



NORTH SECOND STREET CORRIDOR IMPROVEMENT PROJECT

**From Interstate 40 at North Second Street to the Intersection of
U.S. 51/SR-3/Whitney Avenue in Memphis, Tennessee
Shelby County, Tennessee**

Draft Environmental Impact Statement

**Submitted Pursuant to the National Environmental Policy Act of 1969
42 U.S.C. 4332(2)(c) and 49 U.S.C. 303**

**U.S. Department of Transportation
Federal Highway Administration,
Tennessee Department of Transportation
Environmental Division**

**Cooperating Agency
U.S. Army Corps of Engineers, Memphis District**

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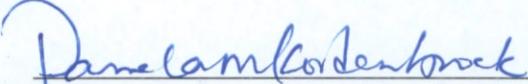
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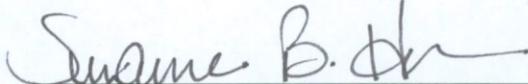
U.S. Army Corps of Engineers, Memphis District

This document identifies and assesses the environmental impacts associated with improving North Second Street and North Third Street to form a one-way pair from I-40 to Chelsea Avenue and constructing a four-lane roadway along the North Second Street corridor from Chelsea Avenue to the Whitney Avenue intersection with U.S. 51/SR-3. Segments of the proposed project will follow existing streets, while other improvements north of the Wolf River will be on new location. The length of the proposed improvement is approximately 4.6 miles.

2/11/11
Date


Federal Highway Administration, TN Division
Division Administrator

2/16/11
Date


Tennessee Department of Transportation

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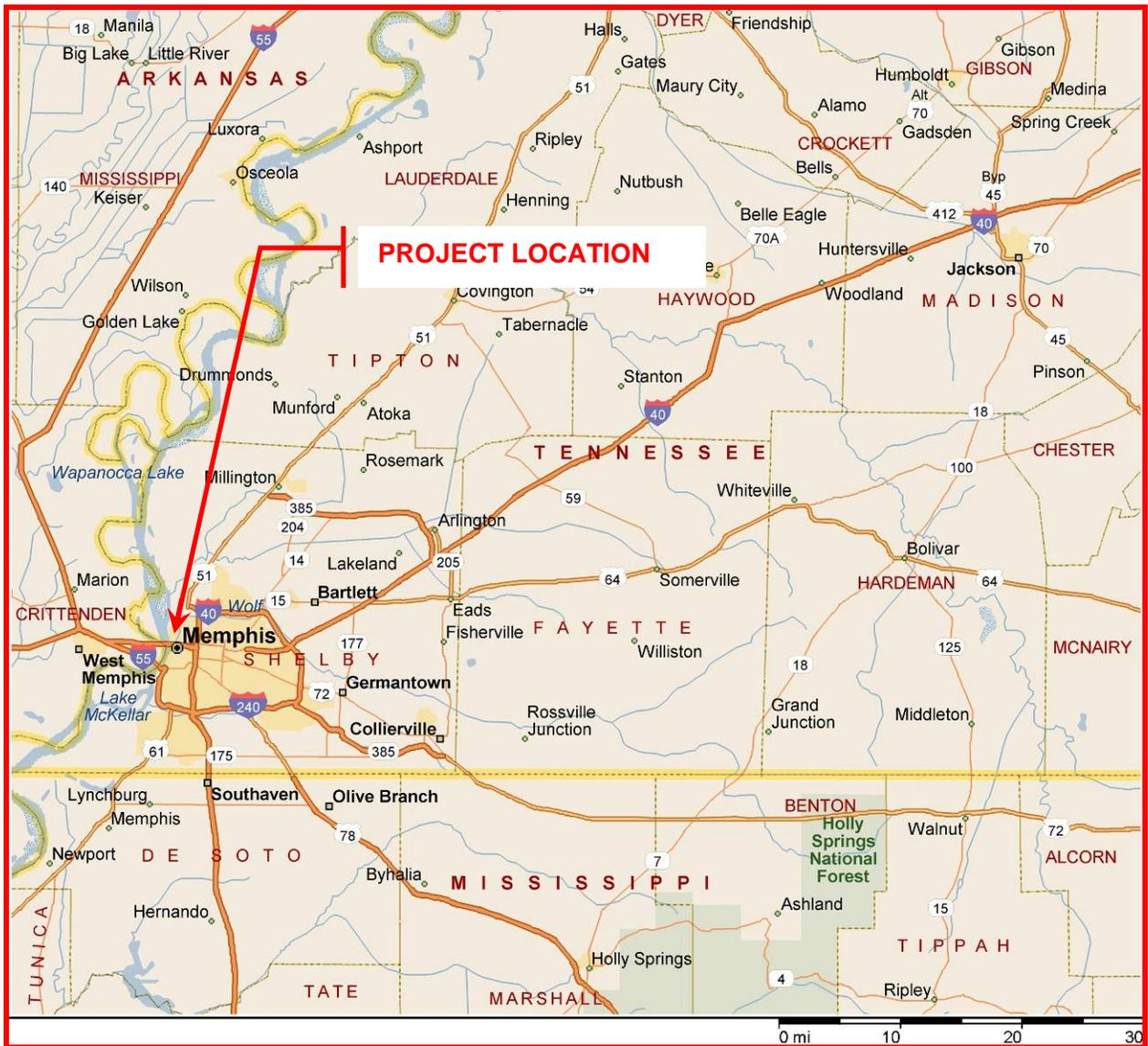
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Summary

North Second Street DEIS, Shelby County, Memphis, TN



AREA VICINITY MAP

SUMMARY

The North Second Street corridor improvement project is a joint effort between the City of Memphis, the Tennessee Department of Transportation (TDOT) and the Federal Highway Administration (FHWA). The limits of the approximately four and a half mile long project extend from I-40 in Downtown Memphis north along the North Second Street Corridor, crossing over the Wolf River and floodplain, along the existing Whitney Avenue corridor, and terminating at the US 51/SR 3 intersection. See **Figure I: Project Location Map** for a map of the project location.

Most of North Second Street currently has two travel lanes and is functionally classified as an urban principal arterial on the National Highway System. The street does not meet current design standards in several locations and does not have the capacity to meet future traffic projections. The street serves commercial, industrial, and adjacent neighborhoods. The adjacent communities are primarily low income with large minority populations. Through the efforts of the City and local developers, the adjacent communities are undergoing massive redevelopment. The goal is to develop a sustainable, pedestrian friendly urban neighborhood environment.

The purpose of the proposed project is to 1) provide a viable secondary access route into the Memphis Central Business District (CBD) from communities north of downtown while improving traffic circulation within the study corridor and 2) to stimulate economic development by providing infrastructure that will maintain the existing momentum for reinvestment and new investment in residential and commercial ventures along the corridor.

A viable secondary access into the CBD is needed to improve system linkage between communities north of downtown Memphis and downtown. It will relieve traffic congestion and reduce travel delays on US 51/Danny Thomas Boulevard and Interstate 40 for commuters and truck traffic entering the downtown area from north of the City. To be a viable secondary access that promotes usage by motorists, the project needs to correct geometric deficiencies along the existing route, meet the growing traffic demands of the area by providing adequate capacity, and provide a safe operating environment. By addressing these needs, the project will also improve traffic circulation within the study corridor.

Improvements to the North Second Street Corridor are also needed to enhance the ongoing redevelopment of the Uptown Neighborhood and other older residential areas by providing a facility that blends in with the pedestrian friendly urban neighborhood environment that is being promoted by the City. Improved traffic circulation and linkage with downtown, while improving existing modal interrelationships in the community, will maintain the momentum for economic development being created by the changing social demands of the adjacent communities.

In addition to the needs of the project, several secondary goals should be addressed by the improvements. These secondary goals are primarily related to improved system linkage. These goals include:

- Improve continuity with the downtown roadway network south of the study area, which includes North Second and North Third Streets being utilized in a one-way pair.
- Preserve and manage as much of the existing transportation system as possible and minimize additional needed right-of-way.

A solution to meeting the needs, goals, and objectives of the proposed project is to provide a safe and efficient four lane facility along the North Second Street Corridor that will serve as an improved gateway into downtown Memphis.

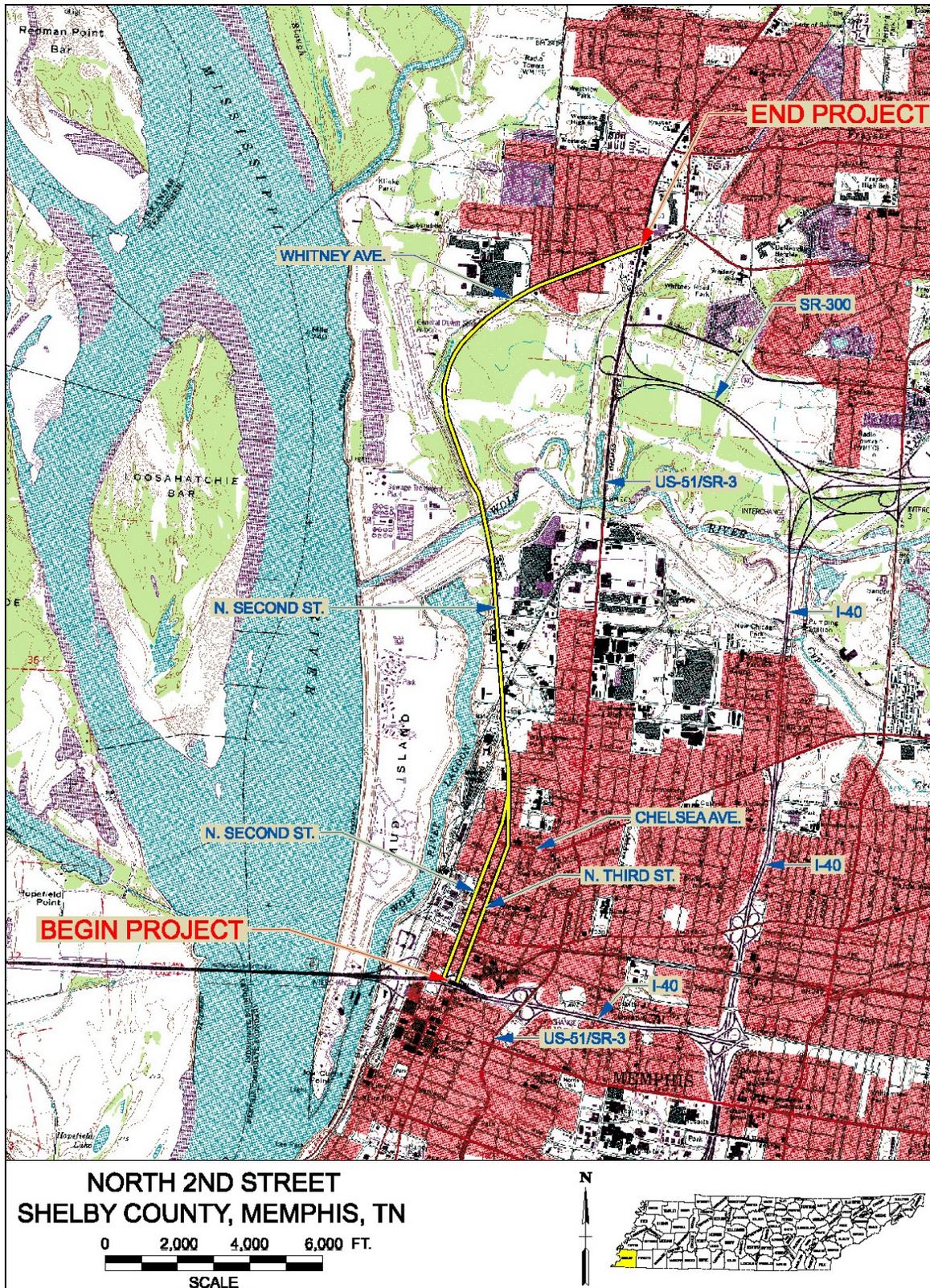


FIGURE I: PROJECT LOCATION MAP – USGS NORTHWEST MEMPHIS QUAD MAP

ALTERNATIVES CONSIDERED

A transportation improvement along the North Second Street Corridor has been a part of the Long Range Transportation Plan for the Memphis Urbanized Area since 1969. Several public meetings regarding this improvement have been conducted and a number of alternatives have been suggested to meet the purpose and need of the project. Some of the suggested alternatives have been eliminated and others were modified. (See **Chapter 3 Alternatives**)

Two alternatives are evaluated in this document, a No Build Alternative and one Build Alternative. The No-Build Alternative makes no improvements to North Second Street other than scheduled maintenance activities.

The proposed Build Alternative, which is a combination of several previously suggested alternatives, involves converting North Second Street and North Third Street from two-way streets into a one-way pair from I-40 to Chelsea Avenue. North Second Street will be one-way south and North Third Street will be one-way north. Both North Second Street and North Third Street will have three traffic lanes from I-40 to Auction Avenue; at Auction Avenue both roadways will transition to two traffic lanes and continue to Chelsea Avenue which is the ending point for the one-way pair. This transition from three lanes to two lanes is needed to avoid displacing new homes and apartments on North Second and North Third Streets. The roadways will be designed to accommodate pedestrians, bicycles, and on street parking. All construction along this first segment of the project will be within the existing right-of-way. A one-way pair is being proposed for this segment to avoid impacting historical properties that are either listed or eligible for listing in the National Register of Historic Places and also to reduce the number of residential and business displacements.

Beginning at Chelsea Avenue the southbound North Second Street alignment begins to shift slightly to the west and follows along existing North Second Street to a point just north of Henry Avenue, where it will join with the North Third Street alignment to form a four-lane two directional roadway.

At the intersection of North Third Street and Chelsea Avenue, the North Third Street alignment extends north and then west on new location and crosses over Bickford Avenue and Henry Avenue before joining North Second Street just north of Henry Avenue to form a two directional four-lane roadway. Additional right-of-way is needed along this segment to achieve this transition.

Extending north from Henry Avenue to the Wolf River, the proposed Build Alternative will be a two directional four-lane improved roadway that follows the existing North Second Street alignment to the south side of the Wolf River. The improved roadway will consist of two traffic lanes in each direction with curbs and gutters separated by a 14 foot median. Sidewalks, bicycle lanes and on street parking will be provided on both sides of the road. Openings in the median will be provided to give access to the cross streets along this segment. Additional right-of-way is needed along this segment.

The next segment of the proposed Build Alternative, extending north at the Wolf River, involves constructing a new two-lane bridge paralleling the existing two-lane bridge. The

proposed alignment extends north on new location across the Wolf River floodplain and ties into existing Whitney Avenue just east of the International Harvester Building on Whitney Avenue. This rural segment of the roadway will consist of two traffic lanes in each direction separated by a 30 foot median with 10 foot wide shoulders suitable for bicycles. A multi-use path will also be provided on the west side of the roadway for pedestrians and bicycles. Additional right-of-way is needed for the rural roadway segment. This segment of the roadway across the floodplain will be access controlled to discourage future development in the floodplain and to minimize the potential impact to wetlands. A new location alignment across the floodplain is needed to correct the numerous geometric deficiencies along the existing North Second Street/Whitney Avenue roadway. Improving this existing segment of North Second Street was considered. However, it was determined not to be feasible. The issues associated with this segment are discussed in more detail in **Chapter 2** under **Section 2.5 Alternatives Previously Considered but Rejected**.

The final segment of the proposed Build Alternative ties into existing Whitney Avenue near the old International Harvester Building and extends along Whitney Avenue to the end of the project at the intersection of Whitney Avenue and US 51/SR 3. This segment of the project will require additional right-of-way. This segment will be designed to provide four traffic lanes, two dedicated bike lanes, sidewalks, curbs, and gutters. The bike lanes will transition to shared lanes in areas where left turn lanes are required.

ENVIRONMENTAL IMPACTS

The adverse impacts associated with this project involve the displacement of thirteen households along the North Second Street corridor, a Section 4(f) impact to two National Register eligible properties, the crossing of streams, and the unavoidable filling of wetlands in the Wolf River floodplain. There will also be temporary impacts during construction such as traffic delays, noise and dust.

The beneficial impacts of the project will be an improved roadway along North Second Street that will link neighborhoods north of downtown Memphis to the Central Business District. It will be compatible with the economic development initiatives which are on-going for this section of the city and relieve traffic congestion on SR 3/US 51/Danny Thomas Boulevard and I-40. It will also provide a viable access route out of the downtown area in the event of an emergency.

PROJECT IMPACTS

Land Use Impacts

Land use will change as land currently in agricultural, residential, commercial, industrial, open farmland, or other uses, is converted to highway right-of-way. Secondary development resulting from the proposed project is likely to occur in the surrounding neighborhoods in the North Second Street Corridor. Development pressure will be focused in the downtown area around the Mississippi Riverfront and Pinch Historic District and along the project corridor from I-40 to the Wolf River.

The indirect and cumulative impacts to land use involves the conversion of land from agricultural use and open space to residential, commercial, and industrial uses, as well as converting commercial and industrial uses to residential uses. This conversion is already occurring at a rapid rate at various locations in the project area. Based on a review of land use plans prepared by the surrounding communities, as the population rate increases and job opportunities increase, it is likely that the need for more residential and commercial development will continue for decades. These land use changes will result in the loss of wildlife habitat, wetlands, forested areas, farmland, as well as impact the floodplains of the surrounding rivers and streams. The number of acres of potential loss cannot be accurately determined at this time.

Economic Impacts

The Build Alternative will not have an adverse impact on the local economy. It will displace a small number of businesses; however, businesses similar to those displaced would remain in the area and there are sites available should the displaced businesses choose to relocate in the project area. The proposed project will have a beneficial impact on the local economy by supporting the local government's efforts to revitalize the surrounding neighborhoods and encourage future development in the downtown area and the construction of new homes and apartments in the Uptown area. The expansion of existing commercial and new commercial enterprises will increase area tax revenues and provide jobs. The cumulative impact will be an increase in the tax base in the surrounding communities through new development.

Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, February 11, 1994, requires that the evaluation of federal actions identify and address disproportionately high and adverse human health and environmental impacts on low income and minority populations. The evaluation of the Build Alternative has revealed low-income and minority populations along the corridor, and will require the displacement of some households. However, the Build Alternative alignment will not change the basic social arrangement or character of the project area and would not create a barrier to social interaction. No adverse impact on school districts or churches is foreseeable. The proposed project will not have a disproportional impact on low income or minority populations.

Hazardous Materials

A number of potential hazardous material sites have been identified within the proposed right-of-way. Additional studies are recommended at 15 sites within the proposed right-of-way to determine the contents and extent of materials and the specific impacts they may possess to the surrounding community. In the event that hazardous substances or wastes are encountered within the proposed right-of-way of the Build Alternative, their disposition shall be subject to the applicable sections of the Federal Resources Conservation and Recovery Act (RCRA), as amended, the Comprehensive Environmental

Response, Compensation and Liability Act (CERCLA), as amended, and the Tennessee Hazardous Waste Management Act of 1983.

The Build Alternative will involve the removal of buildings and has the potential for encountering friable asbestos. Pursuant to the TDOT Standard Specifications for Road and Bridge Construction (March 2006), the construction contractor must notify the Tennessee Department of Environment and Conservation (TDEC) prior to the demolition of any building in accordance with TDEC policy and regulations. All structures containing friable asbestos must be demolished in accordance with these regulations and policies.

Protected Species

The proposed project will not impact any federally listed, threatened, or endangered species or critical habitat. The proposed project is in compliance with Section 7 of the Endangered Species Act. However, one state threatened, and one deemed in need of management, species may be impacted by the project.

Historic Impacts

Two properties protected under Section 106 of the National Historic Preservation Act of 1966, which are eligible for listing in the National Register of Historic Places, will be impacted by the proposed project. The Port of Memphis Grain Elevator fronts on North Second Street. The widening of the roadway will require taking part of the driveway and a grassy strip along the front of the property. The Memphis, Wolf River, and Nonconnah Creek Flood Control Project extends along the North Second Street Corridor from I-40 to the Wolf River. Two flood storage basins, which are contributing elements of this National Register eligible property, will be impacted by the widening of North Second Street. Fill will be placed in these flood storage basins located on either side of the existing road. The SHPO has reviewed the proposed project and has concurred in a "No Adverse Effect" finding to these National Register eligible properties. A more detailed explanation of these impacts can be found in **Chapter 4, Section 4.11 Historical Impacts**.

The goal of **Section 106** is to identify historic properties potentially affected by a Federal undertaking, assess the undertakings effects, and seek ways to avoid, minimize, or mitigate any adverse effects on historic properties.

Archaeological Impacts

A Phase I Cultural Resource Survey identified two historic period archaeological sites in the project area. It was determined based on the field survey that no historic archaeological properties would be impacted by the project and no further investigations were needed. The SHPO has concurred in this finding. The SHPO letter can be found in **Appendix B**.

If archaeological materials are uncovered during construction, all construction work in the area of the find will cease. The Tennessee Division of Archaeology (615-741-1588) and the recognized Native American Tribes previously coordinated with will be immediately

contacted so a representative of their office may have the opportunity to examine and evaluate the materials.

Section 4(f) Evaluation

The proposed Build Alternative will impact two historic properties that are eligible for listing in the National Register of Historic Places. The Port of Memphis Grain Elevator and the Memphis, Wolf River, and Nonconnah Creek Flood Control Project are located on the west side of North Second Street and are immediately adjacent to one another. The widening of the roadway will require taking land from these two historic properties. A portion of the flood control project is also located on the east side of the roadway. In order to avoid Washington Park, which is another Section 4(f) property located immediately across the road from these two National Register eligible properties, the road is being widened on the west side. The existing berm around these two flood storage basins is a contributing element to the Memphis, Wolf River, and Nonconnah Creek Flood Control Project property. The berm will remain in place and the roadway fill needed for the roadway widening will be placed on top of the berm. The side slopes in the basins will be reshaped to replicate their original appearance. A more detailed explanation of these impacts can be found in **Chapter 4, Section 4.11 Historical Impacts**.

The purpose of **Section 4(f)** is to preserve publicly owned land from a public park, recreation area, wildlife or waterfowl refuge, or significant historic site from being used for a transportation project. It requires consideration of avoidance or mitigation of damages.

The SHPO has been notified of FHWA's intent to make a Section 4(f) *de minimis* use determination for the impact to these two National Register eligible properties and has agreed with a no adverse effect determination. No other Section 4(f) use will occur as a result of the Build Alternative.

Executive Order 11990 Wetland Impacts

Several new alignments across the Wolf River Floodplain were evaluated for the Build Alternative. All of the new location alignments evaluated in the segment of the project crossing the Wolf River Floodplain involve the unavoidable filling of wetlands. Early in the planning phase an effort was made to field locate an alternative alignment to avoid wetlands or minimize the impact to the extent practical. It is estimated that approximately seven acres of wetlands will be impacted by the Build Alternative, but until a ground survey is completed and roadway plan development is underway, the precise level of wetland impacts and appropriate mitigation cannot be determined. The unavoidable impacts to wetlands will be mitigated at an approved wetland site. There are several wetland mitigation banks governed by approved "Wetland Banking Agreements" located in the affected watersheds that could be used to mitigate the unavoidable wetland impacts. On past projects, when use of wetland banks was authorized by the Wetland Mitigation Banking Resource Team (MBRT), which is made up of Federal and State resource and permitting agencies, the mitigation ratio has been a minimum 2:1 for wetlands replaced inside the watershed and a minimum 4:1 for replacement of wetlands impacted outside the watershed. A listing of the type of wetlands impacted, their size, and functional value are contained in **Chapters 3 Affected Environment** and **4 Environmental Consequences** under the subheading **Wetlands**. TDOT will work with the appropriate

permitting agencies and follow established wetland banking procedures to determine if the use of the wetland banks is appropriate for this project and determine the level of mitigation required. A detailed mitigation plan will be developed in consultation with resource and permitting agencies during the design and permitting phase of the project.

PERMITS NEEDED

The Build Alternative will require both State and Federal Water Quality Permits for stream crossings and wetland impacts. Section 404 permits from the USACE, National Pollutant Discharge Elimination System (NPDES) permits, and Tennessee Water Quality Permits will be needed. TDOT will coordinate mitigation efforts with Federal and State regulatory agencies before preparing final mitigation plans and submitting permit applications. It is during the permitting process phase that the appropriate compensatory mitigation for the unavoidable impacts of this project will be determined.

OTHER MAJOR FEDERAL ACTIONS

A segment of proposed Interstate 69 will intersect the Build Alternative in the north floodplain of the Wolf River, south of Harvester Lane. The crossing location is shown in **Figure 1.4**, Sheet 6 of 8. Interstate 69 will be grade separated over North Second Street with no direct interchange access between the two routes. The proposed I-69 segment will extend east across the Wolf River Floodplain and will interchange with US 51/SR 300. Proposed I-69 is a separate and independent project and has its own separate funding and environmental document. Both projects are included in the Metropolitan Planning Organization's 2030 Memphis Long Range Transportation Plan that has been adopted and found to be in conformity with the Clean Air Act.

AREAS OF CONTROVERSY AND UNRESOLVED ISSUES

There are no areas of controversy or substantial unresolved issues to date.

STATUTE OF LIMITATION ON FILING CLAIMS

The Federal Highway Administration (FHWA) may publish a notice in the Federal Register, pursuant to 23 USC § 139 (I), indicating that one or more Federal agencies have taken final action on permits, licenses, or approvals for this 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 written such that a 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.

Summary of Project Data for Improvements to North Second Street		
Item	No-Build	Build Alternative
Functional Classification: N. Second St. Whitney Ave. N. Third St.	Urban Principal Arterial Urban Minor Arterial Urban Principal Arterial	Urban Principal Arterial Urban Minor Arterial Urban Principal Arterial
Length – Miles: I-40 to US-51	4.6	4.6
Year 2015 AADT	9,000-19,600	9,000-19,600
Year 2035 AADT	12,400-24,000	12,400-24,000
Percent Trucks	6%	6%
Estimated ROW Acquisition (Acres)	0	38
Residential Displacements	0	13
Business Displacements	0	11
Non-Profit Displacements	0	0
Archaeological Sites Impacted	0	0
Historic Sites Impacted	0	2
Section 4(f) Properties Impacted**	0	2
Wetlands Impacted (Acres)	0	7.3
Stream Crossings (Linear Feet)	0	1,170
Threatened/Endangered Species Impacts***	0	2
Hazardous Material Sites Impacted (Parcels) ****	0	15
Farmland Impacted (Acres)	0	15
Estimated ROW Cost	0	\$ 9,728,000
Estimated Utility Cost Reimbursable	0	\$ 3,680,000
Estimated Utility Cost Non-reimbursable	0	0
Estimated Engineering/Construction Cost (2008)	0	\$ 48,393,000
Total Estimated Project Cost (2008)	0	\$ 61,800,000
Total Estimated Project Cost (2015) 6% inflation	0	\$ 92,930,000

** Right-of-Way/*de minimis* 4(f) sites that have been declared “no adverse effect” by SHPO.

*** No federally-protected species. State “threatened” and State “deemed in need of management”

**** “High probability” of impact; Phase II Environmental Site Assessment (ESA) recommended.

ENVIRONMENTAL COMMITMENTS

Throughout this Environmental Impact Statement (EIS), measures are detailed to avoid, minimize, or mitigate the impacts of the proposed project on the human and natural environments. Unique commitments, outside of the normal or standard requirements of a federally funded project, including Federal and State laws, regulations, policy, best practice, and TDOT's Standard Specifications, are summarized as follows:

WATER RESOURCES

- Compensatory mitigation to offset forested wetland losses as a result of the proposed transportation project will be accomplished through the wetland mitigation banking process. The Tennessee Department of Transportation (TDOT) is actively pursuing wetland mitigation bank sites within the Wolf River Watershed for this purpose.
- To discourage future development within the 100 year floodplain and forested wetland, no new driveway permits will be allowed along North Second Street from the Wolf River to Harvester Lane.

ENDANGERED AND THREATENED SPECIES

- Efforts will be undertaken during the construction of the proposed roadway bridge to minimize impacts to the Wolf River and the state threatened (T) Blue Sucker (*Cycleptus elongates*). These efforts will include: (1) construction of the bridge will not occur immediately following a major storm event, (2) utilization of erosion prevention and sediment control (EPSC) best management practices (BMPs), and (3) the prevention of machinery and/or equipment within the river waters unless permitted through the appropriate regulatory agencies.
- Riparian vegetation as well as non-riparian tree removal for bridge construction will be minimized to lessen the impact to the Mississippi kite (*Ictinia mississippiensis*).
- Potential construction impacts to species populations and/or habitat will be coordinated through the Tennessee Department of Environment and Conservation (TDEC) and the U.S. Fish & Wildlife Service (USFWS).

WATER QUALITY IMPACT MINIMIZATION/MITIGATION

- In order to minimize impacts to water quality as a result of construction activities, erosion prevention and sediment control (EPSC) "Best Management Practices" (BMPs) will be utilized.
- Best Management Practices will include but not be limited to:
 - Preservation of roadside vegetation beyond the limits of construction where possible;
 - Early re-vegetation of disturbed areas to hold soil movement to a minimum;
 - The use of detention/retention structures, surface, subsurface, and cross drains designed to protect the water quality of both groundwater and surface waters;
 - Inclusion of BMPs in the construction plans, specifications, and contract pay items as specified in *TDOT Standard Specification for Road and Bridge Construction* as well as the *TDOT Drainage Manual*; and

- Prohibit the release of chemicals, fuels, lubricants, bitumens, raw sewage, or harmful waste into or alongside of streams or impoundments, or into natural or manmade channels that lead to same.

ARCHAEOLOGICAL

- If archaeological materials are uncovered during construction, all construction work in the area of the find will cease. The Tennessee Division of Archaeology (615-741-1588) and the recognized Native American Tribes previously coordinated with will be immediately contacted so a representative of their office may have the opportunity to examine and evaluate the materials.
- Any archaeological sites identified as part of the proposed project will be monitored during construction activities to ensure that the areas are avoided and not utilized as equipment staging areas or otherwise impacted by the construction of the project.

HISTORICAL SECTION 4(F)

- The contractor will be responsible to maintain the historical integrity of the Marble Bayou Pumping Station during and after the construction of the project. The earthen berm beneath and supporting the existing North Second Street is considered a contributing element to a National Register-eligible property. Design of the proposed roadway will (1) incorporate the existing berm, (2) place fill on top of the existing berm, (3) reshape fill slopes to replicate their original appearance, (4) incorporate notes on the plans to apprise the contractor of the historical significance of the existing berm, and (5) direct the contractor through plan notes of specific construction sequencing to maintain the historical integrity of the existing berm.

CONSTRUCTION

- Vegetation clearing for the project will be minimized to only include the areas required for construction of the project and disturbed areas will be re-vegetated with native species as soon as practical to minimize erosion as well as impacts to wildlife habitat.
- The Tennessee Department of Transportation (TDOT) and the City of Memphis will work with the Tennessee Department of Environment and Conservation (TDEC) to insure that proper controls are in place to protect the Wolf River. These controls will be considered in the design and construction phases of the project.
- TDOT and the City of Memphis will work closely with the airport authority to ensure that the project construction is compatible with the General DeWitt Spain Airport activities.
- TDOT and the City of Memphis will include specific language in the Construction Contract and on the construction plans that advises the contractor of the sensitive nature of the Marble Bayou pumping station and the mitigation measures that have been agreed to with the SHPO to protect this National Register eligible property.

DESIGN

- Provisions will be made in the design of the new structure over the Wolf River to accommodate the proposed Wolf River Greenway under the bridge, as well as an at grade signed crossing at the end of the bridge to access the trail from the roadway.
- Access control will be maintained along North Second Street between the Wolf River and Harvester Lane. In lieu of access control fence through this section, no new driveway permits will be allowed from the Wolf River to Harvester Lane.

HAZARDOUS MATERIALS

- A Phase II Environmental Site Investigation will be performed on 15 high probability parcels identified in the Phase I Hazardous Materials Survey Report.
- If excavation activities such as relocating utility trenches are going to be performed, or the proposed corridor is revised such that additional property is acquired, further investigation may be warranted on parcels of no or low probability of contamination.

PERMITS

- The as-built drawings of the bridge over the Wolf River will be sent to the Coast Guard as requested upon completion of the project.
- Due to the fact that the Wolf River is listed for siltation impacts on the State's 303(d) list of impaired streams, additional permit requirements will be applicable. TDOT or the City of Memphis will secure the necessary permits from TDEC.
- Wetland Mitigation will be accomplished through the use of available credits in the Wolf River Wetland Mitigation Bank and/or approved areas within the Wolf River Watershed.

ACRONYMS

A/C	Auto Crash Ratio	EDR	Environmental Data Resource
ACHP	Advisory Council on Historic Preservation	EIS	Environmental Impact Statement
ADT	Average Daily Traffic	EPA	Environmental Protection Agency
AADT	Average Annual Daily Traffic	ESA	Environmental Site Assessment
APE	Area of Potential Effect (Section 106)	ETW	Exceptional Tennessee Waters
ARAP	Aquatic Resources Alterations Permit	FEMA	Federal Emergency Management Agency
BMPs	Best Management Practices	FHWA	Federal Highway Administration
CAAA	Clear Air Act Amendment	GPS	Global Positioning System
CCC	Center City Commission	HC	Hydrocarbons
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	HCS	Highway Capacity Software
CFR	Code of Federal Regulations	HCM	Highway Capacity Manual
CO	Carbon Monoxide	Leq	Equivalent continuous sound level
CRA	Memphis & Shelby County Community Redevelopment Agency	LOS	Level of Service
db	Decibels	L RTP	Long Range Transportation Plan
dBA	A-weighted sound levels in decibels	MOE	Measures of Effectiveness
DEIS	Draft Environmental Impact Statement	MRT	Memphis Route Tour
DPD	Division of Planning and Development	MSL	Mean Sea Level
		NAAQS	National Ambient Air Quality Standards

**North Second Street DEIS
Shelby County**

Acronyms

NEPA	National Environmental Policy Act	Sox	Sulfur Oxides
NHS	National Highway System	SR	State Route
NO	Nitrogen Oxides	SWPPP	Storm Water Pollution Prevention Plan
NPDES	National Pollution Discharge Elimination System	TCA	Tennessee Codes Annotated
NRCS	Natural Resources Conservation Service	TDEC	Tennessee Department of Environment and Conservation
NRHP	National Register of Historic Places	TDOT	Tennessee Department of Transportation
NWI	National Wetland Inventory	TSM	Transportation Systems Management
O3	Ozone	TVA	Tennessee Valley Authority
ONRW	Outstanding Natural Resource Waters	TWRA	Tennessee Wildlife Resources Agency
pH	Level of acidity of water	USACE	U.S. Army Corps of Engineers
PM	Particulate matter	USFWS	U.S. Fish and Wildlife Services
RCRA	Resource Conservation and Recovery Act	USC	United States Codes
ROW	Right-of-Way	UST	Underground Storage Tank
SJCRH	St. Jude Children's Research Hospital	VOC	Volatile Organic Compound
SHPO	State Historic Preservation Office		

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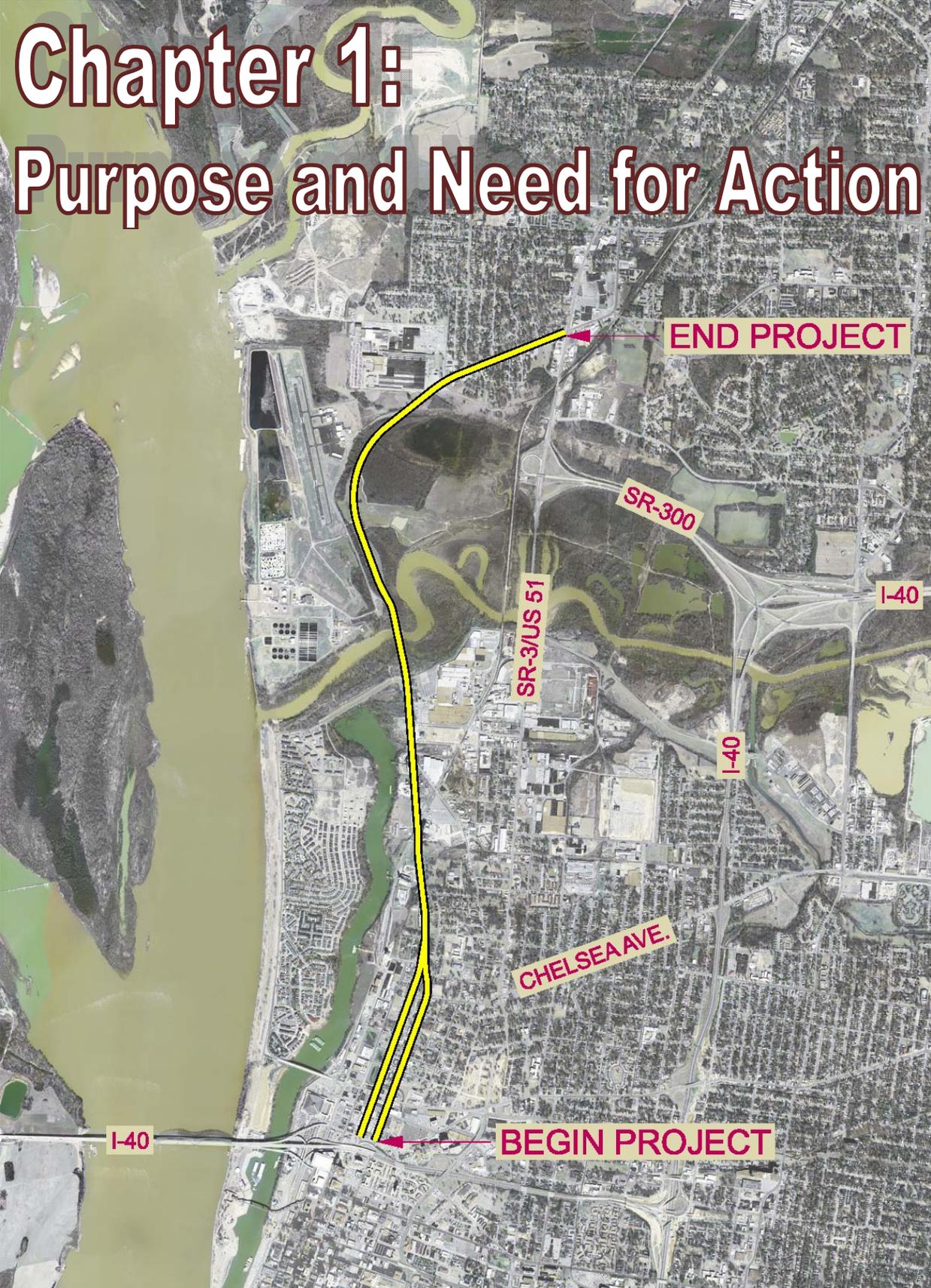
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Chapter 1: Purpose and Need for Action



1.0 PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION AND DESCRIPTION OF THE STUDY CORRIDOR

The North Second Street corridor improvement project is a joint effort between the City of Memphis, the Tennessee Department of Transportation (TDOT) and the Federal Highway Administration (FHWA). The limits of the approximately four and a half mile long project extend from I-40 in Downtown Memphis north along the North Second Street Corridor, crossing over the Wolf River and floodplain, along the existing Whitney Avenue corridor, and terminating at the US 51/SR 3 intersection (See **Figures 1.1** through **1.4** for maps of the study corridor).

The North Second Street corridor contains a mixture of land uses. The undeveloped portion of the corridor extends from north of the Wolf River to Whitney Avenue and consists of floodplain and wetlands associated with the Wolf River. The developed portions of the corridor are located south of the Wolf River, along North Second and North Third Streets through the Uptown Memphis community, and along Whitney Avenue, north of the Wolf River Floodplain. The developed portions of the corridor consists of residential, commercial and industrial land uses, and contains community services including hospitals, schools, churches, and parks.

In the 19th Century, Uptown Memphis was one of the finest neighborhoods in the City of Memphis. As Memphis began to grow, several businesses and many prominent residents left the area. Over a period of years the area began to decline and those who remained were often left unemployed and uneducated. According to the 2000 US Census, well over half of Uptown residents lived below the poverty level. This aging neighborhood suffered from the problems of low income, retail decline and deteriorated housing. Vacant lots and dilapidated properties were scattered over a 125 city block area that once flourished with businesses, industry, and housing. Today, through the efforts of the City and local developers, this neighborhood is undergoing massive redevelopment. The goal is to develop a sustainable, pedestrian friendly urban neighborhood environment. Hundreds of new homes and apartments have been constructed and several original homes and businesses have been restored. There are several economic assets in the study corridor including the Mississippi River, St. Jude Children's Research Hospital, the Pinch Historic District, the Pyramid Arena, Mud Island, industrial areas, a general aviation airport, several churches, and two community centers.

1.1.1 Existing Roadway Characteristics

Most of North Second Street currently has two travel lanes and is functionally classified as an urban principal arterial on the National Highway System. Whitney Avenue and North Third Street will be utilized in the North Second Street Corridor improvements. Whitney Avenue and North Third Street are classified as an urban minor arterial and an urban principal arterial, respectively. Approximately one third of the corridor can be characterized as having roadside ditches, narrow shoulders, and no sidewalks. The remainder of the corridor has curb and gutter with adjacent sidewalks. The average daily traffic (ADT) in 2015 is estimated to be between 9,000 and 19,600 vehicles per day along the corridor with approximately six percent of that total being trucks. In the year 2035, the design year of the project, the traffic will increase to between 12,400 and 24,000 vehicles per day. Without improvements, North Second Street will become incapable of carrying these high volumes of traffic safely and efficiently. The following describes the existing roadway cross-sections along the corridor.

I-40 to Shadyac Avenue

Immediately south of the study corridor, North Second Street serves as a one-way street with typically three travel lanes traveling south into downtown Memphis. Within the study corridor, beginning at Jackson Avenue near I-40 and proceeding to Shadyac Avenue, North Second Street is a bi-directional roadway with an existing pavement width of approximately fifty-four feet from curb to curb. The existing roadway through this segment has two ten foot wide southbound through lanes, one ten foot wide left turn lane, and one twenty foot wide northbound through lane. The northbound travel lane also accommodates on-street parking. On both sides of the roadway, five foot wide sidewalks are provided.

North Third Street parallels North Second Street and is positioned one block to the east. North Third Street provides circulation within the study area and will be utilized in the proposed project. Immediately south of the study area, North Third Street serves as a one-way street with typically three travel lanes travelling north from downtown Memphis towards I-40 and Jackson Avenue. The curb to curb width on North Third Street is approximately fifty-four feet between Jackson Avenue and Shadyac Avenue. The existing typical section of the roadway has five ten foot lanes with two travel lanes in both directions and a center turn lane.

Shadyac Avenue to Auction Avenue

Beginning at Shadyac Avenue, North Second Street has a roadway width of approximately forty-eight feet and transitions to approximately forty feet at its intersection with Auction Avenue. Through this segment, the typical section of the existing roadway is one travel lane in both northbound and southbound directions with left turn lanes, curb and gutter, and five foot sidewalks on both sides. The Southbound lane remains at a constant width through the segment at fifteen feet. The Northbound lane transitions from approximately twenty feet wide at Shadyac Avenue to fifteen feet wide at Auction Avenue. The turn lanes through this segment are approximately ten feet wide.

The curb to curb width on North Third Street is approximately fifty-four feet from Shadyac Avenue to Auction Avenue. The existing typical section of the roadway has five ten foot lanes with two travel lanes in both directions and a center turn lane.

Auction Avenue to Marble Avenue (North Second Street) & Chelsea Avenue (North Third Street)

The existing curb to curb width along this segment of North Second Street is approximately forty-four feet wide, providing one twenty foot wide lane in both northbound and southbound directions that serves as a travel lane and accommodates on street parking. Curb and gutter, along with five foot sidewalks, exist on both sides of the roadway to Cedar Avenue. Beginning at Cedar Avenue, the existing roadway typical section transitions from one twenty foot wide lane in each direction with curb and gutter to one eleven foot wide lane in each direction with shoulders varying in width from six to eight feet. The sidewalk is also terminated during this transition at Washington Park.

The curb to curb width on North Third Street is approximately fifty-four feet from Auction Avenue to Mill Avenue. The existing typical section of the roadway has five ten foot lanes with two travel lanes in both northbound and southbound directions and a center turn lane. Beginning at the intersection with Mill Avenue, the pavement width begins to transition to approximately fifty-two

North Second Street DEIS
Shelby County

feet wide at the intersection with Greenlaw Avenue. The curb and gutter and five foot sidewalk on both sides of the road remain throughout this transition. The existing typical section on North Third Street through this transition is four twelve foot wide travel lanes. This typical section is continued until North Third Street terminates at Chelsea Avenue.

Marble Avenue to Wolf River

The segment of North Second Street beginning at Marble Avenue has a total roadway width of approximately twenty-two feet, with one eleven foot wide travel lane in both northbound and southbound directions. The shoulders through this segment on either side vary from four to eight feet wide, with the shoulders being unpaved from Mahannah Avenue north to the Wolf River. The existing bridge over the Wolf River provides two twelve foot wide travel lanes with four foot shoulders.

Wolf River to Harvester Lane

North Second Street becomes Whitney Avenue in the vicinity of the General DeWitt Spain Airport within this segment of the corridor. After the bridge over the Wolf River, North Second Street/Whitney Avenue has a total roadway width of approximately twenty-two feet, providing one eleven foot wide travel lane in both northbound and southbound directions. Zero to two foot wide shoulders are provided on either side of the roadway. Several horizontal curves with radius of five hundred feet or less are present in this section, many creating reverse curves. The curves, along with the profile of the road, limit the safe operating speed of the roadway to 35 mph or less, which is what the posted speed limit is.

Harvester Lane to US 51/SR 3

After its intersection with Harvester Lane, the roadway reverts back to an urban typical section with curb and gutter. The curb to curb width through this segment is approximately forty-four feet wide, providing one twenty foot wide travel lane in both directions. A five foot wide sidewalk is provided throughout this segment on both sides of the roadway.

**North Second Street DEIS
Shelby County**

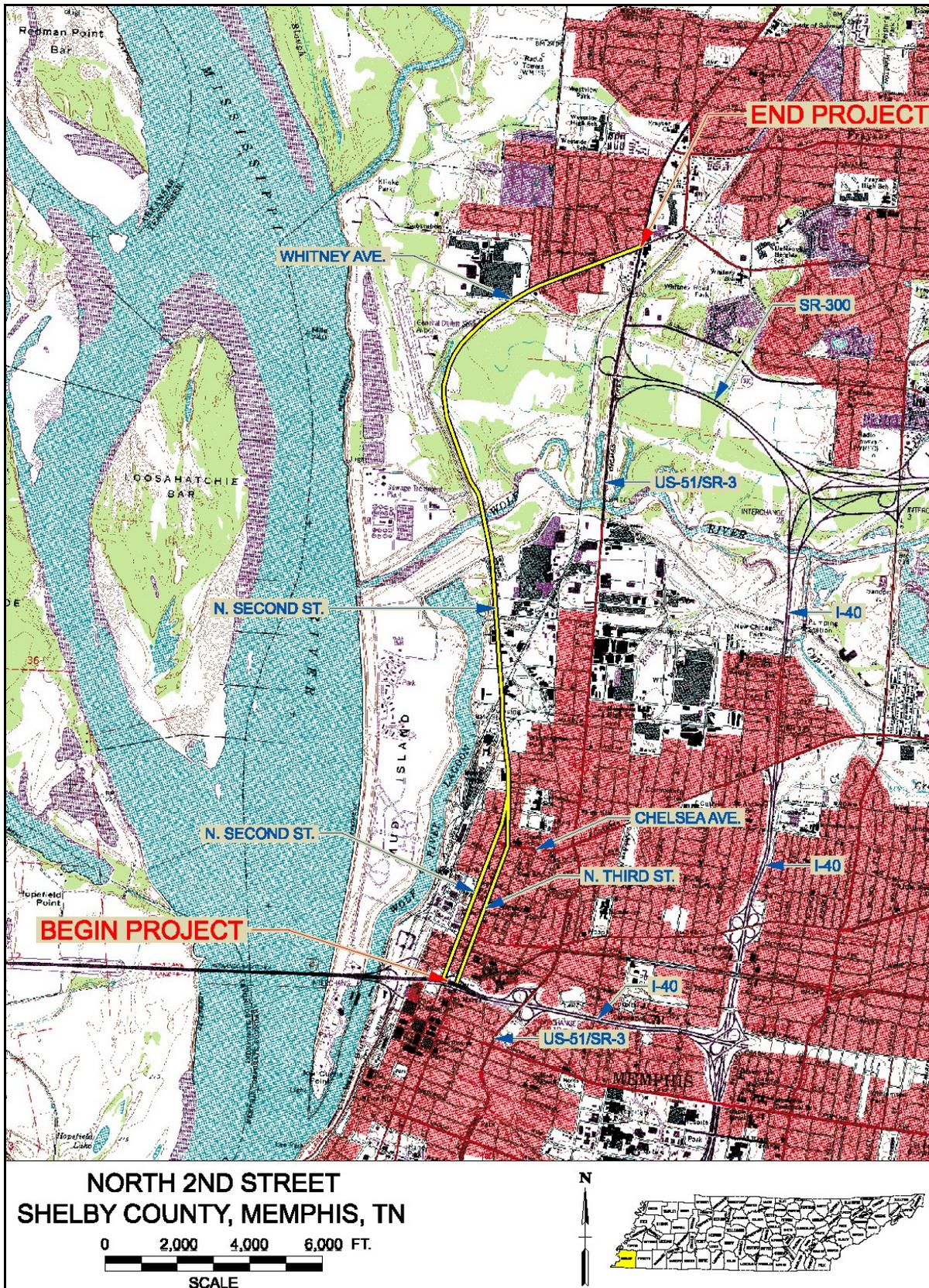


FIGURE 1.1: PROJECT LOCATION MAP – USGS NORTHWEST MEMPHIS QUAD MAP

North Second Street DEIS
Shelby County

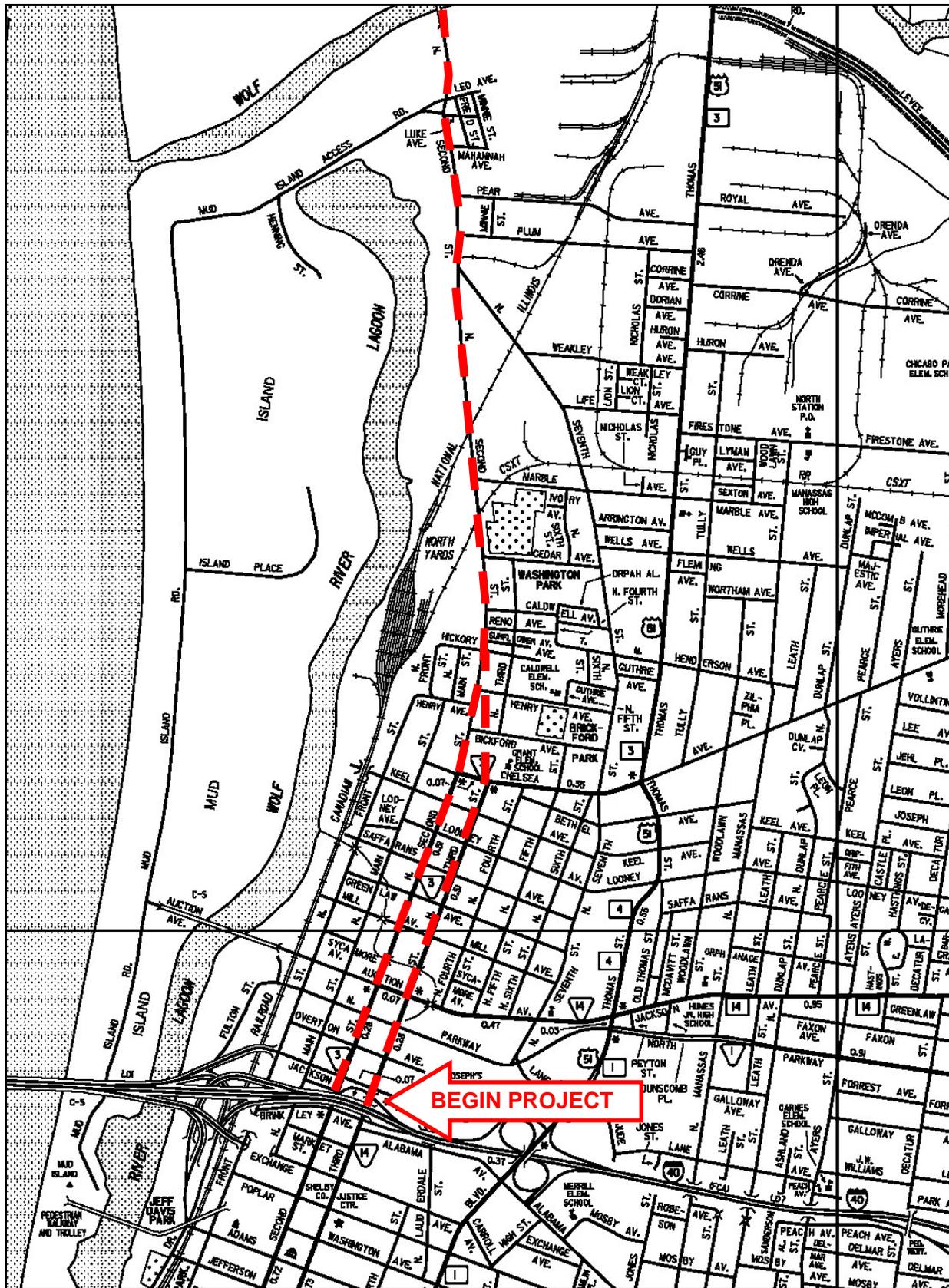
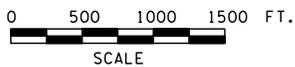
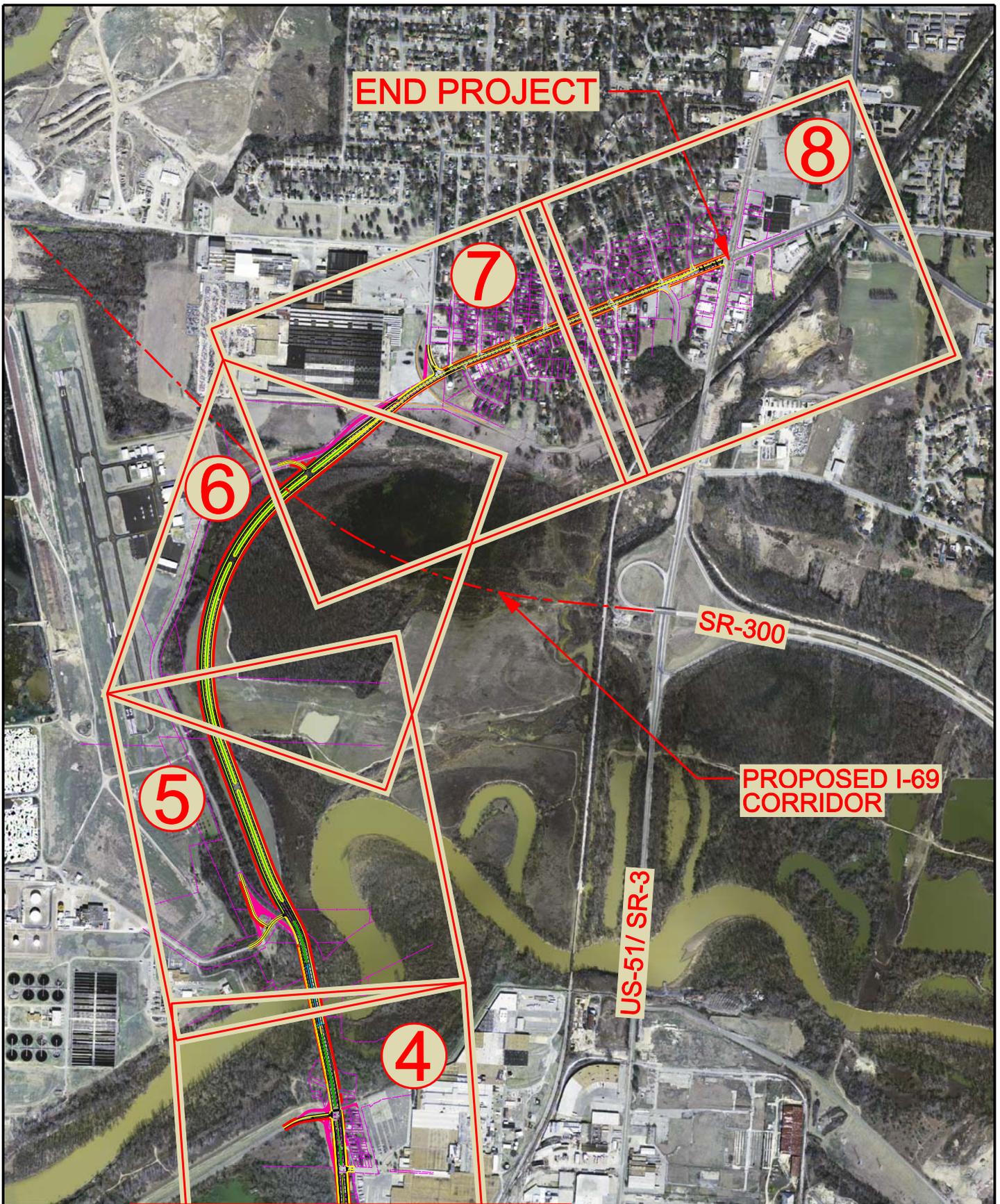


FIGURE 1.2: PROJECT LOCATION MAP – STREET DETAILS (1 OF 2)

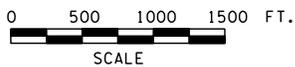


North 2nd Street Improvement Project
From I-40 to U.S. 51/Whitney Ave.
Memphis, Shelby County, Tennessee

FIGURE 1.3
PROJECT LOCATION MAP LEGEND
SHEET 1 OF 2



MATCH LINE STA. + SEE SHEET NO. 1



North 2nd Street Improvement Project
From I-40 to U.S. 51/Whitney Ave.
Memphis, Shelby County, Tennessee

FIGURE 1.3
PROJECT LOCATION MAP LEGEND
SHEET 2 OF 2

WOLF RIVER HARBOR

PYRAMID ARENA

100 YEAR FLOOD
500 YEAR FLOOD

**BEGIN N. 2ND STREET
IMPROVEMENT PROJECT**

OVERTON AVE.

MAIN ST.

**BEGIN ONE-WAY IMPROVEMENT
THREE TRAVEL LANES WITH PARKING LANES
ON BOTH SIDES OF N. 2ND AND N. 3RD ST.
UTILIZE EXISTING SIDEWALKS**

MATA
NORTH END
TERMINAL

**BEGIN TWO TRAVEL LANES WITH BIKE LANE
ONE PARKING LANE AND GRASS STRIPS
UTILIZE EXISTING SIDEWALKS**

MILL AVE.

GREENLAW AVE.

SARFANS AVE.

MATCH LINE STA. + SEE SHEET NO. 2

N. 2ND ST.

GREENLAW PLACE
APARTMENTS

GREENLAW PLACE
APARTMENTS

N. 3RD ST.

JACKSON AVENUE

FIRE STATION

ST. JUDE CHILDREN'S
RESEARCH HOSPITAL

SHADY AVE / N. PROMV.

AUCTION AVE.

ST. STEPHENS
BAPTIST CHURCH

GREENLAW
COMMUNITY
CENTER

**BEGIN TWO TRAVEL LANES WITH BIKE LANE
PARKING LANES ON BOTH SIDES OF STREET
AND GRASS STRIPS. UTILIZE EXIST. SIDEWALKS**

EXISTING AND PROPOSED
ROAD IS CLOSED TO
THROUGH-VEHICLES

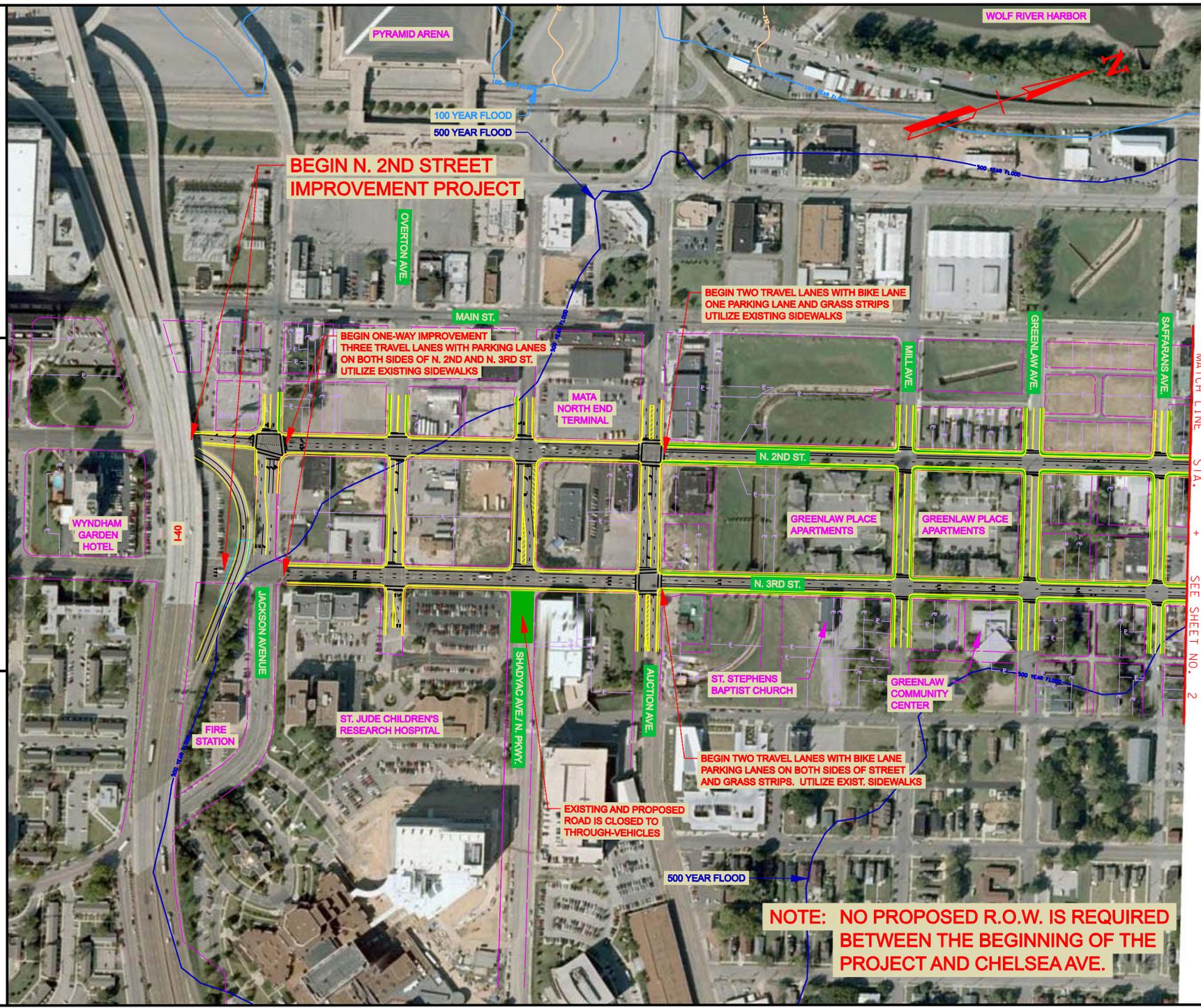
500 YEAR FLOOD

**NOTE: NO PROPOSED R.O.W. IS REQUIRED
BETWEEN THE BEGINNING OF THE
PROJECT AND CHELSEA AVE.**

0 150 300 450
SCALE: 1 IN. = 400 FT.

North 2nd Street Improvement Project
From I-40 to U.S. 51/Whitey Ave.
Memphis, Shelby County, Tennessee

FIGURE 1.4
CONCEPTUAL PLAN SHEET
SHEET 1 OF 8



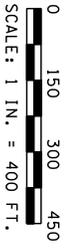
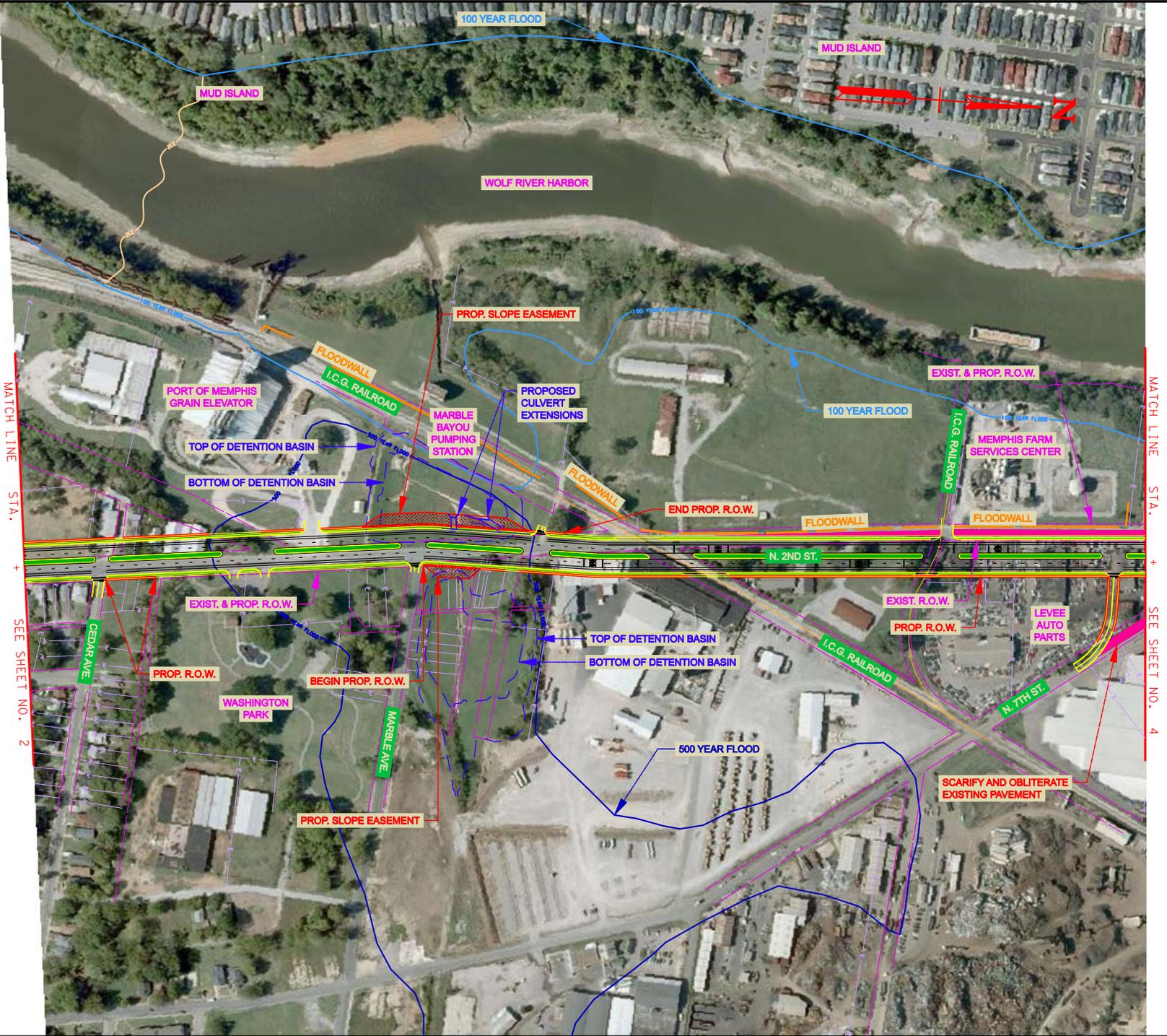
0
150
300
450
SCALE: 1 IN. = 400 FT.

North 2nd Street Improvement Project
From I-40 to U.S. 51/Whitey Ave.
Memphis, Shelby County, Tennessee

FIGURE 1.4
CONCEPTUAL PLAN SHEET
SHEET 2 OF 8



NOTE: NO PROPOSED R.O.W. IS REQUIRED BETWEEN THE BEGINNING OF THE PROJECT AND CHELSEA AVE.



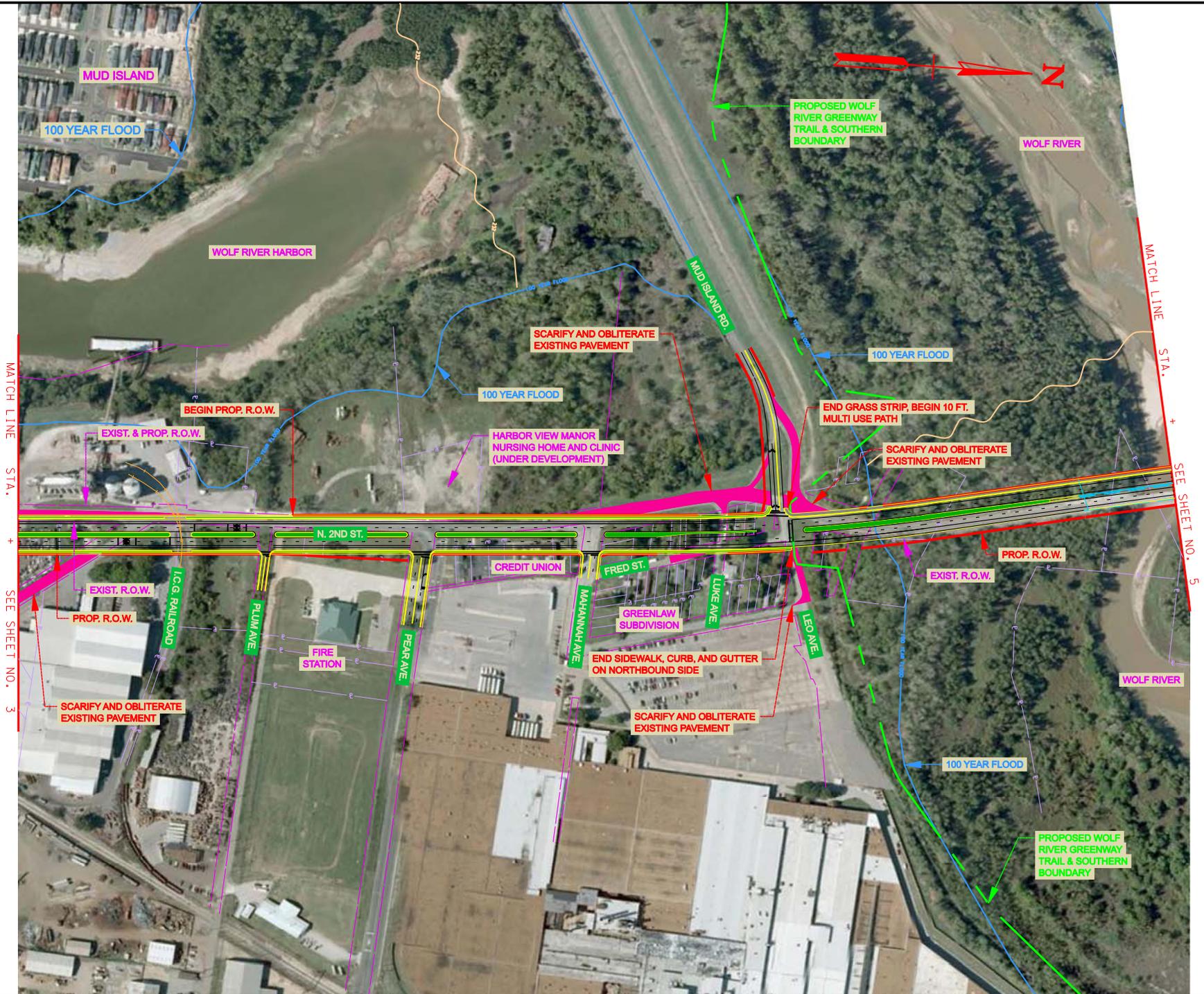
North 2nd Street Improvement Project
 From I-40 to U.S. 51/Whitney Ave.
 Memphis, Shelby County, Tennessee

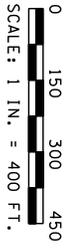
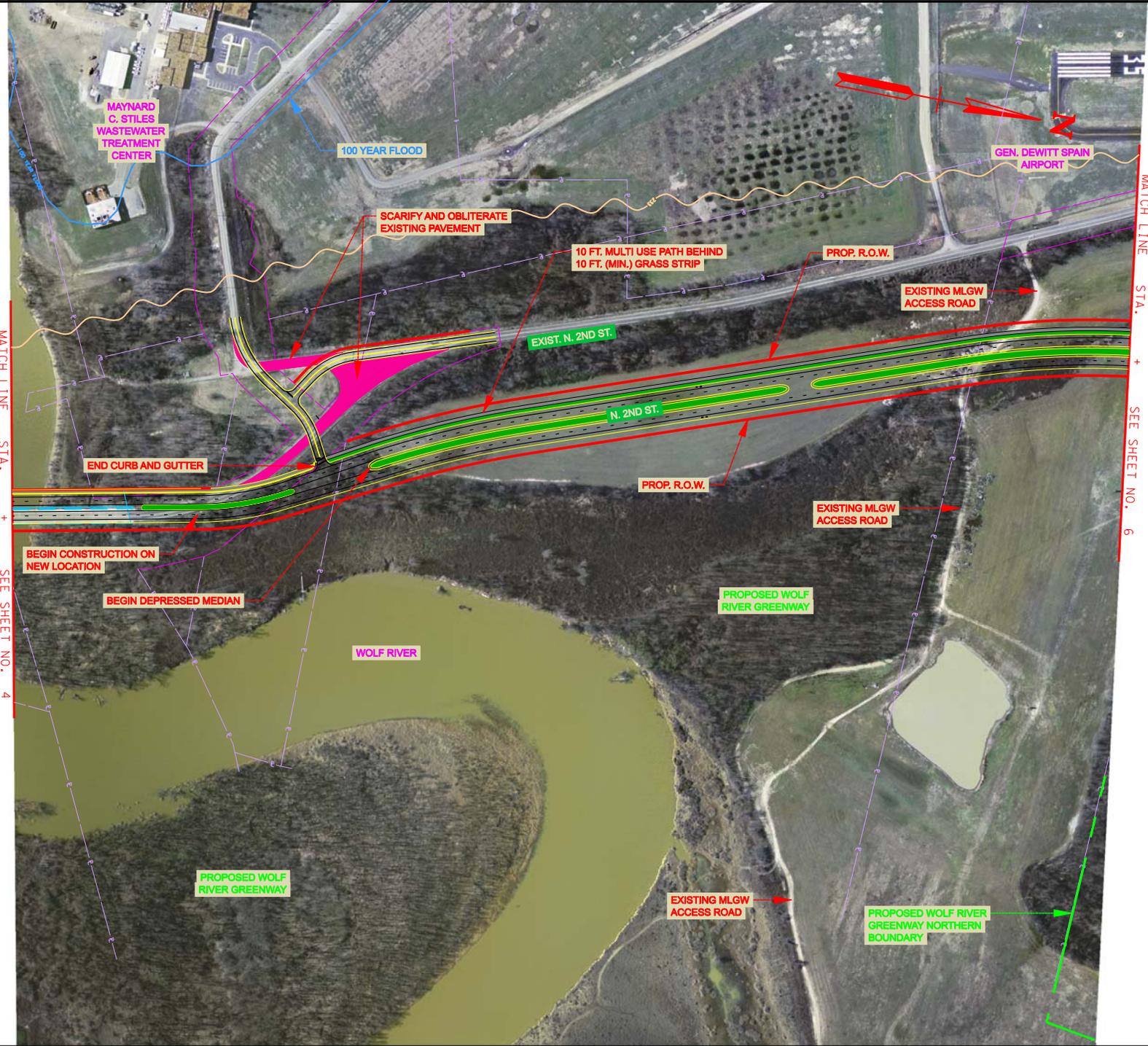
FIGURE 1.4
CONCEPTUAL PLAN SHEET
SHEET 3 OF 8

0
150
300
450
SCALE: 1 IN. = 400 FT.

North 2nd Street Improvement Project
From I-40 to U.S. 51/Whitney Ave.
Memphis, Shelby County, Tennessee

FIGURE 1.4
CONCEPTUAL PLAN SHEET
SHEET 4 OF 8





North 2nd Street Improvement Project
From I-40 to U.S. 51/Whitney Ave.
Memphis, Shelby County, Tennessee

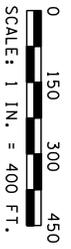
FIGURE 1.4
CONCEPTUAL PLAN SHEET
SHEET 5 OF 8



0
150
300
450
SCALE: 1 IN. = 400 FT.

North 2nd Street Improvement Project
From I-40 to U.S. 51/Whitney Ave.
Memphis, Shelby County, Tennessee

FIGURE 1.4
CONCEPTUAL PLAN SHEET
SHEET 6 OF 8

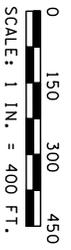
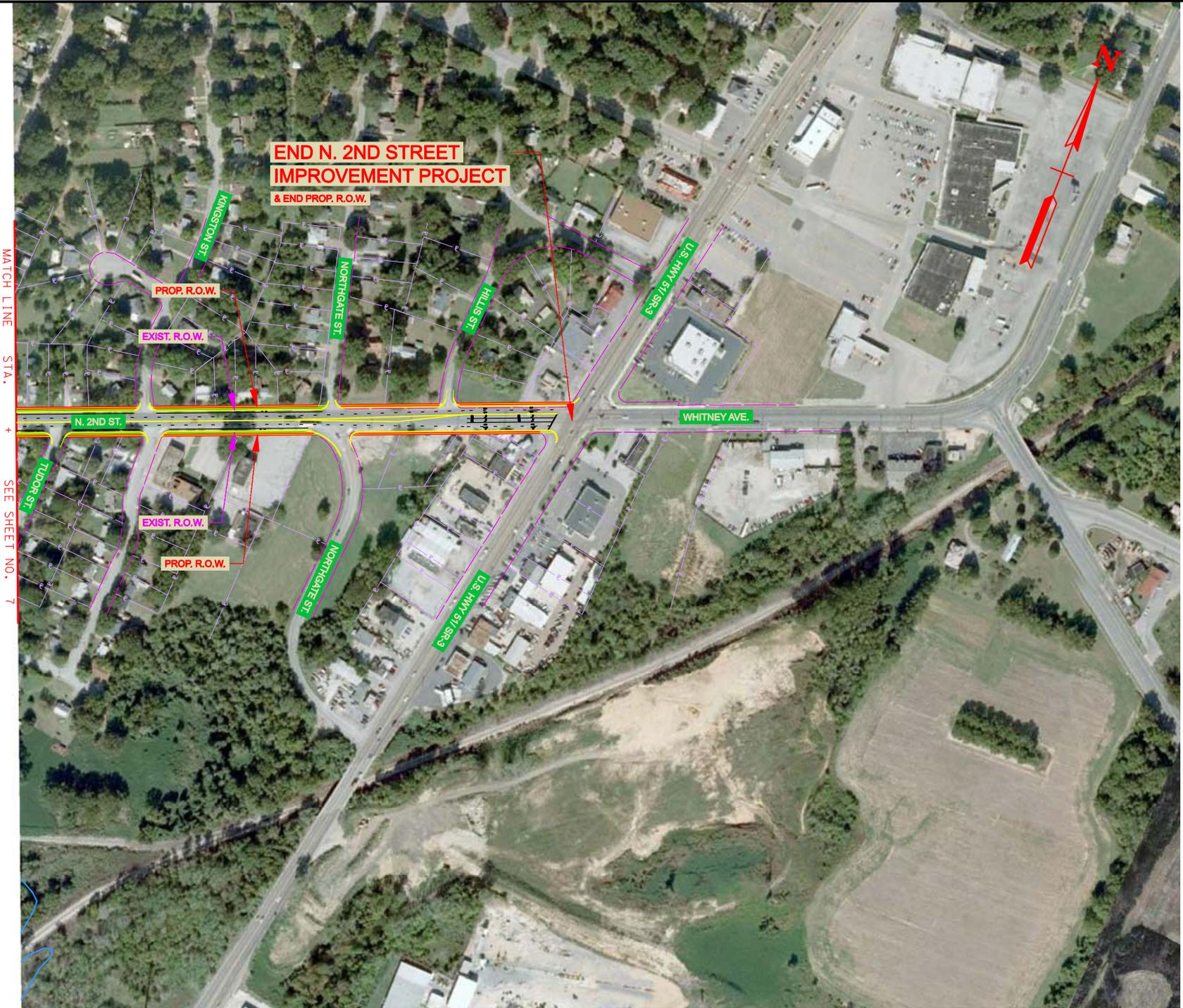


North 2nd Street Improvement Project
 From I-40 to U.S. 51/Whitney Ave.
 Memphis, Shelby County, Tennessee

FIGURE 1.4
CONCEPTUAL PLAN SHEET
SHEET 7 OF 8

MATCH LINE STA. + SEE SHEET NO. 8

MATCH LINE STA. + SEE SHEET NO. 6



**North 2nd Street Improvement Project
From I-40 to U.S. 51/Whitney Ave.
Memphis, Shelby County, Tennessee**

**FIGURE 1.4
CONCEPTUAL PLAN SHEET
SHEET 8 OF 8**

1.2 PROJECT BACKGROUND AND STATUS

The Memphis Metropolitan Planning Organization (MPO) guides the transportation policy for major roadways in the Memphis region. The MPO is responsible for integrated planning of transportation systems in Shelby County, and parts of DeSoto County, Mississippi and Fayette and Tipton Counties, Tennessee. Using federal regulations and guidance, short and long-term transportation plans that meet community objectives are developed and implemented. A multi-modal planning approach is used to assure a vibrant and growing system of roads, rail lines, transit systems, airports and waterways. A transportation facility along the North Second Street corridor has been part of the MPO's Long Range Transportation Plan (LRTP) for the Memphis Urbanized Area since 1969. This project is listed in the latest MPO plans, the *Memphis Urban Area 2030 LRTP*, dated March 2008, and the *2008-2011 Transportation Improvement Program (TIP)*. Memphis is the largest city in Tennessee with a population of approximately 650,100 (2000 US Census). The population of the MPO urban area region is much larger at approximately 1.3 million people. The population within the five adjacent census tracts along the project corridor is 13,896, or approximately two percent of the Memphis population.

