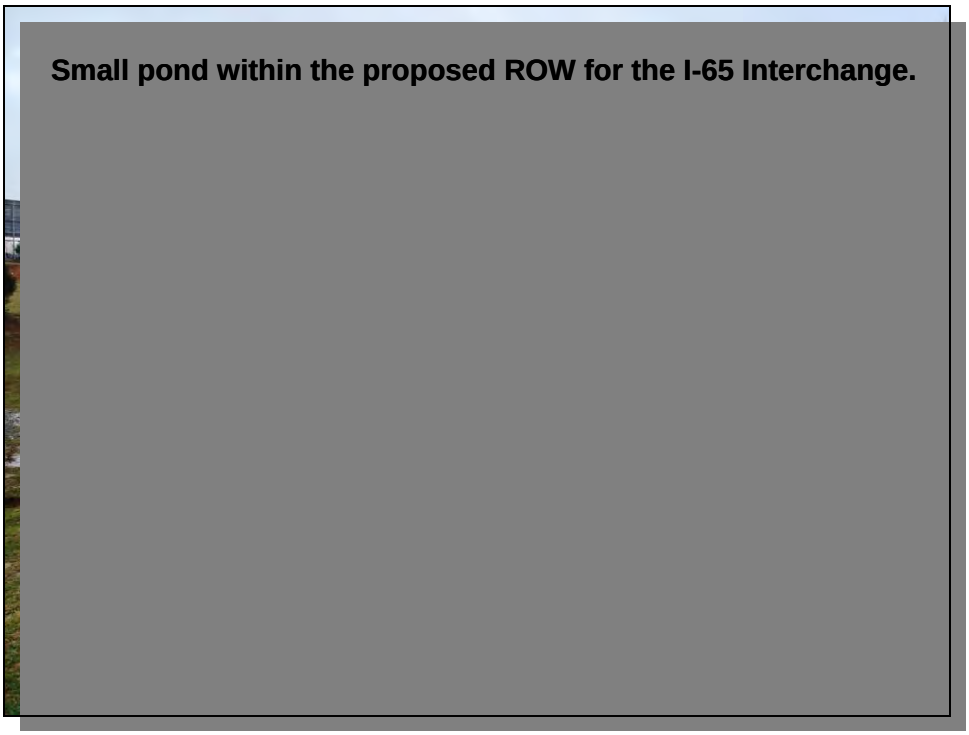
Stream crossing points were assessed to determine if any channelization would be required. It was assumed that channelization would be necessary if the angle of the stream crossing to the highway was less than 45 degrees. Stream crossings at angles between 45 and 90 degrees would be accommodated by culverts or bridges and would require only minimal channelization. At locations where the stream would be spanned by a bridge, it was assumed that only minimal channelization would be required as part of the bridge construction. In addition, stream segments not crossed by the road could still be impacted, if the build alternative were to be constructed adjacent to the stream, depending on the limits of fill. In these cases, channelization could be necessary as well. Stormwater drainage ditches were not considered channelizations when culverts could be used to carry future stormwater flow. A summary of the amount of channel modification and/or encapsulation is provided on Table 3.8 below.

Table 3.8. Streams located within the 500-foot Study Corridor for the I-65 Interchange Build Alternative in Robertson and Sumner Counties, Tennessee.

Alternative	Number of Streams in Study Area	Length of Stream Channel in 500-foot Corridor	Number of Streams Directly Crossed	Estimated Length of Stream Channel Modification/ Encapsulation (feet)
Build Alternative	3	3,137	3	511
The information listed in this table is subject to change once final design of the interchange is complete as some of the features may be avoided or impacts may be minimized by slight shifts in the design if the Build Alternative is chosen. *Source: Parsons, 2009*				

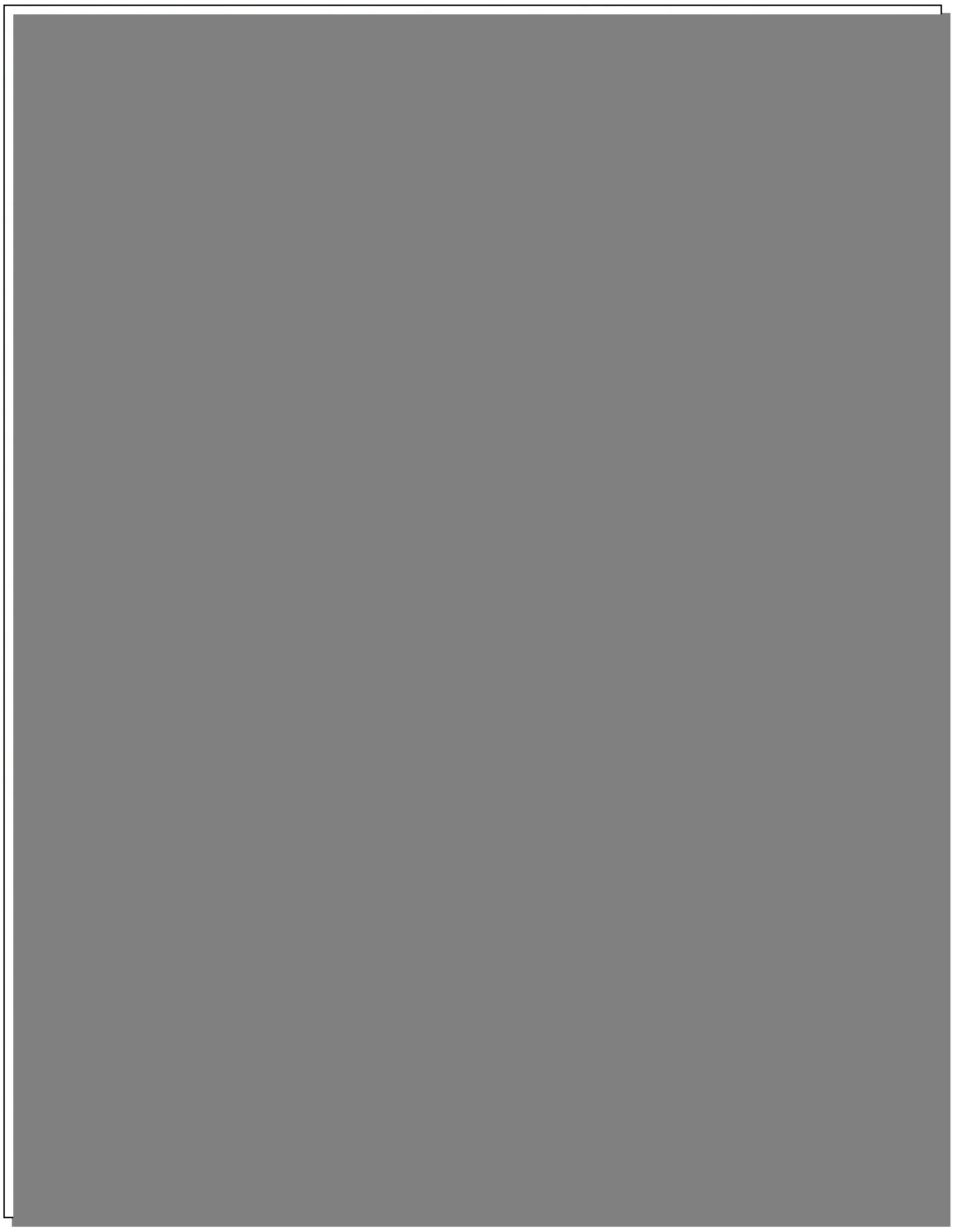
Other Waterbodies

One man-made pond located just south of Eubanks Road would also be potentially affected by the Build Alternative. The location of this pond is shown on Figure 3-4. This pond appears to only hold water for short periods following rainfall. More detail for this feature is contained in the Ecology Study Technical Appendix available upon request from TDOT.



Small pond within the proposed ROW for the I-65 Interchange.

Figure 3-4. Watercourses, Ponds, and Sinkholes within the I-65 Interchange Study Area.



3.3.1.3 Potential Impacts to Aquatic Resources

Potential Impacts to Aquatic Resources Associated with the No-Build Alternative

Because no new construction activities would occur under the No-Build Alternative, no changes from the baseline conditions of aquatic resources would occur within the immediate project site. However, the anticipated growth in Robertson and Sumner Counties will continue to have potential adverse impacts on streams and other aquatic resources in the region. Eventually the area within the project site may become developed, but without the new interchange it is likely that other areas with better access to I-65 would become developed first.

Potential Impacts to Aquatic Resources Associated with the Build Alternative

The information presented in this EA represents the anticipated worst-case impact of the Build Alternative, with the assumption that these impacts would be reduced, where possible, during further project design. The Build Alternative would directly impact a total of three streams and would require channel modification and/or encapsulation at each crossing.

Long-term adverse impacts to streams would occur due to changes in stream flow and channel characteristics caused by necessary channel modifications, including stream encapsulation where the streams cross the proposed alignments. Some minor stream channel relocations may be necessary upstream and downstream of the anticipated stream culverts. It is anticipated that impacts due to stream channel modifications would be minimal, because all three streams would be crossed at near 90 degree angles, thus reducing the need to relocate long portions of the stream channels.

Implementation of the Build Alternative could result in increased sedimentation in each of the streams found in the study area. These impacts will be minimized by good sediment control planning and implementation. Encapsulation of the streams within the project area could result in long-term adverse impacts to aquatic habitats and species living in downstream habitats. Potential short-term indirect adverse impacts on benthic invertebrates and other aquatic species could occur from stormwater runoff, which would increase turbidity and total suspended solids during the construction period.

Future actions that could occur in and around the study area may result in encapsulation of streams, erosion and sedimentation, and the addition of impervious surfaces. Such actions occurring in a geographic area tend to degrade overall quality of aquatic habitats and water quality resulting in cumulative impacts. TDOT will continue to coordinate with the Tennessee Department of Environment and Conservation (TDEC) and the U.S. Army Corps of Engineers (USACE) to ensure that proper permits are obtained and that all stream impacts minimized and/or mitigated to the extent possible.

Long-term impacts to water quality would be anticipated for the streams within the Build Alternative footprint. The interchange will increase the amount of paved or impervious area resulting in increased runoff. Pollutants usually contained in highway runoff include de-icing salts, pesticides, and herbicides used for the control of roadside vegetation. De-icing salts are used relatively sparingly in this area and would not likely impact water quality, and pesticides and herbicides can be applied in a manner designed to minimize introduction of these

chemicals into the surrounding water bodies. Runoff from bridge surfaces could impact water quality in the immediate area. Also, aquatic benthic habitats may be altered near the piers of bridges due to changes in bathymetry associated with the piers.

Short-term adverse impacts would include interruption or modification of stream flow during construction and water quality impacts associated with site preparation, grading, and construction activities. Other short-term adverse impacts would include increased sediment loading, disruption of bottom substrates and associated macroinvertebrate communities, and removal of tree cover and riparian vegetation resulting in increased erosion and habitat loss. Removal of canopy cover increases sun exposure to the water surface, which can raise stream water temperature. Increased water temperature can alter species composition in the stream. Contaminant runoff from construction equipment and materials may also adversely affect water quality. Construction-related impacts would be temporary and any affected aquatic communities would be expected to recover after construction had ceased. The degree of impact would vary depending on the width and depth of the stream, the distance of the stream to the primary construction or grading activities, the steepness of the newly established streambanks, and the typical level of flow within the stream.

The Build Alternative would impact one man-made pond. The pond appears to be ephemeral and only holds water for short periods following rainfall events. It is expected that the entire pond would need to be drained and filled for this project. Draining of the pond may have short-term impacts to downstream watercourses depending on the amount of water in the pond at the time of construction and the water quality within the pond. If possible, construction within the pond will be conducted when the pond is dry.

Efforts would be made during the design phase to maintain hydrology to all streams and wetlands located downstream of the project area to reduce the potential for long-term impacts extending beyond the project limits. Permeable material such as rock fill may be used in some areas to allow movement of water underneath the roadway.

3.3.1.4 Mitigation of Aquatic Resources Impacts

If the Build Alternative is chosen for this project, it would be designed to avoid major impacts to aquatic resources to the extent practicable. Efforts to further minimize impacts would continue throughout the design, permitting, and construction phases. Unavoidable impacts would be mitigated as required by applicable laws and regulations. In an effort to minimize sedimentation impacts, erosion and sediment control plans would be included in the project construction plans. TDOT would also implement its Standard Specifications for Road and Bridge Construction, which include erosion and sediment control standards for use during construction. The State of Tennessee sets water quality criteria for waters of the state; these standards must be met during the construction of the proposed I-65 Interchange.

Impacts to water quality can be minimized by using best management practices, including limiting the construction and/or placement of metal pipes, concrete culverts, and bridges to dry periods, by implementing proper construction techniques and erosion controls, and by avoiding the removal of existing vegetation to reduce soil erosion. Employing bank stabilization

measures, such as seeding, placing of rip-rap, and/or installing silt fence would also minimize short-term adverse impacts to water quality during stream-side and in-stream construction.

Although short-term and long-term adverse impacts would be anticipated, BMPs would be followed to reduce or mitigate for the overall impact to water quality. Water quality protection measures that would be followed are described in the following documents:

- Reducing Nonpoint Source Water Pollution by Preventing Soil Erosion and Controlling Sediment on Construction Sites (Smoot et al., 1992);
- Tennessee Erosion and Sediment Control Handbook (TDEC, 2001b);
- Riparian Restoration and Streamside Erosion Control Handbook (TDEC, 1998a); and
- Tennessee Department of Transportation, Standard Specifications for Road and Bridge Construction (TDOT, 2006).

Examples of stream protection measures that may be used include the following:

- When possible, streamside and in-stream construction activities would be performed during dry periods, when stream flow is at a minimum;
- The unnecessary removal of existing vegetation would be avoided as much as possible. Canopy removal along all working or staging areas would be limited to the extent practicable;
- Where removal of vegetation is necessary, bank stabilization and sediment control measures would be employed immediately at the start of construction. Bank stabilization measures would include seeding with native species and placing of silt fences or rip-rap; and
- Control structures would be inspected and properly maintained throughout the life of the project.

Mitigation is required for all impacts that do not meet requirements for general Aquatic Resource Alterations Permits (ARAP; State of Tennessee) or for certain Nationwide Section 404 USACE permits. TDOT's stream and wetland mitigation efforts for this project will be in compliance with all rules and regulations as set by USACE, EPA, and/or TDEC. Where possible, TDOT replaces unavoidable stream and wetland impacts through a process referred to as compensatory mitigation. Compensatory mitigation involves actions taken to offset unavoidable adverse impacts to wetlands, streams, and other aquatic resources authorized by Clean Water Act Section 404 permits and other USACE permits.

Specific mitigation measures for this project would be developed during the permit acquisition process once final design plans have been developed, but prior to any construction activities. All construction activities and associated mitigation requirements would need to be approved by the appropriate agencies responsible for protecting water resources in the project area. Continued coordination with appropriate regulatory agencies would occur during final planning and construction of the project and extend through required monitoring periods that may be established during the initial permit acquisition process.

A spill prevention, control, and counter measures (SPCC) plan would be developed for both the construction process and for operations of the I-65 Interchange after construction. This plan

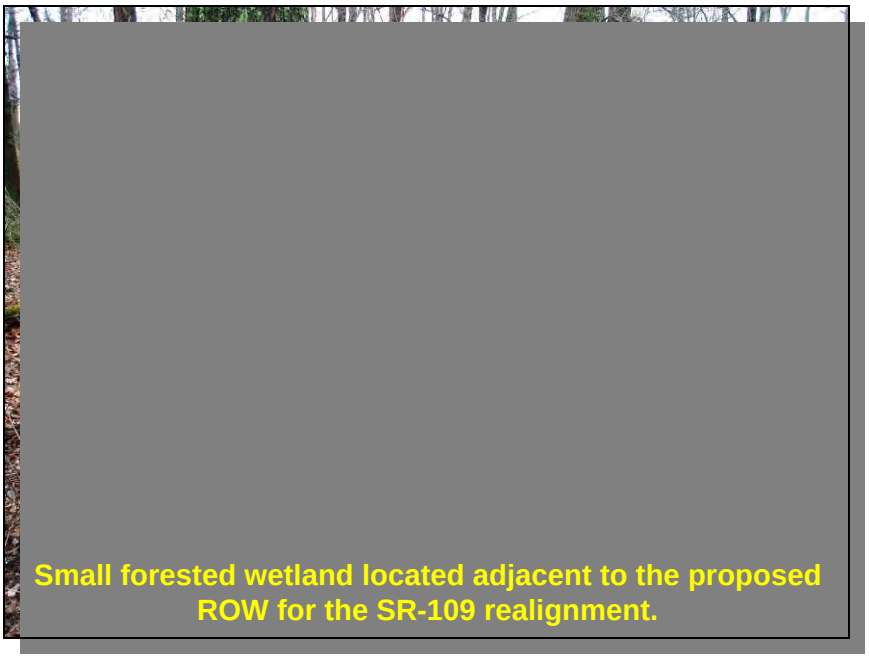
would define the emergency response plan in cases where accidental releases of hazardous substances occurred, including potential spills or releases adjacent to streams or other environmentally sensitive areas.

3.3.2 Wetlands

Section 404 of the Clean Water Act extends authorization to the USACE to regulate activities that affect waters of the United States, including wetlands. The USACE issues Section 404 permits for the discharge of dredged or fill material into waters of the U.S. including special aquatic sites, such as wetlands.

The project study area was surveyed to determine if wetlands were present. The specific objectives of the wetland surveys were to identify potential jurisdictional wetlands occurring within and immediately adjacent to the Build Alternative ROW; to characterize the wetland resources in terms of wetland type, size, and functional value; and to determine the environmental impacts of each alternative on these wetland resources. Jurisdictional wetlands are defined by the USACE as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (USACE, 1987). Wetlands have hydrophytic vegetation, hydric soils, and occur in areas that are permanently or periodically inundated or saturated with water.

Potential wetlands were preliminarily identified within the project area by reviewing existing United States Geological Survey (USGS) topographic maps, NRCS soil survey maps, U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps, and aerial photographs. Field surveys were conducted to confirm the presence or absence of jurisdictional wetlands within or adjacent to the Build Alternative ROW. Wetland determinations were made utilizing the technique as described in the USACE Wetlands Delineation Manual (USACE, 1987). This approach requires an on-site inspection of the vegetation, soils, and hydrology of an area to make wetland determinations. At least one positive wetland indicator for each of the three parameters must be evident for a positive wetland determination.



Small forested wetland located adjacent to the proposed ROW for the SR-109 realignment.

One potentially jurisdictional wetland (WTL-1) was located in the study area of the Build Alternative. WTL-1 is located outside of the

immediate project ROW. Only 0.12 acres of this 4.77 acre wetland area is located within the 500-foot study area. Functional values for this wetland are low due primarily to disturbance caused by cattle activity in the wetland. This wetland has minimal capacity for flood storage, nutrient and pollution uptake, and providing wildlife habitat. Figure 3-4 above displays the location of WTL-1 near the eastern end of the project area. The Ecology Study Technical Appendix prepared for this project contains more detailed descriptions of the wetland and is available upon request from TDOT.

3.3.2.1 Potential Impacts to Wetlands

Potential Impacts to Wetlands Associated with the No-Build Alternative

Because no new construction activities would occur under the No-Build Alternative, no changes from the baseline conditions of wetlands would occur within the immediate project site. However, the anticipated growth in Robertson and Sumner Counties will continue to have potential adverse impacts on wetlands in the region. Eventually the area within the project site may become developed, but without the new interchange it is likely that other areas with better access to I-65 would become developed first.

Potential Impacts to Wetlands Associated with the Build Alternative

Since WTL-1 is located outside of the project ROW, this wetland would not be filled or drained. Minor long-term adverse impacts would occur due to highway runoff containing petroleum products and other roadway contaminants entering the wetland. Construction of the new I-65 Interchange would introduce new paved impervious area that would result in increased runoff. Pollutants usually contained in highway runoff include de-icing salts, pesticides, and herbicides used for the control of roadside vegetation. De-icing salts are used relatively sparingly in this area and would not likely impact water quality in WTL-1, and pesticides and herbicides can be applied in a manner designed to minimize introduction of these chemicals into wetlands.

Short-term adverse impacts would include increased sediment loading and contaminant runoff from construction activities. Construction-related impacts would be temporary, and appropriate measures would be implemented to reduce sediment loading and contaminant runoff. TDOT will continue to coordinate with the USACE to ensure that proper permits are obtained and that all wetland impacts, if any, are minimized and/or mitigated to the extent possible.

Increased sediment loading due to increased runoff from the proposed project could adversely affect functional values of WTL-1. Decreasing the limited functional values of WTL-1 could cause adverse impacts to the streams described in the study area by increasing flow during storm events. Increased flow, especially in channelized streams, causes increased bank erosion, sedimentation, and head cutting. Additionally, increased nitrogen and other nutrients entering the stream could ultimately lead to reduced dissolved oxygen.

3.3.2.2 Mitigation of Wetland Impacts

<u>Mitigation of Wetland Impacts</u>

TDOT's stream and wetland mitigation efforts for this project will be in compliance with all rules and regulations as set by USACE, EPA, and/or TDEC. Where possible, TDOT replaces unavoidable stream and wetland impacts through a process referred to as compensatory

mitigation. Compensatory mitigation involves actions taken to offset unavoidable adverse impacts to wetlands, streams, and other aquatic resources authorized by Clean Water Act Section 404 permits and other USACE permits. As such, compensatory mitigation is a critical tool in helping the federal government to meet the longstanding national goal of ‘‘no net loss’’ of wetland acreage and function. For impacts authorized under Section 404, compensatory mitigation is not considered until after all appropriate and practicable steps have been taken to first avoid and then minimize adverse impacts to the aquatic ecosystem pursuant to 40 CFR part 230 (i.e., the CWA Section 404(b)(1) Guidelines). Compensatory mitigation can be carried out through four methods: the restoration of a previously-existing wetland or other aquatic site; the enhancement of an existing aquatic site’s functions; the establishment (i.e., creation) of a new aquatic site; or the preservation of an existing aquatic site.

There are three mechanisms for providing compensatory mitigation: permittee-responsible compensatory mitigation, mitigation banks, and in-lieu fee mitigation. Permittee-responsible mitigation is the most traditional form of compensation and continues to represent the majority of compensation acreage provided each year. As its name implies, the permittee retains responsibility for ensuring that required compensation activities are completed and successful. Permittee-responsible mitigation can be located at or adjacent to the impact site (i.e., on-site compensatory mitigation) or at another location generally within the same watershed as the impact site (i.e., offsite compensatory mitigation). Mitigation banks and in-lieu fee mitigation both involve off-site compensation activities generally conducted by a third party, a mitigation bank sponsor or in-lieu fee program sponsor. When a permittee’s compensatory mitigation requirements are satisfied by a mitigation bank or in lieu-fee program, responsibility for ensuring that required compensation is completed and successful shifts from the permittee to the bank or in-lieu fee sponsor. TDOT’s compensatory mitigation typically occurs in advance of or concurrent with the impact.

