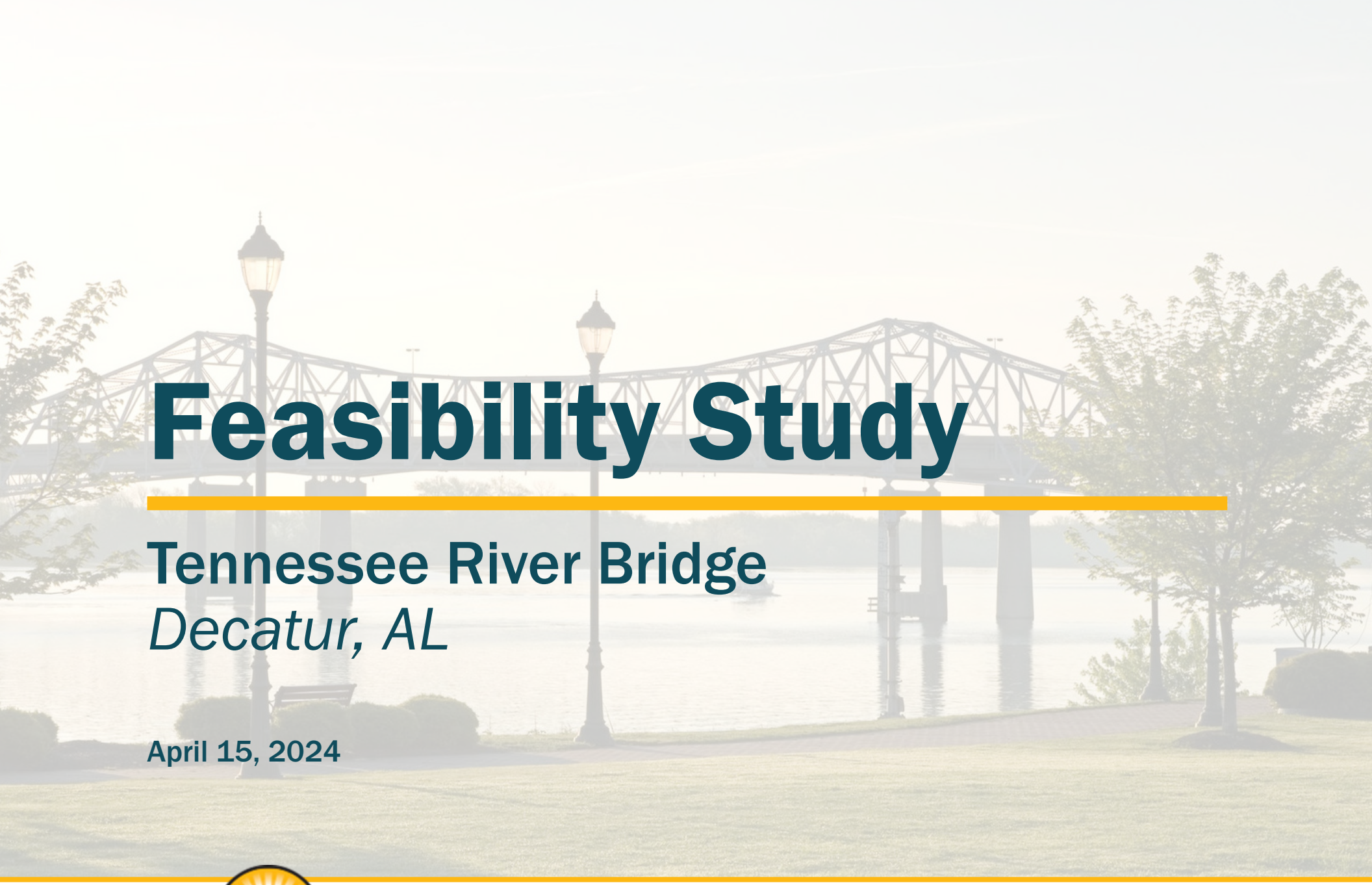

Feasibility Study

Tennessee River Bridge

Decatur, AL

April 15, 2024

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Tables

Acronyms and Abbreviations

3D	three-dimensional
AADT	annual average daily traffic
AASHTO	American Association of State Highway and Transportation Officials
ac	Acre
ACM	asbestos containing materials
ADAAG	Americans with Disabilities Act Accessibility Guidelines
ADA	Americans with Disabilities Act
ADCNR	Alabama Department of Conservation and Natural Resources
ADEM	Alabama Department of Environmental Management
Admin.	Administrative
ADHS	Appalachian Development Highway System
AHC	Alabama Historic Commission
AHERA	Asbestos Hazard Emergency Response Act
AL	Alabama
ALDOT	Alabama Department of Transportation
Alt	Alternate
APE	Area of Potential Effects
ARC	Appalachian Regional Commission
Ave	Avenue
BGEPA	Bald and Golden Eagle Protection Act
Blvd	Boulevard
BMP	Best Management Practices
BPP	Bicycle and Pedestrian Plan
CAA	Clean Air Act
CDC	Centers for Disease Control and Preventions
CE	Categorical Exclusion
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	Code of Federal Regulations
CH4	methane
City	City of Decatur
CMSA	Consolidated Metropolitan Statistical Area
CO2	carbon monoxide
CORRACTS	RCRA Corrective Action Report
CR	County Road
CWA	Clean Water Act
dB	decibels
dBA	A-weighted equivalent sound level in decibels
DOT	Department of Transportation
DPM	diesel particulate matter
Dr	Drive
EA	Environmental Assessment
EB	eastbound
ECHO	Enforcement and Compliance History Online

ECOS	Environmental Conservation Online System
EIS	Environmental Impact Statement
EJ	Environmental Justice
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
existing corridor	U.S. Highway 31/ U.S. Highway 72 Alternate/ State Route 20
existing corridor bridges	“Steamboat Bill” Memorial Bridges
F	Fahrenheit
FDA	Food and Drug Administration
Feasibility Study	Tennessee River Bridge Feasibility Study
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Fire Insurance Rate Map
FPPA	Farmland Protection Policy Act
ft	foot
FTA	Federal Transit Administration
GBA	General Bridge Act of 1946
GHG	greenhouse gases
GIS	Geographic Information System
HAP	hazardous air pollutants
HATS	Huntsville Area Transportation Study
HCM	Highway Capacity Manual

HHS	US Department of Health and Human Services
HMS	hazardous material sites
HTF	Federal Highway Trust Fund
Hwy	Highway
I-	Interstate Highway
IIJA	Infrastructure Investment and Jobs Act
IPaC	Information for Planning and Consulting (from the USFWS)
KY	Kentucky
LBP	lead-based paint
Leg	equivalent continuous sound levels
LiDAR	Light Detection and Ranging
LOS	Level of service
LRFD	load and resistance factor design
LRTP	Long-Range Transportation Plan
LUST	leaking underground storage tank
LWCF	Land and Water Conservation Fund
MBTA	Migratory Bird Treaty Act