Since 1990, two Advance Planning Reports (APRs) have been prepared for this project. These APRs have suggested several alternatives to meet the transportation needs in the corridor. The first APR was prepared in April 1990 and the second in July 2001. It has been determined in these early studies that in order to provide a viable secondary access between communities north of downtown Memphis, while adequately serving the redevelopment initiatives and the anticipated future traffic in the area, that a four-lane facility is needed in the North Second Street Corridor that extends from I-40 in Memphis north to US 51/SR 3 in the Frayser community. The proposed project suggests utilizing existing streets, as well as some segments on new alignment. The segments on new alignment are necessary when improving the existing street to acceptable design standards is infeasible. The alternative routes identified in the APRs and evaluated in this environmental document are discussed in **Chapter 2 Alternatives**.

The public involvement process for this Environmental Impact Statement was initiated in September 2000. TDOT and the City of Memphis hosted an open house meeting at the Bickford Community Center on September 14, 2000 and again on September 24, 2002, in which aerial displays depicting alternative alignments were presented to the general public. In addition to the early public involvement meetings, TDOT hosted two Environmental Justice meetings on May 21 and 22, 2003 to specifically solicit the concerns of the minority and low-income population that would be affected by the proposed project. Environmental Justice issues are discussed in **Chapter 4 Environmental Consequences**.

Following approval of the July 2001 APR, interagency coordination and environmental technical studies were initiated. A project scoping meeting was held on December 17, 2001 with natural resource and permitting agencies, area developers, and community leaders in attendance. Several proposed alternatives were presented at the meeting and issues and concerns of the attendees were discussed. Initial coordination letters detailing the proposed alternatives to be studied in the Draft Environmental Impact Statement (DEIS) were sent to 68 federal, state and local agencies and organizations in January 2002. Responses from the initial coordination effort are discussed in **Chapter 6 Public Input and Agency Coordination**.

These previous efforts have led to the proposed Build Alternative discussed in this DEIS.

1.3 PURPOSE OF THE PROPOSED ACTION

The purpose of the proposed project is to 1) provide a viable secondary access route into the Memphis Central Business District (CBD) from communities north of downtown while improving traffic circulation within the study corridor and 2) to stimulate economic development by providing infrastructure that will maintain the existing momentum for reinvestment and new investment in residential and commercial ventures along the corridor. Overall, the proposed project is intended to serve as an improved gateway into downtown Memphis through the Uptown Community.

1.4 NEED OF THE PROPOSED ACTION

A viable secondary access into the CBD is needed to improve system linkage between communities north of downtown Memphis (including the Frayser Community) and downtown. It will relieve traffic congestion and reduce travel delays on US 51/Danny Thomas Boulevard and Interstate 40 for commuters and truck traffic entering the downtown area from north of the City. To be a viable secondary access that promotes usage by motorists, the project needs to correct geometric deficiencies along the existing route, meet the growing traffic demands of the area by providing adequate capacity, and provide a safe operating environment. By addressing these needs, the project will also improve traffic circulation within the study corridor.

Improvements to the North Second Street Corridor are also needed to enhance the on-going redevelopment of the Uptown Neighborhood and other older residential areas by providing a facility that blends in with the pedestrian friendly urban neighborhood environment that is being promoted by the City. Improved traffic circulation and linkage with downtown, while improving existing modal interrelationships in the community, will maintain the momentum for economic development being created by the changing social demands of the adjacent communities.

The needs of the project can be summarized as follows:

- Improve system linkage between communities in North Memphis and the CBD
- Correct existing roadway deficiencies of the corridor
- Meet the changing social demands and economic development of the study corridor
- Improve the existing modal interrelationships including bicycle, pedestrian, and transit
- Meet the growing traffic demand and capacity needs of the corridor
- Provide a safer route to travel

These needs are discussed further in **Sections 1.4.1** through **1.4.6**. The proposed project will fulfill these needs while being consistent with other plans in the community. The project is listed in the MPO's LRTP and TIP. This project's consistency with other plans in the community is discussed in **Section 1.5**.

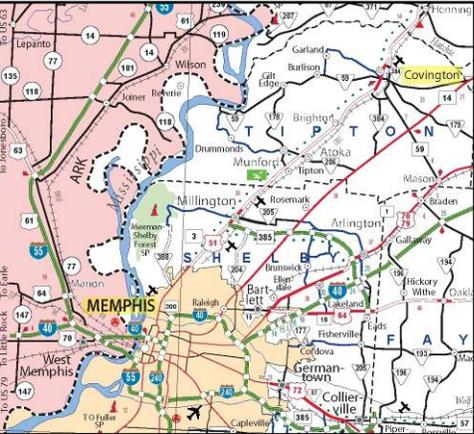
In addition to the needs of the project, several secondary goals should be addressed by the improvements. These secondary goals are primarily related to improved system linkage and are discussed in **Section 1.4.1 System Linkage Needs**. These goals include:

- Improve continuity with the downtown roadway network south of the study corridor, which includes North Second and North Third Streets being utilized in a one-way pair.
- Preserve and manage as much of the existing transportation system as possible and minimize additional needed right-of-way.

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The solution to address the needs of the project is to provide an improved four travel lane facility with improved bicycle and pedestrian facilities along the North Second Street corridor between I-40 and the intersection of Whitney Avenue and US 51/SR 3 in the south Frayser Community that is consistent with the Long Range Transportation Plan. The project will link the neighborhoods north of Memphis to Downtown and the Central Business District and be compatible with the on-going economic development initiatives and revitalization opportunities for the neighborhoods and businesses along the North Second Street corridor. The improved facility will correct existing deficiencies and provide an increase in capacity to give some relief to other major routes in the area.

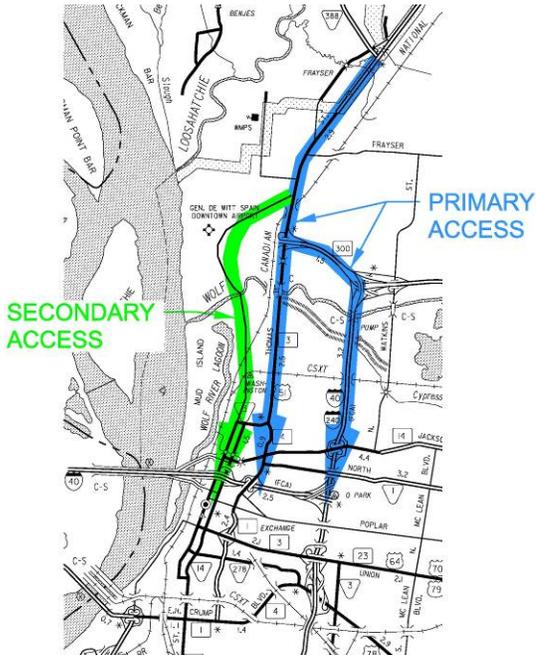
1.4.1 System Linkage Needs



Viability Secondary Access

There is currently no high quality route along the North Second Street Corridor between the North Memphis communities located adjacent to the Mississippi River and the Downtown Central Business District. An improved route is needed to better serve these communities, which include the Frayser, Mud Island, and Uptown Communities, and better link them with the Downtown CBD, Pinch Historic District, and St. Jude Children’s Research Hospital area. The route will also serve as a secondary access for communities located further north that would currently utilize US 51/SR 3/Danny Thomas Boulevard or I-40. The improved route will serve as a gateway into downtown Memphis.

US 51/SR 3 is the primary North-South arterial corridor in North Memphis. It frequently experiences congestion during peak travel times. Adjacent to the North Second Street Study Corridor, US 51/SR 3 is a four travel-lane route located approximately one mile east of the Mississippi River and one mile west of I-40. US 51/SR-3 serves regional traffic needs, connecting the bedroom communities of Millington and Covington, along with the City of Dyersburg, with Downtown Memphis. US 51/SR 3 also serves the local traffic needs between several North Memphis Communities and Downtown Memphis. It was previously considered to widen US 51/SR 3 to three lanes in each direction. The widening would have required numerous residential and business displacements and would not serve the transportation needs in the North Second Street Corridor. It was determined that widening US 51/SR 3 did not meet the purpose and need of the project. It is located outside the North Second Street project corridor.



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North Second Street is the most logical corridor between US 51/SR 3 and the Mississippi River to provide secondary access between North Memphis and Downtown. The corridor has several deficiencies, which are discussed in **Section 1.4.2 Roadway Deficiencies and Needs**.

Improving this underutilized corridor would complement the US 51/SR 3 corridor, providing an alternate route into Downtown Memphis and improving system linkage. As additional local traffic is distributed to the North Second Street/Whitney Avenue corridor, a benefit to regional traffic along US 51/SR-3 will occur.

The North Second Street/Whitney Avenue Corridor is located adjacent to the Mississippi River and provides access for the redeveloping Uptown Memphis neighborhood, the General DeWitt Spain Downtown Airport, several hospitals, and other commercial and industrial land uses. Improvements to this corridor are needed to make the North Second Street corridor more appealing to commuters, and produce a viable alternate route for US-51/SR-3.

1.4.1.1 System Linkage Secondary Goals

Several secondary goals are associated with the need to provide a viable secondary route between North Memphis and Downtown. These goals include improving the continuity of the downtown roadway network, and preserving the existing transportation system.

Improve the Continuity of the Downtown Roadway Network

South of the study corridor, North Second and North Third Streets form a one-way pair through Downtown Memphis. North Second and North Third Streets are each currently two-way within the study corridor. This creates poor traffic circulation between the Uptown Neighborhood and Downtown. It is desirable to extend the existing one-way pair. The extended one-way pair will link the heart of Downtown Memphis with surrounding communities, from E. G.E. Patterson Avenue, located south of downtown, to Chelsea Avenue, located north of I-40. This will further improve system linkage and improve traffic operations in all of Downtown Memphis.

Preserve the Existing Transportation System

It is desirable to minimize the additional right-of-way (R.O.W.) requirements by utilizing the existing transportation infrastructure, especially through the urbanized section of the study corridor between I-40 and Chelsea Avenue. This can be achieved with the use of a one way pair street network between I-40 and Chelsea Avenue. The existing pavement will be better utilized to provide the needed travel lanes for the corridor.

Better utilization of the existing pavement is desired due to the current allocation of travel lanes along North Second and North Third Streets. North Second Street provides connectivity between areas north of Memphis and the Uptown Neighborhood. North Third Street only provides internal circulation within the Uptown Neighborhood due to ending at Chelsea Avenue. North Second Street only has one travel lane in each direction while North Third Street has two travel lanes in each direction. Neither North Second nor North Third Street provides optimal circulation with Downtown due to the non-traditional intersections formed near I-40 where they become one-way. Creating a one-way pair with North Second and North Third Streets between I-40 and Chelsea Avenue is desired to provide the needed two travel lanes (minimum) in each direction (northbound and southbound) and improve connectivity between communities in North Memphis, the Uptown Community, and Downtown, without requiring additional R.O.W. in this urbanized area.

1.4.2 Roadway Deficiencies and Needs

The primary deficiency of the North Second Street Corridor is an inadequate number of travel lanes with limited capacity for future traffic growth and poor connectivity with Memphis's CBD. Additionally, numerous geometric deficiencies are present in the rural segment of the route through the Wolf River Floodplain. Bicycle lanes are not delineated physically anywhere along the route with pavement markings; however, North Second Street/Whitney Avenue from south of the Wolf River to Harvester Lane is within the Mississippi River Bicycle Trail and the City of Memphis Bike Tour. These bicycle routes have a warning that they are for experienced bikers.



The existing corridor is unfavorable for bus/transit service due to the roadway cross section, geometric deficiencies, and slow travel speeds. The speed limit along the existing corridor ranges from 35 mph to 45 mph, but many curves along the route are not designed for these speeds. Turn lanes are needed along many segments of the corridor. Because of these deficiencies, the North Second Street/Whitney Avenue corridor is an underutilized route into Downtown Memphis. Improvements to this corridor are needed to make the North Second Street corridor more appealing to commuters and bicyclists, and produce a viable alternate route for US 51/SR 3. Deficiencies associated with the urban and rural areas along the corridor are discussed in more detail below.

Urban Areas

The primary deficiencies through the urbanized areas of the project are inadequate numbers of travel lanes, limited capacity for future traffic growth, and lack of access control concerning driveways. The urbanized areas of the study corridor are primarily from I-40 to Mud Island Road and along Whitney Avenue from Harvester Lane to US 51/SR 3. The urban areas serve residential, commercial, and industrial land uses. The urban areas generally have sidewalks, but do not have bike lanes.

Rural Areas

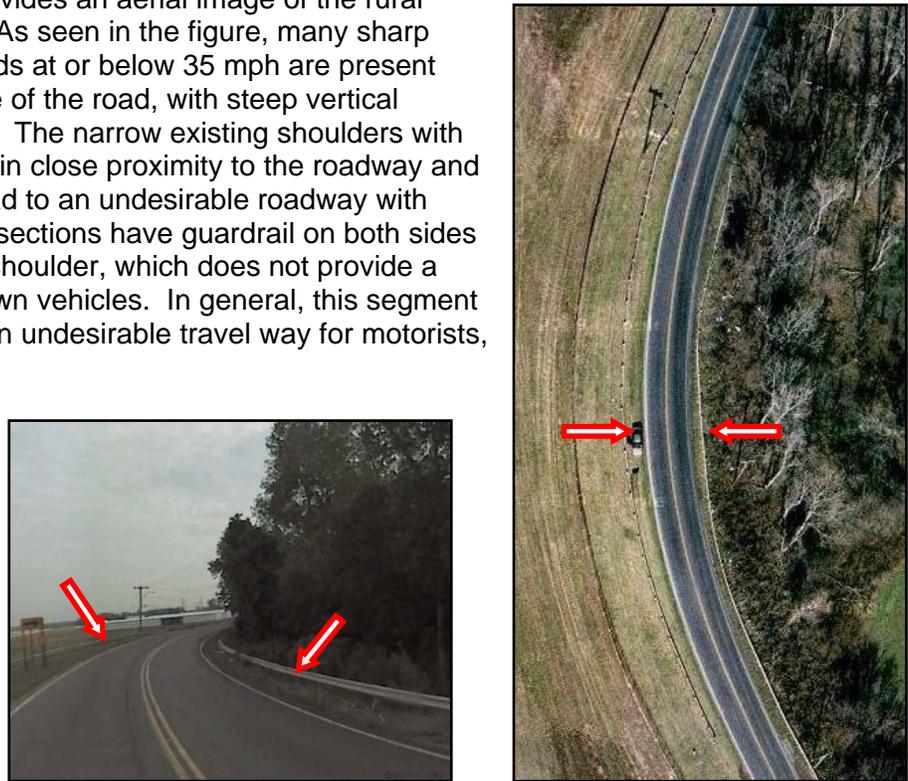
In addition to inadequate numbers of travel lanes and limited capacity for future traffic growth, the rural area of the corridor has numerous geometric deficiencies. The rural area of the study corridor is primarily between Marble Avenue to the south and Harvester Lane to the north. The Wolf River Floodplain is located in this area. This rural area also serves industrial land uses including an airport and wastewater treatment plant.

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Several deficient curves are located within this segment of the route. **Figure 1.5: North Second Street Curves** provides an aerial image of the rural area of the study corridor. As seen in the figure, many sharp curves with operating speeds at or below 35 mph are present along the route. The profile of the road, with steep vertical curves, is also undesirable. The narrow existing shoulders with roadside obstacles located in close proximity to the roadway and poor vertical alignments lead to an undesirable roadway with poor sight distance. Many sections have guardrail on both sides of the road with little to no shoulder, which does not provide a safe location for broken-down vehicles. In general, this segment of North Second Street is an undesirable travel way for motorists, bicyclists and pedestrians.

Figure 1.5: North

Second Street Curves



Guardrail on both sides of North Second Street near the Airport.



Whitney Avenue Looking Southbound near
Harvester Lane



North Second Street Looking Northbound near
General DeWitt Spain Airport

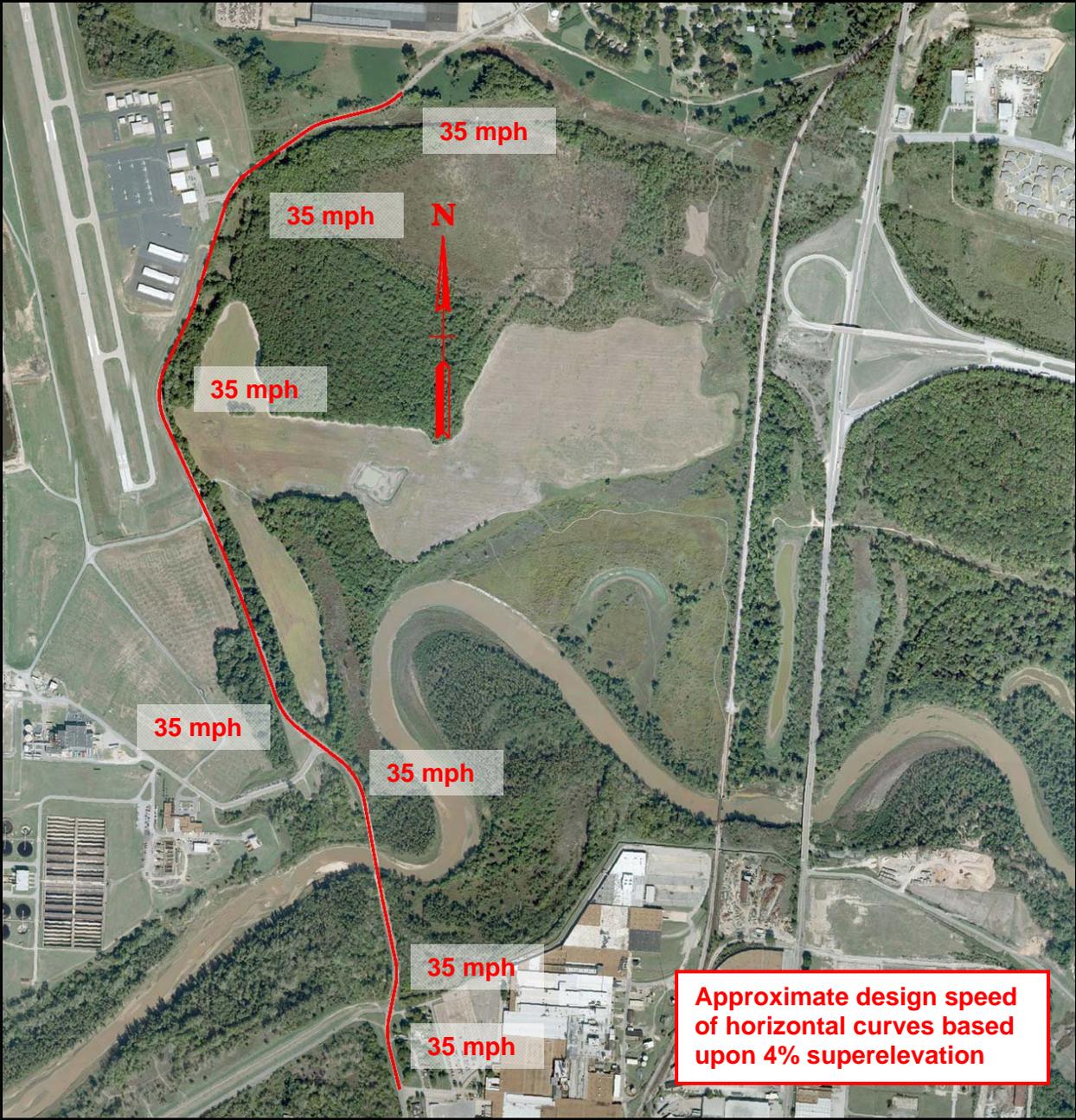


FIGURE 1.5: NORTH SECOND STREET CURVES

1.4.3 Changing Social Demands and Economic Development Needs



The demographics of the areas directly adjacent to the study corridor are rapidly changing due to considerable redevelopment activities taking place. Improvements to the transportation system are needed to maintain the existing momentum for reinvestment and new investment within the study corridor. Memphis's Center City Commission reports over \$3 billion in public and private development projects recently completed, planned or underway in all of downtown Memphis. This total includes \$765 million in the Mud Island, Pinch,

Uptown, and St. Jude Children's Research Hospital areas that surround the project study corridor. Most of the redevelopment activities promote a sustainable, pedestrian friendly, new-urbanism neighborhood environment. Improvements to the existing corridor are needed to link these developments with employment centers, provide additional traffic capacity for these high density developments, provide pedestrian and bicycle facilities, and better accommodate mass transit usage. The changing demographics of the study corridor are discussed in more detail in **Chapter 3, Section 3.2.3 Social Characteristics**.

1.4.4 Modal Interrelationship Needs

Improvements to the North Second Street Corridor are needed to improve mass transit, pedestrian, and bicycle modal interrelationships in the area. Mass transit service is currently available in the surrounding area, but not along North Second Street/Whitney Avenue between Auction Avenue and Harvester Lane. Improvements to the corridor are needed to correct deficiencies along the route and provide a facility that is more adaptable for transit service. The existing mass transit network within the study corridor is discussed in more detail in **Chapter 2, Section 2.4.2 Mass Transit Alternative**.

Sidewalks are present from I-40 to Washington Park (near Marble Avenue) at the southern end of the North Second Street Corridor and along Whitney Avenue from Harvester Lane to US 51/SR 3 at the northern end of the corridor. There are no sidewalks from Washington Park to Harvester Lane in the middle of the corridor. The pedestrian connectivity between the urban areas at the northern and southern ends of the corridor is therefore poor due to the absence of sidewalks and narrow shoulders along North Second Street/Whitney Avenue through the Wolf River Floodplain area.

Bike lanes are currently not delineated physically with pavement markings or additional pavement width anywhere along the North Second Street Corridor. However, North Second Street from south of the Wolf River to Whitney Avenue at Harvester Lane is within the Mississippi River Bicycle Trail and the City of Memphis Bike Tour. These bicycle routes have a warning that they are for experienced bikers. Improvements are needed to promote safer bike usage as an alternative modal choice. The existing bicycle facilities within the study corridor are discussed in more detail in **Chapter 3, Section 3.2.5.6 Bicycle Trails**.

The proposed Wolf River Greenway and Trail System is another City of Memphis project that is located in the middle of the study corridor. One of the initial phases of the Wolf River Greenway

Trail will extend from the north end of Mud Island eastward through the densely wooded Wolf River Bottoms, crossing under the North Second Street Bridge. Access to North Second Street will be provided. The Wolf River Greenway is discussed in more detail in **Chapter 3, Section 3.2.1.1 Proposed Wolf River Greenway**. There are no sidewalks or delineated bicycle lanes in the vicinity of the proposed Wolf River Greenway.

Improvements to the North Second Street Corridor are needed to integrate these pedestrian and bicycle facilities into a coherent network and connect the urbanized areas at the northern and southern ends of the project with the Wolf River Greenway in the center of the study corridor.

General DeWitt Spain Airport is located in the northern portion of the study corridor. This is a general aviation airport with no commercial service. Improvements to the North Second Street Corridor will result in safer ingress/egress to the airport due to better sight distances through the decrease in curvature of the roadway.

1.4.5 Capacity Needs

1.4.5.1 Traffic

To be a viable secondary access into the Central Business District (CBD) and meet the traffic needs of the adjacent communities, the proposed improvements must accommodate the future traffic needs of the area. Traffic projections were created to assist with determining the needed improvements. The traffic projections utilize historical traffic data and The Memphis Urban Area Metropolitan Planning Organization's (MPO) traffic model data. The MPO's traffic model includes future transportation improvements as programmed in the Long Range Transportation Plan (LRTP), including the Build Alternative in this document. An MPO traffic model also includes existing and future land use scenarios that can spur the need for improving the area's highway capacity. The traffic volumes are summarized in **Table 1.1: AADT Volumes** and **Figure 1.6: 2035 AADT Volumes**. A more detailed discussion of the traffic projections can be found in the "*Traffic Data for North Second Street Improvements*" report on file in the TDOT Environmental Division Office in Nashville, TN. Annual Average Daily Traffic (AADT) mainline and turning movement projections are included in the report, along with Design Hourly Volume (DHV) turning movement projections.

It should be noted that North Parkway/Shadyac Avenue adjacent to North Third Street (within St. Jude Hospital's campus) has recently been closed to vehicular traffic and is now a pedestrian mall. The traffic projections account for this modification to the roadway network. It should also be noted that the St. Jude Hospital Master Plan proposes closing Jackson Avenue east of North Third Street. Because this modification has not occurred, and the status of this plan is unknown, the closing of Jackson Avenue east of North Third Street is not accounted for in the traffic projections. It is not anticipated closing Jackson Avenue would substantially impact the AADT projections utilized in the Level of Service calculations in this document. A map from the St. Jude Master Plan is provided in the **Section 1.5.2.7 St. Jude Children's Research Hospital Master Site and Facilities Plan 2004 – 2020+**.

TABLE 1.1: AADT VOLUMES

North Second Street Corridor Improvement Project

Annual Average Daily Traffic (AADT)

From	To	2015 AADT					
		No Build Alternative			Build Alternative		
		N. 2nd Street	N. 3rd Street	Combined	N. 2nd Street	N. 3rd Street	Combined
Jackson Ave.	Chelsea Ave.	6,200	13,400	19,600	9,800	9,800	19,600
Chelsea Ave.	South of N. 7th St.	14,300	n/a	14,300	14,300	n/a	14,300
South of N. 7th St.	SR-3/US-51	9,000	n/a	9,000	9,000	n/a	9,000

From	To	2035 AADT					
		No Build Alternative			Build Alternative		
		N. 2nd Street	N. 3rd Street	Combined	N. 2nd Street	N. 3rd Street	Combined
Jackson Ave.	Chelsea Ave.	7,600	16,400	24,000	12,000	12,000	24,000
Chelsea Ave.	South of N. 7th St.	18,200	n/a	18,200	18,200	n/a	18,200
South of N. 7th St.	SR-3/US-51	12,400	n/a	12,400	12,400	n/a	12,400

Notes:

K (ratio of DHV to AADT): 10%
D (directional distribution of DHV): 65:35
Truck Percentage: 6%

TDOT Count Stations 467 and 538 demonstrate that 70% of the combined existing AADT along N. 2nd and N. 3rd Streets utilizes N. 3rd Street. 30% utilizes N. 2nd Street. With the Build Alternative, the one-way pair is projected to exhibit a 50%-50% split.

N. 2nd Street currently becomes Whitney Avenue near the General DeWitt Spain Airport. In the No Build Alternative, the segment from south of N. 7th St. to SR-3/US-51 is currently named Whitney Avenue.

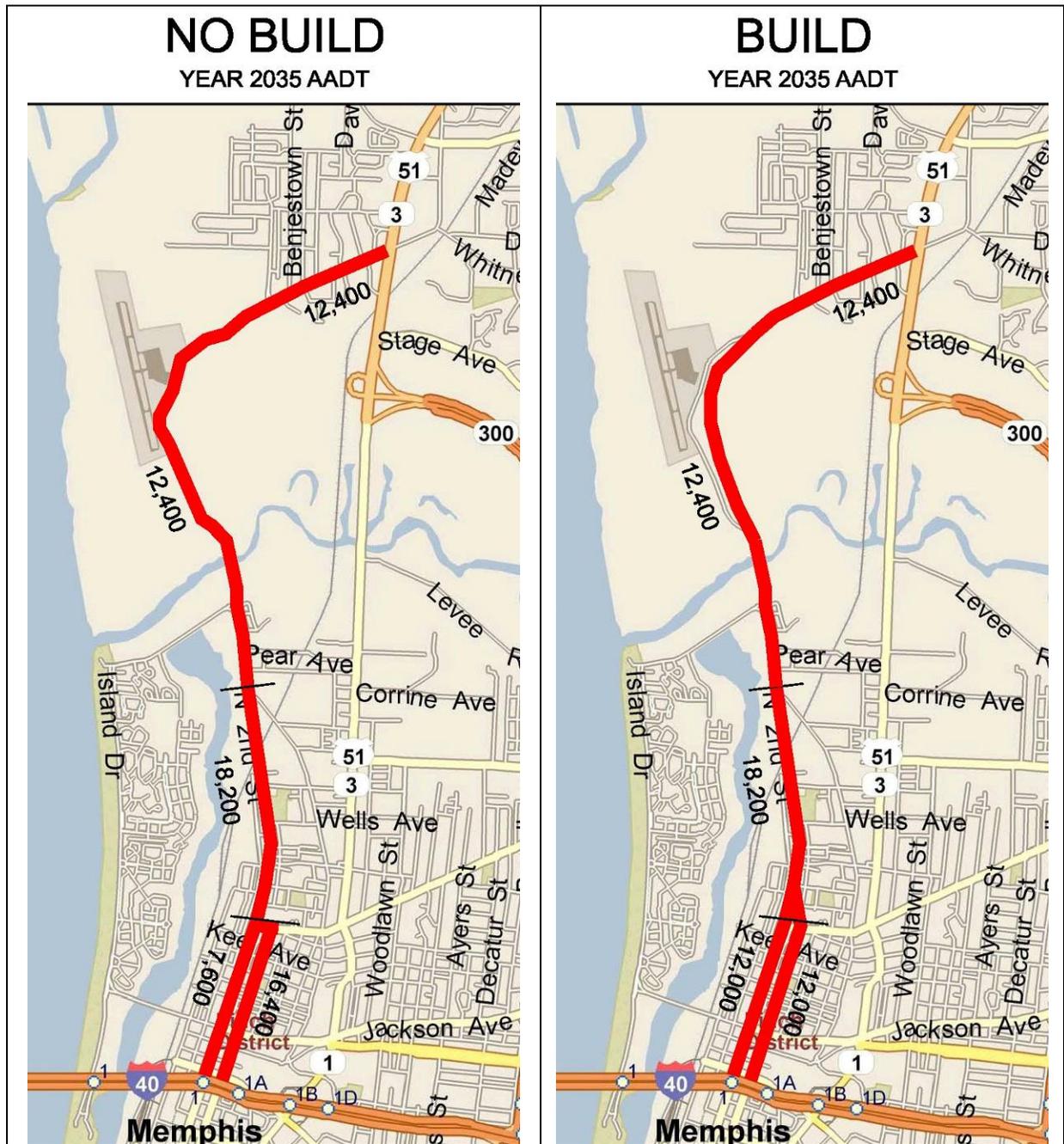


FIGURE 1.6: 2035 AADT VOLUMES

1.4.5.2 Capacity Analysis

Several measures of effectiveness (MOE) are utilized in this document to assess the operational conditions of North Second Street, North Third Street, and Whitney Avenue for both the No Build and Build Alternatives. Each of these routes will be utilized in the Build Alternative. These measures of effectiveness are level of service, volume to capacity ratio, average travel speed, and travel time. A definition of these measures is provided in the following text. A detailed discussion of the No Build Alternative and Build Alternative’s MOE are provided in **Sections 1.4.5.2.1 and 1.4.5.2.2**. A summary of the No Build and Build Alternative’s Design Year MOE are provided in **Figure 1.7: Design Year MOE**. The Level of Service calculations can be found in the “*Traffic Data for North Second Street Improvements*” report on file in the TDOT Environmental Division Office in Nashville, TN.

Without improvements (No Build), the corridor will experience LOS ranging from B to F in the design year and a corresponding average travel speed of 11 mph.
With improvements (Build), the LOS will be improved to a range of A to C with an average travel speed of 31 mph.

Level of Service

Level of Service (LOS) is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. LOS range from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each LOS represents a range of operating conditions and the driver’s perception of those conditions. Please refer to **Table 1.2: LOS Table** for a description of each LOS.

The quality of service was assessed utilizing the methodology outlined in the *Highway Capacity Manual 2000 (HCM) Urban Streets, Two-Lane Highways, and Multilane Highways* Chapters. The Level of Service (LOS) Calculations were performed with the Highway Capacity Software (HCS+T7F Version 5.3). HCS+ is developed and maintained as an implementation of the HCM procedures. HCS+ calculations assign a LOS along route segments with similar geometric and traffic characteristics.

The *Arterials Planning Level Analysis* routine in the HCS+ Software was utilized to analyze North Second and North Third Streets between I-40 and Chelsea Avenue. This routine was chosen for these segments due to their urban nature, their low free flow speeds, and the presence of several traffic signals. The *Two-Lane Highway or Multilane Highway Operational Analysis* routines were utilized to analyze the remainder of the route, from Chelsea Avenue to SR-3/US-51. These highway routines were chosen for these remaining segments due to their more suburban nature, higher free flow speeds, and absence of traffic signals. The *Arterials* and *Highway* routines have different inputs, including the existence of turn lanes and passing zones, and assign LOS differently.

Volume to Capacity Ratio & Congestion Reduction

Unlike LOS, which is a qualitative measure, the volume to capacity ratio (v/c) is a quantitative measure. The v/c ratio is reported to demonstrate the magnitude of congestion for the options included in this document. The v/c ratio demonstrates how much reserve capacity along a roadway segment is available, or how much the segment is overcapacity. A v/c ratio near or above “1” indicates a roadway experiences congestion.

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Average Travel Speed

Average travel speed is calculated in the LOS analysis. Speed, or its reciprocal travel time, is an important measure of congestion and the quality of the traffic service provided to the motorist.

Travel Time

The travel time along a route can be calculated by dividing the distance of the route by the average travel speed. As discussed above, travel time is an important measure of the quality of the traffic service provided to the motorist. In addition to the travel speed improvements associated with reduced congestion, travel time demonstrates the time savings of shorter route options.

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TABLE 1.2: LOS TABLE

LOS	Traffic Flow Conditions	Representative Photo
A	Free flow operations. Vehicles are almost completely unimpeded in their ability to maneuver with the traffic stream. The general level of physical and psychological comfort provided to the driver is high.	
B	Reasonable free flow operations. The ability to maneuver within the traffic stream is only slightly restricted and the general level of physical and psychological comfort provided to the driver is still high.	
C	Flow with speeds at or near free flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted and lane changes require more vigilance on the part of the driver. The driver notices an increase in tension.	
D	Speeds decline with increasing traffic. Freedom to maneuver within the traffic stream is more noticeably limited. The driver experiences reduced physical and psychological comfort levels.	
E	At lower boundary, the facility is at capacity. Operations are volatile because there are virtually no gaps in the traffic stream. There is little room to maneuver. The driver experiences poor levels of physical and psychological comfort.	
F	Breakdowns in traffic flow. The number of vehicles entering the highway section exceed the capacity or ability of the highway to accommodate that number of vehicles. There is little room to maneuver. The driver experiences poor levels of physical and psychological comfort.	

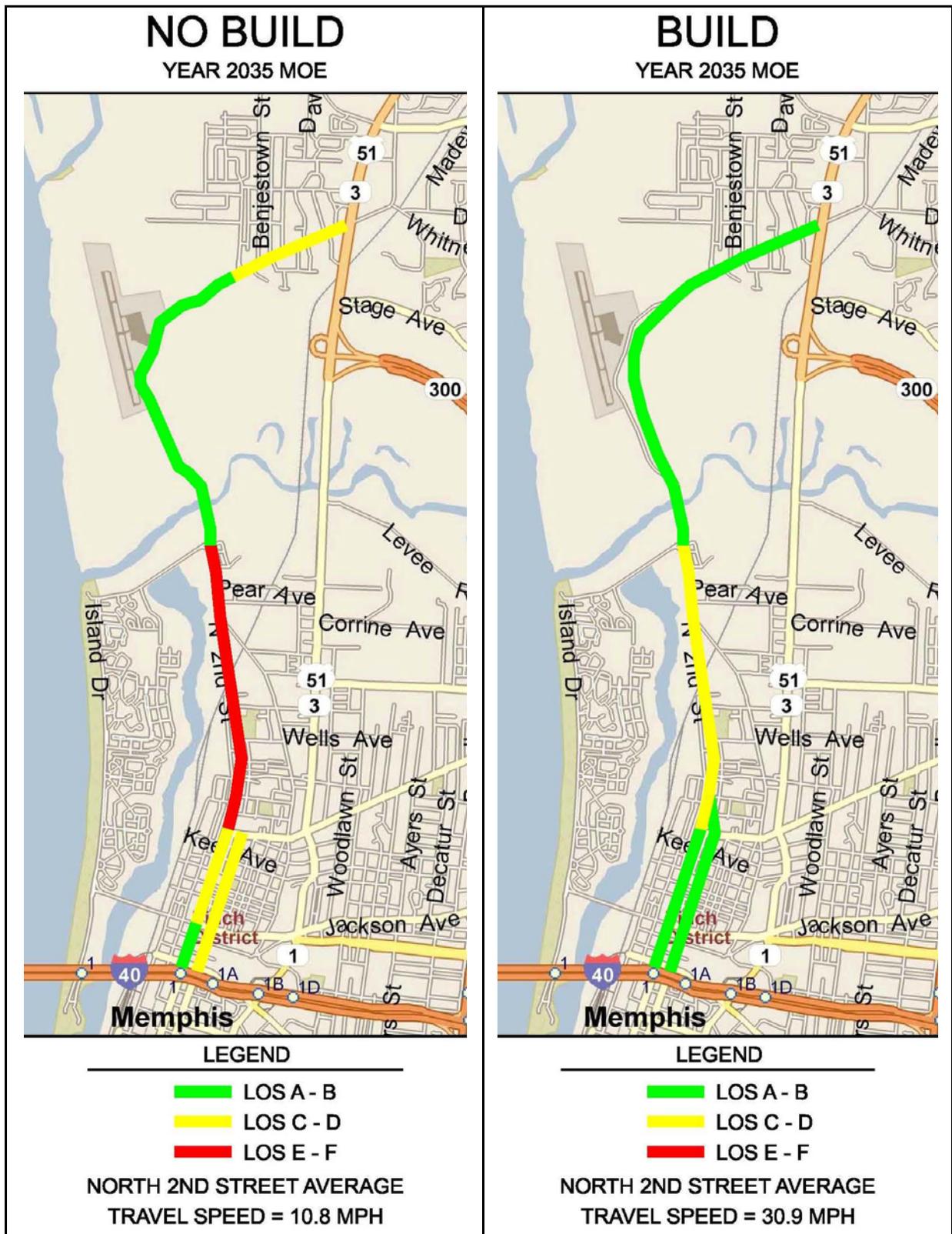


FIGURE 1.7: DESIGN YEAR MOE

1.4.5.2.1 No Build Alternative

For the No Build Alternative, the Highway Capacity Software (HCS) analysis calculates Levels of Service (LOS) ranging from B to F along the North Second Street/Whitney Avenue Corridor through the year 2035 during peak hour conditions. The most capacity deficient segment of the corridor is the urbanized area between Chelsea Avenue and Marble Avenue. There is no adjacent parallel route in this location. A summary of the LOS calculations for the No Build Alternative is provided in **Table 1.3**. The LOS are reported for the years 2015 and 2035. The LOS are also reported for North Third Street. North Third Street will serve one way traffic in the Build Alternative. For the No Build Alternative, a LOS of C is calculated through the year 2035 for North Third Street.

For the No Build Alternative in the year 2015, the volume to capacity ratio (v/c) of the North Second Street/Whitney Avenue Corridor is calculated to range from 0.31 to 1.70, with a weighted average of 0.72. In 2035, the v/c ranges from 0.38 to 2.16 with a weighted average of 0.94. The average was weighted based upon the length of each segment analyzed. A v/c ratio near or above "1" indicates a roadway experiences congestion. A summary of the v/c calculations for the No Build Alternative is provided in **Table 1.3**. The v/c are reported for the years 2015 and 2035. The v/c are also reported for North Third Street. For the No Build Alternative, the volume to capacity ratio (v/c) of North Third Street in the year 2015 is calculated to range from 0.33 to 0.40, with a weighted average of 0.38. In 2035, the v/c ranges from 0.41 to 0.49 with a weighted average of 0.46.

The speed limit ranges from 35 to 45 mph along the North Second Street/Whitney Avenue Corridor. For the No Build Alternative in the year 2015, travel speeds along the corridor are calculated by the HCS to range from 4.2 mph to 29.7 mph, with a weighted average of 14.8 mph. In 2035, the travel speed ranges from 2.7 mph to 28.5 mph with a weighted average of 10.8 mph. The average was weighted based upon the length of each segment analyzed. The weighted average of the speed limit along the route is 39.7 mph. The calculated average route speed is 37% and 27% of the posted speed limit in the years 2015 and 2035, respectively. A summary of the travel speed calculations for the No Build Alternative is provided in **Table 1.3**. The travel speeds are reported for the years 2015 and 2035.

The existing North Second Street/Whitney Avenue Corridor (No Build Alternative) between I-40 to the south and SR-3/US-51 to the north is 4.6 miles in length. For the No Build Alternative in the year 2015, the travel time along the corridor is calculated to be 18.7 minutes. In 2035, the travel time is calculated to be 25.7 minutes.

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TABLE 1.3: NO BUILD ALTERNATIVE LOS

From		To		Dist. (mi)	Roadway Data			2015					2035				
L.M.	Description	L.M.	Description		Posted Speed (mph)	# of Signals	Cross-Section Type	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
N. 2nd Street/Whitney Avenue																	
0.84	I-40	0.58	Auction Ave.	0.26	35	5	2-Ln+TL	6,200	B	0.31	22.0	0.7	7,600	B	0.38	21.7	0.7
0.58	Auction Ave.	0.07	Chelsea Ave.	0.51	35		2-Ln	6,200	B	0.74	19.8	1.5	7,600	C	0.90	18.6	1.6
0.00	Chelsea Ave.	0.66	Marble Ave.	0.66	35		2-Ln	14,300	F	1.70	4.2	9.4	18,200	F	2.16	2.7	14.7
0.66	Marble Ave.	1.48	Mud Island Rd.	0.82	40		2-Ln	9,000	C	0.80	22.4	2.2	12,400	E	1.10	13.6	3.6
1.48	Mud Island Rd.	3.99	Harvester Ln.	1.74	45	2	2-Ln	9,000	B	0.45	29.7	3.5	12,400	B	0.62	28.5	3.7
3.99	Harvester Ln.	3.38	SR-3/US-51	0.61	35		2-Ln	9,000	C	0.45	27.9	1.3	12,400	C	0.62	26.9	1.4
Σ =				4.60				Avg= 0.72 Σ = 18.7					Avg= 0.94 Σ = 25.7				
N. 3rd Street																	
12.43	I-40	12.67	Auction Ave.	0.24	35	4	4-Ln+TL	13,400	C	0.33	14.7	1.0	16,400	C	0.41	14.4	1.0
12.67	Auction Ave.	12.81	Mill Ave.	0.14	35		4-Ln+TL	13,400	C	0.40	14.4	0.6	16,400	C	0.49	14.0	0.6
12.81	Mill Ave.	13.18	Chelsea Ave.	0.37	35		4-Ln	13,400	C	0.40	14.4	1.5	16,400	C	0.49	14.0	1.6
Σ =				0.75				Avg= 0.38 Σ = 3.1					Avg= 0.46 Σ = 3.2				

Notes: The corridor was analyzed with HCS+ Arterials Planning Analysis

N. 2nd St. and N. 3rd St. from I-40 to Chelsea Ave. currently have 3 signals each (N. Jackson Ave, Shadyac Ave., and Auction Ave.) and 1 stop controlled intersection (Chelsea Ave). For the HCS+ Analysis, the stop controlled intersections were included as signals in the future years, and Mud Island Road is included for a signal for a total of 5 signals. Whitney Ave. at SR-3 is currently signalized, for 2 signals between Mud Island Rd. (prop) and SR-3 (exist).

Mud Island Rd. to Harvester Ln. log miles do not add to the shown distance due to the change in route designation. The distance shown is correct.

N. 2nd Street/Whitney Ave.

Average Speed:	14.8	Average Speed:	10.8
Avg. Post. Spd.:	39.7	Avg. Post. Spd.:	39.7
% Spd vs Post.:	37%	% Spd vs Post.:	27%

N. 3rd Street

Average Speed:	14.5	Average Speed:	14.1
Avg. Post. Spd.:	35.0	Avg. Post. Spd.:	35.0
% Spd vs Post.:	41%	% Spd vs Post.:	40%

1.4.5.2.2 Build Alternative

The Build Alternative includes incorporating North Second Street and North Third Street into a one-way pair from I-40 north to Chelsea Avenue. The remainder of the route will remain two-way, but will increase the number of travel lanes from two to four. Converting two-way streets to a one-way pair is generally done for the purpose of increasing capacity. The removal of one direction of traffic from a two-way street allows for better signal synchronization and promotes an improved progression of traffic. One-way streets also allow for unopposed turn maneuvers, simplifies signal phasing, allows pedestrians to only have to confront traffic from one direction, and provides more gaps for vehicles and pedestrians at unsignalized crossings. For the Build Alternative, the Highway Capacity Software (HCS) analysis calculates Levels of Service (LOS) ranging from A to C along the proposed North Second Street Corridor through the year 2035. A summary of the LOS calculations for the Build Alternative is provided in **Table 1.4**. The LOS are reported for the years 2015 and 2035. The LOS are also reported for North Third Street. North Third Street will serve northbound one way traffic in the Build Alternative, and is therefore integral to the Build Alternative improvements.

For the Build Alternative in the year 2015, the volume to capacity ratio (v/c) of the North Second Street Corridor is calculated to range from 0.21 to 0.68, with a weighted average of 0.31. The year 2015 v/c ratio is improved by a factor of 2.32 compared to the No Build Alternative v/c ratio of 0.72. In 2035, the v/c ranges from 0.29 to 0.83 with a weighted average of 0.40. The year 2035 v/c ratio is improved by a factor of 2.35 compared to the No Build Alternative v/c ratio of 0.94. The average was weighted based upon the length of each segment analyzed. A v/c ratio near or above "1" indicates a roadway experiences congestion. A summary of the v/c calculations for the Build Alternative is provided in **Table 1.4**. The v/c are reported for the years 2015 and 2035.

For the Build Alternative in the year 2015, travel speeds along the North Second Street Corridor are calculated by the HCS to range from 26.2 mph to 35.5 mph, with a weighted average of 31.2 mph. This is a 111% improvement from the No Build Alternative average speed of 14.8 mph. In 2035, the travel speed ranges from 25.7 mph to 35.2 mph with a weighted average of 30.9 mph. This is a 186% improvement from the No Build Alternative average speed of 10.8 mph. The average was weighted based upon the length of each segment analyzed. A summary of the travel speed calculations for the Build Alternative is provided in **Table 1.4**. The travel speeds are reported for the years 2015 and 2035.

The North Second Street Corridor (Build Alternative) between I-40 to the south and SR-3/US-51 to the north is 4.6 miles in length. For the Build Alternative in the year 2015, the travel time along the corridor is calculated to be 8.8 minutes. This is a 53% reduction in travel time from the No Build Alternative travel time of 18.7 minutes. In 2035, the travel time is calculated to be 8.9 minutes. This is a 65% reduction in travel time from the No Build Alternative travel time of 25.7 minutes.

The Build Alternative will have a design speed of 45 mph, where practical. The segment of the project between I-40 and Chelsea Avenue utilizes the existing pavement and right-of-way widths, and would not be practical to improve beyond the existing, unknown, design speed due to adjacent development. Although the design speed of the remainder of the route is proposed to be 45 mph, the posted speed limit will be lower (between 35 and 40 mph) along most segments due to adjacent development, close intersection spacing, and to promote pedestrian and bicycle usage.

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TABLE 1.4: BUILD ALTERNATIVE LOS

From		To		Dist. (mi)	Roadway Data			2015					2035				
L.M.	Description	L.M.	Description		Posted Speed (mph)	# of Signals	Cross-Section Type	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)	ADT (vpd)	LOS	v/c	Calc. Speed (mph)	Travel Time (min.)
N. 2nd Street Build Alternative Corridor																	
0.84	I-40	0.58	Auction Ave.	0.26	35	5	2-Ln (1-way)	9,800	A	0.68	32.8	0.5	12,000	A	0.83	32.2	0.5
0.58	Auction Ave.	0.07	Chelsea Ave.	0.51	35		2-Ln (1-way)	9,800	A	0.68	32.8	0.9	12,000	A	0.83	32.2	1.0
0.00	Chelsea Ave.	0.66	Marble Ave.	0.66	40		4-Ln+TL	14,300	C	0.34	26.2	1.5	18,200	C	0.43	25.7	1.5
0.66	Marble Ave.	1.48	Mud Island Rd.	0.82	40		4-Ln+TL	9,000	C	0.21	26.7	1.8	12,400	C	0.29	26.4	1.9
1.48	Mud Island Rd.	3.99	Harvester Ln.	1.74	45	2	4-Ln+TL	9,000	A	0.21	35.5	2.9	12,400	A	0.29	35.2	3.0
3.99	Harvester Ln.	3.38	SR-3/US-51	0.61	40		4-Ln+TL	9,000	B	0.21	32.3	1.1	12,400	B	0.29	32.1	1.1
Σ =				4.60				Avg=		0.31	Σ =	8.8	Avg=		0.40	Σ =	8.9
N. 3rd Street (N. 2nd Street Build Alternative Corridor)																	
12.43	I-40	12.67	Auction Ave.	0.24	35	4	2-Ln (1-way)	9,800	A	0.68	32.8	0.4	12,000	A	0.83	32.2	0.4
12.67	Auction Ave.	12.81	Mill Ave.	0.14	35		2-Ln (1-way)	9,800	A	0.68	32.8	0.3	12,000	A	0.83	32.2	0.3
12.81	Mill Ave.	13.18	Chelsea Ave.	0.37	35		2-Ln (1-way)	9,800	A	0.68	32.8	0.7	12,000	A	0.83	32.2	0.7
Σ =				0.75				Avg=		0.68	Σ =	1.4	Avg=		0.83	Σ =	1.4

Notes: The corridor was analyzed with HCS+ Arterials Planning Analysis

N. 2nd St. and N. 3rd St. from I-40 to Chelsea Ave. currently have 3 signals each (N. Jackson Ave, Shadyac Ave., and Auction Ave.) and 1 stop controlled intersection (Chelsea Ave). For the HCS+ Analysis, the stop controlled intersections were included as signals in the future years, and Mud Island Road is included for a signal for a total of 5 signals. Whitney Ave. at SR-3 is currently signalized, for 2 signals between Mud Island Rd. (prop) and SR-3 (exist).

The speed limit is estimated to be improved from 35 mph to 40 mph between Chelsea Ave. & Marble Ave. and Harvester Ln. and SR 3 with the proposed improvements.

Mud Island Rd. to Harvester Ln. log miles do not add to the shown distance due to the change in route designation. The distance shown is correct.

N. 2nd Street

Average Speed:	31.2	Average Speed:	30.9
Avg. Post. Spd.:	41.1	Avg. Post. Spd.:	41.1
% Spd vs Post.:	76%	% Spd vs Post.:	75%

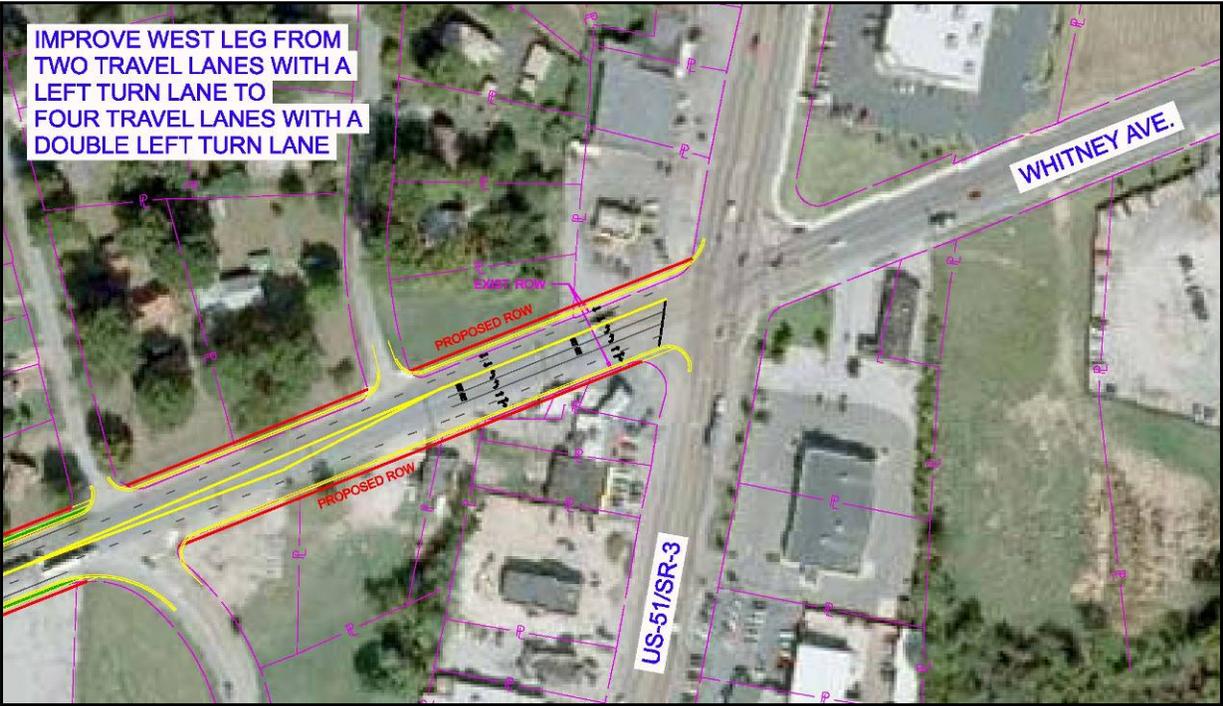
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Build Alternative – SR-3/US-51 at Whitney Avenue/North Second Street



As part of the Build Alternative, the west leg of the existing intersection between SR-3/US-51 and Whitney Avenue will be improved. US-51/SR-3 at the intersection with Whitney Avenue consists of a five lane cross section, with two travel lanes in each direction and a center two way left turn lane. The Southbound US-51/SR-3 approach to the intersection with Whitney Avenue also includes a right turn lane. Whitney Avenue east of the intersection is a five lane cross section with two travel lanes in each direction and a center two way left turn lane. Whitney Avenue west of the intersection is currently a basic two lane cross section. A left turn lane is included along existing Eastbound Whitney Avenue at the approach to

US-51/SR-3. The existing departing lanes of the west leg of the intersection accommodate the two lane eastbound approach of Whitney Avenue, and then taper to one travel lane. With the Build Alternative, the west leg of the intersection will be improved from the existing two travel lanes to four travel lanes. A double left turn lane will be included in the improvements to accommodate the projected high turning volumes.



The Design Hourly Volume turning movement projection calculations are provided in the “*Traffic Data for North Second Street Improvements*” report on file in the TDOT Environmental Division Office in Nashville, TN. As seen in **Table 1.5: US-51/SR-3 at Whitney Avenue/N. Second Street LOS**, the operations of the intersection are improved with the Build Alternative. The Build Alternative saves up to 18 seconds per vehicle of peak hour delay time. The quality of

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service was assessed utilizing the methodology outlined in the *Highway Capacity Manual 2000* (HCM) *Signalized Intersections* Chapter. The Level-of-Service (LOS) Calculations were performed with the Synchro 7 Software package and can be found in the “*Traffic Data for North Second Street Improvements*” report on file in the TDOT Environmental Division Office in Nashville, TN.

TABLE 1.5: US-51/SR-3 AT WHITNEY AVENUE/NORTH SECOND STREET LOS

Time Period	No Build Alternative			Build Alternative		
	N. 2nd St./Whitney Ave. at SR-3			N. 2nd St./Whitney Ave. at SR-3		
	LOS	v/c	Delay (s/veh)	LOS	v/c	Delay (s/veh)
2015 AM	D	1.03	36.1	C	0.85	29.6
2015 PM	D	0.96	37.1	C	0.86	29.6
2035 AM	D	1.00	48.5	D	1.05	36.8
2035 PM	E	1.04	60.4	D	0.89	42.9

1.4.6 Safety Needs

Vehicular Crash Data



A crash analysis was developed for North Second Street, North Third Street, and Whitney Avenue within the study corridor. These routes will be utilized in the Build Alternative. The crash data for the years 2004-2006 was analyzed. **Table 1.6: Crash Rates** provides the crash rate data for these routes. The units in the crash rate numbers are crashes per million vehicle-miles traveled. The statewide averages were developed according to the roadway type and cross section. The statewide average values are the average crash rates for the years 2003-2005, which were the most current at the time this report

was issued. The critical crash rate is an indication of how the actual crash rate differs from the statewide crash rate. It is used in this application primarily to calculate the A/C ratio, which is the actual crash rate divided by the critical crash rate. The ratio is a measure of the significance of the safety issue along the routes. An A/C ratio over one implies safety deficiencies. The raw crash data is provided in the “*Traffic Data for North Second Street Improvements*” report on file in the TDOT Environmental Division Office in Nashville, TN.

As seen in the “Total Crash Rate Data” of **Table 1.6**, the A/C ratio is greater than one for nearly every segment of the existing routes to be utilized in the Build Alternative. The data demonstrates that the less safe segments to be utilized in the Build Alternative are concentrated along North Second and North Third Streets between I-40 and

The proposed improvements will improve the safety of the North Second Street Corridor. The segment being converted to one-way travel can expect a 10-50% reduction in crashes. The remainder of the corridor can expect a 39% reduction in crashes due to the construction of a proposed median and/or improved roadway geometry and cross section.

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Auction Avenue. These streets will be converted from two-way travel to a one-way pair. The ITE “Traffic Safety Toolbox” (Institute of Transportation Engineers, 1999) reports that studies have shown a 10 to 50 percent reduction in total crashes after conversion of a two-way street to one-way operation.

The segments of North Second Street and Whitney Avenue that will remain two-way streets in the Build Alternative will also experience an improvement in safety due to the proposed median. The statewide average crash rate for two lane functionally classified urban local roads is 3.14 crashes per million vehicle miles travelled. The statewide average crash rate for four lane divided facilities is 2.26 crashes per million vehicle miles travelled. Therefore, it is estimated that the proposed improvements, which include a median, will reduce crashes by 39% along the two-way segments.

Table 1.7: Crash Severity Data demonstrates that the crashes along the routes to be utilized in the Build Alternative are generally not severe. Seventy-seven percent of the crashes were property damage only. There were no fatality crashes. The remaining twenty three percent of the crashes were injury crashes. Two percent of the crashes were incapacitating injury crashes.

Table 1.8: Crash Type Data demonstrates that the majority of crashes along the routes to be utilized in the Build Alternative are either rear end crashes (25%) or angle crashes (37%). Rear end crashes may indicate congestion as a cause of many crashes due to stop and go traffic. Angle crashes are right angle crashes, or those similar in nature. Angle crashes are often associated with large total intersection volume and may also indicate congestion as a cause. Sixteen percent (16%) of the crashes along the North Second Street corridor involved only one vehicle. The majority of these crashes occurred along the rural segment of the roadway associated with the Wolf River Floodplain, between the Wolf River and Harvester Lane.

Mill Avenue intersects the study corridor just north of Auction Avenue. The City has recently relocated the stop sign placement along Mill Avenue between North Second Street and US-51/SR-3/Thomas Street to improve traffic circulation. The stop signs previously were located to allow free flow east-west travel along Mill Avenue. The stop signs have recently been relocated to allow free flow north-south travel along North Second, North Third, North Fourth, North Fifth, North Sixth, and North Seventh Streets. Vehicles traveling along Mill Avenue must now stop at each of these cross streets. Local stakeholders noted crashes have increased along Mill Avenue due to driver’s unfamiliarity with the new stop sign configuration. The crash data along North Second and North Third Streets does not indicate a substantial safety concern at either of these intersections along the study corridor with Mill Avenue. However, the crash data utilized in this study was collected previous to the stop sign relocation. Therefore, the safety of Mill Avenue should be monitored by local officials due to the concern noted by the local stakeholder’s.



Bicyclists and Pedestrian Safety

Sidewalks are not present along all urbanized segments of the existing North Second Street Corridor. The Portions of the Memphis Bike Tour and Mississippi River Bicycle Trails are located along the route, despite the narrow cross section and lack of bicycle friendly facilities. The trail segments along North Second Street are currently recommended for only highly experienced bike riders. TDOT's bicycle and pedestrian policy, as stated in the *Bicycle and Pedestrian Element of the Tennessee Long-Range Transportation Plan*, includes provisions for bicycles and pedestrians in new construction and the reconstruction of roadway projects through design features appropriate for the context and function of the transportation facility. The improvement project will provide safer bicycle and pedestrian facilities.

The segments of North Second Street and North Third Street that will be converted from two-way travel to a one-way pair will experience improved pedestrian safety. Several studies have shown that converting from two-way to one-way streets can substantially reduce pedestrian collisions by simplifying the task of crossing a street. This is particularly true if the one-way street conversion does not result in increased vehicle speeds.

The segments of North Second Street and Whitney Avenue that will remain two-way streets in the Build Alternative will also experience an improvement in pedestrian safety due to the proposed raised median. FHWA's Office of Safety reports that providing raised medians or pedestrian refuge areas at pedestrian crossings at marked crosswalks has demonstrated a 46% reduction in pedestrian crashes. Installing such raised channelization on approaches to multi-lane intersections has been shown to be particularly effective. At unmarked crosswalk locations, medians have demonstrated a 39% reduction in pedestrian crashes. Medians are especially important in areas where pedestrians access a transit stop or other clear origin/destinations across from each other.

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TABLE 1.6: CRASH RATES

Total Crash Rate Data

Location	Start L.M.	Street	End L.M.	Street	Length (Miles)	Cross Section	2005 AADT	Crashes (2004-2006)	Crash Rate	Statewide Average	Critical Rate	A/C Ratio
N. 2nd St.	0.84	I-40	0.58	Auction Ave.	0.26	2-Ln+TL	4,850	23	16.66	2.65	6.24	2.67
	0.58	Auction Ave.	0.07	Chelsea Ave.	0.51	2-Ln	3,930	25	11.39	2.34	4.97	2.29
	0.00	Chelsea	2.41	Whitney Ave.	2.41	2-Ln	3,400	36	4.01	2.34	3.58	1.12
Whitney Ave.	4.80	N. 2nd St.	3.38	SR-3/US-51	1.42	2-Ln	6,315	39	3.97	2.34	3.53	1.13
N. 3rd St.	12.43	I-40	12.67	Auction Ave.	0.24	4-Ln+TL	8,660	42	18.23	2.65	5.38	3.39
	12.67	Auction Ave.	12.81	Mill Ave.	0.14	4-Ln	8,660	8	5.65	3.27	7.29	0.77
	12.81	Mill Ave.	13.18	Chelsea Ave.	0.37	4-Ln	2,490	20	19.83	3.27	7.95	2.49

TABLE 1.7: CRASH SEVERITY

Crash Severity Data

Location	Start L.M.	Street	End L.M.	Street	Length (Miles)	Crashes (2004-2006)	Fatal Crashes	Total Killed	Incapacitating Injury Crashes	Total Incapacitating Injuries	Other Injury Crashes	Total Other Injuries	Property Damage Only Crashes	Severity Index
N. 2nd St.	0.84	I-40	0.07	Chelsea Ave.	0.77	48	0	0	2	5	8	15	38	0.25
	0.00	Chelsea	2.41	Whitney Ave.	2.41	36	0	0	1	1	8	9	27	0.28
Whitney Ave.	4.80	N. 2nd St.	3.38	SR-3/US-51	1.42	39	0	0	1	1	9	10	29	0.28
N. 3rd St.	12.43	I-40	13.18	Chelsea Ave.	0.75	70	0	0	0	0	15	23	55	0.21
Totals:						193	0	0	4	7	40	57	149	
Percentages:							0%		2%		21%		77%	

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TABLE 1.8: CRASH TYPE

Crash Type Data

Location	Start L.M.	Street	End L.M.	Street	Length (Miles)	Crashes (2004-2006)	Rear End	Head On	No Collision with Vehicle	Angle	Sideswipe - Same Direction	Sideswipe - Opposite Direction	Unknown
N. 2nd St.	0.84	I-40	0.07	Chelsea Ave.	0.77	48	10	5	4	19	6	2	2
	0.00	Chelsea	2.41	Whitney Ave.	2.41	36	12	0	11	8	2	0	3
Whitney Ave.	4.80	N. 2nd St.	3.38	SR-3/US-51	1.42	39	7	1	11	11	5	3	1
N. 3rd St.	12.43	I-40	13.18	Chelsea Ave.	0.75	70	19	0	5	34	12	0	0
Totals:						193	48	6	31	72	25	5	6
Percentages:							25%	3%	16%	37%	13%	3%	3%

1.5 CONSISTENCY WITH EXISTING TRANSPORTATION PLANS

1.5.1 Consistency with the LRTP and TIP



This project is included in the *Memphis Urban Area 2030 Long Range Transportation Plan (LRTP)*, dated March 2008, that was prepared by the Memphis and Shelby County Department of Regional Services (MPO). The LRTP addresses the future transportation needs within the MPO boundaries. North Second Street is listed as a Vision Project in the LRTP. The definition of a Vision Project is not provided in the LRTP. The project is listed on pages 6-26 and 6-29 of the LRTP as follows:

Project Type	Facility	Extents
Widen Existing	Second Street	Cedar Avenue to Whitney Avenue
Widen Existing	Whitney Avenue	Second Street to Thomas Street

The proposed roadway design elements included in the project are consistent with the “complete streets” concept discussed in Chapter 7 of the LRTP. “Complete streets” is a term used nationally to describe the transformation of vehicle dominated thoroughfares in urban and suburban areas into community oriented streets that safely and conveniently accommodate all modes of travel, not just motorists. The “complete streets” concept attempts to achieve a balanced design so that traffic demands do not overshadow the need to walk, bicycle, and ride transit safely, efficiently, and comfortably.

The project is also included in the MPO's *2011-2014 Transportation Improvement Program (TIP)*, adopted September 23, 2010. The project is listed as follows:

Tip # STP-M-2000-09	TDOT PIN # 101968	Horizon Year E+C	Lead Agency Memphis
County Shelby	Length 2.5 miles	LRTP # 02540002-5	Conformity Non-Exempt
Project Name North Second Street		Total Cost \$55,528,100	
Termini or Intersection I-40 to US 51			
Project Description: The project is to improve the North Second Street corridor to a parkway design including right-of-way acquisition, reconstruction of sidewalks, bike route, landscaping, and utility relocation. Third Street will be converted to a one-way street with three northbound lanes from I-40 to Auction Avenue, and two northbound lanes from Auction Avenue to Henry Avenue. Second Street will be converted to a one-way street with three southbound lanes from I-40 to Auction Avenue and two southbound lanes from Auction Avenue to Henry Avenue. North Second Street will be a four lane divided roadway from Henry Avenue to Harvester Lane. Whitney Ave from Harvester Lane to US 51 will be reconstructed as a four lane undivided roadway with left turn lanes as necessary. This project will be undertaken in phases as funding allows. Phase one will be from I-40 to Cedar Avenue as approved in TDOT contract #080029.			

The proposed project is in compliance with Federal guidelines for consistency.

1.5.1.1 Proposed Interstate 69

The proposed Interstate 69 project is located within the study corridor and is also included in the *Memphis Urban Area 2030 Long Range Transportation Plan* (LRTP). Proposed Interstate 69 is a separate and independent project and has its own separate funding and environmental document. A segment of proposed Interstate 69 will intersect the North Second Street Corridor in the north floodplain of the Wolf River. The proposed Interstate 69 segment will extend east across the Wolf River Floodplain and will interchange with US 51/SR 300. Interstate 69 is proposed to be grade separated over North Second Street Corridor, with no interchange access to North Second Street. The approximate location of Proposed Interstate 69 is sketched in **Figure 1.4**, Sheet 6 of 8.

1.5.2 Consistency with other Plans

In addition to the LRTP and TIP, the project study area is located within several community plans' areas. These plans are briefly discussed in **Appendix D**. The plans were prepared for the Memphis and Shelby County Division of Planning and Development (DPD) by the Memphis and Shelby County Community Redevelopment Agency (CRA) or the Center City Commission (CCC). In addition to these local government planning efforts, the *St. Jude Children's Research Hospital Master Site and Facilities Plan 2004-2020+* and the Riverfront Development Corporation's (RDC) *Memphis Riverfront Master Plan* were reviewed. Each of the plans has some transportation improvement element. Although the transportation recommendations in each of the plans vary, the common theme is for a transportation system that improves circulation in Downtown Memphis while promoting pedestrian activities and complementing a dense urban environment. These themes are consistent with the proposed improvements.

1.6 SUMMARY

Based on the above discussion and traffic projections, it has been determined that there is a need for the proposed project. This highway section is a link in the overall improvement of North Second Street from I-40 north to the US 51/SR 3 intersection with Whitney Avenue in the Frayser Community. The project has logical termini, is of sufficient length to address environmental matters on a broad scope, has independent utility, and will not restrict consideration of alternatives for other foreseeable transportation improvements.

Chapter 2: Alternatives



2.0 ALTERNATIVES

This section of the Draft Environmental Impact Statement (DEIS) describes the alternatives under consideration for the 4.6 mile long North Second Street Corridor improvement project. The No Build and Build Alternatives are described in detail. The alternatives that were considered but eliminated from further study are also described and the reason for their elimination are summarized. In selecting reasonable alternatives to meet the purpose and need of the project, TDOT consulted with local, state and federal officials and agencies, identified environmentally sensitive areas and held several public involvement meetings in the project corridor. One Build Alternative and the No-Build Alternative are currently under consideration for this project. The final selection of the preferred alternative will not be made until after the impacts of the No Build and Build Alternative, comments on the Draft EIS, and the comments from the NEPA Public Hearing have been fully evaluated.

2.1 BACKGROUND IN DETERMINING REASONABLE ALTERNATIVES TO INCLUDE IN THE DRAFT ENVIRONMENTAL IMPACT STATEMENT

A transportation improvement project along the North Second Street Corridor has been a part of the Long Range Transportation Plan (LRTP) for the Memphis Urbanized Area since 1969.

North Second Street is predominantly a two-lane roadway, although some sections near the downtown area are multi-lane. The street serves commercial, industrial and adjacent residential areas. There are several at-grade railroad crossings along the roadway. There are poor sight angles and distances from driveways along North Second Street and open drainage on some segments of the roadway.

The primary objectives of the proposed project are to improve accessibility into the downtown area and support economic development. Improving the infrastructure in the project corridor will serve as an economic development tool for the area of Memphis bounded on the west by the Mississippi River, on the east by Thomas Street, on the north by the Frayser Community, and to the south by downtown Memphis. Improving the infrastructure along the North Second Street project corridor will improve accessibility between Frayser, North Memphis, and the central business district. Infrastructure improvements will also relieve some of the existing traffic congestion on Interstate 40 between the Midtown Interchange north to State Route 300, and along Danny Thomas Boulevard (US 51/SR 3). Creating continuity with the existing North Second/North Third Street one-way pair south of the study area will benefit traffic operations. The improvements proposed in this document will provide a continuous one-way pair that will extend from E GE Patterson Avenue south of I-40 through the heart of Downtown Memphis to Chelsea Avenue north of I-40. This will further improve system linkage and improve traffic operations throughout Downtown Memphis, including the North Second Street corridor.

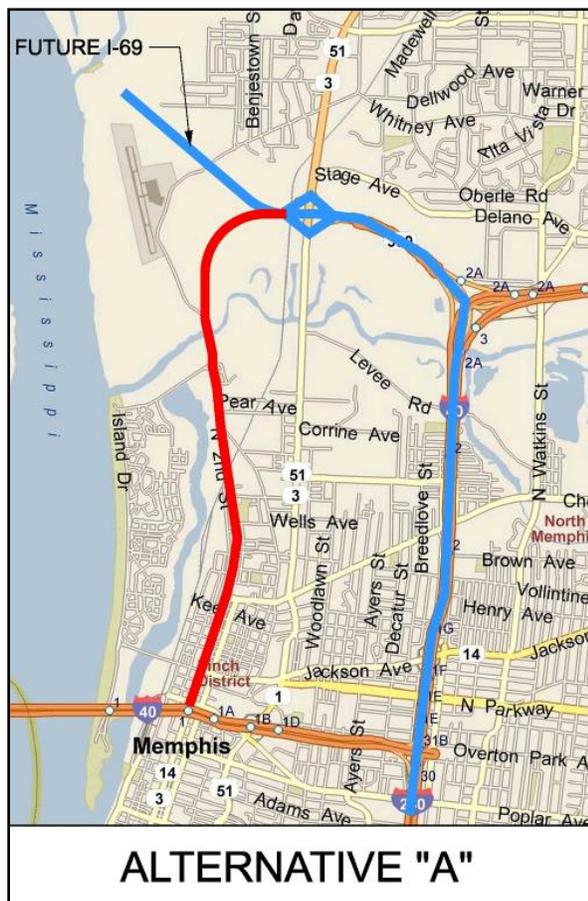
In the very early planning stages of this project (1990), only one Build Alternative (Alternative A) was identified for the North Second Street improvement project. Alternative A proposed reconstructing North Second Street from a two-lane roadway to a six-lane facility. It extended along existing North Second Street from I-40 near the downtown area north to the Wolf River Bridge. After crossing the river, Alternative A extended across the Wolf River floodplain on a new alignment and connected to the existing US 51/SR-300 interchange near Frayser. The cross-section from I-40 to Luke Avenue, near Mud Island Road, consisted of six twelve foot wide traffic lanes with a 34 foot wide raised median and sidewalks on either side of the roadway within a 160 foot wide right-of-way. The cross-section changed at Luke Avenue to six twelve

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foot wide traffic lanes with a 22 foot wide median with a median barrier within a 250 foot wide right-of-way and continued to the end of the project at the US 51/SR-300 Interchange. Alternative A, while consistent with the recommendations in the Major Route Plan for the Memphis Urbanized area, would require 100 feet of new right-of-way through a developed portion of North Second Street from Auction Avenue to the Wolf River, resulting in substantial environmental impacts. It would require taking property from the Pinch and Greenlaw Historic Districts; both of which are listed properties in the National Register of Historic Places. It would also impact the Jacob Burkle House, Port of Memphis Grain Elevator, and the Memphis, Wolf River and Nonconnah Creek Flood Control Project, which are all eligible for listing in the National Register of Historic Places. Alternative A would have resulted in an "Adverse Effect" to historic properties and would require additional studies to comply with the provision of Section 106 of the National Historic Preservation Act of 1966. It also involved the taking of land from Washington Park and would have required a separate evaluation and mitigation to comply with Section 4(f) of the U.S. Department of Transportation Act of 1966.

The goal of **Section 106** is to identify historic properties potentially affected by a Federal undertaking, assess the undertakings effects, and seek ways to avoid, minimize, or mitigate any adverse effects on historic properties.

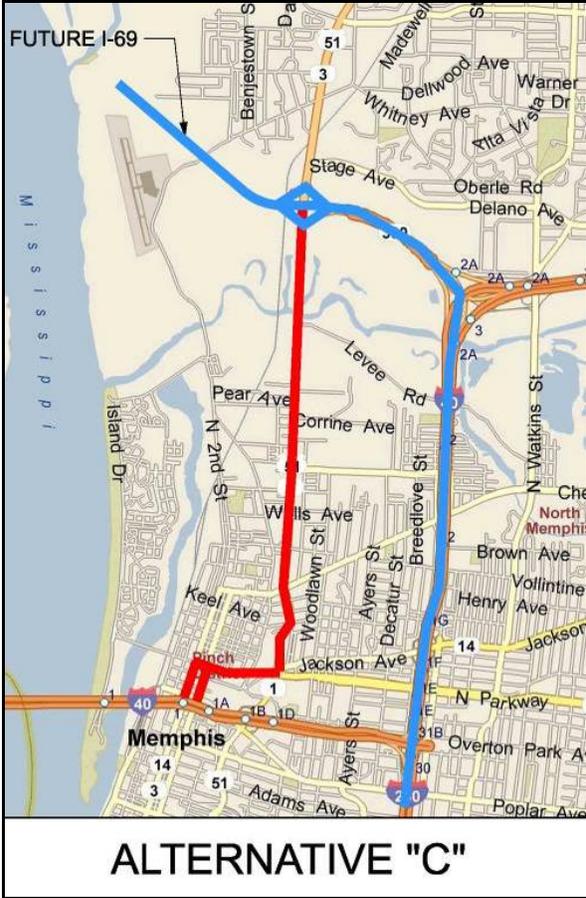
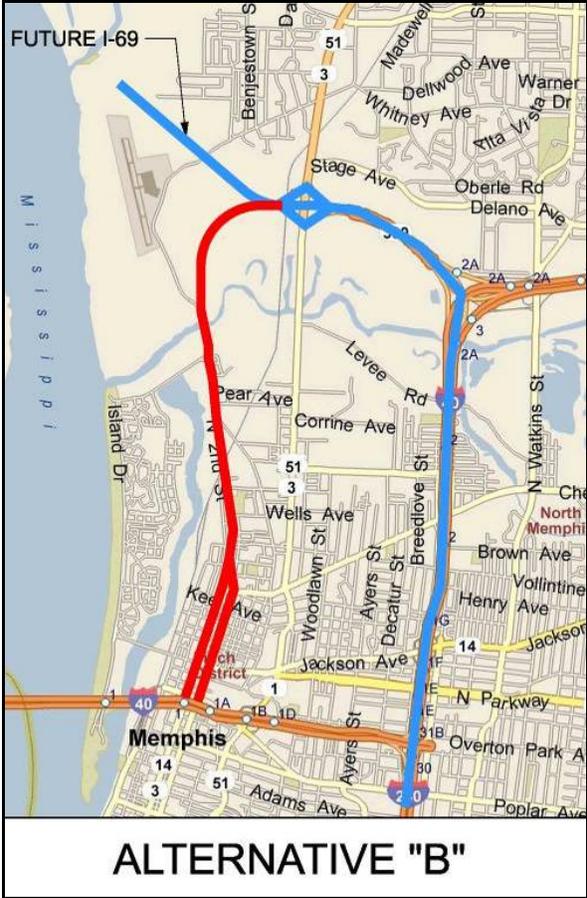
The purpose of **Section 4(f)** is to preserve publicly owned land from a public park, recreation area, wildlife or waterfowl refuge, or significant historic site from being used for a transportation project. It requires consideration of avoidance or mitigation of damages.