On April 10, 2008 the USACE and the EPA issued revised regulations governing compensatory mitigation for activities authorized by permits issued by the USACE (USACE 33 CFR Parts 325 and 332 and EPA 40 CFR Part 230; EPA–HQ–OW–2006–0020; FRL–8545–4] RIN 0710–AA55). The regulations establish performance standards and criteria for the use of permittee-responsible compensatory mitigation, mitigation banks, and in-lieu programs to improve the quality and success of compensatory mitigation projects for activities authorized by USACE permits. This rule improves the planning, implementation, and management of compensatory mitigation projects by emphasizing a watershed approach in selecting compensatory mitigation project locations, requiring measurable, enforceable ecological performance standards, regular monitoring for all types of compensation, and specifying the components of a complete compensatory mitigation plan. This includes assurances of long-term protection of compensation sites, financial assurances, and identification of the parties responsible for specific project tasks. This rule applies equivalent standards to permittee-responsible compensatory mitigation, mitigation banks, and in-lieu fee mitigation to the maximum extent practicable.

Since a mitigation bank must have an approved mitigation plan and other assurances in place before any of its credits can be used to offset permitted impacts, this rule establishes a preference for the use of mitigation bank credits, which reduces some of the risks and

uncertainties associated with compensatory mitigation. This rule also significantly revises the requirements for in-lieu fee programs to address concerns regarding their past performance and equivalency with the standards for mitigation banks and permittee-responsible compensatory mitigation. This new rule became effective on June 9, 2008. Additional information can also be found at the Corps Headquarters Regulatory Program webpage at http://www.usace.army.mil/CECW/Pages/techbio.aspx or the EPA compensatory mitigation webpage at: *http://www.epa.gov/wetlandsmitigation*.

3.3.3 Floodplains

Floodplains perform a variety of important natural functions including storage of floodwater, moderation of peak flows, maintenance of water quality, and groundwater recharge. Floodplains often support wetland ecosystems due to collection and storage of floodwaters and filtration and deposition of beneficial nutrients from those waters that enter into the soil and help support lush wetland vegetation. Many floodplains, especially those that flood less frequently during the growing season, also provide areas that are suitable for growing crops. Floodplains also provide habitat for wildlife (especially migratory birds, such as waterfowl and shorebirds), recreational opportunities, timber supplies, and aesthetic benefits.

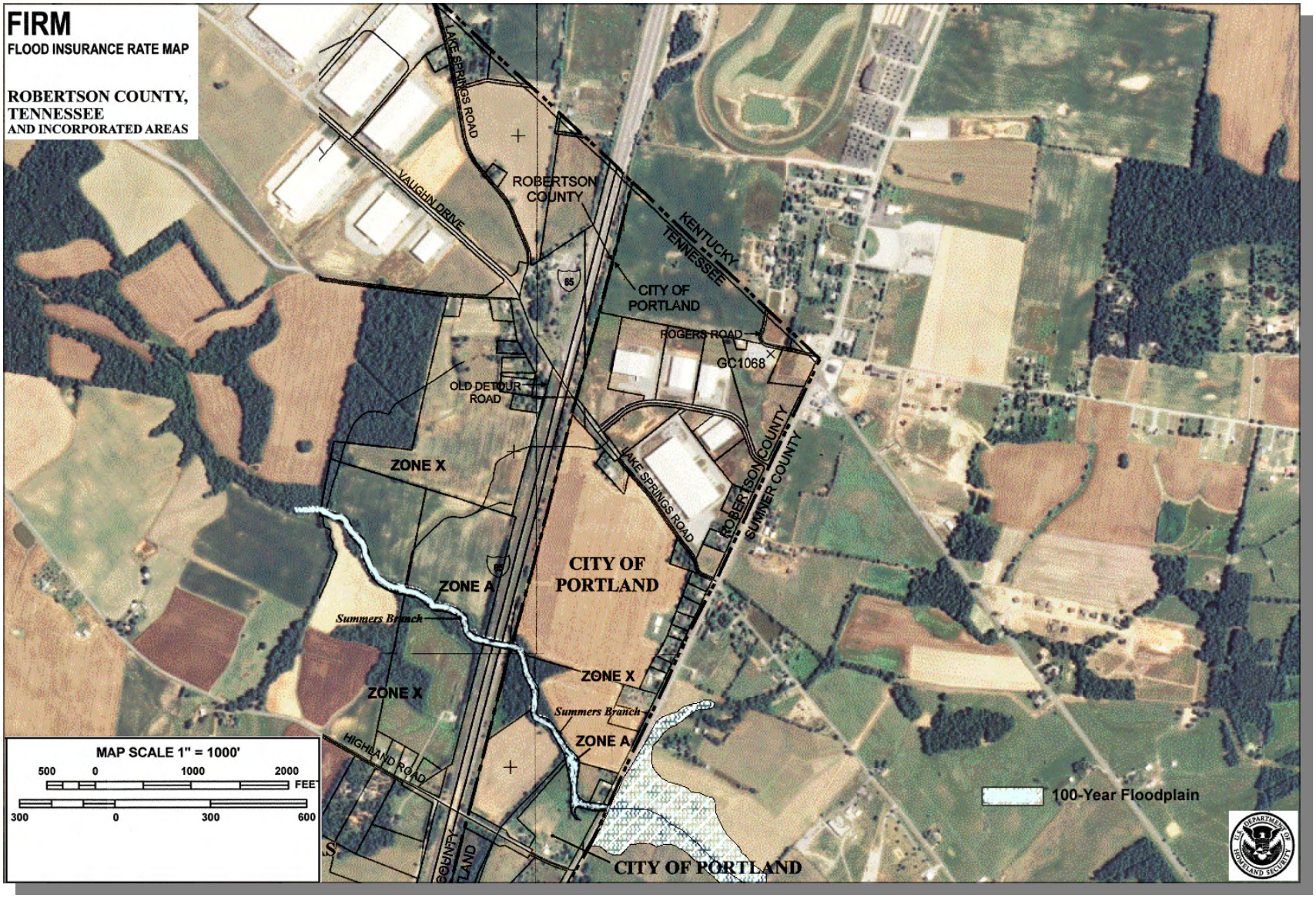
Significant encroachment according to 23CFR650.105(q) refers to a highway encroachment and any direct support of likely base floodplain development that would involve one or more of the following construction-or flood-related impacts: (1) a significant potential for interruption or termination of a transportation facility which is needed for emergency vehicles or provides a community's only evacuation route; (2) a significant risk; or (3) a significant adverse impact on natural and beneficial floodplain values.

Encroachment may diminish or impair the natural functions of the floodplain by decreasing the capacity for the area to convey floodwaters, which increases the potential for flood hazards. Flooding can cause serious damage to homes, businesses, and public works and can pose a threat to the safety of individuals.

The Build Alternative would traverse the 100-year floodplain of Summers Branch. Figure 3-5 shows the designated 100-year floodplain within the project area. Section 3.3.3.1 below discusses the floodplain impacts in more detail. Ecological values associated with the affected floodplains include overflow flood storage, water filtration, and wildlife habitat.

The Build Alternative would be designed to minimize impacts to current drainage patterns and would not increase the base flood elevations upstream from the floodplain crossing. Where feasible, precautions would be taken during construction to minimize in-stream work and other stream disturbances that could alter flood flow. All stream work and mitigation measures would be in compliance with EO 11988, Floodplain Management. Regulatory floodway encroachments would be coordinated with FEMA.

Figure 3-5. 100-Year Floodplain in the I-65 Interchange Study Area.



3.3.3.1 Potential Impacts to Floodplains

Potential Impacts to Floodplains Associated with the No-Build Alternative

The No-Build Alternative would not result in any changes to the baseline conditions relative to floodplains. Therefore, the No-Build Alternative would not result in impacts to floodplains.

Potential Impacts to Floodplains Associated with the Build Alternative

The floodplain of Summers Branch extends into the project area and may be slightly impacted by the project. Encroachment of floodplains can diminish or impair the natural functions of the floodplain by decreasing the capacity for the area to convey floodwaters, which increases the potential for flood hazards. However, it is not anticipated that the small amount of floodplain that would be impacted by the I-65 Interchange would result in any changes in base flood elevations for any adjacent areas. The floodplain area that would be impacted occurs where existing I-65 would be widened. The existing bridge would be widened to accommodate the additional traffic lanes for I-65. The bridge widening would be designed to allow adequate conveyance of floodwater and would not result in any noticeable loss of floodplain area.

3.3.4 Threatened and Endangered Species

Certain species are given protection under the Endangered Species Act of 1973 (ESA), as amended. The ESA, administered by the USFWS and National Marine Fisheries Service, provides Federal protection for all species designated as *threatened* or *endangered*. An *endangered* species is "in danger of extinction throughout all or a significant portion of its range," and a *threatened* species "is likely to become an endangered species within the foreseeable future." The "take" of species listed as *threatened* or *endangered* under the ESA is prohibited, unless the take is incidental to otherwise lawful activities. To "take" a listed species includes to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct.

Information from several sources, as well as prior experience with habitats in the area, was used to prepare for field surveys to locate protected species and/or habitats. These sources included database information provided by the USFWS, TDEC, and the Tennessee Wildlife Resources Agency (TWRA).

3.3.4.1 Federally-Listed Species

The USFWS lists the gray bat (*Myotis grisescens*) and tan riffleshell (*Epioblasma walkeri*) as federally endangered species in Robertson County. The tan riffleshell is listed as a historical occurrence (i.e., occurrence pre-dates 1970). In Sumner County, the gray bat, pink mucket pearly mussel [*Lampsilis abrupta* (=*Lampsilis orbiculata*)], and leafy prairie clover [*Dalea* (=*Petalostemum*) *foliosa*] are listed as federally endangered species. The pink mucket pearly mussel and leafy prairie clover are listed as historical occurrences.

3.3.4.2 State-Listed Species

The TDEC Natural Heritage database was searched for state-listed species that are known to occur in Robertson and Sumner Counties, Tennessee. State-listed species known to occur within the affected counties are shown on Table 3.9.

Table 3.9. State and Federally-listed Species known to occur in Robertson and Sumner Counties, Tennessee.

Tennessee Natural Heritage Program
Rare Species Observations For
Tennessee Counties

Robertson County — **Known Species: 20**

Invertebrate Animals: 3		St. Rank	Global Rank	St. Prot.	Fed. Prot.
Lithasia salebrosa	Muddy Rocksnail Formerly occurred in portions of lower Cumberland and lower Tennessee systems; may be limited to dam tailwaters currently.	S2	G3G4Q	--	--
Orconectes pellucidus	Mammoth Cave Crayfish Aquatic cave obligate; subterranean streams & pools of Penneroyal Plain; Montgomery & Robertson counties.	S3	G4	--	--
Pseudanophthalmus loganensis	A Cave Obligate Beetle Terrestrial cave obligate; Western Highland Rim.	S1S2	G2G3	--	--

Vascular Plants: 8		St. Rank	Global Rank	St. Prot.	Fed. Prot.
Astragalus tennesseensis	Tennessee Milk-vetch Glades	S3	G3	S	--
Carex buxbaumii	Brown Bog Sedge Swamps	S1	G5	T	--
Helianthus eggertii	Eggert's Sunflower Barrens And Roadsides	S3	G3	S	DM
Leucothoe racemosa	Fetter-bush Acidic Wetlands And Swamps	S2	G5	T	--
Ranunculus aquatilis var. diffusus	White Water-buttercup Ponds And Streams	S1	G5T5	E	--
Ranunculus flabellaris	Yellow Water-crowfoot Ponds And Marshes	S2	G5	T	--
Spiranthes odorata	Sweetscent Ladies'-tresses Swamps, Pond Margins	S1	G5	E	--
Torreyochloa pallida	Pale Manna Grass Pond And Stream Margins	S1	G5	S	--

Vertebrate Animals: 9		St. Rank	Global Rank	St. Prot.	Fed. Prot.
Etheostoma cinereum	Ashy Darter Small to medium upland rivers with bedrock or gravel substrate and boulders.	S2S3	G2G3	T	--
Etheostoma microlepidum	Smallscale Darter Small rivers, in deep, strongly flowing riffles with gravel, boulder, and coarse rubble substrates; Cumberland River drainage.	S2	G2G3	D	--
Etheostoma tippecanoe	Tippecanoe Darter Medium to large rivers in shallow riffle areas containing fine cherty gravel; Cumberland River watershed.	S1S2	G3G4	D	--
Hemidactylium scutatum	Four-toed Salamander Woodland swamps, shallow depressions, & sphagnum mats on acidic soils; middle & east Tennessee.	S3	G5	D	--
Hyla gratiosa	Barking Treefrog Low wet woods and swamps esp. with ephemeral ponds.	S3	G5	D	--

Table 3.9 (cont.). State and Federally-listed Species known to occur in Robertson and Sumner Counties, Tennessee.

Tennessee Natural Heritage Program
Rare Species Observations For
Tennessee Counties

Robertson County . . . Continued — Known Species: 20

Vertebrate Animals: 9 . . . Continued		St. Rank	Global Rank	St. Prot.	Fed. Prot.
Myotis grisescens	Gray Myotis	S2	G3	E	LE
	Cave obligate year-round; frequents forested areas; migratory.				
Percina phoxocephala	Slenderhead Darter	S3	G5	D	--
	Small-large rivers with moderate gradient in shoal areas with moderate-swift currents; portions of Tenn & Cumb river watersheds.				
Typhlichthys subterraneus	Southern Cavefish	S3	G3G4	D	--
	Aquatic cave obligate; cave streams, karst waters, and water supply wells; reported from all karst regions excluding RV & BR.				
Zapus hudsonius	Meadow Jumping Mouse	S4	G5	D	No Status
	Open grassy fields; often abundant in thick vegetation near water bodies; statewide.				

-- End of Robertson --

Table 3.9 (cont.). State and Federally-listed Species known to occur in Robertson and Sumner Counties, Tennessee.

Tennessee Natural Heritage Program
Rare Species Observations For
Tennessee Counties

Sumner County — **Known Species: 31**

Invertebrate Animals: 4		St. Rank	Global Rank	St. Prot.	Fed. Prot.
Allocapnia cunninghami	Karst Snowfly Small-medium size creeks; northern Highland Rim; Barren River watershed.	S1	G1G2	--	--
Allocapnia perplexa	Perplexing Snowfly Low-mod gradient streams with limestone bedrock & interspersed rubble; E Fk Bledsoe Creek, Cumberland R watershed; Sumner Co.	S1	G1	--	--
Barbicambarus cornutus	Bottle Brush Crayfish Under slabrock in medium-large tributaries of Barren River watershed; Sumner, Macon, Clay counties.	S2	G4	--	--
Carychium stygium	Cave Thorn Cave obligate; feeds on cricket guano; Highland Rim & escarpment of Cumberland Plateau.	S2	G3	--	--

Other Types: 1		St. Rank	Global Rank	St. Prot.	Fed. Prot.
Heron rookery	Heron Rookery	SNR	GNR	--	--

Vascular Plants: 11		St. Rank	Global Rank	St. Prot.	Fed. Prot.
Allium tricoccum	Ramps Rich Woods	S1S2	G5	S-CE	--
Carex hitchcockiana	Hitchcock's Sedge Rich Moist Woods	S1	G5	T	--
Caulophyllum giganteum	Giant Blue Cohosh Rich Woods	S1	G4G5Q	T	--
Collinsia verna	Spring Blue-eyed Mary Rich Wet-Mesic Woods	S1	G5	E	--
Dalea foliosa	Leafy Prairie-clover Rocky Washes In Glades	S2S3	G2G3	E	LE
Hydrastis canadensis	Goldenseal Rich Woods	S3	G4	S-CE	--
Juglans cinerea	Butternut Rich Woods And Hollows	S3	G4	T	--
Lilium michiganense	Michigan Lily Swamps And Open Wet Woods	S3	G5	T	--
Panax quinquefolius	American Ginseng Rich Woods	S3S4	G3G4	S-CE	--
Stellaria fontinalis	Water Stitchwort Seeps And Limestone Creek Beds	S3	G3	T	--
Trillium pusillum	Least Trillium Alluvial/Moist Ravines And Dry Ridges	S2	G3	E	--

Vertebrate Animals: 15		St. Rank	Global Rank	St. Prot.	Fed. Prot.

Table 3.9 (cont.). State and Federally-listed Species known to occur in Robertson and Sumner Counties, Tennessee.

Tennessee Natural Heritage Program
Rare Species Observations For
Tennessee Counties

Sumner County . . . Continued — **Known Species: 31**

Vertebrate Animals: 15 . . . Continued		St. Rank	Global Rank	St. Prot.	Fed. Prot.
Ardea alba	Great Egret	S2B,S3N	G5	D	--
	Marshes, swampy woods, streams, lakes, and ponds; also fields and meadows; colonial nester.				
Cryptobranchus alleganiensis	Hellbender	S3	G3G4	D	No Status
	Rocky, clear creeks and rivers with large shelter rocks.				
Etheostoma barbouri	Teardrop Darter	S2	G4G5	D	--
	Sandy pools in small to medium streams with slabrock cover; Barren River watershed.				
Etheostoma barrenense	Splendid Darter	S3	G4	D	--
	Locally abundant in rocky pools and adjacent riffles of small to moderate streams; Barren River watershed.				
Etheostoma bellum	Orangefin Darter	S3	G4G5	D	--
	Locally abundant in small to medium-sized clear streams over gravel substrate; Barren River watershed.				
Hemitremia flammea	Flame Chub	S3	G3	D	--
	Springs and spring-fed streams with lush aquatic vegetation; Tennessee & middle Cumberland river watersheds.				
Moxostoma atripinne	Blackfin Sucker	S1	G2	D	--
	Larger creeks with quiet or gently flowing pools with scattered slabrocks & undercut banks; Barren River watershed.				
Myotis grisescens	Gray Myotis	S2	G3	E	LE
	Cave obligate year-round; frequents forested areas; migratory.				
Percina stictogaster	Frecklebelly Darter	S1	G4G5	D	--
	Small rivers & larger creeks; pool areas with mod-sluggish current & aquatic vegetation; Barren River watershed.				
Pituophis melanoleucus melanoleucus	Northern Pinesnake	S3	G4T4	T	--
	Well-drained sandy soils in pine/pine-oak woods; dry mountain ridges; E portions of west TN, E to lower elev of the Appalachians.				
Sorex longirostris	Southeastern Shrew	S4	G5	D	--
	Various habitats including wet meadows, damp woods, and uplands; statewide.				
Thryomanes bewickii	Bewick's Wren	S1	G5	E	--
	Brushy areas, thickets and scrub in open country, open and riparian woodland.				
Typhlichthys subterraneus	Southern Cavefish	S3	G3G4	D	--
	Aquatic cave obligate; cave streams, karst waters, and water supply wells; reported from all karst regions excluding RV & BR.				
Tyto alba	Barn Owl	S3	G5	D	--
	Open and partly open country, often around human habitation; farms.				
Zapus hudsonius	Meadow Jumping Mouse	S4	G5	D	No Status
	Open grassy fields; often abundant in thick vegetation near water bodies; statewide.				

-- End of Sumner --

State Status: E = Endangered, T = Threatened, P = Proposed for Listing, D = Deemed in Need of Management, S = Special Concern;

Source: *TDEC-ESD Natural Heritage Division, List of Rare and Endangered Species by Tennessee County.*

3.3.4.3 Threatened and Endangered Species Assessment

Following the compilation of the list of threatened and endangered species potentially occurring in the study area, a detailed literature search was completed for the listed species. The potential for species to occur in the study area was estimated using available life history information coupled with recorded observations of known threatened and endangered species occurrences provided by TDEC. It is not anticipated that any listed species occur within the proposed ROW of the Build Alternative. Much of the habitat within the study area has been disturbed due to construction of the existing highways and due to the agricultural practices in the area.

Collection records from the USFWS and TDEC Natural Heritage Inventory indicated that there are no federally-listed species within the proposed study area of the project. Two state-listed fish species, the splendid darter and orangefin darter, found within 4 miles of the study area, have been given a status of "Deemed in Need of Management" by the TWRA. None of the known records of state-listed species occurred within the ROW of the Build Alternative. The two state-listed fish species are located in the Barren River watershed, and the project is located entirely in the Red River watershed. Therefore, no direct or indirect impacts to threatened and endangered species are expected to occur due to the proposed action.

Information received from TDEC is periodically reviewed and updated. If any protected species or their habitats are identified as project development continues, they would be addressed in accordance with applicable laws and regulations.

3.3.4.4 Potential Impacts to Threatened and Endangered Species

Potential Impacts to Threatened and Endangered Species Associated with the No-Build Alternative

The No-Build Alternative would not result in any changes to the baseline conditions in regards to threatened and endangered species.

Potential Impacts to Threatened and Endangered Species Associated with the Build Alternative

No records of listed species occurred within the 500-foot study area of the Build Alternative. In addition, no listed species or suitable habitats were identified during the 2009 field surveys. With the exception of a few isolated areas, most of the terrestrial and aquatic habitats within the proposed project area have become relatively degraded due to past and/or present disturbances, such as agriculture, roadways, utilities, timber harvesting, and other human disturbances. Therefore, the potential for the remaining habitats to support threatened and endangered species is considered low at this time.

3.3.5 Fish and Wildlife Resources

3.3.5.1 Aquatic Wildlife

Aquatic Habitats

Aquatic habitats within the project area consist of a mixture of perennial streams, intermittent streams, wetlands, and man-made ponds. The intermittent stream located in the project area contains a limited amount of aquatic habitat due to its small size. However, the two perennial streams provide aquatic habitats for a variety of species, especially Summers Branch. Characteristics of these habitats are described in more detail in the *Ecology Study Technical Appendix* prepared for this project and available upon request through the TDOT Environmental Division.

The perennial streams contain several small fish species, reptiles, amphibians, mammals, and various invertebrates that are common in streams of this size in the project vicinity. Several otherwise terrestrial species also utilize the aquatic habitats for drinking and foraging. Most of the aquatic habitats in the project area are of somewhat reduced quality due to past and present human disturbances including past construction and current operation of roadways and agricultural practices, such as row crop production, hay production, and cattle grazing; and other land uses that tend to degrade natural communities. These disturbances have resulted in a combination of impacts to local aquatic habitats and water quality resulting from removal of riparian vegetation, substantial channel modifications, increased erosion, and changes in hydrology.

3.3.5.2 Terrestrial Wildlife

Terrestrial Wildlife Habitats

The majority of the I-65 Interchange study area is agriculture fields and pasture. Typical resident species include mammals, such as white-tailed deer, raccoon, coyote, opossum, and several small rodent species. Resident birds likely include wild turkeys, northern cardinals, and American robins. Some of the migratory species that frequent the study area include raptors, such as red-tailed hawks, turkey vultures, sharp-shinned hawks, and American kestrels; and neotropical migrants including warblers, sparrows, vireos, thrushes, and other songbirds. Reptiles, including snakes, lizards, and turtles, are also present within the study area. Some of the bird species observed during the field survey were northern cardinal, American robin, red-tailed hawk, red-bellied woodpecker, and American crow.

Very little forested habitat exists in the study area. The habitats present provide limited habitat diversity for resident and migratory species, and there is a lot of human disturbance in the area which minimizes habitat quality. The larger, more open agricultural areas that dominate the study area provide low quality habitat. Table 3.10 contains an estimate of the acreages of each habitat type within the I-65 Interchange project area.

Table 3.10. Total habitat acreages potentially affected by the I-65 Interchange in Robertson and Sumner Counties, Tennessee.

Alternative	Agriculture	Forest	Old Field	Pasture	Water	Developed/ Disturbed	Total
Build Alternative	96.7	14.8	2.46	41.2	1.42	140.1	296.7

Note: Habitat areas shown as acres.