mm	millimeter
MOVES	Motor Vehicle Emission Simulator
MP	milepost
MPA	Metropolitan Planning Area
mph	miles per hour
MPO	Metropolitan Planning Organization
MSA	Metropolitan Statistical Area

MSAT	mobile source air toxics
N	north
NAAQS	National Ambient Air Quality Standards
NAC	noise abatement criteria
NARCOG	North Central Alabama Regional Council of Governments
NB	northbound
NESHAP	National Emission Standards for Hazardous Air Pollutants
NE	northeast
NEPA	National Environmental Policy Act of 1969
NFHL	National Flood Hazard Layer
NHD	National Hydrography Dataset
NHPA	National Historic Preservation Act
N2O	nitrous oxide
NO2	nitrogen dioxide
NOAA-NMFS	National Oceanic and Atmospheric Administration-National Marine Fisheries Service
NOI	Notice of Intent
NPL	National Priority List
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSSP	National Shellfish Sanitation Program
NW	northwest
NWI	National Wetland Inventory
NWR	National Wildlife Refuge

O3	ozone
OD	Origin and Destination
One Decatur	City of Decatur Comprehensive Plan
Pb	lead
PCE	Programmatic Categorical Exclusion
PCP	Project Communication Plan
PEL	Planning and Environmental Linkages
PFAS	per- and polyfluoroalkyl
PFOS	per-fluorooctanesulfonic acid
PIM	Public Involvement Meeting
PM	particulate matter (example PM10 and PM2.5)
RCRA	Resource Conservation and Recovery Act of 1979
Rd	Road
RHA	Rivers and Harbors Act of 1899
ROW	right-of-way
RRP	renovation, repair, and painting
SARA	Superfund Amendments and Reauthorization Act of 1986
SB	southbound
Scoping Study	Tennessee River Bridge Scoping Study
SE	southeast
SEMS	Superfund Enterprise Management System
SEP	Stakeholder Engagement Plan

SESA	State Environmental Species Act
SHPO	State Historical Preservation Office
SIP	State Implementation Plan
SME	subject matter experts
SO2	sulfur dioxide
St	Street
SR-	State Route
StreetLight	StreetLight Data
SW	southwest
SWTP	Statewide Transportation Plan
TDM	travel demand model
TMDL	total maximum daily load
TN	Tennessee
TRIP	Transportation Regionally Innovative Projects
TSMO	Transportation Systems Management and Operations
TVA	Tennessee Valley Authority
U.S.C.	United States Code
UA	urbanized area
US	United States
USDA	United States Department of Agriculture
UST	underground storage tank
U.S. Highway	U.S. Highway
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geologic Service
VMT	vehicle miles traveled
v/c	volume-to-capacity ratios (a measurement of traffic)
W	west
WB	westbound
WMA	Wildlife Management Area
WOTUS	Waters of the United States
WQS	water quality standards
WSS	Web Soil Survey

Executive Summary

The Tennessee River Bridge Feasibility Study was commissioned by the City of Decatur to assess both the need for, and potential locations of, either a new Tennessee River crossing, a southbound replacement bridge, or improvements/repairs to the existing bridge over the Tennessee River.