Due to the large number of family displacements, the impacts to historic properties on either side of North Second Street, and the impacts to Washington Park, it was recommended that other feasible and prudent alternatives be identified. Alternative A did not provide continuity with the existing North Second/North Third Street one-way pair south of the study area and was not carried forward for further study.

In a subsequent study in 2000, two additional six lane alternatives were suggested (Alternative B and C).

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Alternative B began at I-40 and involved converting North Second Street and North Third Street from two-way streets into a one-way pair extending from I-40 to Henry Street. The proposed one-way pair would connect to the existing one-way pair south of the study area, creating a continuous link in the transportation system. Each street was proposed to have three traffic lanes. North Second Street would be one-way south into the downtown area and North Third would be one-way north. In the vicinity of Henry Street, the one-way pair would transition into a two-way roadway separated by a raised median and continue to the Wolf River. After crossing the river, it followed the same alignment as previously proposed Alternative A to the end of the project at the US 51/SR-300 interchange. The cross-section on this new alignment across the floodplain consisted of three-traffic lanes in each direction separated by a 34 foot wide median and a minimum right-of-way width of 250 feet. Alternative B avoided impacting the Pinch and Greenlaw Historic Districts south of Chelsea Avenue. However, it had the same impacts as Alternative A to the Jacob Burkle House, Port of Memphis Grain Elevator, the Memphis Wolf River and Nonconnah Creek Flood Control Project, and Washington Park. Alternative B displaced 29 families and 24 businesses. Alternative B was not carried forward for the same reasons as Alternative A, which is the number of houses and businesses displaced and impacts to historical properties.

Alternative C began at I-40 and followed the same one-way pair alignment as Alternative B along North Second and North Third Streets to Auction Avenue. It had the same cross-section and right-of-way requirements. Alternative C extended east along Auction Avenue (SR-14) to its intersection with US 51 (Danny Thomas Boulevard). Alternative C then proceeded north along Danny Thomas Boulevard to Looney Avenue. At this point the alignment was shifted to

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eliminate a sharp curve on the existing roadway and to improve the alignment of the Chelsea Avenue/Danny Thomas Boulevard intersection. Alternative C extended north from this intersection along the existing roadway to the US 51/SR-300 Interchange. Alternative C would have widened Danny Thomas Boulevard to a six-lane divided facility and would require additional right-of-way through a highly developed area.

Alternative C passed through the Greenlaw Additions Historic District, the Wills-Arrington Historic District, two properties listed in the National Register of historic places, and would require the acquisition of several contributing properties. The widening would have required 27 residential and 78 business displacements. Alternative C was eliminated because it was outside the North Second Street corridor and does not meet the purpose and need of improving North Second Street and providing a viable secondary access into downtown Memphis.

These three Alternatives (A, B & C) were presented at early public involvement meetings and also at the December 17, 2001 Scoping Meeting with Federal and State resource and permitting agencies, local officials and local developers. (These meeting are discussed in **Chapter 6.**)

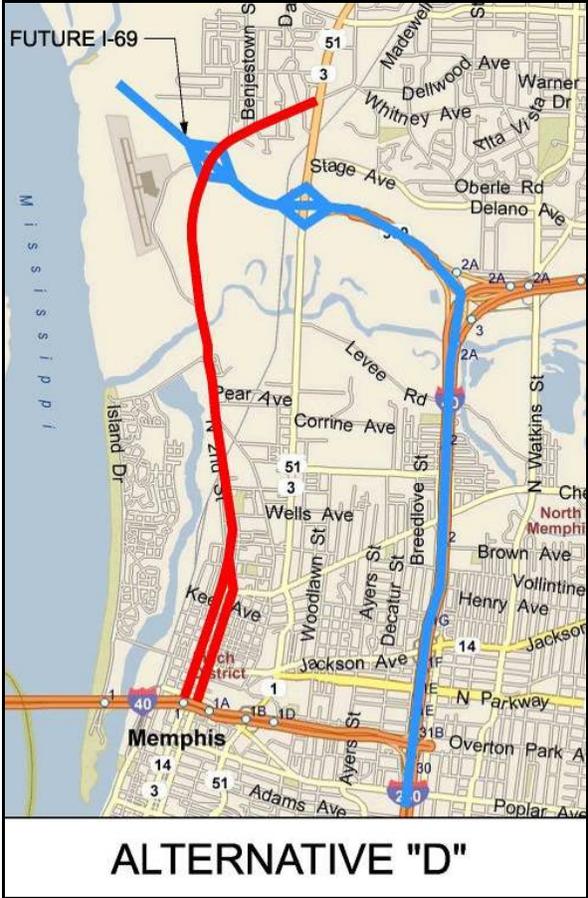
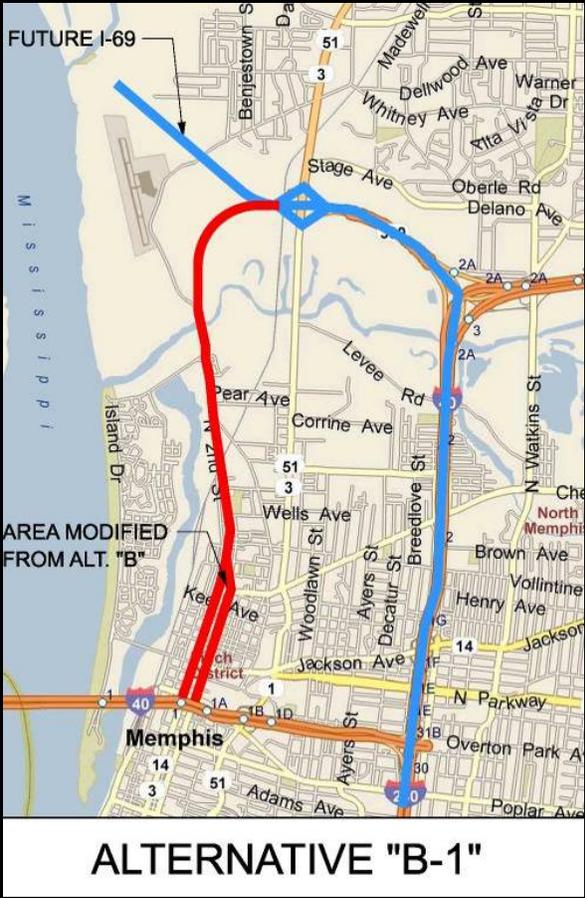
In the further evaluation of reasonable alternatives, Alternative B was modified to avoid historic properties and better fit the existing street grid system. It was renamed Alternative B-1.

Under Alternative B-1, the transition of North Second and North Third Street was extended north of Henry Street and slightly realigned to avoid impacting the Jacob Burkle historic property and minimize the impact to Washington Park. The transition area was also selected to minimize residential displacement. Alternative B-1 displaced 23 families and 24 businesses.

Alternative B-1 was not carried forward for further study for the same reasons as Alternatives A and B. While it avoided some historic properties and avoided Washington Park, it still had an adverse effect on the Port of Memphis Grain Elevator and the Memphis, Wolf River and Nonconnah Creek Flood Control Project, as well as numerous residential and business displacements.

After further coordination between the North Second Street and Interstate 69 projects, it was determined that the termination point for Alternatives A, B, and B-1 would not be feasible due to the obvious design and traffic operational difficulties related to connecting both I-69 and North Second Street to the US 51/SR-300 Interchange.

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In order to accommodate the proposed Interstate 69 project, and still meet the primary objectives of the proposed North Second Street improvement project, Alternative D was suggested. Alternative D would interchange with proposed I-69 west of Harvester Lane and then follow I-69 to the end of the project at the US 51/SR 300 Interchange. Alternative D would also connect to Whitney Avenue near the southeast corner of the Old International Harvester Building, near Harvester Lane.

Alternative D is similar to Alternative B as previously described. It has the same cross-section as Alternative B, the same displacement, and impacts to historical properties. The defining feature of Alternative D is an alternative interchange to I-69 west of the existing US 51/SR-300 interchange and the connection to Whitney Avenue.

In another subsequent study in 2007, it was determined that an I-69 interchange with North Second Street west of the existing US 51/SR-300 interchange was not feasible due to the short distance between the interchanges and the inherent traffic operations difficulties (length of ramps, merging traffic, and weaving patterns).

The elimination of the proposed I-69 interchange with North Second Street resulted in the modification of Alternative D and the extension of the project limits. Alternative D was proposed to cross I-69 south of the Old International Harvester Building and terminate at Harvester Lane. Instead of an interchange, a separation structure (bridge) was suggested to carry North Second Street either over or under I-69, depending on the best design scenario to accommodate both projects. After crossing I-69, Alternative D was extended along Whitney Avenue to the

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intersection of US 51/SR-3 and Whitney Avenue. The extension along Whitney Avenue was suggested to provide route continuity and meet the purpose and need of the project.

Since the development of these earlier alternatives, the purpose and need for the project has grown. Several hundred new homes have been constructed in the area, as well as new apartments and businesses. St. Jude Children's Research Hospital has expanded their facilities and increased their employment. The City, with U.S. Department of Housing and Urban Development (HUD) funding has rebuilt Hurt Village, an old neighborhood complex, and restored another aging residential complex, Lauderdale Courts. Uptown Memphis, a local private development group working with the City of Memphis, is redeveloping the neighborhood along North Second and North Third Streets to provide a sustainable pedestrian friendly urban neighborhood. The City of Memphis and private developers have spent millions of dollars improving the infrastructure and rebuilding and restoring this segment of Memphis. The improvement of North Second Street is part of the urban renewal effort.

The original concept for North Second Street was to build a six-lane facility. The objective was to construct a viable secondary access into the downtown area and support the ongoing residential and commercial development and to stimulate economic development. In order to accommodate the recent developments along this corridor, provide on street parking, sidewalks and bicycle lanes, maintain the pedestrian friendly urban environment that is being promoted by the Uptown Memphis Development group, and also to avoid some major environmental impacts as well as minimize family displacements, the concept has been modified to a predominantly four-lane facility. The Build Alternative described in this document follows the same alignment as the previously evaluated Alternatives A, B, B-1 and D south of the river utilizing a narrower right-of-way to reduce impacts.

Improving the existing segment of North Second/Whitney Avenue north of the Wolf River Bridge to Harvester Lane was considered. However, because of the poor horizontal and vertical alignment along this segment it was not determined to be a feasible alternative. There is a sharp horizontal curve at the north end of the existing bridge and another sharp curve just south of the Old Harvester Plant. Widening the existing roadway would not eliminate these sharp horizontal curves in the alignment or improve the poor vertical alignment present along this segment of the corridor. The roadway along this segment is a narrow two-lane facility with no shoulders. Some sections of the existing roadway have guardrail on both sides of the roadway, along with poor sight distance. Widening of the existing roadway on the west side would encroach upon the Dewitt Spain Airport and the sludge fields associated with the wastewater treatment plant. Widening on the east side would require several hundred feet of rechanneling a blue line stream, several hundred feet of rechanneling a wet weather conveyance, completely fill three ponds, and encroach into the bottom land wetland on the east side of the roadway. Traffic would have to be maintained on the existing road during construction to serve the airport, wastewater treatment plant, and the yeast plant all located on the west side of the roadway. Maintaining traffic while improving the existing alignment to meet current horizontal and vertical design criteria would be difficult. In order to widen the roadway from two-lanes to four-lanes, provide for pedestrians and bicycles, meet modern design criteria, and to meet the purpose and need for the project, a new location alignment parallel to the existing roadway is needed from north of the Wolf River Bridge to Harvester Lane.

Based on early public involvement meetings and the on-going redevelopment in the North Second Street Corridor the proposed Build Alternative described in **Section 2.3 Build Alternative** is considered to be the best solution to the transportation need in the North Second Street Corridor.

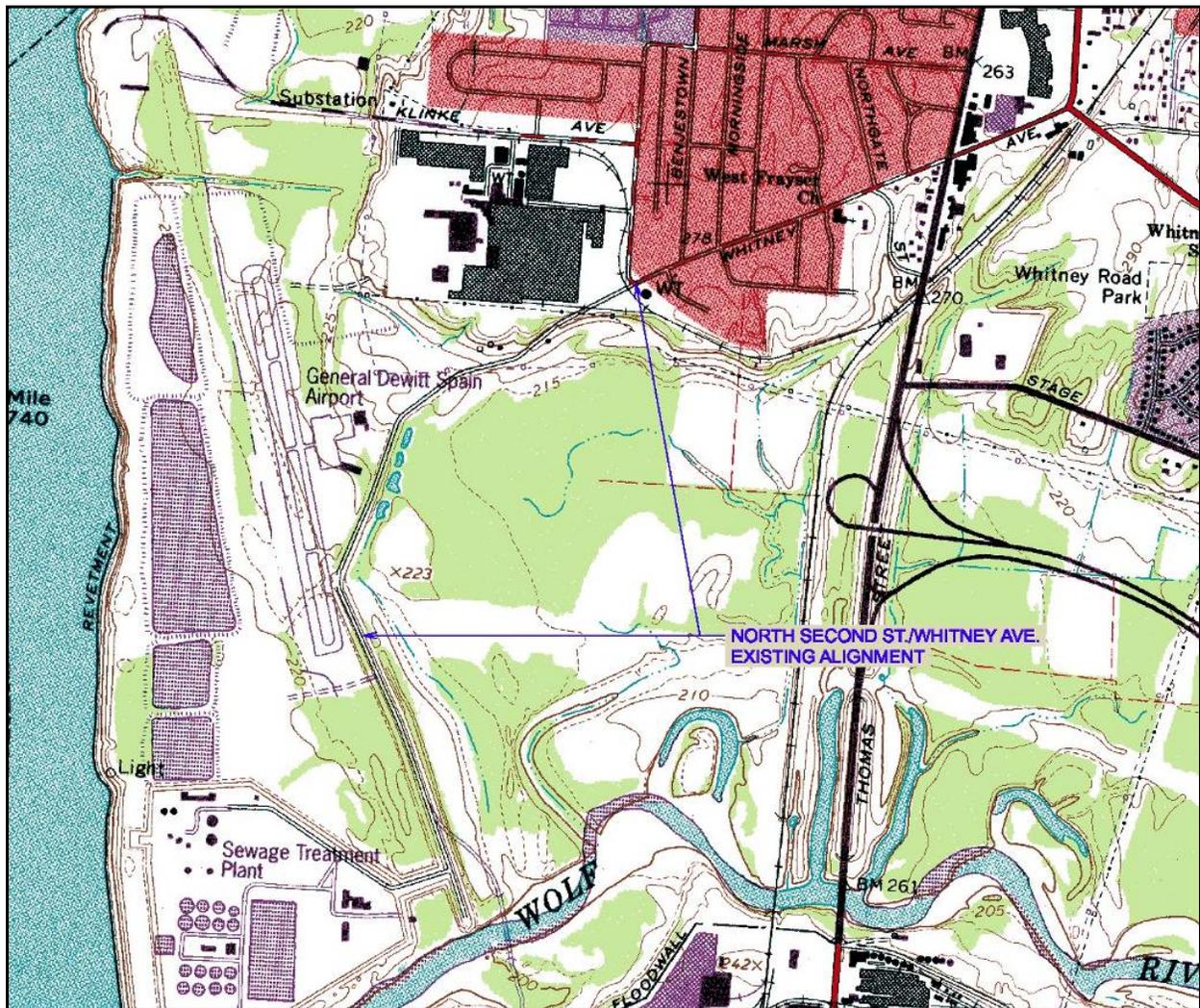
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Whitney Avenue Looking Southbound near
Harvester Lane



North Second Street Looking Northbound near
General DeWitt Spain Airport



2.2 NO BUILD ALTERNATIVE

The No-Build, or No Action, Alternative makes no improvements to North Second Street other than scheduled maintenance activities, but does include other planned roadway improvements in the area. There are several advantages to the No Build Alternative. One is that present travel patterns would not be temporarily disrupted by the construction of this project. Noise and construction impacts would not occur. There would be no impacts to wetlands, wildlife, cultural resources, or farmland. There would be no family or business relocations. The No Build Alternative would have no direct impacts on the environment.

There are, however, several disadvantages to the No Build Alternative. It would not improve access to the Central Business District for those areas north of downtown Memphis, it would not correct existing deficiencies along the route, it would not improve existing modal interrelationships, nor would it stimulate economic development or support the on-going revitalization of the North Memphis area. It would not provide any traffic relief to other congested roadways in the corridor. The No Build Alternative would not meet the purpose and need of the project.

The existing roadway characteristics are discussed in **Chapter 1**. How characteristics of the existing roadway address the purpose and need of the project are discussed below.

I-40 to Marble Avenue (North Second Street) & Chelsea Avenue (North Third Street)

The 1.43 mile long segment of North Second Street and 0.77 mile long segment of North Third Street have no known geometric deficiencies between I-40 and Marble Avenue/Chelsea Avenue. Sidewalks are present in this area to Washington Park. However, the existing segment provides poor system linkage with the CBD and does not have bike lanes. Improvements are needed to meet the changing social demands and economic development initiatives of the study corridor, as well as to improve modal interrelationships, meet the growing traffic demand, and provide a safer route to travel. The No Build Alternative will not provide the needed changes along this segment of North Second and North Third Streets.

North Second Street provides connectivity between areas north of Memphis, the Uptown Neighborhood, and Downtown. North Third Street only provides internal circulation within the Uptown Neighborhood due to dead ending at Chelsea Avenue. Yet North Second Street only has one travel lane in each direction while North Third Street has two lanes in each direction.

Marble Avenue to Harvester Lane

The 2.56 mile long segment of North Second Street/Whitney Avenue has geometric deficiencies between Marble Avenue and Harvester Lane, including narrow to no shoulders and sharp curves. Many sections have guardrail on both sides of the road, creating a narrow and undesirable roadway surface. Sidewalks are not present. The existing segment provides poor system linkage with the CBD and does not have bike lanes. Improvements are needed to meet the changing social demands and economic development initiatives of the study corridor, as well as to improve modal interrelationships, meet the growing traffic demand, and provide a safer route to travel. The No Build Alternative will not provide the needed changes along this segment of North Second Street.

North Second Street and North Third Streets are one-way south of the study area and bi-directional within the study area. This creates poor traffic circulation between the Uptown Neighborhood and Downtown.

Harvester Lane to US 51/SR 3

The 0.61 mile long segment of Whitney Avenue has no known geometric deficiencies between Harvester Lane and US 51/SR 3. Sidewalks are present in this area. However, the existing segment provides poor system linkage with the CBD and does not have bike lanes. Improvements are needed to meet the changing social demands and economic development initiatives of the study corridor, as well as to improve modal interrelationships, meet the growing traffic demand, and provide a safer route to travel. The No Build Alternative will not provide the needed changes along this segment of Whitney Avenue.

No Build Alternative Summary

The No Build Alternative will not meet the purpose and need of the project as it does not improve access to the Central Business District for those areas north of downtown Memphis, it would not correct existing deficiencies along the route, it would not improve existing modal interrelationships, nor would it stimulate economic development or support the on-going revitalization of the North Memphis area. It would not provide any traffic relief to other congested roadways in the corridor or improve route continuity with the one-way street network south of the study area.

2.3 BUILD ALTERNATIVE

The proposed Build Alternative begins at I-40 at the North Second Street Interchange and extends north across the Wolf River Floodplain and ends at the US 51/SR 3/Whitney Avenue Intersection. See **Figure 2.1 Build Alternative** for a map of the corridor.

The Build Alternative improvements include converting North Second and North Third Streets into a one-way pair, and constructing a four-lane roadway from south of Henry Street, across the Wolf River Floodplain, and ending at the US 51/SR 3/Whitney Avenue Intersection in Frayser.

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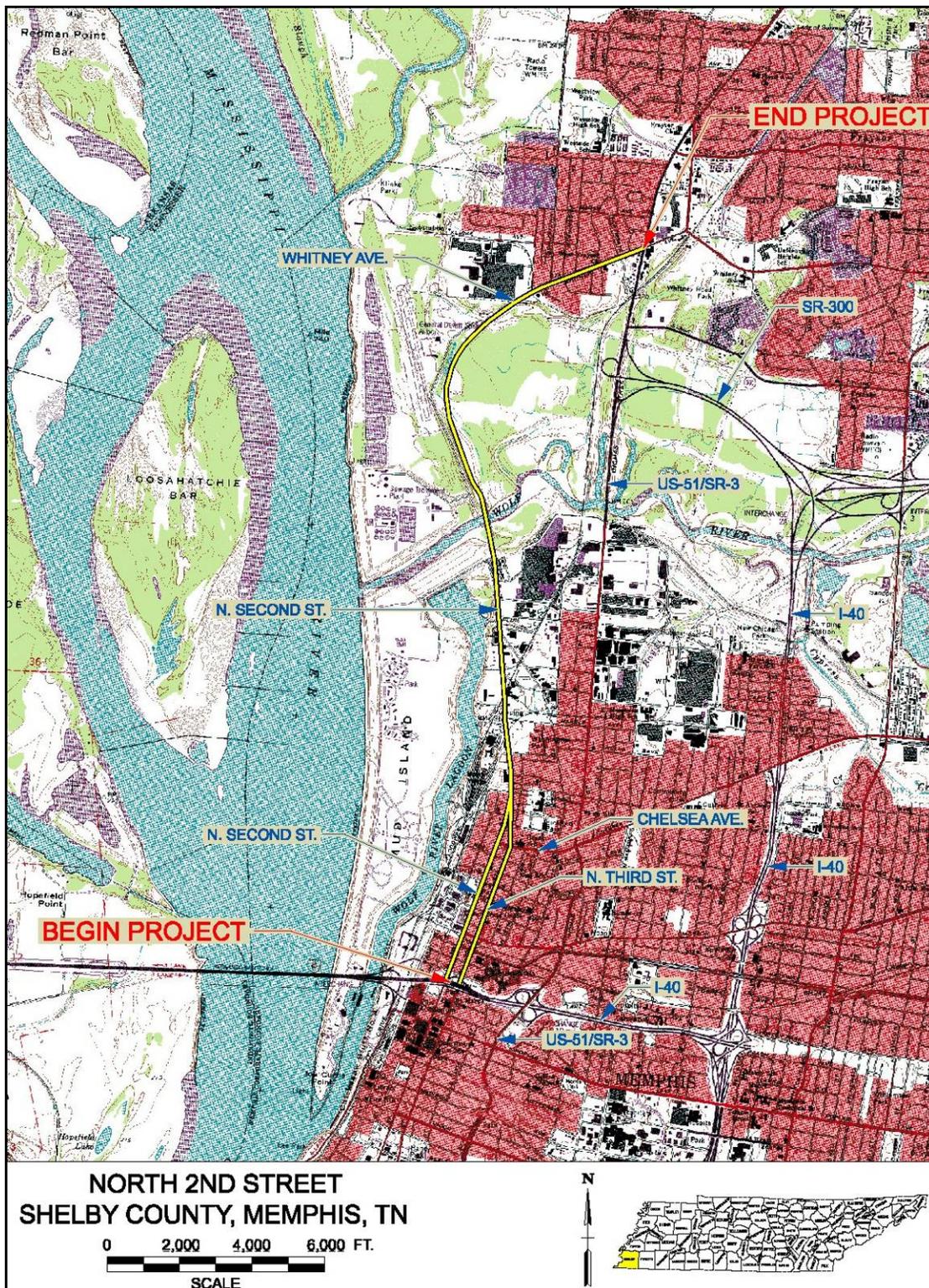


FIGURE 2.1: BUILD ALTERNATIVE

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Five different roadway cross-sections are being proposed for this project in order to meet the purpose and need of the project and to accommodate all of the new development, as well as the on-going redevelopment initiatives, while also reducing the adverse social, economic, and environmental impacts. A map of the locations where the cross sections change is provided in **Figure 2.2 Cross Section Legend**. This figure matches the discussion of the cross section segments beginning on page 68. Turn lanes will also be provided, where appropriate, for safety and operational benefits. Locations requiring turn lanes include a left turn lane from North Second Street northbound to Mud Island Road westbound and a double left turn lane from North Second Street/Whitney Avenue eastbound to US 51/SR 3. Medians will also be provided in many areas to improve access control for driveways and to improve safety.

Several intersections with North Second Street and side roads will be modified as part of the proposed improvements. These intersection modifications will improve access control along North Second Street and improve safety at the intersections. Cul-de-sacs will be formed at the termini of T.M. Henderson Avenue and Reno Avenue with North Second Street. These are local roads that will not adversely impact access to properties or traffic operations by creating cul-de-sacs. These roads are located between Henry Avenue and Cedar Avenue. Additionally, Leo Avenue and Fred Street, located across from Mud Island Road, will be closed. Access to properties along these short roads will be provided via Mahannah Avenue. Five side-road approaches along the corridor will be realigned to intersect North Second Street to as close to a ninety-degree angle as feasible, which will improve the safety of the intersections. The following roadway approaches will require realignments: North Seventh Street, Mud Island Road, General DeWitt Spain Airport Access Road/Old North Second Street (which intersects the Build Alternative in two locations and provides access to the Maynard C. Stiles Waste Water Treatment Plant), and Harvester Lane.



The Build Alternative involves converting North Second Street and North Third Street from two-way streets into a one-way pair extending from I-40 to Chelsea Avenue. North Second Street is proposed to be one-way south into downtown and North Third Street is proposed to be one-way north towards Frayser. A one-way pair is proposed along this segment to avoid impacting historic property either listed or eligible for listing in the National Register of Historic Places and also to avoid impacting several hundred new homes, new apartment complexes and restored commercial buildings.

No additional R.O.W. is proposed along the proposed one-way pair between I-40 and Chelsea Avenue.

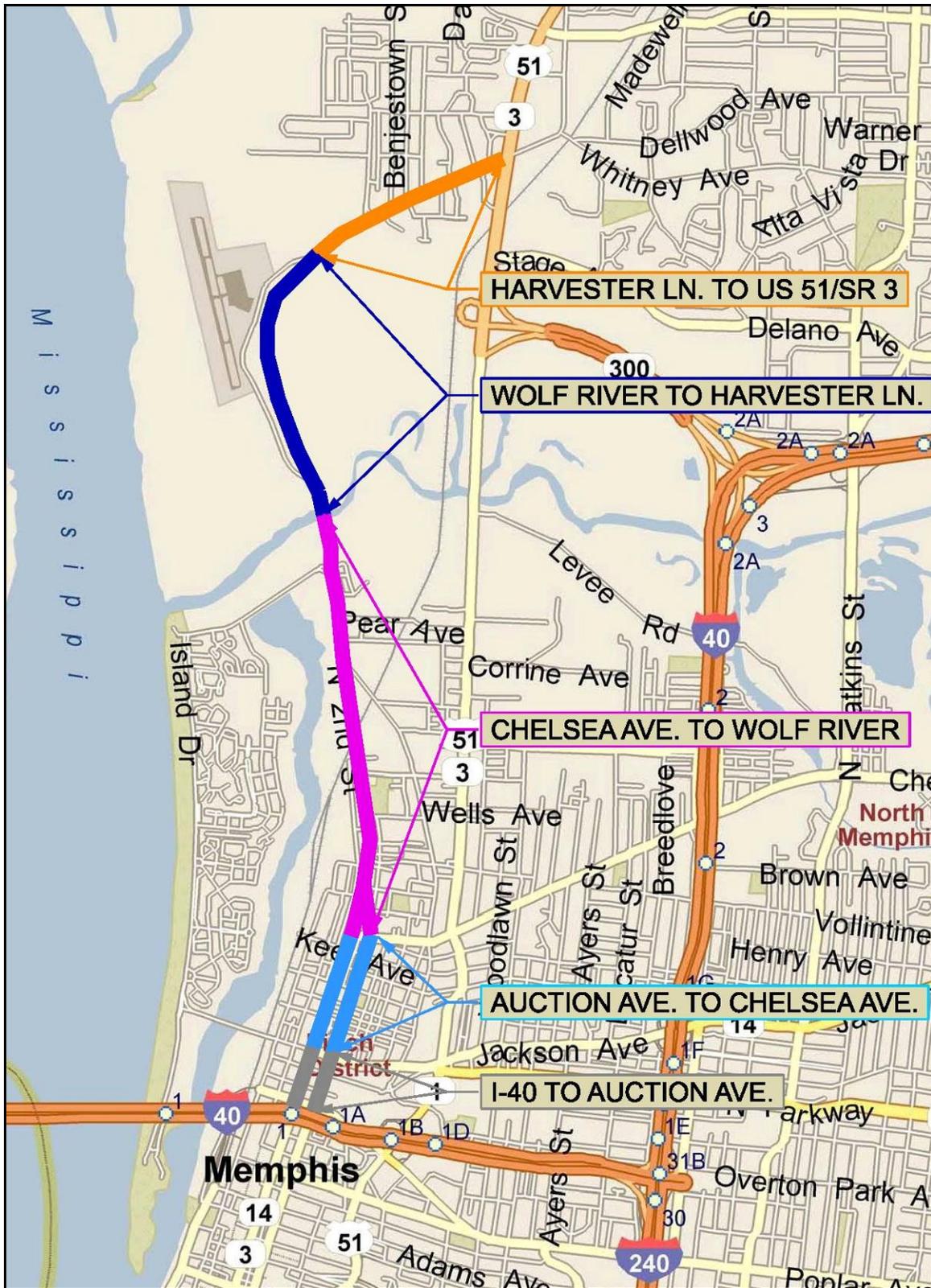


FIGURE 2.2: CROSS SECTION LEGEND

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The following describes the proposed roadway cross-sections along the Build Alternative/North Second Street Corridor.

I-40 to Auction Avenue

On the first 0.26 mile long segment from I-40 to Auction Avenue, all construction is proposed to be within the existing 66 feet of right-of-way. The curb to curb width along this segment of North Second Street and North Third Street is 54 feet. It is proposed to restripe the existing roadway on this segment. Each street will have three traffic lanes with an 8 foot parking lane on each side of the roadway. Two of the traffic lanes will be 11 feet wide, the third lane, the far right lane, will be 16 feet wide in order to accommodate bicycles. Because of the need to provide on-street parking, a striped dedicated bicycle lane is not being proposed. The wider lane will give bicyclist sufficient room to avoid potential accidents from opening car doors. It is proposed to replace the existing curb, gutter and sidewalks as needed along this segment. The typical cross-section of this segment is provided in **Figure 2.4: I-40 to Auction Avenue Cross Section**.

Auction Avenue to Chelsea Avenue

Beginning at Auction Avenue and extending to Chelsea Avenue, the 0.51 mile long segment of North Second and North Third Streets will transition to two-lane streets with provisions for on-street parking to accommodate recent residential development. North Second and North Third Streets will remain one-way in this section. The curb to curb width along North Second Street is 40 feet. The cross-section on North Second will accommodate two-eleven foot traffic lanes, and on the right side (west) a seven foot bike lane and a nine foot parking lane. Two feet will be provided to accommodate the drainage gutter on the left side (east). A seven and half foot utility strip and a five foot sidewalk is proposed on both sides of the roadway.

The curb to curb width on North Third Street is 44 feet from Auction Avenue to Chelsea Avenue, which will accommodate two-eleven foot traffic lanes, a six foot bicycle lane, and an eight foot parking lane on both sides of the roadway. A five foot sidewalk and a five and half foot utility strip is proposed for both sides on the roadway. The typical cross-section of this segment is provided in **Figure 2.5: Auction Avenue to Chelsea Avenue Cross Section**. “Before” and “after” renderings of the proposed improvements are provided in **Figures 2.6 through 2.9**.

Chelsea Avenue to Henry Avenue

Beginning at Chelsea Avenue, the North Second Street leg of the one-way pair continues north along the existing road to just north of Henry Avenue, where it is proposed to join the North Third Street leg of the one-way pair to form a four-lane roadway. North Third Street at the Chelsea Avenue intersection will extend north on a new alignment and crosses over Bickford Avenue and Henry Avenue before joining North Second Street just north of Henry Avenue. North Second Street and North Third Street come together to form a two-directional, four-lane roadway. Additional right-of-way is needed along this 0.19 mile long segment to achieve the transition from a one-way pair to a four-lane divided roadway.

Beginning at Chelsea Avenue, the Build Alternative transitions to a four lane, two-way roadway. Additional R.O.W. will be needed along these segments, some of which are on new location.

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Henry Avenue to the Wolf River

This 1.6 mile long segment begins the four-lane, two direction roadway cross section that will extend to the end of the project at US 51/SR 3. The cross-section from Henry Avenue to near the Wolf River will consist of two twelve foot traffic lanes in each direction, separated by a 14 foot raised median within a minimum 118 feet of right-of-way. The proposed improvements are along the existing North Second Street alignment, but additional R.O.W. will be needed. An eight foot parking lane and a six foot bike lane, along with sidewalks, curbs, and gutters will be provided on both sides of the roadway. Openings will be provided in the median to give access to the cross streets along this segment. A 118 foot right-of-way is proposed through this area to minimize impacts to Section 4(f) resources; two properties eligible for listing in the National Register of Historic Places (including a historic floodwall) and Washington Park. See **Section 4.13 Section 4(f) Evaluation** for a discussion of these properties. Additionally, a new fire station and a nursing home that is currently under construction are present along this segment. The floodwall begins adjacent to the Wolf River Lagoon behind the Marble Bayou Pumping Station across from Marble Avenue. The floodwall is adjacent to North Second Street's southbound lanes from the railroad tracks located just north of Willow Place to just south of North Seventh Street. These railroad tracks form an at-grade crossing with North Second Street and have crossing signals with no gates. The typical cross-section of this segment is provided in **Figure 2.10: Chelsea Avenue to Wolf River Bridge Cross Section**. "Before" and "after" renderings of the proposed improvements are provided in **Figures 2.11** and **2.12**.



Storm water detention basins are located on both sides of North Second Street near Marble Avenue. These basins are approximately 16 feet deep and are part of the historic flood control network in the area. The basins are active flood control features. Impacting these basins is unavoidable with the proposed improvements. To avoid impacting Washington Park, which is located along the east side of North Second Street, the proposed roadway improvement will primarily occur along the west side of North Second Street. It is anticipated that roadway fill slopes will extend approximately 80 feet into the basin on the west side of North Second Street due to the the proposed widening. Two large culverts will need to be extended to the limits of the proposed slopes in the west basin. The fill slopes along the east side of North Second Street are not anticipated to reach the bottom of the east basin, or impact this culvert. Because the basins are active flood control features, the lost storm water detention capacity will have to be replaced. The most likely area to replace the lost storm water detention volume is to enlarge the east basin. A detailed view of the storm water detention basins is provided in **Figure 2.3: Marble Bayou Detention Basin Detail**.

A new two-lane bridge will be constructed across the Wolf River adjacent to the existing two-lane bridge. The new bridge will have two 12 foot traffic lanes. A six foot bicycle lane and a five foot sidewalk will be provided on the west side of the new bridge. The existing two-lane bridge will be modified to provide two 12 foot traffic lanes, and a six foot bike lane on the east side of the bridge. North Second Street at the Wolf River Bridge will enter the boundaries of the proposed Wolf River Greenway. A pedestrian cross walk will be provided at the southern end of the bridges at the Mud Island Road and North Second Street intersection, directing pedestrians to the west side of the new bridge before crossing the river. Access to the Wolf River Greenway will be provided at the southern end of the bridges.



FIGURE 2.3: MARBLE BAYOU DETENTION BASIN DETAIL

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Wolf River to Harvester Lane

After crossing the Wolf River Bridge, a rural roadway cross section will begin north of the Wolf River and extend across the Wolf River Floodplain to a point just south of the old International Harvester Building, near Harvester Lane. This 1.43 mile long section is mostly on new location in order to correct existing geometric deficiencies that exist on North Second Street as it transitions to Whitney Avenue. The cross-section will consist of two 12 foot traffic lanes and a 10 foot shoulder in each direction separated by a 30 foot raised median. The 10 foot shoulders will be wide enough to accommodate bicycles. A 10 foot wide multi-use path will be provided on the west side of the roadway for pedestrians and bicyclists. There will be a minimum 10 foot separation between the shoulder and the multi-use path. The 10 foot multi-use trail will transition to a 5 foot sidewalk at the new Whitney Road intersection to North Second Street just north of the river. A pedestrian cross walk will be provided at this intersection directing pedestrians to the sidewalk on the west side of the new roadway. A 160 foot wide right-of-way is proposed along this segment to minimize the unavoidable impact to wetlands in the floodplain and the proposed Wolf River Greenway. The typical cross-section of this segment is provided in **Figure 2.13: Wolf River Bridge to Harvester Lane Cross Section**.

In order to discourage future development and control access in the Wolf River Floodplain, no new driveway permits will be allowed along North Second Street from the Wolf River to Harvester Lane. There is one existing Memphis Light Gas and Water (MLGW) utility access road in this section that will need to be maintained. This can be achieved either through a gated driveway connection to realigned North Second Street, or via maintaining the existing driveway connection to existing North Second Street and providing a grade separation for the access road under realigned North Second Street.

A segment of proposed Interstate 69 will intersect North Second Street in the north floodplain of the Wolf River, south of Harvester Lane. The proposed Interstate 69 segment will extend east across the Wolf River Floodplain and will interchange with US 51/SR 300. Interstate 69 is proposed to be grade separated over North Second Street, with no interchange access to North Second Street. The proposed Interstate 69 project is included in the *Memphis Urban Area 2030 Long Range Transportation Plan* (LRTP). Proposed Interstate 69 is a separate and independent project and has its own separate funding and environmental document. The Interstate 69 Final Environmental Impact Statement is on file in the TDOT Environmental Office.

Harvester Lane to US 51/SR 3

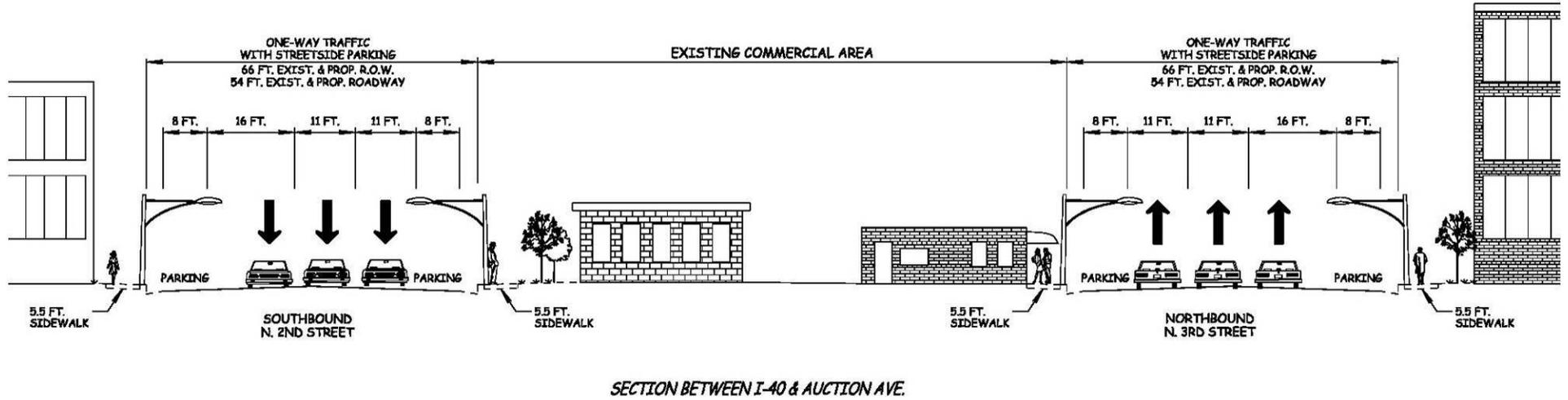
The last 0.61 mile long segment of the project begins in the vicinity of Harvester Lane and extends east along existing Whitney Avenue to the end of the project at US 51/SR 3. The cross-section along Whitney Avenue will consist of four 12 foot traffic lanes, two 8 foot bicycle lanes, two five foot sidewalks with curbs and gutters within a minimum 84 foot right-of-way. The bike lanes will transition to shared lanes in areas where left turn lanes are required. Additional right-of-way is required along Whitney Avenue to provide the bicycle lanes. The existing curbs, gutters and sidewalks will be replaced and moved back, closer to the residences and other buildings along this segment. The typical cross-section of this segment is provided in **Figure 2.14: Harvester Lane to US 51/SR 3 Cross Section**. “Before” and “after” renderings of the proposed improvements are provided in **Figures 2.15** and **2.16**.

Build Alternative Summary

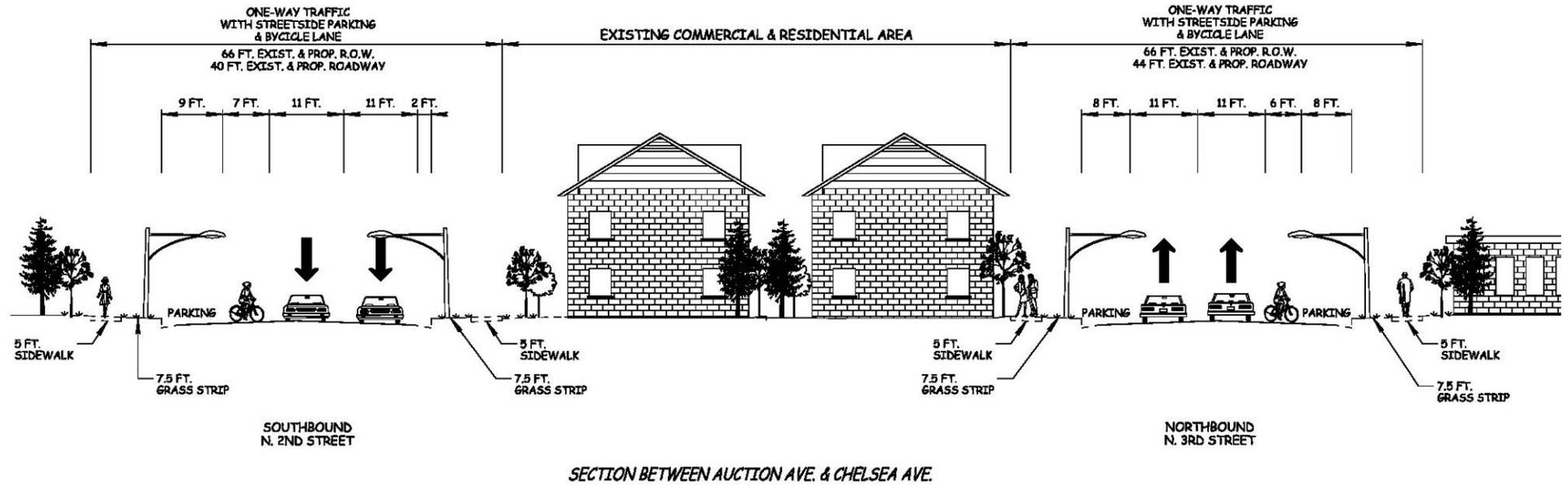
The Build Alternative is considered to be the best solution to the transportation need in the North Second Street Corridor. The Build Alternative will provide an improved four travel-lane facility that is consistent with the Long Range Transportation Plan. The project will link the neighborhoods north of Memphis to Downtown and the Central Business District and be

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compatible with the on-going economic development initiatives and revitalization opportunities for the neighborhoods and businesses along the North Second Street corridor. The proposed facility will improve existing deficiencies and provide an increase in capacity to give relief to other major routes in the area. The Build Alternative is consistent with a pedestrian friendly urban environment that is being promoted by the City.



SECTION BETWEEN I-40 & AUCTION AVE.
FIGURE 2.4: I-40 TO AUCTION AVENUE CROSS SECTION



SECTION BETWEEN AUCTION AVE. & CHELSEA AVE.
FIGURE 2.5: AUCTION AVENUE TO CHELSEA AVENUE CROSS SECTION



FIGURE 2.6: “BEFORE” EXAMPLE OF NORTH SECOND STREET BETWEEN AUCTION AVENUE AND CHELSEA AVENUE



FIGURE 2.7: "AFTER" EXAMPLE OF NORTH SECOND STREET BETWEEN AUCTION AVENUE AND CHelsea AVENUE



FIGURE 2.8: “BEFORE” EXAMPLE OF NORTH THIRD STREET BETWEEN AUCTION AVENUE AND CHELSEA AVENUE



FIGURE 2.9: “AFTER” EXAMPLE OF NORTH THIRD STREET BETWEEN AUCTION AVENUE AND CHELSEA AVENUE

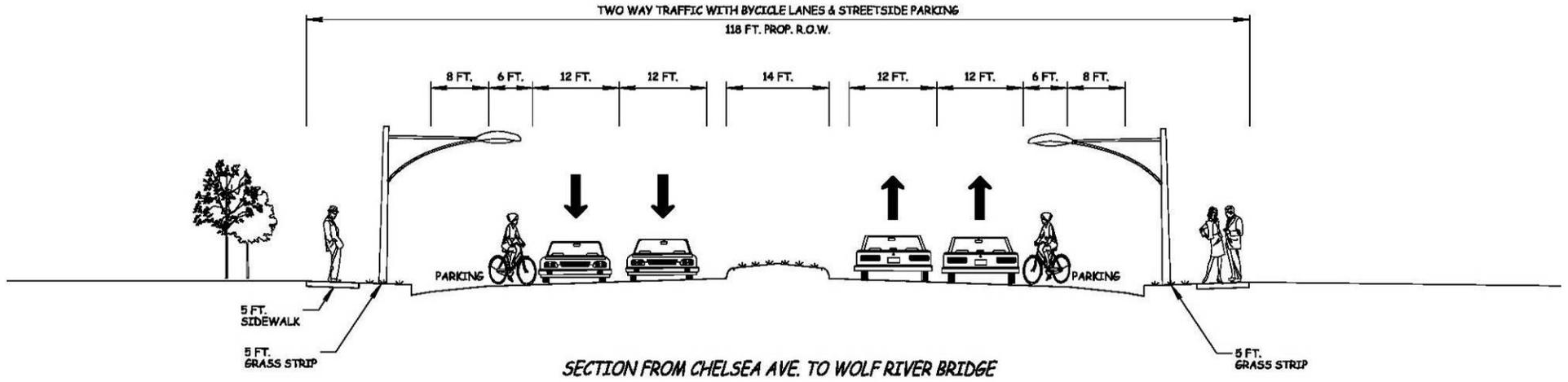


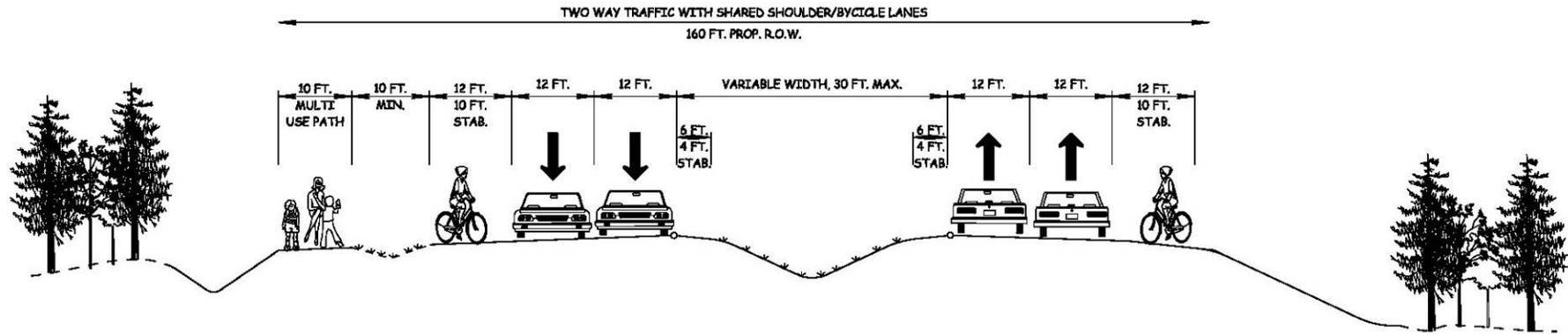
FIGURE 2.10: CHELSEA AVENUE TO WOLF RIVER BRIDGE CROSS SECTION



FIGURE 2.11: “BEFORE” EXAMPLE OF NORTH SECOND STREET BETWEEN CHelsea AVENUE AND THE WOLF RIVER BRIDGE

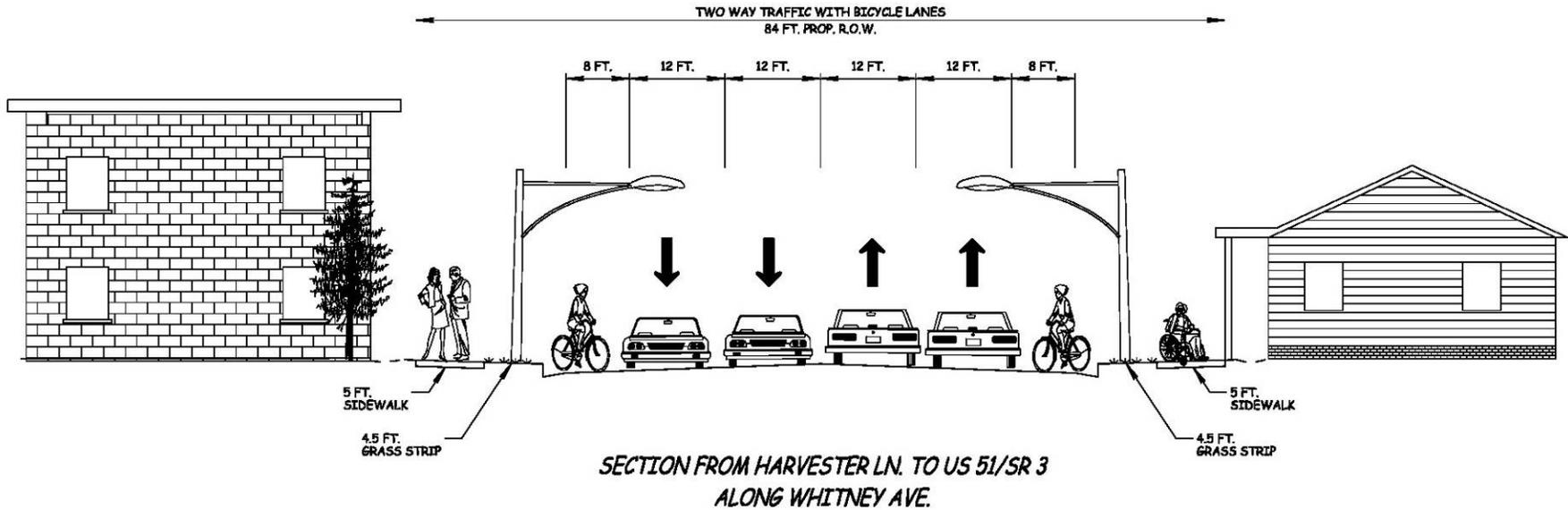


FIGURE 2.12: “AFTER” EXAMPLE OF NORTH SECOND STREET BETWEEN CHELSEA AVENUE AND THE WOLF RIVER BRIDGE



SECTION FROM WOLF RIVER BRIDGE TO HARVESTER LN.

FIGURE 2.13: WOLF RIVER BRIDGE TO HARVESTER LANE CROSS SECTION



SECTION FROM HARVESTER LN. TO US 51/SR 3
ALONG WHITNEY AVE.

FIGURE 2.14: HARVESTER LANE TO US 51/SR 3 CROSS SECTION



FIGURE 2.15: “BEFORE” EXAMPLE OF NORTH SECOND STREET BETWEEN HARVESTER LANE AND US 51/SR 3



FIGURE 2.16: “AFTER” EXAMPLE OF NORTH SECOND STREET BETWEEN HARVESTER LANE AND US 51/SR 3

2.4 ALTERNATIVES OTHER THAN BUILD AND NO BUILD

In addition to the Build Alternative, other transportation policy alternatives were considered for this project. The alternatives included a Transportation Systems Management Alternative and a Mass Transit Alternative. Neither of these alternatives alone can serve the purpose and need for this project, and were therefore not carried forward through the EIS process. However, elements of each of these transportation policy alternatives are provided in the Build Alternative.

2.4.1 TSM Alternative

Transportation Systems Management (TSM) is an integrated approach to optimize the performance of the existing transportation infrastructure through the implementation of systems, services, and projects designed to preserve capacity and improve security, safety, and reliability. The goal of TSM is to improve the efficiency of existing transportation facilities while minimizing the need for major construction/reconstruction projects. TSM strategies are included in the LRTP's Congestion Management Process (CMP) plan.

TSM Alternatives, as outlined in the CMP, are necessary elements of a LRTP for a large urbanized area. Many of these strategies are already in use within the project corridor. However, TSM strategies alone cannot serve the purpose and need for this project, which is to provide a viable secondary access route from the north into the downtown area and to aid in the redevelopment of older residential, commercial and industrial areas to make them a vital part of the community and stimulate economic development. Therefore TSM alternatives as the only improvements were not carried forward through the EIS process for North Second Street. The TSM strategies listed in the LRTP, along with their effects to this project, are listed in **Table 2.1**.

It should be noted that a powerful TSM strategy not listed in the LRTP is the conversion of two-way streets to one-way streets. The removal of one direction of traffic from a two-way street allows for better signal synchronization and promotes an improved progression of traffic. One-way streets also allow for unopposed turn maneuvers, simplifies signal phasing, allows pedestrians to only have to confront traffic from one direction, and provides more gaps for vehicles and pedestrians at unsignalized crossings. Therefore, improvements in traffic operations can be expected without constructing additional lanes of traffic by converting two-way streets to a one-way pair. The Build Alternative will utilize this TSM strategy by converting North Second and North Third Streets into a one-way pair between I-40 and Chelsea Avenue.

TABLE 2.1: TSM STRATEGIES

TSM Strategy #1: Ridesharing	
Tools:	<p>Carpooling, vanpooling, alternative work hours, guaranteed ride home, telecommuting, paratransit services, park and ride facilities</p>
Effect on the Study Area:	<p>The effects of ridesharing strategies are regional in nature, and not corridor specific. There is an existing government sponsored rideshare (carpooling and vanpooling with guaranteed ride home) program in the metropolitan area. The existing rideshare program has a ridership of approximately 2,000 persons in peak hours. This represents less than 0.5% of the existing trips in the region.</p> <p>Alternative work hours are currently conducted locally on a relatively small scale. There are several large employers in the MPO area, such as FedEx, that maintain operations in the off peak periods. It is anticipated by the MPO that less than a 1% decrease in peak period traffic could be attained with an aggressive alternative work hour campaign.</p> <p>Advances in technology have enabled many to work from home. However, the potential impact of telecommuting on the transportation system is difficult to ascertain, and should be considered minimal.</p> <p>Paratransit services are presently handled as a demand-response service in the Memphis Area. Paratransit services are a benefit to those unable to drive, but generally have minimal impact on traffic.</p> <p>Park and ride facilities are provided for motorists to park and transfer to public transit, carpool or vanpool. A park and ride lot is located at the North End Terminal bordered by Main Street, North Second Street, Auction Avenue, and North Parkway. This location is a “destination” location near downtown and would not alleviate traffic during rush hour. No other park and ride facilities are located in the project study area. Additional park and ride facilities may compliment roadway improvements, but would not significantly improve congestion in the area or meet the purpose and need of the project.</p>

TSM Strategy #2: Roadway Improvements	
Tools:	Intersection improvements, channelization, traffic surveillance and control systems, traffic control centers, computerized signal systems
Effect on the Study Area:	<p>Roadway improvements are included in the Build Alternative. Improved signal systems will complement the TSM strategy of converting North Second and North Third Streets to a one-way pair and providing improved channelization (i.e. turn lanes) at major intersections.</p> <p>Traffic surveillance and control systems, traffic control center, and computerized signal system improvements alone may improve traffic operations at the signalized intersections along the corridor, especially at the southern end of the project, but would not meet the purpose and need of the project to provide a viable secondary access route from the north into the downtown area or stimulate economic development.</p>
TSM Strategy #3: Dedicated Laneage	
Tools:	HOV lanes, HOV and bus bypass lanes, bus bypass ramps
Effect on the Study Area:	These tools are generally applied to freeway facilities and are not applicable to the study corridor.
TSM Strategy #4: Bicycle and Pedestrian Facilities	
Tools:	Provide bicycle and pedestrian facilities.
Effect on the Study Area:	The Build Alternative will provide bicycle lanes and improve or provide pedestrian facilities along the corridor. These facilities will compliment the roadway improvements. Bicycle and pedestrian facilities alone would not meet the purpose and need of the project or noticeably reduce congestion along the corridor. The LRTP references a study that notes that an increase in bicycling would result in less than a 0.2% decrease in regional vehicle miles traveled.

TSM Strategy #5: Transit Improvements	
Tools:	Transit service enhancement or expansion, transit traffic signal preemption, transit information services, exclusive transit ROW, and mode change facilities
Effect on the Study Area:	Transit improvements are discussed in Section 2.4.2 Mass Transit Alternative.
TSM Strategy #6: Intelligent Transportation Systems	
Tools:	Intelligent transportation systems and advanced public transportation system technology, incident management, and motorist information systems
Effect on the Study Area:	<p>Several ITS Systems have already been deployed in the MPO region. Therefore, it is assumed that the majority of the measurable benefits have already been realized for this strategy. These systems are primarily applied to freeway facilities.</p> <p>Many non freeway ITS strategies, including dynamic message signs and improved personal GPS systems that provide congestion alerts, provide value. However, quantitative estimates of their benefits are not yet available since many of these strategies are relatively new. ITS improvements alone would not be expected to significantly improve traffic operations along the corridor and would not meet the purpose and need of the project to provide a viable secondary access route from the north into the downtown area and stimulate economic development.</p>

TSM Strategy #7: Growth Management	
Tools:	Growth management and activity center strategies, access management techniques
Effect on the Study Area:	Of all the CMP strategies listed, growth management has the largest potential impact on the transportation system. Tools that can be used to guide development to cause less impact on the transportation infrastructure include compact residential development, compact employment and activity centers, mixed land uses, connectivity, transit and pedestrian oriented development, jobs/housing balance, affordable housing, and development impact mitigations. These tools are currently being implemented within the study area. These land use strategies will compliment the roadway improvements, but alone would not meet the purpose and need of the project to provide a viable secondary access route from the north into the downtown area and stimulate economic development. The LRTP references a study that shows a 0-5% decrease in single occupant vehicle use over the short term and a 0-10% decrease in SOV's use over the long term where growth management strategies are used. A corresponding increase in transit use of 0-5% may be realized using growth management strategies.
TSM Strategy #8: General Purpose Lanes	
Tools:	Add additional general purpose lanes
Effect on the Study Area:	<p>This strategy has the potential to have the most impact on congestion relief. It also will likely have the highest cost and will tend to negatively impact vehicle miles traveled and, in some cases, emissions. Therefore, the addition of general purpose lanes is considered only after all of the other strategies have been evaluated and found to be ineffective.</p> <p>As discussed previously, several TSM strategies are already in use within the project corridor. However, TSM strategies alone cannot serve the purpose and need for this project, which is to provide a viable secondary access route from the north into the downtown area and to stimulate economic development.</p> <p>It should be noted that the Build Alternative will utilize a powerful TSM strategy by converting 0.8 miles of North Second and North Third Streets into a one-way pair between I-40 and Chelsea Avenue. Utilizing a one-way pair within this heavily urbanized area of Memphis will improve traffic operations without constructing additional general purpose lanes. North of Chelsea Avenue, additional lanes will be constructed to meet the purpose and need of the project.</p>

2.4.2 Mass Transit Alternative

Mass transit service is currently available within the study corridor. The Memphis Area Transit Authority (MATA) provides fixed route bus services to the southern portion of the project area. Bus routes run along both North Second and North Third Streets between I-40 and Auction Avenue, and continue along North Third Street from Auction Avenue to Chelsea Avenue. At the northern portion of the study area, Whitney Avenue has bus service between Harvester Lane and SR-3. The southern tip of Mud Island is serviced by a monorail that departs from North Front Street near Poplar Avenue, just south of the study corridor. These routes are serviced by The North End Transfer Station. The North End Transfer Station and public parking facility (park-and-ride) are located between North Main Street and North Second Street south of Auction Avenue. All routes serviced by MATA can be accessed via the North End Transfer Station. The Station is open Monday through Friday from 7:00 AM until 6:00 PM, and 8:00 AM to 4:30 PM on Saturdays. The adult base fare for fixed route bus service is \$1.50, with various discounts available.

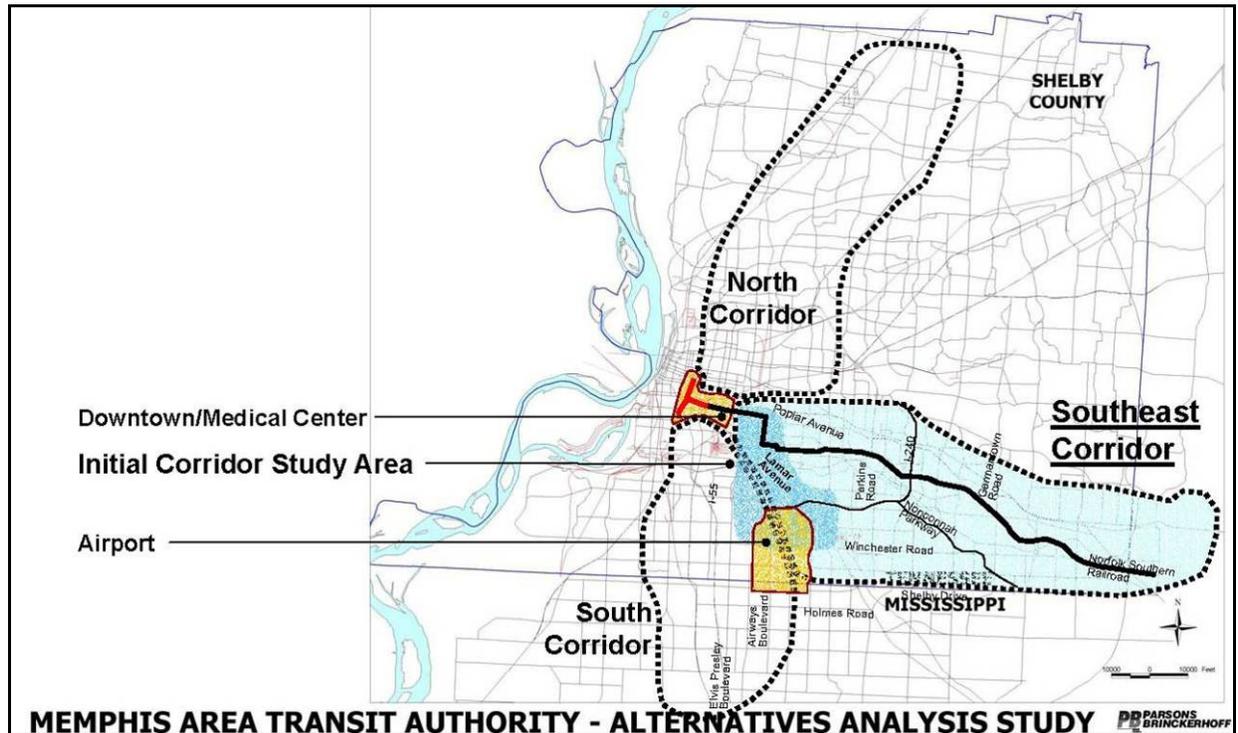


The study corridor is also serviced by a trolley system. Three of MATA's four trolley routes are located within the study corridor. The routes run along Northbound Main Street, Southbound Main Street, and Southbound Front Street between Calhoun Street to the south and Auction Avenue to the north. These trolleys run every 10 minutes between 6:00 AM and 1:00 AM. The fourth trolley runs south of the study area along Madison Avenue between North Third Street and Cleveland Street which is just east of I-240. The trolley base fare is \$1.00 with various discounts available.

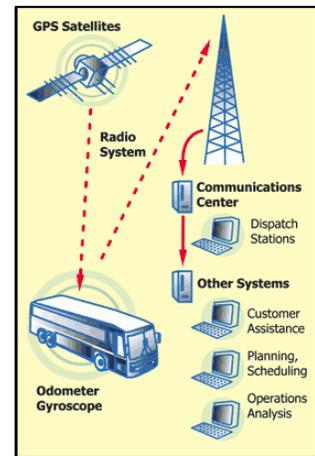
Additional transit improvements are under study that will eventually service the study corridor. MATA has been engaged in planning for a regional light rail transit system since the early 1990s. The most comprehensive effort began in 2000 with a planning process that is continuing up to the present time. Three corridors have been under study. They are the Southeast Corridor, which will service Collierville to downtown; the South Corridor, which will service Whitehaven/Mississippi to downtown; and the North Corridor, which will service Frayser/Millington to downtown. The MATA Board approved the Southeast Corridor with a

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connection to the Airport as the first choice for implementation. The North Corridor would serve the North Second Street neighborhood, but is likely to be the last corridor developed.



Further improvements to Memphis's transit system are planned in an Advanced Public Transportation System. MATA has begun a program of technology improvements that will increase the efficiency of service delivery to passengers and upgrade operations and management capabilities. This program will be implemented in phases over the next few years. The one critical element of the program is an Automatic Vehicle Location (AVL) system, based on Global Positioning System (GPS) technology. AVL, which will be implemented in the first phase, will allow MATA to track the exact location of all of its buses, paratransit vehicles and trolleys at all times. It will also provide the capability for, or work in conjunction with, several other elements of the program. The first phase is expected to begin implementation in 2009 and riders should begin to see the benefits of the first phase by early 2010.



As discussed above, mass transit is already in extensive use within the project corridor. Future planned improvements to the transit system in the form of a North Corridor light rail line would improve service to the eastern section of the study area, likely near SR-3. This route would likely have more impact on the SR-3/I-240 corridors than the North Second Street Corridor. Additionally, improvements to the mass transit system do not serve the purpose and need for this project, which is to provide a viable secondary access route from the north into the downtown area. Therefore, a Mass Transit Alternative was not carried forward through the EIS process for North Second Street.

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It should be noted that the improvements in the Build Alternative would complement bus service along the North Second Street Corridor. North Second Street and Whitney Avenue are currently two-lane roadways with limited capacity for future traffic growth or higher speed operations. A portion of the route has a rural cross section with no shoulders. The narrow cross section width and lack of shoulders, along with slow travel speeds, makes many segments of the corridor unfavorable for bus/transit service. The proposed improvements will correct deficiencies along the route and provide a facility that is acceptable for transit service.

Chapter 3: Affected Environment



3.0 AFFECTED ENVIRONMENT

The project area begins just north of historic downtown Memphis in the dense urban environment of the Uptown community. Just north of Uptown Memphis, from the Wolf River to Whitney Avenue, the project area is undeveloped. This area includes the Wolf River Floodplain and associated wetlands. Beyond the undeveloped area associated with the Wolf River Floodplain, the project area is developed and part of the Frayser community. The developed portions of the corridor, including Uptown Memphis and Frayser, consists of residential, commercial and industrial land uses.

This chapter provides an inventory of the natural and human environments within the North Second Street project area. **Section 3.1 Natural Environment** concentrates on the segment of the project associated with the Wolf River Floodplain and includes the geology, terrestrial characteristics, water resources, and floodplain characteristics of the area. **Section 3.2 Human Environment** concentrates on the developed portions of the corridor and includes the land use, historic resources, and social and economic characteristics of the area. A detailed description and evaluation of potential impacts to the resources identified in this chapter are provided in **Chapter 4 Environmental Consequences** of this document.

3.1 NATURAL ENVIRONMENT

Most of the natural environment within the project corridor has been altered through the past and continuing urbanization of the Memphis Area. The portion of the project area north of the Wolf River and south of Whitney Avenue, however, remains undeveloped and contains many sensitive areas that are of importance to the natural environment.

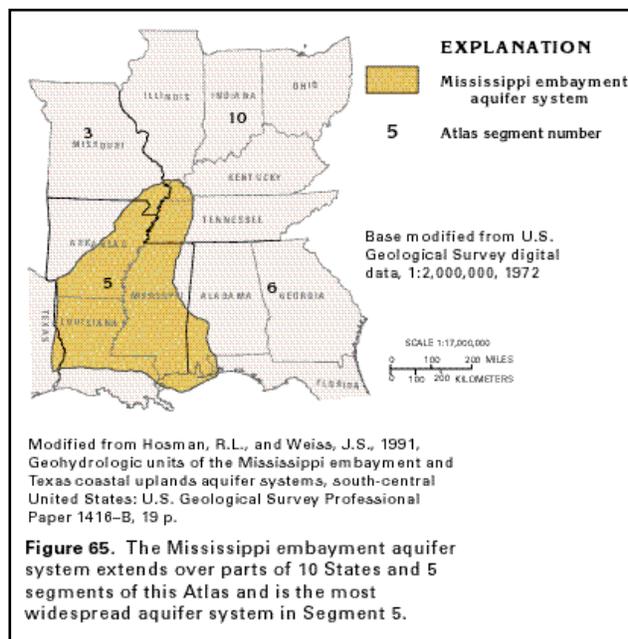


The majority of the project area located north of the Wolf River is within the 100-year floodplain. The Wolf River Floodplain contains large wetland systems that are beneficial to local water quality and wildlife. Some of the wetland areas were forested, while others were herbaceous and have been converted to agricultural production. A detailed discussion of the potential impacts this project may have on the wetlands, wildlife, floodplain, and other components of the natural environment is presented in **Chapter 4 Environmental Consequences**.

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The project area is located within a large geographical unit referred to as the Mississippi Embayment for the Gulf Coastal Plain. The Mississippi Embayment, a large trough shaped land form with the Mississippi River flowing through its center, extends approximately 350 miles from the southern tip of Illinois to Jackson, Mississippi. The project is located within the Mississippi River Floodplain Physiographic Province portion of the Mississippi Embayment.

The terrain within the project area is mostly flat with an occasional uprising or depression. One major stream crossing (Wolf River), which is a direct tributary to the Mississippi River, is located within the project area. The northern portion of the study area lies within the 100-year floodplain of the Wolf River. The majority of the project area lies between 185 to 200 feet above sea level.



3.1.1 Geology

3.1.1.1 Geologic Formation

Most of the geologic formations within the project area date back to the Cenozoic and Mesozoic Periods of the Cenozoic Era. The majority of geologic formations in the project area have been affected by either alluvial wash from the Mississippi River or earthquakes from the New Madrid Fault that lies beneath. The project area is considered to be at high risk for earthquakes, given the close proximity of the New Madrid Fault. The geology makeup of the project area consists of an alluvial blanket of sand, gravel, and clay that originates from as far away as the east slope of the Rocky Mountains and the west slope of the North Carolina Blue Ridge. The alluvial blanket is thick throughout most of the Mississippi River floodplain, reaching depths of several hundred feet.

3.1.1.2 Geologic Soils

Surficial geologic soil units in the project area consist of Artificial Fill (af), Alluvium (Qal), and Loess (Ql). Soil descriptions and percentages for the project alignment between the Wolf River and the tie in with Whitney Avenue compiled by the Web Soil Survey published by the U.S. Department of Agriculture are: Sharkey clay (Sh) (23%), Falaya silt loam (Fm) (11%), Tunica silty clay (Tu) (16%), Commerce silt loam (Cr) (34%), and Memphis silt loam (MeF3) (16%). Sharkey clay, Falaya silt loam, and Tunica silty clay are considered hydric soils; therefore, an estimated 50% of this portion of the subject Build Alternative will be within known hydric soils. The proposed project is located in the Wolf River Watershed (HUC 08010210).

3.1.2 Terrestrial Characteristics

The forested areas within the project area consist of bottomland floodplain species such as tulip poplar; sweetgum; sycamore; hackberry; black willow; box elder; red maple; American hornbeam; river birch; green ash; pin oak; swamp white oak; scarlet oak; buttonbush; bald cypress; Chinese privet; false nettle; lizard's tail; and spicebush. The farmed field/pasture areas appear to be utilized for agriculture. It appears that the field areas have been recently planted in row crops and harvested. Typical grass and forb species within the cultivated fields include: fescue; panic grass; broomsedge; Johnson grass; and wild onion. Right-of-way areas are mostly roadway pavement with limited vegetation in the shoulders that contain Bermuda grass; thistle; Johnson grass; crabgrass; goldenrod; and ragweed. Residential areas are vegetated with Bermuda grass; crabgrass; fescue, American holly; flowering dogwood; white oak; and white pine.

Both upland and floodplain forested habitats between the Wolf River and the intersection of Whitney Avenue and Harvester Lane provide food, cover, and nesting opportunities for numerous small mammals, including rabbits, squirrels, and other rodents, as well as reptiles, native birds, spiders and other arachnids, and insects. Old field habitats in various stages of succession are also useful to many types of wildlife. The industrial, commercial, residential and non-profit lands generally have limited wildlife value, as they are usually paved or mowed, except for undisturbed vegetation along fence rows or property boundaries.

3.1.3 Water Resources

The alluvial soils vary from well-drained, sandy deposits to very poorly drained silty clays. Soil units classified as poorly drained or very poorly drained are typically considered hydric, and under normal conditions support jurisdictional wetlands. Hydrologic modification in the form of channel changes has occurred to many of the streams and wetlands in the surrounding areas. The channelization has allowed the drainage of groundwater and surface water throughout the Wolf River watershed. Channel modifications have also allowed for the rapid removal of surface water and groundwater that would otherwise remain for long periods of time in low lands.

3.1.3.1 Wetlands

Definition of Wetlands

The U.S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (EPA) jointly define wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Ecological studies to determine impacts to wetlands were conducted in September 2003, December 2008, March 2009, and June 2009.

Wetland Delineation Methodology

Literature review and site reconnaissance were conducted to determine wetland resources within and/or adjacent to the Build Alternative roadway project. Wetlands were delineated during the site reconnaissance according to the criteria set forth in the *1987 Corps of Engineers*

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Wetlands Delineation Manual. Jurisdictional wetlands are areas that have wetland hydrology, hydric soils, and hydrophytic vegetation in concert.

Wetlands within the Project Corridor

Subject wetlands within the proposed project corridor are positioned between the riparian areas of the Wolf River northward across the floodplain to Whitney Avenue. Wetland W-1 is a forested wetland located immediately southwest of the existing bridge over the Wolf River. Wetland W-2 is a forested wetland located north of the Wolf River in the southern part of the floodplain. Wetland W-3 is a farmed wetland located in the centroid of the floodplain north of the Wolf River. Wetland W-4 is a forested wetland stretching from the centroid of the floodplain northward to an area of overhead power lines. The location of these wetlands is mapped in **Figure 3.1: Water Resources**.

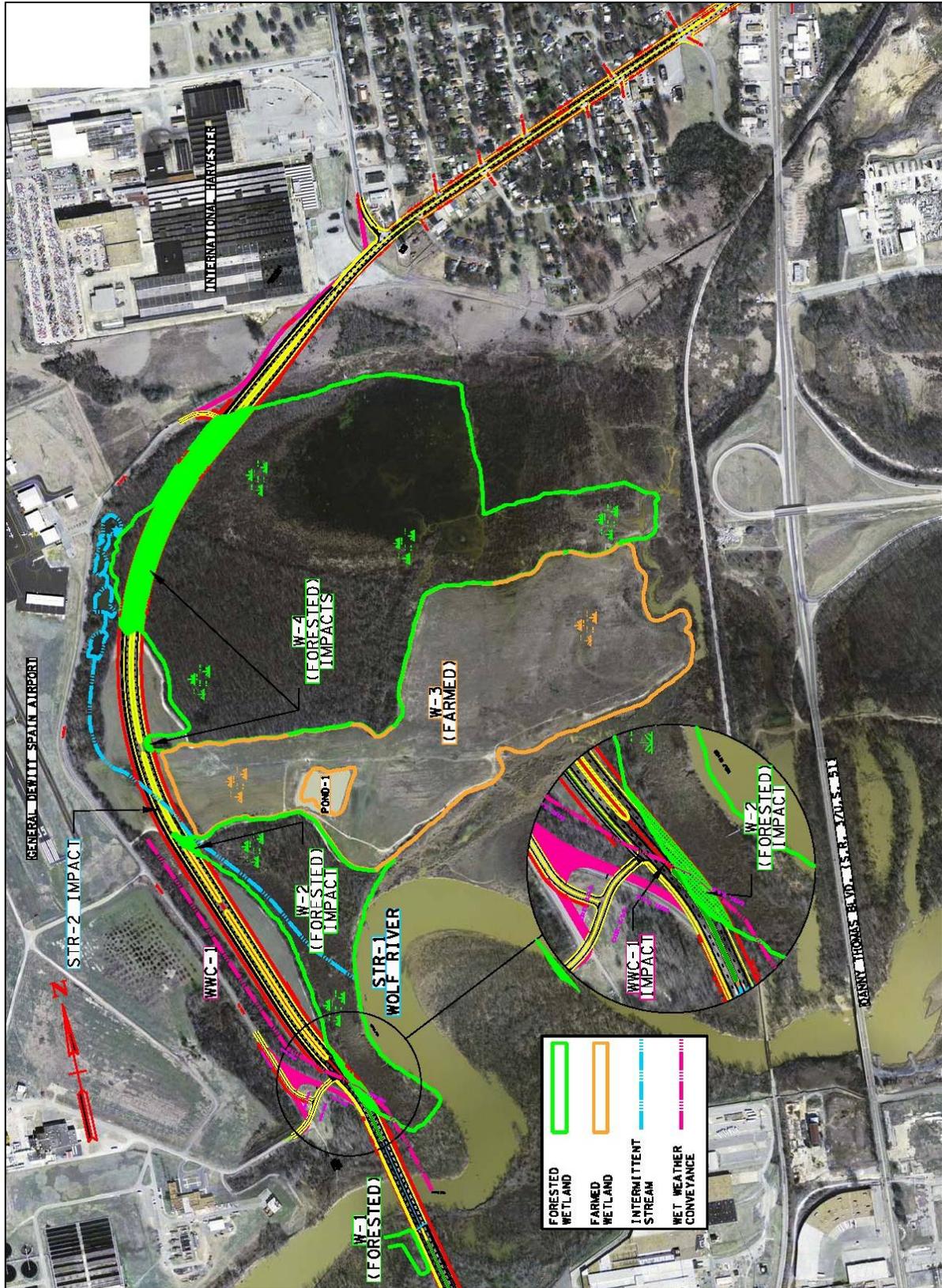


FIGURE 3.1: WATER RESOURCES

3.1.3.2 Streams, Springs, Seeps, & Other Water Resources

Perennial Streams

Perennial streams are defined as “streams that flow throughout a majority of the year and flow in a well-defined channel”. However, perennial streams can still dry up, particularly during extended periods of drought.

According to the USGS Northwest Memphis quadrangle map, there is one perennial blue-line stream located within the corridor of the proposed transportation facility alignment. This blue-line stream is the Wolf River. The Wolf River rises near Holly Springs, Mississippi and flows northwest into Tennessee. The river drains a large portion of Memphis and northern and eastern Shelby County before entering the Mississippi River near the northern end of Mud Island. Mud Island is a relatively large Mississippi River island located just north of downtown Memphis on the Tennessee side of the river channel.



The Wolf River contains typical aquatic species such as common carp (*Cyprinus carpio*), bluegill (*Lepomis macrochirus*), largemouth bass (*Micropterus salmoides*), white crappie (*Pomoxis annularis*), northern water snake (*Nerodia sipedon*), and common snapping turtle (*Chelydra serpentina*). The substrate of the river within the project area consists of silt, sand, and clay. This portion of the Wolf River appears highly degraded. The 2008 303(d) List published by the Tennessee Department of Environment & Conservation, Division of Water Pollution Control, details 32.6 miles of the Wolf River that is considered impaired. Pollutant sources are: atmospheric deposition, discharges from a Municipal Separate Storm Sewer System (MS4) area, Resource Conservation & Recovery Act (RCRA) hazardous waste sites, channelization, and contaminated sediments. Fishing advisories have been established for 19.1 miles of the Wolf River with specific contaminants including mercury, lead, chlordane, polychlorinated biphenyls (PCBs), dioxin, E. coli, and siltation.