Note: These acreage amounts were calculated based on lands within the 500-foot study corridor for the Build Alternative and are provided to show the basic land uses in the study area. Not all of the acreages shown in this table would actually be impacted by construction of this project. Only lands needed for actual construction or work zones would be cleared or disturbed.
Source: Parsons, 2009.

3.3.5.3 Potential Impacts to Fish and Wildlife Resources

Potential Impacts to Fish and Wildlife Resources Associated with the No-Build Alternative

The No-Build Alternative would not change the baseline conditions in the project area. The trend toward more development in the project vicinity would continue and likely result in additional loss and/or fragmentation of existing fish and wildlife habitats. The habitats in the immediate I-65 Interchange project area would likely not be substantially impacted due to their already small size and much of the habitat is located along the existing streams in the project area and would not be conducive to development.

Potential Impacts to Fish and Wildlife Resources Associated with the Build Alternative

There would be minor long-term adverse impacts to terrestrial habitats due to the clearing of existing forests, old fields, pastures, and shrub/scrub areas for conversion to roadway ROW. Due to the limited value of the habitats in the immediate project area and because most of the habitats have been altered/disturbed in the past, it is not expected that the loss of these habitats will have a substantial influence on fish and/or wildlife populations in the area. Only a small amount of the existing habitats would actually need to be cleared for this project. Some of the remaining habitats within the ROW of the project could still be utilized by several of the species common to the project area. However, the quality of the habitats immediately adjacent to the roadway would be further reduced for most species due to highway noise and other factors. Highway noise can affect the utilization of habitats by wildlife in both the short and long term.

Channelization/encapsulation of streams within the project area could result in long-term adverse impacts to aquatic habitats and species living in downstream habitats. These long-term adverse impacts would mainly result from potential changes in aquatic habitat conditions associated with changes in hydrology and water quality over time. Changes in hydrology may impact microhabitat conditions, such as substrate type, stream channel depth and width, and vegetation in portions of these streams. Removal of canopy cover increases sun exposure to the water surface, which can raise stream water temperature. Increased water temperature and other microhabitat changes can alter species composition in the stream. These adverse impacts have potential to affect spawning and larval fish due primarily to the decreased water quality and subsequent decrease in benthic invertebrates.

Short-term adverse impacts would include interruption or modification of stream flow during construction and water quality impacts associated with site preparation, grading, and construction activities. Other short-term adverse impacts would include increased sediment loading, disruption of bottom substrates and associated macroinvertebrate communities, and removal of tree cover and riparian vegetation resulting in increased erosion and habitat loss. Contaminant runoff from construction equipment and materials may also adversely affect water quality. Construction-related impacts would be temporary and any affected aquatic communities would be expected to recover after construction had ceased. The degree of impact would vary depending on the width and depth of the stream, the distance of the stream to the final alignment, the steepness of the newly established streambanks, and the typical level of flow within the stream.

Potential short-term adverse impacts on benthic invertebrates, larval fish, and other aquatic species could occur from stormwater runoff, which would increase turbidity and total suspended solids. Erosion would be the primary agent of adverse impacts, potentially resulting in an increased silt load (suspended solids and total solids), turbidity, change in color, and introduction of contaminants, such as petroleum products from heavy equipment. Siltation can cause mortality or impair the growth of the benthic fauna and fish, while increased turbidity and color can impact primary production by plants.

In rural areas adjacent to interstates the pressure to develop habitat into businesses and roadways can be high. Within a one-mile radius of the study area there has been an increase in distribution facilities. Undeveloped forest, agricultural land, and old field habitat are gradually decreasing. It is likely that this trend would continue with or without the new interchange, but the improved access provided by the new interchange would likely result in increased development in the surrounding area.

3.3.5.4 Mitigation of Fish and Wildlife Resources Impacts

If the Build Alternative is chosen, efforts to further minimize impacts would continue throughout the design, permitting, and construction processes. Unavoidable impacts would be mitigated as required by applicable laws and regulations. Whenever possible, impacts to fish and wildlife resources would be avoided and minimized. These decisions would be made during the final design phase of the project as more details regarding cut and fill limits and volumes have been developed.

It is expected that the combined use of water quality protection measures during construction and appropriate mitigation measures would result in a reduction in potential impacts to water bodies and wildlife. Although short-term and long-term adverse impacts would be anticipated, BMPs would be followed to reduce or mitigate for the overall impact to fish and wildlife. When possible, streamside and in-stream construction activities would be performed during dry periods, when stream flow is at a minimum. The unnecessary removal of existing vegetation would be avoided as much as possible. Canopy removal along all working or staging areas would be limited to the extent practicable. Where removal of vegetation is necessary, bank stabilization and sediment control measures would be employed immediately at the start of construction. Bank stabilization measures would include seeding with native species and placing of silt fences or rip-rap. Control structures would be inspected and properly maintained

throughout the life of the project. A spill prevention control and countermeasures (SPCC) plan would be developed for both the construction process and for operations of the I-65 Interchange after construction.

In an effort to minimize sedimentation impacts, erosion and sediment control plans would be included in the project construction plans. TDOT would also implement its Standard Specifications for Road and Bridge Construction, which include erosion and sediment control standards for use during construction. The State of Tennessee sets water quality criteria for waters of the state; these standards must be met during the construction of the proposed project.

Stream channels requiring relocation or channelization would be replaced on-site to the extent possible, using techniques that would replace existing stream characteristics such as length, width, gradient, and tree canopy. Stream or water body impacts that cannot be mitigated on site, such as impacts of culverts over 200 feet or impacts to springs or seeps which require rock fill to allow for movement of water underneath the roadway, would either be mitigated off-site by improving a degraded system or by making a comparable payment to an in-lieu-fee program, which would perform such off-site mitigation under the direction of state and federal regulatory and resource agencies. In some cases stream relocations can be avoided by slightly shifting the alignment away from the channel. Such efforts will be considered during the design phase of the project.

TDOT will work closely with TDEC and the USACE during the permit stage of the project to determine exact impacts to existing watercourses and what mitigation is required for impacts to those resources. TDOT will continue to work closely with regulatory agencies and other stakeholders to ensure that impacts to important resources are kept to the minimum practical.

3.3.6 Invasive Species

In accordance with EO 13112 *Invasive Species*, field surveys in the project area included visual observations for invasive species populations. The EO directs Federal agencies to expand and coordinate their efforts to combat the introduction and spread of plants and animals not native to the United States. Transportation systems can facilitate the spread of plant and animal species outside their natural range. Those species that are likely to harm the environment, human health, or economy are of particular concern. Nonnative flora and fauna can cause major changes to ecosystems, upset the ecological balance, and cause economic harm to agriculture and recreation sectors. Roadways can provide opportunities for the spread of invasive species in several ways, including: the introduction by automobile traffic; mowing and spraying operations; the importing of dirt, gravel, or sod; or through the use of nonnative plants for erosion control, landscape, or wildflower projects.

Past land and stream alterations, including those completed for construction of existing roads and agricultural purposes, has permanently altered the natural landscape and provided a variety of existing impacts to fish and wildlife. These disturbances have also promoted the spread of invasive species into the area. Some of the most common non-native plant species observed in the proposed project corridor included Japanese honeysuckle (*Lonicera japonica*), sericea lespedeza (*Lespedeza cuneata*), and multiflora rose (*Rosa multiflora*).

No widespread populations of invasive species were observed within the ROW of the Build Alternative. However, small, isolated populations of invasive species were identified in the project area during the field surveys. Isolated populations of other invasive plants are possibly present within the project area as well, but no evidence of widespread infestations were observed during the field surveys.

3.3.6.1 Potential Invasive Species Impacts

Potential Invasive Species Impacts Associated with the No-Build Alternative

The No-Build Alternative would not result in any substantial changes in the baseline conditions of invasive species. Therefore, the scattered populations of invasive species would continue to occur in the general project area. Populations of such species would not be expected to spread rapidly unless other projects that result in major land disturbances are implemented.

Potential Invasive Species Impacts Associated with the Build Alternative.

Construction activities associated with the Build Alternative would potentially increase the chance of spreading invasive plant species in the project area, due primarily to soil disturbance and removal of native vegetation. Many invasive species thrive in newly disturbed areas and effectively out-compete native vegetation before populations can become reestablished. Areas that already contain a population of invasive species are the areas of most concern. Even if no noticeable populations of invasive species occurs in an area, it is possible for seeds from nearby populations to lie idle on the surface awaiting disturbances that remove the native vegetation and allow them to germinate.

3.3.6.2 Mitigation of Invasive Species Impacts

The FHWA has developed guidance to implement Executive Order 13112. It provides a framework for preventing the introduction of and controlling the spread of invasive plant species on highway ROWs. Controlling invasive plants on ROWs can often be a complex effort involving various governmental jurisdictions, adjacent landowners, and the general public. Incorporating elements of the FHWA guidance into planning and implementation of construction, erosion control, landscaping, and maintenance activities, would facilitate the use of best management practices. Key elements of this guidance would include inspection and cleaning of construction equipment, commitments to ensure the use of invasive-free mulches, topsoils, and seed mixes, and eradication strategies to be deployed should an invasion occur (FHWA, 1999).

The Tennessee Exotic Pest Plant Council (TN-EPPC) has produced a detailed manual, Tennessee Exotic Plant Management Manual (TN-EPPC, 1997), aimed at providing information to help control and manage 20 of Tennessee's worst exotic pest plant problems. This manual provides the entire list of invasive exotic pest plants in Tennessee, detailed species descriptions, and recommended herbicide application methods for controlling these species. This resource would be used as an additional tool to control the spread of invasive species with construction of the Build Alternative.

The following measures would be used to the extent possible to help prevent the introduction and spread of invasive species:

- Native grasses, shrubs, and trees would be planted for beautification purposes or to prevent erosion, wherever needed. Native species would be consistent with local community types;
- Whenever possible, all disturbed soil would be seeded with temporary annual species to reduce the ability of exotics to become established. This would also act to reduce erosion potential during rain events; and
- Consideration would be given to the types and quality of plants and soils at borrow sites. Soil from borrow sites used as project area fill could contain viable plant parts or seeds and could increase the spread of invasive species to new locations.

3.4 Cultural Resources

Federal laws require TDOT and FHWA to comply with Section 106 of the National Historic Preservation Act of 1966, as amended. This legislation requires TDOT and FHWA to identify any properties (either above-ground buildings, structures, objects, or historic sites or below ground archaeological sites) of historic significance. For the purposes of this legislation, historic significance is defined as those properties which are included in the National Register of Historic Places (NRHP) or which are eligible for inclusion in the National Register. Once historic resources are identified, legislation requires these agencies to determine if the proposed project would affect the historic resource. If the proposed project would have an adverse effect to a historic property, the legislation requires FHWA to provide the Advisory Council on Historic Preservation (an independent federal agency) an opportunity to comment on the effect.

The U.S. Department of Transportation Act of 1966, as amended, also requires FHWA to assess the applicability of Section 4(f). This law prohibits the Secretary of Transportation from approving any project, which requires the "use" of a historic property unless there is no prudent and feasible alternative to that use and unless the project includes all possible planning to minimize harm to the historic resource.

An important part of the Section 106 process is consultation with the Tennessee State Historic Preservation Office (SHPO), the ACHP, federally recognized Native American tribes that may attach cultural or religious significance to properties within the project study area, and local governments.

On January 19, 2007, TDOT mailed letters to the Mayors of Robertson and Sumner Counties requesting their participation in the historic review process as consulting parties. In addition, TDOT mailed letters to the following six groups or tribes representing Native American interests requesting their participation as consulting parties:

- The Cherokee Nation;
- Eastern Band of Cherokee Indians;
- Eastern Shawnee Tribe of Oklahoma;
- Shawnee Tribe;
- Thlopthlocco Tribal Town; and
- United Keetoowah Band of Cherokee Indians.

Appendix B of this document contains a brief summary of the Section 106-related coordination and consultation efforts for this project and copies of coordination letters related to cultural resources issues for this project.

3.4.1 Architectural/Historical Resources

Pursuant to 36 CFR 800.4 which requires TDOT and FHWA to identify historic resources near its proposed projects, architectural historians from TDOT surveyed the proposed project area in April 2007 in an effort to determine if any properties in the project impact area were either eligible for inclusion or are included in the NRHP. The Historic/Architectural Resource Assessment Report is on file with the TDOT Environmental Division.

A project's area of potential effects (APE) is defined in 36 CFR 800.16 (d) as 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.

The area adjacent to the project includes a mixture of the interstate zone, industrializing rural land, remaining agricultural land, growing residential areas, and roadside commercial development along SR-41 (U.S. 31W).

The APE for this project includes the following:

- A corridor approximately 1,500 feet surrounding the centerline of the proposed roadway improvements/interchange. Limitations to this corridor would be topographic features, such as the hills that are between the proposed project and other resources in the study corridor;
- Areas within the nearby viewshed of the proposed project; and
- Areas within the potential noise impact area (up to 500 feet from the proposed improvements).

TDOT also checked the survey records of the Tennessee SHPO to determine if any previous surveys had identified any historic properties in the area. The SHPO survey maps indicated no previously surveyed properties in the APE for the project.

Based on the April 2007 field surveys, TDOT documented one previously un-surveyed property and charted several others. In the opinion of TDOT, no properties within the project area are eligible for listing on the NRHP, and there will not be a Section 4(f) use of a historic property. The SHPO agreed with TDOT's determinations stated in the 2007 Historical/Architectural Assessment in a letter dated November 8, 2007. A copy of the SHPO letter is included in Appendix B of this EA.

3.4.1.1 Potential Impacts to Architectural/Historical Resources

There are no NRHP eligible or listed architectural/historical resources within the project APE. Therefore, there will be no direct or indirect impacts to architectural/historical resources.

3.4.2 Archaeological Resources

The federal statutes and responsibilities in relation to archaeological resources include Section 106 of the National Historic Preservation Act of 1966, as amended; Executive Order 11593; the Advisory Council's Protection of Historic Sites (36 CFR Part 800) effective June 17, 1999; and section 5 of the Abandoned Shipwreck Act of 1987.

Pursuant to regulations set forth in 36 CFR Part 800, TDOT personnel conducted an archaeological resource evaluation of the APE. The study involved a literature search and field investigation. The purpose of the study was to identify and determine the spatial limits of archaeological sites within the APE that are listed, eligible, or potentially eligible for inclusion in the NRHP pursuant to 36 CFR 60.4. All field and office work was conducted in accordance with the standards and guidelines established in 36 CFR Part 66, Recovery of Scientific, Prehistoric, Historic, and Archaeological Data: Methods, Standards, and Reporting Requirements (Federal Register, Volume 42, Number 19-Friday, January 18, 1977). The field investigations were conducted in a manner that is compliant with the general Scope of Work (SOW) for TDOT Phase I Archaeological Assessments (Hodge and Kline 2006), and adhered to the Tennessee Historical Commission Review and Compliance Section Reporting Standards Appendix B: Archaeological and Architectural Resource Identification Studies (Survey Reports) of that SOW.

Examination of Tennessee Division of Archaeology (TDOA) files on February 14th, 2007 and on April 3rd, 2008 revealed the nearest recorded prehistoric archaeological sites, 40SU52 and 40SU55, occur on the southwest side of Summers Branch southeast of the project limits. Summers Branch is a headwater tributary of Red River that flows in a north-westerly direction just south of the proposed interchange. These sites are characterized by low density surface lithic scatters. The nearest recorded historic archaeological site, 40SU106, is in Mitchellville well over a mile from the APE.

In general, review of TDOA site records suggests the uplands of the study area have a low probability for intact prehistoric archaeological deposits. Almost the entire project locality has been cultivated for many years. Consequently, sites in the APE are expected to be deflated prehistoric lithic scatters in plowzone with little vertical integrity.

Archaeological fieldwork on the project was initiated in March of 2007. Design changes later in the year required additional survey that was conducted in March of 2008. The fieldwork consisted of informant interviews, pedestrian reconnaissance, and shovel testing in areas of poor ground visibility that exhibited potential for intact upland archaeological deposits.

With the exception of the two observed lithic scatters outside the APE, no prehistoric or historic archaeological deposits were identified. Based on the results of the records check, informant interviews and field study no NRHP-listed, eligible, or potentially eligible archaeological deposits are located within the APE of the proposed undertaking. No further archaeological resource surveys are recommended.

The SHPO agreed with TDOT's determinations stated in the 2008 Archaeological Survey Report in a letter dated June 3, 2008. A copy of the SHPO letter is included in Appendix B of this EA.

3.4.2.1 Potential Impacts to Archaeological Resources

Based on the Phase 1 Archaeological Surveys, the I-65 Interchange project is not expected to result in impacts to archaeological resources. Much of the construction area will occur in previously disturbed areas with low likelihood of containing intact artifacts. There is a small chance artifacts could be discovered in any previously undisturbed areas within the expanded ROW for the interchange.

3.4.3 Mitigation of Cultural Resources Impacts

TDOT will continue to work in coordination with the SHPO and other consulting parties to ensure all cultural resources impacts are handled according to all applicable laws and regulations.

Should any previously undiscovered cultural resources be discovered during construction of the new roadway, all construction activities would cease in that vicinity until further investigations and coordination with the SHPO are completed. Construction activities would commence in the area once the SHPO has made a determination on the site or until any artifacts are properly documented/recovered.

3.5 Air Quality

3.5.1 Air Quality Background Information

An analysis of the project's potential impacts to the air quality in the project area is required under the Clean Air Act (CAA). Passed by Congress in 1970, the Act is the most comprehensive legislation related to air quality. The CAA was amended in 1977 and most recently in 1990 under the Clean Air Act Amendments (CAAA). The CAA of 1970 established six criteria pollutants and required EPA to set National Ambient Air Quality Standards (NAAQS) for these pollutants. The six criteria pollutants are ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead.

The CAA established two types of national air quality standards. Primary standards set limits to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings. The standards for the six principal pollutants are shown in Table 3.11.

The EPA Final Conformity Rule, revised on July 1, 1999, requires state Departments of Transportation and Metropolitan Planning Organizations (MPOs) to develop Long Range Transportation Plans and Transportation Improvement Programs (TIPs) that conform to the emissions budget and the implemented schedule of Transportation Control Measures (TCMs) established in the State Implementation Plan (SIP) for air quality. TIPs and Long Range Transportation Plans (LRTPs) are essentially lists of transportation projects that are to be undertaken in the short term and the long term (respectively).

The purpose of air quality conformity is to reduce the severity and number of violations of the NAAQS, to achieve the NAAQS as expeditiously as possible for areas designated as Non-Attainment areas, to ensure compliance with an air quality maintenance plan, and to support the

intent of the 1990 CAAA to integrate transportation, land use and air quality planning. The CAAA establishes three designations for areas based on ambient air quality conditions observed for NAAQS pollutants:

- Non-attainment areas: Areas that currently exceed NAAQS for transportation-related criteria pollutants;
- Maintenance areas: Areas that at one time were designated as nonattainment areas, but have since met NAAQS for transportation related criteria pollutants. Areas are designated "maintenance areas" for 20 years from the date the EPA approves the state's request for re-designation as a maintenance area; and
- Attainment areas: All other areas.

Table 3.11. Summary of National Primary Ambient Air Quality Standards.

Pollutant	Primary Standard	Averaging Time	Secondary Standard	
Carbon Monoxide	9 ppm (10 mg/m^3)	8-hour[1]	None	
	35 ppm (40 mg/m^3)	1-hour[1]	None	
Lead	0.15 µg/m^3	Rolling 3-month Average	Same as Primary	
	1.5 µg/m^3	Quarterly Average	Same as Primary	
Nitrogen Dioxide	0.053 ppm (100 µg/m^3)	Annual (Arithmetic Mean)	Same as Primary	
Particulate Matter (PM_{10})	150 µg/m^3	24-hour[3]	Same as Primary	
Particulate Matter ($PM_{2.5}$)	15.0 µg/m^3	Annual[4] (Arith. Mean)	Same as Primary	
	35 µg/m^3	24-hour[5]	Same as Primary	
Ozone	0.075 ppm (2008 std)	8-hour[6]	Same as Primary	
	0.08 ppm (1997 std)	8-hour[7]	Same as Primary	
	0.12 ppm	1-hour[8]	Same as Primary	
Sulfur Dioxide	0.03 ppm	Annual (Arith. Mean)	0.5 ppm (1300 µg/m^3)	3-hour[1]
	0.14 ppm	24-hour[1]		

[1] Not to be exceeded more than once per year.
[2] Final rule signed October 15, 2008.
[3] Not to be exceeded more than once per year on average over 3 years.
[4] To attain this standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m^3.
[5] To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m^3 (effective December 17, 2006).
[6] To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm 9 (effective May 27, 2008).
[7] (a)To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor in an area over each year must not exceed 0.08 ppm.
(b) The 1997 standard—and the implementation rules for that standard—will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.
[8] (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is < 1.
(b) As of June 15, 2005 EPA has revoked the 1-hour ozone standard in all areas except the fourteen 8-hour ozone nonattainment Early Action Compact (EAC) Areas. For one of the 14 EAC areas (Denver, CO), the 1-hour standard was revoked on November 20, 2008. For the other 13 EAC areas, the 1-hour standard was revoked on April 15, 2009.
Source: EPA, 2009

Detailed discussions of the air quality and noise analyses and results are provided in the air quality and noise evaluation report for the project, *Air Quality and Noise Evaluation for Interstate 65 Interchange with State Route 109*.

3.5.1.1 Carbon Monoxide (CO)

Based upon the analyses of highway projects with similar meteorological conditions and traffic volumes, the carbon monoxide levels of the subject project will be well below the NAAQS. This project will have no substantial impact on the air quality of the area.

3.5.1.2 Conformity

The 1990 Clean Air Act Amendments (CAAAs) and the Tennessee Transportation Conformity Rule require that each new regional LRTP and TIP must be demonstrated to conform to the Tennessee State Implementation Plan (SIP).

Transportation conformity is a way to ensure that federal funding and approval are given only to those transportation projects that are consistent with federal air quality goals. According to the CAA, transportation plans, programs and projects cannot:

- Create new NAAQS violations;
- Increase the frequency or severity of exiting NAAQS violations; or
- Delay attainment of the NAAQS.

Federal funding dedicated to transportation projects and programs can be withheld if a region is found to be in violation of conformity standards.

The widening of I-65 from the proposed new interchange to the Kentucky state line is located in Robertson County, which is not located in a nonattainment or maintenance area. As a result, conformity does not apply to the widening of I-65.

The remaining project features are located in whole or in part in Sumner County, which was previously in the Nashville area nonattainment area for 1-hour ozone NAAQS and was an Early Action Compact (EAC) area for the 8-hour ozone NAAQS.

On April 2, 2008 the Nashville EAC Area was designated as attainment for the 8-hour ozone NAAQS, effective April 15, 2008. In addition, the 1-hour ozone NAAQS was revoked on April 15, 2009. As a result, the Nashville area is currently in attainment of the ozone NAAQS as well as all other regulated criteria pollutants. Therefore, conformity does not apply to project features located in Sumner County.

The construction of the new interchange and the extension of SR-109 from SR-41 (U.S. 31W) to existing SR-109 is included in the Nashville Area MPO Year 2030 LRTP (project 5017) adopted October 19, 2005 (amended June 21, 2006) and the Nashville Area MPO TIP Fiscal Years 2008 -2011 (project #2006-416) adopted August 27, 2007.