The Project Team, comprised of the City of Decatur, Decatur Area Metropolitan Planning Organization, TTL, Inc., Jacobs Engineering, and Pugh Wright McAnally, Inc. (collectively referred to as the Project Team) reviewed extensive data, including previous work completed by the City of Decatur and related transportation plans that documented current and projected transportation needs, and now present the following options.

The existing corridor remains in all scenarios with several versions of improvements. These are included in the Feasibility Study Decision Matrix as **Alignments A, B, C and D.**

- **Alignment A** is a "No Build" option and represents the existing conditions.
- **Alignment B** includes adding a southbound causeway lane as well as improvements to the Y-Interchange located further to the east.
- **Alignment C** includes creating an on and off ramp at Wilson Street NE (west of the bridge), as well as improvements to the Y-Interchange located further to the east.
- **Alignment D** includes widening the bridge as well as improvements to the Y-Interchange.

In addition to the four bridge alignments, six new river crossing alternative alignments are provided for consideration and include Alternatives 25, 30, 31, 32, 33, and 35.

To arrive at these findings, the team examined readily available data regarding the existing conditions within the Study Area as well as data collected from a recent traffic model that also was prepared by the Project Team. Existing conditions regarding current structures and road networks, expected soil conditions, timely navigational information, and recent environmental resources also were examined by the Project Team. All of this was done to meet the established purpose and need of the Tennessee River Bridge Feasibility Study and reach educated and informed decisions regarding which potential solutions would be best for the future of Decatur.

The 137-square-mile Project Study Area is bound by the town of Tanner, Alabama to the north, Interstate 65 to the east, and State Route 20 to the west and south. The Project Team used the Planning and Environmental Linkages process, which focused on early engagement with agencies, stakeholders, and the public, as a planning guide for the Tennessee River Bridge Feasibility Study.

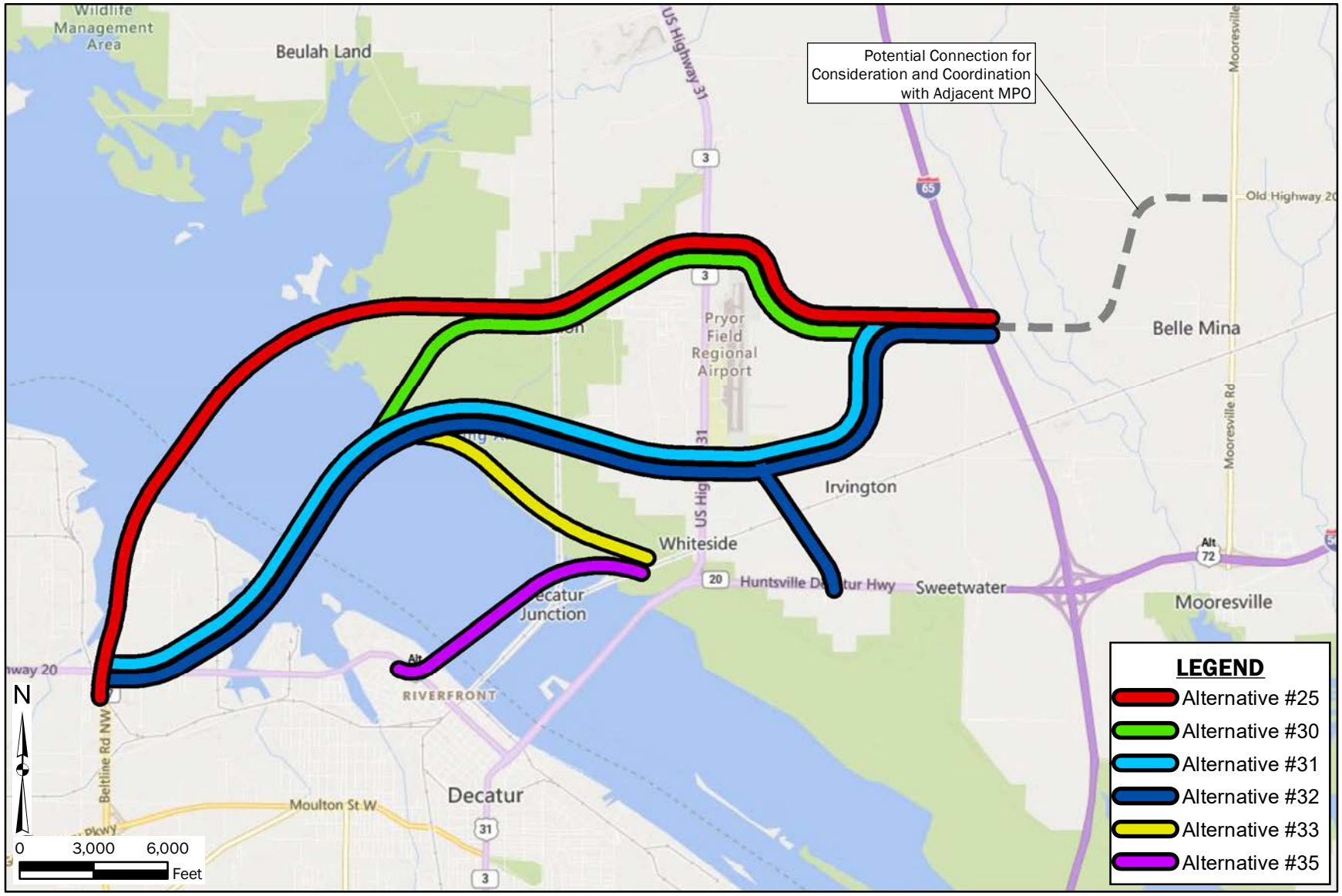
While researching existing conditions, the Project Team established a framework to coordinate and document interactions with various agencies, interested Native American tribes, stakeholders, and the public. Information, research, as well as the goals and the purpose and need statements were shared with these parties on multiple occasions via Microsoft Teams meetings, emails, telephone calls, and in-person sessions.