Intermittent Streams

Intermittent streams are defined as “streams that flow only during wet periods of the year and flow in a continuous well-defined channel”. During dry periods, intermittent streams may go down to a trickle of water and make it appear dry, when in fact there is water flowing through the stream bottom or “substrate”. This is usually caused by the seasonal changes of the local soil water table or during periods of long term drought.



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An intermittent stream is located within the project corridor. The intermittent stream consists of three (3) sections. The first section is made up of three (3) ponds positioned in a wooded area contiguous to the Whitney Avenue eastern right-of-way and immediately east-southeast of the entrance of the General Dewitt Spain Airport. The flow direction is to the south and this section of the intermittent stream is approximately 1,680 linear feet in length. It appears that these ponds overflow into one another eventually directing flow into the second section of the intermittent stream across cultivated fields. There is no riparian vegetation within this section due to farming activities. The second section of the intermittent stream is approximately 900 linear feet and flows into a third section of the intermittent stream. The third section flows through wetland acreage and empties into the Wolf River to the southeast. The third section of the intermittent stream is approximately 1,730 linear feet in length. Overall, the intermittent stream from the northernmost pond to the Wolf River is 4,310 linear feet (0.82 mi.) in length.



Wet Weather Conveyances (Ephemeral Streams)

Wet weather conveyances (ephemeral streams) are defined as “man-made or natural watercourses, including natural watercourses that have been modified by channelization, that flow only in direct response to precipitation runoff in their immediate locality and whose channels are above the groundwater table and which do not support fish or aquatic life and are not suitable for drinking water supplies”. A wet weather conveyance (ephemeral stream) is located within the proposed project area. This watercourse begins at the access entrance to the farmed acreage off of North Second Street. This watercourse accepts stormwater runoff from the farmed acreage to the immediate east and flows in the southward direction paralleling North Second Street within the eastern right-of-way. The watercourse eventually empties into the Wolf River.



3.1.4 Floodplains

3.1.4.1 Beneficial Floodplain Values

The majority of the project area located north of the Wolf River is within the 100-year floodplain. Floodplain lands and adjacent waters combine to form a complex, dynamic physical and biological system. Benefits from floodplains range from reducing the number and severity of floods through helping handle stormwater runoff to minimizing non-point water pollution. Natural resources of floodplains fall into three categories: water resources, ecological resources, and societal resources.



3.1.4.2 Floodplain Water Resources

Floodplains develop their own ways to handle flooding and erosion with natural features that provide floodwater storage and conveyance, reduce flood velocities and flood peaks, and curb sedimentation. Both forested and farmed wetlands have been delineated within the floodplain between the Wolf River and Whitney Avenue. Benefits of these wetlands include:

- slow floodwaters
- protect uplands from erosion
- increase water quality through natural filtration
- recharge the groundwater
- support a diversity of wildlife
- provide a setting for recreation and study

3.1.4.3 Floodplain Ecological Resources

Floodplains enhance biological productivity by supporting a high rate of plant growth. This helps to maintain biodiversity and the integrity of ecosystems. Floodplains provide habitats for fish and wildlife by serving as breeding and feeding grounds. They also create and enhance waterfowl habitats, and help to protect habitats for rare and endangered species. Species known to inhabit the Wolf River area are deer, otter, mink, bobcat, fox, coyote, turkey, and a wide variety of waterfowl. Migrating osprey, great egret, and bald eagle have also been noted along the river.

3.1.4.4 Floodplain Societal Resources

Floodplains provide areas for scientific study and outdoor education opportunities. They may contain cultural resources such as historic or archaeological sites and thus provide opportunities for environmental and other kinds of studies. Parks, bike paths, open spaces, wildlife conservation areas and aesthetic features are typically available. The Wolf River Conservancy is a non-profit land trust in Memphis. The mission of the group is to conserve and enhance the Wolf River corridor and its watershed as a sustainable natural resource. Their recreational, advocacy, and educational outreach programs emphasize the importance of protecting the Wolf River and the Memphis Sands, the public drinking water source. The group also advocates the development of a 30-mile Wolf River Greenway that interconnects the Mississippi River, neighborhoods, and parks in Shelby County, and the cities of Memphis, Germantown, and Collierville

According to Flood Insurance Rate Map (FIRM) Number 47157C0260F; September 28, 2007, published by the Federal Emergency Management Agency (FEMA), the portion of the proposed Build Alternative from the Wolf River to the tie-in with Whitney Avenue is within Zone AE. This zone is a Special Flood Hazard Area (SFHA) subject to inundation by the 1% annual chance flood. Base flood elevations have been determined in this area. The Wolf River is designated as a floodway area in Zone AE. The “floodway” is the channel of the river plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights. **Figure 3.2: Flood Map** details the proposed roadway within the mapped floodplain.

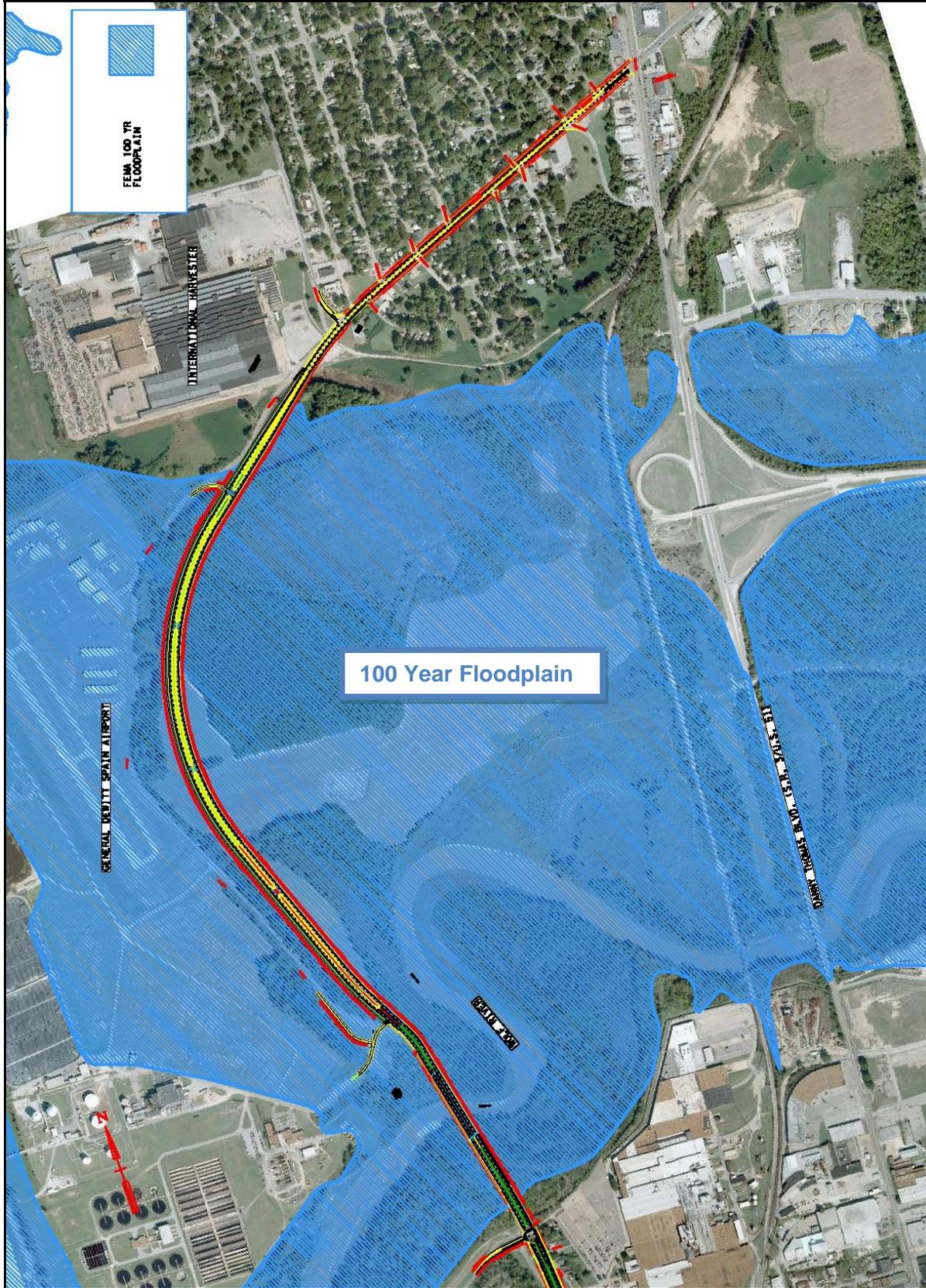
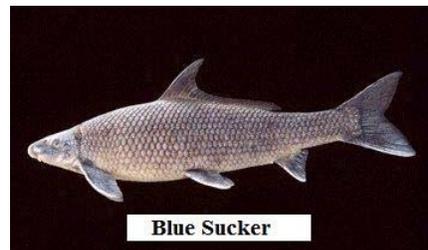


FIGURE 3.2: FLOOD MAP

3.1.5 Endangered and Threatened Species

Information from several sources was used to determine the potential for endangered and/or threatened species along the proposed transportation project alignment. These sources included: (1) database information provided by the Tennessee Department of Environment and Conservation (TDEC), Division of Natural Areas (November 14, 2008), (2) species research utilizing the state Division of Natural Areas database for listing of rare species by 7.5' USGS quadrangles (January 28, 2009), (3) species research utilizing the state Division of Natural Areas



database for listing of rare species by county (January 28, 2009), and (4) information from Tennessee Cave Survey, Inc. (TCS), an internal organization of the National Speleological Society (NSS). The U.S. Fish & Wildlife Service (USFWS) and the Tennessee Wildlife Resource Agency (TWRA) were also contacted for information from their files, by letter on December 8, 2008. Three "rare" species were listed in the state Division of Natural Areas database for the Northwest Memphis USGS Quadrangle. The species include: Blue Sucker (*Cycleptus*

elongates), Mississippi Kite (*Ictinia mississippiensis*), and Bell's Vireo (*Vireo bellii*). Five species were listed in the Natural Heritage Database for rare species observations within a one and four mile radius of the proposed project. The species include: Blue Sucker (*Cycleptus elongates*) (observed within a one-mile radius of the proposed project), Mississippi Kite (*Ictinia mississippiensis*) (observed within a one-mile radius of the proposed project), Bell's Vireo (*Vireo bellii*) (observed within a four-mile radius of the proposed project), Swainson's Warbler (*Limnothlypis swainsonii*) (observed within a four-mile radius of the proposed project), and Goldenseal (*Hydrastis canadensis*) (observed within a four-mile radius of the proposed project).



The Blue Sucker (*Cycleptus elongates*) is a state threatened (T) fish species. There is no federal protection status for this species. A threatened species on the state level is defined as "any species or subspecies that is likely to become an endangered species within the foreseeable future." The Blue Sucker is found in the largest rivers and lower parts of major tributaries usually in channels and flowing pools with moderate current. The species may also be found in



impoundments. Adults winter in deep pools. Young are found in shallower and less swift water than adults. (Reference NatureServe) The Mississippi Kite (*Ictinia mississippiensis*) is a state deemed in need of management (D) bird species. A species deemed in need of management on the state level is defined as "any species or subspecies of nongame wildlife which the executive director of the Tennessee Wildlife Resource Agency (TWRA) believes should be investigated in order to develop information relating to populations, distribution, habitat needs, limiting factors, and other biological and ecological data." There is no federal protection status for this species. The Mississippi Kite is found in palustrine habitats of forested wetland and riparian areas. The species is also found in terrestrial habitats of forest (conifer, hardwood, mixed), grassland, herbaceous, savanna, shrubland, chaparral, and woodlands (conifer,

hardwood, mixed). (Reference NatureServe) Bell's Vireo (*Vireo bellii*) currently has no state or federal protection status. The bird species is found in palustrine habitats of riparian areas as well as terrestrial habitats of old field, shrubland, chaparral, and woodland (hardwood). (Reference NatureServe) Swainson's Warbler (*Limnothlypis swainsonii*) is a state deemed in need of management (D) bird species. There is no federal protection status for this species. The bird species is found in palustrine habitats of forested wetland and riparian areas as well as terrestrial habitats of forest (conifer, hardwood, mixed), shrubland, chaparral, and woodland (conifer, hardwood, mixed). (Reference NatureServe) Goldenseal (*Hydrastis canadensis*) is a state special concern-commercially exploited (S-CE) flowering plant species. A special concern species on the state level is defined as "any species or subspecies of plant that is uncommon in Tennessee, or has a unique or highly specific habitat requirements or scientific value and therefore requires careful monitoring of its status." Goldenseal (*Hydrastis canadensis*) is also designated commercially exploited due to large numbers being taken from the wild and propagation or cultivation insufficient to meet market demand. Commercially exploited species



are of long-term conservation concern, but the Division of Natural Heritage does not recommend they be included in the normal environmental review process. There is no federal protection status for this species. This flowering plant species is found in rich, mesic hardwood forest, especially those underlain by limestone or alkaline soils. (Reference NatureServe)

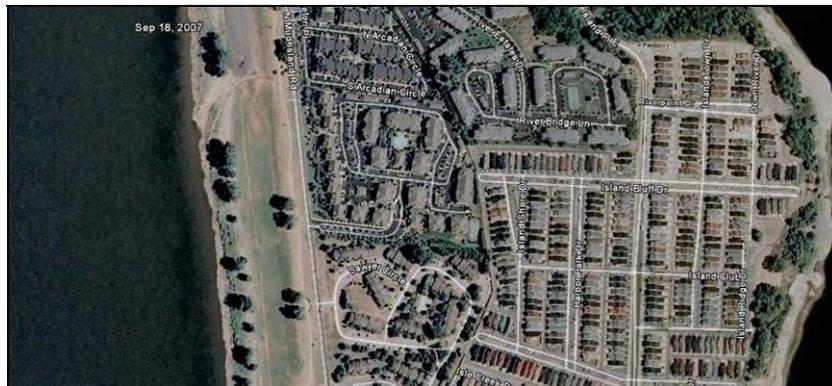
3.2 HUMAN ENVIRONMENT

The project area begins just north of historic Downtown Memphis, and includes a portion of the City commonly referred to as "Uptown Memphis". Uptown Memphis is comprised of some of the oldest neighborhoods in the City that date back to the late 1800's and early 1900's. Uptown Memphis, as a whole, is a depressed area in which most of the residents are of minority race and many earn incomes below the national poverty level. However, there is currently an ongoing effort between the City of Memphis, the Memphis Housing Authority, and several other organizations, to revitalize the Uptown Memphis area. Certain revitalization efforts have already commenced, including the multimillion-dollar expansion of the St. Jude Children's Research Hospital; the demolition and reconstruction, and renovation of several distressed housing projects; and extensive new developments on Mud Island. Many of the developments on Mud Island, including the Harbor Town development, are upscale communities. The revitalization effort of Uptown Memphis will further benefit from the enhanced transportation facility the North Second Street Improvement Project will bring to the area. Examples of infill development within the last decade in the study area are provided in **Figures 3.3** through **3.6**.

Just north of Uptown Memphis, from the Wolf River to Whitney Avenue, the project area is undeveloped and consists of floodplain and wetlands associated with the Wolf River. North of the Wolf River Floodplain, the project area is developed and includes a portion of the Frayser community. The developed portions of the corridor, including Uptown Memphis and Frayser, consists of residential, commercial and industrial land uses, and contains community services including hospitals, schools, churches, and parks.



Northern Mud Island 2001



Northern Mud Island Present



Northern Mud Island Street View

FIGURE 3.3: MUD ISLAND DEVELOPMENT



FIGURE 3.4: MUD ISLAND DEVELOPMENT



Greenlaw Place Apartments (location) 2003



Greenlaw Place Apartments Present (w/new houses along N. Third St.)



Greenlaw Place Apartments Street View

FIGURE 3.5: GREENLAW PLACE APARTMENT DEVELOPMENT
(Located between North Second St., North Third St., Auction Ave., and Greenlaw Ave.)



Redevelopment between Keel Ave., Saffarans Ave., N. Third St., and Main St., 1997



Redevelopment between Keel Ave., Saffarans Ave., N. Third St., and Main St., Present



New Magnolia Terrace Senior Facility, on left in Street View, red box in aerial views)

FIGURE 3.6: UPTOWN REDEVELOPMENT

3.2.1 Land Use

Land use within, and directly adjacent to the project area, consists of residential, commercial, industrial, medical, and undeveloped areas. **Figures 3.7** through **3.11** provide example photos of these land uses within the study area. **Figures 3.12** and **3.13** depict the locations of each of these land uses within the Uptown and Lake Front portions of the study area. Most of the residential and commercial property is intermittently scattered throughout the project area south of the Wolf River, along North Second and North Third Streets, and along Whitney Avenue, north and east of General DeWitt Spain Airport. The residential areas generally consist of low-income, single family households. However, considerable redevelopment activities are occurring that are altering the social and economic characteristics of the area. Some examples of the commercial properties located within the study area include gas stations, convenience stores, auto repair garages, retail stores, and office buildings. The industrial properties are located directly south of the Wolf River, along the northern edge of the residential and commercial areas, and along Whitney Avenue, between General DeWitt Spain Airport and Harvester Lane. St. Jude Children's Research Hospital is located at the southern terminus of the study area, adjacent to North Third Street. The undeveloped portion of the corridor extends from north of the Wolf River to Whitney Avenue and consists of floodplain and wetlands associated with the Wolf River.



FIGURE 3.7: HOSPITAL LAND USE NEAR NORTH THIRD STREET AT SOUTHERN TERMINUS



FIGURE 3.8: RESIDENTIAL AND COMMERCIAL LAND USES AT NORTH SECOND AND NORTH THIRD STREETS NEAR CHELSEA AVE.



FIGURE 3.9: INDUSTRIAL LAND USE NEAR NORTH SECOND STREET AND MARBLE AVENUE



FIGURE 3.10: UNDEVELOPED LAND USE NEAR THE WOLF RIVER



FIGURE 3.11: INDUSTRIAL LAND USE AT WHITNEY AVE. NEAR HARVESTER LANE

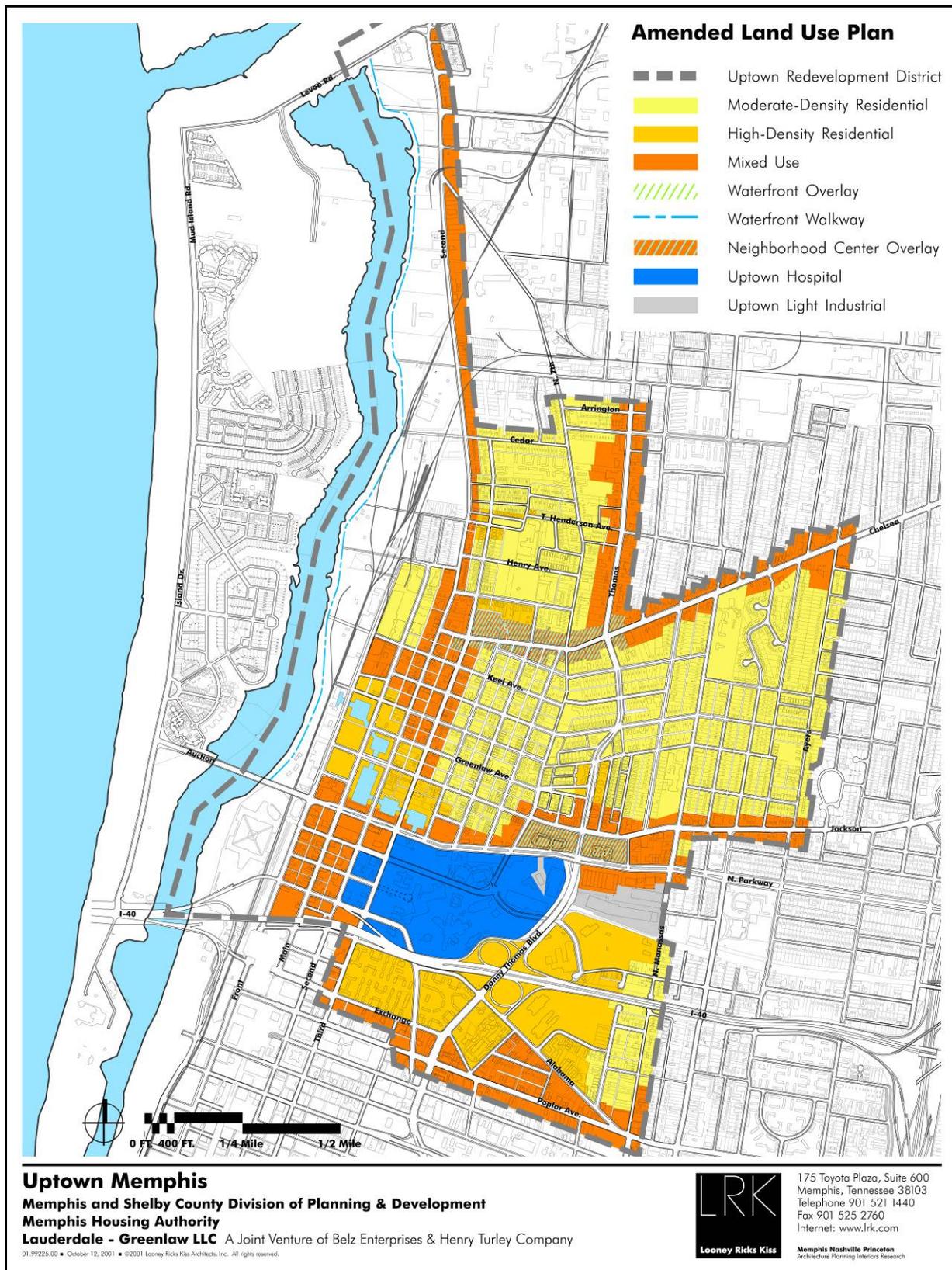


FIGURE 3.12: UPTOWN LAND USE PLAN



FIGURE 3.13: LAKE FRONT LAND USE PLAN

3.2.1.1 Proposed Wolf River Greenway

The proposed “Wolf River Greenway” is located within the undeveloped portion of the North Second Street Corridor associated with the Wolf River Floodplain. The planning and development for the “Wolf River Greenway” is based on recommendations within the Memphis “Park Commission Facilities Master Plan” updated and approved in 1999, the “Memphis 2000 Policy Plan” and the “Community Compact”, approved in 1997 which proposed the establishment of a City/County wide greenbelt system.

The proposed Greenway and trail system will preserve a contiguous forested corridor along the Wolf River from the confluence at the Mississippi River back to the future Memphis City limits at Houston Levee Road; providing an uninterrupted multi-use trail linking Memphis parks and neighborhoods from East Memphis, Raleigh, Frayser, and North Memphis to Downtown, the Mississippi River Greenbelt Park, Mud Island and River Walk. (See **Figures 3.14: Wolf River Greenway Master Plan Map and 3.15: Wolf River Greenway Mississippi River Trail Head Segment Map**) The approximate 22 mile long greenbelt corridor will include a network of multi-use trails along the entire length providing bicycle and pedestrian links between neighborhoods, parks, commercial, employment and entertainment centers.

Approximately 4,614 acres are proposed to be preserved within the Greenway boundaries which include 2,085 acres currently controlled by public agencies, i.e. City of Memphis, Shelby County Preservation Board, Chickasaw Basin Authority, Memphis Light and Water Division and the Tennessee Department of Transportation. The remaining 2,529 acres to be acquired are privately owned.

The Wolf River Greenway Master Plan contains a recommendation for the proposed Greenway boundaries and an alignment for the proposed trail corridor. These recommendations however will be further analyzed and verified through future detailed planning and construction documents.

The proposed boundary for the Greenway through the project impact area generally follows the existing levee on the south side of the Wolf River to the right-of-way for the North I-40 loop. The area of the Greenway between Thomas Street and North Second Street north of the Wolf River is configured on parcel boundaries rather than any man made or natural features. Ideally this area would include all the bottomland vegetation located between North Second Street and the north/south ICRR track and the east/west spur that served the Old Harvester Plant site. The configuration of the Greenway boundaries in this segment will preserve the bottomland environment between the existing levee and the interstate. This segment of the Greenway contains 1146 acres, 342 are publicly owned, the remaining 804 acres are privately owned. The North Second Street improvement extends along the western boundary of the Greenway paralleling Whitney Road , passing through a large open field before crossing through some bottomland hardwoods. Most of the land along this segment of the project is under private ownership.

The alignment for the “Wolf River Greenway, Mississippi River Trail Head Segment Number One“ begins at the northern terminus of the existing Riverwalk on Mud Island crossing the drive leading to the boat ramp parking lot and continues north to the top of the bluff on the south bank of the Wolf River at the confluence with the Mississippi River. Paralleling the top of the bluff the trail corridor follows the alignment of an existing sanitary sewer easement and briefly along the

North Second Street DEIS
Shelby County

top of a levee before turning back north towards the Wolf River to pass underneath the existing North Second Street Bridge. Two proposed neighborhood connector routes along North Second Street will tie the Uptown and Greenlaw Neighborhoods to the trail system. This connection will also provide access to the trail from the Memphis Police mounted patrol stables near Washington Park.

Crossing beneath the Second Street Bridge, the proposed trail corridor dips down to parallel an old river channel and from there, turns up the slope to parallel the river side of the existing concrete floodwall. The floodwall takes a nearly 90 degree turn and terminates at the earthen levee at North Thomas Street.

The improvements to North Second Street south of the Wolf River are along the existing alignment. However, the proposed project will require the construction of a new bridge across the river. Provisions will be made in the design of the new structure to accommodate the trail under the bridge, as well as an at grade signed crossing at the end of the bridge to access the trail from the roadway. See **Figures 3.16: Wolf River Greenway Concept Sketch (Planview)** and **3.17: Wolf River Greenway Concept Sketch (Cross-section View)** for schematics of the trail head at the river crossing.

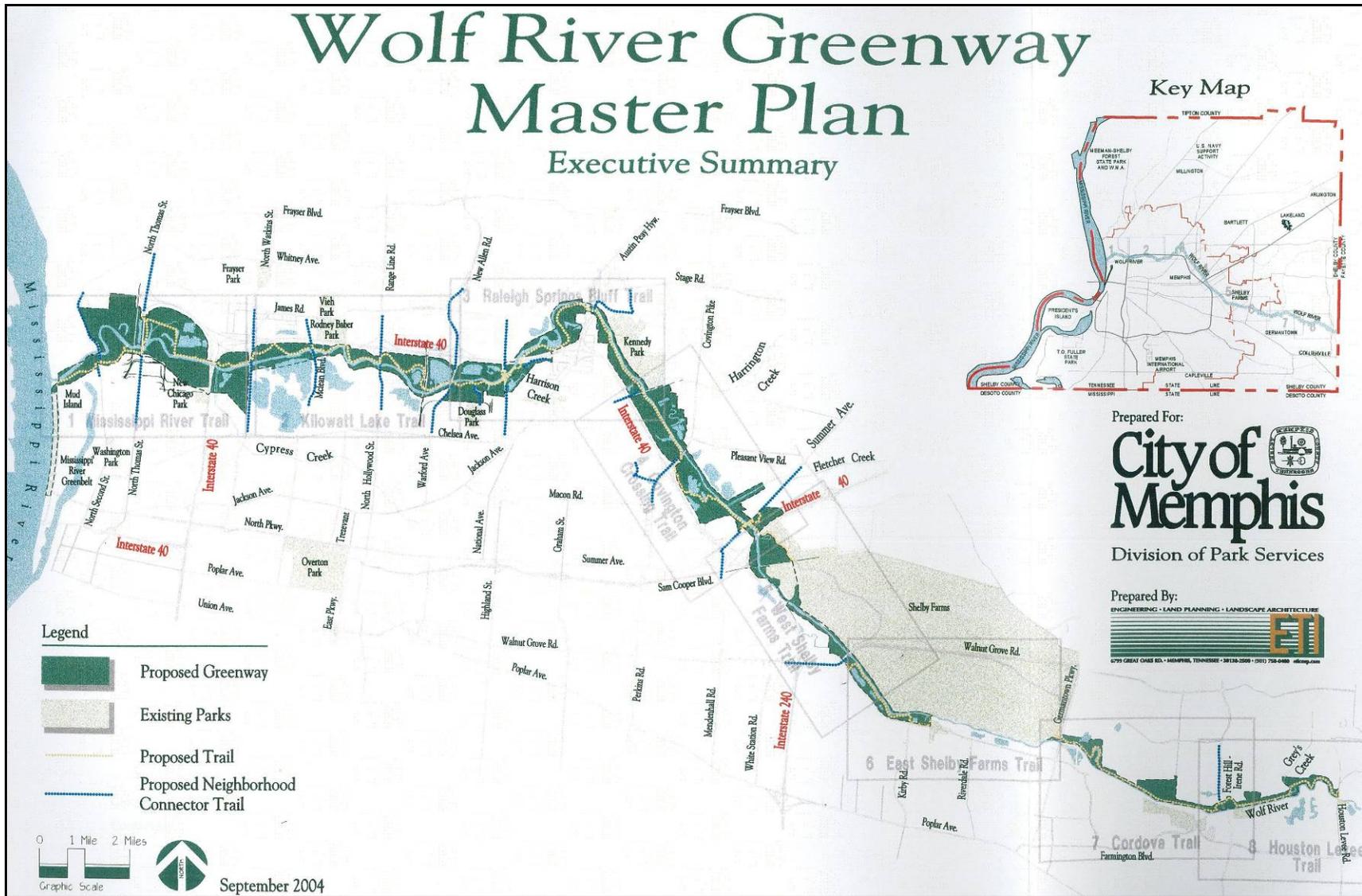


FIGURE 3.14: WOLF RIVER GREENWAY MASTER PLAN MAP

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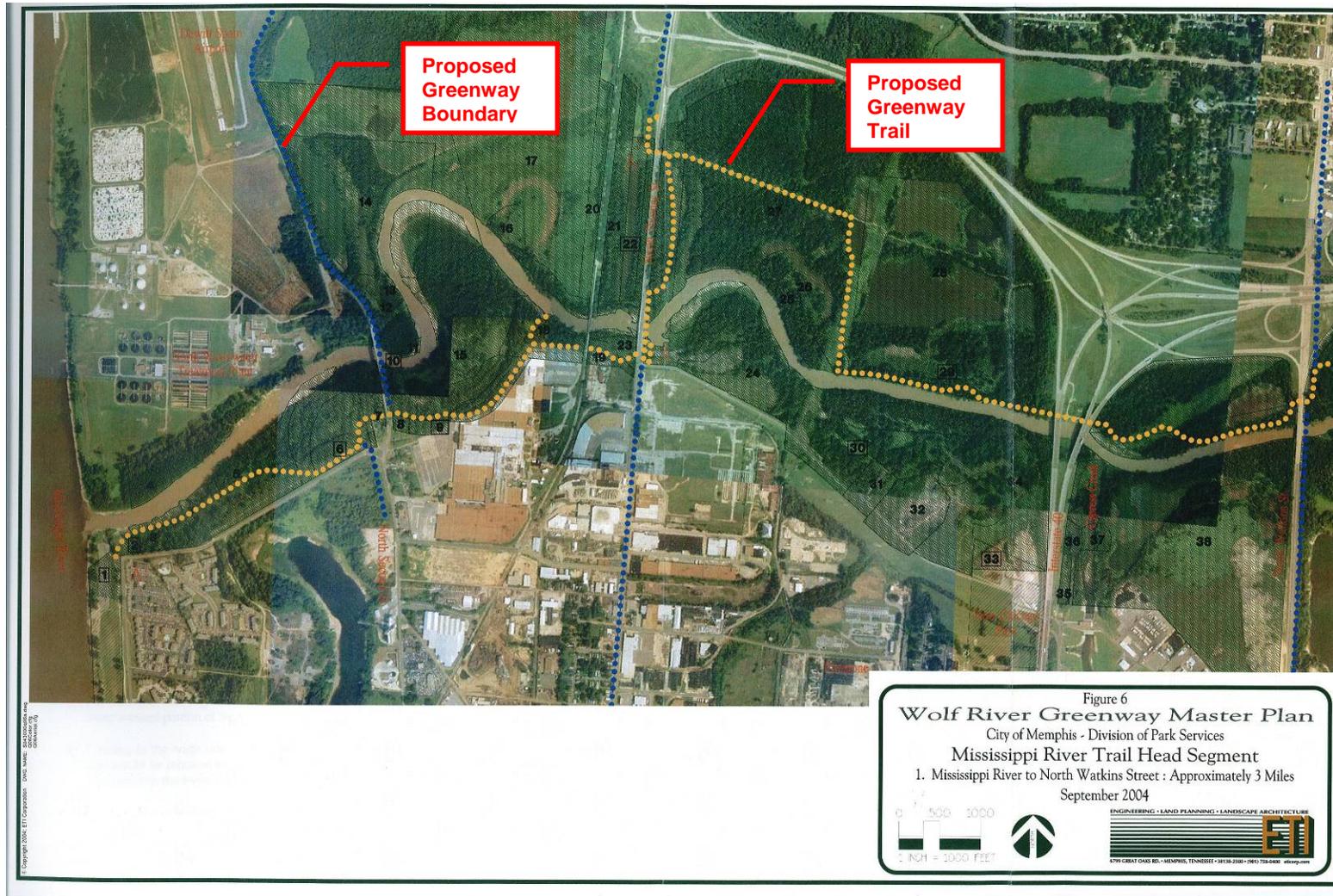


FIGURE 3.15: WOLF RIVER GREENWAY MISSISSIPPI RIVER TRAIL HEAD SEGMENT MAP

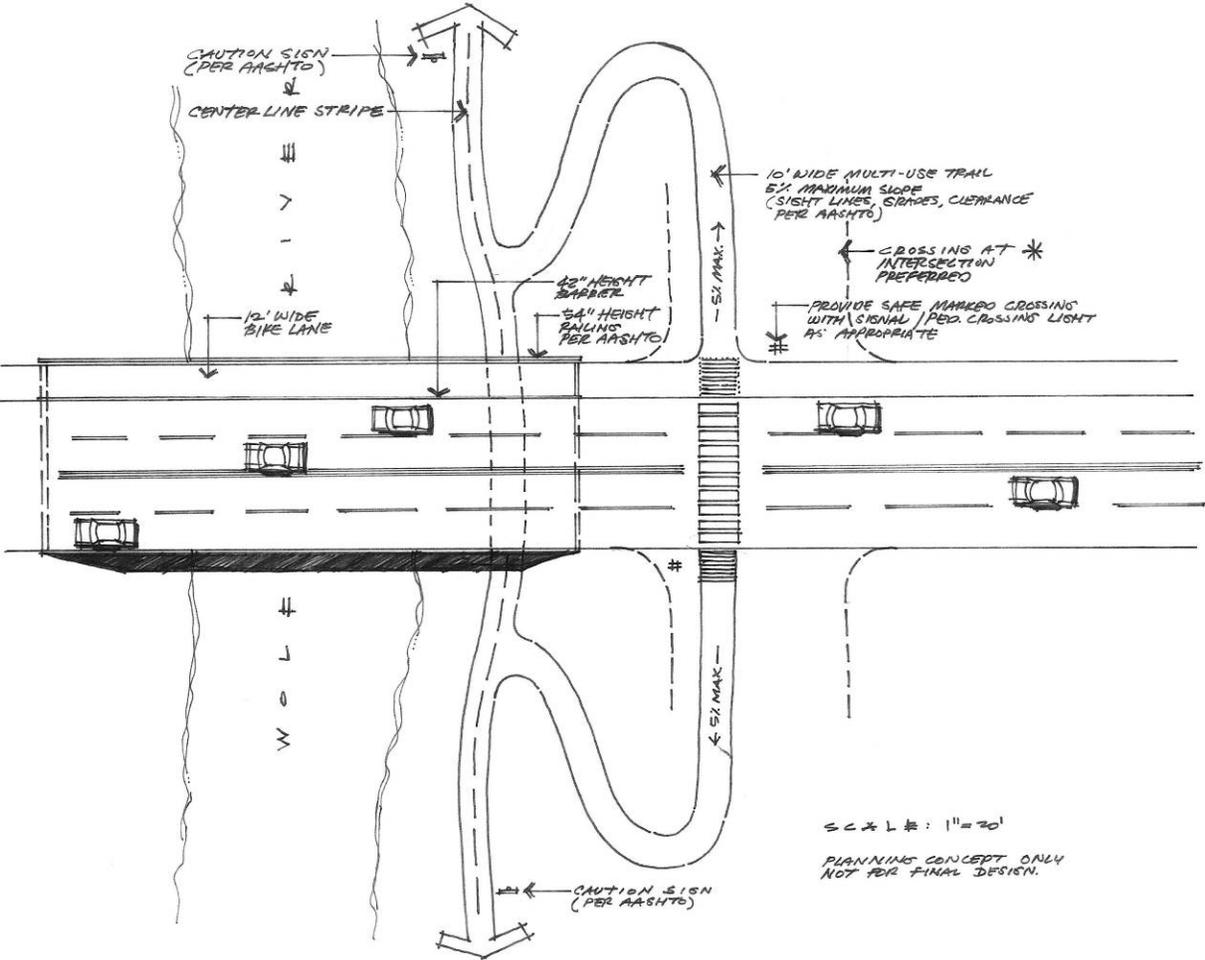


FIGURE 3.16: WOLF RIVER GREENWAY CONCEPT SKETCH (PLANVIEW)

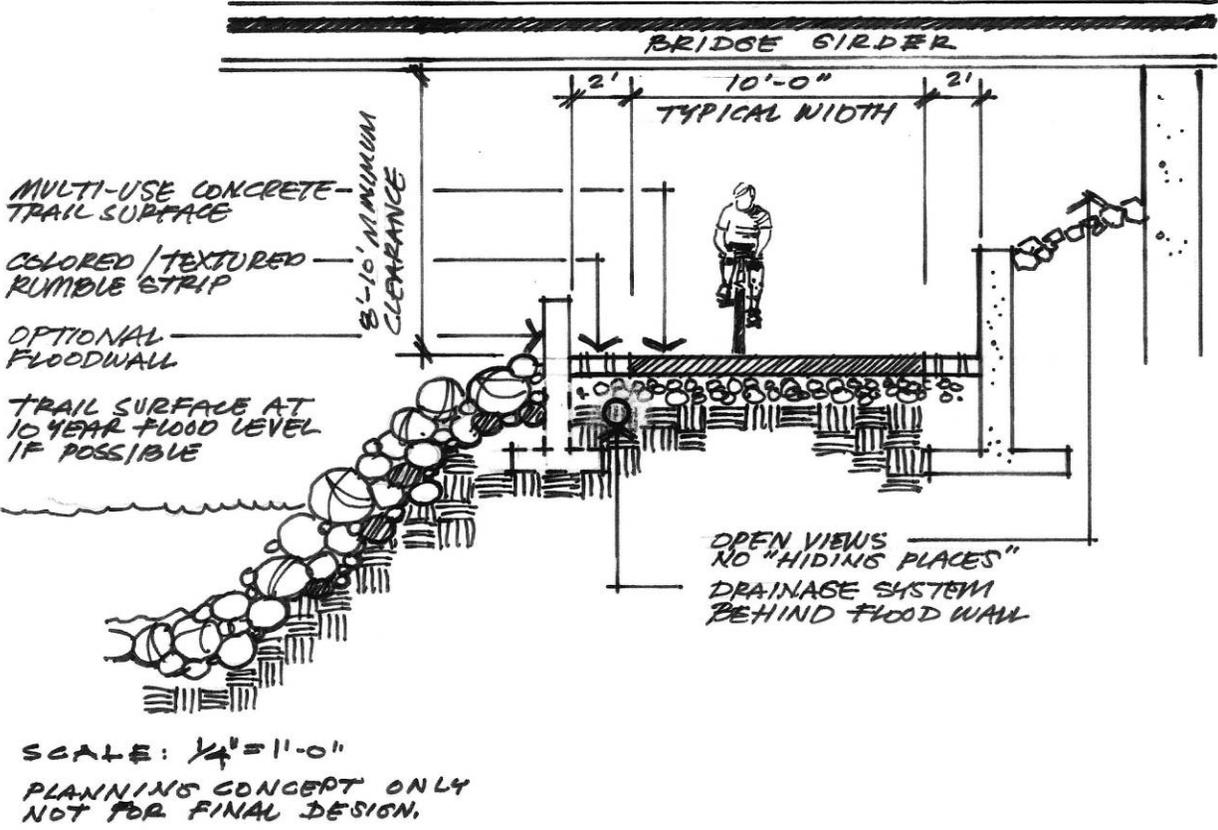


FIGURE 3.17: WOLF RIVER GREENWAY CONCEPT SKETCH (CROSS-SECTION VIEW)

3.2.2 Historic Resources

In compliance with the requirements of Section 106 of the National Historic Preservation Act of 1966, and implementing regulations 36 CFR 800, a Cultural Resource Survey was conducted to identify historic resources in or eligible for the National Register of Historic Places (NRHP) within the project study area.

The goal of **Section 106** is to identify historic properties potentially affected by a Federal undertaking, assess the undertakings effects, and seek ways to avoid, minimize, or mitigate any adverse effects on historic properties.

The National Register of Historic Places (NRHP) is the Nations' official list of cultural resources worthy of preservation. The NRHP was authorized under the National Historic Preservation Act of 1966 and is part of a national program to coordinate and support public and private efforts to identify, evaluate and protect our historic and archaeological resources. Properties listed in the NRHP include historic districts, sites, building, structures and objects that are significant in American history, architecture, archaeology, engineering and culture.

Section 106 is a provision of the National Historic Preservation Act of 1966, which requires all federal agencies to consider the effects of their projects on historic properties and to provide the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on those effects.

Section 106 applies to properties that have been listed in the National Register of Historic Places (NRHP), properties that have been determined to be eligible for listing in the NRHP, and properties that may be eligible but have not yet been evaluated.

Between 2001, 2003, and 2009, several pedestrian and vehicular reconnaissance of the project's Area of Potential Effects (APE) were undertaken to locate architectural resources listed in or potentially eligible for listing in the NRHP; that is, architectural resources 50 years old or older and any structures less than 50 years of age of exceptional significance. The APE was defined as the area in which the proposed project may directly or indirectly cause alterations in the character of use of historic properties, if any such properties exist. This area includes properties that may be physically or visually affected by the construction of the project, as well as properties affected by changes in air quality, noise levels, setting and land use. The APE included the existing and proposed right-of-way, in which all construction activities would occur, and any properties that may be directly affected by the proposed construction.

Several hundred resources, including individual structures and historic districts, were included in the survey of historic resources. Based on the results of the historic property identification efforts, eight properties listed in or eligible for listing in the NRHP are located within the APE of the Build Alternative under study. These properties are listed in **Table 3.1** and **Figure 3.18**.

TABLE 3.1: NATIONAL REGISTER LISTED AND ELIGIBLE PROPERTIES AND THEIR EFFECT WITHIN THE APE

National Register Status	Property Affected	Effect	4(f) Involvement
Listed	Pinch-North Main Commercial Historic District	No Adverse Effect	No
Listed	Greenlaw Addition Historic District	No Adverse Effect	No
Eligible	Jacob Burkle House	No Adverse Effect	No
Eligible	Port of Memphis Grain Elevator	No Adverse Effect	Yes
Eligible	Memphis, Wolf River and Nonconnah Creek Flood Control Project	No Adverse Effect	Yes
Eligible	International Harvester Plant	No Adverse Effect	No
Eligible	United Auto Workers Building	No Adverse Effect	No
Listed	Wells-Arrington Historic District	No Adverse Effect	No
Reference Historic Resources Location maps for locations.			

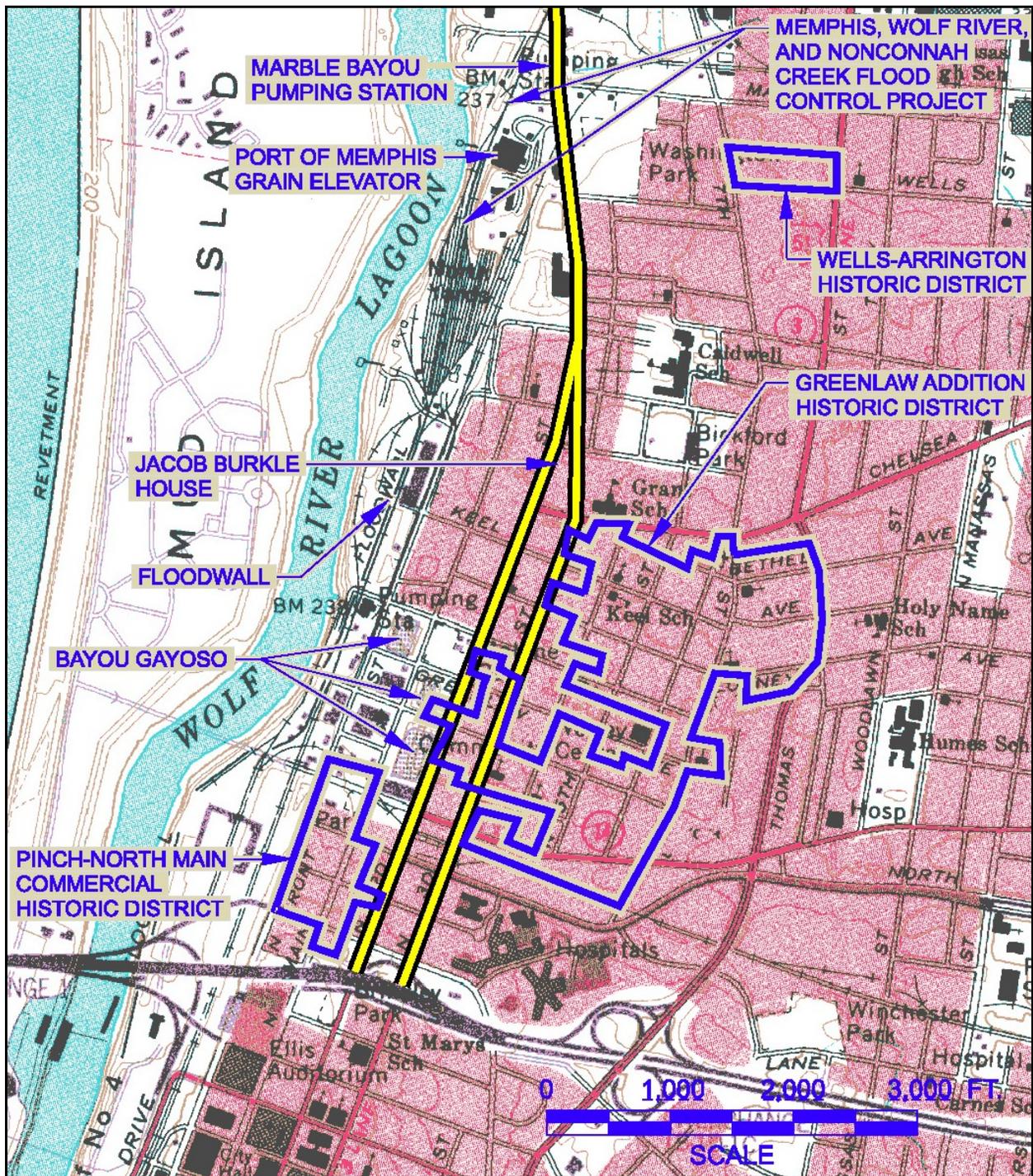


FIGURE 3.18: NATIONAL REGISTER LISTED AND ELIGIBLE PROPERTIES WITHIN THE APE (1 OF 2)

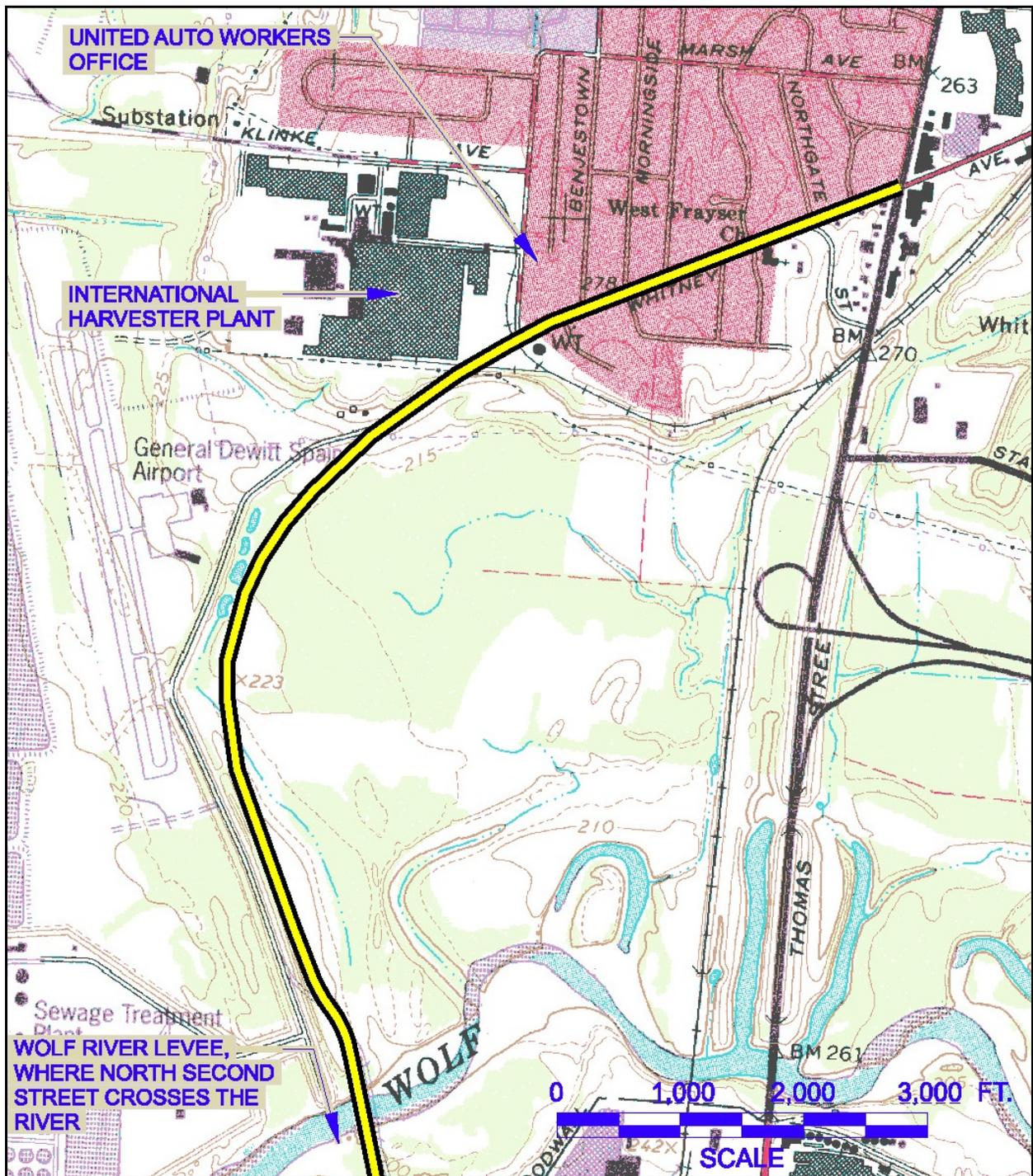


FIGURE 3.18: NATIONAL REGISTER LISTED AND ELIGIBLE PROPERTIES WITHIN THE APE (2 OF 2)

3.2.2.1 NRHP Resources

Pinch-North Main Commercial Historic District

The Pinch-North Main Commercial Historic District is a National Register-listed historic district containing approximately 38 contributing buildings spread over 19 acres. The buildings within the district are primarily late nineteenth and early twentieth century one to three story masonry commercial structures. The district is significant under the themes of Architecture, Community Planning and Development, Commerce, and Exploration/Settlement. The listed boundary roughly corresponds to North Front Street and North Second Street, Auction Avenue and Commerce Avenue; the majority of buildings in the district are concentrated on North Main Street and North Front Street.

Greenlaw Addition Historic District

The Greenlaw Addition Historic District is a National Register listed historic district covering approximately 100 acres between North Second Street and Danny Thomas Boulevard containing examples of mid-nineteenth to early twentieth century residential and commercial structures. Residential styles within the district include Late Victorian, Craftsman and various turn-of-the-century revivals. The district is significant under Criteria A and C for commerce and architecture. The listed boundary roughly corresponds to Bethel, Thomas, Auction, Second and Seventh Streets.

Burkle House

The Burkle House at 826 North Second Street, located north of the Greenlaw Addition Historic District, is a one-story frame vernacular Greek Revival, Italianate-influenced residence. It is a good example of its period and retains much of its original character.

The Burkle House was determined eligible for the National Register under Criterion A for its association with the Underground Railroad and Criterion C as a significant example of a Greek Revival, Italianate influenced residential structure. The recommended National Register boundary corresponds to the current legal lot.



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Port of Memphis Grain Elevator



The Port of Memphis Grain Elevator is eligible for listing in the National Register of Historic Places under Criterion A for its significance in Commerce and Agriculture. Built in 1936, the elevator had a direct impact on the commerce of the City of Memphis and on the agriculture development of the region. It was the first major barge terminal to ship agriculture products from the City of Memphis. The elevator was built as part of the federal New Deal program of the 1930's to promote crop diversification and assist farmers in the region with more accessible markets for their

agriculture products and promote overall Memphis commerce. The property continues today to be used as a grain storage and shipping center for the region.

The boundary for the Port of Memphis Grain Elevator includes the entire city-owned parcel on which the elevator is sited, as well as a parcel west of the Illinois Central Railroad which encompasses the conveyor and terminal on the Wolf River. The grain elevator property fronts on North Second Street.

Memphis, Wolf River, and Nonconnah Creek Flood Control Project

The Memphis, Wolf River, and Nonconnah Creek Flood Control Project was built to prevent flooding within the low lying areas of Memphis along the Wolf River north of downtown and Nonconnah Creek to the south of downtown. Improvements were also made to Gayoso Bayou, a stream which flowed into the Wolf River near Saffarans Avenue and Front Street. This National Register eligible property is significant under Criteria A "Community Planning and Development and Politics Government" and Criterion C for "Engineering".

Under Criterion A, the flood control project is significant for its role in protecting large areas of Memphis from flooding and promoting new urban development. The initiation of the flood control project was designed to protect the residential, commercial, and industrial properties near these tributaries allowing for new investments and construction. It is also significant for its role in the New Deal. The project was one of many authorized by the federal government to benefit Memphis and provided employment to thousands of men during the Great Depression.

The Memphis, Wolf River, and Nonconnah Creek Flood Control Project is also significant under Criterion C for its Engineering as part of the USACE legacy of flood control management on the Mississippi River. The project's levees, floodwall and pumping stations reflect typical designs of their period and are similar to other flood control projects of the mid-20th century.

The boundary for the Memphis, Wolf River and Nonconnah Creek Flood Control Project extends along the project corridor from I-40 north to the Wolf River and includes all of the extant floodwalls, levees, pumping stations, storage reservoirs and other associated facilities.

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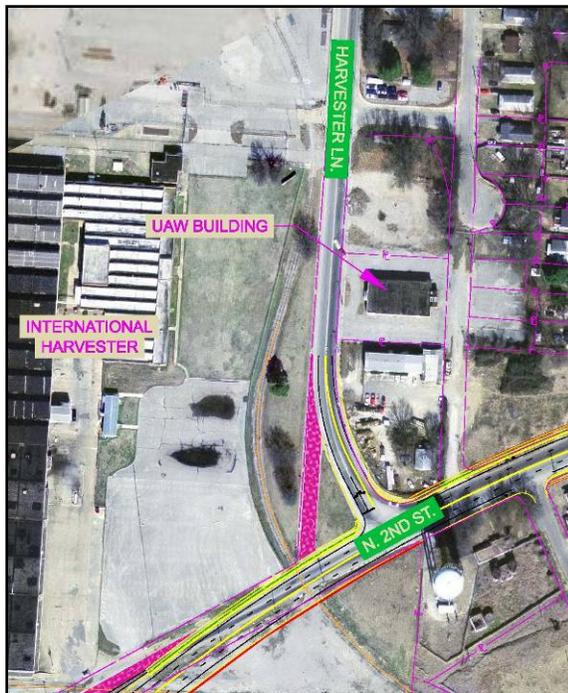
The International Harvester Plant

The International Harvester Plant is eligible for listing in the National Register of Historic Places under Criterion A for its significance in industry and manufacturing. Construction of the plant in 1948 spurred extensive growth and development in north Memphis and Frayser in the 1950s and 1960s. The plant provided steady incomes and support for hundreds of employees each year and several subdivisions were platted and developed to provide nearby housing for workers. The plant was a mainstay in the local community for three decades. The plant was one of the first in Memphis to have desegregated working conditions. The influence of the United Auto Workers Union was important in creating equal work for equal pay for both whites and African Americans.

The boundaries for the International Harvester Plant are Kinkle Road on the north, Second Avenue/Whitney Avenue on the south and Harvester Lane on the east.

United Auto Workers Building

The UAW Office is eligible for listing in the National Register under Criterion A for its historical significance on the local level. The building is significant in the area of Labor and Industry for its role in promoting integration in the workplace in Memphis. The International Harvester Plant was one of the first industries in Memphis providing equal pay for both whites and African Americans. As the civil rights movement advanced in Memphis, the plant and the associated UAW Union Office became enmeshed with the larger struggle for integration and equal rights in the community. The UAW local experienced its own internal conflict between being a segregated or integrated local. Through the influence of the national union and local leadership, UAW Local 988 voted to integrate in the 1960s, and this precedent influenced other industries and companies to follow their example. The boundary for the United Auto Workers Building is the land parcel on which it is located. It is bound on the west by Harvester Lane and on the east by Sinclair Road.



Wells-Arrington Historic District

The Wells-Arrington Historic District is a National Register listed historic district centered on Wells and Arrington Avenues. This district contains examples of early twentieth century shotgun and double shotgun residences. The district is significant under the Residential Resources of Memphis MPS cover. The listed boundary encompasses 563-610 Arrington Avenue and 556-601 Wells Avenue.

3.2.3 Social Characteristics

3.2.3.1 Population Trends

Social characteristics of the project area were derived from the U.S. Census Bureau and the U.S. Bureau of Labor Statistics (BLS). The U.S. Census was last performed in the year 2000. Since that time, the community surrounding the study area has experienced considerable redevelopment. Additionally, a severe national economic recession has occurred. Therefore, the social and economic characteristics recorded in the 2000 Census are somewhat dated. However, no other source can provide the detailed social and economic data for the areas directly adjacent to the study area. Because of the competing desire to report the social and economic characteristics directly adjacent to the study area, and also report the most up to date information available, the 2000 Census data is reported along with updated national, state, county, and city data from the BLS.

The Census tracts adjacent to the study area include 1, 2, 21, 22, and 99. Census Tract 1 includes Mud Island and a portion of the Wolf River Harbor Area. Census Tract 2 includes a portion of the Uptown Neighborhood and a portion of the Wolf River Harbor Area. It is generally bounded by the Wolf River Harbor to the west, Chelsea Avenue to the south, US-51 to the east, and North Seventh Street to the north. Census Tract 21 includes the St. Jude Medical District and a portion of the Wolf River Harbor Area. It is generally bounded by the Wolf River Harbor to the west, Auction Avenue to the south, North Seventh Street to the east, and Chelsea Avenue to the north. Census Tract 22 includes the Pinch District and a portion of the Wolf River Harbor Area. It is generally bounded by the Wolf River Harbor to the west, Poplar Avenue to the south, North Lauderdale Street to the east, and Auction Avenue to the north. Census Tract 99 includes the Wolf River basin and General DeWitt Spain Airport Area. The southern portion of Census Tract 99 contains the northern terminus of the study area. Refer to **Figure 3.19: 2000 Adjacent Census Tracts Map** for a map of the 2000 Census Tracts.

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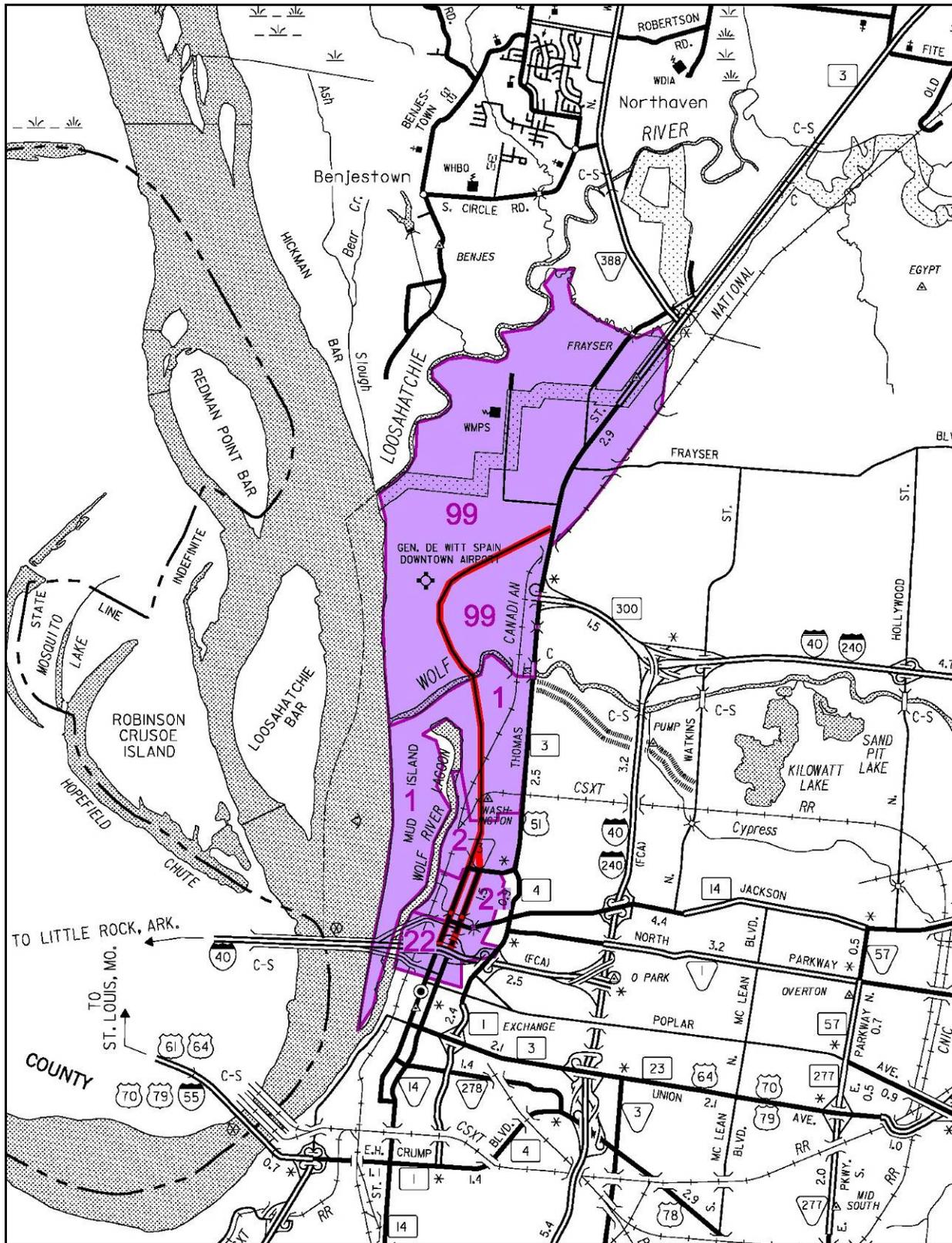


FIGURE 3.19: 2000 ADJACENT CENSUS TRACTS MAP

3.2.3.2 Census 2000 Population Characteristics

Population

Based on information from the U.S. Census Bureau, the United States experienced a 13.2 percent increase in population from 1990 to the year 2000. During the same period, the population of Tennessee increased at a higher rate of 16.7 percent. While the population of Tennessee and the nation were experiencing high growth rates, Shelby County and particularly the City of Memphis grew at much lower rates of 8.6 percent and 6.5 percent, respectively. Additionally, the areas directly adjacent to the project study area grew at an even lower rate of 2.4%. The population of the City of Memphis grew at a rate of approximately half of the national average during the 1990's. The population of the areas directly adjacent to the project study area grew at a rate of approximately 20% of the national average during the 1990's. With the exception of Census Tract 1, which includes Mud Island and a portion of the Wolf River Harbor Area, the census tracts immediately adjacent to the study area have declined or remained stagnant in population between 1990 and 2000. **Table 3.2: Population Growth 1990 to 2000** and **Figure 3.20: Population Growth 1990 to 2000** compare population and growth rates from 1990-2000.

TABLE 3.2: POPULATION GROWTH 1990 TO 2000

Geographic Area	1990 Population	2000 Population	Percent Change (%)
United States	248,709,873	281,421,906	13.2%
Tennessee	4,877,185	5,689,283	16.7%
Shelby County	826,330	897,472	8.6%
Memphis	610,337	650,100	6.5%
Adjacent Census Tracts	13,565	13,896	2.4%
Census Tract 1	1,278	2,934	129.6%
Census Tract 2	2,177	1,466	-32.7%
Census Tract 21	1,124	911	-19.0%
Census Tract 22	916	434	-52.6%
Census Tract 99	8,070	8,151	1.0%

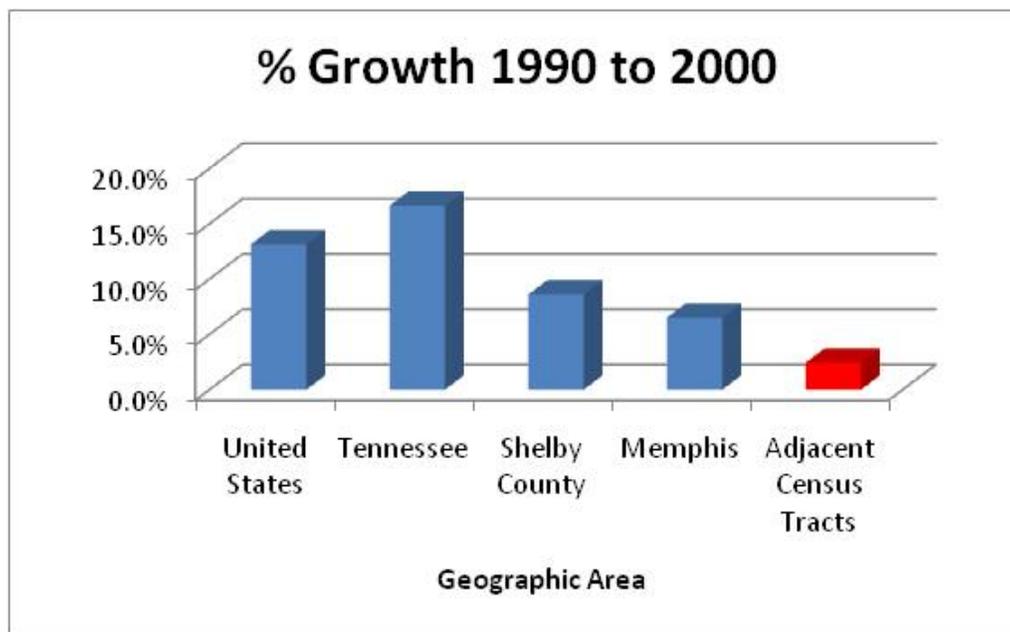


FIGURE 3.20: POPULATION GROWTH 1990 TO 2000

Education

The percentage of the population of the United States that graduated from high school was 80.4 percent in 2000. The Tennessee high school graduate percentage, 75.9 percent, was lower than the nationwide percentage. It is important to note that only those 25 years or older were included in these percentages. In Shelby County, Tennessee, the percentage of high school graduates (80.8 percent) was above the state average and comparable to the U.S. average. The percentage of the population for the City of Memphis with high school diplomas was 76.4 percent in 2000, which is similar to the state wide percentage. However, the percentage of the population of the areas directly adjacent to the study area was considerably lower at 67.8 percent. Furthermore, in three of the five census tracts adjacent to the study area, the high school graduation percentage is less than fifty percent. **Table 3.3** and **Figure 3.21** compare the high school graduation rates in 2000.

Minority Populations

Approximately one-fourth (24.9 percent) of the United States population was a member of a minority group in 2000. Tennessee's minority population comprised 19.8 percent of the total population of the state. Shelby County and Memphis had much greater concentrations of minorities than the State of Tennessee. Minorities comprised 52.7 percent of the county and 65.6 percent of the City in the year 2000. The percentage of the population of the areas directly adjacent to the study area that is a minority was 64.8 percent, which is comparable to the City's percentage. However, in three of the five census tracts adjacent to the study area, the percentage of the population that is a minority is greater than 87 percent. **Table 3.3** and **Figure 3.21** compare the minority percentages in 2000.

Employment

The 2000 U.S. Census reported that the rate of unemployment in the United States was 3.7 percent. Tennessee had a similar unemployment rate of 3.5 percent. Shelby County had a rate (4.5 percent) that surpassed the statewide and national average. The unemployment rate of

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Memphis was 5.4 percent in 2000, which surpassed the national, state, and county rates. The unemployment rate of the areas directly adjacent to the study area was 7.2 percent, which was over double the state average and almost double the national average. **Table 3.3** and **Figure 3.21** compare the unemployment rates in 2000.

Poverty Level

Paralleling the trends of the unemployment rates, the rate of people living below the poverty level was higher for Shelby County and particularly in the City of Memphis as compared to the national and state poverty rates. According to the U.S. Census Bureau, the average income threshold identifying the poverty level for a family of four in 2001 was \$17,960. In 2000, the percentage of people in the United States that were living below poverty level was 12.4 percent. The Tennessee poverty rate (13.5 percent) was comparable to the national poverty rate, while the Shelby County rate (16.0 percent) was higher than the state rate, and the Memphis rate (20.6 percent) was higher than the county rate. The poverty rate of the population of the areas directly adjacent to the study area was considerably higher at 32.2 percent, which is over 2.5 times the national poverty rate. Furthermore, in three of the five census tracts adjacent to the study area, the poverty rate is higher than 62 percent. This is five times the national poverty rate. **Table 3.3** and **Figure 3.21** compare the poverty rates in 2000.

Income

In 2000, the per capita income in the United States was \$21,587. Tennessee had a per capita income of \$19,393. The per capita income for Shelby County was \$20,856. Memphis had a per capita income that was lower than that of the county, state or national average. The per capita income for Memphis was \$17,838 in 2000. The per capita income of the population of the areas directly adjacent to the study area was comparable to the City of Memphis at \$17,059. However, three of the five census tracts adjacent to the study area had a per capita income of less than \$12,000, and two of the census tracts had a per capita income of less than \$6,900. This is equivalent to 55% and 30% of the national per capita income, respectively.

With the exception of Census Tract 1, which includes the upscale neighborhoods on Mud Island, the project study area has a low high school graduation rate, a large minority population, a high unemployment rate, a high percentage of the population living below the poverty level, and a low per capita income. Therefore, based on social and economic data attained from the 2000 U.S. Census, the project area can be categorized as disadvantaged and underprivileged.

Age

In 2000, the median age in the United States was 35.3 years. Tennessee's population had a median age of 35.9 years. The median age in Shelby County was 32.9 years. The City of Memphis's population had a median age that was lower than that of the county, state or nation. The median age for Memphis's population was 31.9 years in 2000. The percentage of the population of Memphis that was over 18 and over 65 years in 2000 was 72.1% and 10.9%, respectively. These are both younger than the percentages of the U.S. population of 75.1% and 12.4%, respectively.

TABLE 3.3: 2000 POPULATION CHARACTERISTICS

Geographic Area	2000 Population	High School Graduate (%)	Minority (%)	Unemployment Rate (%)	Below Poverty Level (%)	Per Capita Income
United States	281,421,906	80.4	24.9	3.7	12.4	\$ 21,587
Tennessee	5,689,283	75.9	19.8	3.5	13.5	\$ 19,393
Shelby County	897,472	80.8	52.7	4.5	16.0	\$ 20,856
Memphis	650,100	76.4	65.6	5.4	20.6	\$ 17,838
Adjacent Census Tracts	13,896	67.8	64.8	7.2	32.2	\$ 17,059
Census Tract 1	2,934	90.5	30.8	3.7	17.8	\$ 40,518
Census Tract 2	1,466	43.5	99.1	9.9	62.3	\$ 5,372
Census Tract 21	911	49.7	97.7	6.2	63.5	\$ 6,903
Census Tract 22	434	28.0	87.1	4.9	64.4	\$ 18,582
Census Tract 99	8,151	68.2	66.0	8.2	26.7	\$ 11,770



FIGURE 3.21: 2000 POPULATION CHARACTERISTICS

3.2.3.3 Recent Population & Development Characteristics

Since the 2000 U.S. Census, the demographics of the areas directly adjacent to the study area have changed due to considerable redevelopment activities taking place. Memphis's Center City Commission (CCC) reports over \$3 billion in public and private development projects recently completed, planned or underway in all of downtown Memphis. This total includes \$765 million in the Mud Island, Pinch, Uptown, and St. Jude Children's Research Hospital areas that surround the project study area. Redevelopment activities within the project study area are listed in **Table 3.4** and shown in **Figure 3.22**.

As an example of the changing demographics, Mud Island (located within Census Tract 1) has become home to over 5,000 residents in the past decade. Many of the developments on Mud Island, including the Harbor Town development, are upscale communities that serve as a home to doctors and other medical and business professionals at St. Jude and executives that work downtown.

Considerable redevelopment has also been occurring in the Uptown Neighborhood. Uptown covers 100 blocks, and is a mixed-income community of public housing, market-rate homes, and affordable rental units for low-income families. In 2007, the City of Memphis began an anti blight campaign to eliminate abandoned properties and approved \$25 million citywide through five years for this effort. In this time, Uptown officials began focusing on the demolition of dangerous occupied and vacant properties in the area. The Memphis Housing Authority (MHA) has the ability to use eminent domain in Uptown because the Memphis City Council and Shelby County Commission declared the area blighted. MHA initiates the proceedings and buys the blighted properties through its land bank. Then the City's development partners and master developers of Uptown, Belz Enterprises and Henry Turley Co., are paid fees to develop the property. Many residents in the Uptown Neighborhood work in Downtown Memphis or at the St. Jude Children's Research Hospital.

St. Jude Children's Research Hospital (SJCRH) and the American Lebanese Syrian Associated Charities (ALSAC) plan considerable growth over the next 20 years. ALSAC was founded in 1957 and exists for the sole purpose of raising funds to support the operation and maintenance of St. Jude Children's Research Hospital. ALSAC is located within the SJCRH campus. The 2005 SJCRH Master Site and Facilities Plan projects an annual growth in authorized positions of four percent per year. According to the plan, SJCRH and ALSAC will grow from the number of authorized positions in the Fiscal Year 2005 budget of 3,328 and 380, to a total of authorized positions in FY 2014 of 4,737 and 896, respectively. Furthermore, the master plan can accommodate approximately 9,000 SJCRH and ALSAC employees. As seen in **Table 3.4**, the value of developments recently completed, planned, or underway on campus are considerable to accommodate the projected growth. The population of the adjacent communities can be expected to grow along with the campus. Many of the new jobs can be expected to be professional in nature, further altering the demographics of the surrounding communities.

The Pinch District has seen redevelopment in recent years. Since the late 1980s, urban renewal has changed the character of the neighborhood. The construction of the Pyramid and the development of downtown trolley lines helped to revitalize the area. Popular restaurants and bars now distinguish the Pinch District, and developers have recognized it as a promising area for the construction of new residences such as condominiums and townhouses.

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TABLE 3.4: RECENT REDEVELOPMENT

Location/Development	Value	Description
Mud Island Community		
River Inn Bed & Breakfast	\$ 9,000,000	Upscale hotel
Harbor Town Landing	\$ 13,000,000	Mixed-use project
Island Point	\$ 15,000,000	150 Single-family homes
River Town on the Island	\$ 70,000,000	200 condos
	\$ 107,000,000	
Pinch District		
Turning Pointe	\$ 2,000,000	Condo conversion
Harbor Lights	\$ 6,000,000	24 condos
Pinch Place	\$ 8,000,000	64 condos
429 North Main	\$ 600,000	Office renovation
374 North Main	\$ 5,000,000	22 townhomes
	\$ 21,600,000	
Uptown		
Riverbend Place	\$ 3,500,000	30 apartments
April Woods Apartments	\$ 14,000,000	117 apartments
497 North Front	\$ 1,400,000	17 lofts
The Metropolitan	\$ 8,000,000	114 apartments
North Parkway Realignment	\$ 6,000,000	Roadway improvements
North 2 nd Street Widening	\$ 100,000,000	Roadway improvements
Milagro Biofuels	\$ 3,000,000	Renovation project
	\$ 135,900,000	
St. Jude Children's Hospital	\$ 500,000,000	Research Hospital
Total	\$ 764,500,000	

3.2.4 Economic Characteristics

3.2.4.1 Employment Characteristics

Memphis has a broad economic base with diversified employment opportunities. It is headquarters for three Fortune 500 companies, FedEx, International Paper, and AutoZone. Other Fortune 1000 companies operating there include Service Master, First Horizon National Corp., Mueller Industries, Thomas & Betts, and Freds. There are also some well-known restaurants such as The Rendezvous and Corkey's BBQ. Science and technical businesses include Brother Industries USA, Buckman Laboratories, Sofamor Danek, Morgan-Keegan, Sharp Manufacturing of America, Smith & Nephew, and Wright Medical Technologies. In Uptown Memphis, much of the industrial and manufacturing type businesses have either gone out of business or moved away in recent years. This has caused a loss of industrial and commercial jobs.

Since the 2000 U.S. Census, the unemployment rate of the country has changed considerably due to a severe recession. It is unlikely the areas directly adjacent to the study area have avoided the impacts of the recession. According to data attained from the U.S. Bureau of Labor Statistics (BLS), the U.S., State, and Shelby County unemployment rates have all more than doubled from 2000 to 2009. Unemployment in the City of Memphis has nearly doubled. The annual unemployment rates of the U.S., Tennessee, Shelby County, and the City of Memphis are charted and graphed in **Table 3.5**. Updated Census tract data will not be available until the 2010 U.S. Census is complete.

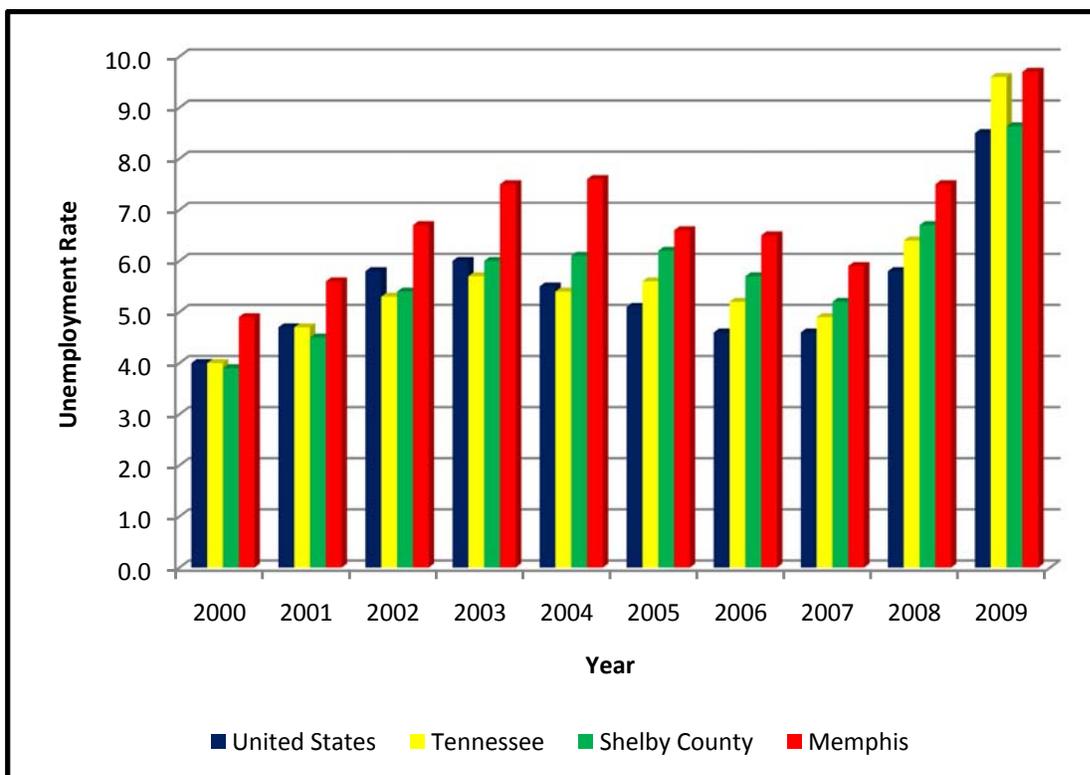
The 2000 U.S. Census reported that the unemployment rate of the areas directly adjacent to the study area was 7.2 percent, which was over double the state average and almost double the national average in 2000. Even with the redevelopment activities occurring in the area, it is unlikely the areas directly adjacent to the study area are not currently experiencing a double digit unemployment rate.