Additionally, the widening of SR-41 (U.S. 31W) from the new SR-41/SR-109 interchange north to the Kentucky State Line is included in the TIP Fiscal Years 2008 -2011 (project #2008-32-018).

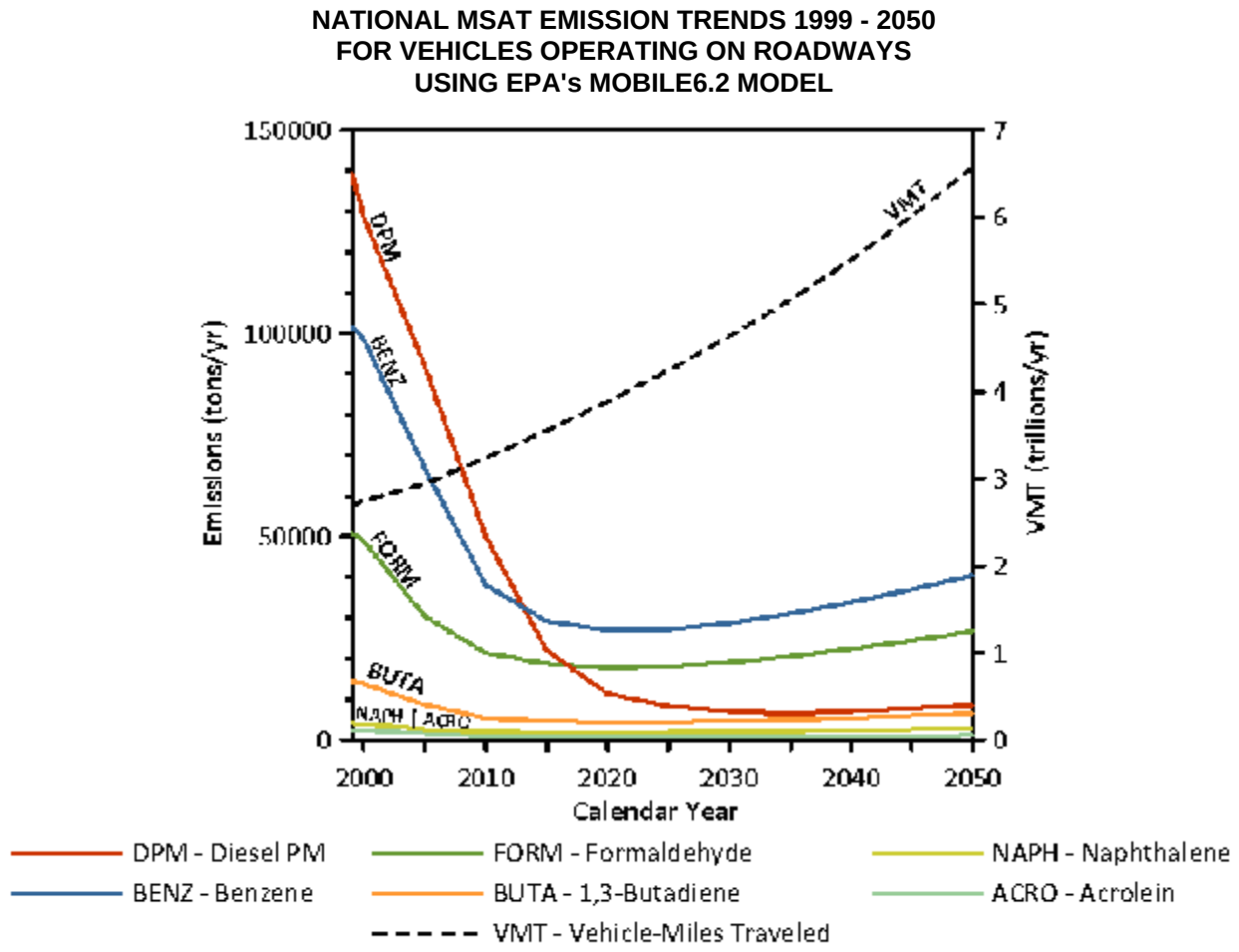
3.5.1.3 Mobile Source Air Toxics (MSATs)

Background

Controlling air toxic emissions became a national priority with the passage of the CAAA of 1990, whereby Congress mandated that the EPA regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007) and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS) (http://www.epa.gov/ncea/iris/index.html). In addition, EPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (NATA) (http://www.epa.gov/ttn/atw/nata1999/). These are acrolein, benzene, 1,3-butidiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future EPA rules.

The 2007 EPA rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using EPA's MOBILE6.2 model, even if vehicle activity (vehicle-miles travelled, VMT) increases by 145% as assumed, a combined reduction of 72% in the total annual emission rate for the priority MSAT is projected from 1999 to 2050, as shown in Figure 3-6.

Figure 3-6. U.S. Annual Vehicle Miles Traveled (VMT) vs. Mobile Source Air Toxics Emissions, 1999-2050*



Notes:
(1) Annual emissions of polycyclic organic matter are projected to be 561 tons/yr for 1999, decreasing to 373 tons/yr for 2050.
(2) Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors
Source: U.S. Environmental Protection Agency. MOBILE6.2 Model run 20 August 2009.

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how the potential health risks posed by MSAT exposure should be factored into project-level decision-making within the context of the National Environmental Policy Act (NEPA).

Nonetheless, air toxics concerns continue to be raised on highway projects during the NEPA process. Even as the science emerges, we are duly expected by the public and other agencies

to address MSAT impacts in our environmental documents. The FHWA, EPA, the Health Effects Institute, and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated with highway projects. The FHWA will continue to monitor the developing research in this emerging field.

On February 3, 2006, the FHWA released "*Interim Guidance on Air Toxic Analysis in NEPA Documents*" (http://www.fhwa.dot.gov/environment/airtoxic/020306guidmem.htm). This guidance was superseded on September 30, 2009 by FHWA's "*Interim Guidance Update on Air Toxic Analysis in NEPA Documents*" (http://www.fhwa.dot.gov/environment/airtoxic/100109guidmem.htm). The purpose FHWA's guidance is to advise on when and how to analyze Mobile Source Air Toxics (MSATs) in the NEPA process for highways. This guidance is interim, because MSAT science is still evolving. As the science progresses, FHWA will update the guidance.

Incomplete or Unavailable Information for Project Specific MSAT Health Impacts Analysis

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the CAA and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (http://www.epa.gov/ncea/iris/index.html). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). Two HEI studies are summarized in Appendix D of FHWA's Interim Guidance Update on Mobile source Air Toxic Analysis in NEPA Documents. Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI, http://pubs.healtheffects.org/view.php?id=282) or in the future as vehicle emissions substantially decrease (HEI, http://pubs.healtheffects.org/view.php?id=306).

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts with each step in the process building on the model predictions obtained in the previous step. All are

encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable. The results produced by the EPA's MOBILE6.2 model, the California EPA's Emfac2007 model, and the EPA's DraftMOVES2009 model in forecasting MSAT emissions are highly inconsistent. Indications from the development of the MOVES model are that MOBILE6.2 significantly underestimates diesel particulate matter (PM) emissions and significantly overestimates benzene emissions.

Regarding air dispersion modeling, an extensive evaluation of EPA's guideline CAL3QHC model was conducted in an NCHRP study (http://www.epa.gov/scram001/dispersion_alt.htm#hyroad), which documents poor model performance at ten sites across the country (three where intensive monitoring was conducted plus an additional seven with less intensive monitoring). The study indicates a bias of the CAL3QHC model to overestimate concentrations near highly congested intersections and underestimate concentrations near uncongested intersections. The consequence of this is a tendency to overstate the air quality benefits of mitigating congestion at intersections. Such poor model performance is less difficult to manage for demonstrating compliance with NAAQS for relatively short time frames than it is for forecasting individual exposure over an entire lifetime, especially given that some information needed for estimating 70-year lifetime exposure is unavailable. It is particularly difficult to reliably forecast MSAT exposure near roadways, and to determine the portion of time that people are actually exposed at a specific location.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (http://pubs.healtheffects.org/view.php?id=282). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM.

The EPA (http://www.epa.gov/risk/basicinformation.htm#g) and the HEI (http://pubs.healtheffects.org/getfile.php?u=395) have not established a basis for quantitative risk assessment of diesel PM in ambient settings.

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the CAA to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine a "safe" or "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that

cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than safe or acceptable.

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision-makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

Qualitative Analysis

Technical shortcomings of emissions and dispersion models and uncertain science with respect to health effects prevent meaningful or reliable estimates of MSAT emissions of this project. However, even though reliable methods do not exist to accurately estimate the health impacts of MSATs at the project level, it is possible to qualitatively assess the levels of future MSAT emissions. The qualitative assessment presented below has been prepared in accordance with FHWA's Interim Guidance derived in part from a study conducted by the FHWA entitled "*A Methodology for Evaluating Mobile Source Air Toxic Emissions among Transportation Project Alternatives*." (www.fhwa.dot.gov/environment/airtoxic/msatcompare/msatemissions.htm). A qualitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives.

FHWA's Interim Guidance groups projects into the following categories:

- Exempt Projects and Projects with no Meaningful Potential MSAT Effects;
- Projects with Low Potential MSAT Effects; and
- Projects with Higher Potential MSAT Effects.

FHWA's Interim Guidance provides examples of "Projects with Low Potential MSAT Effects." These projects include minor widening projects and new interchanges, such as those that replace a signalized intersection on a surface street or where design year traffic projections are less than 140,000 to 150,000 AADT. The Build Alternative includes the construction of a new interchange and connector roadway and meets the definition of a project with low potential MSAT effects as the highest design year AADT on I-65 is 89,860 and lower than the FHWA criterion.

For both the Build and No-Build Alternatives, the amount of MSATs emitted would be proportional to the vehicle miles traveled (VMT), assuming that other variables such as fleet mix are the same. The VMT for the No-Build and Build Alternatives was determined for the affected roadway network as shown in Table 3.12. As shown, the projected VMT for the No-Build

Alternative is 623,800 miles. The projected VMTs for the Build Alternative is 616,000 miles. Therefore, it is expected that there would be no appreciable difference in overall MSAT emissions among the alternatives.

Table 3.12. Design Year 2031 VMT Projections on Affected Roadway Network

Road	From	To	ADT	Length (miles)	VMT
No-Build Alternative					
I-65	SR 52	Proposed Interchange	69,740	3.2	222,819
I-65	Proposed Interchange	U.S. 31 W	69,740	2.4	169,468
SR 52	I-65	U.S. 31 W	46,670	0.5	21,002
U.S. 31 W	SR 52	Lake Springs Road	25,970	2.9	74,794
U.S. 31 W	Lake Springs Road	North Broadway	31,740	0.5	15,711
U.S. 31 W	North Broadway	I-65	41,830	2.3	94,118
Lake Springs Road	I-65	U.S. 31 W	16,760	0.5	8,296
North Broadway	U.S. 31 W	Proposed SR-109	19,570	0.9	17,613
				Total	***623,800***
Build Alternative					
I-65	SR 52	Proposed Interchange	83,810	3.2	267,773
I-65	Proposed Interchange	U.S. 31 W	89,860	2.4	218,360
SR 52	I-65	U.S. 31 W	32,600	0.5	14,670
U.S. 31 W	SR 52	Lake Springs Road	11,900	2.9	34,272
U.S. 31 W	Lake Springs Road	North Broadway	20,090	0.5	9,945
U.S. 31 W	North Broadway	I-65	19,800	2.3	44,550
North Broadway	U.S. 31 W	Proposed SR-109	2,000	0.9	1,800
Proposed SR-109	I-65	U.S. 31 W	19,800	0.5	8,910
Proposed SR-109	U.S. 31 W	North Broadway	19,800	0.8	15,750
				Total	***616,000***
				Change	***-7,800***

Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by 72% from 1999 to 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in virtually all locations.

The travel lanes contemplated as part of the project alternatives will have the effect of moving some traffic closer to nearby homes, schools, and businesses; therefore under the Build Alternative there may be localized areas where ambient concentrations of MSAT would be

higher than the No Build Alternative. The localized differences in MSAT concentrations would be likely to be most pronounced along the new/expanded roadway sections that would be built at I-65, SR-41, and the extension of SR-109. However, the magnitude and the duration of these potential increases cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. Furthermore, under all Alternatives, overall future MSAT are expected to be substantially lower than today due to implementation of EPA's vehicle and fuel regulations.

In sum, under both the No-Build and Build Alternatives in the design year, it is expected that there would be little or no change in MSAT emissions in the immediate area of the project due to little change in VMT, and due to EPA's MSAT reduction programs. In comparing the Build and No-Build alternatives, MSAT levels could be higher in some locations than others, but current tools and science are not adequate to quantify them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

Substantial construction-related MSAT emissions are not anticipated as construction is not planned to occur over an extended building period. However, construction activity may generate temporary increases in MSAT emissions in the project area.

Climate Change

FHWA's current approach on the issue of global warming is summarized in this section. To date, no national standards have been established regarding greenhouse gases, nor has EPA established criteria or thresholds for greenhouse gas emissions. On April 2, 2007, the Supreme Court issued a decision in Massachusetts et al v. EPA et al that the EPA does have authority under the CAA to establish motor vehicle emissions standards for CO2 emissions. The EPA is currently determining the implications to national policies and programs as a result of the Supreme Court decision. However, the Court's decision did not have any direct implications on requirements for developing transportation projects.

FHWA does not believe it is informative at this point to consider greenhouse gas emissions in an EA. The climate impacts of CO2 emissions are global in nature. Analyzing how alternatives evaluated in an EA might vary in their relatively small contribution to a global problem will not result in better-informed decisions. Further, due to the interactions between elements of the transportation system as a whole, emissions analyses would be less informative than ones conducted at regional, state, or national levels. Because of these concerns, FHWA concludes that they cannot usefully evaluate CO2 emissions in an EA in the same way that we address other vehicle emissions.

FHWA is actively engaged in many other activities with the DOT Center for Climate Change to develop strategies to reduce transportation's contribution to greenhouse gases, particularly CO2 emissions, and to assess the risks to transportation systems and services from climate change. FHWA will continue to pursue these efforts as productive steps to address this important issue. FHWA will review and update its approach to climate change at both the project and policy level as more information emerges and as policies and legal requirements evolve.

3.5.1.4 Potential Air Quality Impacts

Potential Air Quality Impacts Associated with the No-Build Alternative

The No-Build Alternative would not result in measurable impacts to air quality. However, traffic congestion may become worse by the design year, especially along the secondary routes used by commuters to access I-65. The slower speeds and longer idling times for vehicles may result in increased emissions in the area than would occur if the area was provided with an additional interstate access point.

There may be minor adverse impacts to air quality under the No-Build Alternative, because there would be more potential for traffic delays along existing secondary routes in the region as the area continues to grow and traffic volumes increase. The increased congestion on normal routes used by commuters may result in those commuters taking alternate routes and result in increased VMT. Those increases in VMT could result in increased MSATs emissions. However, this impact is not measureable at this time.

Potential Air Quality Impacts Associated with the Build Alternative

The project is not predicted to result in a measurable project-specific air quality impact and, therefore, would not have a substantial air quality impact. A portion of the project area is currently in a non-attainment area and ongoing efforts are being made to improve air quality in the region. This project was included in the MPO's LRTP and TIP, both of which have been determined to conform to the SIP. Therefore, the Build Alternative is not expected to result in substantial air quality impacts.

This project will impact travel patterns on several additional routes in the surrounding area due to the new access point it would create. Some commuters will stop using other routes to use the more direct route provided by the new interchange, thus lowering VMT; while others may choose to drive further out of their way to make use of the more efficient new interchange or to access new development in the area, thus increasing VMT. Overall, it is not anticipated that there will be a substantial impact to VMT one way or the other, which means there would not likely be substantial regional MSAT impacts due to this project.

The new interstate access will increase traffic volumes along some existing roadways, which may result in increased localized MSATs emissions. There may be localized areas where ambient concentrations of MSATs could be higher than the No-Build Alternative. However, as discussed above, the magnitude and the duration of these potential increases compared to the No-Build Alternative cannot be accurately quantified due to the inherent deficiencies of current models.

Even though the Build Alternative may increase MSATs near some receptors, thereby increasing the localized level of MSAT emissions; it is possible that the localized effects could be offset by increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be substantially lower than present baseline conditions.

Substantial construction-related MSAT emissions are not anticipated for this project as construction is not planned to occur over an extended building period. However, construction activity may generate temporary increases in MSAT emissions in the project area. Equipment exhaust and dust would be the primary air quality concerns during construction. It is not anticipated that the construction of the proposed project would occur simultaneously with any other major transportation projects in area.

Regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce MSAT emissions by 57 to 87% from 2000 to 2020. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The project is not predicted to result in any substantial measurable air quality impacts. There may be minor short-term air quality impacts during the construction phase of the project that could temporarily affect areas downwind of the project site.

3.5.1.5 Mitigation of Air Quality Impacts

No violations of the NAAQS are projected for this project. Therefore, no air quality mitigation measures are required for the project improvements.

During construction the contractor must comply with all federal, state, and local laws and regulations governing the control of air pollution. Adequate dust-control measures would be maintained so as not to cause detriment to the safety, health, welfare, or comfort of any person or cause any damage to any property or business.

Demolition and construction activities can result in short-term increases in fugitive dust and equipment-related particulate emissions in and around the project area. (Equipment-related particulate emissions can be minimized, if the equipment is well maintained.) The potential air quality impacts would be short-term, occurring only while demolition and construction work is in progress and local conditions are appropriate. The potential for fugitive dust emissions typically is associated with building demolition, ground clearing, site preparation, grading, stockpiling of materials, on-site movement of equipment, and transportation of materials. The potential is greatest during dry periods, periods of intense construction activity, and during high wind conditions.

Dust and airborne dirt generated by construction activities would be controlled through dust control procedures or a specific dust control plan, when warranted. The contractor and TDOT will meet to review the nature and extent of dust-generating activities and would cooperatively develop specific types of control techniques appropriate to the specific situation. Techniques that may warrant consideration include measures, such as minimizing track-out of soil onto nearby publicly-traveled roads, reducing speed on unpaved roads, covering haul vehicles, and applying chemical dust suppressants or water to exposed surfaces, particularly those on which construction vehicles travel. With the application of appropriate measures to limit dust

emissions during construction, this project would not cause any short-term particulate matter air quality impacts.

3.6 Noise

3.6.1 Noise Background Information

Traffic noise is often a primary concern for roadway improvement projects. The level of highway traffic noise depends on three things: (l) the volume of the traffic; (2) the speed of the traffic; and (3) the number of trucks in the flow of the traffic. Generally, the loudness of traffic noise is increased by heavier traffic volumes, higher speeds, and greater numbers of trucks. Vehicle noise is a combination of the noises produced by the engine, exhaust, and tires. The loudness of traffic noise can also be increased by defective mufflers or other faulty equipment on vehicles. Any condition (such as a steep incline or traffic signals) that causes heavy laboring of motor vehicle engines will also increase traffic noise levels. In addition, there are other, more complicated factors that affect the loudness of traffic noise. For example, as a person moves away from a highway, traffic noise levels are reduced by distance, terrain, vegetation, and natural and manmade obstacles. Traffic noise is not usually a serious problem for people who live more than 500 feet from heavily traveled freeways or more than 100 to 200 feet from more lightly traveled roads.

The noise analysis was completed in accordance with FHWA noise standards, *Procedures for Abatement of Highway Traffic and Construction Noise, 23 CFR 772*, and TDOT's *Policy on Highway Traffic Noise Abatement* and included the following tasks:

- Identification of noise-sensitive land uses in the project area;
- Determination of existing sound levels at sensitive receivers in the project area;
- Determination of future sound levels for each alternative;
- Determination of impacts for each alternative;
- Evaluation of noise abatement;
- Discussion of construction noise; and
- Coordination with local officials.

3.6.1.1 Identification of Noise-Sensitive Land Uses

Review of available electronic mapping and field reconnaissance revealed several areas of residential development near the proposed project. These residences are located on Highland Road, Lake Springs Drive, South Old Detour Road, Eubanks Road, Highway 31W, TGT Road, and North Broadway.

3.6.1.2 Determination of Existing Sound Levels

Measurements were conducted on January 23, 2008 at several locations along the project to characterize the existing noise environment. The measurement locations are shown and summarized in the air quality and noise evaluation report.

Measured existing peak hour equivalent sound levels range from 50 to 63 dBA. The differences in sound levels are primarily a function of the distance between the measurement locations and

I-65 and SR-41 (U.S. 31W) and the shielding provided by terrain features, such as the tops of cuts.

3.6.1.3 Determination of Future Sound Levels

Future Peak Hour Equivalent Sound Levels without Project

Sound levels without the project can be reasonably estimated by evaluating existing and future traffic volumes on I-65 and SR-41 (U.S. 31W). Design year 2031 peak hour equivalent sound levels without the project are predicted to be approximately 3 dB higher than existing levels at receivers near I-65, 4 dB higher than existing levels at receivers near SR-41 (U.S. 31W), and 2 dB higher than existing levels at receivers near SR-109 (North Broadway).

Future Peak Hour Equivalent Sound Levels with Project

Noise modeling of the project area was completed using the FHWA Traffic Noise Model (TNM 2.5) computer program. The program calculated peak hour equivalent sound levels in the design year 2031 with the project for the residences in the project area. Predicted year 2031 peak hour equivalent sound levels with the project at the modeled receivers range from 57 to 70 dBA.

3.6.1.4 Noise Impact Analysis

Noise impact is determined by comparing future sound levels: (1) to a set of Noise Abatement Criteria (NAC) for a particular land use category; and (2) to existing sound levels.

The FHWA noise standards (contained in 23 CFR 772) and TDOT noise policy state that traffic noise impacts warrant consideration of abatement when worst-hour equivalent sound levels approach or exceed the NAC listed in Table 3.13. TDOT policy defines “approach” as one decibel below the NAC, or 66 dBA for Category B land uses.

Table 3.13. Noise Abatement Criteria in 23 CFR 772.

Activity Category	L_{eq} (1h) dBA	Description of Activity
A	57 (Exterior)	Land on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	---	Undeveloped lands.
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

The FHWA noise standards and TDOT policy also define impacts to occur, if there is a substantial increase in design year sound levels above the existing sound levels when the predicted design year sound levels are between 57 and 67 dBA L_{eq}. Table 3.14 presents the TDOT criteria used to define noise increase.

Table 3.14. TDOT Criteria to Define Noise Increase.

Increase (dB)	Subjective Descriptor
0 to 5	Minor Increase
6 to 9	Moderate Increase
10 or more	Substantial Increase

Sound level increases due to the project at most of the modeled receivers are between 5 and 9 dB. These increases are defined as “minor” or “moderate” in accordance with TDOT noise policy. As a result, most residences are not predicted to be impacted by a substantial increase in sound level.

However, the sound level at one residence along TGT Road is predicted to increase by 10 dB with a future sound level of 60 dBA and the sound level at one residence along Lake Springs Road is predicted to increase by 12 dB from 58 dBA to 70 dBA. The sound level of 70 dBA exceeds the NAC, so this residence is predicted to be impacted based on approaching or exceeding the NAC.

Sound levels at 12 additional residences are predicted to be 66 dBA or higher. These residences are predicted to be impacted based on approaching or exceeding the NAC.

3.6.1.5 Potential Noise Impacts

Potential Noise Impacts Associated with the No-Build Alternative

Based on the analyses conducted for design year sound levels for the Build Alternative, it is assumed that no noise impacts would occur under the No-Build Alternative. Although noise levels would increase along some of the existing routes due to gradual increases in traffic volumes, it is not expected that noise levels would reach or exceed NAC levels for any receptors in the vicinity. Any increases would be defined as “minor” in accordance with TDOT noise policy. No residences will experience a substantial increase in sound levels under the No-Build Alternative.

Potential Noise Impacts Associated with Build Alternative

The future year 2031 noise analysis includes projected traffic volumes for the project as well as forecasted background traffic growth and other planned and programmed projects in the area. As a result, the noise impacts predicted for the noise analysis represent both direct and cumulative noise impacts. A total of 14 residences will be impacted due to noise under the Build Alternative.

The implementation of the project will result in redistribution of traffic on the surrounding roadway network. However, this redistribution will result in a significant diversion of traffic from the local roadway network onto I-65 resulting in lower sound levels at noise sensitive-receivers near SR 52, SR 41 and North Broadway with the Build Alternative. The increased traffic volumes on I-65 were modeled in the noise analysis.

The project will result in intermittent and temporary noise above existing ambient levels due to construction activities in the project vicinity. However, the noise increases would be temporary and would not constitute a noise impact as defined by the FHWA noise standards and TDOT’s noise policy.

3.6.1.6 Mitigation of Noise Impacts

Noise Abatement Evaluation

For Federal projects, abatement must be evaluated when noise impacts are predicted. Noise abatement measures may include alteration of horizontal and vertical alignment and traffic management measures (such as reducing speed limits, prohibition of heavy trucks, etc.). However, these forms of mitigation were found not to be reasonable for this project. Noise barriers would be the only available abatement measure for this project to reduce noise levels for impacted residences.

In order for noise barriers to be included in a project, they must be determined to be both feasible and reasonable in accordance with TDOT noise policy.

Noise barriers are considered cost prohibitive for locations where one only or two residences are predicted to be impacted based on TDOT noise policy. As a result, noise barriers for the

impacted residences on Lake Springs Road, South Old Detour Road, TGT Road, and SR-109 were not evaluated.

Noise barriers can not be constructed along SR-41 (U.S. 31 W), because this roadway is not a limited access facility, so the construction of noise barriers is not possible, since the barriers would limit access from adjacent properties. As a result, noise abatement is not feasible for the impacted residences on SR-41 (U.S. 31W).

Construction Noise

If TDOT's construction specifications apply to this project, construction procedures shall be governed by the Standard Specifications for Road and Bridge Construction as issued by TDOT and as amended by the most recent applicable supplements. In this case, the contractor will be bound by Section 107.01 of the Standard Specifications to observe any noise ordinance in effect within the project limits. Detoured traffic shall be routed during construction so as to cause the least practicable noise impact upon noise-sensitive areas.

Coordination with Local Officials

TDOT encourages local communities and developers to practice noise compatible land use planning in order to avoid future noise impacts. The following language is included in TDOT's noise policy:

> "Highway traffic noise should be reduced through a program of shared responsibility. Local governments should use their power to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway or that the developments are planned, designed and constructed in such a way that noise impacts are minimized."

Two guidance documents on noise compatible land use planning are available from FHWA. These include: The Audible Landscape: A Manual for Highway Noise and Land Use, Federal Highway Administration, November, 1974, which can be found at (http://www.fhwa.dot.gov/environment/audible/index.htm); and Entering the Quiet Zone: Noise Compatibility Land Use Planning, Federal Highway Administration, May, 2002 found at http://www.fhwa.dot.gov/environment/noise/quietzon.

Table 3.15 presents future predicted equivalent sound levels for areas along I-65, SR-41 (U.S. 31W), and SR-109 where vacant and possibly developable lands exist. Noise predictions were made at distances between 200 and 600 feet from each roadway for the year 2031 design hour. These values do not represent predicted levels at every location at a particular distance back from the roadway. Sound levels will vary by location and will be affected by the shielding of terrain features and objects, such as buildings.

This information is being included to make local officials and planners aware of anticipated highway noise levels so that future development will be compatible with these levels. The analysis indicates that noise-sensitive land uses such as residences will not be compatible with the noise environment within approximately 800 feet of the centerline of I-65 and approximately

150 feet of the centerline of SR-41 (U.S. 31W) and SR-109 unless noise mitigation strategies are implemented.

Table 3.15. Year 2031 Design Hour Sound Levels – Undeveloped Areas

Distance[1]	L_{eq} (1h) (dBA)[2]		
	I-65	**SR-41 (U.S. 31W)**	**SR-109**
100 feet	within ROW	69	69
200 feet	79	63	63
400 feet	73	59	59
600 feet	69	57	57
800 feet	66	55	55

(1) Perpendicular distance to roadway centerline.
(2) At-grade situation.

Additionally, TDOT's noise policy states that "*noise abatement will also not be considered reasonable for land uses constructed after the date of adoption of this noise policy (based upon local Assessor's records), except for projects involving construction of a roadway on a new alignment*."

TDOT's policy was adopted in April 2005. Development constructed after this date will not be eligible for noise abatement.

Finally, TDOT currently has an active Type II Noise Barrier Program to facilitate the construction of "retrofit" noise barriers along existing highways. To be eligible for a Type II noise barrier, an area must meet the following criteria:

- The neighborhood must be located along a limited-access roadway;
- The neighborhood must be primarily residential;
- The majority (more than 50%) of residences in the neighborhood near the highway pre-dated the initial highway construction;
- A noise barrier for the neighborhood must not have been previously determined to be not reasonable or not feasible as part of a new highway construction or through-lane widening study (Type I project);
- Existing noise levels measured in the neighborhood must be above the Noise Abatement Criteria (NAC) of 66 dB (1-hour equivalent sound level);

- A barrier must be feasible to construct and will provide substantial noise reduction; and

- A barrier must be reasonable (barrier cost per benefitted residence) in accordance with TDOT's Noise Policy. A residence is considered "benefitted" if the noise barrier will reduce the traffic noise by at least 5 dB.

3.7 Hazardous Waste Sites

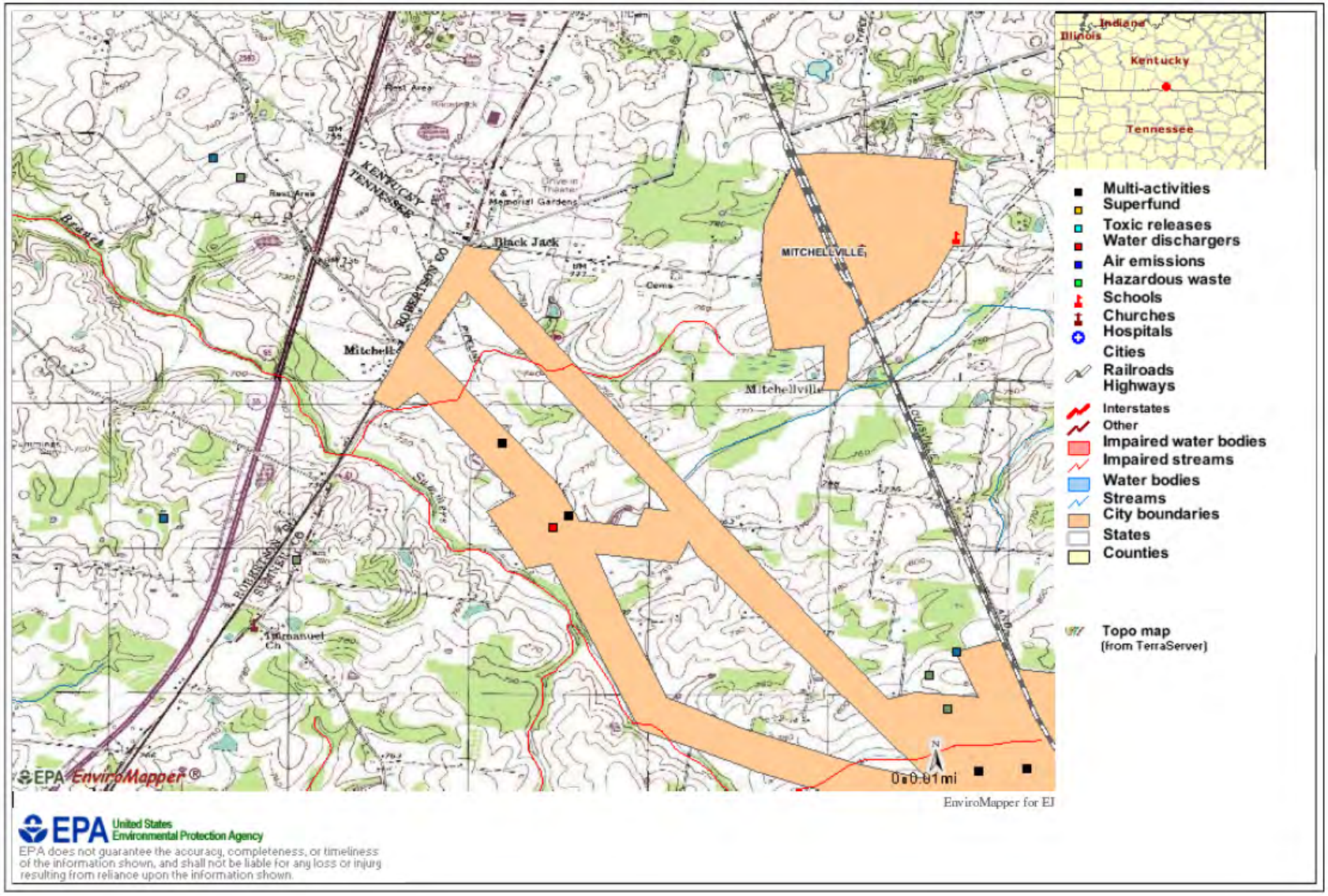
3.7.1 Hazardous Waste Background Information

A site review and database search was conducted to determine whether the condition of properties within or adjacent to the I-65 project area indicated that hazardous substances or petroleum products may be present from past releases or land uses.

The site review and database search included reviews of aerial photographs, the EPA Envirofacts Web site (www.epa.gov/enviro), List of Underground Storage Tank (UST) Facilities from the TDEC database, and a visual assessment of properties along in the project area. Figure 3-7 contains the EPA mapped facilities in the project vicinity.

Based on this site investigation and known historical information, none of the properties within the ROW or 500-foot study area of the I-65 Interchange project had any evidence of environmental concerns related to hazardous or toxic materials. No USTs were identified in the immediate project area. Two sites were mapped within the industrial area along Vaughn Road and within the city limits of Portland. However, none of these sites would be impacted by the proposed project.

Figure 3-7. Map of EPA regulated sites within the I-65 Interchange Project Vicinity.



3.7.1.4 Potential Impacts to Hazardous Waste Sites

Potential Impacts to Hazardous Waste Sites Associated with the No-Build Alternative

The No-Build Alternative would not result in any noticeable changes from the baseline conditions in relation to hazardous waste sites. Regardless of whether or not the I-65 Interchange is constructed, the expected growth in the region may result in an increase in the number of facilities handling or storing hazardous wastes or other products of environmental concern. Also, there would be a slight increase in risks related to transportation of hazardous materials through the area. Without improvements to the existing roadway network, LOS would deteriorate over time resulting in increased potential for crashes, some of which could include a remote possibility of crashes involving trucks carrying hazardous materials.

Potential Impacts to Hazardous Waste Sites Associated with the Build Alternative

The Build Alternative is not expected to result in any impacts to known hazardous waste sites or other EPA-regulated facilities in the region. However, additional industrial growth in the area promoted by this project may result in an increase in the number of facilities handling or storing hazardous wastes or other products of environmental concern.

3.7.1.5 Hazardous Waste Sites Mitigation

If any hazardous wastes are encountered within the proposed ROW they would be remediated in accordance with the applicable sections of the Federal Resource Conservation and Recovery Act (RCRA), the Federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and the Tennessee Hazardous Waste Management Act of 1983. All project-related activity that involves USTs would adhere to the Tennessee Petroleum Underground Storage Tank Act of 1998 (Tennessee Code Annotated, section 68-215-101 et seq.) and the rules set forth by TDEC's Underground Storage Tank Program (Tennessee Code Annotated, section 68-215-201 et seq.).

3.8 Energy

3.8.1 Energy Background Information

The current commitment of energy resources (mainly gasoline and diesel fuels) in the project area is influenced by traffic flow patterns and travel efficiency. When travel efficiency is reduced or limited, which is the case in the I-65 Interchange area due to access issues, higher consumption of fuel is required than when traffic flow is flowing more freely and travel efficiency is increased.

There are no energy sources in the I-65 Interchange project area that would be potentially impacted. There are gas pipelines in the immediate project area that would need to be crossed by the project. Details regarding the need to relocate or alter existing pipeline and utility lines would be determined during the design phase of the project.

3.8.1.1 Potential Energy Impacts

Potential Energy Impacts Associated with the No-Build Alternative

The No-Build Alternative would potentially result in adverse impacts to energy in terms of decreased fuel efficiency due to continued decreases in LOS, especially along secondary routes in the area normally used as routes to gain access to I-65. These impacts would gradually become more of an issue as the area continues to grow and more traffic volume is introduced to the area.

The No-Build Alternative would potentially result in additional fuel consumption in the long term due to less efficient travel in the area. This would gradually worsen over time as the secondary routes used to access I-65 become more crowded. In addition, VMT may increase as people look for alternative routes in order to avoid areas that begin to experience frequent traffic delays. This increase in VMT would result in additional fuel consumption.

Potential Impacts to Energy Associated with Build Alternative

Equipment used to construct the I-65 Interchange under the Build Alternative would require additional energy in the short-term when compared to baseline conditions. There would also be short-term adverse impacts due to decreased fuel efficiency during construction activities due to potential construction delays and detours. However, the short-term uses of extra energy during construction are expected to be offset by the energy resources saved due to improved travel efficiency for commuters using the improved facility in the long-term. There would be beneficial impacts on energy consumption in the long term associated with improved traffic flow and efficiency.

There is some potential the new interchange could result in some commuters traveling additional miles to take advantage of the improved travel efficiency and reduced commuting times. This could result in an increase in VMT. However, the more efficient travel and reduced travel times expected due to the improved access may offset any increases in VMT. Regardless, the project is not expected to have any substantial adverse impacts on energy consumption rates.

Secondary commercial and residential development could increase following completion of the proposed project due to improved transportation facilities and improved access to adjacent areas. Increased construction activities resulting from new developments, along with subsequent increases in populations, would likely result in increased energy demands within the area. However, it is likely that this area will continue to become more populated and developed regardless of this project. Therefore, when compared to expected baseline conditions or No-Build conditions, this project would not have measurable impacts. The timing in which the immediate project area becomes developed may be reduced. The improved traffic efficiency the new interchange would provide would offset much of the increased energy consumption that could be attributed to secondary developments that are promoted by the project.

3.9 Section 4(f) Properties

According to Section 4(f) of the Department of Transportation Act of 1966, recodified as 49 United States Code Section 303, "The Secretary [of Transportation] shall not approve any program or project which requires the use of any publicly-owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance as determined by the Federal, State, or local officials having jurisdiction thereof, or any land from an historic structure of National, State, or local significance as so determined by such officials unless:

- There is no feasible and prudent alternative to the use of such land; and
- The project includes all possible planning to minimize harm to the land resulting from such use."

No Section 4(f) eligible properties are expected to be impacted by this project. It is also the opinion of TDOT, pursuant to 36 CFR 800.5, that the project would have no adverse effect to any NRHP-eligible properties.

3.10 Construction Impacts

Adverse impacts from construction would be primarily short-term in duration. Construction inconveniences such as noise, dust, and traffic conflicts are likely to be unavoidable yet are greatest during the construction phase only.

In order to minimize potential detrimental effects from noise, siltation, soil erosion, or possible pollution of area watercourses, the construction contractors would be required to comply with the special provisions of *Standard Specifications for Road and Bridge Construction* (TDOT, 2006) and the *Best Management Practices for Erosion and Sediment Control* (FHWA, 1995). These provisions implement the requirements of the FHWA's Federal-Aid Policy Guide (Subchapter G part 650b).

Contractors would be required to conduct and schedule operations according to these provisions. For example, the contractor would be bound by the Standard Specifications to observe any noise ordinance in effect within the project limits. Detoured traffic would be routed during construction in a manner that has the least noise impact practicable upon residential and noise sensitive areas. In addition, coordination with affected utility companies would minimize disruption to utility services. Furthermore, TDOT would coordinate with local governments during the construction phase to minimize disruption to communities accepting detoured traffic.

Any action involving open burning would be in accordance with Chapter 1200-3-4 ("Open Burning") of the Tennessee Air Pollution Control Regulations. Any action resulting in fugitive dust would be in accordance with Chapter 1200 3-8 ("Fugitive Dust"). The general contractor and all related subcontractors associated with the project would be required to have a valid operation permit from the Tennessee Air Pollution Control Division or to obtain an exception from the regulations through board action.

Solid waste generated by construction activities would be disposed of in accordance with all state rules and regulations concerning solid waste management. Where possible, land debris

would be disposed at a registered sanitary landfill site. If the use of a landfill is not possible, the contractor would dispose of the solid waste in a manner that is compliant with appropriate TDEC and/or EPA regulations.

If any previously unknown archaeological resources are uncovered during construction of the proposed project, all construction activities would be halted in the immediate area until the area is cleared for further activities. TDOT would continue to coordinate with the SHPO should any new cultural resources be discovered.

Short-term adverse impacts to fish and wildlife would likely result from construction activities. Noise impacts could alter wildlife behavior and inhibit mating, breeding, nesting, and feeding/foraging activities. Construction activities could result in direct mortality to less mobile terrestrial and aquatic species. All reasonable precautions would be taken to minimize short-term and long-term impacts to plants and wildlife and their habitat. Several mitigation measures that would avoid or minimize short-term and long-term adverse impacts to species would be required conditions of the build alternative. These would include:

- Streamside and in-stream construction work would occur during dry periods;
- Removal of vegetation near the streams would occur only as necessary to accomplish the proposed action. Where removal of vegetation is necessary, bank stabilization measures would be used. Stream bank restoration measures would include seeding with native species and the placing of rip-rap or other bank stabilization techniques, as outlined in TDEC's *Riparian Restoration and Streamside Erosion Control Handbook* (TDEC, 1998a); and
- Proper sediment control measures, such as silt fences, would be used as outlined in the Tennessee Erosion and Sediment Control Handbook (TDEC, 2001b) and Reducing Nonpoint Source Water Pollution by Preventing Soil Erosion and Controlling Sediment on Construction Sites (Smoot et al., 1992).

3.11 Indirect and Cumulative Impacts Analysis

Sections 3.2 through 3.10 described the direct impacts anticipated to be associated with the No-Build Alternative and the Build Alternative for the I-65 Interchange project. This section presents a summary of the potential indirect and cumulative impacts associated with the I-65 Interchange project.

3.11.1 Definitions of Key Terms Used in the Indirect and Cumulative Impacts Analyses

An indirect impact is caused by the proposed action and occurs later in time or is farther removed in distance but is still reasonably foreseeable. Cumulative impacts are impacts on the environment that result from the incremental impact of a project when added to other past, present, and reasonably foreseeable actions regardless of what agency or person undertakes such other actions. Cumulative impact analyses look at the combined effect on an entire resource due to multiple projects or actions, whereas direct and indirect impact analyses refer to more specific impacts on a given resource that can be attributed to one specific project, such as a new roadway or roadway improvement.

The cumulative impact analyses for this project have been conducted at a level of detail that is reasonable and appropriate to support an informed decision in determining if the proposed project should be implemented. Cumulative impacts analyses typically focus on the impact to an entire resource and at a broader scale than the initial analysis of direct and indirect impacts associated with a specific individual project or action.

3.11.1.1 Past and Present Actions within the I-65 Interchange Project Vicinity

<u>Past Actions</u>

Past actions are defined as actions within the cumulative impact analysis area that occurred before the current NEPA study was initiated. These include past actions in the project area, and past demographic, land use, and development trends in the areas that surround the project area. Past actions are discussed in greater detail below. In most cases, the characteristics and results of these past actions comprise the baseline conditions that set the framework for determining what impacts the proposed project would have on those existing or remaining resources.

<u>Present Actions</u>

Present actions include:

- Current activities within the cumulative impact analysis areas; and
- Current resource management programs, land use activities, and development projects that are being implemented by other governmental agencies and the private sector (where they can be identified) within the cumulative impact analysis areas.

The affected environments of the social, economic, natural, and cultural resources occurring within the I-65 Interchange project area are discussed in Sections 3.2 through 3.10 of this EA. The affected environments of the various resources considered have resulted from all past and present actions in the project area. These actions have provided the baseline conditions against which to evaluate any cumulative impacts that could result from the proposed project.

Additional details regarding some of the resources are contained in the various Technical Study Documents that have been prepared in support of the EA. These reports include: the Ecology Study Report, Historical and Architectural Survey Report, Phase I Archaeological Resources Survey Report, and Air Quality and Noise Evaluation Report. These documents are available upon request through the TDOT Environmental Division.

3.11.1.2 Reasonably Foreseeable Future Actions within the Surrounding Area

Reasonably-Foreseeable Future Actions

Reasonably-foreseeable future actions may include those actions in the planning, budgeting, or execution phases. Actions may be those of the federal government, state government, local government, private organizations or companies, or individuals.

Cumulative effects can be analyzed with respect to all resource areas, including ecological resources, physical resources, historical and archaeological resources, economic resources, and social conditions. Cumulative effects can be both beneficial and adverse.

The following reasonably foreseeable future actions would likely occur near and within the project area regardless of whether the proposed project is implemented:

- **Continuation of private project development and activity trends including**: The conversion of agricultural and open land to urban land uses including residential, commercial, and industrial uses. These developments would likely occur first near the existing communities, such as Portland and Mitchellville, and along the secondary routes currently used to provide access to the existing I-65 interchanges located north and south of the proposed I-65 Interchange project area. Development of new residential neighborhoods on subdivided tracts with relatively small lot sizes is one of the trends that will continue in the area.

- **Minor improvements and/or maintenance of existing roadways and bridges:** Routine roadway, bridge, and ROW maintenance activities and other minor improvements would continue to be required on existing local and regional roadways to improve safety and traffic flow, and to support the anticipated increases in vehicular traffic within the region.

  Maintenance activities may include resurfacing roadways, widening or repairing shoulders, repairing or replacing culverts and small bridges, improving intersections by adding turn lanes and/or signals, mowing, snow removal, and various other activities. Most of these activities are expected to have minor environmental impacts due to their small area of impact and short-lived construction period. Therefore, those activities would not have a high potential to result in cumulative impacts with other projects such as this I-65 Interchange project.

- **Continuation of Urban Growth in Robertson and Sumner Counties**: Urban growth is expected to continue in the project vicinity. This development is part of the overall outward expansion of Nashville and its suburbs. This growth is anticipated to become more prevalent in the proposed I-65 Interchange project area in the near

future. All of the land in northwestern Sumner County falling within the I-65 Interchange study area falls within either the UGB of Portland or is considered PGA by Sumner County. Therefore, it is expected that this area will continue to become more developed in the reasonably foreseeable future. The portion of the project area within Robertson County is already experiencing substantial industrial growth, and additional industrial growth is expected to continue.