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TABLE 3.5: UNEMPLOYMENT RATES, 2000 TO 2009

Year	United States	Tennessee	Shelby County	Memphis
2000	4.0	4.0	3.9	4.9
2001	4.7	4.7	4.5	5.6
2002	5.8	5.3	5.4	6.7
2003	6.0	5.7	6.0	7.5
2004	5.5	5.4	6.1	7.6
2005	5.1	5.6	6.2	6.6
2006	4.6	5.2	5.7	6.5
2007	4.6	4.9	5.2	5.9
2008	5.8	6.4	6.7	7.5
2009	8.5	9.6	8.6	9.7

Notes: Source is Bureau of Labor Statistics (www.bls.gov)
2009 Data is through May



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Figure 3.23 maps the businesses that employ 500 or more people. These businesses are listed in the “*Traffic Data for North Second Street Improvements*” report on file in the TDOT Environmental Division Office in Nashville, TN. This data was attained from the Tennessee Department of Economic and Community Development. As seen in **Figure 3.23**, many large employers are located in Memphis’ downtown central business district. The community will benefit from improved interconnectivity with the neighborhoods in north Memphis and these employment centers.

Major employers within Memphis and their approximate local workforce, according to the Greater Memphis Chamber of Commerce, are as follows: Federal Express (32,000), Memphis City Schools (15,240), United States Government (14,500), Methodist Healthcare (8,937), City of Memphis (6,909), Baptist Memorial Health Care Corp. (6,791), Shelby County Government (6,513), Naval Support Activity Mid-South (6,372), Wal-Mart Stores (6,000), Harrah’s Entertainment, Inc. (5,780), Shelby County Schools (5,200), Tennessee State Government (5,000), University of Tennessee Health Science Center (3,822), DeSoto County School District (3,600), Regions Financial Corp. (3,524), The Kroger Company (3,500), St. Jude Children’s Research Hospital (3,207), First Horizon National Corp. (3,027), Technicolor Video Services, Inc. (2,800), Memphis Light, Gas & Water (2,700), the University of Memphis (2,605), the ServiceMaster Co. (2,585), International Paper Co. (2,500), Walgreen Co. (2,300), and Regional Medical Center of Memphis (2,248). Much of this local workforce (43,647) comes into Memphis from Tipton County, which lies to the north of the City, and many of these people enter via North Second Street, through the congested Uptown Area.

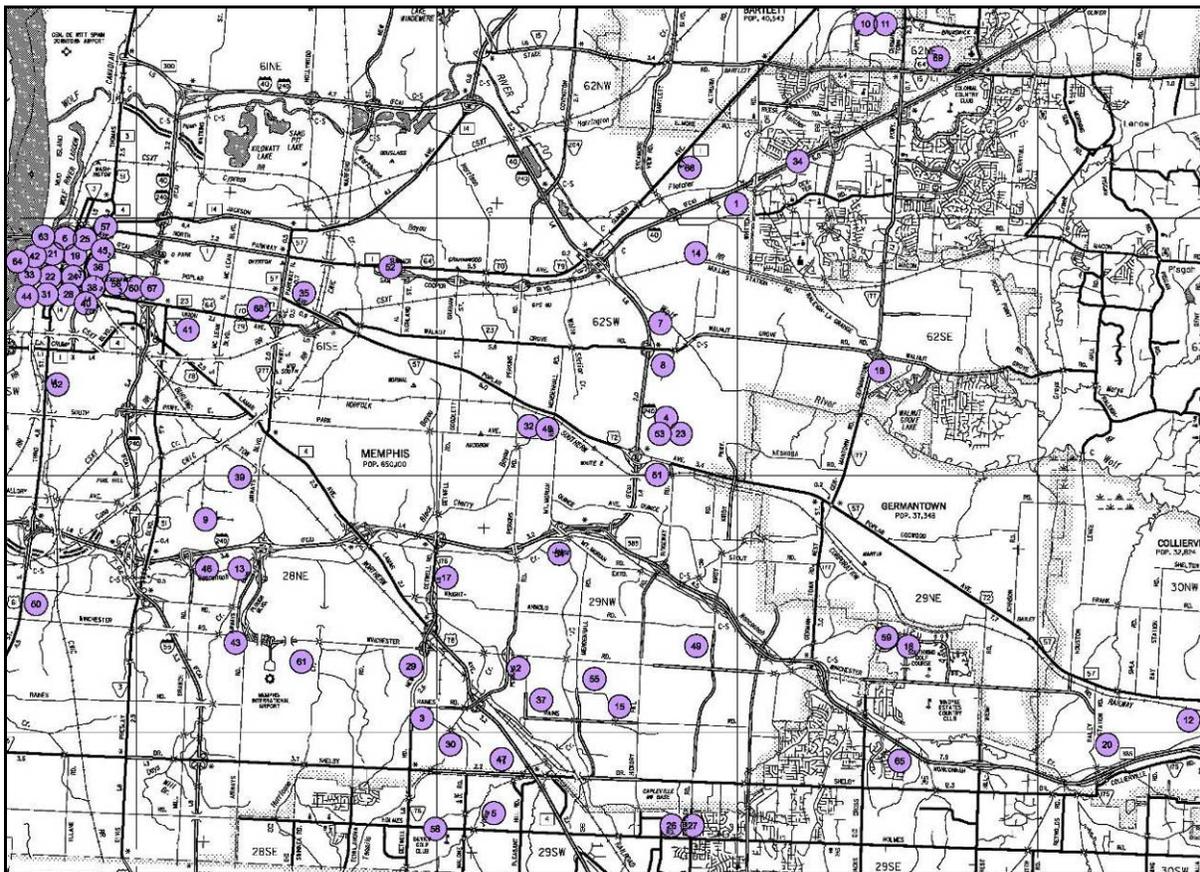


FIGURE 3.23: BUSINESSES WITH 500+ EMPLOYEES

3.2.4.2 Commercial Shipping

Memphis has the 2nd biggest cargo port on the Mississippi River and the 4th largest in the United States. There are three still-water harbors which accommodate all kinds of world-wide trade. The Uptown Memphis area borders this activity. Memphis International Airport is 15-20 minutes from the Uptown Area and serves several major airlines and commuter lines. It is considered the world's busiest cargo airport due to FedEx, UPS, and other air freight companies which together moved 3.8 million tons of cargo in 2007 (per the Memphis Convention & Visitor's Bureau). Two major highway bridges span the Mississippi River in Memphis. I-40 (East to West) and I-55 (North to South) are the main freeways through the Memphis Metropolitan Area, and a large volume of railroad freight traffic moves through the city due to two Mississippi River railroad bridges.

3.2.4.3 Retail

The City of Memphis accounts for most of Shelby County's retail sales. These sales were continually increasing until around 2001. Since that time, it is more difficult to compare the retail trends to those of the past due to changes in classifications. Many retailers have shown a decline in sales during the past couple of years due to a national, ongoing recession. Tennessee is a right-to-work state with lower taxes than most other states in the U.S. There is no personal income tax levied on salaries and wages by the state or local governments. Therefore, most government revenue is generated through sales taxes on retail merchandise, and it is well documented that the more income earned by a populace, the more they will spend. In order to attract businesses, the City of Memphis, in conjunction with the State of Tennessee, offers tax incentives, training & workforce assistance, project assistance, infrastructure & energy incentives, financing incentives, and downtown development & business incentives to industrial and manufacturing businesses under special circumstances. Also, there are several programs available to assist minority and small businesses. Presently there are only a few retail establishments located in the Uptown Area.

3.2.4.4 Property Values

Property values in Memphis (including the Uptown Area) increased by approximately 28 percent from 2000 to 2006. Most of these property value increases were attributed to real property and improvements through the removal of old, dilapidated buildings and facilities and the construction of new buildings and facilities; however, a small amount can be attributed to increased property valuations due to reassessments. According to information in the Comptroller of the Treasury's, Division of Property Assessments, Tax Aggregate Reports, Memphis total property values grew by only 1.02 percent from 2007 to 2008. This indicates a leveling off of property values, which may be due to the present national recession.

3.2.4.5 Economic Growth

During recent years the Memphis Uptown area has undergone much revitalization as a result of a partnership between the City and private developers. This has resulted in hundreds of older, rundown, buildings being torn down and replaced with new apartments, houses, and businesses. Uptown Memphis also contains the Mud Island Community and Park, the Pyramid Arena, and St. Jude Hospital as well as a large grainery, and a small airport. According to the

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Tennessee Department of Economic and Community Development, as well as the Greater Memphis Chamber of Commerce, the “Memphis 2005” initiative, which began in 1996, has been responsible for adding more than \$1 billion of capital investments along with 10,000 new jobs each year into the overall Memphis area. It was replaced by the “Think Memphis: Partnership for Prosperity” initiative after 2005, which has had mixed results, so far, also due to the recession.

3.2.5 Community Services

Several community services are located within the study corridor. These community services include schools, parks, community centers, fire stations, hospitals, and churches.

3.2.5.1 Parks & Community Centers



Established in 1900 as the Memphis Park Commission, the Division of Park Services has protected the urban forest and has played a key role in promoting the City's health and appearance. The Memphis Park Commission currently oversees 166 parks with a total of 3,219 acres around the City. Four of the city parks are located within the study corridor. Malone Park is located on North Second Street between Greenlaw Avenue and Saffarans Avenue. It is one city block (0.5 acres) of green space. Washington Park is located at 1972 North Second Street between Cedar Avenue and Marble Avenue. It is 7.8 acres with play equipment, an outdoor basketball court, and a pavilion. Bickford Park is located just off North Third Street at 232 Bickford Avenue. It is 6 acres with a community center, play equipment, basketball court, and an indoor swimming pool. A park is located adjacent to the Greenlaw Community Center at 190 Mill Avenue, adjacent to North Third Street. No land will be acquired from these parks for the proposed roadway improvements. There are no county or state parks located within the project corridor.

3.2.5.2 Schools

In Shelby County there are two public school systems: the Memphis City School System and the Shelby County School System. The Memphis City School System, which is comprised of 209 public schools, serves approximately 105,000 students, and serves the community within the project area.

Caldwell Elementary School is located within the project corridor. This school is located at 230 Henry Avenue. No land will be acquired from the school. There is an abandoned schoolyard, formerly known as Grant Elementary, within the project corridor. A fire destroyed the old schoolhouse that once stood on this property. The Grant Elementary property is located along Chelsea Avenue, where North Third and North Fourth Streets create a “T” intersection with Chelsea.



There are six schools of higher learning in Shelby County.

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They are the University of Memphis, Christian Brothers University, Rhodes College, the University of Tennessee-Memphis, Lemoyne-Owen College, and Southwest Tennessee Community College. None of these institutions are in the proposed impact area.

3.2.5.3 Fire Stations



Two fire stations are located within the project study corridor. One is located at the southern terminus of the study area along Jackson Avenue, near I-40 and St. Jude Children's Research Hospital. The other fire station is located along North Second Street between Pear and Plum Avenues, just south of the Wolf River. The Jackson Avenue Fire Station will not be directly impacted by the proposed project. However, the proposed conversion of North Third Street to one-way travel northbound will require fire engines and other emergency vehicles

responding to an emergency to the south to travel one block north, turn left onto Overton Avenue, then turn left on North Second Street southbound.

R.O.W. will be acquired in front of the North Second Street Fire Station. A grassy strip along the existing road is needed to widen the roadway. It will not affect ingress and egress from the station and the R.O.W. impact is not anticipated to negatively affect operations of the fire station. The fire stations will benefit from the improved interconnectivity with the neighborhoods in north Memphis and the Frayser community, which would aid in decreasing response times.



3.2.5.4 Hospitals

There are a number of hospitals that serve Shelby County including the Regional Medical Center, Baptist Memorial Hospital, Methodist Hospital, St. Francis Hospital, LeBonheur Children's Hospital, Delta Medical Center, and St. Jude Children's Research Hospital. The St. Jude Children's Research Hospital is a world renowned comprehensive cancer center located within the study corridor. St. Jude is located at the southern terminus of the study area adjacent to North Third Street. Although the St. Jude Children's Research Hospital property will not be directly impacted by the project, the hospital will benefit from the improved interconnectivity with the neighborhoods in north Memphis and the Frayser community.

Harbor View Manor Nursing Home and a separate clinic are currently under development within the study area. The project is an infill development where a tire recycling center was previously located. Harbor View Manor will be located along the west side of North Second Street near the intersection with Pear Avenue. The nursing home will have approximately 100-150 beds and will open in early 2010. The opening date of the clinic is not known at this time. These facilities will benefit from the improved interconnectivity with the neighborhoods in north Memphis and the Frayser community. A minor amount of right of way may be needed from the Harbor View Manor property adjacent to the existing roadway to accommodate the proposed improvements. The R.O.W. impact is not anticipated to affect operations of the nursing home or clinic.

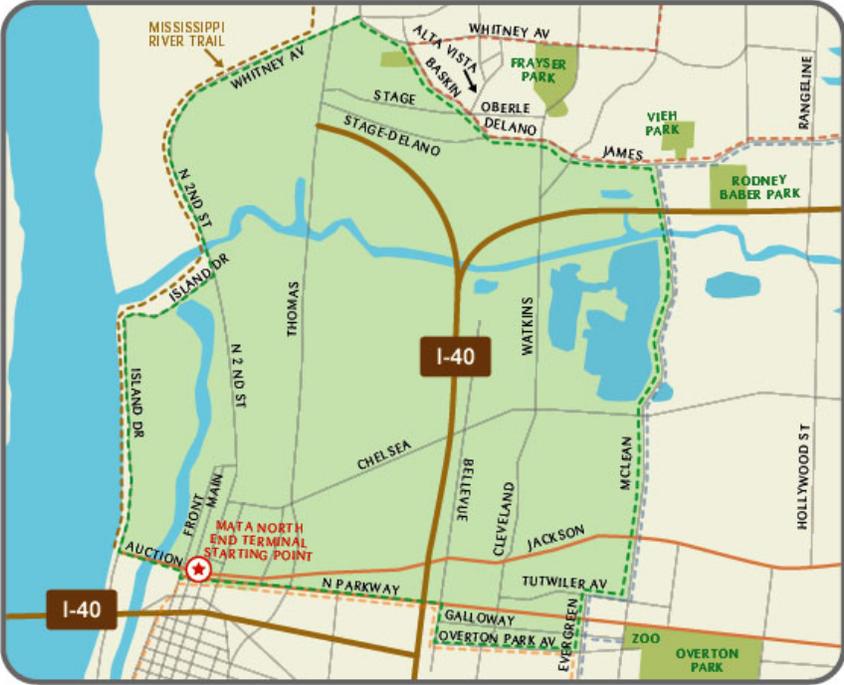
3.2.5.5 Churches

There are several churches located near the project corridor. Only one of the church buildings, Divine Destiny Outreach Ministries, would be impacted by the project. The Devine Ministries Outreach Church is located on North Second Street near the intersection with T.M. Henderson Avenue.

3.2.5.6 Bicycle Trails

Bike lanes are currently not delineated physically with pavement markings or additional pavement width anywhere along the North Second Street Corridor. However, North Second Street from south of the Wolf River to Whitney Avenue at Harvester Lane is within the Mississippi River Bicycle Trail and the City of Memphis Bike Tour. These bicycle routes have a warning that they are for experienced bikers.

The Memphis Bike Tour consists of 60+ miles of city streets for on-road, shared roadway bike route tours. There are five "neighborhood" route tours and one longer "Memphis" route tour. These routes are intended for recreational as well as commuter use and link neighborhoods, commercial areas and many City attractions. The North Memphis Bike Tour is a 14-mile portion of the City Bike Tour system. Starting at the MATA North End Terminal on North Main Street, the route crosses onto Mud Island via the Auction Avenue Bridge, providing views of Harbor Town. The route continues along the Mississippi River Trail (MRT) using North Second Street. Upon leaving Mud Island, the route changes from urban views to views of the Wolf River Floodplain. In contrast to the flat Wolf River area, the route continues through the hilly terrain of the Frayser Community. The North Memphis Bike Tour is recommended only for highly experienced adult bikers.



The Mississippi River Trail (MRT) is a world-class bicycling route that travels from the headwaters of the Mississippi River at Lake Itasca, Minnesota to the Delta at the Gulf of Mexico in Louisiana. It is a 3,000-mile system of generally bicycle-friendly roads and multiuse pathways. The MRT connects 10 states, the cities of Minneapolis, St. Louis, Memphis, and New Orleans, and hundreds of smaller towns along the way. The MRT is part of the North Memphis Bike Tour. The MRT along North Second Street is very narrow and it is recommended that only highly experienced bike riders attempt to use this part of the route.

TABLE 3.6: SUMMARY OF PROJECT DATA FOR IMPROVEMENTS TO NORTH SECOND STREET

Summary of Project Data for Improvements to North Second Street		
Item	No-Build	Build Alternative
Functional Classification: North Second St. Whitney Ave. North Third St.	Urban Principal Arterial Urban Minor Arterial Urban Principal Arterial	Urban Principal Arterial Urban Minor Arterial Urban Principal Arterial
Length – Miles: I-40 to US-51	4.6	4.6
Cross-sections* – Ft: I-40 to Chelsea Ave. (North Second St.) I-40 to Chelsea Ave. (North Third St.) Chelsea Ave. to Wolf River Bridge Wolf River Bridge to Harvester Lane Harvester Lane to US-51 (Whitney Ave.)	66 66 66 66# 60-70	66 66 118 160## 84
Year 2015 AADT	9,000-19,600	9,000-19,600
Year 2035 AADT	12,400-24,000	12,400-24,000
Percent Trucks	6%	6%
Estimated ROW Acquisition (Acres)	0	38
Residential Displacements	0	13
Business Displacements	0	11
Non-Profit Displacements	0	0
Noise Receptors Impacted (Residential)**	0	143
Archaeological Sites Impacted	0	0
Historic Sites Impacted***	0	2
Section 4(f) Properties Impacted***	0	2
Wetlands Impacted (Acres)	0	7.3
Stream Crossings (Linear Feet)	0	1,170
Threatened/Endangered Species Impacts****	0	2
Hazardous Material Sites Impacted (Parcels) *****	0	15
Farmland Impacted (Acres)	0	15
Estimated ROW Cost	0	\$ 9,728,000
Estimated Utility Cost Reimbursable	0	\$ 3,680,000
Estimated Utility Cost Non-reimbursable	0	0
Estimated Engineering/Construction Cost (2008)	0	\$ 48,393,000
Total Estimated Project Cost (2008)	0	\$ 61,800,000
Total Estimated Project Cost (2015) 6% inflation	0	\$ 92,930,000

* Right-of-way

Existing North Second Street

New facility across floodplain

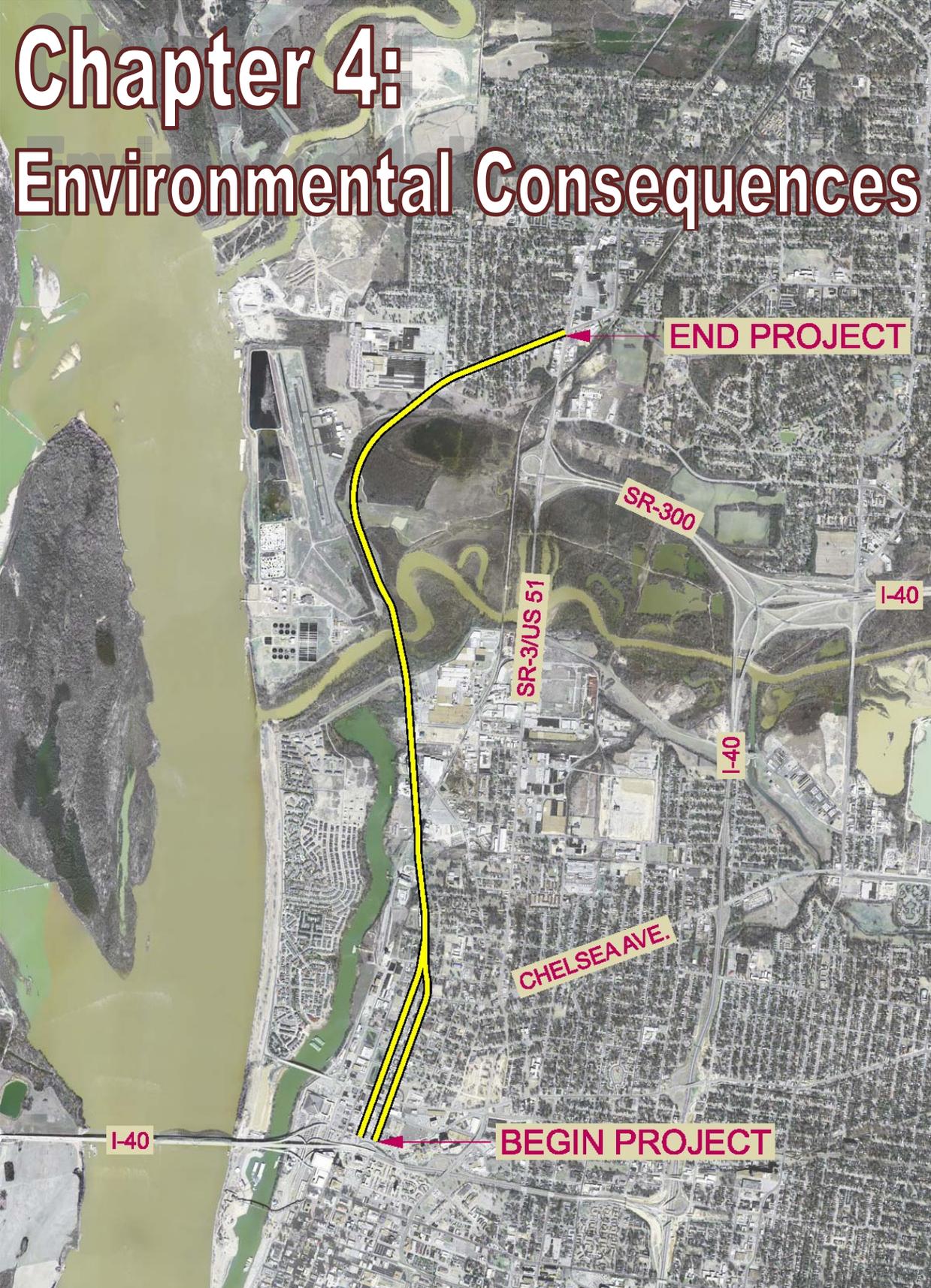
** Noise abatement not practical

*** Right-of-way/*de minimis* 4(f) sites that have been declared “no adverse affect” by SHPO.

**** No federally-protected species. State “threatened” and State “deemed in need of management”

***** “High probability” of impact; Phase II Environmental Site Assessment (ESA) recommended.

Chapter 4: Environmental Consequences



4.0 ENVIRONMENTAL CONSEQUENCES

This chapter describes the direct environmental impacts of the No Build and Build Alternatives. The indirect and cumulative impacts of the No Build and Build Alternatives are discussed in **Chapter 5**. The following resource categories were determined to be appropriate for this study and are consistent with the general guidelines set forth by the FHWA.

- Land Use Impacts
- Farmland Impacts
- Social Impacts
- Relocation Impacts
- Environmental Justice
- Economic Impacts
- Considerations Relating to Pedestrians and Bicyclists
- Ecological Impacts
- Air Quality Impacts
- Noise Impacts
- Historical Impacts
- Archaeological Assessment
- Section 4(f) Evaluation
- Hazardous Material Impacts
- Visual Impacts
- Wild & Scenic Rivers and Tennessee Scenic Rivers
- Energy Impacts
- Construction Impacts
- Short Term Impacts vs. Long Term Benefits
- Irreversible and Irretrievable Commitments of Resources

4.1 LAND USE IMPACTS

The land use along the project corridor is a mixture of residential, commercial, industrial, recreational, forested, and open space. The southern portion of the North Second Street improvement project, between I-40 and Chelsea Avenue, is located on existing alignment within existing right-of-way. This urbanized area is not expected to incur any direct land use changes as a result of the project. The segment of the project through the Wolf River Floodplain will be along new alignment that will convert undeveloped land into roadway right-of-way. The proposed Wolf River Greenway is located in this portion of the study corridor. The remaining segments of the project are along existing alignment and require additional right-of-way to accommodate the roadway improvements. No direct land use changes are anticipated as a result of the additional right-of-way needed along the existing roadway alignment.

Indirect and cumulative impacts are expected to occur within the project study corridor. These impacts are discussed in **Sections 5.1.1** and **5.2.1** of this document.

4.1.2 Proposed Wolf River Greenway

The proposed Wolf River Greenway is located within the undeveloped portion of the North Second Street corridor. Construction of the roadway through the proposed Greenway will require approximately 30 acres of right-of-way. The proposed roadway in this area will have a 10' foot wide multi-use path, as well as bicycle lanes that will connect with the Greenway and trail at the Wolf River crossing.

The Wolf River Greenway and the North Second Street improvements are both City projects and are subject to available funding. The City of Memphis is coordinating both projects with the appropriate City offices to ensure the successful completion of both projects.

Since the proposed roadway project will involve the unavoidable filling of wetlands, it may be appropriate as wetland mitigation to acquire the remainder of the proposed Greenway property that is currently in private ownership and to revegetate the previously cleared fields with native bottomland hardwood species. Consultation with the appropriate State and Federal resources and permitting agencies will continue as the proposed project develops.

The proposed project will provide improved connectivity between the proposed greenway and the population centers located to the south and north of the Wolf River Floodplain. Improved connectivity will be provided for motorists, pedestrians, and bicyclists through the provision of additional vehicular travel lanes, parking lanes, bicycle facilities, and pedestrian facilities. A positive impact is anticipated for the proposed greenway.

4.2 FARMLAND IMPACTS

The Federal Farmland Protection Act was passed in 1981. The purpose of the Act is to prevent the conversion of farmlands to non-agricultural uses by minimizing the impacts that federal programs have on farmlands. Before farmland can be used for a project utilizing federal funds, an assessment must be completed to determine if prime, unique or statewide or locally important farmlands would be converted to non-agricultural uses.

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The Natural Resource Conservation Service (NRCS) characterizes eligible farmlands as prime, unique or of statewide or local significance. The designations are based on NRCS soil type and are protected by federal legislation.

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, or oil-seed and other agricultural crops with minimum input of fuel, fertilizer, pesticides, and labor without intolerable soil erosion. Prime farmland includes land that possesses the above characteristics and may include land currently used as cropland, pastureland, rangeland or forestland. Prime farmland does not include land already in or committed to urban development or water storage.

Unique farmland is land other than prime farmland that is used for production of specific high-value food and fiber crops. It has the special combination of soil quality, location, growing season and moisture supply needed to economically produce high quality or high yields of specific crops when treated and managed according to acceptable farming methods.

Statewide or locally important farmland is land that has been designated of state or local importance for the production of food, feed, fiber, forage or oil-seed crops but is not of national significance.

The impacts of the proposed project on farmland were determined through coordination with NRCS, which included an evaluation using the US Department of Agriculture's (USDA) Farmland Conversion Impact Rating Form (*see coordination letter from NRCS in Appendix A*). The form was completed in accordance with 7 CFR, Part 658 of the *National Farmland Protection Policy Act*. The site assessment criteria (part VI on the form) are designed to assess important factors other than the agricultural value of the land. The ten assessment criteria used for transportation and other corridor-like studies consider not only the land currently being farmed, but also the land use around the project area and whether or not that land use is urban, non-urban or in transition. The criteria also determine the following:

- Whether the conversion of the proposed agricultural site would eventually cause the conversion of neighboring farmland;
- Whether there are adequate support facilities, activities and industry to keep the farms in business;
- The extent to which local and state government and private programs have made efforts to protect farmland from conversion;
- Relative amount of on-farm investment; and
- Whether there are agriculturally related activities, businesses or jobs dependent on the site staying in agricultural production.

Each factor is assigned a score relative to its importance. Sites that receive a total site assessment score of 160 points or less are given a minimal level of consideration for protection. Sites with a total site assessment score of 161 points or more would require the consideration of alternative project alignments that would serve the proposed purpose but convert either fewer acres of farmland or other farmland that has a relatively lower value.

The site assessment score for the project was 157 points, indicating that consideration of alternative project alignments that would serve the proposed purpose but convert either fewer acres of farmland or other farmland that has a relatively lower value is not necessary. The completed USDA Farmland Conversion Impact Rating form is included in **Appendix A**.

The No-Build Alternative would have no effect on farming operations since existing conditions would remain unchanged.

Construction of the Build Alternative would result in the direct conversion of approximately 15 acres of farmland to a transportation facility.

4.3 SOCIAL IMPACTS

Several North Memphis communities, including Uptown Memphis, are located along the study corridor. According to the 2000 US Census, well over half of Uptown residents lived below the poverty level. This aging neighborhood suffered from the problems of low income, retail decline and deteriorated housing. Vacant lots and dilapidated properties were scattered over a 125 city block area that once flourished with businesses, industry, and housing. Today, through the efforts of the City and local developers, this neighborhood is undergoing massive redevelopment. The goal is to develop a sustainable, pedestrian friendly urban neighborhood environment. Hundreds of new homes and apartments have been constructed and several original homes and businesses have been restored. There are several economic assets in the study corridor including the Mississippi River, St. Jude Children's Research Hospital, the Pinch Historic District, the Pyramid Arena, Mud Island, industrial areas, a general aviation airport, several churches, and two community centers.

The proposed project will not adversely impact or cut off any community from services. It will not split neighborhoods, nor pose a threat to neighborhood continuity or cohesion. The project will not adversely alter the patterns of travel or accessibility to community services. The project will aid local residents in their use of area schools, churches, hospitals, and shopping areas. Police, fire, and ambulance services to the area will be improved by the use of an improved and safer roadway. All people in the area will share equally the benefits of the proposed project.

4.4 RELOCATION IMPACTS

Displacements are a potential adverse environmental effect associated with any proposed project. A Conceptual Stage Relocation Plan (CSRP) has been prepared to assess the effects of displacements and to determine the probability of successful relocation. The Build Alternative will result in 13 residential displacements and 11 business displacements. The relocatees are generally scattered along the route between Chelsea Avenue and the Wolf River Bridge.

Research of the real estate market utilizing local news papers, local real estate brokers, MLS, and the Internet revealed that there is sufficient replacement housing available for sale or rent within a reasonable distance from the project area. The Memphis Housing Authority, working with private developers, has begun to rebuild the Uptown Memphis neighborhoods using federal grant funds in addition to city and state funds. Construction of new housing and rehabilitation of existing homes has begun. Over 1,000 housing units are planned for the area; approximately 25 percent will be made available to low income residents.

Based on preliminary drawings and field observations, an estimated 13 households will be acquired for roadway right-of-way. The displacements consist of 8 single residences and 5 units in 2 multi-family residences. The dwellings are in poor to average condition. Due to the multi-family units, it is expected that a majority of the displacees will be tenants. Indications are

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that all the effected households are in the low to medium income range and that most are of minority races. During field observations it was noted that there were a few elderly households. No handicapped or special needs households were observed. Based on information from the tax assessor's office, the homes that may potentially be acquired range in value from \$15,000 to \$60,000. Most of the rental dwellings appear to be in poor condition. Historically they tend to rent below the market rate. It may be necessary to employ last resort housing in these instances.

A study of the real estate market in the project area indicates that the market is sufficient to provide housing both for sale and for rent to those displaced by the proposed project. Some of the structures within the proposed right-of-way appeared to be vacant; however, there is no way of knowing until a thorough inspection is performed. Even though these structures appeared vacant they could possible be used for storage purposes.

It is estimated that the Build Alternative will displace 11 businesses. The displaced businesses represent a variety of retail, professional, manufacturing and services industries. Those displaced are for the most part small business believed to employ ten or fewer workers. A few businesses are light to heavy industrial/manufacturing. Relocation would involve moving heavy equipment and machinery, wood products and chemicals. An old dry cleaning business and abandoned gas station will also be acquired. The existence of contamination at these sites is unknown.

In addition to the businesses mentioned above, there are four commercial buildings that will not be acquired as part of this project, but will be impacted by their proximity to the right-of-way.

Relocation Assistance

The availability of replacement dwellings in the project area appears adequate and within the financial means of the displacees. Therefore, while there will be some short term disruption and inconvenience to displaced persons, the availability of comparable housing coupled with the benefits afforded all displaced persons under Federal and state laws will minimize any long term impacts.

The Tennessee Department of Transportation 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 in accordance with provisions in Title VI of the Civil Rights Act of 1964. Title VI prohibits discrimination on the basis of race, color, and national origin in programs and activities receiving federal financial 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 State of Tennessee, Department of Transportation, Right-of-Way Manual.

Relocation resources are available to all the displaced without discrimination. Relocation impacts to the displaced would include possible loss of neighbors, adjustment to new surroundings, and moving inconveniences. Although the impacts associated with project displacements are adverse, they would be short-term in duration. The provisions of suitable and acceptable replacement housing, combined with adequate relocation payments, can be expected to minimize relocation impacts. If any situation should exist where decent, safe, and

sanitary housing within the financial means of the displaced is not available, such housing will be made available under the replacement housing of last resort provisions.

Because sufficient replacement property appears to be available, the need for Last Resort Housing is not anticipated at this time. Last Resort Housing is used when there is no comparable housing available for sale or rent within TDOT's current limitations. Should Last Resort Housing become necessary, supplemental payments or other housing options, as determined by TDOT, can be implemented through procedures provided for in the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. The displaced will be interviewed on an individual basis 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 vacating date, and no occupant of a 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 the Department has offered the relocatee decent, safe, and sanitary housing that is within their financial means and available for immediate occupancy.

At least one relocation agent is assigned to each highway project to carry out the relocation assistance payments program. A relocation agent will contact each person to be relocated to determine individual needs and desires, to provide information, answer questions, and aid in finding replacement property.

The Department provides advance notification of impending right-of-way acquisition and before acquiring right-of-way has all properties appraised on the basis of comparable sales and land values in the area. Owners of property to be acquired will be offered fair market value for their property. Relocation services and payment are provided without regard to race, color, religion, sex, or national origin.

Brochures that describe in detail the right-of-way acquisition program and relocation assistance and payments program are distributed at all public hearings and are made available upon request to any interested person.

Implementation of the proposed project will not substantially change the basic social arrangement or character of the project area. The project will have the usual impact on the relocatees, but there are no known unusual circumstances or problems. The proposed project will not split neighborhoods or separate residence from community facilities. The displaced families will be able to relocate into similar areas.

4.5 ENVIRONMENTAL JUSTICE

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, requires that the evaluation of Federal actions identify and address disproportionately high and adverse human health and environmental impacts on low income and minority populations. The majority of the residents in the project area based on 2000 census data are minority, with most of those being African American. The project area is so diverse that in order to gain a better analysis of the area, it was reviewed by block groups rather than by census tracts. Four of the five block groups along the project have

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a minority population of at least 96 percent minority. The fifth block group, which is located the farthest distance from the downtown area, is Block Group 8, Census Tract 99. This block group has a minority population of approximately 34 percent. The Harbor Town neighborhood that has a predominantly white population is located within this block group. While Memphis and Shelby County have a large minority population, these particular block groups within the project area exceed the percentages of both. The minority population of Memphis is approximately 66 percent and of Shelby County is approximately 53 percent. The minority population of the state of Tennessee is approximately 20 percent.

A series of outreach efforts were conducted to solicit public input and to complement the early public involvement meetings. The environmental justice efforts included a number of on-site individual interviews and two public outreach meetings. In an attempt to reach a wide cross-section of citizens, the interviews were conducted at various times of the day, Monday through Friday. The majority of interviews were conducted primarily in the early evening after the end of the workday, with the remainder of the interview being conducted during the daytime hours. The two outreach meetings were attended by 97 people. Both meetings included visual presentations describing the environmental justice purpose and giving a description of the project. Project representatives from TDOT and the City of Memphis took questions from attendees once the presentation was completed. Attendees were also given an opportunity to review wall maps and other larger-scale maps. The presentation from TDOT's Right-of-Way Division solicited the most interest and questions from attendees. This allowed attendees to have questions answered in a general manner and to learn about the various program components available to those who would be displaced by the project. If residents are to be relocated due to the proposed project, locating decent, safe and sanitary replacement housing in the Memphis area should not pose a problem. Additionally, TDOT has procedures in place to ensure uniform application of the relocation process. These items are of concern to area residents that may be impacted.

The door-to-door community outreach yielded the identification of the Greenville Subdivision near the proposed intersection of North Second Street and Mud Island Road south of the Wolf River Bridge. Several long-term residents live in this particular neighborhood and many are related to one another. There are approximately 13 houses in the neighborhood, but several are not presently occupied. Many of the residents of Greenville Subdivision have lived in the house all their lives or the houses have been passed down from one generation to another. The houses date to the early 1900's. This minority neighborhood has continuity and a sense of community. Most of the interviewee's in the Greenville Subdivision state that they were opposed to moving. The Build Alternative, as presently proposed, will take three structures in the Greenville Subdivision, two of which are uninhabitable. It is not possible to completely avoid this area because of the location of the existing bridge crossing. Widening to the west side of the road would impact a 100 bed nursing home and clinic. During the design phase of the project a further evaluation of the alignment to avoid these structures will be investigated.

Approximately 64 percent of the survey respondents are not opposed to the North Second Street Corridor Improvement project and view the proposed improvement as positive to their neighborhood. They see the project as an enhancement to the community and believe it will bring economic development, including more jobs and businesses, and improved housing. Many of the respondents are concerned about relocation. The project will not have an adverse or disproportionately high impact for minority populations and low income populations. All people in the area, including special interest groups, will share equally in the benefits of the proposed project. A copy of the Environmental Justice Report is on file in TDOT's Environmental Division Office in Nashville.

4.6 ECONOMIC IMPACTS

4.6.1 Potential Economic Impacts of the Build Alternative

There will be both short-term and long-term beneficial and adverse effects on the Uptown Area and the overall City of Memphis due to construction of this project. In the short-term, there will be approximately 13 residential relocations (8 from single family units and 5 from multi-family units) and 11 business relocations involved. Some of the businesses may choose to go out of business or move out of the Metro area, causing a temporary loss of tax revenues. One farm will be bisected by the project, although a good portion of the farm presently lies within the floodplain. Also, the buying of additional right of way by the government will decrease the area property tax base.

The short-term benefits will be the removal of certain rundown unoccupied or abandoned structures in the neighborhood. Also, the project will bring in a number of additional jobs to the area, and supplies will have to be purchased from local retailers during construction. This will increase local employment and sales taxes.

The project area is undergoing redevelopment to add and rehabilitate area housing. In the long-term, relocation benefits will likely help some of the homeowners to be able to purchase better houses and some of the renters to purchase a home for the first time. The removal of this property from the tax rolls should have little effect on the tax base and the economic impact on the area affected by the project should be favorable. The roadway improvement may have an accelerating effect on the development of available property along the project corridor.

In the long-term, the better access is sure to attract more businesses and industry. The project will provide convenient access between the central business district (CBD), north Memphis communities, SR 3/US 51, and I-40. Increased commuter traffic and redevelopment will bring more people to and through the areas, which will encourage businesses to locate there. Visibility will be better for all traffic related businesses; however, there might be a decrease in parking in front of some businesses along existing Whitney Avenue due to the closeness of the proposed highway and/or sidewalk. The new road design will improve the access for driveway entrances and side roads.

An industrial area is located along the project corridor, south of the Wolf River. Several of the existing buildings are currently abandoned. The proposed project will give the area convenient access to SR 3/US 51, which will be an incentive for new industries to locate in the area, or for the abandoned tracts to be redeveloped for residential use due to the close proximity to the CBD. After the revitalization program is completed, other industries may locate in this area, since it is near the river harbors and railroad terminals. In the long run, the incoming businesses, industries, and rehabilitated housing after the project will increase the property values and spur an increase in the City's tax base.

4.6.2 Potential Economic Impacts of the No-Build Alternative

The existing economic conditions and trends in the Memphis Uptown Area are expected to keep improving slowly until the revitalization program is completed. However, without constructing the North Second Street Project, the poor access into the Pinch North District, Pyramid, and St.

Jude Hospital as well as into Memphis from Tipton County will cause this economic recovery to be slower than normal, and after the revitalization program is complete, the economic situation will likely recede. Traffic volumes are expected to increase, which will keep new industries from choosing this area, and will cause homeowners to move to areas with less congestion. This would be detrimental to the local area economy as well as the overall Memphis economy.

4.7 PEDESTRIAN AND BICYCLISTS IMPACTS

Construction of the proposed project will provide sidewalks and bicycle lanes. On North Second Street from I-40 to Chelsea Avenue there will be a five foot sidewalk on either side of the roadway and a south bound bicycle lane. North Third Street from I-40 to Chelsea will also have two five foot sidewalks with a north bound bicycle lane. Just north of Chelsea Avenue where North Second and North Third Streets come together to form a four-lane two directional roadway, there will be a five foot sidewalk on each side of the roadway as well as bicycle lane. After crossing the Wolf River the roadway transitions to a rural cross-section with two twelve foot traffic lanes and two ten foot shoulders in each direction. The proposed ten foot shoulders are wide enough to accommodate bicyclist. In addition, a ten foot wide multi-use path will be constructed on the west side of the roadway for pedestrians and bicycles. This pathway will begin on the north side of the river and extend across the floodplain to near the Old Harvester Building. Provision will be made to give access from the pathway/sidewalk to the proposed Wolf River Greenway at the Wolf River crossing

The last segment of the project extending from the northern edge of the floodplain down Whitney Avenue to the US 51 intersection will have a five foot sidewalk and a bicycle lane on either side of the roadway. Construction of the sidewalks and bicycle lanes will be in compliance with Federal and State (ADA) rules and regulations. Impacts on the existing pedestrian and bicycle facilities will be positive. Improvements to the North Second Street Corridor will incorporate enhanced bike paths and new sidewalks along North Second Street within the designated North Memphis Bike Tour and Mississippi River Trail. It will also connect with the future 22 mile long Wolf River Greenway Trail System. The proposed transportation facility will provide a safer and more citizen-friendly alternative mode of transportation from the north to downtown Memphis.

4.8 ECOLOGICAL IMPACTS

An ecological study was conducted in December 2008, March 2009, and June 2009 to characterize the existing terrestrial and aquatic habitat within the proposed Build Alternative and to identify jurisdictional water resources including wetlands, streams, springs, sinkholes, etc. as well as the potential for the presence of any threatened and/or endangered species and their critical habitat. The ecological study also reviewed water quality impacts, floodplain benefit impacts, and geology within the proposed Build Alternative corridor and evaluated potential environmental impacts to these resources. The complete Ecology Report is on file in the TDOT Environmental Division Office in Nashville, TN.



In evaluating the Build Alternative across the Wolf River Floodplain, four possible concepts were studied. Concepts #1-3 cross the floodplain, while Concept #4 involved widening the existing roadway. **(See Figure 4.8.2. Build Alternative Concepts)**

Improving existing North Second Street/Whitney Avenue was determined to be infeasible because of the poor horizontal and vertical alignment. Widening the existing roadway would not eliminate the sharp horizontal curves, improve the vertical alignment or improve sight distance along the roadway. Widening on the west side of the existing roadway would encroach upon the DeWitt Spain Airport and the sludge fields associated with the wastewater treatment plant adjacent to the roadway. Widening on the east side would require 1500 feet of rechanneling a blue line stream and over 2000 feet of rechanneling a wet weather conveyance along the east side of the existing road, would completely fill three ponds, and encroaches into the bottomland wetlands on the east side of the road.

Concepts #2 and #3, while similar to Concept #1, were also evaluated to determine the least wetland impacts. Concepts #2 and #3 were not selected due to the number of farmed and forested wetland acres impacted (18.7 and 18.1, respectively), as well as their encroachment into the proposed Wolf River Greenway.

In order to widen the roadway from two lanes to four lanes, provide for pedestrians and bicycles, meet modern design criteria, and to meet the purpose and need for the project, a new location alignment parallel to the existing roadway is needed from north of the Wolf River Bridge to Harvester Lane. Of the three concepts on new location, Concept #1 was chosen as the Build Alternative based on the minimum impacts to the natural environment. It impacts less wetland area (7.3 acres) than Concepts #2 and #3, and involves less blue line stream impacts than Concept #4. It is located along the western edge of the Wolf River Greenway and will have a minimal impact.

4.8.1 Terrestrial Ecology

The direct impacts of the chosen concept (Concept #1) for the Build Alternative include the loss of 11.3 acres of forested habitat (7.3-forested wetland, 4.0-forested non-wetland) and 15.2 acres of open field habitat (11.2-farmed, 4.0-unfarmed). There will be direct long-term impacts when productive forests and open field areas are converted to roadway. However, Concept #1, as reviewed for the Build Alternative, impacts the least amount of forested wetlands (7.3 acres or 27% of its roadway footprint from the Wolf River to Whitney Avenue) and farmed wetlands (0 acres or 0%) of the possible concepts that meet the purpose and need of the project. The wetland impact acres and associated percentages represent impacts from the Wolf River to Whitney Avenue. Reference **Figure 4.8.1: Build Alternative Concept Choice Comparisons** and **Figure 4.8.2: Build Alternative Concept Choices** for information concerning the studied concepts.

Roads and highways affect wildlife in many ways; both directly as roadkill, and indirectly through the degradation, fragmentation, and loss of habitat. The subject project will most likely have one or more of the following ecological impacts on wildlife:

- Modification of animal behavior
- Alteration of the physical environment
- Alteration of the chemical environment

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To aid in the minimization of impacts to wildlife, no new driveway permits will be allowed along North Second Street between the Wolf River and Whitney Avenue. This access control measure will minimize any additional impacts to the terrestrial environment that would occur through commercial and/or residential development along the eastern and western sides of the roadway. Additionally, most of the land between the Wolf River and Whitney Avenue is either already publicly owned, or will be included in the proposed Wolf River Greenway, further minimizing the opportunities for future development.

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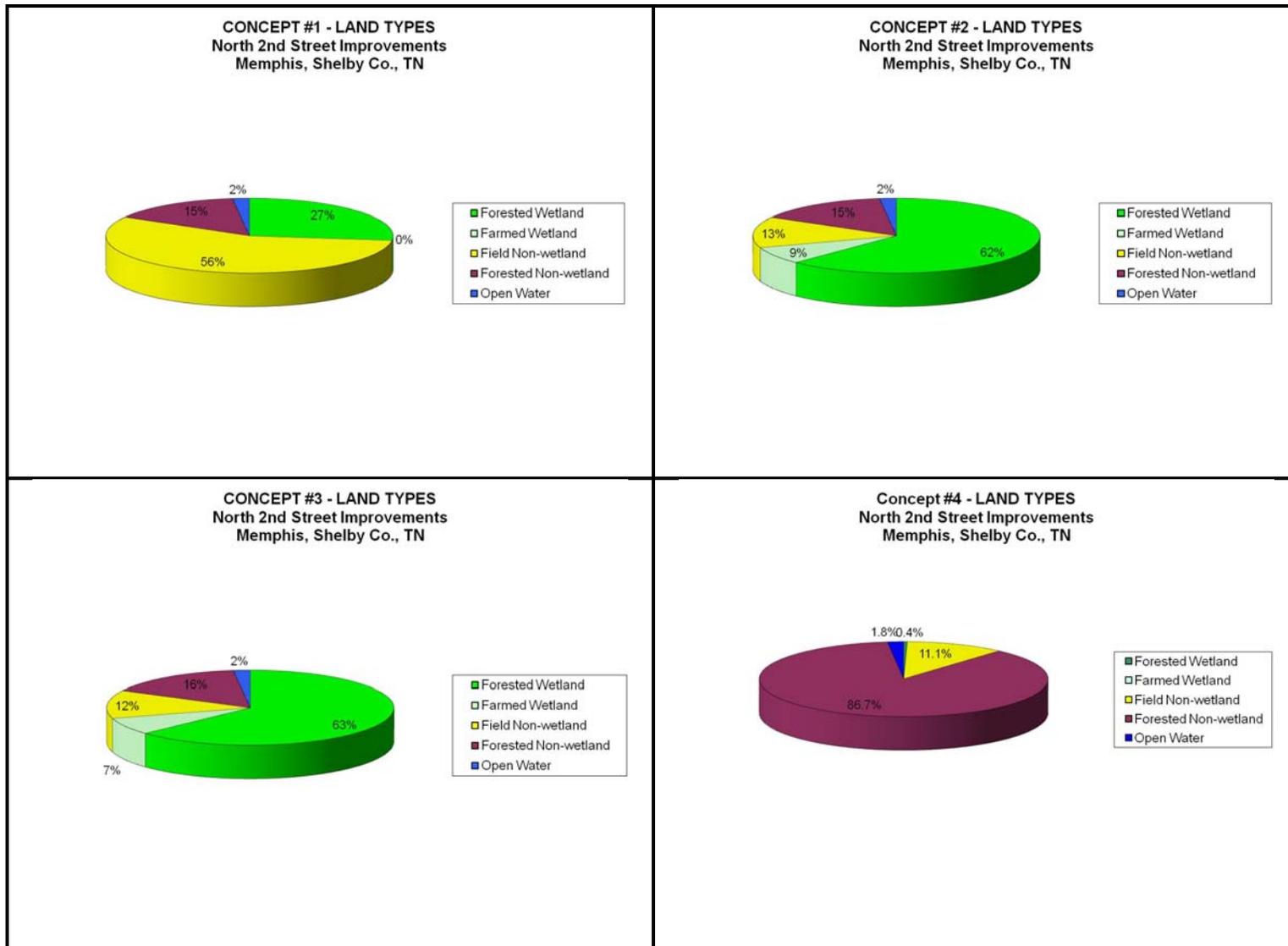


FIGURE 4.8.1: BUILD ALTERNATIVE CONCEPT COMPARISONS
 Note: Percentages represent impacts from the Wolf River to Whitney Avenue

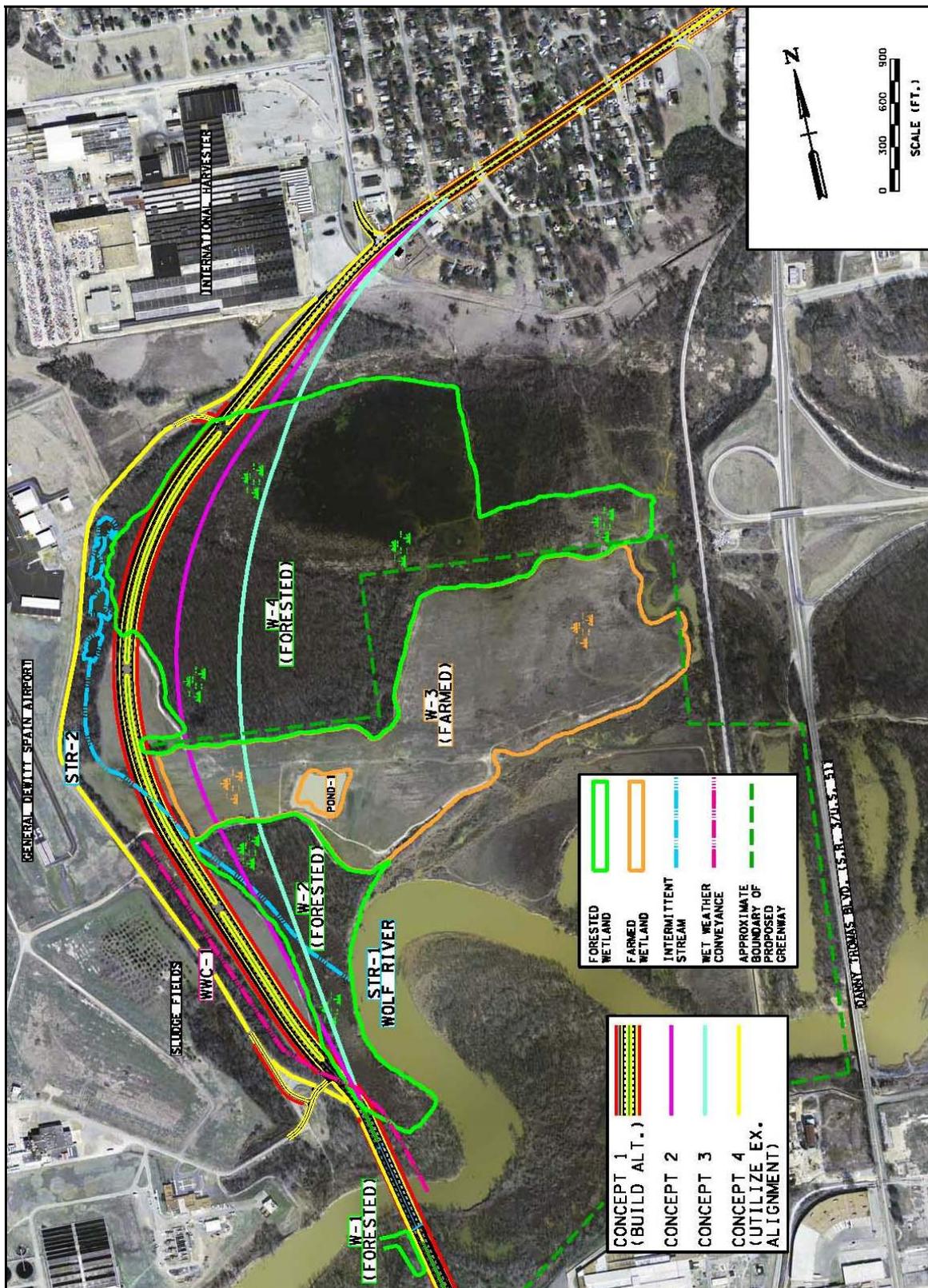


FIGURE 4.8.2: BUILD ALTERNATIVE CONCEPTS

4.8.1.1 Mitigation of Impacts

Two practical applications for mitigating impacts on wildlife should include: (1) avoidance of highway fencing and median barriers when not used in association with wildlife passage structures, and (2) controlling access by not allowing new driveway permits along the roadway between the Wolf River and Whitney Avenue to minimize potential impacts due to development. Species known to inhabit the Wolf River area are deer, otter, mink, bobcat, fox, coyote, turkey, and a wide variety of waterfowl. Migrating osprey, great egret, and bald eagle have also been noted along the river.

4.8.2 Water Resources

4.8.2.1 Wetlands

The proposed Build Alternative will directly impact forested wetlands. The subject wetlands are located between the riparian areas of the Wolf River northward across the floodplain to Whitney Avenue. Four concepts across the Wolf River Floodplain were evaluated for the Build Alternative. The impacts to the wetlands vary in size. Concepts #4, which improves North Second Street from the Wolf River to Whitney Avenue, is not considered viable as discussed in **Section 4.8 Ecological Impacts**. For the three remaining alignments, Concept #1 impacts the least amount of wetlands (7.3 acres forested wetland, 0 acres of farmed wetland), and is utilized in the Build Alternative. **Table 4.8.1: Wetland Impacts between the Wolf River and Whitney Avenue** details the impacts to wetlands based on choice of concept. Wetland impacts determined through field study are consistent with the National Wetland Inventory (NWI) data compiled by the U.S. Department of the Interior, U.S. Fish and Wildlife Service, specifically within the Northwest Memphis, TN quadrangle.



TABLE 4.8.1: WETLAND IMPACTS (ACRES) BETWEEN THE WOLF RIVER AND WHITNEY AVENUE

Land Type Impact	Impact Type	Concepts			
		#1 (Build Alternative)	#2	#3	#4
Forested Wetland	Roadway construction	7.3	16.7	16.2	0.1
Farmed Wetland	Roadway construction	—	2.0	1.9	—
Open Field	Roadway construction	15.2	3.6	3.1	3.1
Forested Non-wetland	Roadway construction	4.0	4.0	4.0	24.1
Open Water	Bridge construction	0.5	0.5	0.5	2.0*
Total Impact to Wetlands		7.3	18.7	18.1	0.1

* Includes 0.5 acres at the Wolf River Bridge and 1.5 acres at the ponds near General Dewitt Spain Airport

Avoidance & Minimization of Wetland Impacts

Of the three viable concepts studied, the Build Alternative (utilizing Concept #1) has been analyzed as far as impacts to wetlands and has been determined to present the least environmental impacts to wetlands between the Wolf River and Whitney Avenue.

Mitigation of Wetland Impacts

Approximately 7.3 acres of forested wetlands will be impacted by the Build Alternative. Compensatory mitigation to offset wetland impacts as a result of this transportation project will be accomplished through the wetland mitigation banking process. According to *33 CFR Part 332, Compensatory Mitigation for Losses of Aquatic Resources* published in April 10, 2008, the U.S. Army Corps of Engineers (USACE) place mitigation banks at the top of the preference hierarchy for mitigation. The TDOT Environmental Division will seek to mitigate for wetland impacts incurred by the subject project using wetland banking compensatory mitigation as directed by the U.S. EPA hierarchy of compensation for no net losses of natural water resources. The wetland banking effort will be accomplished through available credits within the Wolf River Wetland Mitigation Bank and/or approved areas within the Wolf River Watershed. The compensatory wetland banking credit ratio required will depend on the type of wetland bank utilized, i.e. restoration, establishment, enhancement, or preservation. Access to the proposed project will be controlled across the Wolf River Floodplain to discourage future development in the floodplain.

Wetland Alteration Permitting

Entities that propose to construct projects that alter wetlands must first obtain a water quality permit. Jurisdictional wetlands are considered “waters of the U.S.” and “waters of the State”. The term “waters of the U.S.” refers to the limits of jurisdiction for the U.S. Army Corps of Engineers (USACE) under the Clean Water Act of 1972 and subsequent amendments. These waters are non-tidal waters including lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, and natural ponds. The term “waters of the State” infers the same definition as above but within state boundaries and regulated by state environmental departments. Physical alterations to properties of waters of the State require an Aquatic Resource Alteration Permit (ARAP) or a Section 401 Water Quality Certification. Alterations to waters of the U.S. require either a Section 404 Nationwide or Individual Permit from the U.S. Army Corps of Engineers (USACE). When a Section 404 Permit is required from the USACE, a Section 401 Certification must first be obtained from the state. A Section 401 Certification affirms that the discharge would not violate Tennessee’s water quality standards. Construction projects disturbing one or more acres of land require storm water control permits issued by the State of Tennessee pursuant to the National Pollutant Discharge Elimination System (NPDES). As part of the permit, a Stormwater Pollution Prevention Plan (SWPPP) detailing erosion prevention and sediment control best management practices (BMPs) must be prepared. For any project that affects water flowing into an open sinkhole or cave, or for any impact that may affect the groundwater via a sinkhole, a Class V Injection Well permit may be required. This process involves obtaining a permit before the project is let if open sinkholes are known to exist. If other sinkholes are encountered after construction has begun, the appropriate TDOT offices will be notified and the appropriate steps taken to comply with laws, regulations, and permits. These or any other permit requirements identified in the project development process will be complied with.

State Permits Required for Wetland Impacts

One or more Aquatic Resource Alteration Permits (ARAP) under Section 401 of the Clean Water Act will be required for the proposed project. The alterations of jurisdictional wetlands will require either a General Permit or Individual Permit under the ARAP program administered by the Tennessee Department of Environment and Conservation (TDEC). The type of permit issued will be determined after the significance of the impacts to the overall wetland ecology is reviewed by TDEC.

Federal Permits Required for Wetland Impacts

One or more permits under Section 404 of the Clean Water Act will be required for the proposed project. The alteration of jurisdictional wetlands will require either a Nationwide Permit or Individual Permit under the federal permit program administered by the U.S. Army Corps of Engineers (USACE). The type of permit issued will be determined after the significance of the impacts to the overall wetland ecology is reviewed by the USACE. Other agencies such as the U.S. Fish and Wildlife Service and the U.S. Environmental Protection Agency may also be involved in the permitting process.

4.8.2.2 Streams, Springs, Seeps & Other Water Resources

The proposed project will impact both perennial and intermittent streams as well as a wet weather conveyance (ephemeral stream). Ecological studies to determine impacts on water resources were conducted in September 2003, December 2008, March 2009, and June 2009.

Perennial Stream Impacts

The Wolf River is approximately 200 feet wide at the proposed and existing bridge crossings. The river flows westward, perpendicular to the proposed alignment; therefore, longitudinal impacts should not occur to the river as a result of the project. Efforts will be undertaken during the project design, permitting, and construction to minimize impacts to the Wolf River. Best management practices will be used during construction to prevent erosion and control sediment-laden stormwater run-off from the project area. No construction will be conducted immediately following a precipitation event to allow normal flow conditions to return before disturbance. Any disturbed riverbank will be replanted with native vegetation beneficial to wildlife immediately following disturbance. It is estimated that approximately 0.5 acres of the Wolf River will be indirectly impacted based on the footprint of the proposed bridge crossing of the roadway.

Intermittent Stream Impacts

An intermittent stream extends from three ponds positioned near the entrance of the General Dewitt Spain Airport to the Wolf River. Construction will result in structures being placed at or near the intermittent stream. Efforts will be undertaken during the project design, permitting, and construction to minimize impacts to the stream. Best Management Practices will be used during construction to prevent erosion and control sediment-laden stormwater run-off from the project area. No construction will be conducted immediately following a precipitation event to allow normal flow conditions to return before disturbance. Any disturbance will be replanted with native vegetation beneficial to wildlife immediately following disturbance. It is estimated that approximately 470 linear feet of the intermittent stream will be impacted by the proposed roadway project.

Wet Weather Conveyance (Ephemeral Stream) Impacts

A wet weather conveyance begins at the access entrance to the farmed acreage off of North Second Street and flows in the southward direction paralleling North Second Street. The watercourse eventually empties into the Wolf River. Best management practices will be used during construction to prevent erosion and control sediment-laden stormwater run-off from the project area and into the wet weather conveyance. It is estimated that approximately 500 linear feet of the wet weather conveyance will be impacted by the proposed roadway project.

Minimization of Impacts

The Build Alternative will be designed, to avoid major impacts to waters of the State/U.S. to the extents practicable. Efforts to further minimize impacts will continue throughout the design, permitting, and construction processes. Unavoidable impacts will be mitigated as required by applicable laws and regulations. In an effort to minimize sedimentation impacts, erosion prevention and sediment control plans will be included in the project construction plans. TDOT will also implement its *Standard Specifications for Road and Bridge Construction* and the *Statewide Storm Water Management Plan (SSWMP)*, which includes erosion prevention 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 construction of the project.

Streams, springs, seeps, impoundments and other watercourses and waterbodies which are known at this time to be potentially affected by the project are detailed in **Figure 4.8.3: Waterbody Locations** as well as listed in **Table 4.8.2: Ecological Features within the Build Alternative**. The determinations as to which are waters of the State and/or of the U.S. have not been confirmed by the Tennessee Department of Environment and Conservation (TDEC) or the U.S. Army Corps of Engineers (USACE). All aquatic impacts identified as project development continues will be avoided, minimized, or mitigated to the extent possible, and incorporated into the permitting. Any project related impacts to aquatic resources within the project limits will be mitigated as required by the appropriate permitting agency/agencies.

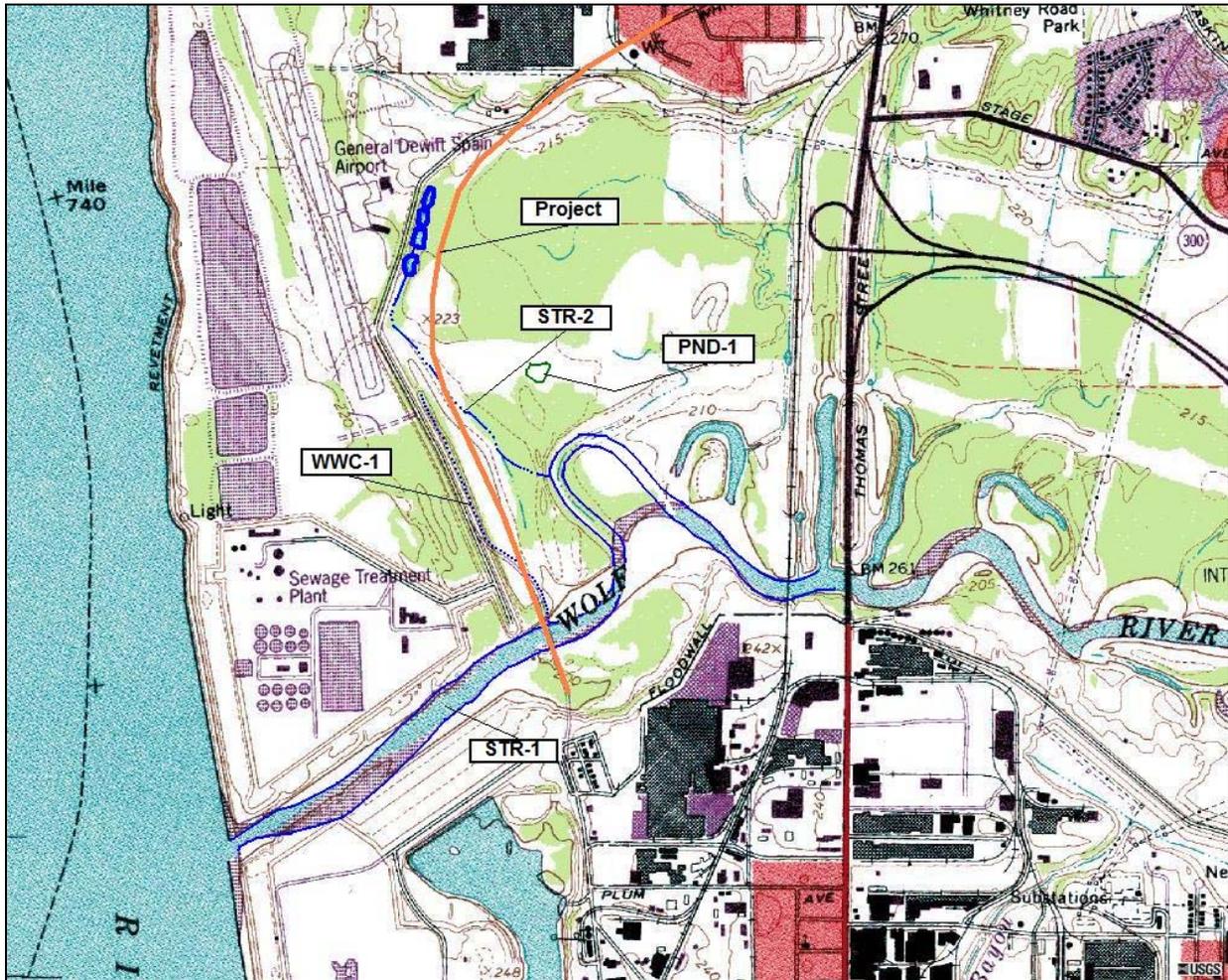


FIGURE 4.8.3: WATERBODY LOCATIONS

TABLE 4.8.2: ECOLOGICAL FEATURES WITHIN THE BUILD ALTERNATIVE

Map Label Feature Name	Latitude Longitude	Feature Designation	Potential Impact	Estimated impact quantity	ETW or ONRW ?	303d Listed (Y/N) Reason
STR-1	35.1881 90.0469	Wolf River	Bridge construction	0.5 ac.	ETW*	Yes; various reasons
STR-2	35.1955 90.0493	Intermittent stream	Roadway & Bridge	470 ft.	N	_____
WTL-1	35.1869 90.0468	Forested wetland	Bridge construction	_____	N	_____
WTL-2	35.1939 90.0472	Forested wetland	Roadway construction	0.9 ac.	N	_____
WTL-3	35.1964 90.0485	Farmed wetland	Roadway construction	_____	N	_____
WTL-4	35.1997 90.0493	Forested wetland	Roadway construction	6.4 ac.	N	_____
WWC-1	35.1937 90.0494	Wet Weather Conveyance	Roadway Construction	500 ft.	N	_____
PND-1	35.1960 90.0462	Farm Pond	None	_____	N	_____

* From Mississippi River to Fletcher Creek due to State threatened Blue Sucker

Alteration Permitting

Entities that propose to construct projects that alter a stream, river, or lake must first obtain a water quality permit. Physical alterations to properties of waters of the State require an Aquatic Resource Alteration Permit (ARAP) or a Section 401 Water Quality Certification. Alterations to waters of the U.S. require either a Section 404 Nationwide or Individual Permit from the U.S. Army Corps of Engineers (USACE) and, where applicable, a 26a permit or letter of no objection from the Tennessee Valley Authority (TVA).

State Permits Required for Stream Impacts

A General NPDES Permit for Discharges of Stormwater Associated with Construction Activities will be required for the proposed project. This permit is issued by the Tennessee Department of Environment & Conservation (TDEC), Division of Water Pollution Control pursuant to the federally-promulgated National Pollutant Discharge Elimination System (NPDES) program. The permit requires a Stormwater Pollution Prevention Plan (SWPPP) detailing the erosion prevention and sediment control practices designed to minimize sediment-laden stormwater run-off during precipitation events. One or more Aquatic Resource Alteration Permits (ARAP) under Section 401 of the Clean Water Act will be required for the proposed project. The crossing of the Wolf River with a new bridge structure and the alteration of the intermittent stream will require either a General Permit or Individual Permit under the ARAP program administered by TDEC. The type of permit issued will be determined after the significance of the impacts to the streams is reviewed by TDEC.

Federal Permits Required for Stream Impacts

One or more permits under Section 404 of the Clean Water Act will be required for the proposed project. The crossing of the Wolf River with a new bridge structure and the alteration of the intermittent stream and the wet weather conveyance with proposed roadway structure will require either a Nationwide Permit or Individual Permit under the federal permit program administered by the U.S. Army Corps of Engineers (USACE). The type of permit issued will be determined after the significance of the impacts to the streams is reviewed by the USACE.

4.8.3 Endangered & Threatened Species

4.8.3.1 Species Impacts

The following discusses the species and the presence/absence of habitat as well as the potential for populations within the Build Alternative construction limits:

Blue Sucker (*Cycoreptus elongates*)

The Blue Sucker is a state threatened (T) fish species. There is no federal protection status for this species. According to literature reviewed, the Blue Sucker is found in the largest rivers and lower parts of major tributaries usually in channels and flowing pools with moderate current. The species may also be found in impoundments. As a result of site reconnaissance of the proposed Build Alternative construction limits on June 1, 2009, habitat for the Blue Sucker was confirmed to be present and consists of the Wolf River. Approximately 0.5 acres of the Wolf River will be indirectly impacted based on the footprint of a new bridge crossing. The Wolf River is approximately 200 feet wide at the proposed and existing bridge crossings. The river flows westward, perpendicular to the proposed alignment; therefore, longitudinal impacts should not occur to the river as a result of the project. Efforts will be undertaken during the project design, permitting, and construction to minimize impacts to the Wolf River. Best management practices will be used during construction to prevent erosion and control sediment-laden stormwater runoff from the project area. No construction will be conducted immediately following a precipitation event to allow normal flow conditions to return before disturbance. Any disturbed riverbank will be replanted with native vegetation beneficial to wildlife immediately following disturbance. Based on the presence of habitat and the species record review, Blue Sucker populations are likely present within the proposed Build Alternative construction limits.

Mississippi Kite (*Ictinia mississippiensis*)

The Mississippi Kite is a state deemed in need of management (D) bird species. There is no federal protection status for this species. The Mississippi Kite is found in palustrine habitats of forested wetland and riparian areas. The species is also found in terrestrial habitats of forest (conifer, hardwood, mixed), grassland, herbaceous, savanna, shrubland, chaparral, and woodlands (conifer, hardwood, mixed). As a result of site reconnaissance of the Build Alternative construction limits on June 1, 2009, habitat for the Mississippi Kite was confirmed to be present; however, species individuals were not noted. This habitat consists of the riparian areas immediately adjacent to the Wolf River. The habitat will be directly impacted due to new bridge construction. Based on the presence of habitat and the species record review,

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Mississippi Kite populations are likely present within the proposed Build Alternative construction limits.

Bell's Vireo (Vireo bellii)

Bell's Vireo currently has no state or federal protection status. The bird species is found in palustrine habitats of riparian areas as well as terrestrial habitats of old field, shrubland, chaparral, and woodland (hardwood). As a result of site reconnaissance of the Build Alternative construction limits on June 1, 2009, habitat for the Bell's Vireo was confirmed to be present; however, species individuals were not noted. This habitat will be directly impacted and exists within the proposed project limits and consists of the low-lying areas immediately adjacent to the Wolf River as well as the floodplain to the north. However, based on the species record review, Bell's Vireo populations are not likely to be present within the proposed Build Alternative construction limits.

Swainson's Warbler (Limnothlypis swainsonii)

Swainson's Warbler is a state deemed in need of management (D) bird species. There is no federal protection status for this species. The bird species is found in palustrine habitats of forested wetland and riparian areas as well as terrestrial habitats of forest (conifer, hardwood, mixed), shrubland, chaparral, and woodland (conifer, hardwood, mixed). As a result of site reconnaissance of the Build Alternative construction limits on June 1, 2009, habitat for the Swainson's Warbler was confirmed to be present; however, species individuals were not noted. This habitat will be directly impacted and exists within the proposed project limits and consists of the low-lying areas immediately adjacent to the Wolf River as well as the floodplain to the north. However, based on the species record review, Swainson's Warbler populations are not likely to be present within the proposed Build Alternative construction limits.

Goldenseal (Hydrastis canadensis)

Goldenseal is a state special concern-commercially exploited (S-CE) flowering plant species. Goldenseal is designated commercially exploited due to large numbers being taken from the wild and propagation or cultivation insufficient to meet market demand. Commercially exploited species are of long-term conservation concern, but the Division of Natural Heritage does not recommend they be included in the normal environmental review process. There is no federal protection status for this species. This flowering plant species is found in rich, mesic hardwood forest, especially those underlain by limestone or alkaline soils. As a result of site reconnaissance of the proposed Build Alternative construction limits on June 1, 2009, habitat for Goldenseal was not found to be present. Based on the lack of habitat and the species record review, it is unlikely that Goldenseal is present within the proposed Build Alternative construction limits.

Table 4.8.3: Listed Threatened & Endangered Species summarizes the listed endangered and threatened species that were reviewed for the proposed project.

TABLE 4.8.3: LISTED THREATENED & ENDANGERED SPECIES

Species	Status		Species Likely Present (Y/N)	BA Required (Y/N)	BA Conclusion
	Fed	State*			
Blue Sucker	none	T	Y	N	na
Mississippi Kite	none	D	Y	N	na
Bell's Vireo	none	none	N	N	na
Swainson's Warbler	none	D	N	N	na
Goldenseal	none	S-CE	N	N	na

*T-Threatened, D-Deemed in Need of Management, S-CE – Special Concern/Commercially Exploited

4.8.3.2 Direct Impacts

Habitat for the Blue Sucker (*Cycleptus elongates*) was confirmed to be present and consists of the Wolf River. Approximately 0.5 acres of the Wolf River will be impacted based on the footprint of a new bridge crossing. Habitat for the Mississippi Kite (*Ictinia mississippiensis*) will be directly impacted due to new bridge construction. Based on the presence of habitat and the species record review, Mississippi Kite populations are likely present within the proposed Build Alternative construction limits. No Biological Assessment (BA) is required under Section 7 of the Endangered Species Act of 1973 since there are no “federally-listed” species that will be impacted by the proposed Build Alternative.

4.8.3.3 Minimization of Impacts

As a result of the research performed for impacts to threatened and/or endangered species, the protected species with the potential to occur within the proposed Build Alternative construction limits are the Blue Sucker (*Cycleptus elongates*) and the Mississippi Kite (*Ictinia mississippiensis*). The Blue Sucker is a state threatened (T) fish species but not a federally-protected species. Based on the records with the Tennessee Department of Environment & Conservation, Division of Natural Areas, the Blue Sucker is believed to inhabit the Wolf River. Efforts will be undertaken during the project design, permitting, and construction to minimize impacts to the Wolf River and the protected fish species. Best management practices will be used during construction to prevent erosion and to control sediment-laden stormwater run-off from the project area. No construction will be conducted immediately following a precipitation event to allow normal flow conditions to return before disturbance. Any disturbed riverbank will be replanted with native vegetation beneficial to wildlife immediately following disturbance. The Mississippi Kite is a state deemed in need of management (D) bird species but not a federally-protected species. The Mississippi Kite is found in palustrine habitats of forested wetland and riparian areas. The species is also found in terrestrial habitats of forest (conifer, hardwood, mixed), grassland, herbaceous, savanna, shrubland, chaparral, and woodlands (conifer, hardwood, mixed). Habitat for the Mississippi Kite was confirmed to be present; however, species individuals were not noted. This habitat consists of the riparian areas immediately adjacent to the Wolf River. The habitat will be directly impacted due to new bridge construction.

Riparian vegetation and non-riparian tree removal for bridge construction will be minimized to lessen the impact to Mississippi Kite habitat.

Based on the final design of the transportation project, both the Mississippi Kite (*Ictinia mississippiensis*) and the Blue Sucker (*Cyprinostomus elongatus*) along with their associated habitat may be impacted. After final design, the Tennessee Wildlife Resources Agency (TWRA) may request additional work to minimize these impacts; however, it is not expected that this additional work will impede the progress of the project. Impacts will also be coordinated with the Tennessee Department of Environment and Conservation (TDEC) and the U.S. Fish & Wildlife Services (USFWS).

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

4.8.4 Water Quality

4.8.4.1 Water Quality Impacts

Potential environmental impacts other than the direct alteration of wetlands and streams will consist of sediment-laden stormwater run-off due to construction of the project. The Wolf River is listed as an impaired stream in the 2008 303(d) listing published by the Division of Water Pollution Control of the Tennessee Department of Environmental & Conservation (TDEC). Since the Wolf River is a “listed” stream, additional conditions under the *General National Pollutant Discharge Elimination System (NPDES) Permit for Discharges Associated with Construction Activities* will be required. These additional conditions include the following:

- Certify that erosion prevention and sediment control devices have been designed to control stormwater run-off generated by a 5-year, 24-hour storm event;
- Certify quarterly that twice weekly inspections have been performed and that all controls are installed and in working order;
- Provide a temporary or permanent sediment basin that provides storage for a calculated volume of run-off from a 5-year, 24-hour storm for outfalls in a drainage area of 5 or more acres; and
- Preserve a 60-foot natural riparian buffer zone adjacent to the receiving stream during construction activities.

4.8.4.2 Minimization of Water Quality Impacts

In order to minimize the impacts to water quality as a result of construction activities, erosion prevention and sediment control (EPSC) “Best Management Practices” (BMPs) will be utilized. Some of the BMPs that should be utilized include the following:

- Preservation of roadside vegetation beyond the limits of construction where possible;
- Early re-vegetation of disturbed areas to hold soil movement to a minimum;
- The use of detention/retention structures, surface, subsurface, and cross drains designed to protect the water quality of both groundwater and surface waters;

- Inclusion of BMPs in the construction plans, specifications, and contract pay items as specified in TDOT *Standard Specification for Road and Bridge Construction as well as the Drainage Manual*; and
- Prohibiting the release of chemicals, fuels, lubricants, bitumens, raw sewage, or harmful waste into or alongside of streams or impoundments, or into natural or manmade channels that lead to same.