3.11.1.3 Cumulative Impact Analysis Area

Because the cumulative impacts analyses were focused on the individual resources present in the I-65 Interchange project vicinity, the analysis area studied varies in size by individual resource category. This differs somewhat from the direct and indirect impacts analyses because those analyses are focused more on the site specific impacts to those resources anticipated to be caused by the action of constructing the I-65 Interchange or the secondary developments anticipated to be induced by the new interstate access. In the cumulative impacts analyses, the direct or indirect impacts of the project are analyzed in addition to the direct and indirect impacts of other non-related projects in the vicinity that could cumulatively affect the same resources, but on a broader scale.

The cumulative impact analyses included that area that had a reasonable potential to be noticeably affected by implementation of the proposed I-65 Interchange project, in combination with other past, present, and reasonably foreseeable projects. The boundaries of the cumulative impact analysis area for each resource category are identified on Table 3.16.

Table 3.16. Analysis Area by Resource Category Considered in the Cumulative Impacts Analyses for the I-65 Interchange Project.

Resource Category	Analysis Area
Land Use and Infrastructure	Cumulative impacts to Land Use and Infrastructure were assessed based upon a 2-mile buffer from the approximate center of the I-65 Interchange Build Alternative. These impacts were assessed relative to development projects identified in the field in the immediate area and in relation to known projects or plans provided by state and local government planning organizations with known projects in the vicinity.
Social Environment and Community Resources	In general, cumulative impacts to the Social Environment and Community Resources were assessed relative to Robertson and Sumner Counties. Some of the various Social Environment and Community Resources were assessed at more local levels as appropriate based on the level of available data.
Economic	Cumulative impacts to the Economic Environment were assessed

Resource Category	Analysis Area
Environment	relative to Robertson and Sumner Counties.
Farmland	Cumulative impacts to Farmland were assessed relative to Robertson and Sumner Counties.
Aquatic Resources	Cumulative impacts to Aquatic Resources were assessed within the Red River Watershed, which is the watershed that drains the project area. Assessment of impacts considered reaches both upstream and downstream of the project area. Downstream consideration terminates 4 miles from the centerline of each Build Alternative stream crossing or modification.
Wetlands	Cumulative impacts to wetlands were assessed relative to the immediate watershed containing them.
Floodplains	Cumulative impacts to floodplains were considered based upon the Summers Branch floodplain and associated watershed. Downstream consideration terminated 4 miles downstream of the nearest Build Alternative floodplain impact.
Threatened and Endangered Species	Cumulative impact consideration for endangered species was dependent upon the organism. Cumulative impacts to listed aquatic organisms were assessed to 4 miles downstream and 1-mile upstream of the project. Cumulative impacts to listed terrestrial species were assessed in a 1-mile buffer from the project center point. Cumulative impacts to endangered bats were considered for any known populations within 5 miles of the project center point.
Fish and Wildlife Resources	Cumulative impacts to aquatic habitats and species were assessed based upon the Red River Watershed. This assessment considered impacts both upstream and downstream of the project area. Downstream consideration terminated 4 miles downstream of each Build Alternative stream crossing. Cumulative impacts to terrestrial wildlife were assessed based upon a 1-mile buffer surrounding the project center point.
Cultural Resources	Cumulative impacts consideration was based upon the Area of Potential Effect (APE) for Cultural Resources which includes all areas within and immediately adjacent to the proposed ROW of the Build Alternative.
Air Quality	Cumulative impacts to Air Quality were assessed relative to the attainment status of Robertson and Sumner Counties.

Resource Category	Analysis Area
Noise	Cumulative impacts of Noise were assessed based upon a 1-mile buffer from the project construction limits.
Hazardous Materials	Cumulative impacts to Hazardous Materials were assessed based upon a 1-mile buffer surrounding the project center point.
Source: Parsons, 2009	

3.11.1.4 Indirect Impacts

The proposed I-65 Interchange project could encourage secondary development within the general vicinity of the new interchange due to the improved interstate access. The primary considerations of this secondary growth used for the indirect impacts analyses include:

- An increase in conversion of land near the proposed new interchange to commercial land uses, especially service or vehicle oriented facilities such as restaurants and gas stations;
- Conversion of low-density rural residential areas to single-family and multi-family residential communities; and
- An increase in conversion of land near the new interchange to industrial land uses due to anticipated improved access for large trucks typically used to ship products or supplies to and from such facilities in Tennessee.

The basic concepts discussed in the National Cooperative Highway Research Program (NCHRP) Report 466 "Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects" were used during the indirect impacts analyses.

3.11.2 Potential Indirect and Cumulative Impacts Associated with the No-Build Alternative

The No-Build Alternative would have indirect and cumulative impacts as follows:

- Growth in northern Robertson and Sumner Counties, including the northern portions of Portland and Mitchellville, would likely occur at a slower rate. Therefore, overall land use changes in the area would be slower to occur than would be expected if a new interchange were constructed at SR-109 to provide improved access to the area. However, because a portion of the area is included in the UGB for Portland, it is expected that much of the project vicinity will eventually become developed with or without the new interchange.

- Not constructing the I-65 Interchange would contribute to continued declines in travel efficiency due to the gradual increases in traffic volumes with the anticipated growth in the area. Increasing traffic volumes will gradually result in a decrease in LOS on

the secondary routes currently used to access I-65 and may also result in declining safety along those routes.

- Economic growth would be slow in the project vicinity if the new interchange is not constructed due to poor access to much of the area and limitations on some of the secondary routes to support increased traffic, especially related to industrial developments. This could result in adverse cumulative impact for areas that may already be seeing depressed income levels and lack of economic growth. Tax revenues for local communities may also be slow to increase due to slower development of the area under the No-Build Alternative.

- Property values may increase more slowly in the project vicinity if the access to the area is not improved. It is likely that some growth would continue to occur in the area regardless of the new interchange, but it would occur at a slower pace and not likely result in a substantial increase in property values in the immediate project vicinity due to limited access to the interstate.

- Response times for emergency vehicles may increase as growth continues to occur in northern portions of Robertson and Sumner Counties and traffic volumes continue to increase on existing routes.

- The potential for transportation savings for local residents would not be realized under the No-Build Alternative. Although other roadway improvements may occur in the region, and more fuel efficient vehicles may become available to help reduce some costs, the increased travel times and potential for accidents, as secondary roadways become more crowded, would result in potential increased costs.

- Farmland would continue to be converted to other land uses in the project vicinity regardless of whether the new interchange is constructed or not. However, the conversion would likely occur at a slower rate than would occur if the interchange is built.

- Ecological resources including streams, forests, wetlands, and other fish and wildlife habitats would continue to be impacted in the project vicinity due to the continued growth and development of the area regardless of whether the new interchange is constructed or not. However, the conversion of undeveloped areas to developed areas would likely occur at a slower rate than would occur if the interchange is built.

- It is anticipated that not constructing the I-65 Interchange project could result in potential adverse impacts to air quality in the area due to continued reduction in travel efficiency and increased congestion on secondary routes, especially those used to gain access to and from I-65 at the existing interchanges north and south of the proposed project. These adverse impacts would offset some of the beneficial impacts to air quality expected to occur due to other programs aimed at improving the regional air quality, including EPA's national control programs that are projected to reduce MSAT emissions by 57 to 87% from 2000 to 2020.

3.11.3 Potential Indirect and Cumulative Impacts Associated with the Build Alternative

The I-65 Interchange Build Alternative would have indirect and cumulative impacts as follows:

- Growth in northern Robertson and Sumner Counties, including the northern portions of Portland and Mitchellville, would likely occur at a faster rate if the new I-65 Interchange is constructed because access to the surrounding land would be improved. This faster growth in the area would result in land use changes that would result in loss of open space and farmland. The surrounding area would eventually become less rural as more development occurs. Local land use planners can help ensure that the growth in the area occurs in a controlled manner so that adverse impacts to local communities and other resources can be minimized.

- If the I-65 Interchange is constructed at the proposed location, it is likely that new developments would follow. Highway-oriented commercial development, to include service stations, fast food restaurants, truck stops, and motels, would most likely be the initial types of development if the interchange is constructed. Local officials are anticipating residential development to increase and have discussed the possibility of a shopping mall in the immediate surrounding area.

- Construction of a new I-65 Interchange at SR-109 would improve travel efficiency for commuters living in the area and would help to alleviate potential problems on other secondary routes currently used to gain access to I-65.

- Provision of the new I-65 Interchange would promote economic growth in the project vicinity, including the Portland area. This would help improve personal income levels in the area as well as tax revenues for local communities.

- It is expected that there could be a potential increase in property values for those properties with increased accessibility and development potential at key areas in proximity to the I-65 Interchange. The increases in property value would complement any other increases that are likely to occur as a result of more services, utilities, retail stores, restaurants, and other developments being added in the area as Robertson and Sumner Counties continue to grow. As growth occurs, the demand for developable land will increase and likely result in increases in property values.

- The I-65 Interchange project may help improve economic conditions in the immediate project vicinity. Induced development could result in an increased real property tax base and tax revenues. The potential induced development could result in a local increase in employment and personal income, and an increase in sales and other business-related taxes.

- Response times for emergency vehicles would likely improve due to the improved access provided by the new I-65 interchange. These improvements would complement other improvements that would likely occur as the area continues to become more developed as is currently planned. Improvements would likely include

addition of new fire stations, ambulance stations, and other public services that would need to be developed as the population increases.

- There would be a continued loss of open space as the area is transformed from a rural setting to more of a suburban setting. The loss of open space would result in visual impacts in the project area. However, this would not differ substantially from the No-Build Alternative in the long-term. Construction of new buildings and newly landscaped areas may actually result in visual improvements in some areas. Perception of visual impacts are typically different between individuals, so it is often difficult to determine if conversion of open agricultural fields to newly constructed homes or other buildings with trees and other landscaping surrounding them is considered adverse or beneficial.

- There would be potential transportation cost savings with implementation of the Build Alternative because of the improved access, which would reduce travel times and likely reduce the accident potential on other secondary routes. These improvements would complement other transportation cost improvements resulting from other roadway improvements and more fuel efficient vehicles.

- Farmland would continue to be converted to other land uses as the area continues to grow and become more suburban. Farmland and soils adjacent to the new I-65 Interchange could be indirectly impacted through secondary development. The project is expected to encourage new development, especially along SR-109 and SR-41 (U.S. 31W) near the proposed interchange. Given the rural nature of this area and amount of land currently being used for agriculture in the surrounding area, it is likely that some of this new development would occur on farmland. Based on the area growth plans, some new development would be expected to occur in this area regardless of the new interchange being constructed, so not all of the conversion of land to urban uses in the area would be attributable to the new interchange. The interchange may promote earlier development of the area.

  Some of the secondary impacts to farmland could be controlled by local zoning and land use planning efforts. Also, the landowners would have the choice whether or not to stop farming their land to convert it to other uses or to sell their property to private developers. When land values increase in an area, such as would be expected for land adjacent to the new I-65 Interchange, it often makes sense for farmers to sell their strategically located property at the new elevated price and then to purchase new property to farm in areas less strategically located for development (land further from the new interchange) Because the value of the land they are selling may be worth more than the land they are purchasing, those farmers may end up being able to purchase more acres to farm than they farmed on their current property.

- Ecological resources including streams, forests, wetlands, and other fish and wildlife habitats would be impacted in the project vicinity due to the continued growth and development of the area. Although this development would likely occur in the long term, regardless of whether the new interchange is constructed or not, the new

interchange would likely increase the rate at which the area becomes developed. Human activity has already extensively modified the natural resources of the study area, and virtually all of the land in the project area has been developed or altered to some extent. The habitat types are already fragmented and modified by the existing agricultural land uses, residential developments, and construction of the existing roadways and other infrastructure. Consequently, there are no substantial reasonably foreseeable cumulative impacts to natural resources associated with the proposed project.

- As more development occurs, there would be additional access roadways, parking lots, and driveways built. This will result in an increase in the percentage of impervious surface in the project area. As the amount of impervious surfaces increases, stormwater runoff would increase. Stormwater runoff often carries chemicals associated with roads and lawn fertilizer from new residences, which would degrade downstream water quality and aquatic habitats.

- The continued growth and development of the area could result in some construction in floodplains. This would likely be more of an issue further into the future as the more developable upland areas become fully developed and the more readily-developable lands become more scarce. However, there is currently a large amount of undeveloped upland areas in the project vicinity, so impacts to floodplains is expected to be minimal at this time.

- Secondary developments associated with the I-65 Interchange would result in additional land disturbances that could result in the spread of invasive plant species.

- It is anticipated that the I-65 Interchange project would result in long-term beneficial impacts to air quality in the region by improving travel efficiency. The improved transportation would combine with the positive impacts of other programs aimed at improving the regional air quality, including EPA's national control programs that are projected to reduce MSAT emissions by 57 to 87% from 2000 to 2020.

- Some localized adverse air quality impacts could occur depending on the types of new developments that occur in the area. Due to this project being a new interstate interchange with developable land surrounding it, it is likely that secondary developments may include truck stops and/or other gas stations. These facilities could result in increased emissions in the local area that could reduce the air quality in the immediate area. However, the impacts of this can not be quantified at this time, because the amount and type of secondary developments is currently unknown. Local land use planners could play a role in the types of development that occur in the area. Also, all new developments in the area would be required to comply with all local, state, and federal regulations related to air quality and other environmental issues.

- It is anticipated that the Build Alternative would result in higher noise levels for residences along SR-109 and other secondary or local routes due to increased traffic associated with the new interchange. This increased noise would combine with any

other new noise generators that may be developed in the project vicinity. Local planners can help reduce impacts due to noise by proper land use planning that results in placement of new residential areas and other noise sensitive land uses in areas that are away from noise generating land uses such as highways, industrial sites, railroads, etc., which are known or expected to conflict with the sensitive land uses.

- It is anticipated that the continued growth and development in the area will result in an increase in the number of facilities transporting, handling, and/or storing hazardous materials. The new I-65 Interchange may result in faster development in the area and may promote development of gas stations, industrial sites, and other facilities that handle and/or store hazardous or toxic materials. Regulatory agencies will monitor all new developments to help ensure that all hazardous materials are handled, stored, and transported properly to avoid spills or other potential adverse impacts associated with those materials. Spills on highways are a potential source of water quality degradation and a possible public health hazard. The likelihood of such spills or leaks impacting such resources would be considered low. Spill response teams in the area can normally contain accidental spills or leaks in a timely manner limiting the adverse impacts of such events to the localized area of the spill site. The Tennessee Emergency Management Agency (TEMA) has the responsibility and authority for coordination of all state and local agencies during accidents involving hazardous materials. The TEMA has demonstrated its ability to effectively manage such incidents.

Regardless of whether or not the new I-65 Interchange is constructed, portions of the project study area are likely to become developed in the reasonably foreseeable future due to the proximity of the entire area to Nashville and I-65. Robertson and Sumner Counties have mechanisms in effect to minimize, mitigate, or avoid adverse impacts of project implementation. Such issues as land use, buffering, noise mitigation, etc. can be addressed through implementation and application of the County Growth Policy Plans, city zoning, and any subdivision ordinances, design guidelines, and other special ordinances and/or policies that may be in effect, or that may be developed as the area continues to grow. Regulatory agencies will be responsible for monitoring private developments in the project area to help ensure no substantial water quality impacts or other major environmental impacts occur. Proper planning can be beneficial to the residents that currently live in the project vicinity, to future residents that will live in the area, and to the natural environment. Cumulative environmental impacts can be minimized if proactive measures are taken as each new development or project is implemented.

3.12 Summary of Environmental Consequences

Table 3.17 contains summary environmental consequences information for the proposed I-65 Interchange Build Alternative.

Table 3.17. Summary data for the I-65 Interchange project in Robertson and Sumner Counties, Tennessee.

Resource	Build Alternative
Total Size of Study Area (acres)*	297
Land Uses/Wildlife Habitat Present	
Forest (acres)**	15
Old Field (acres)	3
Pasture	41
Agriculture (acres)	97
Developed/Disturbed (acres)	140
Open Water (acres)	1
Residential Displacements	2
Business Displacements	1
Farmland Conversion Impact Rating Score (Robertson Co./Sumner Co.)	146/103
Noise Receptors Impacted	14
Aquatic Resources Present	
Streams Present/Impacted (number)	3
Stream Channel in Corridor (feet)	3,137
Streams Channelized (number of feet modified/encapsulated)	3 (511)
Ponds Present (number)	1
Wetlands (acres)	0.12
100-year Floodplain (acres)	0.9
Archaeological Sites Impacted (number)	0
Historic Sites Impacted (number)	0
Hazardous Materials Sites Impacted (number)	0

* Unless otherwise noted in the specific categories above, the study area for the land use and natural resources reported in this table was 500-foot wide (including 250-foot on either side of the centerline of each ramp or roadway segment making up the proposed interchange under the Build Alternative). Because the actual ROW would narrower than 500 feet, the actual impacts to many of the resources in this table would be less. This data characterizes the worst case scenario for the impacts that would occur under the Build Alternative. This data can be extrapolated to the narrower ROW boundary in most cases. Exact impacts to the various resources in this table will be refined following development of more detailed design plans.
Source: Parsons, 2009

3.13 Environmental Permits

The acquisition of permits would occur prior to initiation of construction activities, pursuant to Section 69-3-108(a) of the Tennessee Water Quality Control Act of 1977 and other State and Federal laws and regulations. These permits could include:

- Clean Water Act Section 404 Permit – required for construction that involves placement of dredge and fill material in Waters of the U.S. Typical Waters of the U.S. include rivers, blueline streams, headwaters streams, and special aquatic sites, such as wetlands. Section 404 Permits are issued by the USACE;

- Aquatic Resource Alteration Permit (ARAP) – required for any alterations of State waters, including wetlands that do not require a Federal (Section 404) permit. The ARAP permits are required for construction at locations where the proposed project involves placement of fill in the following: a pond that is spring fed or impacts springs; reservoirs; wetlands; blue line streams; intermittent blueline streams on the United States Geologic Survey (USGS) 7.5 quadrangle map; any stream that supports any form of aquatic life; or is in the vicinity of a State-listed endangered species. TDEC, Division of Water Pollution Control issues ARAP permits;

- National Pollutant Discharge Elimination System (NPDES) Stormwater Construction Permit – required for grubbing, clearing, grading, or excavation of one or more acres of land and for stormwater discharges. TDEC's Division of Water Pollution Control issues NPDES permits;

- Tennessee Construction General Permit for Storm Water Discharges from Construction Activities (TNCGP) – required by operators of construction sites in Tennessee; and

- TDEC Class V Injection Well Permit for possible impacts to sinkholes.

In addition, the State of Tennessee would require water quality certification under Section 401 of the CWA. Section 401 certification ensures that activities requiring a Federal permit or license will not cause pollution in violation of State water quality standards.

CHAPTER 4 - PUBLIC INVOLVEMENT

4.1 Initial Coordination with Federal, State, and Local Agencies

On May 6, 2008, forty-five agencies/agency divisions, local officials, and organizations were sent an initial coordination package. This package consisted of a letter describing the project and requesting comments on the proposed study, a project data summary, and a copy of the project's Coordination Plan. The data summary contained a project location map and a map showing the conceptual layout of the project, which was later accepted as the Build Alternative analyzed in the EA.

This initial coordination effort afforded concerned agencies and local officials an opportunity to provide input into the project planning process during the early stages of project development. This process helps to ensure that all foreseeable impacts and concerns are considered in the environmental and location studies.

The USACE and Tennessee Valley Authority (TVA) were requested to become Cooperating Agencies by TDOT. Federal, state, and local agencies were sent letters regarding their Participating Agency status. A list of all agencies, organizations, and other community representatives that were sent an initial coordination package are shown in Sections 4.1.1 through 4.1.3 below.

4.1.1 Participating and Cooperating Agencies

Federal Agencies
Tennessee Valley Authority-Environmental Policy and Planning; and
U.S. Army Corps of Engineers, Nashville District-Regulatory Branch (CELRN-OP-F).

4.1.2 Participating Agencies

Federal Agencies
U.S. Environmental Protection Agency;
U.S. Department of Agriculture-NRCS;
U.S. Department of Housing and Urban Development;
U.S. Department of the Interior-USGS;
U.S. Department of the Interior-USGS Water Resources Division;
U.S. Department of the Interior-USFWS;
U.S. Department of the Interior-Office of Surface Mining;
U.S. Department of Agriculture-NRCS Wetland Reserve Program Coordinator;
Advisory Council on Historic Preservation;
Federal Energy Regulatory Commission;
Federal Aviation Administration; and
U.S. Department of Energy.

State Agencies
Tennessee Department of Environment and Conservation;
Tennessee Department of Economic & Community Development-NEPA Contact;
Tennessee Department of Economic & Community Development-Local Planning Assistance Office, Middle Tennessee Section;

Tennessee Wildlife Resources Agency;
State Historic Preservation Officer-Tennessee Historical Commission;
Tennessee Department of Agriculture-Deputy Commissioner's Office;
Tennessee Department of Education; and
Tennessee Housing Development Agency.

Local Agencies/Officials
Robertson County-Mayor;
Sumner County-Mayor;
Mayor of the City of Portland;
Metropolitan Planning Commission of Nashville-Davidson County;
Nashville Area Metropolitan Planning Organization;
Greater Nashville Regional Rural Planning Organization;
Sumner County Planning Commission; and
Robertson County Planning Commission.

4.1.3 Non-Participating Agencies, Local Officials, and Organizations

Federal Agencies
National Oceanic and Atmospheric Administration; and
Federal Emergency Management Agency.

Organizations
NAACP-District IV Area Director
Tennessee Trails Association,
Tennessee Conservation League;
Sierra Club;
Chickasaw Group-Sierra Club;
The Nature Conservancy;
Tennessee Wildlife Federation;
Tennessee Environmental Council;
World Wildlife Fund; and
Tennessee Chapter of the Sierra Club.

Local Officials
Greater Nashville Regional Council;
Portland Chamber of Commerce; and
Robertson County Chamber of Commerce.

4.2 Summary and Disposition of Comments Received from the Initial Coordination

There were fifteen replies to the initial coordination package that was sent to the 45 Federal, State, and local planning/resource management agencies, and private groups. The following is a brief summary of the comments contained in the initial coordination responses. Copies of the full response letters and/or e-mails are attached in Appendix A.

4.2.1 Federal Agencies

U.S. Department of the Army – Nashville District Corps of Engineers – Regulatory Branch

SUMMARY:

"..we agree to participate as a cooperating agency in the preparation of your Environmental Assessment for the subject project…

..if jurisdictional waters are impacted from the proposed project, a Department of the Army permit would be required for any discharge of fill materials into jurisdictional waters, including wetlands, pursuant to Section 404 of the Clean Water Act. For your consideration, we make these recommendations for use in your draft EA.

1. It is recommended that the EA list the waters of the U.S. to be impacted with each build alternative…indicated if stream impacts are from channel relocations, wetland fill, or culvert construction. This office recommends TDOT to avoid and/or minimize the environmental impacts from the alignment to the extent possible.

2. If photographs are available of the waters to be impacted, it would be helpful to include those photos in the EA or …Appendix.

3. Mitigation for stream impacts should be described, if any, with details.

4. If your preliminary surveys reveal the presence of threatened or endangered species, you should begin required U.S. Fish and Wildlife coordination.

5. Depending on the extent of impacts, the proposed action may require an individual public interest review (public notice) or the impacts may be minor and meet the criteria of a Nationwide Permit for road crossings.

It is not likely that the proposed project would have an effect, either favorable or adverse, on any other programs being planned or executed by our agency.

DISPOSITION:

TDOT appreciates the USACE's acceptance to become a cooperating agency for this project.

TDOT has conducted field investigations along the proposed Build Alternative study area and has provided detailed information regarding all waters that may be impacted by the project in the Ecology Study Technical Appendix. Based on preliminary investigations, the Build Alternative alignment was shifted to minimize impacts to one of the streams in the study area. Other stream crossings occur at perpendicular angles and will require minimal stream channel relocations. Most stream impacts will be associated with culverts. Information regarding impacts to streams and wetlands is reported in the EA, along with the amount of stream channelization/encapsulation that may be required.

No direct impacts to wetlands are anticipated. TDOT will continue to coordinate with the USACE and TDEC to ensure that all construction activities are conducted under the appropriate permits and that proper mitigation is conducted as necessary.

It is not anticipated that this project will impact any threatened or endangered species.

U.S. Fish and Wildlife Service – Field Supervisor

SUMMARY:

"…We have reviewed the project summary and the possible role that our agency would have in the development of the I-65 Interchange project. We accept the invitation to be a participating agency in the development of this project…

We have also reviewed our existing database for any records of federally listed species near the proposed project. Our collection records do not indicate that federally listed or proposed endangered or threatened species occur within the proposed study area of the project."

DISPOSITION:

TDOT appreciates the USFWS's acceptance to become a participating agency for this project.

TDOT concurs that there are no known federally listed species in the immediate study area of the project. Based on records searches and field surveys we do not believe this project will adversely impact any listed species. Should new information be obtained during the remainder of the project planning, design, or construction phases, TDOT will continue to coordinate with USFWS to determine what, if any, impact this project may have on protected species based on that new information.

U.S. Environmental Protection Agency – Region 4 – Chief, NEPA Program Office

SUMMARY:

"…we accept your invitation to become a participating agency for this project… EPA's participating agency status and level of involvement does not, however preclude our independent review and comment responsibilities under Section 102(2)(C) of the NEPA and Section 309 of the Clean Air Act, or our authorities under Section 404 of the Clean Water Act. Similarly, our being a participating agency should not imply that EPA will necessarily concur with all aspects of TDOT's EA."

DISPOSITION:

TDOT appreciates the EPA's acceptance to become a participating agency for this project.

TDOT understands that becoming a participating agency does not preclude EPA's other regulatory responsibilities and that EPA may not concur with all aspects of our EA. We will continue to provide EPA with opportunities to provide input into the planning for this project so we can develop a project that meets the purpose and need of the proposed transportation improvements while minimizing impacts to the environment to the extent possible.

Tennessee Valley Authority – Environmental Stewardship and Policy - NEPA Policy Program Manager

SUMMARY:

"..TVA is pleased to be a participating agency in the development of the environmental assessment for this project. Because the project is outside of the Tennessee River watershed and there are no TVA transmission lines in the vicinity, we have no jurisdiction or related actions and thus decline your invitation to be a cooperating agency.

…we are not aware of unusual or unique resources in the project area that should be addressed in the environmental assessment."

DISPOSITION:

TDOT appreciates the TVA's acceptance to become a participating agency for this project.

TDOT will continue to give TVA opportunities to provide input for this project throughout the planning stages.

Advisory Council on Historic Preservation – Historic Preservation Specialist

SUMMARY:

"…At this time, we do not expect to attend meetings or provide formal comments at environmental review milestones. However, we retain the right to become involved in the environmental review for this action in the future, if based on information provided by you or other consulting parties, we determine that our involvement is warranted.

In order to ensure compliance with Section 106 of the National Historic Preservation Act, the ACHP encourages FHWA to initiate the Section 106 process by notifying, at your earliest convenience, the appropriate SHPO and/or Tribal Historic Preservation Officer (THPO), Indian Tribes, and other consulting parties pursuant to our regulations "Protection of Historic Properties" (36 CFR Part 800.

..If FHWA determines through consultation with the consulting parties that the undertaking will adversely affect historic properties, or that the development of a Programmatic Agreement is necessary, FHWA must notify the ACHP and provide the documentation detailed at 36 CFR 800.11(e)..."

DISPOSITION:

TDOT and FHWA have conducted the appropriate studies and consultation for this project to comply with Section 106 of the National Historic Preservation Act. Based on the information provided by consulting parties, records research, and field surveys TDOT and the SHPO have determined that no historic properties will be impacted by this undertaking. Should those findings change, TDOT and FHWA will continue to work with the SHPO and ACHP as appropriate.

U.S. Department of Agriculture – Natural Resources Conservation Service

SUMMARY:

"Prime Farmland soils are mapped within the immediate area of your inquiry. This project will convert areas of Prime Farmland as defined in the Farmland Protection Policy Act. This determination was made solely from the information you provided and other relevant resource data for the area of the project. No site visit has been made. A completed form AD-1006 is included to document the Farmland Protection Policy Act determination."

DISPOSITION:

TDOT is aware that Prime Farmland is mapped in the area and will be impacted by the project. There are no reasonable alternatives that would avoid impacts to this resource. However, TDOT will attempt to minimize impacts to farmland to the extent practical. Based on the information provided on the AD-1006 and the subsequent site assessment scores, it does not appear that there will be substantial impacts to farmland due to this project that would require additional action.

4.2.2 State Agencies

Tennessee Wildlife Resources Agency

SUMMARY:

"The Tennessee Wildlife Resources Agency has received and reviewed the information your office provided to us regarding the invitation to become a participating agency in the development of an Environmental Assessment for the proposed Interstate 65 Interchange at State Route 109 in Robertson and Sumner Counties, Tennessee. Our current concerns are potential environmental impacts associated with potential stream and wetland impacts, and impacts to federally and state listed species that may occur due to the construction of this project. We accept the invitation to participate in this process and encourage continued consultation with our agency…to further reduce impacts to fish and wildlife resources."

DISPOSITION:

TDOT appreciates TWRA accepting the invitation to participate in this project. TDOT will continue to coordinate with TWRA throughout the NEPA and planning process for this project to ensure that all fish and wildlife impacts are avoided or minimized to the extent possible.

Tennessee Department of Environment and Conservation – Environmental Assistance Center – Division of Solid Waste Management, Nashville Field Office

SUMMARY:

"…we have evaluated the proposal and found no issues that are of concern to the programs of this Division."

DISPOSITION:

TDOT appreciates the response and concurs that there are no solid waste management features of concern that would be impacted by this project.

Tennessee Department of Environment and Conservation –Division of Ground Water Protection

SUMMARY:

"The Division of Ground Water Protection (GWP) regulates all aspects of the subsurface sewage disposal (SSD) program in the State of Tennessee. In this regard, the Division staff have worked closely with TDOT on those construction projects where it is anticipated that the project will potentially impact existing SSD systems.

Regarding the above referenced project, the Division of GWP anticipates that the project may impact existing SSD systems that are located along the proposed route."

DISPOSITION:

TDOT appreciates the response and concurs that there may be impacts to existing SSD systems. Once final design plans have been developed, TDOT will evaluate the locations of these systems and will contact the Division of GWP if assistance is required.

Tennessee Department of Environment and Conservation –Nashville Environmental Field Office - Division of Remediation

SUMMARY:

"..After reviewing the site location maps….we have concluded that Division of Remediation (DoR) has no sites in your proposed project area.

..we have concluded that DoR has two sites within one mile of your proposed project area: 83-516 TN Gas Pipeline Co., Portland, TN and 83-518 East Tennessee Gas No. 2101, Portland, TN.

DISPOSITION:

TDOT appreciates the response and concurs that there are no Division of Remediation sites within the proposed project area that would be impacted by the project. We also concur that there are two sites within one mile of the project area.

We are also aware of gas pipelines that traverse the project area and that would be crossed by the proposed project. TDOT will continue to coordinate with TDEC and the owners of the pipelines during development of the final design plans to determine what measures will be required to minimize impacts to the gas pipelines in the area and ensure the safety of nearby residents and users of the roadway, if it is constructed as part of this project.

Tennessee Department of Agriculture – Deputy Commissioner

SUMMARY:

"The Department of Agriculture accepts the invitation to become a participating agency with TDOT and FHWA in the development of the Environmental Assessment for the…project.

DISPOSITION:

TDOT appreciates the Tennessee Department of Agriculture's acceptance to become a participating agency for this project and will continue to provide opportunities for the Department to review project planning documents and provide input as appropriate.

4.2.3 Local Agencies/Organizations

Metro Planning Commission of Nashville-Davidson County – Executive Director

SUMMARY:

"…Please consider this as the Metro Planning Department's written acceptance, making it eligible to be a participating agency for this project."

DISPOSITION:

TDOT appreciates the Metro Planning Commission's acceptance to become a participating agency for this project and will continue to provide opportunities for the Commission to review project planning documents and provide input as appropriate.

Sumner County – Sumner County Executive

SUMMARY:

"…This letter serves as Sumner County's acceptance of the invitation to become a Participating Agency with TDOT and FHWA in the development of the environmental assessment for this project..."

DISPOSITION:

TDOT appreciates Sumner County's acceptance to become a participating agency for this project and will continue to provide opportunities for the County to review project planning documents and provide input as appropriate.

City of Portland – Office of the Mayor

SUMMARY:

"…the City of Portland has reviewed the contents of the Project Data Summary and does hereby agree to be designated as a participating agency for the project..."

DISPOSITION:

TDOT appreciates the City of Portland's acceptance to become a participating agency for this project and will continue to provide opportunities for the City to review project planning documents and provide input as appropriate.

Sierra Club – Middle Tennessee Group - Chair

SUMMARY:

"…I offer these comments that the Tennessee Chapter of the Sierra Club thinks should be addressed in detail in the Environmental Assessment:

1. The project is proposed in what is now an undeveloped area of Robertson County. How will the project affect farmland preservation in the northern part of the county as well as in Sumner County? There is a great need and demand for locally grown and produced food and dairy products, and the mid-state area still has one of the highest rates of farmland loss in the country.

2. With the price of gasoline at over $4.00 a gallon and likely to stay that way, there is a great need to reduce the amount of sprawl type development and vehicle miles traveled. How will this project impact that issue?

3. It is, of course, likely that a new interchange will generate more growth and new development in this area, including expansion of the existing industrial area and suburban residential subdivisions. What will the impact of the new development on water supplies in this area, which is now in a position of having limited water supplies and having experienced recent water shortages?

4. Both counties have adopted growth plans under the requirements of Public Chapter 1101, and the City of Portland has more local plans and land use regulations specific to the city. How will the project affect these plans? Is the project and associated new development consistent with these plans?

5. The impact of this project will extend far beyond the immediate area of construction. The EA should take all environmental impacts on the broader area into account. A full EIS may be justified..."

DISPOSITION:

TDOT appreciates the Sierra Club's input on this project. Here are our responses to each of the above items:

1. This project will result in some loss of farmland as discussed in Section 3.2.4 of this EA. Impacts will occur both directly due to construction of the interchange and associated roadways, and due to secondary developments in the vicinity. TDOT coordinated with the U.S. Department of Agriculture and Tennessee Department of Agriculture regarding this project. The Farmland Impact Rating scores for the project did not warrant further action due to the relatively small amount of farmland this project would impact relative to the amount of farmland remaining in the impacted counties. TDOT will attempt to minimize farmland impacts during the design phase of the project where feasible. In terms of secondary growth and development, local city and county growth plans and zoning maps can influence where new developments occur. TDOT recommends coordinating with local planners regarding future growth and development plans in the area.

2. Gas prices have declined since the record highs reached in 2008 around the time the Sierra Club comments were made. Although gas prices have come down, improvements to the transportation network in the area are important to help improve travel efficiency and help reduce vehicle miles traveled when possible.

Although this project may promote additional urban growth in the project vicinity, it is likely this growth would occur regardless of this project as indicated by city and county growth plans. As shown in Table 3.12 of this EA, this project will actually result in an overall reduction in VMT in the area due to the improved interstate access.

3. TDOT does not have the authority to control growth and development in the area. Local planners have the responsibility for providing land use controls and determining whether water supplies are sufficient or if other options for water sources need to be evaluated. This new interchange project is being developed at the request of local officials to improve access to the area.

4. This project was initiated at the request of local officials to provide improved access to the area to support existing and anticipated growth in the area. This project and associated new development is consistent with these plans.

5. This EA discusses all potential environmental impacts on the broader area. Section 3.11 discusses the indirect and cumulative impacts anticipated to occur as a result of this project. FHWA determined that an EA was the appropriate document to determine whether this project would have significant impacts. Based on the findings of the environmental studies presented in this EA, TDOT does not expect that an Environmental Impact Statement will be required. Should it be determined that this project will result in significant impacts TDOT will work with FHWA to determine what the next step will be.

4.3 Public Involvement Meetings

A Public Meeting was held for the project on January 22, 2008 at the Portland High School, 600 College Street, Portland, Tennessee. The purpose of the meeting was to make available to the public all information concerning the project, present the possible Build Alternative layout for viewing and discussion, and solicit comments and suggestions on alternatives for consideration by the TDOT. The meeting was from 5:00 to 7:00 p.m, and consisted of a viewing of displays of the proposed Build Alternative layout and a PowerPoint presentation describing the project and NEPA process.

A total of 10 TDOT staff and their consultants were available at the meeting to assist the public attendees. A total of 31 citizens signed-in at the meeting.

Comments were taken from the public in the form of written comments turned in at the meeting, recorded comments made to the court reporter, and comments submitted by mail and e-mail. All forms of comments were collected and made part of the official transcript of the meeting.

4.3.1 Written Comments (left at the meeting, mailed, or e-mailed)

A total of 36 written comment forms or letters were submitted during the public comment period for the January 22, 2008 public meeting that ended on February 12, 2008. The following summary was taken from the written comments/comment forms that were submitted:

Need for Project:

- Nineteen cited providing a more direct route/better travel efficiency as a need for the project;
- Twenty-five cited economic development as a need for the project;
- Twenty-five cited improved access as a need for the project;
- One cited safety concerns on other existing routes as a need for the project; and
- One cited that the project could improve property values in the area.

Issues/Concerns:

- Seven cited environmental impacts (natural resources) as a concern for the project;
- Seven cited impacts to existing developments/homes as a concern for the project;
- Seven cited air quality or noise impacts as a concern for the project;
- Two cited concerns for impact to cultural resources (historical and archaeological)
- Three cited a concern related to the project causing increased traffic in the area and associated safety issues; and
- One cited concerns related to how the project may affect property values.

Preferred Alternative:

- Twenty-six cited that they preferred the Build Alternative as presented at the public meeting;
- Five cited that they preferred the No-Build Alternative; and
- One cited that they preferred a different Build Alternative than the one presented at the public meeting.

The public will have the opportunity to provide additional comments on the alternatives during the EA public comment period, which will include a Public Hearing. These comments will be evaluated and considered in development of the Final EA and will be used by decision-makers for the project. Selection of an alternative would be made after all public comments have been reviewed and all environmental impacts have been considered.

4.3.2 Oral Comments (Provided to the Court Reporter at the Meeting)

Two commenters provided oral statements to the court reporter. One person was for the project, but requested changes to the design of the loop ramp in the southwest quadrant of the proposed new interchange. The second person was against the project and stated that the project is not needed and that the existing interchanges located north and south of the proposed project were sufficient.

4.4 Tennessee Environmental Streamlining Agreement

This project has been developed following the procedures set forth in the Tennessee Environmental Streamlining Agreement (TESA). TESA establishes a single decision-making process to identify and address agency issues at four key points (referred to as concurrence points), during the planning and NEPA process. In addition to TDOT and FHWA, signatories to TESA include eight federal agencies and authorities, three state agencies, and the eleven Metropolitan Planning Organizations (MPOs) in the state. Agencies involved in TESA have been, or will be participating in the concurrence points at the following four major milestones in the environmental review process for the I-65 Interchange EA:

1) Purpose and Need and Study Area;

2) Project Alternatives to be Evaluated in the EA and Methodologies for Conducting Evaluation;

3) Adequacy of the Preliminary Draft EA; and

4) Designation of Preferred Alternative and Preliminary Mitigation.

4.4.1 Concurrence Point 1 - Purpose and Need

The Concurrence Point 1 (CP-1) portion of the I-65 Interchange project included development of the project purpose and need. The CP-1 document was submitted to the TESA agencies with final concurrence in August 2008. Seven agencies provided concurrence with the purpose and need and three of them provided comments they wanted to see addressed in future concurrence points.

The issues brought up during CP-1 included agencies: wanting to see data regarding traffic projections; including truck traffic estimates, to help support the stated need for the project; wanting more clarification on what the entire project included; stating concerns regarding stream impacts and the types of information they wanted to see in the EA; stating concerns regarding air quality impacts, and noting that there were 303(d) listed streams in the project vicinity that needed to be considered in the document. TDOT has included information pertaining to all of these issues in the EA.

4.4.2 Field Review

Following the end of Concurrence Point 1, TDOT invited all of the participating agencies to attend a Field Review to introduce them to the project location and to discuss potential Build Alternatives being considered for the project. The Field Review was held on August 13, 2008 at the project site. Four agencies were present at the Field Review in addition to TDOT and FHWA representatives. A total of 9 people were in attendance.

The agencies were shown maps of the proposed Build Alternative and then taken on a van tour of the project area. The main issues brought up at the Field Review involved the location of one portion of the alignment in relation to a small stream, location of gas pipelines in the area, and some of the items they would like to see discussed in the EA.

In response to the Field Review comments, the proposed Build Alternative alignment was shifted to reduce the impacts to the small stream. The other information discussed at the Field Review was discussed in this EA.

4.4.3 Concurrence Point 2 - Alternatives

The Concurrence Point 2 package containing the potential project alternatives that were anticipated to be evaluated in the EA was submitted to the TESA agencies with final concurrence in January 2009. Four agencies provided concurrence with the alternatives being proposed for the project. The agencies agreed that the proposed Build Alternative presented in the Concurrence Point 2 package was the appropriate alternative to carry forward for further study in this EA. No other alternatives were recommended for consideration.

Two agencies provided comments regarding the project alternatives and/or information they wanted to see in the EA. All of the requested information is covered in the EA or will be covered

in later phases of the project including the design phase and/or construction phase should the project proceed with the Build Alternative presented in Concurrence Point 2.

4.4.4 Concurrence Point 3 – Preliminary Draft EA document

Based on the output of CP-1 and CP-2, and the subsequent detailed investigation of alternatives and analysis of impacts, TDOT prepared a Preliminary Draft EA document and submitted it to the TESA agencies for their review and comment prior to publishing the Draft EA for public review.

APPENDIX A - INITIAL COORDINATION LETTERS

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
315 John R. Rice Blvd; Suite 175
Murfreesboro, TN 37129

October 19, 2009

Tom Love, Transportation Manager
TN Department of Transportation
Environmental Division
Suite 900 – James K. Polk Building
505 Deaderick Street
Nashville, TN 37243-0334

Subject: **PIN# 107338.00** I-65 interchange at SR 109

Mr. Love,

Prime Farmland soils are mapped within the immediate area of your inquiry. This project will convert areas of Prime Farmland as defined in the Farmland Protection Policy Act. This determination was made solely from the information you provided and other relevant resource data for the area of the project. No site visit has been made. A completed form AD-1006 is included to document the Farmland Protection Policy Act determination.

I apologize for the delay in this inquiry.

Feel free to contact me if I may be of further assistance.

Sincerely,

David McMillen
Resource Soil Scientist

Attachment – Completed AD1006

Helping People Help the Land

An Equal Opportunity Provider and Employer

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request 3/25/09
Name Of Project Interstate 65 Interchange at State Route 109	Federal Agency Involved Federal Highway Administration
Proposed Land Use Transportation	County And State Robertson, TN (Site A); Sumner, TN (Site B)
PART II *(To be completed by NRCS)*	Date Request Received By NRCS

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply -- do not complete additional parts of this form).* Yes ☑ No ☐ | Acres Irrigated 0 | Average Farm Size 120

Major Crop(s) Corn	Farmable Land In Govt. Jurisdiction Acres: 238900 % 70	Amount Of Farmland As Defined in FPPA Acres: 96700 % 28
Name Of Land Evaluation System Used LESA	Name Of Local Site Assessment System	Date Land Evaluation Returned By NRCS 10/19/09

PART III *(To be completed by Federal Agency)*	Alternative Site Rating Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	63.7	28.9		
B. Total Acres To Be Converted Indirectly				
C. Total Acres In Site	63.7	28.9	0.0	0.0
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	46.0	22.0		
B. Total Acres Statewide And Local Important Farmland	0.0	0.0		
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	0.0	0.0		
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	47.0	65.0		
PART V *(To be completed by NRCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	57	21	0	0

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points	Site A	Site B	Site C	Site D
1. Area In Nonurban Use	15	11	8		
2. Perimeter In Nonurban Use	10	6	5		
3. Percent Of Site Being Farmed	20	16	14		
4. Protection Provided By State And Local Government	20	20	20		
5. Distance From Urban Builtup Area	0	0	0		
6. Distance To Urban Support Services	0	0	0		
7. Size Of Present Farm Unit Compared To Average	10	2	1		
8. Creation Of Nonfarmable Farmland	25	18	18		
9. Availability Of Farm Support Services	5	4	4		
10. On-Farm Investments	20	2	2		
11. Effects Of Conversion On Farm Support Services	25	1	1		
12. Compatibility With Existing Agricultural Use	10	9	9		
TOTAL SITE ASSESSMENT POINTS	160	89	82	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	57	21	0	0
Total Site Assessment *(From Part VI above or a local site assessment)*	160	89	82	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	146	103	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☒

Reason For Selection:

Note: SITE A above contains data for the Robertson County portion of the overall I-65 Interchange Project Area.

SITE B above contains data for the Sumner County portion of the overall I-65 Interchange Project Area.

(See Instructions on reverse side) **Form AD-1006 (10-83)**

This form was electronically produced by National Production Services Staff

Clear Form

DEPARTMENT OF THE ARMY
NASHVILLE DISTRICT, CORPS OF ENGINEERS
3701 Bell Road
NASHVILLE, TENNESSEE 37214

REPLY TO
ATTENTION OF:

May 23, 2008

Regulatory Branch

SUBJECT: File No. 2008-00790; Initial Coordination on Proposed Interstate 65 Interchange at State Route 109, Robertson and Sumner Counties, TN

Mr. Tom Love
Tennessee Department of Transportation
Environmental Planning Office
Suite 900, James K. Polk Building
Nashville, TN 37243-0334

Dear Mr. Love:

In response to your May 6, 2008, request, we agree to participate as a cooperating agency in the preparation of your Environmental Assessment (EA) for the subject proposal.

In addition, if jurisdictional waters are impacted from the proposed project, a Department of the Army (DA) permit would be required for any discharge of fill materials into jurisdictional waters, including wetlands, pursuant to Section 404 of the Clean Water Act. For your consideration, we make these recommendations for use in your draft EA:

1. It is recommended that the EA list the waters of the US to be impacted with each build alternative. Also, it would be helpful for the evaluation to indicate if stream impacts are from channel relocations, wetland fill, or culvert construction. This office recommends TDOT to avoid and/or minimize the environmental impacts from the alignment selection to the extent possible.

2. If photographs are available of the waters of the US to be impacted, it would be helpful to include those photos in the EA or in an Appendix.

3. Mitigation for stream impacts should be described, if any, with details.

4. If your preliminary surveys reveal the presence of threatened and/or endangered species, you should begin the required U.S. Fish and Wildlife coordination.