4.8.5 Floodplains

4.8.5.1. Floodplain Impacts

The proposed Build Alternative will impact the floodplain located between the Wolf River and the intersection of Whitney Avenue and Harvester Lane. Impacts will consist of approximately 7,200 linear feet (1.36 miles) of roadway and/or associated structures within the FEMA 100-year floodplain. Any influence on the flood level resulting from the possible encroachment will be determined by the Hydrology Section of the Tennessee Department of Transportation (TDOT) when plans become available. The project will be designed to minimize floodplain impacts to reduce the risk of future flooding as required by Federal Highways Administration procedures in 23 CFR 650A. The floodplain crossing will be designed so that the following criteria are met.

1. There is no potential for interruption or termination of the transportation facility that is needed for emergency vehicles or provides the communities only evacuation route due to the construction of the project.
2. The water crossings will convey floodwaters so there will be no flooding risk due to the encroachment in the floodplain.
3. There will be no substantial impacts on the natural and beneficial floodplain values.

Impacts to the floodplain could be minimized if the Build Alternative is placed on structure throughout the floodplain instead of fill. These considerations will occur during the design process. The design selected for the encroachment will be supported by analysis of design alternatives with consideration to capital costs, risks, and economic, engineering, social, and environmental concerns.

4.8.5.1. Minimization of Floodplain Impacts

The project will be designed to minimize floodplain impacts as required by the Federal Highways Administration procedures in 23 CFR 650A. Impacts will be minimized through the use of a perpendicular roadway design aimed at reducing fill and/or structures within the floodplain. The floodplain crossing will be designed so that the following criteria are met:

- There is no potential for interruption or termination of the transportation facility that is needed for emergency vehicles or provides the communities' only evacuation route due to the construction of the project
- The water crossings will convey floodwaters so there will be no increase in flooding due to the encroachment in the floodplain.

The Build Alternative will have no substantial adverse impacts on the natural and beneficial floodplain values.

4.9 AIR QUALITY IMPACTS

The purpose of the air quality analysis is, first, to address the transportation conformity requirements for the project; second, to address potential Mobile Source Air Toxics (MSATs) effects of the project; and third, to address the relationship of this project to global climate change.

National Ambient Air Quality Standards (NAAQS)

The United States Environmental Protection Agency (EPA) has established allowable concentrations and exposure limits called the National Ambient Air Quality Standards (NAAQS) for various “criteria” pollutants. These pollutants include carbon monoxide (CO), nitrogen oxides (NO_x), ozone (O₃), particulate matter (PM₁₀ and PM_{2.5}), sulfur oxides (SO_x), and lead (Pb).

In accordance with the Clean Air Act Amendments of 1990 (CAAA of 1990), EPA identified those areas that did not meet the NAAQS for the criteria pollutants and designated them as “nonattainment” areas. Once an area meets the NAAQS, it is redesignated as a “maintenance” area.

The Memphis Tennessee Area, including Shelby County, is currently a maintenance area for CO and a nonattainment area for ozone (8-hour).

4.9.1 Transportation Conformity

Transportation conformity is a process required of Metropolitan Planning Organizations (MPOs) pursuant to the CAAA of 1990. CAAA require that transportation plans, programs, and projects in nonattainment or maintenance areas that are funded or approved by the Federal Highway Administration (FHWA) be in conformity with the State Implementation Plan (SIP), which represents the State’s plan to either achieve or maintain the NAAQS for a particular pollutant.

Projects are in conformity with the SIP if they are included in a fiscally constrained and conforming Long Range Transportation Plan and Transportation Improvement Program (TIP). Projects in CO and PM nonattainment and maintenance areas are also subject to project-level hot-spot analysis.

This project is included in the Shelby County Metropolitan Planning Organization Year 2030 Long Range Transportation Plan (project #LSTP 2006-09) adopted in 2008, and the 2011-2014 Transportation Improvement Program (project #STP-M-2000-09) adopted in 2010. Therefore, the project is in conformity with the SIP.

Carbon Monoxide (CO) Hot-Spot Analysis

Since the project is located in a CO maintenance area, a CO hot-spot analysis was completed.

The NAAQS for CO include a 1-hour standard of 35 parts per million (ppm) and an 8-hour standard of 9 ppm. A CO hot-spot analysis was completed in accordance The Guideline for Modeling Carbon Monoxide from Roadway Intersections published by EPA (hereafter referred to as the EPA Guideline) to ensure that the project will not cause new violations or contribute to existing violations of the NAAQS. The results are presented in **Table 4.9.1**.

TABLE 4.9.1: MAXIMUM 1-HOUR AND 8-HOUR CO CONCENTRATIONS, NORTH SECOND STREET/WHITNEY AVENUE AND US 51

Alternative	Year (Peak Hour)	1-hour Concentration (ppm)	8-hour Concentration (ppm)
No-Build	2015 (AM)	3.7	2.6
No-Build	2035 (PM)	4.3	3.0
Build	2035 (PM)	4.2	2.9

As shown, the predicted CO concentrations are well below the NAAQS. The No-Build and Build Alternatives are not predicted to cause new violations or contribute to existing violations of the NAAQS.

4.9.2 Mobile Source Air Toxics (MSATs)

On September 30, 2009, FHWA released the updated “Interim Guidance on Air Toxic Analysis in NEPA Documents.” The purpose of this 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.

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.

A basic analysis of the potential MSAT emissions impacts of this project was completed in accordance with this Interim Guidance.

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

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

Examples of projects with low potential MSAT emissions include minor widening projects and new interchanges, such as those that replace a signalized intersection on a surface street or

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where design year traffic projections are less than 140,000 to 150,000 annual average daily traffic (AADT).

The Build Alternative includes the widening of North Second Street and meets the definition of a project with low potential MSAT effects as the highest design year AADT on North Second Street corridor is 39,000 and substantially lower than the FHWA criterion.

For the No-Build and Build Alternatives, the amount of MSATs emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The estimated VMT for the Build Alternative is essentially the same as the VMT for the No-Build Alternative. Therefore, it is expected that there would be no appreciable difference in overall MSAT emissions between the No-Build and Build Alternatives.

Additionally, travel speeds for the Build Alternative will be higher than for the No-Build Alternative. According to EPA's MOBILE6 emissions model, emissions of all of the priority MSATs except for diesel particulate matter decrease as speed increases. The extent to which these speed-related emissions decreases will offset VMT-related emissions increases cannot be reliably projected due to the inherent deficiencies of technical models.

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 MSAT emissions by 57 to 87 percent 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 additional travel lanes contemplated for the Build Alternative will have the effect of moving some traffic closer to nearby homes, churches, schools, and businesses; therefore, under the Build Alternative there may be localized areas where ambient concentrations of MSATs could be higher than under 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.

In sum, when a highway is widened and, as a result, moves closer to receptors, the localized level of MSAT emissions for the Build Alternative could be higher relative to the No-Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). 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 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.

4.9.2.1 MSAT Background

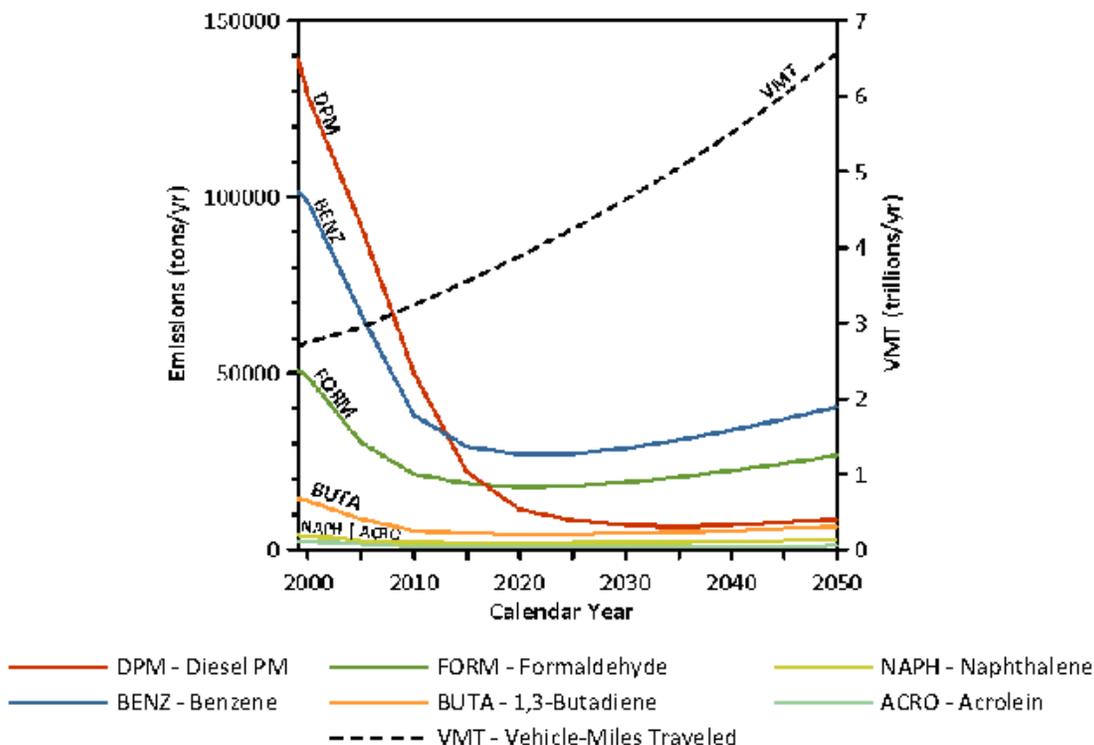
Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the U.S. Environmental Protection Agency (EPA) regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive 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-butadiene, 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 percent as assumed, a combined reduction of 72 percent in the total annual emission rate for the priority MSAT is projected from 1999 to 2050, as shown in **Figure 4.9.2.1**.

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.

FIGURE 4.9.2.1: NATIONAL MSAT EMISSION TRENDS 1999 – 2050
 For Vehicles Operating on Roadways
 Using EPA's MOBILE6.2 Model



Note:

- (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.

Unavailable Information for Project Specific MSAT Impact 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 U.S. Environmental Protection Agency (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 Clean Air Act 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" (EPA, <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 - 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 National Ambient Air Quality Standards 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 Clean Air Act 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.

4.9.3 Climate Change

Climate change, also referred to as global warming, is an increase in the overall average atmospheric temperature of the earth due to the trapping of heat in the atmosphere by greenhouse gases. The primary greenhouse gas emitted by human activities in the United States is carbon dioxide (CO₂), which represents approximately 85 percent of total greenhouse gas emissions.

Transportation sources contribute to global warming through the burning of petroleum-based fuel. According to FHWA, transportation sources are responsible for approximately one-quarter of the greenhouse gas emissions for the United States. Automobiles and light-duty trucks account for almost two-thirds of emissions from the transportation sector and emissions have steadily grown since 1990.

Emissions from transportation sources depend on the number of trips or miles traveled by each type of vehicle each year, which are in turn influenced by larger economic trends and consumer behavior. Over the long term, changes in vehicle fuel efficiency, driving behavior, and fuel type will influence the level of emissions.

Under the Clean Air Act, the EPA has the authority to establish motor vehicle emissions standards for CO₂ and other greenhouse gases although such standards have not yet been established.

FHWA is actively involved in efforts to initiate, collect, and disseminate climate-change-related research and to provide technical assistance to stakeholders. FHWA is also involved in climate

change initiatives with the U.S. DOT Center for Climate Change and Environmental Forecasting.

Climate change and related effects are complex and global in nature. As a result, the impacts of any single transportation project cannot be effectively estimated in terms of global warming effect. However, the emissions changes due to individual projects are very small compared to global emissions.

Once standards are established and guidance for assessing the potential greenhouse gas effects of transportation projects becomes available, a more in-depth assessment may be possible.

4.9.4 Direct, Indirect, and Cumulative Impacts

The project is not predicted to result in a project-specific air quality impact and, therefore, would not have a significant direct, indirect, or cumulative air quality impact.

The proposed project could result in the generation of construction emissions and dust that would be temporary. It is not anticipated that the construction of the proposed project would occur simultaneously with other transportation projects in the area.

A more detailed discussion of the air quality analysis can be found in the “Air Quality and Noise Evaluation for North Second Street Improvements” report on file in TDOT Environmental Division Office in Nashville, TN.

4.10 NOISE IMPACTS

The noise analysis was completed in accordance with Federal Highway Administration (FHWA) noise standards, *Procedures for Abatement of Highway Traffic and Construction Noise, 23 CFR 772*, and the Tennessee Department of Transportation’s *Policy on Highway Traffic Noise Abatement* and included the following tasks:

- Identification of noise analysis areas;
- Determination of existing sound levels;
- Determination of future sound levels for the project alternatives;
- Determination of traffic noise impacts;
- Noise abatement evaluation;
- Discussion of construction noise; and,
- Coordination with local officials.

Identification of Noise Analysis Areas

Review of available electronic mapping and field reconnaissance revealed three areas that contain Category B noise-sensitive land uses that might be impacted by the project. These areas are called noise analysis areas and are described in **Table 4.10.1**.

TABLE 4.10.1: NOISE ANALYSIS AREAS

Noise Analysis	Description
1	Residences on North Second Street and N Third Street between I-40 and Marble Avenue. This area also includes the Memphis Grizzlies House short-term housing facility at St. Jude Hospital, the St. Stephen Missionary Baptist Church, the Temple of Holiness Church, and the Washington Park.
2	Residences near North Second Street between Pear Avenue and Wolf River.
3	Residences on Whitney Avenue between Harvester Lane and US 51. This area also includes the Pilgrim Baptist Church, the World Vision Ministries, the West Frayser Baptist Church, and the Veterans of Foreign Wars (VFW) Post 4916.

Determination of Existing Sound Levels

Short-term and long-term measurements were conducted at several noise-sensitive land uses in the project area on March 18, 2009.

The long-term measurement data was used to identify changes in sound levels throughout the measurement period and to develop adjustments that were applied to off-peak measurements to arrive at peak hour sound levels at the short-term measurement sites.

Existing sound levels at the measurement locations ranged from 59 to 71 dBA.

Determination of Future Sound Levels

No-Build Alternative

Sound levels for the No-Build Alternative can be reasonably estimated by evaluating existing and future traffic volumes on North Second Street, North Third Street, and Whitney Avenue. Year 2035 No-Build sound levels are predicted to be approximately 1 dB higher than existing levels.

Build Alternative

Noise modeling of the Build Alternative was completed using the FHWA Traffic Noise Model (TNM 2.5) computer program. The program calculated design year 2035 equivalent sound levels at the noise-sensitive land uses in each noise analysis area, including the measurement locations.

Predicted design year sound levels at the modeled locations in Noise Analysis Area 1 range from 56 to 71 dBA while predicted design year sound levels at the modeled locations in Noise Analysis Area 2 range from 60 to 69 dBA. Finally, predicted design year sound levels at the modeled locations in Noise Analysis Area 3 range from 57 to 72 dBA.

Determination of Traffic Noise Impacts

Noise impact is determined by comparing future project 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 that warrant consideration of abatement occur when worst-hour equivalent sound levels approach or exceed the NAC listed in **Table 4.10.2**. TDOT policy defines “approach” as one decibel below the NAC, or 66 dBA for Category B land uses.

TABLE 4.10.2: 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. **Table 4.10.3** presents the TDOT criteria used to define noise increase.

TABLE 4.10.3: TDOT CRITERIA TO DEFINE NOISE INCREASE

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

The results of the noise impact assessment for each noise analysis area are summarized in **Table 4.10.4**.

TABLE 4.10.4: IMPACT DETERMINATION ANALYSIS, DESIGN YEAR 2035, BUILD ALTERNATIVE

Noise Analysis Area	Increase over Existing Sound Levels (dB)	Design Year Sound Levels (dBA)	Impacted based on Substantial Increase?*	Impacted based on NAC?	Number of Impacts
1	0-15	56-71	No	Yes	104
2	5-11	60-69	No	Yes	5
3	1	57-72	No	Yes	34
Total				143	

* Sound level increase of 10 dB or more and sound level between 57 dBA and 67 dBA.

Sound level increases for the Build Alternative at most receivers are predicted to be 1 to 9 dB higher than existing levels. These increases are defined as “minor” or “moderate” in accordance with TDOT’s policy.

As indicated in **Table 4.10.4**, sound level increases at some receivers are predicted to be at least 10 dB higher than existing levels. However, the predicted sound levels at these residences are 66 dBA or higher. As a result, these residences are predicted to be impacted based on the NAC and not due to a substantial increase in sound levels.

As shown, 143 receivers are predicted to be impacted under the Build Alternative. All of these impacted receivers are residences.

Additionally, locations in Washington Park within a distance of approximately 100 feet from the edge of pavement of North Second Street are predicted to be impacted.

The Noah’s Ark Learning Center, and the Memphis Grizzlies House, the Greenlawn Community Center, and the churches in the project area are not predicted to be impacted.

Noise Abatement Evaluation

Abatement is generally evaluated when impacts are predicted to occur. Noise abatement measures may include alteration of horizontal and vertical alignment, traffic management measures (such as reducing speed limits, prohibition of heavy trucks, etc) and noise barrier construction.

Since the proposed project is along existing streets with limited new right-of-way being acquired in the residential area to avoid displacing families and business, it seems unreasonable and impracticable to alter the horizontal or vertical alignment as a form of noise abatement. Traffic management measures limit vehicle type, speed, volume and time of operation are not considered appropriate noise abatement due to their effect on the capacity and level of service for the proposed project. North Second Street is not a limited access roadway, 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 this project.

Construction Noise

The Standard Specifications for Road and Bridge Construction as issued by TDOT and as amended by the most recent applicable supplements shall govern construction procedures. 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.”

Table 4.10.5 presents predicted design year 2035 sound levels for areas near the project where vacant and possibly developable lands exist. 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 such as hills and the shielding by objects such as buildings.

TABLE 4.10.5: DESIGN YEAR 2035 SOUND LEVELS – UNDEVELOPED LANDS

Distance ⁽¹⁾	L _{eq} (1h) (dBA) ⁽²⁾		
	North Second Street One-Way	North Third Street One-Way	North Second Street Two-Way
40 feet	66	69	68
100 feet	61	64	64
200 feet	57	61	60
300 feet	55	58	56

(1) Perpendicular distance to the center of near lane.
 (2) At-grade situation.

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.

As mentioned previously, 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.”*

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

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 predated 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 dBA;
- 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.

Direct, Indirect, and Cumulative Impacts

The future year 2035 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.

Implementation of the project could cause some redistribution of traffic on the surrounding roadway network beyond the modeled network. The project could also affect development and land use patterns in the project area. These situations could result in higher traffic volumes and indirect noise impacts at locations near roadways beyond the project limits. However, a doubling of the traffic volume is required to increase the hourly equivalent sound level by 3 dBA, which is usually the smallest change in sound levels that people can detect without specifically listening for the change. Traffic volumes are not anticipated to double as a result of the redistribution of traffic or changes in development, so any increases in sound levels beyond the project would be less than 3 dBA and defined as "minor" in accordance with TDOT's noise policy. As a result, the project is not predicted to cause any indirect noise impacts.

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.

4.11 HISTORICAL IMPACTS

In compliance with the requirements of Section 106 of the National Historic Preservation Act of 1966, and implementing regulations 36 CFR 800, a Cultural Resource Survey was conducted to identify historic resources in or eligible for the National Register of Historic Places (NRHP)

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within the project study area. Pursuant to regulations set forth in the 36 CFR 800, an effects assessment was prepared utilizing the following guidelines:

- 36 CFR 800.16(i) *Effect* means alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register.
- 36 CFR 800.5(a) *Criteria of adverse effect*. An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling or association.

In the first segment of the proposed project beginning at I-40 and extending to Chelsea Avenue, the Build Alternative passes through the **Pinch-North Main Historic District**, and the **Greenlaw Historic District** and in front of the **Burkle House**. In the area of these resources, project implementation will consist of converting North Second Street and North Third Street from two-way roadways into a one-way pair, utilizing the existing pavement and curbs. No new right-of-way in the historic districts or in front of the Burkle House is required.

Implementation of the project will not result in physical destruction or damage to these properties. There are no direct or indirect effects anticipated that would alter the character of the continued commercial, residential and institutional use of these properties. Project implementation would not diminish the integrity of their significant historic characteristics or features. The State Historic Presentation Officer (SHPO) has determined that the project will not adversely affect these resources.

In the second segment of the project extending from north of Henry Street to the Wolf River bridge, the Build Alternative will impact the **Port of Memphis Grain Elevator** site and the Marble Bayou Pumping Station flood basin which is a contributing element of the **Memphis, Wolf River and Nonconnah Creek Flood Control Project**. Project implementation in the area of these resources consists of widening the roadway from two lanes to four lanes. Both of these NRHP properties front on North Second Street. The roadway is being widened on the west side to avoid Washington Park and to minimize the impact to another flood storage basin which is also a contributing element of the **Memphis, Wolf River and Nonconnah Creek Flood Control Project** located on the east side of the roadway. The right-of-way has been reduced in this area to minimize the impact to these flood basins and also avoid a floodwall on the west side of the roadway which is also another contributing element of the **Memphis, Wolf River and Nonconnah Creek Flood Control Project**.

The Build Alternative will acquire a portion of the **Port of Memphis Grain Elevator** entrance driveway. It does not affect any of the buildings and it will still have access to North Second Street. Adjacent to the **Port of Memphis Grain Elevator** is the Marble Bayou Pumping Station and drainage basins which are contributing elements to the **Memphis, Wolf River and Nonconnah Creek Flood Control Project**. The basins are located on either side of the roadway and cannot be avoided. The Build Alternative will place fill on the existing berm sufficient to build the roadway. The existing historic berm will remain in place and the slopes of the basins will be shaped and seeded to replicate their original appearance. These measures have been discussed with the SHPO and it has been determined that the project will have no adverse effect to this property with implementation of the aforementioned measures.

In the last segment of the project extending across the Wolf River Floodplain and along Whitney Avenue to the intersection of US 51/SR 3, there are two National Register eligible properties,

the **International Harvester Plant** and the **United Auto Workers Building**. The Build Alternative passes in front of the International Harvester Building but will not require any new right-of-way. The UAW Building is located on Harvester Lane and no right-of-way will be required from this site. The SHPO has reviewed these properties and determined that the proposed project will have no adverse effect to the **International Harvester Building** or the **United Auto Workers Building**. Since no right-of-way will be acquired from these properties, there will be no Section 4(f) impacts to these properties.

The **Wells-Arrington Historic District** is located along a previously considered alternate route and is not being affected by the proposed Build Alternative. It is mentioned, here because it is included in the original Cultural Resource Survey prepared for this project and submitted to the SHPO for review and comment. Copies of the SHPO correspondence are included in **Appendix B Cultural Resources Correspondence**.

To learn more about these listed or eligible National Register properties, facts about Section 106 of the National Historic Preservation Act, and National Register Criteria, copies of the Historical and Architectural Survey and Documentation for Effect Under 36 CFR 800 Evaluation reports are available for viewing in TDOT's Environmental Division Office in Nashville.

4.12 ARCHAEOLOGICAL ASSESSMENT

A Phase I Cultural Resources Survey for the proposed improvements to North Second Street has been completed. The purpose of the archaeological survey was: to identify and evaluate any archaeological resources (excluding standing structures) located within the area of potential effect that were listed or potentially eligible for listing on the National Register of Historic Places (NRHP) pursuant to the criteria set forth in 36 CFR 60.4; to assess the effects of the proposed construction on such resources; and to provide recommendations for further archaeological resource management decisions in compliance with Section 106 of the National Historic Preservation Act.

Two historic period archaeological sites (40SY667 and 40SY668) were identified as a result of this investigation. Site 40SY667 consists of two vacant house lots located on Chelsea Avenue. These lots contain the disturbed subsurface remains of two residences. Artifacts recovered from the site are consistent with the occupation of the two structures known to have existed at the site during the late 19th and early 20th century. The archaeological remains at site 40SY667 are not considered eligible for inclusion in the NRHP.

Site 40SY668 is a vacant residential and commercial block located along the west side of North Second Street. The site contains one standing structure and partially intact sub-structural surface remains of two structures. The structures that once occupied the site appear to have been constructed between 1888 and 1927 and were razed at some point after 1952. The majority appear to have been shotgun-style residences. The archaeological remains at site 40SY668 are not considered eligible for inclusion in the NRHP.

There is likely little significant information that could be obtained from the remains at sites 40SY667 and 40SY668 that would contribute to the existing body of information for similar occupations in Memphis during this time period. Based on the results of the Phase I survey, no historic archaeological properties would be impacted by the proposed improvements to North Second and no further investigations are recommended. A copy of the Phase I survey has been sent to the SHPO for review and concurrence. The SHPO concurrence letter can be

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found in **Appendix B**. A copy of the Archaeological/Survey Report is on file in the TDOT Environmental Division Office in Nashville.

Native American Consultation

On June 5, 2000 a Section 106 consultation notice was sent to the following federally recognized tribes for Shelby County. An asterisk indicates a response was returned. No culturally sensitive or sacred sites were identified. The Chickasaw Nation was the only tribe to respond, they only wanted to be notified in the event of an inadvertent find.

- Alabama-Quassarte Tribal Town
- The Chickasaw Nation *
- Choctaw Nation of Oklahoma
- Eastern Shawnee Tribe of Oklahoma
- Kialegee Tribal Town
- Muscogee (Creek) Nation
- Quapaw Tribe of Oklahoma
- Shawnee Tribe
- Thlopthlocco Tribe Town
- United Keetoowah Band of Cherokee Indians in Oklahoma

On January 11, 2002, the following federally recognized Native American Tribes were sent a copy of the Initial Coordination Package for review and comment. An asterisk indicates a response was returned. Reference the letters of reply in Appendix A: No culturally sensitive or sacred sites were identified by the respondent tribes.

- Eastern Shawnee Tribe of Oklahoma
- United Keetoowah Band of Cherokee Indians in Oklahoma
- Seminole Nation of Oklahoma *
- Muscogee (Creek) Nation
- Choctaw Nation
- Chickasaw Nation
- Cherokee Nation *
- Eastern Band of Cherokee Indians

On August 19, 2009 a second Section 106 consultation notice was sent to the above federally recognized Native American Tribes. The second notice was sent because it had been nine (9) years since the first notice, and the second notice covered the entire project, including the extension of the proposed project along Whitney Avenue from Harvester Lane to the intersection of US 51/SR 3. No culturally sensitive or sacred sites were identified along this segment. No response letters were received.

Based on the results of the archaeological assessment and the concurrence of the SHPO the proposed project is in compliance with Section 106 of the National Historic Preservation Act of 1966 (Public Law 89-665); 16 USC 470; 80 Stat. 915 and 36 CFR 60 and 36 CFR 800. Copies of the SHPO correspondence are contained in **Appendix B Cultural Resources Correspondence**.

4.13 SECTION 4(F) EVALUATION

4.13.1 Section 4(f) *De Minimis* Impact of a Historic Resource

Section 4(f) of the United States Department of Transportation (USDOT) Act of 1966 Section 6009, requires federal aid projects to include special efforts to preserve the natural beauty of the countryside, public park and recreation lands, wildlife and waterfowl refuges, and historic sites. Approval of projects that have the potential to impact any of these resources can be made only if the following conditions are met:

1. There is no feasible or prudent alternative to the use of land from the property; and
2. The action includes all possible planning to minimize harm to the property resulting from use.

The purpose of **Section 4(f)** is to preserve publicly owned land from a public park, recreation area, wildlife or waterfowl refuge, or significant historic site from being used for a transportation project. It requires consideration of avoidance or mitigation of damages.

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) amended the existing Transportation Act legislation with Section 6009 (a) in order to simplify the Section 4(f) process and approval of projects having a *de minimis* impact on a historic or recreational resource. With respect to historic sites, the USDOT secretary may make a finding of *de minimis* impact only if the following conditions are met:

1. The process required by Section 106 of the National Historic Preservation Act results in the determination of “no adverse effect” or “no historic properties affected” with the concurrence of the SHPO in the Section 106 consultation;
2. The SHPO in the Section 106 consultation, is informed of FHWA’s intent to make a *de minimis* impact finding based on their written concurrence in the Section 106 determination; and
3. FHWA has considered the views of any consulting parties participating in the Section 106 consultation.

4.13.2 Section 4(f) Resources

The proposed Build Alternative will require taking land from two National Register eligible properties located along the North Second Street corridor; the Port of Memphis Grain Elevator and the Memphis, Wolf River and Nonconnah Creek Flood Control Project.

Port of Memphis Grain Elevator

The Port of Memphis Grain Elevator is eligible for listing in the NRHP for its significance in Commerce and Agriculture. Built in 1936, the elevator had a direct impact on the commerce of the City of Memphis and on the agricultural development of the region. It was the first major barge terminal to ship agricultural products from Memphis. The grain elevator was built as part of the federal New Deal program of the 1930’s to promote crop diversification. The property continues today to be used as a grain storage and shipping center for the region.

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The National Register boundary for the Port of Memphis Grain Elevator includes the entire city owned parcel on which the grain elevator is located, as well as a parcel west of the Illinois Central Railroad which encompasses the conveyor and terminal on the Wolf River Lagoon. The eastern edge of the property fronts on North Second Street. The proposed widening of North Second Street in front of the grain elevator will require taking a narrow strip of right-of-way; approximately 0.7 acre from this property. The land to be acquired consists of a portion of the access road into the property and a grassy area adjacent to the existing right-of-way. The land needed is not a contributing element of the NRHP property. The driveway has been previously altered in this area. The impacts to this property are shown in **Figure 4.13.1: Port of Memphis Grain Elevator**.

It is not possible to completely avoid this property without impacting another Section 4(f) resource, Washington Park, located directly across the road from the grain elevator. The right-of-way along this segment was originally proposed to be 160 feet wide. It has been narrowed to 118 feet wide to minimize the impact to the grain elevator and to avoid Washington Park.

It has been determined in consultation with the SHPO that there will be “No Adverse Effect” to this NRHP resource as a result this project. The SHPO, who has jurisdiction over this resource, has concurred in this finding. A copy of the SHPO letter is included in **Appendix B Cultural Resource Correspondence**.

Memphis, Wolf River and Nonconnah Creek Flood Control Project

The Memphis, Wolf River and Nonconnah Creek Flood Control Project was built to prevent flooding within the low lying areas of Memphis along the Wolf River north of downtown and Nonconnah Creek south of downtown. It is significant for its role in protecting large areas of Memphis from flooding and for promoting new urban development. It is also significant for its role in the federal New Deal program. The project was one of many authorized by the federal government to benefit Memphis and provide employment to thousands of men during the Great Depression.

The Memphis, Wolf River and Nonconnah Creek Flood Control Project is also significant for its engineering as part of the U.S. Army Corps of Engineers legacy of flood control minimization on the Mississippi River. The project’s levees, floodwalls, and pumping stations reflect typical designs of their period and are similar to other flood control projects of the mid-20th century. The boundaries for the Memphis, Wolf River and Nonconnah Creek project include all of the extant floodwalls, levees, pumping stations, storage reservoirs and other associated facilities. Elements of this NRHP property extend along the entire North Second Street corridor; the proposed project will have a minor impact on three of the elements. A minor amount of land will be needed from the flood storage basin associated with the Marble Bayou Pumping Station, which is part of the historic flood control project and is located on the west side of the road next to the Memphis Grain Elevator and directly across the road from Washington Park. The second element impacted is a flood storage basin located on the east side of the roadway adjacent to Washington Park and directly across the road from the Marble Bayou Pumping Station. The impacts to the storage basins are shown in **Figure 4.13.2: Marble Bayou Pumping Station Storage Basins**. The third element is the levee that runs along the south-side of the Wolf River. The levee extends from the Mississippi River south to Danny Thomas Boulevard, passing underneath the existing North Second Street Bridge over the Wolf River.

In order to widen North Second Street from two-lanes to four-lanes and meet the purpose and need of the project, approximately 0.7 acre of land is needed in the Marble Bayou Pumping

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Station west flood storage basin and approximately 0.18 acre in the east flood storage basin. The roadway cross-section in the vicinity of these National Register properties was narrowed to avoid taking any property from Washington Park and minimize the impact to the west and east flood storage basins and also to avoid a floodwall located on the west side of the roadway next to the Marble Bayou Pumping Station. The floodwall is a contributing element of the Memphis, Wolf River, and Nonconnah Creek Flood Control Project.

In order to minimize the impact to the Marble Bayou flood storage basin, and not diminish the integrity of this National Register eligible property, the existing berm located underneath the existing roadway between these two basins will remain in place. The fill material needed to widen the roadway will be placed on top of this berm and the grassy side slopes of the basins will be restored to their existing appearance. The contractor will be advised on the sensitive nature of this segment of the project and specific notes will be placed on the design and construction plans to advise the contractor of these minimization measures.

These minimization measures have been discussed with the SHPO. It has been determined that with the implementation of these agreed measures that there will be “No Adverse Effect” to this NRHP resource as a result of the proposed project. The SHPO, who has jurisdiction over this resource, has concurred in this finding. A copy of the SHPO response letter is included in **Appendix B Cultural Resource Correspondence**.

In order to widen North Second Street to four lanes a new parallel bridge is needed. The new bridge will impact approximately 60 feet of the Wolf River Levee. It has been determined that the segment of this levee impacted by the proposed new bridge is a noncontributing element of this National Register eligible property. There is no feasible and prudent alternative to avoid this levee.

There is no feasible and prudent alternative to completely avoid these Section 4(f) resources. Based on the minor impacts to these NRHP resources and the agreed minimization measures, along with consultation with the SHPO, and his knowledge of FHWA’s intent to declare a *de minimis* finding for this project, the criteria set out in SAFETEA-LU 6009 (a) for a *de minimis* impact finding have been met. No other resources protected under Section 4 (f) will be impacted by the proposed Build Alternative.



FIGURE 4.13.1: PORT OF MEMPHIS GRAIN ELEVATOR



FIGURE 4.13.2: MARBLE BAYOU PUMPING STATION STORAGE BASINS

4.14 HAZARDOUS MATERIAL IMPACTS

Hazardous materials are substances that have, or will have when combined with other materials a harmful effect on the human and natural environment. Hazardous materials are primarily regulated under the Federal Resource Conservation and Recovery Act (RCRA) of 1976, as amended, the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980; and the Superfund Amendments and Reauthorization Act (SARA) of 1986.

A broad hazardous materials study was conducted for this project in 2003 and again in 2009. The results of the study were based on visual inspection and documentation of state and federal agencies. Agencies whose records were reviewed included the U.S. Environmental Protection Agency (EPA) and the Tennessee Department of Environment and Conservation, Division of Underground Storage Tanks (DUST) and Division of Solid and Hazardous Waste Management.

The National Priorities List (NPL) is a federal list of sites subject to cleanup directed by the EPA. These sites are part of the national Superfund program. The NPL revealed four sites in Shelby County. None of these sites are near the proposed project.

The Comprehensive Environmental Response and Liability Act Information System (CERCLIS) is also part of the national Superfund program. Inclusion in CERCLIS is the first step in the ranking of potentially hazardous sites to determine whether they meet the criteria for inclusion in the NPL. There are no active CERCLIS sites within the project area.

Superfund also has an archive designation. The “archive status” means that assessment at a site has been completed and the EPA has determined no steps will be taken to designate the site as a priority by listing it on the NPL. No further remedial action is planned for these sites under the Superfund program. Several sites along the project are identified under the archive designation. True-Tagg Paint Company, Kimberly Clark Corporation, and International Harvester are three examples. The True-Tagg Paint Company is located on North Third Street near Auction Avenue. Kimberly Clark Corporation is located on Mahannah Avenue off North Second Street near Mud Island Road. The International Harvester site is located on Harvester Lane off of Whitney Avenue.

The Resource Conservation and Recovery Act Information System (RCRIS) is a national program management and inventory system for hazardous waste handlers. The system indicated that there are 20 hazardous waste handlers in the project vicinity. The hazardous waste handlers are as follows: Cargill Molasses on North Second Street, Dyersburg Express Inc. on North Second Street, Economy Machine Shop Inc. on North Second Street, Memphis North Wastewater Treatment Plant on North Second Street, A & L Agricultural Lags of Memphis Inc. on North Third Street, Diamond Printing Company on North Third Street, Burk Printing and Sales Company on Thomas Street, Dial Corporation on Thomas Street, Exxon Company USA #51488 on Thomas Street, Lazarov Surplus Sales on Thomas Street, Southland Label Company on Thomas Street, Amoco Oil #60534 on Thomas Street, Bluff City Machine Works on Auction Avenue, Memphis Housing Authority – Hurt Village on Auction Avenue, Spic and Span Cleaners on Auction Avenue, and St. Jude Children’s Research Hospital on Lauderdale.

According to records reviewed from the TDEC Division of Underground Storage Tanks, there are 4 underground storage tank sites (USTs) along the project corridor. The tank locations are identified as follows: Levee Auto Parts on North Second Street, Anderson Tully Company on

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North Second Street, Texaco Station (abandoned) on Chelsea Avenue, and MiniMart on Whitney Avenue.

Site Reconnaissance Methodology

A Phase I Preliminary Site Investigation was completed for the proposed Build Alternative in February 2009. The investigation was conducted within the proposed right-of-way from Interstate 40 at North Second Street to the intersection of US51/SR3 with Whitney Avenue. The following activities were completed to evaluate current and historic land uses for the potentially impacted properties along the North Second Street Corridor:

- Conducted a field reconnaissance of the proposed corridor from Interstate 40 at North Second Street to the intersection of US51/SR3 and Whitney Avenue
- Reviewed aerial photographs from 1958, 1965, 1971, 1986, 1994, and 2006, and the *Soil Survey of Shelby County, Tennessee*, provided by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) website; *Web Soil Survey*;
- Reviewed Sanborn Insurance Maps dated 1897, 1907, 1950, 1952, 1965, and 1969 provided by EDR;
- Reviewed historical City Directory information for the years 1921, 1926, 1932, 1938, 1943, 1948, 1953, 1958, 1960, 1963, 1967, 1968, 1973, 1978, 1982, 1983, 1987, 1992, 1993, 1997, 2003, 2006, and 2008;
- Conducted property assessment research for properties within and adjacent to the proposed corridor through the Shelby County Register of Deeds website; and
- Conducted file reviews at the Tennessee Department of Environment & Conservation, Division of Underground Storage Tanks, Division of Solid & Hazardous Waste, and Hazardous Waste central offices, as well as conducted research on the National Priorities List of Superfund sites.

Site Reconnaissance Results

The majority of the land parcels located within or immediately adjacent to the proposed right-of-way consisted of residential, commercial, light industrial and undeveloped woodland properties. A visual site reconnaissance identified thirty-eight parcels as having a recognized environmental condition (REC).

Because the project area is located in a historically industrial part of Memphis, Tennessee, there is a high probability that environmental conditions which were not observed during field reconnaissance activities are present. **Table 4.13.1** lists all parcels observed to have RECs.

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TABLE 4.13.1: PROPERTIES WITH RECOGNIZED ENVIRONMENTAL CONDITIONS

Parcel ID	Street Address	Business Name	Current Use	Reason for Impact
001057 00002	125 Keel Ave.	Matthew Blow Pipe Co.	Vacant	Historically Industrial
001059 00004C	611 N. 3 rd St.	Diamond Printing	Print Shop	Potential Contamination
001075 00009	618 N. 3 rd St.	Auto Repair Experts	Junkyard	Potential Contamination
001075 00010	620 N. 3 rd St.	None	Junkyard	Potential Contamination
001075 00008	Saffarans St.	None	Junkyard	Potential Contamination
001075 00011	N. 3 rd St.	None	Junkyard	Potential Contamination
001056-00016	141 Keel	Former Paint & Body	Residential	Potential Contamination
001054 00006	130 Keel Ave.	Matthew Blow Pipe Co.	Junkyard	Potential Contamination
022006 00013	793 N. 2 nd St.	Unknown	Junkyard	Potential Contamination
022006 00012	N. 2 nd St.	Unknown	Junkyard	Potential Contamination
022006 00011	N. 2 nd St.	Unknown	Junkyard	Potential Contamination
022006 00004	855 N. 2 nd St.	Unknown	Garage	Potential Contamination
001079 00001	183 Chelsea	Abandoned Texaco Station	Vacant	Potential Contamination
022009 00036C	East Chelsea	Unknown	Junkyard	Potential Contamination
022001 00015	N. 2 nd St.	None	Vacant	Dumping
022001 00003	1001 N. 2 nd St.	Truckline Salvage/Marrs	Vacant	Drums
039003 00004	1051 N. 2 nd St.	Talley Co. Garage	Garage	Potential Contamination
039003 00003	1065 N. 2 nd St.	Unknown	Warehouse	Potential Contamination
039003 00002	1075 N. 2 nd St.	Economy Machine Shop	Machine	Potential Contamination
039002 00005	1079 N. 2 nd St.	Bunge Corp.	Agribusiness	Potential Contamination
039011 00001	1178 N. 2 nd St.	Owens Flooring	Manufacturing	Potential Contamination
039021 00010	1242 N. 2 nd St.	Anderson Tully Co.	Lumber Yard	Potential Contamination
039021 00009	N. 2 nd St.	Anderson Tully Co.	Lumber Yard	Potential Contamination
039021 00008	N. 2 nd St.	Anderson Tully Co.	Lumber Yard	Potential Contamination
039001 00011	1315 N. 2 nd St.	Westway	Bulk Liquid	Potential Contamination
039001 00010C	1315 N. 2 nd St.	Westway	Bulk Liquid	Potential Contamination
039021 00011	1306 N. 2 nd St.	Levee Auto Parts	Junkyard	Potential Contamination
039021 00012	1321 N. 2 nd St.	Levee Auto Parts	Junkyard	Potential Contamination
039021 00006	N. 2 nd St.	Levee Auto Parts	Junkyard	Potential Contamination
039021 00002C	1336 N. 2 nd St.	Levee Auto Parts	Junkyard	Potential Contamination
039001 00006	1387 N. 2 nd St.	Cargill	Farm Service	Potential Contamination
039022 00002	1388 N. 2 nd St.	Delta Metals	Manufacturing	Potential Contamination
039001 00006	1489 N. 2 nd St.	Environmental Tire Disposal	Vacant	Potential Contamination
039001 00013	1489 N. 2 nd St.	Environmental Tire Disposal	Vacant	Potential Contamination
069074 00008C	N. 2 nd St.	None	Vacant	Dumping
069074 00029	N. 2 nd St.	None	Vacant	Dumping
069012 00022	692 Whitney	MiniMart Gas Station	Gas Station	Potential Contamination
069021 00022C	669 Whitney	B & B Automotive	Garage	Potential Contamination

After all properties with potential contamination were identified they were ranked according to their level of impact as outlined in the TDOT HazMat Guidelines. These rankings are as follows:

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- No indication – implies that after a review of all available information and limited site visit there is no indication of present or past usage of hazardous material.
- Low – implies the past or present existence of hazardous material will not impact the project.
- High – implies past or present use or existence of hazardous material and the possibility of soil and/or groundwater contamination may impact the project.

Based on the site reconnaissance, regulatory information reviewed, current site use, and the preliminary drawings for the Build Alternative, fifteen parcels were designated with a high probability to be impacted by proposed construction. The parcels are listed in **Table 4.13.2**.

TABLE 4.13.2: PARCELS WITH HIGH PROBABILITY OF IMPACT TO PROJECT

Parcel ID	Street Address	Business Name	Current Use	Reason for Impact
022001 00015	N. 2 nd St.	None	Vacant	Acquiring entire parcel
022001 00003	1001 N. 2 nd St.	Truckline Salvage	Vacant	Acquiring 1/2 parcel
039003 00004	1051 N. 2 nd St.	Talley Company Garage	Garage	Acquiring 1/2 parcel
039003 00003	1065 N. 2 nd St.	Unknown	Warehouse	Acquiring > 1/2 parcel
039003 00002	1075 N. 2 nd St.	Economy Machine Shop	Machine	Acquiring > 1/2 parcel
039003 00001	1178 N. 2 nd St.	Owens Flooring	Manufacture	Acquiring building
039021 00010 039021 00009 039021 00008	1242 N. 2 nd St. N. 2 nd St. N. 2 nd St.	Anderson Tulley Company Anderson Tulley Company Anderson Tulley Company	Lumber yard Lumber yard Lumber yard	Acquiring 1/2 property
039021 00011 039021 00012 039021 00006 039021 00002C	1306 N. 2 nd St. 1321 N. 2 nd St. N. 2 nd St. 1336 N. 2 nd St.	Levee Auto Parts Levee Auto Parts Levee Auto Parts Levee Auto Parts	Junkyard Junkyard Junkyard Junkyard	Acquiring 1/2 property
069074 00008C	N. 2 nd St.	None	Vacant	Project crosses parcel
069074 00029	N. 2 nd St.	None	Vacant	Project crosses parcel

Conclusions and Recommendations

The majority of the properties associated with the Proposed North Second Street Corridor project have low or no potential for environmental impact to the construction project. However, all properties listed in **Table 4.13.1** were observed to have some form of recognized environmental condition (REC). Using TDOT’s property classifications of No Indication, Low Probability, and High Probability of onsite hazardous materials impacting a site, all parcels observed to have RECs were ranked. All parcels ranked as having a High Probability of impact, necessitating further investigation, are shown below in **Table 4.13.3**. A Phase II Environmental Site Investigation will be performed on these parcels prior to commencement of construction activities. A Phase II Environmental Site Investigation consists of soil and/or groundwater sampling to determine the extents of potential or known contamination.

TABLE 4.13.3: PARCELS RECOMMENDED FOR PHASE II INVESTIGATION

Parcel ID	Street Address	Business Name	Current Use	Reason for Impact
022001 00015	N. 2 nd St.	None	Vacant	Dumping
022001 00003	1001 N. 2 nd St.	Truckline Salvage	Vacant	Drums
039003 00004	1051 N. 2 nd St.	Talley Company Garage	Garage	Potential Contamination
039003 00003	1065 N. 2 nd St.	Unknown	Warehouse	Potential Contamination
039003 00002	1075 N. 2 nd St.	Economy Machine Shop	Machine	Potential Contamination
039011 00001	1175 N. 2 nd St.	Owens Flooring	Manufacturing	Potential Contamination
039021 00010	1242 N. 2 nd St.	Anderson Tulley Company	Lumber Yard	Potential Contamination
039021 00009	N. 2 nd St.	Anderson Tulley Company	Lumber Yard	Potential Contamination
039021 00008	N. 2 nd St.	Anderson Tulley Company	Lumber Yard	Potential Contamination
039021 00011	1306 N. 2 nd St.	Levee Auto Part	Junkyard	Potential Contamination
039021 00012	1321 N. 2 nd St.	Levee Auto Part	Junkyard	Potential Contamination
039021 00006	N. 2 nd St.	Levee Auto Part	Junkyard	Potential Contamination
039021 00002C	1336 N. 2 nd St.	Levee Auto Part	Junkyard	Potential Contamination
069074 00008C	N. 2 nd St.	None	Vacant	Potential Contamination
069074 00029	N. 2 nd St.	None	Vacant	Potential Contamination

The remaining parcels in **Table 4.13.1** are not being recommended for Phase II activities based on the Phase I Preliminary Assessment and the preliminary functional drawings. However, there is a high probability that environmental conditions exist which were not observed during field reconnaissance activities or found in historical records since the project area is located in a historically industrial part of Memphis. According to the preliminary functional drawings, the majority of acquisition of right-of-way along the proposed corridor consists of small portions of land along the existing roadways. In these instances, if little or no excavation is going to be performed, the observed RECs on those parcels will most likely not affect construction activities. However, if excavation activities such as relocating utility trenches are going to be performed, or the proposed corridor is revised such that it will necessitate the acquisition of additional property, there is a moderately-high probability that some form of contamination will be encountered. In these instances, further investigation may be warranted on parcels of no or low probability of contamination.

Additionally, in the event any buildings are to be demolished or altered in any way, an asbestos and lead-based paint survey should be performed by an Environmental Protection Agency (EPA) AHERA-trained Asbestos Building Inspector.

In the event hazardous substances/wastes are encountered within the proposed right-of-way during construction activities, the appropriate authorities will be notified, permits will be secured, and clean up activities will take place. Their disposition shall be subject to the applicable sections of the Federal Resource Conservation and Recovery Act (RCRA), as amended; the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended; and the Tennessee Hazardous Waste Management Act of 1983. A copy of the

Phase I Preliminary Site Investigation Report is on file in the TDOT Environmental Division Office in Nashville, TN.

4.15 VISUAL IMPACTS

A visual impact assessment was conducted to evaluate the affects of the project on the area visual resources.

Visual impacts can be defined as changes to the visual landscape. Visual impacts can be categorized as minimal, moderate or high. Minimal impacts generally occur when existing transportation facilities are already part of the viewshed, the view has few or no visually sensitive resources and the proposed project would introduce few, if any noticeable changes to the viewshed. Moderate visual impacts occur when changes to the existing viewshed would be noticeable, but not substantial and/or there are visually sensitive resources that would undergo a noticeable change in view. High visual impact occurs when substantial changes are made to the existing viewshed that would result in a greatly changed view and/or there are visually sensitive resources that would undergo a substantial change in view.

Viewer groups in the project area fall into two categories; persons with a view of the surrounding area from the existing roadway and person with a view of the existing roadway from the surrounding area. The proposed project passes through commercial, residential, industrial, floodplain and wetland areas. The southern portion of the build alternative from I-40 and extending to Chelsea Avenue follows existing North Second and North Third Streets and will not require any additional right-of-way. The dominant visual elements in this area are buildings. The development is typical of built up areas found around cities and does not indicate visual sensitivity or unique visual importance. Few changes other than restriping the roadway and providing some additional sidewalk will occur in this area; therefore, no adverse visual impact is anticipated.

Beginning at Chelsea Avenue and extending to the Wolf River Bridge the proposed project will widen existing North Second Street from two to four lanes. The widening of the roadway through this area will cause a minimal impact since there is an existing facility in place. The dominant visual element through this area is predominantly commercial and industrial with scattered residences and Washington Park.

The new location segment of the project beginning at the Wolf River Bridge and extending on a new alignment across the floodplain to Whitney Avenue will have a moderate impact on the viewshed due to the introduction of wide areas of pavement and sections of elevated roadway. The roadway and bridges would interrupt the long distance views. The dominant visual element in this area along the existing road is the Dewitt Spain Airport and industrial property. Although the new roadway would result in moderate changes in the view, the area is predominantly floodplain and wetlands with few if any residents with a view of the area. The view from the road will afford drivers a scenic view of the Wolf River Greenway, the natural forest area and floodplain.

The last segment of the build alternative extends along existing Whitney Avenue from the north side of the floodplain to the intersection of Whitney Avenue and US-51. The dominant visual element through this segment is predominantly residential with some commercial property and churches. The widening of the existing roadway will cause a minimum impact on the visual environment since an existing facility is in place. The visual effect would not be adverse.

4.16 WILD & SCENIC RIVERS AND TENNESSEE SCENIC RIVERS

4.16.1 Wild & Scenic River Legislation

The Wild & Scenic Rivers Act established a National Wild & Scenic Rivers System in 1968 for the protection of certain selected rivers of the Nation which, with their immediate environments, possess “outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values.” These rivers are to be preserved in free-flowing condition and their immediate environments are to be protected for the benefit and enjoyment of present and future generations.

4.16.2 Wild & Scenic River Designation

The Obed River and its two main tributaries, Clear Creek and Daddys Creek located in Cumberland County and Morgan County, is the only federally designated Wild & Scenic River in the State of Tennessee.

4.16.3 Impacts to Wild & Scenic Rivers

Neither the Wolf River nor the Mississippi River in Tennessee are designated as Wild & Scenic Rivers under the Act; therefore, no impacts to federally-designated Wild & Scenic Rivers will occur as a result of the proposed project.

4.16.4 Tennessee Scenic Rivers Legislation

The Tennessee Scenic Rivers Act was passed in 1968 whereby listed Tennessee Rivers, or sections thereof, are to be preserved similar to the protection granted under the Wild & Scenic Rivers Act.

4.16.5 Tennessee Scenic Rivers Designation

Since the passage of the Act, thirteen sections of rivers in Tennessee have been designated as State Scenic Rivers. These include: Blackburn Fork, Buffalo River, Clinch River, Collin River, Conasauga River, Duck River, French Broad River, Harpeth River, Hatchie River, Hiwassee River, Roaring River, Spring Creek, and Tuckahoe Creek.

4.16.6 Impacts to Tennessee Scenic Rivers

Neither the Wolf River nor the Mississippi River are designated as Tennessee Scenic Rivers; therefore, no impact to Tennessee Scenic Rivers will occur as a result of the proposed project.

4.17 ENERGY IMPACTS

Construction of the Build Alternative will involve the commitment of energy resources both during the short-term construction period and throughout the long-term operation of the facility. The energy requirements of the Build Alternative are greater than the energy requirements of the No-Build Alternative.

The energy used by the Build Alternative can be characterized as follows:

Construction: Energy would be used for the manufacturing and transport of the construction components and by the heavy equipment utilized for roadway and bridge construction.

Maintenance: The project would require routine maintenance that could result in energy use for the maintenance activities. Traffic delays could accompany the maintenance activities and could result in temporary increases in energy use.

Motor Vehicle Use: Improved traffic flow and reduced travel time could result in a decrease from existing energy use.

In summary, the amount of energy required to construct a roadway project of this type is substantial, but temporary in nature, and generally leads to reduced operating cost once the project is completed. A reduction in cost and energy use could come from improved access, reduced travel time and increased safety (i.e. less accidents on local roads that hold up traffic and require emergency services).

4.18 CONSTRUCTION IMPACTS

A major construction project, public or private, will likely inconvenience or disturb residents, businesses and business customers. In the case of improvements to an existing highway, inconvenience to highway users also occurs. The maintenance of traffic and access to properties adjoining the road and utility relocations are particular construction-related impact issues that must be addressed with this project.

Without proper planning and implementation of controls, traffic disruption, loss of access and utility relocation could adversely affect the comfort and daily life of residents and disrupt the flow of customers, employees and material/supplies to and from businesses. Construction impact controls would be integrated into the project's contract specifications and traffic control plans. The Build Alternative would have physical construction-related impacts, but with implementation of appropriate controls, no cumulative or secondary impacts are foreseeable. The following construction issues are addressed below:

- Maintenance of Traffic and access
- Economic benefits
- Waste disposal
- Utility relocation
- Discovery of unknown archaeological sites
- Erosion control
- Air quality
- Noise

Maintenance of Traffic and Access: Traffic will be maintained on existing roadways during construction or detours will be developed. Access to all properties will be maintained during construction.

Economic: The construction activities may result in short-term economic benefits to the local area that would include increased revenue to local businesses through the sale of construction supplies and material and retail/service purchases by construction personnel. Construction jobs also could be available for persons residing in the area. These short-term revenues and jobs are not expected to be significant locally or regionally.

Construction could result in adverse economic impacts to local businesses as a result of construction slow-downs, but the impacts would be minimal and short-term.

Waste Disposal: Solid waste will be generated by project construction (i.e. through removal of structures that cannot be relocated). The quantity of disposed waste would represent a negligible proportion of the total load directed toward local landfills.

Any toxic and hazardous materials would be handled and used in accordance with package labels and manufacturer's directions. Wastes would be segregated, labeled and stored in a manner that would prevent their release into the environment from an accident or spill. The contractor would dispose of these materials and their containers in accordance with applicable state and federal regulations.

Disposal of excess material would be the responsibility of the contractor, who will be contractually required to handle and dispose of the material in accordance with the TDOT *Standard Specification for Road and Bridge Construction*. These specifications require that the contractor comply with open burning regulations and be supervised by a competent watchman; that material is disposed of in accordance with all applicable laws and ordinance and that material disposed on private property have a signed agreement with the property owner.

Utility Relocation: The relocation of utilities will be included in final design plans. As appropriate, TDOT and the City of Memphis will coordinate with the appropriate officials to avoid or minimize damage or disruption of existing service.

Discovery of Unknown Archaeological Sites: If archaeological materials are uncovered during construction, all construction work in the area of the find will cease. The Tennessee Division of Archaeology (615-741-1588) and the recognized Native American Tribes previously coordinated with will be immediately contacted so a representative of their office may have the opportunity to examine and evaluate the materials.

Should earth fill be required for this project, the applicable TDOT borrow provisions will be followed.

Erosion Control: The Build Alternatives will disturb land that has a tendency to erode when disturbed. The contractor will be required to employ FHWA Best Management Practices for Erosion and Sediment Control (1995) to minimize the impacts of point and non-point source pollution resulting from increased siltation and highway runoff. A sediment control plan will be formulated in accordance with the TDOT *Standard Specifications for Road and Bridge Construction* and will include the following measures:

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- Temporary erosion control devices, such as silt fences, straw bales, burlap, jute matting, grading, seeding and sodding will be used to minimize erosion and sedimentation.
- Removal of vegetation will be minimized.
- Fill slopes should be constructed and stabilized during the growing season through the establishment of non-invasive vegetation.
- The planting of native woody and herbaceous vegetation should be encouraged.

Air Quality: Even though the National Ambient Air Quality Standards (NAAQS) are not exceeded in the design year, all phases of construction operations could temporarily contribute to air pollution. Particulates would increase slightly along the project as dust from construction activities collects in the air surrounding the project. The construction equipment would temporarily produce slight amounts of exhaust emissions. The emission of air pollutants would be reduced by the use of properly maintained equipment and the use of tarp covers on trucks transporting refuse and construction waste products.

Any burning of wastes and control of dust will be the responsibility of the construction contractor. The contractor must meet the burning and dust control requirements of TDOT's *Standard Specifications for Road and Bridge Construction* and is required to comply with applicable state and local laws, ordinances and regulations regarding these emissions.

Construction Noise Abatement: Temporary noise impacts will occur within the immediate vicinity of the construction activities. The exact noise levels cannot be predicted because the specific types of construction equipment, methods and schedule are unknown at this time.

The following noise abatement measures will be incorporated into the contract plans and specifications in order to prevent adverse construction noise impact in the vicinity of the proposed project:

- The contractor shall comply with all state and local sound control and noise level rules, regulations and ordinances that apply to any work performed pursuant to the contract
- Each internal combustion engine used for any purpose on work related to the project shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without such muffler.

4.19 SHORT-TERM IMPACTS VERSUS LONG-TERM BENEFITS

Short-term impacts related to highway improvements will occur during construction operations. Some interruption to vehicular traffic flow is inevitable; however, appropriate maintenance of traffic phasing will be employed to minimize inconvenience. Traffic control plans will be developed to minimize congestion and delays during construction.

Temporary air impacts from dust and exhaust fumes, and noise associated with construction operations cannot be avoided. Every effort will be made to minimize these effects by using best management practices.

Many long-term benefits are anticipated to result from the proposed project, such as a decrease in travel time and traffic congestion and an improved level of service. Accidents along segments of existing highways that will be bypassed; including I-40 and Danny Thomas Boulevard (US 51/SR 3), may also decrease over the long term. Elimination of congestion is expected to result in more efficient use of energy. In the long term, the construction of the

roadway through the area will provide a better modal connection and could provide an economic benefit through establishment of new businesses and industries along the corridor.

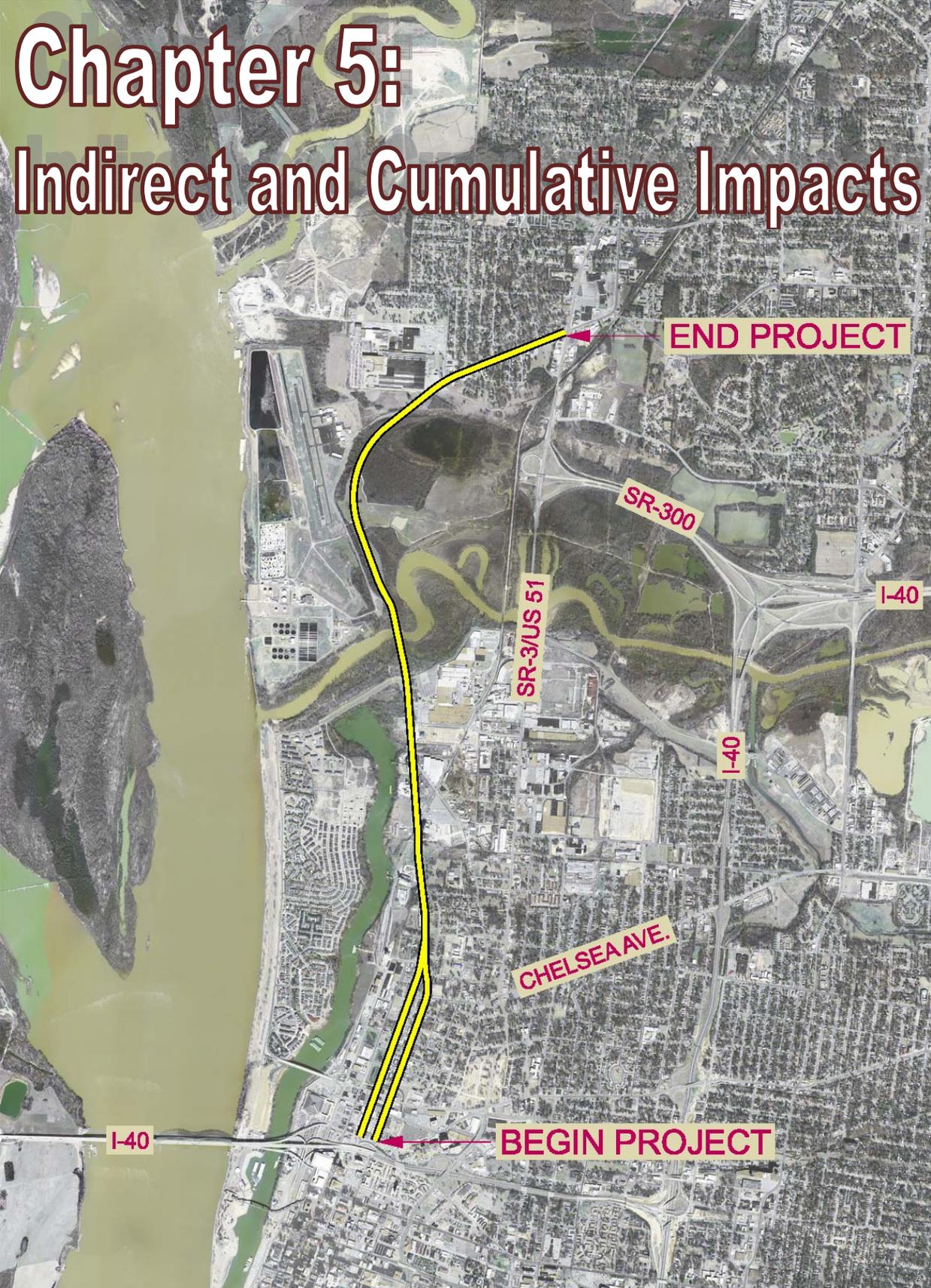
4.20 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Irretrievable resources necessary to build the proposed roadway include energy (fossil fuel), concrete, aggregate and steel. None of these materials are in short supply. Implementation of proposed project involves a commitment of a range of natural, physical, human and fiscal resources. Land used in the construction of the proposed facility is considered an irreversible commitment during the time period that the land is used for a highway facility. However, if the highway facility is no longer needed, the land can be converted to another use.

Considerable amounts of fossil fuels, labor and roadway construction materials such as cement, aggregate and bituminous materials will be expended. Additionally, large amounts of labor and natural resources will be used in the fabrication and preparation of construction materials. These materials are generally not retrievable. However, they are not in short supply and their use will not have an adverse effect upon continued availability of these resources. Construction will require a one-time expenditure of both state and federal funds, which are not retrievable.

The commitment of these resources is based on the concept that residents in the immediate area, state and region will benefit by the improved quality of the transportation system. These benefits will consist of improved accessibility and safety, savings in time and greater availability of quality services that are anticipated to outweigh the commitment of these resources.

Chapter 5: Indirect and Cumulative Impacts



5.0 INDIRECT AND CUMULATIVE IMPACTS

This section of the document discusses indirect and cumulative impacts. Under 40 CFR1508.8, indirect impacts are those that are “*caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.*” Cumulative impacts are the “*impact on the environment which results from the incremental impact of the [proposed] action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.*” Throughout the development of the proposed project, an effort has been made to identify and estimate the indirect and cumulative impacts attributable to the project and nearby projects. The study area analyzed includes downtown Memphis, the Uptown Memphis neighborhoods, Mud Island, Wolf River Floodplain and the Frayser community north of Memphis. This area was selected for analysis because it is the area that would most likely be influenced by the construction of this project.

Some of the guidance material consulted in evaluating the indirect and cumulative effects include: National Cooperative Highway Research Program (NCHRP) Report 403, “Guidance for Estimating the Indirect Effects of Proposed Transportation Projects”; Council on Environmental Quality (CEQ) guidance material “Considering Cumulative Effects Under the National Environmental Policy Act”; the Memphis Long Range Transportation Plan; and the available local land use plans for the surrounding communities.

During the scoping process with Federal and State resource and permitting agencies, the following geographical impact areas were identified; Downtown Memphis, Uptown Memphis, Mud Island, the Wolf River Floodplain, and the Frayser community. Several sensitive areas were identified at the scoping meeting and subsequent early public involvement meetings (i.e. wetlands, archaeological resource, historical property, local parks, as well as old and new residential areas). During the course of this study, the indirect and cumulative impacts to these resources were considered and the roadway cross-sections and alignment were modified to avoid as many environmentally sensitive areas as feasibly possible.

As with all infrastructure projects, there are several factors that influence why and when transportation improvement projects are needed. While roadway improvements enhance access to adjacent properties (particularly for a new roadway alignment), the need for implementing transportation improvements is based on the development allowed under approved county and local land use plans.

The Memphis Metropolitan Planning Organization (MPO) is responsible for developing the Long-Range Transportation Plan (LRTP) within the project area. The primary purpose of the LRTP is to guide the development of transportation systems to serve the travel demands of existing and projected future growth. One of the guiding principles in developing the LRTP is the *Future Land Use Plan*. This plan identifies the development potential of an area and is also used to identify the transportation facilities and improvements needed to support future growth and development in a region. The *Future Land Use Plan*, developed by the local planning agency, indicates the type and intensity of activity approved for the various land uses. Transportation improvement needs are identified in response to the development allowed in the local government comprehensive plans, of which the LRTP and *Future Land Use Plan* are elements.

5.1 INDIRECT IMPACTS

Indirect impacts are defined as impacts that may be caused by a project, but would occur in the future or outside the project area and are reasonably foreseeable. Indirect impacts may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems (40 CFR 1508.7). Reasonably foreseeable actions/projects include:

Reasonably Foreseeable:

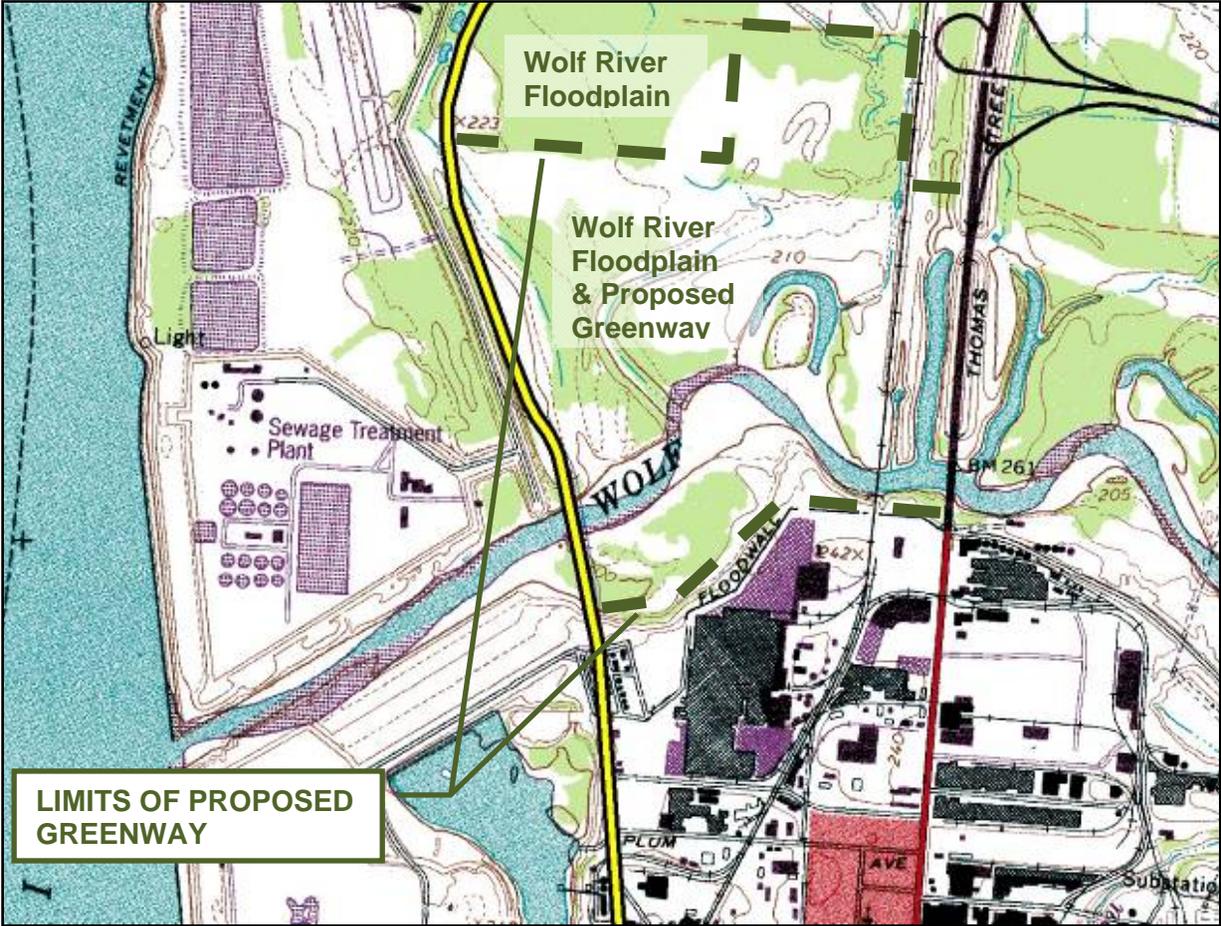
Courts have defined reasonably foreseeable as an action that is sufficiently likely to occur, that a person of ordinary prudence would take into account in making a decision.

- A project identified in a local or regional comprehensive land use plan;
- A subdivision plat that has been filed with the local government, county or other plat-approving agency;
- Population/development trends that are identified in local or regional comprehensive land use plans;
- Planned transportation improvements by city or county governments; and
- Local or regional infrastructure projects that could impact resources (schools, hospitals, etc.).

In general, roadway projects most commonly result in indirect impacts to land use, farmland, community and economic resources, water resources, water quality, wetlands and terrestrial ecology.

5.1.1 Land Use Impacts

Most of the land within the project corridor, with the exception of the Wolf River Floodplain, has been in some form of commercial, industrial or residential use for several decades. The only farmland in the vicinity of the projects is located in the Wolf River Floodplain. To control access and discourage any future development in the floodplain, no new driveway permits will be allowed along the segment of the proposed project that crosses the floodplain. The remaining farmland adjacent to the project, as well as the surrounding forest land estimated at 2,000 acres, is proposed to be incorporated into the proposed Wolf River Greenway. The Build Alternative, as previously discussed, is located along the western boundary of the proposed Greenway. If the land for the Wolf River Greenway is not acquired, the remaining farmland in the floodplain may be indirectly affected since access on the north and east side of the floodplain is not access controlled. The land may be converted to non-farmland usage.



The segment of the proposed project that begins at I-40 and extends to the Wolf River Bridge passes through a 100+ block multi-use area that is being redeveloped. Construction of the proposed project may accelerate the on-going redevelopment initiatives and result in additional land use changes. Commercial property may be converted to residential use and some industrial property may be converted to commercial use. Residential property may also be converted to commercial use. This accelerated development may result in the construction of more apartments and condominiums along the Wolf River Lagoon. Abandoned homes and businesses may be removed and the land used for future residential development or recreational uses. A positive indirect impact of the project may be that some blighted areas will be restored to their highest and best use.

The segment of the proposed roadway on the north side of the Wolf River floodplain near the Old Harvester Plant and extending to US 51 is along existing Whitney Avenue. Some land use changes may occur in the older neighborhood along this segment as the area is redeveloped to its highest use potential.

The extent of the land use changes and the effectiveness of any applied mitigation measures will be the responsibility of the City government through their local ordinances and land use policies.

5.1.2 Economic Impacts

The project will make the Memphis Uptown area more attractive for residential living as well as for incoming retail businesses and industries. The improved traffic flow coming in from the Tipton County area in conjunction with the present revitalization program will cause Northern Memphis to flourish.

5.1.3 Community Resources

An improved roadway would increase accessibility to the area and could help to encourage more people and businesses to move to this area as well as stimulate other investment opportunities. This could result in an increase in school age children which will have an indirect impact on schools and classroom sizes and, as a result, increase the need for additional educational resources. Increased growth could also increase the demand and cost for other community and social services (i.e. increased sewer and water service maintenance, additional trash pick up, increased cost of maintenance at Washington Park, increased cost of local bus services, and other capital improvements).

5.1.4 Water Resources/Water Quality

Indirect impacts to the Wolf River and other water resources, as well as water quality, could occur. An increase in land development could increase site imperviousness and add to the amount of run-off entering the Wolf River and small drainage ways, thereby decreasing natural filtration to groundwater. Construction activities could increase the amount of soil erosion; thereby increasing the potential for sediment to enter streams.

5.1.5 Wetlands/Floodplain

Indirect impacts to jurisdictional wetlands and the removal of riparian vegetation could occur as the result of the development of currently undisturbed land outside the proposed Wolf River Greenway boundaries. Indirect impacts to wetlands and the floodplain could occur in the vicinity of the US 51/SR-300 interchange and along Danny Thomas Boulevard south of the interchange, as well as the undeveloped areas on Mud Island and around the Wolf River Lagoon.

5.1.6 Terrestrial Ecology/Wildlife Habitat

The proposed project could encourage future development. Removal of habitat (open space, wooded areas, and overgrown lots) as a result of future development could affect migratory trails, nesting patterns, and wildlife population numbers. Based on the presence of habitat and the species record review, Mississippi Kite (*Ictinia mississippiensis*) may be indirectly impacted as a result of development in the immediate vicinity of the Wolf River Bridge.

Future construction activities around the Wolf River floodplain, forested areas and wetlands may result in a decline in the local wildlife populations due to the removal of habitat. Increased noise levels may also affect wildlife populations in the vicinity.

5.2 CUMULATIVE IMPACTS

According to the Council of Environmental Quality (CEQ) NEPA regulations: “*Cumulative impact is the impact on the environment which results from the increased impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other action. Cumulative impacts can result from individually minor, but collectively significant action taking place over a period of time*” (40 CFR 1508.7)

5.2.1 Land Use

The cumulative impacts to land use in the study area as a result of past and future transportation and infrastructure projects has been anticipated by local governments for many years. Local land use plans have identified areas for future growth and local services. The conversion of farmland and open land and the filling of wetlands for residential, commercial and industrial uses to support an ever growing human environment, along with providing the needed infrastructure, have been on-going for many decades. The decline in agricultural employment and the increase in manufacturing, services, and distribution employment have cumulatively accelerated these land use changes in the region.

The Build Alternative, as previously discussed in this document, is mostly along existing roadways with the exception of the new alignment across the Wolf River floodplain. Future land use changes in the project impact area would be influenced by other factors in addition to the proposed project. Changes in the local economy, changes in land use plans by the local jurisdictions, and other infrastructure changes can all affect how, when, and to what degree land is developed or redeveloped. Cumulative changes in land use in the project corridor could alter the land use pattern from a mixed use area (commercial, industrial) to a predominantly residential area interspersed with small, local stores and shops.

A positive cumulative effect in the project corridor would be the conversion of vacant lots and the removal of abandoned buildings and other blighted property to create a vibrant pedestrian friendly residential area close to the downtown area. This is one of the objectives of the proposed project.

5.2.2 Economic Impacts

The long-term, cumulative, beneficial, economic impacts of the project will greatly out-weigh any short-term, adverse effects. The project will help to increase the good economic impacts of the ongoing revitalization project. Improved transportation infrastructure should increase business potential and employment opportunities, as well as personal income throughout the Northern Memphis area. This should greatly enhance the City’s tax base for the region. The cumulative economic impacts of the project indicate that it is needed and will be good for Memphis.

5.2.3 Water Resources/Water Quality

The main watershed in the project impact area is the Wolf River, which has a drainage area of 353,853 acres. The construction of the proposed project along with future planned and on-

going residential, commercial, and industrial development and other roadway and infrastructure improvements will increase site imperviousness and add to the amount of run-off entering the Wolf River and its tributaries. Small local drainage systems and existing culverts in the developing areas may be near capacity as a result of the cumulative increase in run-off.

The proposed project, along with other infrastructure improvements and the on-going residential, commercial, and industrial development in the project impact area could affect long term water quality as a result of increased run-off. Water quality would be affected following site development by the introduction of urban pollutants, such as vehicle oils and grease, and heavy metals on roads, parking lots, and driveways; fertilizer used on site landscaping; and toxic compounds released from auto maintenance areas. Uncontrolled, these pollutants could affect aquatic life in the surrounding watersheds. During the rainy season, construction of the proposed project, as well as the on-going residential, commercial, and industrial development in the project impact area, could affect water quality. Clearing, grubbing, and grading activities could temporarily increase sedimentation and the maintenance of construction vehicles and equipment could release contaminants. The proposed project will incrementally contribute to this cumulative effect on water quality. The long term water quality impacts associated with the proposed project are considered to be less cumulative because of the implementation of proper planning and use of storm water Best Management Practices (BMP's), along with adhering to federal and state water quality permit provisions. If all future development around rivers and streams were constructed using appropriate erosion prevention and sediment controls (EPSC), this impact could be minimized.

5.2.4 Terrestrial Ecology and Wildlife Impacts

Cumulative development in and around the project area could result in the further loss of habitat for some local wildlife. The cumulative clearing of forest area, farmland, and other open land along the Wolf River north and east of the proposed project will have an impact on nesting areas and foraging areas for local wildlife. The removal of vegetation around Mud Island and the Wolf River Lagoon will also contribute to loss of terrestrial habitat.

The proposed project will result in the conversion of 50+ acres of land in various land uses to roadway right-of-way. Past actions involving roadway construction, residential and commercial development and other infrastructure projects have resulted in the removal of some habitat or the degradation of areas of habitat. It is not evident at this time the extent of the combined effect of past and present actions upon wildlife in the project impact area.

Reasonably foreseeable future actions in relation to this project are expected to be limited and concentrated outside the North Second Street corridor, and not associated with the project. The future development could cumulatively result in the additional loss of aquatic and terrestrial habitat for local wildlife. Based on the presence of habitat and the species record review, the Mississippi Kite (*Ictinia mississippiensis*) may be cumulatively impacted as a result of development in the immediate vicinity of the Wolf River Bridge.

5.2.5 Wetlands/Floodplains

Cumulative development in the project area could result in the loss of waters of the U.S., including jurisdictional wetlands and associated riparian habitat.

The main watershed in the project impact area is the Wolf River, with a drainage area of 353,853 acres. There are several hundred acres of jurisdictional wetlands within the Wolf River floodplain in the vicinity of the proposed project. The proposed project will cause some incremental impact to these wetlands, as well as placing roadway fill in the floodplain.