5. Depending on the extent of impacts, the proposed action may require an individual public interest review (public notice) or the impacts may be minor and meet the criteria of a Nationwide Permit for road crossings. In addition, a state water quality certification may be required for the proposed work.

I am available to participate in onsite inspections or preliminary meetings for the proposed corridor in an effort to identify waters of the US that would be subject to the Corps Regulatory authority and to discuss aquatic resource impact avoidance and minimization.

It is not likely that the proposed project would have an effect, either favorable or adverse, on any other programs being planned or executed by our agency.

Thank you for the opportunity to participate in your planning process. When your preliminary plans are developed, please submit your information to me directly. Until that time, if you have any questions or comments contact me at the above address or phone (615) 369-7504.

Sincerely,

Lisa R. Morris

Lisa R. Morris
Project Manager
Operations Division

United States Department of the Interior

FISH AND WILDLIFE SERVICE
446 Neal Street
Cookeville, TN 38501

June 5, 2008

Mr. Charles Bush
Tennessee Department of Transportation
Environmental Planning and Permits Division
Suite 900, James K. Polk Building
505 Deadrick Street
Nashville, Tennessee 37243-0334

Re: Initial Coordination for the Proposed Interstate 65 Interchange at State Route 109, Robertson and Sumner Counties, Tennessee

Dear Mr. Bush:

The Tennessee Department of Transportation (TDOT), in cooperation with the Federal Highway Administration (FHWA), is initiating an Environmental Assessment (EA) for the proposed construction of a new interchange on Interstate 65 (I-65) at the proposed State Route 109 (SR-109) intersect in Robertson and Sumner Counties, Tennessee. The proposed project is located near the existing I-65 and Lake Springs Road crossing. The proposed interchange would provide safe and adequate transportation facilities for traffic projected to be generated by the existing and anticipated industrial developments located east and west of I-65 in the project area. The project would also provide an opportunity to directly link I-65 with SR-109.

TDOT and the FHWA have requested that the US Fish and Wildlife Service (Service) be a participating agency with the development of the EA. Acceptance of this request does not imply that the Service supports the proposal or has any special expertise with respect to the evaluation of the project.

We have reviewed the project summary and the possible role that our agency would have in the development of the I-65 interchange project. We accept the invitation to be a participating agency in the development of this project. However, with the undersized staff and limited budget that currently exist at our office, our involvement and available service may be limited in nature. Provided that the appropriate staff and time are available, our office will strive to provide timely input, participate in coordination meetings, and comment on all alternatives.

We have also reviewed our existing database for any records of federally listed species near the proposed project. Our collection records do not indicate that federally listed or proposed endangered or threatened species occur within the proposed study area of the project. We note,

however, that collection records available to the Service may not be all-inclusive. Our data base is a compilation of collection records made available by various individuals and resource agencies. This information is seldom based on comprehensive surveys of all potential habitat and thus does not necessarily provide conclusive evidence that protected species are present or absent at a specific locality.

If you have any questions regarding the information which we have provided, please contact Robbie Sykes of my staff at 931/528-6481, extension 209.

Sincerely,

Lee A. Barclay, Ph.D.
Field Supervisor

xc: Tom Love, TDOT, Nashville, TN

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

June 20, 2008

Charles Bush
Transportation Manager II
Tennessee Department of Transportation
James K. Polk Building
505 Deaderick Street, Suite 900
Nashville, Tennessee 37243-0334

SUBJECT: Participating Agency Request for the Environmental Assessment for the Proposed Interstate 65 Interchange at State Route 109 in Robertson and Sumner Counties, Tennessee

Dear Mr. Bush:

The U.S. Environmental Protection Agency (EPA) received your letter dated May 6, 2008, inviting EPA to become a "participating agency" with the Tennessee Department of Transportation (TDOT) and Federal Highway Administration in the development of an Environmental Assessment (EA) for the proposed new interchange on Interstate 65 at State Route 109 in Robertson and Sumner Counties, Tennessee. In accordance with this request, we accept your invitation to become a participating agency for this project and will endeavor to participate in project activities in the manner suggested in your letter, subject to resource limitations. EPA's participating agency status and level of involvement does not, however, preclude our independent review and comment responsibilities under Section 102(2)(C) of the National Environmental Policy Act and Section 309 of the Clean Air Act, or our authorities under Section 404 of the Clean Water Act. Similarly, our being a participating agency should not imply that EPA will necessarily concur with all aspects of TDOT's EA.

Your letter also requested EPA to provide comments on the "Project Coordination Plan" included with your letter. In accordance with this request, EPA does not have any comments on this plan. We appreciate the opportunity to work with the TDOT as a participating agency on this important project. Please contact Ben West, as our primary agency representative for this project, at (404) 562-9643 to discuss this letter or if you have questions.

Sincerely,

Heinz J. Mueller, Chief
NEPA Program Office
Office of Policy and Management

cc: Federal Highway Administration – Tennessee Division

Internet Address (URL) • http://www.epa.gov
Recycled/Recyclable • Printed with Vegetable Oil Based Inks on Recycled Paper (Minimum 30% Postconsumer)

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1499

May 16, 2008

Mr. Charles E. Bush
Tennessee Department of Transportation
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, Tennessee 37243-0334

Dear Mr. Bush:

COORDINATION PACKAGE FOR THE PROPOSED INTERSTATE 65 INTERCHANGE AT STATE ROUTE 109 IN ROBERTSON AND SUMNER COUNTIES, TENNESSEE

In response to your letter of May 6, 2008, TVA is pleased to be a participating agency in the development of the environmental assessment for this project. Because this project is outside of the Tennessee River watershed and there are no TVA transmission lines in the vicinity, we have no jurisdiction or related actions and thus decline your invitation to be a cooperating agency.

As a participating agency under SAFETEA-LU, we would be pleased to work with you on defining the purpose and need, range of alternatives, and environmental analysis needs. If coordination meetings and field reviews are scheduled, please provide us with an opportunity to participate. We are not aware of unusual or unique resources in the project area that should be addressed in the environmental assessment.

Should you have any questions, please contact me at (865) 632-3582 or cpnicholson@tva.gov.

Sincerely,

Charles P. Nicholson

Charles P. Nicholson
NEPA Policy Program Manager
Environmental Stewardship and Policy

From: "Adams, Scott (Planning)" <scott.adams@nashville.gov>
To: <tom.love@state.tn.us>, <charles.bush@state.tn.us>
Date: 6/13/2008 4:45 PM
Subject: Proposed Interstate 65 Interchange at State Route 109 in Robertson and Sumner Counties, Tennessee

Hello,

I received the Coordination Package via Rick Bernhardt, Executive Director, Metro Planning Commission of Nashville-Davidson County. Please consider this as the Metro Planning Department's written acceptance, making it eligible to be a participating agency for this project.

Thanks,

Scott Adams
Planner I - Transportation
Community Plans
Metropolitan Planning Department
800 2nd Ave. S.
Nashville, TN 37201
ph: (615) 862-7219
fax: (615) 862-7209
e-mail: scott.adams@nashville.gov <mailto:scott.adams@nashville.gov>

NASHVILLE MPO - MEMBER COUNTY: SUMNER

TENNESSEE DEPARTMENT OF AGRICULTURE
Ellington Agricultural Center
P.O. Box 40627
Nashville, TN 37204

June 19, 2008

Mr. Charles Bush
Transportation Manager II
Tennessee Department of Transportation
Suite 900, James K. Polk Building
505 Deadrick Street
Nashville, TN 37243-0334

Re: Invitation to be a Participating Agency
Proposed Interstate 65 Interchange at SR 109 EIS,
Robertson and Sumner Counties, Tennessee

Dear Mr. Bush:

The Department of Agriculture accepts the invitation to become a participating agency with TDOT and FHWA in the development of the Environmental Assessment for the above-referenced project.

Please do not hesitate to contact us if you have questions about our comments.

Sincerely,

Terry Oliver
Deputy Commissioner

STATE OF TENNESSEE
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
ENVIRONMENTAL ASSISTANCE CENTER
711 R. S. GASS BOULEVARD
NASHVILLE, TENNESSEE 37216
PHONE (615) 687-7000 STATEWIDE 1-888-891-8332 FAX (615) 687-7078

June 13, 2008

Mr. Charles E. Bush
Transportation Manager II
Department of Transportation
Environmental Division
Suite 900 - James K. Polk Building
505 Deaderick Street
Nashville, Tennessee 37243-0334

Subject: Coordination Package for the Proposed Interstate 65 Interchange at State Route 109 in Robertson and Sumner Counties, Tennessee – Environmental Assessment.

Dear Mr. Bush:

In a May 6, 2008 letter to Mr. Mike Apple (Director of the Tennessee Department of Environment and Conservation Division of Solid Waste Management), you asked if the subject project would have an effect on any programs being planned or executed by the Division. Your letter was forwarded to the Division's Nashville Environmental Field Office for a response. Therefore we have evaluated the proposal and found no issues that are of concern to the programs of this Division.

If you have any questions about our determination or if we may be of assistance to you, feel free to contact me by telephone at 615-687-7019.

Sincerely,

Al Majors

Al Majors
Division of Solid Waste Management, Nashville Field Office

cc: Mike Apple, DSWM/CO with original proposal attached

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
Ground Water Protection
10th Floor, 401 Church Street
Nashville, Tennessee 37243

May 15, 2008

Mr. Charles E. Bush
TDOT Environmental Division
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, Tennessee 37243-0334

Re: Coordination Package for the Proposed Interstate 65 Interchange at State Route 109 in Robertson and Sumner Counties, Tennessee – Environmental Assessment

Dear Mr. Bush:

The Division of Ground Water Protection (GWP) regulates all aspects of the subsurface sewage disposal (SSD) program in the State of Tennessee. In this regard, Division staff has worked closely with TDOT on those construction projects where it is anticipated that the project will potentially impact existing SSD systems.

Regarding the above referenced project, the Division of GWP anticipates that the project may impact existing SSD systems that are located along the proposed route.

If you have any questions or think that assistance will be requested on this project, you should contact Mr. Fali Kapadia, GWP Assistant Field Office Manager for the Nashville Region, at (615) 687-7049.

Sincerely,

Alan Schwendimann
Director
Division of Ground Water Protection

VAS/deh

CC: Mr. Fali Kapadia

TDOTresponse83

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
NASHVILLE ENVIRONMENTAL FIELD OFFICE
711 R. S. GASS BOULEVARD
NASHVILLE, TENNESSEE 37243
PHONE (615) 687-7000 STATEWIDE 1-888-891-8332 FAX (615) 687-7078

May 12, 2008

Mr. Charles Bush
State of Tennessee Department of Transportation
Environmental Division
Suite 900 James K. Polk Building
Nashville, TN 37243-0334

Re: Environmental Information Request
Proposed Interstate 65 Interchange at State Route 109
Robertson County, TN

Dear Mr. Bush,

The Tennessee Department of Environment & Conservation, Division of Remediation (DoR) has received your environmental review request letter dated May 6, 2008 for information from our Division that may relate to the proposed Interstate 65 Interchange at State Route 109 in Robertson County. After reviewing the site location maps that you provided and our project files, we have concluded that DoR has no sites in your proposed project area.

If you should have any questions, please contact me at (615) 687-7032.

Sincerely,

Evan W. Spann
Manager, Division of Remediation
Nashville Environmental Field Office

cc: DoR Central Office

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
NASHVILLE ENVIRONMENTAL FIELD OFFICE
711 R. S. GASS BOULEVARD
NASHVILLE, TENNESSEE 37243
PHONE (615) 687-7000 STATEWIDE 1-888-891-8332 FAX (615) 687-7078

May 12, 2008

Mr. Charles Bush
State of Tennessee Department of Transportation
Environmental Division
Suite 900 James K. Polk Building
Nashville, TN 37243-0334

Re: Environmental Information Request
Proposed Interstate 65 Interchange at State Route 109
Sumner County, TN

Dear Mr. Bush,

The Tennessee Department of Environment & Conservation, Division of Remediation (DoR) has received your environmental review request letter dated May 6, 2008 for information from our Division that may relate to the proposed Interstate 65 Interchange at State Route 109 in Sumner County. After reviewing the site location maps that you provided and our project files, we have concluded that DoR has two sites within one mile of your proposed project area.

- 83-516 TN Gas Pipeline Co., Portland, TN
- 83-518 East Tennessee Gas No. 2101, Portland, TN

If you should have any questions, please contact me at (615) 687-7032.

Sincerely,

Evan W. Spann
Manager, Division of Remediation
Nashville Environmental Field Office

cc: DoR Central Office

TENNESSEE WILDLIFE RESOURCES AGENCY

ELLINGTON AGRICULTURAL CENTER
P. O. BOX 40747
NASHVILLE, TENNESSEE 37204

May 29, 2008

Charles Bush
State of Tennessee
Department of Transportation
Environmental Division
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, TN 37243-0334

Re: Invitation to Participate in the Development Process for an Environmental Assessment for the Proposed Interstate 65 Interchange at State Route 109 in Robertson and Sumner Counties, Tennessee

Dear Mr. Bush:

The Tennessee Wildlife Resource Agency has received and reviewed the information your office provided to us regarding the invitation to become a participating agency in the development of an Environmental Assessment for the proposed Interstate 65 interchange at State Route 109 in Robertson and Sumner Counties, Tennessee. Our current concerns are potential environmental impacts associated with potential stream and wetland impacts, and impacts to federally and state listed species that may occur do to the construction of this project. We accept the invitation to participate in this process and encourage continued consultation with our agency in future phases of this project to further reduce impacts to fish and wildlife resources.

We thank you for the opportunity to comment during the initial coordination process and look forward to working with TDOT personnel in the future to reduce potential impacts to fish and wildlife resources associated with this project.

Sincerely,

Robert M. Todd

Robert M. Todd
Fish and Wildlife Environmentalist

cc: David Sims, Region II Habitat Biologist
Steve Patrick, Region II Manager
Andrea English, Region II Wildlife Diversity Coordinator

The State of Tennessee

IS AN EQUAL OPPORTUNITY, EQUAL ACCESS, AFFIRMATIVE ACTION EMPLOYER

R.J. "HANK" THOMPSON
SUMNER COUNTY EXECUTIVE

May 22, 2008

Mr. Charles E. Bush
TDOT, Environmental Division
Suite 900, James K. Polk Building
505 Deaderick St.
Nashville, TN 37243-0334

Dear Mr. Bush:

Thank you for your correspondence regarding the proposed Interstate 65 interchange at State Route 109 in Robertson and Sumner counties.

This letter serves as Sumner County's acceptance of the invitation to become a Participating Agency with TDOT and FHWA in the development of the environmental assessment for the project.

Any pertinent comments will provided after we have reviewed the material you provided.

Mr. Mike Moulton, Sumner County planning director, has been asked to respond to you separately regarding participation by the Sumner County Planning Commission.

Sincerely,

R.J. "Hank" Thompson
Sumner County Executive

RJT/sp

cc: Sumner County Engineer Nick Strong

355 NORTH BELVEDERE DRIVE • ROOM 102 • GALLATIN, TENNESSEE 37066-5413 • (615) 452-3604 • FAX (615) 451-6066

MAYOR:
Kenneth Wilber

VICE-MAYOR:
Jody McDowell

BOARD OF ALDERMEN:
Luther Bratton
Mike Callis
Allen Dyer
Phil Hobdy
Erin McLerran
Ronnie Meadows

CITY OF PORTLAND, TN
Proud, Progressive Portland

OFFICE OF THE MAYOR
100 SOUTH RUSSELL STREET
PORTLAND, TENNESSEE 37148
Telephone 615/325-6776
Fax 615/325-5345
Email Address: Kmayor@cityofportlandtn.gov

June 10, 2008

Mr. Charles E. Bush
Tennessee Dept of Transportation
Environmental Division
James K. Polk Building, Suite 900
505 Deaderick Street
Nashville, Tennessee 37243-0334

RE: Coordination Package for the Proposed Interstate 65 Interchange at State Route 109 in Robertson and Sumner Counties, Tennessee

Mr. Bush:

In response to your correspondence dated May 6, 2008, the City of Portland has reviewed the contents of the Project Data Summary and does hereby agree to be designated as a participating agency for this project.

Please contact my office should you have questions.

Thank you,

Kenneth Wilber
Mayor

SIERRA CLUB
FOUNDED 1892

June 19, 2008

Mr. Charles E. Bush
Transportation Manager II
Tennessee Department of Transportation
Environmental Division
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, TN 37243-0334

Re: Proposed I-65 Interchange at State Route 109

Dear Mr. Bush:

Thank you for inviting comments from the Sierra Club on this significant project. I offer these comments that the Tennessee Chapter of the Sierra Club thinks should be addressed in detail in the Environmental Assessment.

1. The project is proposed in what is now an undeveloped area of Robertson County. How will the project affect farmland preservation in the northern part of the county as well as in Sumner County? There is a great need and demand for locally grown and produced food and dairy products, and the mid-state area still has one of the highest rates of farmland loss in the country.
2. With the price of gasoline at over $4.00 a gallon and likely to stay that way, there is a great need to reduce the amount of sprawl type development and vehicle miles traveled. How will this project impact this issue?
3. It is, of course, likely that a new interchange will generate more growth and new development in this area, including expansion of the existing industrial areas and suburban residential subdivisions. What will be the impact of the new development on water supplies in this area, which is now in a position of having limited water supplies and having experienced recent water shortages?
4. Both counties have adopted growth plans under the requirements of Public Chapter 1101, and the City of Portland has more local plans and land use regulations specific to the city. How will the project affect these plans? Is the project and associated new development consistent with these plans?
5. The impact of this project will extend far beyond the immediate area of construction. The EA should take all environmental impacts on the broader area into account. A full EIS may be justified.

Thank you again for this opportunity to participate in a full public process to evaluate the overall impact of the interchange.

Sincerely,

Rachel Floyd

Rachel Floyd, Chair
Middle Tennessee Group
2021 21st Avenue South
Suite 436
Nashville, TN 37212

APPENDIX B - CULTURAL RESOURCES COORDINATION EFFORTS and COPIES OF LETTERS

B.1 Section 106 Coordination Efforts

On January 19, 2007, TDOT mailed letters to the Mayors of Robertson and Sumner Counties requesting their participation in the historic review process as consulting parties. In addition, TDOT mailed letters to the following six groups or tribes representing Native American interests requesting their participation as consulting parties:

- The Cherokee Nation;
- Eastern Band of Cherokee Indians;
- Eastern Shawnee Tribe of Oklahoma;
- Shawnee Tribe;
- Thlopthlocco Tribal Town; and
- United Keetoowah Band of Cherokee Indians.

To date, TDOT has received no responses related to architectural resources.

Copies of all Cultural Resources letters received are included in this Appendix.

B.2 Cultural Resources/Section 106 Coordination Letters

Copies of cultural resources coordination letters are contained below.

Preserving America's Heritage

June 2, 2008

Mr. Charles E. Bush
Transportation Manager II
Tennessee Department of Transportation
Environmental Division
James K. Polk Building, Suite 900
505 Deaderick Street
Nashville, Tennessee 37243-0334

RE: *Proposed Interstate 65 Interchange at State Route 109*
Robertson and Sumner Counties, Tennessee

Dear Mr. Bush:

On May 12, 2008, the Advisory Council on Historic Preservation (ACHP) received your invitation to participate in the environmental review process for the referenced undertaking pursuant to Section 6002 of the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users* (SAFETEA-LU). At this time, we do not expect to attend meetings or provide formal comments at environmental review milestones. However, we retain the right to become involved in the environmental review for this action in the future if, based on information provided by you or other consulting parties, we determine that our involvement is warranted.

In order to ensure compliance with Section 106 of the *National Historic Preservation Act*, the ACHP encourages FHWA to initiate the Section 106 process by notifying, at your earliest convenience, the appropriate State Historic Preservation Officer (SHPO) and/or Tribal Historic Preservation Officer (THPO), Indian tribes, and other consulting parties pursuant to our regulations, "Protection of Historic Properties" (36 CFR Part 800). Through early consultation FHWA will be able to determine the appropriate strategy to ensure Section 106 compliance for this undertaking.

FHWA should continue consultation with the appropriate SHPO/THPO, Indian tribes, and other consulting parties to identify and evaluate historic properties and to assess any potential adverse effects on those historic properties. If FHWA determines through consultation with the consulting parties that the undertaking will adversely affect historic properties, or that the development of a Programmatic Agreement is necessary, FHWA must notify the ACHP and provide the documentation detailed at 36 CFR § 800.11(e). In the event that this undertaking is covered under the terms of an existing Programmatic Agreement, you should follow the process set forth in the applicable Programmatic Agreement.

ADVISORY COUNCIL ON HISTORIC PRESERVATION
1100 Pennsylvania Avenue NW, Suite 803 • Washington, DC 20004
Phone: 202-606-8503 • Fax: 202-606-8647 • achp@achp.gov • www.achp.gov

Should you have any questions as to how your agency should comply with the requirements of Section 106, please contact me by telephone at (202) 606-8520 or by e-mail at kharris@achp.gov.

Sincerely,

Katry Harris

Katry Harris
Historic Preservation Specialist
Office of Federal Agency Programs

Annual 060608
PRH
2008035

TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550

June 3, 2008

Mr. Gerald Kline
Tennessee Department of Transportation
Environmental Planning and Permits Division
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, Tennessee 37243-0334

RE: FWHA, ARCHAEOLOGICAL ASSESSMENT, I-65 INTERCHANGE AT SR-109, UNINCORPORATED, ROBERTSON COUNTY, TN

Dear Mr. Kline:

At your request, our office has reviewed the above-referenced archaeological survey report in accordance with regulations codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739). Based on the information provided, we find that the project area contains no archaeological resources eligible for listing in the National Register of Historic Places.

If project plans are changed or archaeological remains are discovered during construction, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act.

Your cooperation is appreciated.

Sincerely,

E. Patrick McIntyre, Jr.

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

EPM/jmb

TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550

November 8, 2007

Ms. Martha Carver
Tennessee Department of Transportation
505 Deaderick St/900
Nashville, Tennessee, 37243-0349

RE: FHWA, ARCHITECTURAL SURVEY REPORT, I-65 INTERCHANGE/SR-109, SUMNER, ROBERTSON COUNTY

Dear Ms. Carver:

In response to your request, received on Wednesday, October 31, 2007, we have reviewed the documents you submitted regarding your proposed undertaking. Our review of and comment on your proposed undertaking are among the requirements of Section 106 of the National Historic Preservation Act. This Act requires federal agencies or applicant for federal assistance to consult with the appropriate State Historic Preservation Office before they carry out their proposed undertakings. The Advisory Council on Historic Preservation has codified procedures for carrying out Section 106 review in 36 CFR 800. You may wish to familiarize yourself with these procedures (Federal Register, December 12, 2000, pages 77698-77739) if you are unsure about the Section 106 process.

Considering the information provided, we find that the area of potential effect contains no architectural resources eligible for listing in the National Register of Historic Places affected by this undertaking. You should notify interested persons and make the documentation associated with this finding available to the public.

All borrow areas outside proposed rights-of-way will require separate certification as specified under Section 107.06-Federal Aid Provisions. If your agency proposes any modifications in current project plans or discovers any archaeological remains during the ground disturbance or construction phase, please contact us to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act. This office appreciates your cooperation.

Sincerely,

E. Patrick McIntyre, Jr.

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

EPM/jyg