Another transportation project, I-69 is proposed to cross North Second Street just south of the International Harvester Plant and interchange with US 51/SR-300. I-69 will result in placing fill in the Wolf River Floodplain and will impact approximately 50+ acres of jurisdictional wetlands. I-69 is a separate and independent project from North Second Street and has its own NEPA document. The proposed North Second Street project is not dependent upon the construction of I-69. No access from North Second Street to I-69 is proposed, however the construction of both projects will have a cumulative impact on jurisdictional wetlands. The on-going development in and around the North Second Street corridor, along with proposed local transportation and infrastructure projects, will continue to have a cumulative effect on jurisdictional wetlands and floodplains. The total number of acres involved, the sediment load to the watershed, and the number of wetlands impacted by these local projects is unknown at this time and would be difficult to quantify.

All future actions would have to comply with State and Federal water quality rules and regulations, however the level of mitigation required to offset the impacts is not known at this time.

5.2.6 Transportation Impacts to the Community

A positive cumulative effect in transportation service to the surrounding area will occur with the proposed North Second Street project. The project will provide a viable secondary access into the downtown area from the Frayser Community and North Shelby County, and relieve future traffic congestion along US 51 and I-40. It will also influence the orderly development of the area to achieve a balance between population and resources.

Chapter 6: Public Input and Agency Coordination



6.0 PUBLIC INPUT AND AGENCY COORDINATION

During the early stages of project development, a scoping meeting was held with federal, state and local officials to introduce the project and identify social, economic and environmental concerns. The participants expressed their concerns and issues in a question and answer session.

Public involvement meetings were conducted to inform people about the proposed project and obtain their comments. These meetings were advertised in local papers and posted on TDOT's website. Two public meetings were held in the study area on September 14, 2000 and September 24, 2002. Approximately 84 people attended these two meetings. The attendees were asked to comment on the proposed project. Oral comments were taken by a court reporter, and standard comment cards were distributed. Feedback was received from 38 of the attendees (Transcripts of meetings are available at the TDOT's Environmental Division Office in Nashville and at the Region IV Office in Jackson, Tennessee)

Both meetings were held at the Bickford Community Center in Memphis. Comments cards at the September 2000 meeting asked attendees if they supported the project and which alternative they preferred. Ninety percent of attendees that provided comments supported the project, although 75 percent did not specify a preferred alternative. Alternatives A, B and C were presented at this meeting. Supporters of the project wanted to see economic development in the community. Comment cards at the September 2002 public meeting asked attendees which alternative they liked best, what issues they have with the project and what they would change about the project. At the September 2002 meeting, Alternatives B-1, C and D were presented. Approximately 35 percent of the attendees that provided comments supported Alternative B-1, and 24 percent supported Alternatives B-1 and D. Concern expressed at this meeting included business and residential displacements, economic development and bike lanes.

Two additional public meetings were held as a part of the Environmental Justice community outreach process in an effort to reach those who may not have been aware of the North Second Street project. Approximately 97 area residents attended these meetings at the Bickford Community Center and Greenlaw Community Center. The meetings consisted of a presentation and a question and answer session. The questions raised by area residents mainly dealt with relocation issues and compensation. A representative of TDOT's Right-of-Way Division was present at the meeting and explained the right-of-way relocation process and compensation and answered all their questions. A copy of the Environmental Justice Report is on file in the TDOT Environmental Division Office in Nashville.

Since the time of these earlier meetings several hundred new homes and apartments have been constructed in the project corridor. The purpose and need for the project has not changed, however the roadway cross-section presented at these earlier meetings has been reduced from a six-lane facility to a four-lane facility to minimize displacements and impacts to historical property. Bicycle lanes and on-street parking has been added to the project to accommodate the recent increase in residential housing. In the early phases of the project North Second Street was to interchange with proposed I-69. However, it has now been determined that the interchange cannot be built due to its close proximity to the US 51/SR-300 interchange. This resulted in extending the project limits to include improving a segment of Whitney Avenue that was not originally part of the project and shifting the end point to the intersection of US 51/SR-3. The segment of Whitney Avenue from Old Harvester Lane to the

US 51/SR-3 intersection will be upgraded to provided four traffic lanes, with bicycle lanes and sidewalks on both sides of the roadway. Additional right-of-way is required, however, no displacement are anticipated along Whitney Avenue.

6.1 Coordination with Federal, State and Local Agencies and Organizations

On January 11, 2002, an initial coordination package was sent to 71 federal, state and local agencies and officials and organizations. Seventeen responses were received. These groups were asked to review and comment on the Department's plans to improve the subject project. This insured that interested organizations were afforded the opportunity to comment on the project. The following is a list of those agencies, officials and organizations receiving the initial coordination package and the disposition of their comments. An asterisk indicates a response was returned to TDOT. Reply letters can be found in **Appendix A**.

FEDERAL AGENCIES

Federal Emergency Management Agency
Mitigation Division
U.S. Department of Housing and Urban Development
Environmental Officer
U.S. Department of the Interior
National Park Service
U.S. Geological Survey
Office of Environmental Affairs
Water Resources Division
Office of Surface Mining
Fish and Wildlife Service *
U.S. Department of Commerce
National Oceanic and Atmospheric Administration
U.S. Department of Agriculture
Natural Resource Conservation Service *
U.S. Department of Energy
Federal Energy Regulatory Commission
Division of Environmental and Engineering Review
Tennessee Valley Authority
Environmental Policy and Planning *
U.S. Army Corps of Engineers
Regulatory Functions Branch *
Federal Railroad Administration
Office of Economic Analysis
U.S. Environmental Protection Agency
EIS Review Section
Water Management Division, Wetlands Section
United States Coast Guard
Eighth Coast Guard District *
U.S. Fish and Wildlife Service
Cookeville Field Office

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STATE AGENCIES

TN Department of Economic and Community Development
TN Department of Environment and Conservation
 Commissioner
 Division of Natural Heritage *
 Division of Water Pollution Control *
 Division of Water Supply
 Division of Ground Water Protection *
 Division of Solid/Hazardous Waste Management
 Division of Air Pollution Control *
 TN Historical Commission *
TN Wildlife Resources Agency *
TN Department of Agriculture
TN Department of Education *

LOCAL AGENCIES AND OFFICIALS

Memphis Metropolitan Planning Organization
 Department of Regulatory Services
Memphis Area Association of Government *
Center City Commission
Memphis Area Transit Authority
Tennessee Trails Association
Sierra Club
Tennessee Chapter, Sierra Club
Tennessee Conservation League
Tennessee Environmental Council
Association for the Preservation of Tennessee Antiquities
Center for Neighborhoods
Center of Southern Folklore
Memphis Heritage, Inc.
Memphis & Shelby County Office of Planning and Development
 Division Director *
 Memphis Landmarks Commission
Shelby County Historian
Shelby County Historical Commission
Uptown Memphis Group *
Tennessee State University
 College of Arts and Sciences
West Tennessee Historical Society
Mississippi-Arkansas-Tennessee Council of Governments
City of Memphis
 Mayor
 Department of Engineering, Division of Public Works
Shelby County Mayor
Tennessee Cave Survey

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STATE SENATORS

The Honorable John Ford
The Honorable James F. Kyle, Jr.

STATE REPRESENTATIVES

The Honorable Carol Chumney
The Honorable Barbara Cooper
The Honorable John J. Deberry
The Honorable Larry J. Miller

NATIVE AMERICAN GROUPS

Eastern Shawnee Tribe of Oklahoma
United Keetoowah Band of Cherokee Indians of Oklahoma
Seminole Nation of Oklahoma *
Muscogee (Creek) Nation
Choctaw Nation
Chickasaw Nation
Cherokee Nation *
Eastern Band of Cherokee Indians

6.2 SUMMARIES AND DISPOSITION OF COMMENTS

6.2.1 Federal Agencies

U.S. Department of the Interior – Fish and Wildlife Services

Comment: “We would like to outline our concerns regarding Alternative AB.

“The Wolf River floodplain, which would be bisected on new location by Alternate AB, contains large area of forested wetlands. These wetlands likely serve as habitat for neotropical migratory songbirds, migratory waterfowl, and other wildlife. Wetlands provide flood storage and improve water quality. Wetlands, along with wetland inhabitants such as migratory birds, are invaluable natural assets and are considered “trust resources” by the Service.

“Alternative AB would result in the loss of these trust resources by directly and indirectly impacting wetlands and wildlife habitat. Direct impacts include clearing and grubbing the roadway and the resultant loss of forested wetlands. Alternative AB, north of the Wolf River, would have an apparent longitudinal encroachment on the river floodplain and a small, first order Wolf River tributary. Indirect impacts of the proposed roadway range from wildlife habitat fragmentation and loss of aesthetic appeal to the loss of flood storage capacity in the Wolf River floodplain.

“The project description states that the primary objective of the project is to “serve as an economic development tool for the area of Memphis bounded on the west by the Wolf River, on the east by Thomas Street (US 51), on the north by Frayser community, and on the south by downtown Memphis.” This indicates that the roadway corridor would experience secondary

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commercial development. Secondary development in an environmentally sensitive area such as the proposed Alternative AB corridor is not recommended.

“We suggest that Alternate C be fully explored. If this option is judged unfeasible, we recommend siting and designing Alternate AB such that minimal adverse impacts to wetlands and streams would be incurred from both primary and secondary development. Because wetlands and streams are present along the project corridor, U.S. Army Corps of Engineers permits will be required. Since permit applications could more thoroughly reveal the extent of construction activities affecting aquatic resources, we will provide additional comments during the Section 404 review process. We would likely recommend both full compensatory mitigation for all wetland and stream impacts in addition to protective measures to protect corridor wetlands and streams from secondary development if Alternate AB is chosen.”

Disposition: An Ecological Study of the project impact area was conducted. The impacts to wildlife, streams and wetlands are addressed in **Chapter 4 Environmental Consequences**. A copy of the Ecological study is on file at the TDOT Environmental Division Office in Nashville. The segment of the proposed project across the floodplain will be access controlled (no new driveway permits will be allowed) to discourage future development and eliminate future access to the floodplain. The alignment of the roadway has been modified to minimize wetland impacts and the cross-section narrowed to minimize the right-of-way needed through the floodplain.

Alternative C was determined to be outside the project corridor and did not meet the purpose and need of the North Second Street improvements and was dropped from further consideration.

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

Comment: “Enclosed is the completed Ad-1006 Farmland Conversion Impact Rating for the proposed improvement”.

Disposition: Based on the results of the farmland survey no additional sites need to be evaluated for the proposed project. The Farmland Conversion Impact Rating form, along with the initial coordination reply letter, is contained in **Appendix A**.

Tennessee Valley Authority – Environmental Policy and Planning

Comment: “From the project description, it appears that there would be no TVA approvals or other involvement with this project. Therefore, it is not necessary to include TVA as a cooperating agency.”

Disposition: TVA will not be included as a cooperating agency.

U.S. Army Corps of Engineers – Regulatory Functions Branch

Comment: “Based on the information provided, it appears relatively large wetland impacts may occur if the currently proposed build alternative is constructed. This being the case, it is recommended that you look closely at alternatives that reduce wetland impacts.”

Disposition: The Build Alternative has been redesigned to minimize impacts to wetlands. The proposed interchange with I-69 has been eliminated and the cross-section reduced. The alignment across the floodplain has been shifted west to follow the farm fields north of the Wolf

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River Bridge. The proposed project will be access controlled (no new driveway permits will be allowed) across the floodplain, which will greatly limit any future development. The proposed project will unavoidably impact jurisdictional wetlands. All feasible steps will be taken to ensure that impacts to wetlands are minimized. "Best Management Practices" will be utilized during the construction period to minimize secondary and long-term impacts to the streams and wetlands. (See **Chapter 4 Wetland Impacts**)

United States Coast Guard – Eighth Coast Guard District

Comment: "The waterway for the subject project conforms to criteria for advance approval of bridges as set forth in Title 33, Code of Federal Regulations, Section 115.70, as amended. This regulation provides for the advance approval by the Commandant, U.S. Coast Guard, of the location and plans of bridges to be constructed across navigable waterways or waterways navigable-in-law but not actually navigated other than by logs, log rafts, rowboats, canoes and small motorboats. Clearances provided for high water stages and drift will be considered adequate to meet the reasonable needs of navigation.

"A Coast Guard Bridge Permit is not required. However, we will need as-built drawings of the replacement bridge, in 8 1/2 by 11 inch format, when the project is completed. The Coast Guard offers no objection to the project upon compliance with the laws and regulations listed below:

- a. Section 303 (formerly Section 4(f) of the Department of Transportation Act
- b. Executive Order 11990 – Protection of Wetlands
- c. Executive Order 11988 – Floodplain Management
- d. Section 106 of the National Historic Preservation Act and Executive Order 11593
- e. Section 401 of the Federal Water Pollution Control Act, as amended
- f. Fish and Wildlife Coordination Act
- g. Endangered Species Act
- h. Section 309 of the Clean Air Act
- i. Noise Control Act
- j. Wild and Scenic Rivers Act of 1968
- k. Prime and Unique Farmlands (Council on Environmental Quality Policy dated 16 January 1980)
- l. Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970
- m. Executive Order 12898, Environmental Justice"

Disposition: The as-built drawings will be sent to the Coast Guard as requested upon completion of the project. This project is being developed pursuant to the National Environmental Policy Act of 1969, and will be in compliance with the federal laws and regulation listed by the Coast Guard.

6.2.2 State Agencies

TN Department of Environmental and Conservation – Division of Natural Heritage

Comment: "We have reviewed the document and attached information and offer the following general comments:

"1. Please be advised that a review of our Departmental data bases indicate recorded rare, threatened and/or endangered species near the project boundaries and within a one mile radius

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of the proposed project. Based upon the information provided, we believe that a survey of the project area would provide valuable information concerning the protection of species known to occur within a one mile radius of the project. These species have very specific or rare habitat. Please be advised, however, that this information is sensitive to the protection of rare habitat, threatened or endangered species, and ecological sites, which our Department has the responsibility to protect. Therefore, we would request that this information **only** be used as a research tool by professional staff and not made available to the public or anyone outside of your office/department.”

“2. In order to comply with the National Environmental Policy Act consideration should be given to the comprehensive and *cumulative* impacts associated with the project action. Based upon the information provided, it is probable that any proposed in-stream construction will impact in-stream flow, aquatic habitat, and riparian habitat as part of the project implementation. We would encourage stream bank restoration and **bioengineering** design as part of the overall project planning.

“3. Habitat loss and sedimentation resultant from this large construction site are of concern, not just locally but also for the potential of long term impacts to the watershed. We recommend that prudent design specifications and construction strategies be developed to address protection of sensitive ecological sites.

“4. Any restoration activities should include the use of native plant species. Restoration should be accomplished by using native plant species consistent with local community types.”

Disposition: The Division of Natural Heritage comments are addressed in Chapter 4 under Ecological Impacts. Continued coordination with TDEC will occur as the project is further developed. The appropriate level of mitigation will be discussed with TDEC prior to final design plans and before requesting any water quality permits. A copy of the Ecological Study report is on file in TDOT’s Environmental Division Office in Nashville.

TN Department of Environment and Conservation – Division of Water Pollution Control

Memphis Office:

Comment: “It was noted on the topographic map that Route Alternative A and B Common Alignment will cross the Wolf River, as well as two or more blue-line channels that may be streams. There may also be streams along the routes that do not show up as blue lines on the topographic map. Road crossings over streams, including the extension of existing culverts, require coverage under an Aquatic Resource Alteration Permit (ARAP) from this Division. In addition, you have noted several areas that are potentially ACOE jurisdictional wetlands. Wetlands are also considered to be water of the State and alterations to such will require an ARAP or 401 Water Quality Certification.

“Please be aware that the portion of the Wolf River in the vicinity of the project is on Tennessee’s 303d list of impaired streams for contaminated sediments. This may have impact on the permitting process if excavation is to occur in the channel due to the potential for the contaminants to be mobilized.

“Please note that the disturbance of property five acres or greater will require coverage under the Tennessee Construction General Permit (TNCGP). Due to the fact that the Wolf River is listed for siltation impacts on the 303d list, additional permitting requirements will be applicable.

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The additional requirements include the submittal of a Storm Water Pollution Prevention Plan, and submittal of a quarterly report of weekly erosion control inspection.”

Disposition: The Ecological Study prepared for the proposed project addresses the comments made by the Memphis Office of the Division of Water Pollution Control. All applicable permits will be obtained at the appropriate time during the project development process. Ecological impacts and permits are discussed in Chapter 4 Environmental Consequences.

Nashville Office:

Comments: “In regards to this specific project and information you have provided, Wolf River was identified to be within the study area. This information was presumably taken from US Geological Survey topographical maps. However, there may be other “waters of the state” that are not shown as “blue line” streams on this information source. Further, we urge that crossings of large streams and associated floodplains and wetlands be planned to minimize disruption of hydrology and hydraulics in the vicinity of the crossings. Also, the Wolf River is an impaired stream; therefore, this project will be subject to Part III.F of the *General NPDES Permit for Storm Water Discharges Associated with Construction Activity*, which requires submittal of the storm water pollution prevention plan for the project. A field investigation is required to properly identify all streams and other “water of the state”. We expect that a more thorough investigation will precede submittal of applications for ARAPs and a construction activity storm water permit.”

Disposition: A field review was conducted to determine if any “waters of the state” were impacted by the proposed project. The impacts are addressed in Chapter 4 Environmental Consequences. A copy of the Ecological Study is on file at the TDOT Environmental Division Office in Nashville, TN.

TN Department of Environmental and Conservation – Division of Ground Water Protection

Comment: “The Division of Ground Water Protection (GWP) anticipates that it is unlikely the project will impact existing subsurface sewage disposal (SSD) system that are within areas planned for the new corridor construction.”

TN Department of Environment and Conservation – Division of Air Pollution Control

Comment: “Since this project is to be in Shelby County, this agency has forwarded your letter and the attached information to Ms. Diane L. Arnst, with the Memphis-Shelby County Air Pollution Control Division. The Memphis-Shelby County Health Department is the appropriate agency for addressing air pollution control matters in Shelby County.”

TN Department of Environment and Conservation – TN Historical Commission

Comment: “Considering available information, we find that the project as currently proposed may affect properties that are eligible for listing in the National Register of Historic Places.”

Disposition: A Cultural Resources Survey has been conducted. Information on properties on or eligible for listing in the National Register of Historic Places is contained in the Cultural Resources Section in Chapter 4. The Cultural Resources Survey is on file at TDOT Environmental Division Office in Nashville, TN.

Tennessee Wildlife Resources Agency

Comment: “At the outset, we do not support highway projects which are justified on the basis of opening up sensitive lands for economic development – the effect of the first state objective for the project. The Second Avenue extension (Alternative A, AB) would require a new crossing of the Wolf River and cross/bisect a large wetland area adjacent to the Wolf River. Structural development in Memphis that takes place in the vicinity of wetlands has routinely come at the expense of those wetlands. Compensatory wetland mitigation opportunities in the Memphis area are not good. As a result, the rapid expansion of urban development in Memphis area wetlands has been poorly mitigated in the past. The extension of Second Avenue north of the Wolf River would serve a primary stated objective of the project and subject remaining wetlands associated with the Wolf River to inadequately mitigated wetland losses.

“On the other hand, the mapped (but not described) Alternative C that would improve Danny Thomas Boulevard (U.S. 51) on existing alignment would not be objectionable. To the extent that Alternative C is not being pursued, we request that it be placed back into full consideration. As the extension of North Second Street is evaluated, the environmental cost should be calculated both in terms of direct and secondary impacts as targeted development follows construction of the road. Environmental cost should be characterized in terms of dollar expense (mitigation), as well as the various functions (habitat, recreation, aesthetics, flood control, water quality, others) lost with conversion of wetlands and woodlands.”

Disposition: While the project would open up new land for development, most of the development that is occurring is not in new areas, but infill of existing urbanized areas. Since the segment of the project within the Wolf River Floodplain will be access controlled (no new driveway permits will be allowed), there should be limited development in that area. It is proposed to mitigate the unavoidable impacts to jurisdictional wetlands in an established Wetland Bank within the Wolf River Watershed in accordance with 33CFR Part 332, “Compensatory Mitigation for Losses of Aquatic Resources.” Wetland impacts are discussed in Chapter 4 Environmental Consequences. The Build Alternative across the floodplain will be access controlled (no new driveway permits will be allowed) to minimize the impact to wetlands

It was determined that Alternative C does not meet the Purpose and Need of the project and was dropped from further consideration. Alternate C is outside the project corridor. Appropriate mitigation will be addressed with the Corps of Engineers and TDEC during the permitting process. Alternatives are further discussed in Chapter 2.

Tennessee Department of Education

Comment: “The State Department of Education knows of no environmental impact relating to the North Second Street from Interstate 40 to the State Route 3 (US 51) Interchange with SR 300 in north Memphis.”

6.2.3 Local Agencies and Officials

Memphis Area Association of Government

Comment: “The highway improvement project (North Second from Interstate 40 to the SR 300 in North Memphis) has been reviewed by this Association under the provisions of Section 204 of the Model Cities Demonstration Act of 1966. No conflicts or duplications with known local or regional plans or programs were identified.”

Memphis & Shelby County Office of Planning and Development

Comment: “Our concerns center around implementation of the land use plan and rezoning recently approved for Uptown Memphis. Properties along Second Street have been rezoned predominantly in the Mixed Use (MU) District with a small segment zoned in the High Density Residential (HDR) District. The ideal model for redevelopment in the MU District consists of buildings with retail commercial or restaurant uses on the ground floor and office and/or residential uses on the upper floors. Land use types permitted in the HDR District are multiple family, townhouses and institutions. Third Street is similarly zoned except a portion serves properties in the Moderate Density Residential (MDR) District which permits single family dwellings, two family dwellings and institutions.

“Ideal access for the planned new uses along these streets is relatively slow moving traffic allowing easy driveway access to individual properties. On street parking is needed to support businesses and residences on small sites without large parking lots. We recommend that whatever transportation plan is adopted should take these land use considerations into account. The land use and transportation elements in the Uptown area should be complementary so that we can achieve the desired results.

“In our office, we have informally discussed ways to balance the objectives for providing improved access to downtown with successful revitalization of the Uptown District. An example of our thoughts are low speed through the core of Uptown (one way pair idea). On street parking is also important, we think, in this area. Of course, we all have learned that posting speed limits must be accompanied by physical reminders to the motorists that they are passing through a neighborhood.

Disposition: The proposed Build Alternative has been designed to be compatible with the Uptown Memphis land use plan. While one of the purposes of the project is to serve as an economic development tool for an area including the Uptown District, another purpose is to move traffic efficiently between Frayser, North Memphis and the central business district. The speed limit on the roadway will reflect speeds appropriate for a boulevard-type street. Appropriate signage, including speed limit signs, will be placed along the route.

Uptown Memphis Group

The reply was sent from Lauderdale-Greenlaw, LLC, the master developer for the Uptown Redevelopment Project. The letter was accompanied by the minutes from the scoping meeting, a list of community leaders and a list of community development and social organizations. They were not able to provide any substantial demographic information.

6.2.4 Native American Groups

Seminole Nation of Oklahoma

Comment: “While we are not currently aware of any Seminole affiliated cultural properties or resources within the proposed project areas, inadvertent discoveries may occur even in areas of prior or existing development. Archaeological testing, construction activities, and looting can destroy, damage or otherwise diminish the integrity of Seminole cultural resources, please be advised of the following:

“It is the policy of the Seminole Nation of Oklahoma in the event of inadvertent discoveries of ancestral remains or burial artifacts, that all site surveys and/or other site activities cease pending immediate notifications of this office and until such remains and artifacts have been properly secured. Further, we oppose any laboratory testing, data retrieval, non-biodegradable shrouding, photographic documentation, public display, or unauthorized removal of ancestral remains or burial artifacts. Site which are known to possess or that are discovered to possess our ancestral remains or burial artifacts, or which are of historical, cultural or religious significance to the Seminole people should be avoided.”

Disposition: In the unlikely event that human remains or undocumented archaeological deposits are encountered during the construction phase, the 36 CFR 800.13 process for “Post review discoveries will be followed. All construction in the suspect area will cease and the SHPO, as well as the recognized Native American Tribes will be notified so their representative can inspect the site. The remains, burial objects or artifacts will be properly secured and protected.

Cherokee Nation

Comment: “The Cherokee Nation is not presently aware of or able to identify any cultural resources affiliated with the Cherokee Nation within the proposed area of development. However, we are aware that inadvertent discovery may occur as a result of development, archaeological testing, or as project construction activities progress. Such activity has the potential to destroy, damage, or diminish the integrity of any Cherokee resources. Also, any such discovery may result in looting if not adequately protected. Therefore, the Cherokee Nation requests that:

1. In the event of inadvertent discovery of human remains, burial objects, or artifacts that all site survey or other site activities cease pending notification of the Cherokee Nation;
2. Any and all remains, burial objects or artifacts must be properly secured and protected;
3. The Cherokee Nation opposes any laboratory testing, data retrieval, non-biodegradable shrouding, photographic documentation, public display, or unauthorized removal of ancestral remains or burial objects;
4. Sites known to possess or are discovered to possess ancestral remains or burial objects, or that have historical, cultural, or religious significance to the Cherokee people should be avoided.”

Disposition: In the unlikely event that human remains or undocumented archaeological deposits are encountered during the construction phase, the 36 CFR 800.13 process for “Post review discoveries will be followed. All construction in the suspect area will cease and the SHPO, as

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well as the recognized Native American Tribes will be notified so their representative can inspect the site. The remains, burial objects or artifacts will be properly secured and protected.

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TABLE 6.1: AGENCIES AND ORGANIZATIONS RECEIVING A COPY OF THE DEIS

Agency Type	Name
Federal	Department of Housing and Urban Development
Federal	U.S. Department of Interior Office of Environmental Policy and Compliance
Federal	U.S. Department of Interior Office of Planning and Compliance Division National Park Services
Federal	U.S. Department of Commerce National Oceanic and Atmospheric Administration
Federal	Wetland Reserve Program Coordinator USDA Natural Resources Conservation Service
Federal	Federal Energy Regulatory Commission
Federal	Tennessee Valley Authority Environmental Policy and Planning
Federal	Federal Aviation Administration
Federal	U.S. Army Corps of Engineers-Memphis District Regulatory Branch
Federal	Federal Railroad Administration Office of Economic Analysis
Federal	Environmental Protection Agency Environmental Assessment Office
Federal	Environmental Protection Agency Office of Federal Activities
Federal	Advisory Council on Historic Preservation
Federal	U.S. Coast Guard Eighth Coast Guard District
State	Tennessee Department of Environment and Conservation
State	Tennessee Department of Environment and Conservation Division of Air Pollution Control
State	Tennessee Department of Environment and Conservation Division of Ground Water Protection
State	Tennessee Department of Environment and Conservation Division of Natural Areas
State	Tennessee Department of Environment and Conservation Division of Solid and Hazardous Waste Management
State	Tennessee Department of Environment and Conservation Division of Remediation
State	Tennessee Department of Environment and Conservation Division of Water Supply
State	Tennessee Department of Environment and Conservation Division of Water Pollution Control
State	Tennessee Department of Economic and Community Development NEPA Contract
State	Tennessee Wildlife Resources Agency NEPA Contract
State	Tennessee Department of Environment & Conservation Tennessee Historical Commission
State	Tennessee Department of Agriculture NEPA Contract
State	Department of Education
State	Memphis and Shelby County Office of Planning and Development Transportation Coordinator
State	Tennessee State Library and Archives
State	Memphis-Shelby County Public Library and Information Center
State	University of Memphis Library Government Publication Department
Local	Tennessee Trails Association
Local	Sierra Club
Local	Tennessee Chapter of the Sierra Club
Local	The Nature Conservancy
Local	Tennessee Wildlife Federation
Local	Tennessee Environmental Council
Local	Memphis Area Association of Government
Local	Mississippi-Arkansas Council of Government
Local	Mayor of Shelby County, Tennessee
Local	Mayor of Memphis, Tennessee
Local	Memphis Area Association of Governments
Total	

7.0 LIST OF PREPARERS

This document was prepared by the Tennessee Department of Transportation for the Federal Highway Administration. The following list includes the individuals that contributed to the preparation of the Draft Environmental Impact Statement

Federal Highway Administration

Gary Fottrell, FHWA Project Manager
Region 4 Environmental Program Engineer

Michael Smart
FHWA Area Engineer

Tennessee Department of Transportation

Tom Love, Manager, NEPA Consultant Section
TDOT Project Manger

Florence & Hutcheson

John Farmer, Project Manager, Engineer
Ecological Study, Environmental Document Preparation

Ray Brisson, Senior Planner
Environmental Document Preparation

Jon Storey, Project Engineer
Environmental Document Preparation/Traffic Analysis Engineer

John Boynton, Right-of-Way Acquisition Manager
Conceptual Stage Relocation Plan

Bowlby and Associates

Geoffrey Pratt, Project Manager, Engineer
Air and Noise Study

Thomason & Associates, Inc.

Phil Thomason, Preservation Planner
Historic and Architectural Survey

**North Second Street DEIS
Shelby County**

K.S. Ware and Associates, LLC

Heidi S. Wilbarger, Environmental Manager
Phase I Preliminary Site Investigation Report

DuVall and Associates

Glyn DuVall, Archaeologist
Archaeology Study

Fitch Williamson & Cartwright, Inc.

Lavelle Fitch, Project Consultant
Environmental Justice Survey

Toles & Associates

James Toles, Project Consultant
Environmental Justice Survey

8.0 REFERENCES

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Commercial Appeal. 22 June 2009
<<http://www.commercialappeal.com/news/2008/jun/20/taking-on-blight/>>.
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1997 *Memphis Regional Transit Plan*. June 1997
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2001 *Regional Rail Program, Phase 1 – Corridor Selection Final Report*.
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2000 *Memphis Metropolitan Area Long Range Transportation Plan*. October 2000.
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- Fitch Williamson & Cartwright Inc./Toles & Associates
2003 *Environmental Justice Study North Second Street Improvement Project*
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2009 *Historical and Architectural Survey and Documentation for effect under 36 CFR
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Whitney Avenue Memphis, Shelby County, Tennessee*

North Second Street DEIS
Shelby County

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Memphis Area Chamber of Commerce

1995 *Memphis 2005.*

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K.S. Ware – *Hazmat Study*

PBS&J – *Ecology Study*

St. Jude Master Plan

Bike Trail Plan

Florence & Hutcheson

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PBS&J

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North Second Street DEIS
Shelby County

Tennessee Department of Environment and Conservation Division of Natural Areas
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2008 www.webwhisper.com/tcs

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2001 *Uptown Community Redevelopment Plan Update for the Pinch District and Wolf River Harbor (Draft).*

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2006 *Downtown Memphis Moving Forward: A Strategic Framework for Success.*
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3/17/10

APPENDIX A

Initial Coordination Response Letters



United States Department of the Interior

FISH AND WILDLIFE SERVICE

446 Neal Street
Cookeville, TN 38501

RECEIVED

JAN 23 2002

ENVIRONMENTAL PLANNING
AND PERMITS

January 25, 2002

Mr. Charles E. Bush
Transportation Manager II
Environmental Planning Office
Tennessee Dept. of Transportation
James K. Polk Building, Suite 900
505 Deaderick Street
Nashville, Tennessee 37243

Re: FWS #02-0828

Dear Mr. Bush:

Thank you for your letter and enclosures of January 11, 2002, regarding the proposed improvement and extension of North Second Street in Memphis, Shelby County, Tennessee. We recently commented on this project in a December 17, 2001, letter to Mr. Raymond Brisson of PBS&J, and outlined issues that we believe should be addressed during the project's scoping process. We have attached a copy of the December 27, 2001, letter to this correspondence.

Thank you for giving us the opportunity to comment on this proposed action. If you have any questions, please contact Rob Tawes of my staff at 931/528-6481, ext. 213.

Sincerely,

Lee A. Barclay, Ph.D.
Field Supervisor

Attachment



United States Department of the Interior

FISH AND WILDLIFE SERVICE
446 Neal Street
Cookeville, TN 38501

December 17, 2001

Mr. Raymond Brisson
Senior Planner
P B S & J
Two International Plaza Drive, Suite 810
Nashville, Tennessee 37217

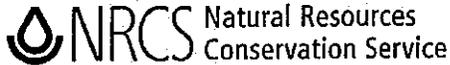
Dear Ms. Brisson:

Thank you for your letter and enclosures of December 3, 2001, regarding the December 17, 2001, scoping meeting for the proposed improvement and extension of N. Second Street in Memphis, Shelby County, Tennessee. Fish and Wildlife Service (Service) personnel have previously commented on the referenced project in letters to PBS&J dated July 12, 2000, and January 12, 2001 (copies attached). In both of these letters we provided potential jurisdictional wetland locations, identified through review of Service National Wetlands Inventory (NWI) maps, attached to the correspondence. After review of the project description, submitted with the December 3 correspondence from your office, we would like to outline our concerns regarding Alternate AB.

The Wolf River floodplain, which would be bisected on new location by alternate AB, contains large areas of forested wetlands. These wetlands likely serve as habitat for neotropical migratory songbirds, migratory waterfowl, and other wildlife. Wetlands provide flood storage and improve water quality. Wetlands, along with wetland inhabitants such as migratory birds, are invaluable natural assets and are considered "trust resources" by the Service.

Alternate AB would result in the loss of these trust resources by directly and indirectly impacting wetlands and wildlife habitat. Direct impacts include clearing and grubbing the roadway and the resultant loss of forested wetlands. Alternate AB, north of the Wolf River, would have an apparent longitudinal encroachment on the river floodplain and a small, first order Wolf River tributary. Indirect impacts of the proposed roadway range from wildlife habitat fragmentation and loss of aesthetic appeal to the loss of flood storage capability in the Wolf River floodplain.

The project description states that the primary objective of the project is to "serve as an economic development tool for the area of Memphis bounded on the west by the Wolf River, on the east by Thomas Street (U.S. 51), on the north by Frayser community, and on the south by downtown Memphis." This indicates that the roadway corridor would experience secondary commercial development. Secondary development in an environmentally sensitive area such as the proposed Alternate AB corridor is not recommended.



235 Oil Well Road, Jackson, Tennessee 38305

February 6, 2002

Mr. Charles E. Bush
Department Of Transportation
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, Tennessee 37243-0334

Re: North Second Street from Interstate 40 to the State Route 3 (US 51) Interchange with State Route 300 in north Memphis

Dear Mr. Bush:

Enclosed is the completed Ad-1006 Farmland Conversion Impact Rating for the proposed improvement of the above subject highway section.

If you have any additional questions please contact me at (731) 668-0700.



Charles L. Davis
Soil Scientist

FARMLAND CONVERSION IMPACT RATING

PART I (To be completed by Federal Agency)		Date Of Land Evaluation Request			
Name Of Project <i>North 2nd Street</i>		Federal Agency Involved <i>FEDERAL HIGHWAY ADM.</i>			
Proposed Land Use <i>State Highway</i>		County And State <i>SHELBY COUNTY, TN</i>			
PART II (To be completed by SCS)		Date Request Received By SCS <i>1-15-2002</i>			
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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Acres Irrigated	Average Farm Size
Major Crops <i>CORN</i>		Farmable Land In Govt. Jurisdiction Acres: <i>380470 * 76</i>		Amount Of Farmland As Defined In FPPA Acres: <i>283300 * 74</i>	
Name Of Land Evaluation System Used <i>SHELBY Co.</i>		Name Of Local Site Assessment System <i>NA</i>		Date Land Evaluation Returned By SCS <i>2-6-2002</i>	
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		<i>15</i>			
B. Total Acres To Be Converted Indirectly		<i>40</i>			
C. Total Acres In Site		<i>55</i>			
PART IV (To be completed by SCS) Land Evaluation Information					
A. Total Acres Prime And Unique Farmland		<i>26</i>			
B. Total Acres Statewide And Local Important Farmland		<i>NA</i>			
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted		<i><.01</i>			
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value		<i>92</i>			
PART V (To be completed by SCS) Land Evaluation Criterion					
Relative Value Of Farmland To Be Converted (Scale of 0 to 100 Points)		<i>52</i>			
PART VI (To be completed by Federal Agency)					
Site Assessment Criteria (These criteria are explained in 7 CFR 658.5(b))		- Maximum Points			
1. Area In Nonurban Use		<i>15</i>	<i>15</i>		
2. Perimeter In Nonurban Use		<i>10</i>	<i>10</i>		
3. Percent Of Site Being Farmed		<i>20</i>	<i>20</i>		
4. Protection Provided By State And Local Government		<i>20</i>	<i>20</i>		
5. Distance From Urban Builtup Area		<i>-X-</i>	<i>X</i>		
6. Distance To Urban Support Services		<i>-X-</i>	<i>X</i>		
7. Size Of Present Farm Unit Compared To Average		<i>10</i>	<i>10</i>		
8. Creation Of Nonfarmable Farmland		<i>25</i>	<i>10</i>		
9. Availability Of Farm Support Services		<i>5</i>	<i>5</i>		
10. On-Farm Investments		<i>20</i>	<i>0</i>		
11. Effects Of Conversion On Farm Support Services		<i>25</i>	<i>5</i>		
12. Compatibility With Existing Agricultural Use		<i>10</i>	<i>10</i>		
TOTAL SITE ASSESSMENT POINTS		160	105		
PART VII (To be completed by Federal Agency)					
Relative Value Of Farmland (From Part V)		100	52		
Total Site Assessment (From Part VI above or a local site assessment)		160	105		
TOTAL POINTS (Total of above 2 lines)		260	157		
Site Selected:		Date Of Selection		Was A Local Site Assessment Used? Yes <input type="checkbox"/> No <input type="checkbox"/>	
Reason For Selection:					



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MAY 06 2002

Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, Tennessee 37902-1409

ENVIRONMENTAL PLANNING
AND PERMITS

May 1, 2002

Mr. Charles E. Bush
Transportation Manager II
Environmental Planning Office
Department of Transportation
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, Tennessee 37243-0334

Dear Mr. Bush:

PROPOSED SECOND STREET FROM INTERSTATE 40 TO THE STATE ROUTE (SR) 3
(US 51) INTERCHANGE WITH SR 300 IN NORTH MEMPHIS, SHELBY COUNTY,
TENNESSEE

TVA has reviewed information provided in your letter of January 11, 2002, on the proposed six-lane improvements to North Second Street across the Wolf River. From the project description, it appears that there would be no TVA approvals or other involvement with this project. Therefore, it is not necessary to include TVA as a cooperating agency.

Should you have any questions, please contact Harold M. Draper at (865) 632-6889 or hmdraper@tva.gov.

Sincerely,

Jon M. Loney, Manager
NEPA Administration
Environmental Policy and Planning

cc: Charles S. Boyd, Division Administrator
Federal Highway Administration
640 Grassmere Park, Suite 112
Nashville, Tennessee 37211



Reply to
Attention of:

DEPARTMENT OF THE ARMY
MEMPHIS DISTRICT CORPS OF ENGINEERS
167 NORTH MAIN STREET B-202
MEMPHIS TN 38103-1894

February 6, 2002

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ENVIRONMENTAL PLANNING
AND PERMITS

Regulatory Branch

Mr. Charles Bush
Tennessee Department of Transportation
James K. Polk Building, Suite 900
505 Deaderick Street
Nashville, Tennessee 37243-0334

Dear Mr. Bush:

This is in response to your letter dated January 11, 2002, requesting comments on any potential impacts that may affect your agency for the proposed work on North Second Street in North Memphis, Shelby County, Tennessee. A review has been completed. As stated in your Project Data Summary Sheet, "The project will be designed and constructed to minimize harm to the environment." Based on the information provided, it appears relatively large wetland impacts may occur if the currently proposed build alternative is constructed. This being the case, it is recommended that you look closely at alternatives that reduce wetland impacts.

Your cooperation in the regulatory program is appreciated. If we may be of further assistance, please contact Tim Davis at (901) 544-0734.

Sincerely,

A handwritten signature in cursive script that reads "Larry D. Watson".

Larry D. Watson
Chief
Regulatory Branch

U.S. Department
of Transportation

United States
Coast Guard



Commander
Eighth Coast Guard District

1222 Spruce Street
St. Louis, MO 63103-2832
Staff Symbol: obr
Phone: (314) 539-3900 x 3
FAX: (314) 539-3755

16593.1/WOLF RIVER
22 January 2002

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

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JAN 29 2002

ENVIRONMENTAL PLANNING
AND PERMITS

Subj: IMPROVEMENT OF NORTH SECOND STREET FROM I-40 TO SR 3 ACROSS
WOLF RIVER (EMBAYMENT OF LOWER MISSISSIPPI RIVER, MILE 738.6)

Dear Mr. Bush:

The waterway for the subject project conforms to criteria for advance approval of bridges as set forth in Title 33, Code of Federal Regulations, Section 115.70, as amended. This regulation provides for the advance approval by the Commandant, U.S. Coast Guard, of the location and plans of bridges to be constructed across navigable waterways or waterways navigable-in-law but not actually navigated other than by logs, logs rafts, rowboats, canoes and small motorboats. Clearances provided for high water stages and drift will be considered adequate to meet the reasonable needs of navigation.

A Coast Guard Bridge Permit is not required. However, we will need as-built drawings of the replacement bridge, in 8 1/2 by 11 inch format, when the project is completed. The Coast Guard offers no objection to the project upon compliance with the laws and regulations listed below:

- a. Section 303 (formerly Section 4(f)) of the Department of Transportation Act (P. L. 89-670).
- b. Executive Order 11990 - Protection of Wetlands.
- c. Executive Order 11988 - Floodplain Management.
- d. Section 106 of the National Historic Preservation Act (P. L. 89-665) and Executive Order 11593.
- e. Section 401 of the Federal Water Pollution Control Act, as amended (P. L. 92-500).
- f. Fish and Wildlife Coordination Act (P. L. 85-624).
- g. Endangered Species Act (P. L. 93-205).
- h. Section 309 of the Clean Air Act (P. L. 90-148).

16593.1/WOLF RIVER
22 January 2002

Subj: IMPROVEMENT OF NORTH SECOND STREET FROM I-40 TO SR 3 ACROSS
WOLF RIVER (EMBAYMENT OF LOWER MISSISSIPPI RIVER, MILE 738.6)

- i. Noise Control Act (P. L. 92-574).
- j. Wild and Scenic Rivers Act of 1968, (P. L. 90-542).
- k. Prime and Unique Farmlands (Council on Environmental Quality Policy dated 16
January 1980).
- l. Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970
(P. L. 91-646).
- m. Executive Order 12898, Environmental Justice

Sincerely,



ROGER K. WIEBUSCH

Bridge Administrator

By direction of the District Commander

Copy: Memphis ACOE



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FEB 13 2002

ENVIRONMENTAL PLANNING
AND PERMITS

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

February 11, 2002

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

Subject: Project review; Proposed Highway Improvements, North Second Street, from Interstate 40 to State Route 3 (US 51) Interchange with State Route 300 in North Memphis, Shelby County TN

Dear Mr. Bush:

We are appreciative of the opportunity to review the **Initial Coordination or Scoping Process** information for the subject project. We have reviewed the document and attached information and offer the following general comments:

1. Please be advised that a review of our Departmental data bases indicate recorded rare, threatened and/or endangered species near the project boundaries and within a one mile radius of the proposed project. Based upon the information provided, we believe that a survey of the project area would provide valuable information concerning the protection of species known to occur within a one mile radius of the project. These species have very specific or rare habitat. Please be advised, however, that this information is sensitive to the protection of rare habitat, threatened or endangered species, and ecological sites, which our Department has the responsibility to protect. Therefore, we would request that this information **only** be used as a research tool by professional staff and not be made available to the public or anyone outside of your office/Department. Please see the attached county records (**Attachment I**) and habitat listing for further information.

2. In order to comply with the National Environmental Policy Act consideration should be given to the comprehensive and *cumulative* impacts associated with the project actions. Based upon the information provided, it is probable that any proposed in-stream construction will impact instream flow, aquatic habitat, and riparian habitat as part of the project implementation. We would encourage stream bank restoration and *bioengineering* design as part of the overall project planning.

Mr. Bush, TDOT-Environmental Planning

Page 2.

February 11, 2002

3. Habitat loss and sedimentation resultant from this large construction site are of concern, not just locally but also for the potential of long term impacts to the watershed. We recommend that prudent design specifications and construction strategies be developed to address protection of sensitive ecological sites.

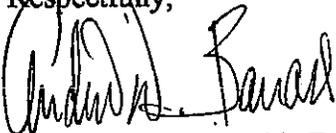
4. Any restoration activities should include the use of native plant species. Restoration should be accomplished by using native plant species consistent with local community types. Techniques for sediment retention and streamside reconstruction are outlined in the following documents prepared by our Department:

1. **Tennessee Erosion Control Handbook, July 1992.**
2. **Reducing Nonpoint Source Water Pollution by Preventing Soil Erosion and Controlling Sediment on Construction Sites, March 1992.**
3. **Riparian Restoration and Streamside Erosion Control Handbook, November 1994 (Revised April 1998).**

Please refer to these documents when planning measures to lessen any project or construction impacts.

We appreciate the opportunity to assist you with your pre-project planning. Should you need any additional information regarding a specific species, species habitat requirements, or species breeding season, natural resources information, etc. please contact me. If we can be of further assistance with your project please contact our office in Nashville, telephone 615/532-0431.

Respectfully,



Andrew N. Barrass Ph. D.,
Environmental Review Coordinator
Division of Natural Heritage

Attachments: (1)

cc:

Gary T. Myers, TWRA
Lee A. Barclay, Ph. D., U. S. Fish and Wildlife

Attachment I

LIST OF RARE, THREATENED, AND ENDANGERED SPECIES BY TENNESSEE COUNTY

June 2001

Shelby County

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	STATE RANK	GLOBAL RANK
** ALL PLANTS					
ACMELLA OPPOSITIFOLIA	CREeping SPOT-FLOWER		S	S2	G5
CRATAEGUS HARBISONII	HARBISON'S HAWTHORN		E	S1	G1
HYDRASTIS CANADENSIS	GOLDENSEAL		S-CE	S3	G4
IRIS FULVA	COPPER IRIS		T	S2	G5
OPHIOGLOSSUM	BULBOUS		S	S2	G5
CROTALOPHOROIDES	ADDER'S-TONGUE				
PANAX QUINQUEFOLIUS	AMERICAN GINSENG		S-CE	S3S4	G3G4
PHACELLIA RANUNCULACEA	BLUE SCORPION-WEED		S	S3	G3G4
PLATANATHERA FLAVA VAR FLAVA	SOUTHERN REIN-ORCHID		S	S2S3	G4T4?Q
PRENANTHES CREPIDINEA	NODDING		E	S1	G3G4
	RATTLESNAKE-ROOT				
SCHISANDRA GLABRA	RED STARVINE		T	S2	G3
SILENE OVATA	OVATE CATCHFLY		E	S2	G2G3
ULMUS CRASSIFOLIA	CEDAR ELM		S	S2	G5
** INVERTEBRATES - MOLLUSC					
EPIOBLASMA TURGIDULA	TURGID-BLOSSOM	LE	E	SX	GH
LAMPSILIS SILIQUOIDEA	FATMUCKET			S1	G5
OBOVARIA JACKSONIANA	SOUTHERN HICKORYNUT			S1	G1G2
TRIODOPSIS MULTILINEATA	STRIPED WHITELIP (=T. WEBBHELIX)			S1	G?
** Other types					
HERON ROOKERY	HERON ROOKERY				
** VERTEBRATES - BIRDS					
CHONDESTES GRAMMACUS	LARK SPARROW		T	S1B	G5
ICTINIA MISSISSIPPIENSIS	MISSISSIPPI KITE		D	S2S3	G5
LIMNOTHLYPIS SWAINSONII	SWAINSON'S WARBLER	MC	D	S3	G4
NYCTANASSA VIOLACEA	YELLOW-CROWNED NIGHT-HERON			S3	G5
STERNA ANTILLARUM	INTERIOR LEAST TERN	LE	E	S2S3B	G4T2Q
ATHALASSOS					
THRYOMANES BEWICKII	BEWICK'S WREN	MC	E	S1	G5
TYTO ALBA	COMMON BARN-OWL		D	S3	G5
VIREO BELLII	BELL'S VIREO	(PS)		SPB	G5

Page 2.
Shelby County, cont.

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	STATE RANK	GLOBAL RANK
** VERTEBRATES - MAMMALS					
CORYNORHINUS RAFINESQUII	EASTERN BIG-EARED BAT		D	S3	G3G4
MYOTIS SODALIS	INDIANA BAT	LE	E	S1	G2
NEOTOMA FLORIDANA ILLINOENSIS	EASTERN WOODRAT		D	S3	G5T5
SOREX LONGIROSTRIS	SOUTHEASTERN SHREW		D	S4	G5
** VERTEBRATES - REPTILES					
MACROCLEMYS TEMMINCKII	ALLIGATOR SNAPPING TURTLE	MC	D	S2S3	G3G4
OPHISAURUS ATTENUATUS	EASTERN SLENDER GLASS LIZARD		D	S3	G5T5
PITUOPHIS MELANOLEUCUS	NORTHERN PINE SNAKE	MC	T	S3	G4T4
MELANOLEUCUS					
** VERTEBRATES - AMPHIBIANS					
HYLA GRATIOSA	BARKING TREEFROG		D	S3	G5
** VERTEBRATES - FISH					
AMMOCRYPTA BEANI	NAKED SAND DARTER		D	S2	G5
CYCLEPTUS ELONGATUS	BLUE SUCKER	MC	T	S2	G3G4
NOTURUS STIGMOSUS	NORTHERN MADTOM	MC	D	S3	G3

Note: Should the project require further environmental program permits from our Department, please attach a complete copy of this review or assessment to the permit application.



ENVIRONMENTAL ASSISTANCE CENTER
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
SUITE E-645, PERIMETER PARK
2510 MT. MORIAH ROAD
MEMPHIS, TENNESSEE 38115-1520
PHONE (901) 368-7939 STATEWIDE 1-888-891-8332 FAX (901) 368-7979

January 28, 2002

CERTIFIED MAIL 7000 0520 0022 1389 8991
RETURN RECEIPT REQUESTED

Mr. Raymond Brisson
PBS&J
Two International Plaza Drive, Suite 810
Nashville, TN 37217

RE: Proposed Improvement of North Second Street
Memphis, Shelby County

Dear Mr. Brisson:

We have received and reviewed your letter and map regarding the above-referenced project. It was noted on the topographic map that Route Alternative A and B Common Alignment will cross the Wolf River, as well as two or more blue-line channels that may be streams. There may also be streams along the routes that do not show up as blue lines on the topographic map. Road crossings over streams, including the extension of existing culverts, require coverage under an Aquatic Resource Alteration Permit (ARAP) from this Division. In addition, you have noted several areas that are potentially ACOE jurisdictional wetlands. Wetlands are also considered to be waters of the State and alterations to such will require an ARAP or 401 Water Quality Certification.

Please be aware that the portion of the Wolf River in the vicinity of the project is on Tennessee's 303d list of impaired streams for contaminated sediments. This may have impact on the permitting process if excavation is to occur in the channel due to the potential for the contaminants to be mobilized.

Please note that the disturbance of property five acres or greater will require coverage under the Tennessee Construction General Permit (TNCGP). Due to the fact that the Wolf River is listed for siltation impacts on the 303d list, additional permitting requirements will be applicable. The additional requirements include the submittal of a Storm Water Pollution Prevention Plan, and submittal of a quarterly report of weekly erosion control inspections.

If you have any questions please contact me at (901) 368-7959.

Sincerely,

A handwritten signature in cursive script that reads "Terry R. Templeton". The signature is written in black ink and is positioned above the typed name.

Terry R. Templeton, P.G.
Manager, Division of Water Pollution Control

Enclosure: TNCGP information sheet

CC: File



Summary of TNR100000 General NPDES Permit for Storm Water Discharges Associated with Construction Activities

The following is just a summary of the new permit and should be used only as a guideline. Full compliance with the terms of Permit TNR10000, which became effective July 1, 2000, is required.

- The developer and all operators (contractors impacting storm-water) must submit a *Notice of Intent (NOI)*, either by all signing the initial NOI or by submitting additional NOI's.
- The Storm Water Pollution Prevention Plan (SWPPP) must be completed when the NOI is submitted.
- A *Notice of Termination (NOT)* is to be submitted when an operator transfers responsibilities or when the site development is complete (structures completed on all building sites).
- Earth disturbance must not begin until receipt of the Notice of Coverage (NOC) from the local Environmental Assistance Center (EAC).
- A copy of the NOC must be posted near the main entrance of the construction site.

SPECIAL REQUIREMENTS - If the site is determined to be a high quality stream or within the drainage of an impacted stream (that is, on the 303(d) list), the following additional requirements apply:

- The SWPPP must be submitted to the local EAC prior to start of construction and before the NOC is issued.
- Inspections must be made before anticipated storm events, within 24 hours after an event and at least once per week.
- Certification of the inspections must be signed weekly on *Inspection Report* form.
- Copy of the *Inspection Report* for the previous quarter must be submitted by January 15th, April 15th, July 15th and October 15th.
- If water quality standards are violated or impairment of waters occurs while complying with the site's SWPPP, the site will require coverage under an individual NPDES permit.

THE STORMWATER POLLUTION PREVENTION PLAN MUST:

- Designate the individual responsible,
- Identify potential sources of pollution,



- Describe and ensure the implementation of practices to reduce pollutants,
- Must be signed by all operators,
- Must be retained on-site and the location posted near the main entrance,
- Must be revised when scope changes, proving ineffective or to add new contractors,
- Describe site and sequence activities,
- Identify each outfall point and the receiving stream,
- Identify any wetlands or streams on the site,
- Identify and describe any other discharge originating on the site and give its location,
- Describe appropriate controls and measures that will be implemented including the general timing of implementation and operator responsible,
- Describe materials to be stored on the site and measures to control their release,
- Include measures to protect state or federally listed threatened or endangered aquatic fauna or critical habitats,
- FOR DRAINAGE WITH 10 OR MORE ACRES DISTURBED- require sediment basins providing 3600 cu. ft. per acre drained or volume of 2 yr. 24 hr. storm.
- Provide for treatment of excavation pumpage,
- Provide for maintenance of all control measures and sediment removal from controls when design capacity reduced by 50%,
- Address borrow pits and off site material storage,
- Prohibit removal of vegetative ground cover more than 20 calendar days prior to grading,
- Require phasing of all projects over 50 acres,
- Require that erosion and sediment control measures be in place and functional before earth moving begins,
- Provide for control of litter and construction debris,
- Establish a schedule of inspections before and after storms and at least once every fourteen calendar days (except for 303(d)-impacting sites which must be inspected once per week),
- Establish a procedure for review of inspection findings and control effectiveness and for revision of SWPPP,
- And contain the signature and certification of the operator.

The applicable control measures specified in the SWPPP must be installed on the site prior to initial clearing or grading. Additional measures must be installed as the various phases of construction progress.

Records concerning dates of the various phases of construction, contractors/operators on site and responsible at each phase, rainfall, inspections, their findings and corrections must be maintained for 3 years after project completion.

A *Notice of Termination* (NOT) is to be submitted when an operator transfers responsibilities or when the site development is complete.

For more information or to download forms (*indicated by italics*) or the permit itself visit TDEC at
<http://www.state.tn.us/environment/permits/conststrm.htm>



RECEIVED

JAN 25 2002

ENVIRONMENTAL PLANNING
AND PERMITS

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
Division of Water Pollution Control

January 25, 2002

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

Re: Proposed Improvements and Construction of North Second Street
From I-40 to State Route 3
Memphis, Shelby County

Dear Mr. Bush:

This letter responds to your letter of January 11, 2002, regarding proposed improvements to and construction of North Second Street in Memphis, Shelby County and your request for comments relative to any potential environmental impacts or concerns the Division of Water Pollution Control (Division) may have. The Division of Water Pollution Control has delegated authority from the U.S. Environmental Protection Agency to administer certain portions of the *Clean Water Act*. This Division also administers requirements of the *Tennessee Water Quality Control Act of 1977* ("ACT"). Please understand that there may be other regulatory programs applicable to this project that are administered by other divisions of the Department of Environment and Conservation.

The programs administered by this Division that may be applicable to the described project include programs promulgated by Rules of Tennessee Department of Environment and Conservation, Division of Water Pollution Control including *General Water Quality Criteria, Chapter 1200-4-3, Use Classification for Surface Waters, Chapter 1200-4-4, and Aquatic Resource Alteration, Chapter 1200-4-7* (ARAP), and the *Tennessee Construction General Permit for Storm Water Discharges from Construction Activities* (TNCGP). In addition, in cases where §401 certification under the *Federal Water Pollution Control Act* is required or where an individual permit is required, rules 1200-4-7-.04(3)(b) and 1200-4-7-.04(5)(b) of the *Aquatic Resource Alteration* rules states that a practicable alternatives evaluation for the proposed activity shall be performed. Further, the description of the project included in your January 11, 2002, letter indicates that the ARAP and TNCGP programs are directly applicable. The applicant is responsible to determine if other regulatory programs apply.

The "ACT" requires that permits be acquired to perform certain activities. Permit conditions are placed on activities proposed by the applicant. These conditions are intended to protect water quality. Specifically, Section 69-3-108(a) of the "ACT" requires acquisition of permits prior to initiation of activities listed in Section 69-3-108(b). The listed activities must be conducted in accordance with conditions of the permit(s).

A number of issues should be addressed as early in the project development as possible. First, identification and assessments of all watercourses in the area must be completed to determine those that are considered waters of the state and, further, those streams that require special consideration, Tier II, Tier III, and 303(d) listed streams. The Division can assist you with this effort, if needed. All "waters of the state" determinations will be evaluated during the permit review process. Second, a detailed ecological study must be completed to identify any unique wildlife habitat or endangered species present in the study area affected by the proposed project. Third, stream mitigation and sediment control should be considered early in the design stage to allow for acquisition of sufficient right-of-way. Completed applications will be reviewed by Division personnel for completeness, accuracy, and adequacy. Incomplete applications will be returned.

In regards to this specific project and information you have provided, Wolf River was identified to be within the study area. This information was presumably taken from US Geological Survey topographical maps. However, there may be other "waters of the state" that are not shown as "blue line" streams on this information source. Further, we urge that crossings of large streams and associated floodplains and wetlands be planned to minimize disruption of hydrology and hydraulics in the vicinity of the crossings. Also, the Wolf River is an impaired stream; therefore, this project will be subject to Part III.F of the *General NPDES Permit for Storm Water Discharges Associated with Construction Activity*, which requires submittal of the storm water pollution prevention plan for the project. A field investigation is required to properly identify all streams and other "waters of the state". We expect that a more thorough investigation will precede submittal of applications for ARAPs and a construction activity storm water permit. Division personnel can assist you with other determinations, if needed.

If you have any questions regarding these issues or require additional information, please call Mr. Doug Ezell at (615)532-0648.

Sincerely,

A handwritten signature in black ink, appearing to read "Daniel C. Eagar", with a horizontal line extending to the right.

Dan Eagar, Manager, Natural Resources Section
Division of Water Pollution Control

CC: Jerry M. Shoemake, Assistant Director
Saya Qualls, Manager, Permits Section
Doug Ezell, Policy Office



RECEIVED

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

Division of Ground Water Protection
10th Floor, L & C Tower
401 Church Street
Nashville, Tennessee 37243-1540

JAN 23 2002
ENVIRONMENTAL PLANNING
AND PERMITS

January 25, 2002

Mr. Charles E. Bush
Environmental Planning and Permits Division
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, Tennessee 37243-0334

Re: Request for comments of proposed road improvements of North Second Street from Interstate 40 to State Route 3 (US 51) interchange with State Route 300, in north Memphis, TN

Dear Mr. Bush:

The Division of Ground Water Protection 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 Ground Water Protection (GWP) anticipates that it is unlikely the project will impact existing SSD systems that are within areas planned for the new corridor construction.

If you have any questions or think that assistance will be requested on this project, you should contact Mr. Wade Haynes at (731) 512-1302 when assistance is needed.

Sincerely,

A handwritten signature in black ink that reads "Kent D. Taylor".

Kent D. Taylor
Director
Division of Ground Water Protection

KDT/gau

cc: Mr. Wade Haynes Jackson Environmental Assistance Center



RECEIVED

MAR 11 2002

ENVIRONMENTAL PLANNING
AND PERMITS

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

Division of Air Pollution Control
9th Floor, L & C Annex, 401 Church Street
Nashville, Tennessee 37243-1531
Telephone: (615) 532-0554

January 17, 2002

Mr. Charles E. Bush
Transportation Manager II
Department of Transportation
Office of Environmental Planning and Permits
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, TN 37243-0334

Subject: North Second Street from Interstate 40 to the State Route 3 (US 51)
interchange with State Route 300 in north Memphis.

Dear Mr. Bush:

This is in response to your January 11, 2002 letter inviting comments about potential air quality impacts from a project to improve North Second Street in Memphis, Tennessee.

Since this project is to be in Shelby County, this agency has forwarded your letter and the attached information to Ms. Diane L. Arnst, with the Memphis-Shelby County Air Pollution Control Division. The Memphis-Shelby County Health Department is the appropriate agency for addressing air pollution control matters in Shelby County. The Pollution Control Division's phone number is (901) 544-7775.

If there are any questions about this matter, please feel free to contact Hubie Stephens or me at (615) 532-0554.

Sincerely,

A handwritten signature in cursive script that reads "Barry R. Stephens".

Barry R. Stephens, P.E.
Director

cc: Diane L. Arnst
Chuck Northington
Hubie Stephens

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JAN 25 2002

January 15, 2002

ENVIRONMENTAL PLANNING
AND PERMITS

TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550

Mr. Charles E. Bush
Environmental Planning Office
Dept of Transportation
Nashville, Tennessee, 37243-0330

RE: FHWA, N SECOND ST./I-40 TO SR-3/SR-300, MEMPHIS, SHELBY
COUNTY

Dear Mr. Bush:

In response to your request, received on Friday, January 11, 2002, 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 available information, we find that the project as currently proposed **MAY AFFECT PROPERTIES THAT ARE ELIGIBLE FOR LISTING IN THE NATIONAL REGISTER OF HISTORIC PLACES.** You should continue consultation with our office, designated consulting parties and invite them to participate in consultation, and provide us with appropriate survey documentation for review and comment. Please direct questions and comments to Joe Garrison (615) 532-1559. We appreciate your cooperation.

Sincerely,

Herbert L. Harper
Executive Director and
Deputy State Historic
Preservation Officer

HLH/jyg



TENNESSEE WILDLIFE RESOURCES AGENCY

ELLINGTON AGRICULTURAL CENTER
P. O. BOX 40747
NASHVILLE, TENNESSEE 37204

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JAN 17 2002

ENVIRONMENTAL PLANNING
AND PERMITS

January 16, 2002

Mr. Charles Bush
Transportation Manager 2
Tennessee Department of Transportation
Suite 900, James K. Polk Building
Nashville, TN 37243-0334

re: North Second Street from interstate 40 to the State Route 3 (US 51)
Interchange with State Route 300 in north Memphis

Dear Charles:

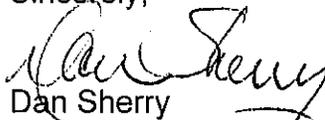
The North Second Street (Memphis) extension project has been recently coordinated by PBS&J (Ray Brisson). A copy of our comment letter to PBS&J is enclosed here and should stand as our position regarding your subject notice.

The Tennessee Wildlife Resources Agency is very concerned about the expressed development purposes associated with this project and its primary and secondary effects on the Wolf River and relatively undeveloped wetlands and woodlands on the north side of the Wolf. Furthermore, we understand that planning for this project is associated with what is developing as the preferred alternative for I-69 through Memphis (section #9). That I-69 alternate is objectionable to this agency because of its new crossing of the Loosahatchie River and the existence of the other alternative which would utilize existing SR 385 without additional major river crossings.

We are very concerned that a linked pair of separate projects (North Second Street extension and section #9 of I-69) could have serious cumulative impacts on wetlands associated with the Wolf and Loosahatchie Rivers. We hereby request early additional coordination between TDOT and review agencies regarding plans that are apparently developing around these two associated projects.

Thank you for considering our position on this important issue.

Sincerely,

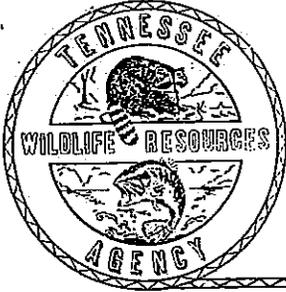

Dan Sherry
Fish & Wildlife Environmentalist

DS/bjs

The State of Tennessee

AN EQUAL OPPORTUNITY EMPLOYER

cc: Dodd Galbreath
EPA
Tim Merritt - USFWS
Steve Seymour



TENNESSEE WILDLIFE RESOURCES AGENCY

ELLINGTON AGRICULTURAL CENTER
P. O. BOX 40747
NASHVILLE, TENNESSEE 37204

December 5, 2001

Mr. Ray Brisson
Senior Planner
PBS&J
Two International Plaza Drive
Suite 810
Nashville, TN 37217

re: Proposed improvement of North Second Street, Memphis, TN
SCOPING COMMENTS

Dear Ray:

The proposed extension of North Second Street in Memphis is described in the Project Description as a single build alternative improving and extending the subject North Second Street. However, the included aerial photograph shows a three-alternative project including an Alternate C which would improve Danny Thomas Boulevard (U.S. 51).

At the outset, we do not support highway projects which are justified on the basis of opening up sensitive lands for economic development - the effect of the first stated objective for the project. The Second Avenue extension (Alternative A, AB) would require a new crossing of the Wolf River and cross/bisect a large wetland area adjacent to the Wolf River. Structural development in Memphis that takes place in the vicinity of wetlands has routinely come at the expense of those wetlands. Compensatory wetland mitigation opportunities in the Memphis area are not good. As a result, the rapid expansion of urban development in Memphis area wetlands has been poorly mitigated in the past. The extension of Second Avenue north of the Wolf River would serve a primary stated development objective of the project and subject remaining wetlands associated with the Wolf River to inadequately mitigated wetland losses.

On the other hand, the mapped (but not described) Alternative C that would improve Danny Thomas Boulevard (U.S. 51) on existing alignment would not be objectionable. To the extent that Alternative C is not being pursued, we request that it be placed back into full consideration. As the extension of North Second Street is evaluated, the environmental costs should be calculated both in terms of direct and secondary impacts

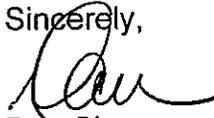
The State of Tennessee

AN EQUAL OPPORTUNITY EMPLOYER

as targeted development follows construction of the road. Environmental costs should be characterized in terms of dollar expense (mitigation) as well as the various functions (habitat, recreation, aesthetics, flood control, water quality, others) lost with conversion of wetlands and woodlands.

We strongly recommend vigorous pursuit of alternatives to the apparent preferred alternative to extend North Second Street.

Sincerely,

A handwritten signature in black ink, appearing to read 'Dan Sherry', written over the printed name below.

Dan Sherry

Fish & Wildlife Environmentalist

DS/bjs

cc: Steve Seymour
Gary Cook
Jim Hatmaker, TDOT
USFWS



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JAN 24 2002

STATE OF TENNESSEE
DEPARTMENT OF EDUCATION
Evaluation and Assessment Division
7th Floor, Andrew Johnson Tower
710 James Robertson Parkway
Nashville, Tennessee 37243-0375

**ENVIRONMENTAL PLANNING
AND PERMITS**

January 17, 2002

Charles E. Bush
Transportation Manager II
Office of Environmental Planning and Permits
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, Tennessee 37243-0334

Dear Mr. Bush:

The State Department of Education knows of no environmental impact relating to the North Second Street from Interstate 40 to the State Route 3 (US 51) Interchange with State Route 300 in north Memphis.

Sincerely,

Sam Cameron
Consultant

SC:ma

MEMPHIS AREA ASSOCIATION OF GOVERNMENTS

**1420 Union Avenue, Suite 410
Memphis, Tennessee 38104-3695**

**901.729.2871
901.729.4107 (fax)**

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JAN 22 2002

ENVIRONMENTAL PLANNING
AND PERMITS

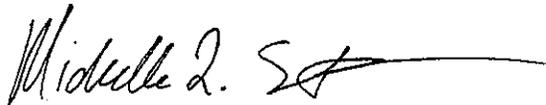
January 22, 2002

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

Dear Mr. Bush:

The highway improvement project (North Second from Interstate 40 to the State Route 3 Interchange with State Route 300 in North Memphis) has been reviewed by this Association under the provisions of Section 204 of the Model Cities Demonstration Act of 1966. No conflicts or duplications with known local or regional plans or programs were identified.

Sincerely,



Michelle L. Stuart
Planner





Memphis and Shelby County Office of Planning and Development

CITY HALL 125 NORTH MAIN STREET MEMPHIS, TENNESSEE 38103 - 2084 (901) 576 - 6601

MEMORANDUM

To: Raymond Brisson
Senior Planner, TDOT

From: Mary L. Baker, Deputy Director *MLB*

Date: December 17, 2001

Subject: Planned Improvements to Second and Third Street

This is to respond to your request for comment about plans for improvements to Second and Third Streets through the newly designated Uptown District. Our concerns center around implementation of the land use plan and rezoning recently approved for Uptown Memphis. Properties along Second Street have been rezoned predominantly in the Mixed Use (MU) District with a small segment zoned in the High Density Residential (HDR) District. The ideal model for redevelopment in the MU District consists of buildings with retail commercial or restaurant uses on the ground floor and office and/or residential uses on the upper floors. Land use types permitted in the HDR District are multiple family, townhouses and institutions. Third Street is similarly zoned except a portion serves properties in the Moderate Density Residential (MDR) District which permits single family dwellings, two family dwellings and institutions.

Ideal access for the planned new uses along these streets is relatively slow moving traffic allowing easy driveway access to individual properties. On street parking is needed to support businesses and residences on small sites without large parking lots. We recommend that whatever transportation plan is adopted should take these land use considerations into account. The land use and transportation elements in the Uptown area should be complementary so that we can achieve the desired results.

In our office, we have informally discussed ways to balance the objectives for providing improved access to downtown with successful revitalization of the Uptown District. An example of our thoughts are low speeds through the core of Uptown (one way pair area). On street parking is also important, we think, in this area. Of course, we all have learned that posting speed limits must be accompanied by physical reminders to the motorists that they are passing through a neighborhood.

We appreciate the opportunity to comment on the proposed street plans and would like to continue the discussion of reaching a desirable solution.

Lauderdale-Greenlaw, LLC

a Belz-Turley Company

65 Union Avenue, Suite 1200
Memphis, TN 38103
901-525-4880
fax 901-525-2747

March 6, 2002

RECEIVED

Mr. Charles Bush, Transportation Manager
State of Tennessee
Department of Transportation
Environmental Planning & Permits Division
Suite 900; James K. Polk Building
506 Deadrick Street
Nashville, Tennessee 37243-0334

MAR 25 2002
ENVIRONMENTAL PLANNING
AND PERMITS

**Subject: North Second Street from Interstate 40 to the State Route 3 (US 51)
Interchange with State Route 300 in North Memphis**

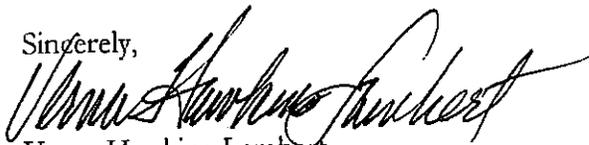
Dear Mr. Bush,

Thank you for the information regarding the proposed improvements to North Second Street. As Development Director for the Lauderdale-Greenlaw, LLC, the master developer for the UPTOWN Redevelopment Project, we appreciate the opportunity to provide comments regarding areas we feel require special consideration. The areas of specific concern are addressed in Exhibit A, a memorandum from Bologna Consultants to the UPTOWN Development team and St. Jude Officials.

We are also happy to assist the Department in complying with Title VI requirements of the Civil Rights Act of 1964 by providing you with a list of the community leaders, community development and social organizations of which we are aware, in the neighborhood, which you may contact to inform them of the proposed improvements. This list is attached as *Exhibit B*. We do not have at this time any substantial demographic data that we could provide you with at this time.

Again we appreciate the opportunity to provide comments and assist in this matter. Please advise should have any follow up questions.

Sincerely,



Verna Hawkins-Lambert

Letter to Mr. Charles Bush
March 6, 2002
Page 2

Attachment: Exhibit A- Notes from "Scoping Meeting", 12/28/01
Exhibit B- List of UPTOWN Community Task Force Leaders, CDC's and
Social Service Organizations

Cc: Robert Lipscomb, Executive Director of Memphis Housing Authority
Elbert Jefferson, General Counsel Memphis Housing Authority
John Conroy, City Engineer, City of Memphis
Henry Turley, Managing Member of Lauderdale-Greenlaw, LLC
Lewis Holland, President of Henry Turley Company
John Dudas, Vice President of Strategic Planning, Belz Enterprise
Scott Bojko, Vice President of Development, Henry Turley Company
Monice Hagler Tate, General Counsel for Lauderdale-Greenlaw, LLC
Anthony Bologna, Bologna Consultants
Mr. Jim Haymaker

UPTOWN COMMUNITY TASK FORCE

LAST NAME	FIRST NAME	AGENCY	ADDRESS #1	ADDRESS #2	CITY	STATE	ZIP	PHONE
Baldwin**	Larry	MHA CityWide Resident Association	350 "D" Danny Thomas		Memphis	TN	38126	526-4437
Baumgardner	Brad	Boys and Girls Club	189 S. Barksdale		Memphis	TN	38104	278-2947
Blakemore, Dr.**	Jerome	University of Memphis	229 Clement Hall		Memphis	TN	38152	678-2815
Bolding	Tim	United Housing Incorporated	1407 Union Avenue	Suite 101	Memphis	TN	38103	272-1122
Cooper	Barbara	State Representative	663 Harbor Edge		Memphis	TN	38105	526-5756
Cooper**	Laverne	Lauderdale Courts Resident Association	660 Alabama Plaza #3		Memphis	TN	38103	527-2600
Cooper**	Barry	Memphis Shelby Crime Commission	50 North Front Street		Memphis	TN	38104	728-4800
Dildes	Beth	RISE Foundation	1900 Union Avenue		Memphis	TN	38103	543-3500
Eddings	Howard	Memphis Leadership Foundation	1548 Poplar Avenue		Memphis	TN	38105	525-9402
Gibson**	Verlean	Hurt Village Resident Association	653 Alabama Plaza #1		Memphis	TN	38103	276-0016
Glass-Frazier	Debra	Leadership Memphis	119 S. Main Street	Suite 425	Nashville	TN	38103	(615)313-5292
Gooding (Northcross)	Amber	State of Tennessee	620 South Lauderdale		Memphis	TN	38126	775-7264
Grannan	Jennifer	Div. Of Family Support & Family Involvement	444 N. Main Street	Second floor	Memphis	TN	38105	545-2246
Hester**	Debra	Workforce Investment Network	501 St. Jude Place		Memphis	TN	38105	522-9133
Mallone	Delira	St. Jude Children's Research Hospital	152 Beale Street		Memphis	TN	38103	523-0211
Howard	Patricia	Girls, Inc.	3696 Southern Avenue		Memphis	TN	38111	678-1445
Hyland, Dr. **	Stan	University of Memphis, School of Urban Affairs	1370 Levee Road		Memphis	TN	38103	722-7100
Hudson	Will	Memphis Area Transit Authority	809 Bethel		Memphis	TN	38107	522-9859
Jackson	Dalton	Greenlaw Neighborhood Association	125 N. Main Street	Suite 314	Memphis	TN	38103	576-6614
Jones	Dottie	City of Memphis	2587 Avery Avenue		Memphis	TN	38122	527-2770
Jones	Sauber	Memphis City Schools	65 Union Avenue	Suite 1200	Memphis	TN	38103	527-0208
Jones	Verna	Lauderdale-Greenlaw, LLC	910 Vance Avenue		Memphis	TN	38128	544-1102
Lambert	Conrad	MIFA	700 Adams Avenue		Memphis	TN	38103	544-1102
Leifeldt	Robert	Memphis Housing Authority	814 Jefferson Avenue	Room 116	Memphis	TN	38105	947-5353
Lipcomb**	Yvonne	Health Department	2140 South Third		Memphis	TN	38109	544-7853
Maddock	Marie	YO Memphis	602 Looney Avenue		Memphis	TN	38107	523-2465
Milam, Dr**	Freddie, Rev.	Holy Community Church	P. O. Box 430		Memphis	TN	38101	528-4151
Moore	Herman	Memphis Light Gas & Water	190 Mill Street		Memphis	TN	38105	527-8313
Moore	Larry	Greenlaw Community Center	485 Beale Street		Memphis	TN	38103	525-2458
Newman	J. B.	Martin Luther King Center	167 Main Street		Memphis	TN	38103	544-4131
Payton	Clay	Office of Congressman Harold Ford, Jr.	2587 Avery Avenue	Room 261	Memphis	TN	38112	925-5445
Perry	Ron	SAFE Schools	230 Henry Avenue		Memphis	TN	38107	579-3200
Pope	Lilah	Caldwell Elementary School	620 South Lauderdale		Memphis	TN	38126	775-7624
Sabir	Willie	Memphis City Schools	114 N. Main Street		Memphis	TN	38103	575-0540
Slate**	Jeff	Center City Commission	556 North Fourth Street		Memphis	TN	38105	527-3963
Sanford	Sherita	Light of Faith Church	125 N. Main Street		Memphis	TN	38103	576-6786
Sherrid	Barbara	Memphis City Council	788 S. Highland St.		Memphis	TN	38111	948-0493
Sweatnngen-Holt	Patricia	YWCA	1407 Union Avenue	Suite 900	Memphis	TN	38104	543-5800
Thompson	Regina	United Way of the Mid-South	8 South Third Street		Memphis	TN	38103	526-1066
Walker	Jim	Salvation Army	170 N. Main Street	9th Floor	Memphis	TN	38103	543-7351
Walker	Linda	Tennessee Dept of Human Services	800 Home Run Lane		Memphis	TN	38104	721-8050
Williams	Reggie	Memphis Redbirds	314 Auction Street		Memphis	TN	38107	527-1390
Williams	Kevin	North Memphis Residents Association			Memphis	TN		

*Indicates a new contact person is needed

**Indicates changes and or additions have been made to the list

Executive Director

FirstWorks

204 North Second Street

Memphis

Tn

526-8228

527-8364 fax

Bratford, Scottie

Bologna Consultants Memorandum

Date: 28 December 2001

To: (1) Uptown Developers
(2) St. Jude Children Research Hospital

From: Antonio R. Bologna d.b.a. Bologna Consultants 

Copy To: John Conroy - City of Memphis Engineer

Subj: Notes from "Scoping Meeting"

Re: Proposed North Second Street Improvements

Attendees: PBS&J (Consultant), T-Dot, Federal Highway Administration, City Engineer, City Traffic Engineer, Corps of Engineers, Center City Commission, Office of Planning and Development, Chamber of Commerce, Wolf River Conservancy, City Division of HCD, MHA, City Division of Public Works, Looney Ricks & Kiss - Architects, Uptown Developers, Other interested parties, A. R. Bologna.

The purpose of the meeting called by PBS&J was to deliver an Advanced Planning Report (APR) or interim report on their progress to-date on the North Second Street Corridor engineering studies. In addition they wanted to get any feed-back from the various entities represented as to other alternative they should or could consider.

I am to pick up a copy of the APR from the City Traffic Engineer on Monday 31 December 2001.

Bill Wallace of PBS&J was the primary presenter and walked us thru the process to-date and their preliminary recommendations and the rationale behind their assumptions and recommendations.

The steps to be undertaken from this point on are as follows: (1) Review of the APR; (2) Develop and Environmental Impact Statement; (3) Develop a recommended "Corridor Plan"; (4) Conduct various Public Hearings; (5) Revise recommendations as may be necessary.

The timing to complete the above is one to one and one half years barring any unforeseen complications or resistance.

Bologna Consultants Memorandum

Date: 28 December 2001

Re: Proposed North Second Street Improvements

Page 2

Some of the determinations presented are as follows:

- Present R.O.W.'s on Second and Third Streets are adequate.
- No parking is contemplated on either Second or Third Streets.
- Traffic Light Signalization is contemplated at Levee Road, Seventh St. and Chelsea.
- Limited (55-mph) access from the present Interstate at Thomas to Wolf River Bridge.
- Parkway design (40-45 mph) from Wolf River Bridge to split into one-way pairing.
- Second & Third Street one-way pairing (30-35 mph).
- The I-40 exit ramp to Second Street to be split with one leg exiting westbound to Jackson Avenue.
- Five to Ten years guesstimated time frame to complete project.
- \$ 100,000,000.00 +/- estimated cost with between 40-50% occurring north of Wolf River Bridge to end of I-240 @ Thomas Street.

Some of the suggestions from those in attendance:

- Consider using Front, Main, Second and Third as two-way feeder streets up to approximately the location of Henderson extended (3-4 blocks north of Chelsea) then create a collector street (Manifold) to feed into the parkway section of North Second Street up to the Wolf River Bridge. (ARB) ; (VHL)
- Consider Bickford as the possible Transition Street. (VanFossen / LRK)
- Due to the present R.O.W. of both Second and third Streets, consider parking on one side only rather than eliminate it altogether. (ARB) ; VHL
- Consider the present ICRR R.O.W. up to the Thomas Street Bridge as a possible alternative. (Wolf River Conservancy)
- Consider tying in the proposed I-69 link to the Thomas Street end of I-240 to reduce cost to the city. (From 50 Feds-25County-25City to 80Feds-20City/County). This would affect approximately an estimated 50% of the cost of the project. (Unknown author)
- If the I-69 tie-in could be achieved than the Second Street Limited Access portion could run more North/South and possibly eliminate the damage to existing wetlands between the present end of the I-240 Expressway and the Wolf River Bridge at Second Street. (Corp. of Engineers)
- Proposed new Yeast Plant near the Stiles Treatment Plant will increase traffic to the Interstate from the proposed new access ramp to the Stiles Treatment Plant being designed at present by T-DOT. Proposed new ramp will probably be revised in the final design. (Jerry Collins - Director of Public Works).
- Make sure that there is proper notification of all residents and interested parties for any anticipated public hearings. (City Div. Of HCD / MHA).
- Project goals, purpose and intent must be clarified for this project to go forward. (City Engineer)

Bologna Consultants Memorandum

Date: 28 December 2001

Re: Proposed North Second Street Improvements

Page 3

The design team indicated that they would take all the suggestions under advisement and give them due consideration. However, they did indicate that they might not be as far along as they initially thought based on some of the suggestions offered at this meeting.

End of Report!

Encl.: Project Description submitted by PBS&J

Semvnole Etulwa Vculvke Vcvyeculke
Seminole Nation of Oklahoma
Historic Preservation Office

June 27, 2001

Gerald Kline
State of Tenn.
Dept. of Transportation

RE: Proposed construction of N. Second Street from Interstate 40 to State Route 3 (US-51) Interchange with State Route 300 in North Memphis, Shelby County.

Dear Mr. Kline,

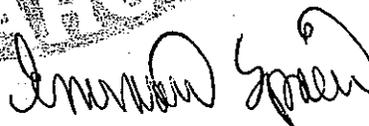
While we are not currently aware of any Seminole affiliated cultural properties or resources within the proposed project areas, inadvertent discoveries may occur even in areas of prior or existing development. Archaeological testing, construction activities, and looting can destroy, damage or otherwise diminish the integrity of Seminole cultural resources, please be advised of the following:

It is the policy of the Seminole Nation of Oklahoma in the event of inadvertent discoveries of ancestral remains or burial artifacts, that all site surveys and/or other site activities cease pending immediate notification of this office and until such remains and artifacts have been properly secured. Further, we oppose any laboratory testing, data retrieval, non-biodegradable shrouding, photographic documentation, public display, or unauthorized removal of ancestral remains or burial artifacts. Sites which are known to possess or that are discovered to possess our ancestral remains or burial artifacts, or which are of historical, cultural or religious significance to the Seminole people should be avoided.

Please be advised that Section 106 of the National Historic Preservation Act does not mandate notification of nor consultation with either state recognized or self-identified entities purporting to be Native American regarding proposed undertakings. Any request for project reviews addressed to such entities within the context of government-to-government relationship between the United States and Federally recognized tribal nations is inappropriate, and constitutes a breach of the authority and intent of Federal law, as well as the inherent sovereign propriety of valid tribal governments.

Furthermore we request to be kept informed as your project continues. Should you require further commentary, review, or additional information concerning this matter, please contact us at 405-257-2036.

Sincerely,



Emman Spain
Historic Resource Specialist
Seminole Nation of Oklahoma

P. O. BOX 1498 • WEWOKA, OK • 74884
PHONE: 405.257.2036 • FAX: 405.257.7054
E-MAIL: SEMNATHIST@RENET.COM



CHEROKEE NATION

P.O. Box 948
Tahlequah, OK 74465-0948
918-456-0671

Chad "Cornassel" Smith
ᏆᏏᏏᏏ
Principal Chief

Hastings Shade
ᏆᏏᏏᏏ
Deputy Principal Chief

June 26, 2001

Mr. Gerald Kline
Department of Transportation
Environmental Planning & Permits Division
Suite 900, James K. Polk Building

Dear Mr. Kline:

The Cherokee Nation has received your letter dated June 13 wherein you requested assistance with your site review pursuant to Section 106 of the National Historic Preservation Act as amended regarding proposed highway improvements that you have identified as the North 2nd Street Roadway Improvements and the Route 5312 from US 64 Bypass projects.

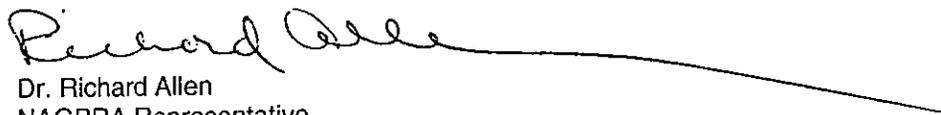
The Cherokee Nation is not presently aware of or able to identify any cultural resources affiliated with the Cherokee Nation within the proposed area of development. However, we are aware that inadvertent discovery may occur as a result of development, archaeological testing, or as project construction activities progress. Such activity has the potential to destroy, damage, or diminish the integrity of any Cherokee resources. Also, any such discovery may result in looting if not adequately protected. Therefore, the Cherokee Nation requests that:

1. In the event of inadvertent discovery of human remains, burial objects, or artifacts that all site surveys or other site activities cease pending notification of the Cherokee Nation;
2. Any and all remains, burial objects or artifacts must be properly secured and protected;
3. The Cherokee Nation opposes any laboratory testing, data retrieval, non-biodegradable shrouding, photographic documentation, public display, or unauthorized removal of ancestral remains or burial objects;
4. Sites known to possess or are discovered to possess ancestral remains or burial objects, or that have historical, cultural, or religious significance to the Cherokee people should be avoided.

There are three federally acknowledged Cherokee entities: the Cherokee Nation; the United Keetoowah Band of Cherokee Indians, and the Eastern Band of Cherokee Indians. Section 106 mandates tribal commentary, review or consultation with federally recognized tribal entities. Therefore, any consultation, commentary or review addressed to state recognized groups, entities, or self-identified individuals purporting to be American Indian representatives does not constitute valid tribal consultation in accordance with the authority and intent of federal legislation.

Should you desire to communicate with the designated tribal representative, you may contact me at (918) 456-0671, extension 2466.

Sincerely,


Dr. Richard Allen
NAGPRA Representative

APPENDIX B

Cultural Resources Coordination

NATIONAL REGISTER OF HISTORIC PLACES SUMMARY SHEET PREPARED BY TDOT

What is the National Register of Historic Places?

The National Register, maintained by the Keeper of the Register within the National Park Service, Department of the Interior, is the nation's official list of districts, buildings, sites, structures, and objects significant in American history, architecture, archeology, engineering, and culture.

What are the benefits and restrictions of listing?

In addition to honorific recognition, listing in the National Register results in the following benefits for historic properties:

Section 106 provides for consideration of National Register listed or eligible properties in planning for Federal, federally licensed, and federally assisted projects;

Eligibility for certain tax provisions for the certified rehabilitation of income-producing National Register structures such as commercial, industrial, or rental residential buildings;

Consideration of historic values in the decision to issue a surface mining permit where coal is located in accordance with the Surface Mining Control Act of 1977; and

Qualification of Federal grants for historic preservation, when funds are available.

Does National Register designation place any additional burdens or obligations on the property owner?

Owners of private property listed in the National Register are free to maintain, manage, or dispose of their property as they choose, provided that no Federal moneys are involved.

How is a property nominated to the National Register?

The first step is for the owner to contact the Tennessee State Historic Preservation Office (TN-SHPO), Clover Bottom Mansion, 2941 Lebanon Road, Nashville, TN 37243-0442; 615-532-1558.

Ordinarily, private individuals (or paid consultants) prepare nomination forms. The TN-SHPO submits these nominations to a State Review Board, which meets three times a year. This body reviews the nominations and votes to recommend or deny National Register listing. If approved, the TN-SHPO submits the nomination to the Keeper of the Register in Washington, D.C. for consideration for listing. The Keeper's Office has 45 days to review the nomination, and its decision regarding National Register listing is final.

How long does the nomination process take?

The process varies but typically takes between eight and twelve months.

**ELIGIBILITY CRITERIA OF THE
NATIONAL REGISTER OF HISTORIC PLACES
AS SET FORTH AT 36 CFR 60.4**

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

CRITERION A. that are associated with events that have made a significant contribution to the broad patterns of our history (history); or

CRITERION B. that are associated with the lives of persons significant in our past (person); or

CRITERION C. that embody the distinctive characteristic of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that components may lack individual distinction (architecture); or

CRITERION D. that have yielded, or may be likely to yield, information important in prehistory or history (archaeology).

Ordinarily, cemeteries; birthplaces or graves of historical figures; properties owned by religious institutions or used for religious purposes; structures that have been moved from their original locations; reconstructed historic buildings; properties primarily commemorative in nature; and properties that have achieved significance within the past 50 years are not considered eligible for the National Register of Historic Places; however, such properties will qualify if they are integral parts of historic districts that do meet the criteria or if they fall within the following categories:

EXCEPTION A. a religious property deriving primary significance from architectural or artistic distinction or historical importance; or

EXCEPTION B. a building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or

EXCEPTION C. a birthplace or grave of a historical figure of outstanding importance if there is no other appropriate site or building directly associated with his productive life; or

EXCEPTION D. a cemetery which derives its primary significance from graves or persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or

EXCEPTION E. a reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or

EXCEPTION F. a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance; or

EXCEPTION G. a property achieving significance within the past 50 years if it is of exceptional importance.

CRITERIA OF ADVERSE EFFECT

Regulations codified at 36 CFR 800 require Federal agencies to assess their impacts to historic resources. The regulations provide specific criteria for determining whether an action will have an effect, and whether that effect will be adverse. These criteria are given below.

36 CFR 800.5 Assessment of Adverse Effects

(a) *Apply Criteria of Adverse Effect.* In consultation with the SHPO/THPO and any Indian tribe or Native Hawaiian organization that attaches religious and cultural significance to identified historic properties, the Agency Official shall apply the criteria of adverse effect to historic properties within the area of potential effects. The Agency Official shall consider any views concerning such effects which have been provided by consulting parties and the public.

(1) *Criteria of adverse effect.* An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

(2) *Examples of adverse effects.* Adverse effects on historic properties include, but are not limited to:

(i) Physical destruction of or damage to all or part of the property;

(ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access that is not consistent with the Secretary's Standards for the Treatment of Historic Properties and applicable guidelines;

(iii) Removal of the property from its historic location;

(iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;

(v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;

(vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and

(vii) Transfer, lease or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

SECTION 106 REVIEW, NATIONAL HISTORIC PRESERVATION ACT OF 1966

Section 106 of the *National Historic Preservation Act* requires that Federal agencies consider what effects their actions and/or actions they may assist, permit, or license, may have on historic properties, and that they give *the Advisory Council on Historic Preservation (Council)* a "reasonable opportunity to comment" on such actions. The Council is an independent Federal agency. Its role in the review of actions under Section 106 is to encourage agencies to consider, and where feasible, adopt measures that will preserve historic properties that would otherwise be damaged or destroyed. The Council's regulations, entitled "Protection of Historic Properties" (36 CFR Part 800) govern the Section 106 process. The Council does not have the authority to require agencies to halt or abandon projects that will affect historic properties.

Section 106 applies to properties that have been listed in the *National Register of Historic Places (NRHP)*, properties that have been determined to be eligible for inclusion in the NRHP, and properties that may be eligible but have not yet been evaluated. If a property has not yet been nominated to the NRHP or determined eligible for inclusion, it is the responsibility of the Federal agency involved to ascertain its eligibility.

The Council's regulations are set forth in a process consisting of four basic steps which are as follows:

1. Initiate Section 106 Process: The Federal agency responsible for the action establishes the undertaking, determines whether the undertaking has the potential to affect historic properties (i.e., properties listed in or eligible for listing in the National Register of Historic Places), and identifies the appropriate State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO). At this time, the agency plans to involve the public and identify other consulting parties.

2. Identify Historic Properties: If the agency's undertaking has the potential to affect historic properties, the agency determines the scope of appropriate identification efforts and proceeds to identify historic properties within the area of potential effects. Identification involves assessing the adequacy of existing survey data, inventories, and other information on the area's historic properties. This process may also include conducting further studies as necessary and consulting with the SHPO/THPO, consulting parties, local governments, and other interested parties. If properties are discovered that may be eligible for the National Register, but have not been listed or determined eligible for listing, the agency consults with the SHPO/THPO and, if needed, the Keeper of the National Register to determine the eligibility status of the property.

3. Assess Adverse Effects: The agency, in consultation with the SHPO/THPO, assesses the potential effects to historic properties affected by the undertaking. The agency at this time will determine that the action will have "no adverse effect" or an "adverse effect" on historic properties. Consulting parties and interested members of the public are informed of these findings.

The regulations provide specific criteria for determining whether an action will have an effect, and whether that effect will be adverse. Generally, if the action may alter the characteristics that make a property eligible for the National Register, it is recognized that the undertaking will have an effect. If those alterations may be detrimental to the property's characteristics, including relevant qualities of the property's environment or use, the effects are recognized as "adverse".

4. Resolve Adverse Effects: The agency consults with the SHPO/THPO and others, including consulting parties and members of the public. The Council may choose to participate in consultation, particularly under circumstances where there are substantial impacts to historic properties, when a case presents important questions about interpretation, or if there is the potential for procedural problems. Consultation usually results in a Memorandum of Agreement (MOA).

If agreement cannot be reached, the agency, SHPO/THPO, or Council may terminate consultation. If the SHPO/THPO terminates consultation, the agency and the Council may conclude the MOA without SHPO/THPO involvement. If the SHPO/THPO terminates consultation and the undertaking is on or affecting historic properties on tribal lands, the Council must provide formal comments. The agency must request Council comments if no agreement can be reached.



TENNESSEE HISTORICAL COMMISSION
701 BROADWAY
DEPARTMENT OF CONSERVATION
NASHVILLE, TENNESSEE 37243-0442
615/742-6716

September 4, 1990

Raymond Brisson
Environmental Planning
TDOT, 9th. Floor Polk Bldg
Nashville, Tennessee 37219

Re: FHWA, NORTH SECOND STREET IMPROVEMENTS, MEMPHIS, SHELBY COUNTY, X

Dear Mr. Brisson:

Pursuant to your request, this office has reviewed your letter dated August 27, 1990, relative to the above-referenced undertaking. Based on available information, we are currently re-evaluating the eligibility of the National Register of Historic Places-listed Greenlaw Historic District. We will coordinate this re-evaluation with your office and other interested persons and agencies as delineated at 36 CFR Part 800. Questions and comments may be directed to Joe Garrison (615)742-6720. Your cooperation is appreciated.

Sincerely,

Herbert L. Harper
Herbert L. Harper
Executive Director and
Deputy State Historic
Preservation Officer

HLH/jyg

RECEIVED



JAN 25 2002

January 15, 2002

ENVIRONMENTAL PLANNING
AND PERMITS

TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550

Mr. Charles E. Bush
Environmental Planning Office
Dept. of Transportation
Nashville, Tennessee, 37243-0330

RE: FHWA, N SECOND ST./I-40 TO SR-3/SR-300, MEMPHIS, SHELBY
COUNTY

Dear Mr. Bush:

In response to your request, received on Friday, January 11, 2002, 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 available information, we find that the project as currently proposed MAY AFFECT PROPERTIES THAT ARE ELIGIBLE FOR LISTING IN THE NATIONAL REGISTER OF HISTORIC PLACES. You should continue consultation with our office, designated consulting parties and invite them to participate in consultation, and provide us with appropriate survey documentation for review and comment. Please direct questions and comments to Joe Garrison (615) 532-1559. We appreciate your cooperation.

Sincerely,

Herbert L. Harper
Executive Director and
Deputy State Historic
Preservation Officer

HLH/jyg

2005022-



TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1500

February 20, 2004

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: FHWA, ARCHAEOLOGICAL ASSESSMENT, NORTH SECOND STREET/
I-40 TO SR-300, MEMPHIS, SHELBY 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.

Therefore, this office has no objection to the implementation of this project. 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,

Herbert L. Harper
Executive Director and
Deputy State Historic
Preservation Officer

HLH/jmb



TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550

January 3, 2007

Ms. Martha Carver
Tennessee Department of Transportation
505 Deaderick St/900
Nashville, Tennessee, 37243-0349

**RE: FHWA, EFFECT DETERMINATION, NORTH SECOND STREET IMPVTS/B-1 & D,
MEMPHIS, SHELBY COUNTY**

Dear Ms. Carver:

Pursuant to your request, received on Monday, December 18, 2006, this office has reviewed documentation concerning the above-referenced undertaking. This review is a requirement of Section 106 of the National Historic Preservation Act for compliance by the participating federal agency or applicant for federal assistance. Procedures for implementing Section 106 of the Act are codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

Based on the information provided, we find that the project area contains a number of cultural resources eligible for listing in the National Register of Historic Places: the Pinch-North Main Commercial Historic District, the Greenlaw Addition Historic District, the Jacob Burkle House, and the Memphis Wolf River and Noncannah Creek Flood Control Project and the Port of Memphis Grain Elevator. We further find that the project as currently proposed will not adversely affect these resources.

Unless project plans change, this office has no objection to the implementation of this project. Should project plans change, please contact this office to determine what additional action, if any, is necessary. Questions and comments may be directed to Joe Garrison (615) 532-1550-103. Your cooperation is appreciated.

Sincerely,

Richard G. Tune
Deputy State Historic
Preservation Officer

RGT/lyg



**STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION**
505 DEADERICK STREET
SUITE 900, JAMES K. POLK BUILDING
NASHVILLE, TENNESSEE 37243-0349
615-253-2461

October 28, 2009

Mr. Patrick McIntyre
Deputy State Historic Preservation Officer
Tennessee Historical Commission
Clover Bottom Mansion
2941 Lebanon Road
Nashville, TN 37214

SUBJECT: Historical and Architectural Survey and Documentation of Effect for the Proposed Improvements and Extension of North Second Street and Whitney Avenue, Memphis, Shelby County

Dear Mr. McIntyre:

The Tennessee Department of Transportation (TDOT) in cooperation with the Federal Highway Administration is proposing to make improvements to North Second Street and Whitney Avenue in Memphis, Shelby County, Tennessee. This project would begin where North Second Street crosses the Wolf River and is an extension of the proposed North Second project that would begin north of I-40. The historic survey and effects assessment for the original North Second Street project was circulated in December 2006 and the State Historic Preservation Office agreed that the proposed project would not adversely affect any historic properties in a January 3, 2006 letter.

Pursuant to regulations set forth in "36 CFR 800: Protection of Historic Properties" a Consultant for TDOT surveyed the general project area in an attempt to identify National Register-included or eligible properties which could be impacted by the proposed project. A Consultant for TDOT identified two properties as eligible for listing on the National Register: the International Harvester Plant and the UAW Union Building, and one property that was previously determined eligible: the Wolf River Levee, a contributing structure of the Memphis, Wolf River, and Nonconnah Creek Flood Control Project.

The Consultant also reassessed effects that the original project would have on the Memphis, Wolf River and Nonconnah Creek Flood Control Project. It is the opinion of

the Consultant and TDOT agrees that the proposed project would not adversely affect any of the historic properties that are located within the project's area of potential effect. However, a small amount of ROW would be required from a levee that is part of the Marble Bayou Pumping Station which is part of the Memphis, Wolf River and Nonconnah Creek Flood Control Project. It is the opinion of TDOT that this would not adversely affect the property and would constitute a *de minimis* Section 4(f) use.

Subject to your office's no adverse effect determination and review of public comments, FHWA intends to make a *de minimis* finding for the Section 4(f) involvement with the Memphis, Wolf River and Nonconnah Creek Flood Control Project.

On behalf of the Federal Highway Administration, we request your review of this report pursuant to regulations contained within 36 CFR 800. We look forward to your comments. Thank you for your help in this matter.

Sincerely,

A handwritten signature in cursive script that reads "Martha Carver".

Martha Carver
Historic Preservation Manager

Enclosure
cc: Mr. Tom Love

Questions and Answers on the Application of the Section 4(f) *De Minimis* Impact Criteria

Introduction

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) amendment to the Section 4(f) requirements allows the U.S. Department of Transportation (DOT) to determine that certain uses of Section 4(f) land will have no adverse effect on the protected resource. When this is the case, and the responsible official(s) with jurisdiction¹ over the resource agrees in writing, compliance with Section 4(f) is greatly simplified, as explained in this guidance.

The *de minimis*² impact criteria and associated determination requirements specified in Section 6009(a) of SAFETEA-LU³ are different for historic sites than for parks, recreation areas, and wildlife and waterfowl refuges. *De minimis* impacts related to historic sites are defined as the determination of either “no adverse effect” or “no historic properties affected” in compliance with Section 106 of the National Historic Preservation Act (NHPA)⁴. *De minimis* impacts on publicly owned parks, recreation areas, and wildlife and waterfowl refuges are defined as those that do not “adversely affect the activities, features and attributes” of the Section 4(f) resource.

The following questions and answers provide information and guidance on the process of determining *de minimis* impacts of highway and transit projects that propose the use of Section 4(f) property. A diagram of the determination process for parks, recreation areas, and wildlife and waterfowl refuges is included for illustration following the questions and answers.

1. General Information Regarding Application of the *De Minimis* Impact Criteria.

Question A. Are *de minimis* impact findings limited to any particular type of project or National Environmental Policy Act (NEPA) document?

Answer: No. The *de minimis* impact criteria may be applied to any project, as appropriate, regardless of the type of environmental document required by the NEPA process as described in the FHWA and FTA Environmental Impact and Related Procedures⁵.

Question B. What effect does the *de minimis* impact provision have on the application of the existing FHWA nationwide programmatic evaluations?

Answer: Existing FHWA programmatic Section 4(f) evaluations⁶ remain in effect and may be applied, as appropriate, to the use of Section 4(f) property by a highway project. However, since FTA does not have its own or share FHWA’s programmatic evaluations, the programmatic option applies only to FHWA projects and to multimodal projects in which FHWA and FTA are co-lead agencies.

¹ “Official(s) with jurisdiction” means the SHPO, THPO and ACHP, if participating in the consultation, for historic resources, and is defined in Question 3C for other Section 4(f) resources.

² Black’s Law Dictionary (8th ed. 1999) defines *de minimis* as 1. Trifling, minimal. 2. (Of a fact or thing) so insignificant that a court may overlook it in deciding an issue or case. 3. *De Minimis Non Curat Lex*, The law does not concern itself with trifles.

³ Section 6009 amends 49 U.S.C. § 303 and 23 U.S.C § 138; see specifically 49 U.S.C. § 303(d) and 23 U.S.C §138(b)

⁴ 16 U.S.C. 470f, with Implementing regulation at 36 CFR part 800

⁵ 23 CFR 771.115

⁶ <http://environment.fhwa.dot.gov/prolddev/4fnspeval.htm>

Question C. Is it appropriate to apply the *de minimis* impact criteria to projects that are already in the project development process?

Answer: Yes. The Section 4(f) statutory amendment was effective immediately upon enactment of SAFETEA-LU and the *de minimis* impact criteria may be applied to projects currently in the project development process, where the requirements of a *de minimis* impact finding have been or will be satisfied. The decision to apply the *de minimis* impact criteria to those projects is a matter of agency choice and professional judgment. The factors that should be considered in decisions to apply the *de minimis* impact criteria to projects in the "pipeline" include, but are not limited to: 1) the stage of the NEPA or project development process the project is in; 2) the benefits to the project delivery schedule realized by applying the *de minimis* impact criteria; 3) the impact to the project delivery schedule due to other agency (e.g., SHPO and/or THPO and park authorities) or public concern; 4) the overall benefit to the project realized by the reevaluation of a more viable alternative through a *de minimis* impact finding; 5) the degree and type of controversy and/or public scrutiny related to the project; and 6) the resulting benefits realized to a Section 4(f) resource by the *de minimis* impact finding.

While the *de minimis* impact criteria may be applied to any project meeting the specified requirements, Section 6009(a) of SAFETEA-LU does not require the U.S. DOT to re-open decisions already made concerning Section 4(f) impacts of individual projects. Project sponsors are encouraged to examine projects currently in the environmental process to see if any would benefit from application of the *de minimis* impact criteria, but the decision must be made on a case-by-case basis.

Question D. Can a *de minimis* Impact finding be made for a project as a whole, where multiple Section 4(f) resources are involved?

Answer: No. Where multiple Section 4(f) resources are present in the study area and potentially used by a transportation project, *de minimis* impact findings must be made for the individual Section 4(f) resources. The impacts to Section 4(f) resources and any impact avoidance, minimization, and mitigation or enhancement measures must be considered on an individual resource basis and *de minimis* impact findings made individually for each Section 4(f) resource. However, when there are multiple resources for which *de minimis* impact findings are appropriate, the procedural requirements of Section 4(f) can and should be completed in a single process, document and circulation, so long as it is clear that distinct determinations are being made. Also in these cases, the written concurrence of the official(s) with jurisdiction may be provided for the project as a whole, so as long as the *de minimis* impacts findings have been made on an individual resource basis.

Question E. What role does mitigation play in the *de minimis* Impact finding?

Answer: The *de minimis* impact finding is based on the degree or level of impact including any avoidance, minimization, and mitigation or enhancement measures that are included in the project to address the Section 4(f) use. The expected positive effects of any measures included in a project to mitigate the adverse effects of a Section 4(f) resource must be taken into account when determining whether the impact to the Section 4(f) resource is *de minimis*. The purpose of taking such measures into account is to encourage the incorporation of Section 4(f) protective measures as part of the project⁷. *De minimis* impact findings must be expressly conditioned upon the implementation of any measures that were relied upon to reduce the impact to a *de minimis* level. The implementation of such measures will become the responsibility of the project sponsor, with FHWA or FTA oversight⁸.

⁷ Conference Report of the Committee of Conference on H.R. 3, Report 109-203, page 1057.

⁸ 23 CFR 771.109(b)

Question F. How should the *de minimis* impacts to Section 4(f) resources be considered in the alternative selection process when all feasible and prudent alternatives result in Section 4(f) use?

Answer: For those situations in which multiple Section 4(f) resources will be used by a project and it has been determined that no feasible and prudent avoidance alternatives exist, the *de minimis* impacts of Section 4(f) resources must be factored into the analysis to determine which alternative results in the least overall harm as described in the FHWA Section 4(f) Policy Paper⁹.

In most cases, the *de minimis* impacts will have little or no influence on the determination of overall harm because the activities, features and attributes of the Section 4(f) resources will not be adversely affected. Also, because potential adverse impacts to the Section 4(f) resources will be completely mitigated or enhanced by inclusion of such measures as part of the project in making *de minimis* impact findings, the Section 4(f) benefit should be included in the least harm analysis. Where it is not clear which alternative results in the least overall harm, consultation with the FHWA or FTA Headquarters or the FHWA or FTA Office of the Chief Counsel is recommended.

Question G. Can a *de minimis* impact finding be made for a "constructive use" of Section 4(f) property?

Answer: No. A *de minimis* impact finding can only be made where the transportation use would not adversely affect the activities, features, and attributes that qualify a property for protection under Section 4(f). Constructive use, by definition, involves impacts to a Section 4(f) resource such that the protected activities, features, and attributes would be substantially impaired¹⁰. Therefore, a *de minimis* impact finding would not be appropriate where there is a constructive use. Furthermore, if a potential constructive use can be reduced below a substantial impairment, with the inclusion of mitigation measures, then Section 4(f) would not apply.

Question H. Can a *de minimis* impact finding be made for a "temporary occupancy" of Section 4(f) property?

Answer: Yes. As long as the *de minimis* impact criteria are met, the impacts associated with a temporary occupancy of a Section 4(f) resource could be determined to be *de minimis*. It should be noted, however, that Section 4(f) does not apply to the temporary occupancy of Section 4(f) property when the conditions set forth in the FHWA and FTA Environmental Impact and Related Procedures¹¹ are satisfied. Therefore, application of the *de minimis* impact provision for these situations should only be considered when the project does not meet the temporary occupancy exception criteria.

Question I. Who makes the *de minimis* impact findings?

Answer: The FHWA Division Administrator or FTA Regional Administrator makes the *de minimis* impact findings. In the determination, FHWA or FTA shall consider any impact avoidance, minimization, and mitigation or enhancement measures that are included in the project to address the impacts and adverse effects on the Section 4(f) resource. The FHWA Division Administrator or FTA Regional Administrator must consider the facts supporting the determination of a *de minimis* impact, the record that was compiled in the coordination that must precede the determination of *de minimis* impact, the concurrence of the official(s) with jurisdiction, and use his or her own best judgment in making the *de minimis* impact finding. It is ultimately the

⁹ March 1, 2005, pages 6, 7; <http://www.environment.fhwa.dot.gov/proidev/4fpolicy.htm>

¹⁰ 23 CFR 771.135(p)(2)

¹¹ 23 CFR 771.135(p)(7)

responsibility of the FHWA or FTA to ensure that *de minimis* impact findings and required concurrences are reasonable.

Coordination with the FHWA or FTA Headquarters or the FHWA or FTA Office of the Chief Counsel is not required for routine *de minimis* impact findings but is recommended for controversial projects and complex situations.

2. De Minimis Impact Findings for Section 4(f) Uses of Historic Properties.

Question A. What are the requirements for a finding of *de minimis* impact on a historic site?

Answer: A finding of *de minimis* impact on a historic site may be made when:

- 1) The process required by Section 106 of the National Historic Preservation Act¹² results in the determination of "no adverse effect" or "no historic properties affected" with the concurrence of the SHPO and/or THPO, and ACHP if participating in the Section 106 consultation;
- 2) The SHPO and/or THPO, and ACHP if participating in the Section 106 consultation, is informed of FHWA's or FTA's intent to make a *de minimis* impact finding based on their written concurrence in the Section 106 determination; and
- 3) FHWA or FTA has considered the views of any consulting parties participating in the Section 106 consultation.

Question B. How should the concurrence of the SHPO and/or THPO, and ACHP if participating in the Section 106 determination, be documented when the concurrence will be the basis for a *de minimis* finding?

Answer: Section 4(f)¹³ requires that the SHPO and /or THPO, and ACHP if participating, must concur in writing in the Section 106 determination of "no adverse effect" or "no historic properties affected." The request for concurrence in the Section 106 determination should include a statement informing the SHPO or THPO, and ACHP if participating, that the FHWA or FTA intends to make a *de minimis* finding based upon their concurrence in the Section 106 determination.

Under the Section 106 regulation, concurrence by a SHPO and/or THPO may be assumed if they do not respond within a specified timeframe, but Section 4(f) explicitly requires their written concurrence. It is recommended that transportation officials share this guidance with the SHPOs and THPOs in their States so that these officials fully understand the implication of their concurrence in the Section 106 determinations and the reason for requesting written concurrence.

Question C. Certain Section 106 programmatic agreements (PAs) allow the lead agency to assume the concurrence of the SHPO and/or THPO in the determination of "no adverse effect" or "no historic properties affected" if response to a request for concurrence is not received within a period of time specified in the PA. Does such concurrence through non-response, in accordance with a written and signed Section 106 PA, constitute the "written concurrence" needed to make a *de minimis* finding?

Answer: In accordance with the provisions of a written and signed programmatic agreement, if the SHPO and/or THPO does not respond to a request for concurrence in the Section 106

¹² 16 U.S.C. 470f, with implementing regulation at 36 CFR part 800

¹³ 49 U.S.C 303(d)(2)

determination within the specified time, the non-response together with the written agreement, will be considered written concurrence in the Section 106 determination that will be the basis of the *de minimis* finding by FHWA or FTA.

FHWA or FTA must inform the SHPOs and THPOs who are parties to such PAs, in writing, that a non-response that would be treated as a concurrence in a "no adverse effect" or "no historic properties affected" determination will also be treated as the written concurrence for purposes of the FHWA or FTA *de minimis* impact finding. It is recommended that this understanding of the parties be documented by either appending the written notice to the existing PA, or by amending the PA itself.

Question D. For historic properties, will a separate public review process be necessary for the determination of a *de minimis* impact?

Answer: No. Section 6009(a) of SAFETEA-LU requires the U.S. DOT to consult with the parties participating in the Section 106 process but does not require additional public notice or opportunity for review and comment. Documentation of consulting party involvement is recommended. For projects requiring the preparation and distribution of a NEPA document, the information supporting a *de minimis* impact finding will be included in the NEPA documentation and the public will be afforded an opportunity to review and comment during the formal NEPA process.

3. *De Minimis* Impact Findings for Parks, Recreation Areas, and Wildlife and Waterfowl Refuges

Question A. What constitutes a *de minimis* impact with respect to a park, recreation area, or wildlife and waterfowl refuge?

Answer: An impact to a park, recreation area, or wildlife and waterfowl refuge may be determined to be *de minimis* if the transportation use of the Section 4(f) resource, including consideration of impact avoidance, minimization, and mitigation or enhancement measures, does not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f). Language included in the SAFETEA-LU Conference Report¹⁴ provides additional insight on the meaning of *de minimis* impact.

"The purpose of the language is to clarify that the portions of the resource important to protect, such as playground equipment at a public park, should be distinguished from areas such as parking facilities. While a minor but adverse effect on the use of playground equipment should not be considered a *de minimis* impact under section 4(f), encroachment on the parking lot may be deemed *de minimis*, as long as the public's ability to access and use the site is not reduced."

This simple example helps to distinguish the activities, features, and attributes of a Section 4(f) resource that are important to protect from those which can be used without resulting adverse effects. Playground equipment in a public park may be central to the recreational value of the park that Section 4(f) is designed to protect. When impacts are proposed to playground equipment or other essential feature, a *de minimis* impact finding will, at a minimum, require a commitment to replace the equipment with similar or better equipment at a time and in a location that results in no adverse effect to the recreational activity. A parking lot encroachment or other similar type of land use, on the other hand, could result in a *de minimis* impact with minimal mitigation, as long as there are no adverse effects on public access and the official(s) with jurisdiction agree.

¹⁴ Conference Report of the Committee of Conference on H.R. 3, Report 109-203, page 1057.

Question B. What are the requirements for a finding of *de minimis* impact with respect to a park, recreation area, or wildlife and waterfowl refuge?

Answer: The impacts of a transportation project on a park, recreation area, or wildlife and waterfowl refuge that qualifies for Section 4(f) protection may be determined to be *de minimis* if:

- 1) The transportation use of the Section 4(f) resource, together with any impact avoidance, minimization, and mitigation or enhancement measures incorporated into the project, does not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f);
- 2) The official(s) with jurisdiction over the property are informed of FHWA's or FTA's intent to make the *de minimis* impact finding based on their written concurrence that the project will not adversely affect the activities, features, and attributes that qualify the property for protection under Section 4(f); and
- 3) The public has been afforded an opportunity to review and comment on the effects of the project on the protected activities, features, and attributes of the Section 4(f) resource.

Question C. What officials are considered to be "officials with jurisdiction" over a park, recreation area, or wildlife or waterfowl refuge for the purposes of the *de minimis* impact finding?

Answer: The officials with jurisdiction are the officials of an agency or agencies that own or administer a Section 4(f) property and who are empowered to represent that agency on related matters. In some cases, the agency that owns or administers the land has either delegated or relinquished its authority to another agency. In those cases, FHWA or FTA should review the applicable agreements to determine which agency or agencies have the authority to concur in the assessment of impacts to the property.

Question D. How should Section 6(f) of the Land and Water Conservation Fund Act (LWCFA) or other U.S. Department of Interior (DOI) grants-in-aid programs be treated in *de minimis* impact findings?

Answer: *De minimis* impact findings will satisfy Section 4(f) requirements only. For projects that propose the use of land from a property or site purchased or improved with funds under the LWCFA, the Federal Aid in Fish Restoration Act (Dingell-Johnson Act), the Federal Aid in Wildlife Act (Pittman-Robertson Act), or other similar law, or the lands are otherwise encumbered with a Federal interest, coordination with the appropriate Federal agency is required to ascertain the agency's position on the land conversion or transfer. Other federal requirements that may apply to the Section 4(f) land should be determined through consultation with the officials with jurisdiction or appropriate DOI or other federal official. These federal agencies may have regulatory or other requirements for converting land to a different use. These requirements are independent of the *de minimis* impact finding and must be satisfied.

Question E. Is consultation with DOI routinely required for *de minimis* impact findings?

Answer: No. As a routine matter, FHWA and FTA do not need to consult with the DOI on *de minimis* impact findings. Where the Section 4(f) resource involved is owned or administered by the DOI, FHWA or FTA will need the written concurrence of the appropriate DOI official as the official with jurisdiction. If the Section 4(f) resource is encumbered with a Federal interest as a result of a DOI grant, then the answer to Question D applies.

Question F. Does the concurrence of the official(s) with jurisdiction over the Section 4(f) resource need to be in writing?

Answer: Yes. The concurrence of the official(s) with jurisdiction that the protected activities, features, and attributes of the resource are not adversely affected must be in writing. The written

concurrence can be in the form of a signed letter on agency letterhead, signatures in concurrence blocks on transportation agency documents, agreements provided via e-mail or other method deemed acceptable by the FHWA Division Administrator or FTA Regional Administrator. Obtaining these agreements in writing is consistent with effective practices related to preparing project administrative records.

Question G. What constitutes compliance with the public notice, review and comment requirements related to *de minimis* impact findings?

Answer: Information supporting a *de minimis* impact finding should be included in the appropriate NEPA document prepared for the project. This information includes, at a minimum, a description of the involved Section 4(f) resource(s), the impact(s) to the resources and any impact avoidance, minimization, and mitigation or enhancement measures that are included in the project as part of the *de minimis* impact finding. The public involvement requirements related to the specific NEPA document and process will, in most cases, be sufficient to satisfy the public notice and comment requirements for the *de minimis* impact finding.

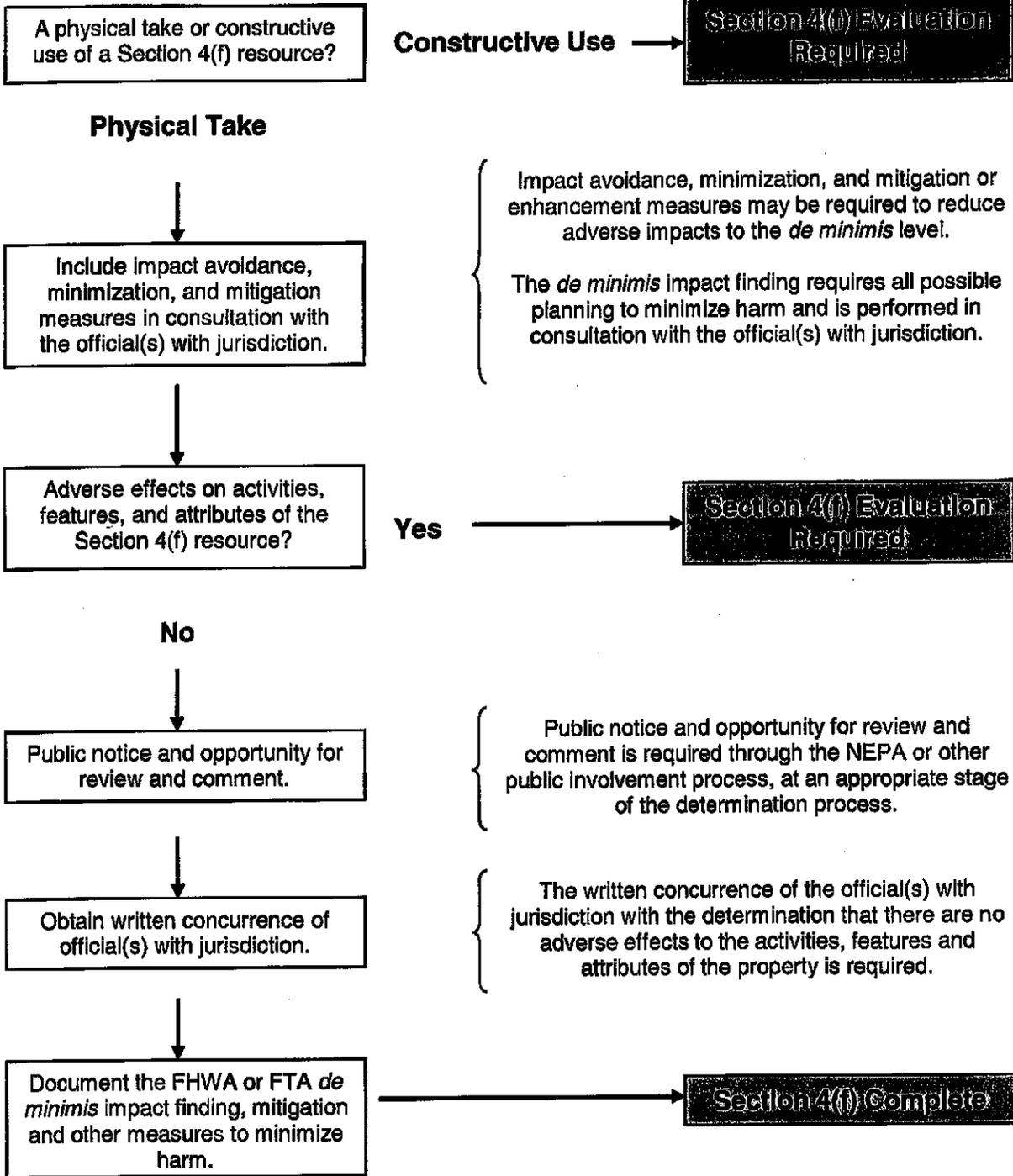
In general, for highway projects, the public notice and comment process related to *de minimis* impact findings will be accomplished through the State DOT's approved public involvement process¹⁵.

For those actions that do not routinely require public review and comment (e.g., certain categorical exclusions and reevaluations) but for which a *de minimis* impact finding will be made, a separate public notice and opportunity for review and comment will be necessary. In these cases, appropriate public involvement should be based on the specifics of the situation and commensurate with the type and location of the Section 4(f) resource(s), impacts and public interest.

All comments received and responses thereto, shall be documented in the same manner that other comments on the proposed action would be handled. Where public involvement was initiated solely for the purpose of a *de minimis* impact finding, responses or replies to the public comments may not be required, depending on the substantive nature of the comments. All comments and responses shall be documented in the administrative record.

¹⁵ 23 CFR 771.111(h)(1))

Suggested Section 4(f) *De Minimis* Impact Determination Process for Parks, Recreation Areas, and Wildlife and Waterfowl Refuges





TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550

November 4, 2009

Ms. Martha Carver
Tennessee Department of Transportation
505 Deaderick St/900
Nashville, Tennessee, 37243-0349

RE: FHWA, HISTORICAL & ARCHITECTURAL SURVEY AND EFFECT DETERMINATION,
IMPROVEMENT AND EXTENSION, NORTH SECOND STREET/WHITNEY AVE., MEMPHIS,
SHELBY COUNTY

Dear Ms. Carver:

Pursuant to your request, received on Monday, November 2, 2009, this office has reviewed documentation concerning the above-referenced undertaking. This review is a requirement of Section 106 of the National Historic Preservation Act for compliance by the participating federal agency or applicant for federal assistance. Procedures for implementing Section 106 of the Act are codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739)

Based on the information provided, we find that the project area contains three cultural resources eligible for listing in the National Register of Historic Places: the International Harvester Plant, the UAW Union Building, and the Wolf River Levee. We further find that the project as currently proposed will not adversely affect these resources.

Unless project plans change, this office has no objection to the implementation of this project. Should project plans change, please contact this office to determine what additional action, if any, is necessary. Questions and comments may be directed to Joe Garrison (615) 532-1550-103. Your cooperation is appreciated.

Sincerely,

E. Patrick McIntyre, Jr.
Executive Director and
State Historic Preservation Officer

EPM/jyg

APPENDIX C

Ecological Coordination Responses



United States Department of the Interior

FISH AND WILDLIFE SERVICE
446 Neal Street
Cookeville, TN 38501

January 9, 2009

Mr. John L. Farmer
Florence & Hutcheson, Inc.
410 New Salem Highway, Suite 109
Murfreesboro, Tennessee 37129

Re: FWS #09-FA-0135

Dear Mr. Farmer:

Thank you for your correspondence of December 2, 2008, regarding the Tennessee Department of Transportation's (TDOT) proposed North Second Street Improvements Project in Shelby County, Tennessee. TDOT proposes to improve approximately 3.5 miles of North Second Street and/or North Third Street from Interstate 40 to Whitney Avenue. Plans also include the construction of a new bridge over the Wolf River. All segments of the proposed project are shown on the attachments to your correspondence. U.S. Fish and Wildlife Service personnel have reviewed the information submitted and we offer the following comments.

Information available to the Service indicates that wetlands exist in the vicinity of the proposed project. Enclosed is a copy of a portion of the National Wetlands Inventory's Northwest Memphis, Tennessee, quadrangle with the referenced wetlands highlighted. This information is provided for your convenience. Our wetlands determination has been made in the absence of a field inspection and does not constitute a wetlands delineation for the purposes of Section 404 of the Clean Water Act. The Corps of Engineers and Tennessee Department of Environment and Conservation should be contacted regarding the presence of regulatory wetlands and the requirements of wetlands protection statutes.

Since the proposed work will involve construction activities over, in, and adjacent to the Wolf River, we recommend that silt barriers be put in place to prevent runoff of sediment. Construction within or adjacent to the Wolf River should be accomplished during low-flow periods, and the riverbanks reseeded with native vegetation beneficial to wildlife immediately following disturbance.

Endangered species collection records available to the Service do not indicate that federally listed or proposed endangered or threatened species occur within the impact 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.

Thank you for the opportunity to comment on this proposed action. If you have any questions regarding the information which we have provided, please contact Wally Brines of my staff at 931/528-6481, extension 222, or at wally_brines@fws.gov.

Sincerely,

A handwritten signature in cursive script that reads "Lee A. Barclay".

Lee A. Barclay, Ph.D.
Field Supervisor

Enclosure



TENNESSEE WILDLIFE RESOURCES AGENCY

ELLINGTON AGRICULTURAL CENTER
P. O. BOX 40747
NASHVILLE, TENNESSEE 37204

January 28, 2009

John L. Farmer
Florence & Hutcheson, Inc.
410 New Salem Hwy.
Suite 109
Murfreesboro, TN 37129

Re: Request for Environmental Information – Proposed Improvements to North Second and North Third Street from Interstate 40 near St. Jude Hospital to a Point just North of the Wolf River and Extending this Route on New Location from There Across the Wolf River Floodplain to Whitney Avenue

Dear Mr. Farmer:

Your request for an environmental review of the proposed project has been referred to me for response as NEPA Coordinator and the Tennessee Wildlife Resources Agency's Tennessee Environmental Streamlining Agreement Coordinator. We have reviewed the information in regards to potential impacts to species within our authority under law. In our opinion, there is the potential for impact to the state Deemed-in-Need-of-Management species the Mississippi kite (*Ictinia mississippiensis*) and the state Threatened blue sucker (*Cycleptus elongates*) due to this project depending on design detail. These species are protected by state law and the Mississippi kite is also protected by the Migratory Bird Treaty Act of 1918.

We also have concerns regarding potential impacts to the wetlands associated with the Wolf River floodplain and those wetlands between the Wolf River on the south, US 51 on the east, and Whitney Avenue on the west and north. We have expressed our concerns regarding these wetlands several times in the past when this project has been proposed; including the coordination on February 28, 2003 with Dan Sherry, who has retired from the Tennessee Wildlife Resources Agency, as referred to in this coordination letter. Our concern regarding these wetland impacts is primarily cumulative impacts of this proposed project due to the secondary development that would occur once these road improvements are implemented. In the past the Tennessee Department of Transportation, previous consultants, and the Tennessee Wildlife Resources Agency have agreed to pursue a plan to obligate the protection of the existing forested and open water wetlands described above

We look for to future coordination regarding this proposed project.

The State of Tennessee

IS AN EQUAL OPPORTUNITY, EQUAL ACCESS, AFFIRMATIVE ACTION EMPLOYER

John Farmer

From: moni7597@comcast.net
Sent: Monday, February 02, 2009 3:40 PM
To: John Farmer
Subject: Re: Ecological Study

Hi John,

There is no known caves in Shelby County or any surrounding counties.

Gerald Moni
West Co-Director - Tennessee Cave Survey

----- Original Message -----

From: John Farmer
To: Moni7597@comcast.net
Sent: Mon, 2 Feb 2009 14:49:43 +0000 (UTC)
Subject: Ecological Study



United States Department of the Interior

FISH AND WILDLIFE SERVICE

446 Neal Street
Cookeville, TN 38501

March 20, 2003

Mr. R. J. Moore

Biologist

PBS&J

Two International Plaza Drive, Suite 810
Nashville, Tennessee 37217

Re: FWS #03-1003

Dear Mr. Moore:

Thank you for your correspondence of February 28, 2003, regarding the Tennessee Department of Transportation's (TDOT) proposed North Second Street Improvements Project in Shelby County, Tennessee. TDOT proposes to improve as much as four miles of highway by considering three alternative routes (B1, C and D) as shown on the attachments to your correspondence. Fish and Wildlife Service (Service) personnel have reviewed the information submitted and the following comments are provided in accordance with the provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

Information available to the Service indicates that wetlands exist in the vicinity of the proposed project. Attachment I is a copy of a portion of the National Wetlands Inventory's Northwest Memphis, Tennessee-Arkansas, quadrangle with the referenced wetlands highlighted. This information is provided for your convenience. Our wetlands determination has been made in the absence of a field inspection and does not constitute a wetlands delineation for the purposes of Section 404 of the Clean Water Act. The Corps of Engineers should be contacted regarding the presence of regulatory wetlands and the requirements of wetlands protection statutes.

The Service is concerned that highway projects frequently accelerate erosion and sedimentation in streams, resulting in adverse effects to the aquatic environment. The use of heavy equipment to move earth and existing vegetation disrupts natural drainage patterns and exposes large areas of disturbed soil to erosion. Excessive sedimentation can clog stream channels and contribute to increased flooding. It can also increase water temperatures and cause oxygen demands which can damage or destroy fish and invertebrate populations. Deposition of sediment on the channel bottom also degrades aquatic habitat by filling in substrate cavities, burying demersal eggs, and smothering bottom organisms. In addition, turbidity, as induced by accelerated erosion and sedimentation, results in further damage to aquatic systems. Increased particulate matter suspended in the water column may drive fish from the polluted area by irritating the gills, concealing forage, and/or

destroying vegetation that may be essential for spawning and cover habitat for particular species. Turbidity also degrades water quality by reducing light penetration, pH and oxygen levels, and the buffering capacity of the water. Degraded water quality may continue far downstream from the point where the erosion occurs.

Prevention of excessive sedimentation can occur only through application of Best Management Practices during daily construction activities. Rigid application of your agency's construction erosion control standards can preclude most sedimentation problems; however, in some cases additional measures will need to be taken by on-site inspectors and construction representatives.

Endangered species collection records available to the Service do not indicate that federally listed or proposed endangered or threatened species occur within the impact 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. However, based on the best information available at this time, we believe that the requirements of Section 7 of the Endangered Species Act of 1973, as amended, are fulfilled. Obligations under Section 7 of the Act must be reconsidered if (1) new information reveals impacts of the proposed action that may affect listed species or critical habitat in a manner not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

We note that our office has previously responded to three letters from PBS&J regarding this (or a very similar) project proposal. The information provided in our December 17, 2001, letter (Attachment II) concerning potential impacts to the Wolf River floodplain and wetlands, including impacts associated with secondary commercial development if Alternatives B1 or D are chosen, is still valid. We believe Alternative C would have the fewest impacts to fish and wildlife resources.

Thank you for the opportunity to comment further on this proposed action. If you have any questions regarding the information which we have provided, please contact Wally Brines of my staff at 931/528-6481, extension 222.

Sincerely,



Lee A. Barclay, Ph.D.
Field Supervisor

Attachments (2)

xc: Dan Sherry, TWRA, Nashville
Robby Baker, TDEC, Nashville
Tim Davis, COE, Memphis

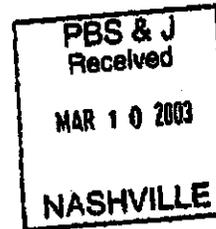


TENNESSEE WILDLIFE RESOURCES AGENCY

ELLINGTON AGRICULTURAL CENTER
P. O. BOX 40747
NASHVILLE, TENNESSEE 37204

March 5, 2003

Mr. R. J. Moore, Biologist
PBS&J
Two International Plaza Drive, Suite 810
Nashville, TN 37217



RE: North Second Street Improvements; Requested Comment and Protected Species Coordination Shelby County

Dear Mr. Moore:

This letter responds to your February 28, 2003 letter requesting rare species information and other project concerns for the proposed North Second Street Improvement. Your letter appears to introduce this project as if it were a new request for initial comment from TWRA. In fact, as demonstrated by the five enclosed response letters from TWRA, the project has been repeatedly addressed as a major concern by this agency with very specific requests for face to face early coordination and preparation of an Environmental Impact Statement.

To date, we have had no response to these requests and are a bit puzzled by still another request for comment. We are apprehensive that difficult-to-reverse planning is taking place without proper consideration from environmental agencies.

The requested coordination is particularly important since we understand the City of Memphis is selecting its preferred alternative for I-69, partially based on alternatives for North Second Street with which this agency has environmental problems. We must stress again that alternatives we understand to be preferred alternatives have serious environmental implications and are likely to be highly objectionable to this agency. On a positive note, we are happy to see that your letter does include a clear Alternative C (improvement of Danny Thomas Blvd.) this time that is not objectionable to us. However, we understand that this alternative, sometimes vaguely presented in the past, is not preferred.

We will submit the requested rare species information although this is customarily supplied by TDEC and/or the USFWS. The information will come under separate cover from our non-game section.

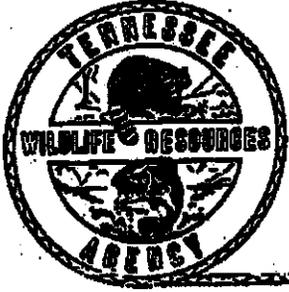
We strongly encourage you to seek coordination of this project in the form of an interagency meeting before its planning proceeds further. Thank you for yet another opportunity to comment.

Sincerely,


Dan Sherry
Fish and Wildlife Environmentalist

DS:bg
enclosures

cc: Bob Bay
Stephanie Fulton, EPA/WPC
Steve Seymour
Ray Brisson
Richard Kirk
Dodd Galbreath, TDEC



TENNESSEE WILDLIFE RESOURCES AGENCY

ELLINGTON AGRICULTURAL CENTER
P. O. BOX 40747
NASHVILLE, TENNESSEE 37204

25 March 2003

Mr. R. J. Moore, Biologist
PBS&J
Two International Plaza drive, Suite 810
Nashville, TN 37217

RE: Rare Species Occurrence Associated with North Second Street Improvements,
Shelby County, Tennessee

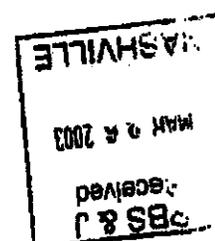
Dear Mr. Moore,
A review of our rare species database revealed the occurrence of the state endangered blue sucker (*Cycleptus elongates*). Our data indicated this species in the vicinity of the Second Street Bridge and just below the mouth of the Wolf River.

If you have any questions, please call at 615.781.6619.

Sincerely,

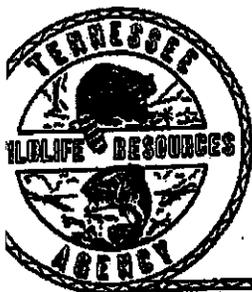

Richard Kirk, Coordinator
Nongame and Endangered Species Program

Cc: D. Sherry
File



TENNESSEE WILDLIFE RESOURCES AGENCY

ELLINGTON AGRICULTURAL CENTER
P. O. BOX 40747
NASHVILLE, TENNESSEE 37204



July 28, 2003

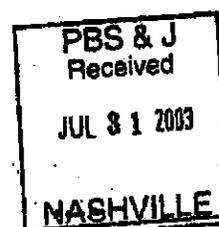
Tom Love
Tennessee Department of Transportation
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, TN 37243-0334

Re: Proposed Improvements and Extension of North Second Street, Memphis

Dear Tom:

This letter follows several comment letters we have submitted on the proposed North Second Street extension in Memphis. At our July 22, 2003 meeting, I restated TWRA's primary concern as being with secondary development of the Wolf River floodplain and associated wetlands on the North side of the river.

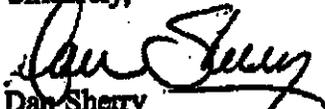
Meeting attendees including PBS&J staff, you and I agreed to pursue a plan to obligate the protection of at least the existing forested and open water wetlands in the Wolf River floodplain lying on the north side of the river between the new Second Avenue to the west and the railroad to the east. There are also farmed wetlands lying within the area of proposed protection. Mitigation for direct wetland impacts associated with the road construction could take place on those farmed wetlands at a higher ratio than the 2 : 1 ratio normally associated with restoration mitigation. Furthermore, it was stated at the meeting that the subject area of proposed protection could be considered loss of access requiring acquisition by TDOT anyway. There appears then, potential for an economically feasible opportunity for floodplain and wetland protection, environmental enhancement, and wetland mitigation in association with this road project. The Wolf River Conservancy has agreed to hold any easements that might be involved with this property.



We think that mutual agreement can be reached to the advantage of all parties concerned. However, it would require advanced planning and commitment which should at least conceptually take place at this time rather than later. We look forward to completing the basic planning for what would happen with the wetlands of concern to us before the NEPA documents are complete.

Thank you for coordinating with us at the July 22 meeting.

Sincerely,


Dan Sherry
Fish and Wildlife Environmentalist

DS:bg

cc: Steve Seymour
EPA
USFWS


PBS&J
Two International Plaza Drive, Suite 810
Nashville, TN 37217



United States Department of the Interior

FISH AND WILDLIFE SERVICE
446 Neal Street
Cookeville, TN 38501

January 12, 2001

Mr. Joshua B. Hayes
Staff Scientist
PBS&J
Two International Plaza Drive, Suite 810
Nashville, Tennessee 37217

Dear Mr. Hayes:

Thank you for your letter and enclosure of December 22, 2000, regarding the proposed improvements to North Second Street from Interstate 40 in Memphis to the State Route 3 (U.S. Highway 51) interchange in Shelby County, Tennessee. Fish and Wildlife Service (Service) personnel have reviewed the information submitted and we offer the following comments.

Information available to the Service indicates that wetlands exist in the vicinity of the proposed project. Attached is a copy of a portion of the National Wetlands Inventory's Northwest Memphis quadrangle with the referenced wetlands highlighted. This information is provided for your convenience. Our wetlands determination has been made in the absence of a field inspection and does not constitute a wetlands delineation for the purposes of Section 404 of the Clean Water Act. The Corps of Engineers should be contacted regarding the presence of regulatory wetlands and the requirements of wetlands protection statutes.

Endangered species collection records available to the Service do not indicate that federally listed or proposed endangered or threatened species occur within the impact 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. However, based on the best information available at this time, we believe that the requirements of Section 7 of the Endangered Species Act of 1973, as amended, are fulfilled. Obligations under Section 7 of the Act must be reconsidered if (1) new information reveals impacts of the proposed action that may affect listed species or critical habitat in a manner not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

Thank you for the opportunity to comment on this proposed action. If you have any questions, please contact Tyler Sykes of my staff at 931/528-6481, ext. 214.

Sincerely,


for Lee A. Barclay, Ph.D.
Field Supervisor

Attachment



United States Department of the Interior

FISH AND WILDLIFE SERVICE
446 Neal Street
Cookeville, TN 38501

July 12, 2000

Mr. Carter M. Teague
Environmental Scientist
PBS&J
1575 Northside Drive, N.W., Suite 350
Atlanta, Georgia 30318-4203

Dear Mr. Teague:

Thank you for your letter and enclosures of June 8, 2000, regarding the Tennessee Department of Transportation's (TDOT) proposed Second Street Improvements and Extension Project in Shelby County, Tennessee. TDOT proposes to improve and extend approximately four miles of Second Street from Interstate 40 to the intersection of State Route 51 and State Route 300 as shown on the attachment to your correspondence. The Fish and Wildlife Service (Service) has reviewed the information submitted and offers the following comments.

Information available to the Service indicates that wetlands exist in the vicinity of the proposed project. Enclosed is a copy of a portion of the National Wetlands Inventory's Northwest Memphis, Tennessee-Arkansas, quadrangle with the referenced wetlands highlighted. This information is provided for your convenience. Our wetlands determination has been made in the absence of a field inspection and does not constitute a wetlands delineation for the purposes of Section 404 of the Clean Water Act. The Corps of Engineers should be contacted regarding the presence of regulatory wetlands and the requirements of wetlands protection statutes.

We note that the proposed road project will require stream crossings. We recommend that silt barriers be put in place when working adjacent to all streams to prevent runoff of sediment. If a stream crossing is necessary, it should be accomplished during low flow periods and the streambanks reseeded with native vegetation beneficial to wildlife immediately following completion of the stream crossing.

Endangered species collection records available to the Service do not indicate that federally listed or proposed endangered or threatened species occur within the impact 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. However, based on the best information available at this time, we believe that the requirements of Section 7 of the Endangered Species Act of 1973, as amended, are fulfilled. Obligations under Section 7 of the Act must be reconsidered if (1) new information reveals impacts of the proposed action that may affect listed species or critical habitat in a manner not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.

Thank you for the opportunity to comment on this proposed action. If you have any questions regarding the information which we have provided, please contact Wally Brines of my staff at 931/528-6481, extension 222.

Sincerely,

A handwritten signature in cursive script that reads "Lee A. Barclay".

Lee A. Barclay, Ph.D.
Field Supervisor

Enclosure

APPENDIX D
COMMUNITY PLANS

The project study area is located within several community plans' areas. These plans are briefly discussed in the following pages. The plans were prepared for the Memphis and Shelby County Division of Planning and Development (DPD) by the Memphis and Shelby County Community Redevelopment Agency (CRA) or the Center City Commission (CCC). In addition to these local government planning efforts, the *St. Jude Children's Research Hospital Master Site and Facilities Plan 2004-2020+* and the Riverfront Development Corporation's (RDC) *Memphis Riverfront Master Plan* were reviewed. Each of the plans has some transportation improvement element. Although the transportation recommendations in each of the plans vary, the common theme is for a transportation system that improves circulation in Downtown Memphis while promoting pedestrian activities and complementing a dense urban environment. These themes are consistent with the proposed improvements.

The DPD is a joint agency that serves both the City of Memphis and Shelby County governments. Its mission includes the development of plans and programs that result in thriving and livable neighborhoods, safe and efficient buildings and enhanced economic development opportunities.

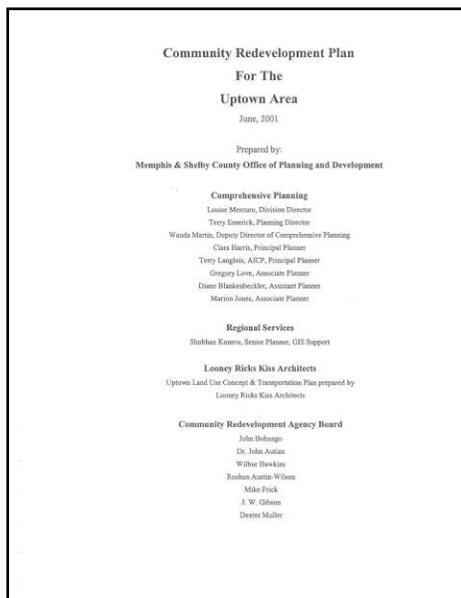
The CRA is a joint City and County entity authorized under the provisions of the State of Tennessee "Community Redevelopment Act of 1998". The CRA was established for the purpose of improving the quality of life through the removal of slum and blight within Memphis and Shelby County. The CRA is enabled through legislation to carry out community redevelopment.

The CCC is the primary leader in the comprehensive redevelopment of Downtown and the official partnership between local government and the private business community in Downtown's revitalization. The mission of the CCC is to improve the economy of Memphis and Shelby County by coordinating an aggressive public/private program to promote the redevelopment and economic growth of the Central Business Improvement District (Downtown Memphis).

St. Jude Children's Research Hospital is a world renowned comprehensive cancer center located within the study corridor. Coordination with the St. Jude Master Plan is consequential due to it being a major local employer, community stakeholder, and considerable generator of traffic.

The RDC, under contract with the City, plans, promotes, and coordinates the development and operation of amenities that will enhance the Memphis Riverfront. The Memphis Riverfront Master Plan was formally endorsed by the Memphis City Council in 2004 and promotes green space, public amenities, private development and economic opportunities developed jointly with citizens and funded through public/private partnerships.

Community Redevelopment Plan for the Uptown Area



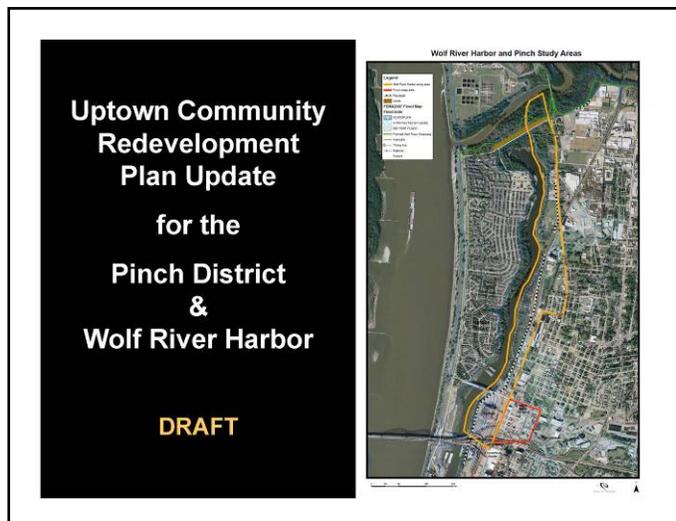
The *Community Redevelopment Plan for the Uptown Area* was prepared by the Memphis and Shelby County Division of Planning and Development (DPD) and Memphis and Shelby County Community Redevelopment Agency (CRA) in 2001. The primary focus of the document is community redevelopment, land use, and comprehensive rezoning in the Uptown area with the purpose of reducing or eliminating blight. A transportation plan is included. The plan notes that “In order to move traffic more efficiently from the terminus of I-240 north of Memphis and into the Downtown area, North Second Street will be redesigned to a parkway with landscaped medians sidewalks on either side, pedestrian scale lighting and architectural features of interest.” Furthermore, “it has been proposed that a new urban boulevard be created along the right of way of North Second Street. It is essential that this boulevard be designed in a way as to have a positive impact upon the

adjacent areas of the Uptown redevelopment area.” It should be noted that since the *Community Redevelopment Plan for the Uptown Area* was prepared in 2001, I-240 has been re-designated as I-40 north of the study area. Therefore, the reference to I-240 above is actually in reference to I-40.

The proposed project is consistent with the transportation element of the CRA plan. At the southern terminus of the study area, the proposed project includes incorporating North Second Street and North Third Street into a one-way pair from I-40 at Midtown north to Chelsea Avenue. Dense urban development and narrow building setbacks would make widening North Second Street between Downtown and Chelsea Avenue impractical. Widening would be necessary to accommodate two-way travel along an urban boulevard with a median while maintaining the existing sidewalks on both sides. Therefore, the proposed project maintains the urban roadway by converting North Second and North Third Streets into a one-way pair between Chelsea Avenue and I-40. This will allow efficient movement of traffic between Uptown and Downtown while maintaining a complimentary urban feel to the adjacent developments. Furthermore, it will complement the existing one-way pair of North Second and North Third Streets through Downtown. Sidewalks and on-street parking will be maintained with the improvements.

North of Chelsea Avenue, the proposed route will be two-way and incorporate sections of existing North Second Street and Whitney Avenue to form a continuous route to US-51. The proposed roadway will include landscaped medians and sidewalks on either side, just as the *Community Redevelopment Plan for the Uptown Area* describes. The proposed project provides direct connectivity between the North Memphis and Downtown Memphis communities.

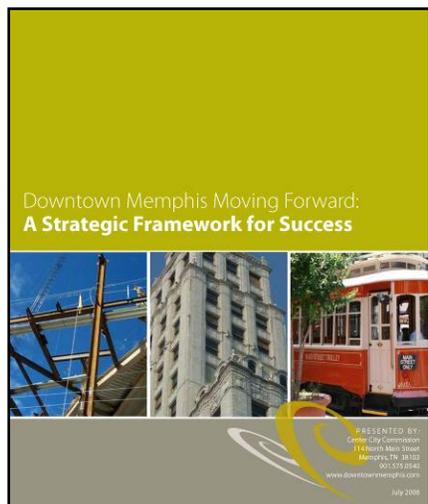
Uptown Community Redevelopment Plan Update for the Pinch District & Wolf River Harbor



This plan is an update to the *Community Redevelopment Plan for the Uptown Area* discussed above. The community redevelopment plan for the Uptown Area was approved in 2001 and the Uptown study area underwent rezoning in 2001. The update's purpose was to determine the needs and opportunities for community reinvestment in the Pinch neighborhood and along the Wolf River Harbor and to provide a framework for achieving orderly and sustainable community development in these neighborhoods. It calls for higher density mixed use development with ground floor retail along North Second and North Third

Streets. One of the challenges listed in the update is limited accessibility from I-40. The update recommends reopening the currently closed Commerce Street and Winchester Streets. These streets are east-west routes that parallel I-40 between North Main Street and North Second Street, and North Second Street and North Third Street, respectively.

Downtown Memphis Moving Forward: A Strategic Framework for Success



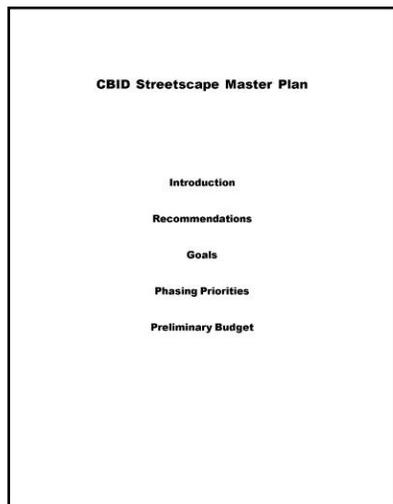
This Center City Commission (CCC) plan was developed in 2006 to set five-year strategies to support the community's strategic framework for moving Downtown forward. More than a thousand people throughout the region participated in the process to craft this comprehensive plan.

One of the community goals is for a Downtown that is safe, attractive, and livable. One objective of this goal is to improve the public environment. Strategies to attain this goal include increasing investments in public infrastructure, maintaining and expanding the Wayfinding Master Plan, promoting and improving the walkability of Downtown, and supporting streetscape improvements included in the Medical Center Master Plan. Another objective of this goal is to improve transportation Downtown. Strategies to attain this goal include improving circulation throughout Downtown,

increasing convenience, safety, and cleanliness of on and off street parking, encouraging alternative forms of transportation, facilitating and supporting cabs and other means of private "for hire" transportation, and promoting and encouraging accessibility of Downtown.

The proposed project meets or compliments the goals and strategies discussed in this CCC plan. The proposed project will improve traffic circulation by creating an uninterrupted one-way pair throughout downtown with an urban design. Sidewalks, on-street parking, and bike lanes will be provided. Signalized intersections will have handicap accessible features.

CBID Streetscape Master Plan

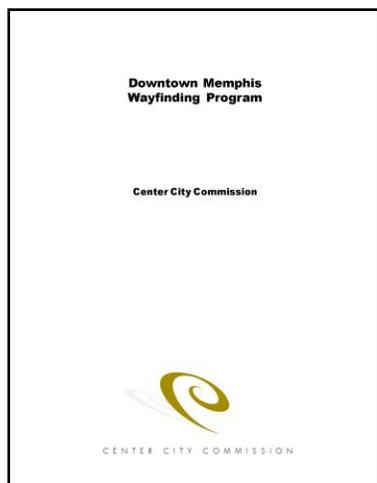


The Central Business Improvement District Streetscape Master Plan was produced for the CCC in 2001. The study area includes approximately 80 blocks and extends from the riverfront area to Third and Fourth Streets and from Auction Avenue to G.E. Patterson Avenue. The purpose of the streetscape master plan is to provide the CCC with a guidebook for implementing streetscape improvements. One of the goals of the plan is to enhance connections among districts, downtown neighborhoods and attractions, including between the downtown core and the Pinch Historic District. Another goal of the plan is to identify and enhance significant gateways and approaches into downtown.

The proposed project will attain the goals of the streetscape plan by enhancing north-south travel adjacent to the riverfront, including between the downtown core and the Pinch District.

The proposed project will create a gateway between communities north of Memphis and Downtown. The proposed features of the project include medians, bike lanes, sidewalks, and on-street parking, which are consistent with an urban gateway. It will create a safer, urban friendly environment that encourages people to either walk or ride their bicycles into the downtown area and leave their cars at home.

Downtown Memphis Wayfinding Program

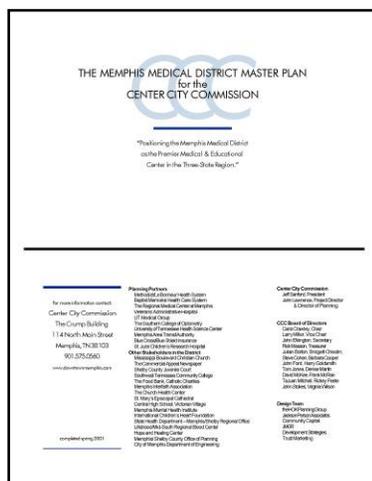


Begun in July 2000, the Center City Commissions' (CCC) Downtown Memphis Wayfinding Program is part of an overall marketing and economic revitalization program to promote tourism for the region. A consistent and uniform system of tourism-oriented directional signage will enhance wayfinding and assist tourists and residents to clearly find attractions and landmarks, minimize confusion, and create awareness of things to see and tour in the Memphis Central Business Improvement District. The major components of the signage system include gateway, vehicular directional, street/parking directional, pedestrian directional and pedestrian orientation kiosks.

The Build proposed project will not negatively affect the wayfinding program. The wayfinding components are generally small in scale and can be incorporated into the proposed

improvements.

The Memphis Medical District Master Plan for the Center City Commission

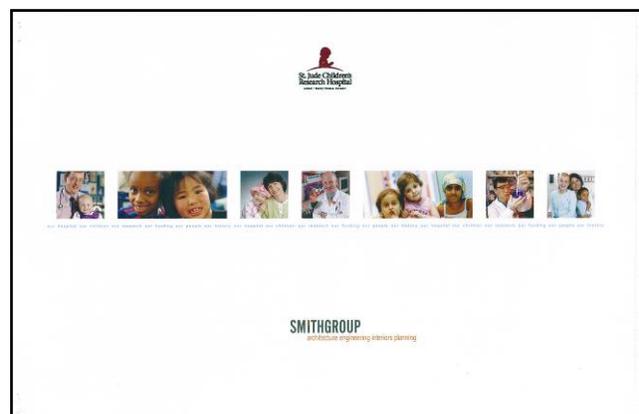


This 2001 plan included improved street conditions as a priority project for the Medical District, which includes the St. Jude Children’s Research Hospital Campus. The plan notes that while the age, density and traditional street grid of the District imply an urban form, a half century of uncoordinated, suburban redevelopment has resulted in conflicting spatial relationships and architectural identity. It also notes that the presence of poor traffic circulation and inconsistent physical structure leads to confusing, dangerous, and circuitous access. The plan notes that streets, light rail, and pedestrian walks represent the infrastructure that benefits, encourages, and stimulates redevelopment.

To improve the Medical District, the plan promotes infilling lots along North Second and Third Streets with buildings that provide ground floor retail/commercial opportunities and 2nd and 3rd floor residential uses. A district wide streetscape is also promoted with coordinated signage and graphics throughout the district. Other streetscape features in the plan include trees, sidewalks, pedestrian and vehicular lighting, and site amenities.

The proposed project will complement the Medical District Master Plan by providing an urban roadway with curb and gutter and sidewalks. The roadway design will complement compact urban infill projects. The one-way pair adjacent to the Medical District will improve traffic flow and circulation. The proposed improvements will not impact architectural improvements, including coordinated signage, tree planters, and site amenities.

St. Jude Children’s Research Hospital Master Site and Facilities Plan 2004-2020+



The SJCRH Master Plan was developed in 2005 and establishes a proposed direction for the twenty-year and beyond time frame development. Components of the plan address the site, potential functional programs, building organization, space planning modules, and site utility infrastructure. Transportation components are included in the plan. The primary feature of the transportation component is the creation of a loop road to improve site circulation. The plan notes “The loop road requires the relocation of North Parkway and

closure of Lauderdale Street to consolidate and integrate the Development Zones. These efforts require the cooperation of the City of Memphis, the utility companies, and the neighborhood and should begin as soon as possible. Once the Section of North Parkway inside the campus is closed, a segment of the loop road can be established creating the central green space envisioned as being an organizing feature of the consolidated campus”.

North Parkway has been closed to through traffic since the Master Plan was written. Gates and architectural elements, including green space, have been added at the intersection with North Third Street. The Master Plan calls for North Parkway to be converted to a pedestrian spine through campus.

The conversion of North Second and North Third Streets into a one-way pair adjacent to campus is shown in the SJCRH Master Plan. This improvement is consistent with the proposed project.



Memphis Riverfront Master Plan



The Master Plan notes a profound need for an accessible, vibrant, and desirable destination at the riverfront. The Master Plan has a circulation, transit, and parking element. The study area extends from Union Avenue to the north end of Mud Island. The Master Plan notes: *“From a roadway standpoint, one of the primary goals of the Riverfront Master Plan is to improve the livability of Riverside Drive as it winds along the banks of the Mississippi River. In its current fourlane, high-speed configuration, Riverside Drive forms a barrier for pedestrians seeking the river from*

Downtown. The opportunity exists for downsizing Riverside Drive into a much more livable configuration as the riverfront plan takes shape.” The proposed cross section for Riverside Drive provides a more livable street for pedestrians, bicycles, and other interests. To relieve regional travel pressure from the proposed Riverside Drive downsizing, the Master Plan calls for Second and Third Street to function as a one-way pair and become the primary feeder network for Downtown. This objective is proposed to be accomplished by reconfiguring the Interstate 40 Ramps at Riverside Drive and Front Street, reconfiguring the Interstate 55 Ramps at Crump Boulevard/Riverside Drive, and redistributing traffic to Second and Third Streets. The Master Plan also promotes improved downtown parking and enhanced trolley service.

The proposed improvements in the North Second Street Corridor are consistent with the Riverfront Master Plan goals.