The Project Team also reviewed environmental resources in the Project Study Area and provided a desktop review of their potential impacts by the existing and alternative corridor alignments. Additionally, various permits and coordination with federal and state agencies are anticipated for future phases of the Project, with the lead federal agency expected to determine the National Environmental Policy Act of 1969 class of action for these.

Alternate locations for a bridge crossing were suggested from multiple sources. These included the public (during the first public involvement meeting), previous traffic studies, and the Project Team itself. The various Tennessee River crossings were referred to as "alignments," and more than 50 alignments were examined and eventually reduced to the six that were then referred to as the Alternative Corridor Alignments.

The goal of the Tennessee River Bridge Feasibility Study was to determine if there were feasible solutions to the current traffic problems. Initially, the Project Team examined the U.S. Highway 31/U.S. Highway 72 Alternate/State Route 20 bridges southbound into the City of Decatur. Multiple deficiencies were identified with the bridges and it was determined that the existing

Figure: ES-1: Alternative Corridor Alignments



corridor is over capacity and in need of improvement. Three bridge scenarios – plus one no build scenario – were created as a solution to improve congestion associated with the existing bridge crossings. After further examination of alternatives, it was determined that even with these proposed improvements, these scenarios did not adequately address the congestion problems.

Instead, an additional, feasible Tennessee River crossing would need to be explored.

Throughout the process, the Project Team was guided by the purpose of the Project – relieve congested traffic conditions, increase corridor capacity, and maintain regional connectivity between the Decatur Metropolitan Statistical Area and the Huntsville Metropolitan Statistical Area – as well as the purpose and need statement, which included key items such as: relieve congested conditions, increase corridor capacity, maintain regional connectivity, provide dedicated bicycle and pedestrian access, and address route deficiencies.

Choosing the best alternatives to meet the goals, purpose and need of the Project were of utmost importance to the Project Team.

The team used a Feasibility Study Decision Matrix to evaluate the viability of feasible alternatives based on multiple criteria. With this, the team was able to compare different options and identify potential risks and benefits of each proposed alternative through a uniform grading system where potential impacts from each alternative were rated as low, moderate, or severe, and the benefits from each rated as good, better, best, or “no impact.” Using this grading rubric, the Project Team prioritized better rated alternatives and carried them into the next planning phase of the Feasibility Study for further development and screening.

Over time, the processes evolved and, ultimately, the Project Team prepared a multi-pronged solution with feasible alternatives that would provide relief to current traffic congestion issues as well as provide long-term traffic solutions to future traffic demands.

The Project Team’s vision of providing a feasibility study containing sufficient information to aid in identifying the best multimodal transportation solution for the City of Decatur has proven successful. For the future, the Project Team envisions a successful National Environmental Policy Act of 1969 process that will build upon the information gathered from the Planning and Environmental Linkages Checklist. Ultimately, the Project Team envisions a safe, aesthetically pleasing, multimodal corridor providing access to and from Decatur.

1.0 INTRODUCTION

The City of Decatur (City or Decatur) commissioned the Tennessee River Bridge Feasibility Study (Feasibility Study) to assess both the need and potential locations for either a new Tennessee River crossing, or a southbound (SB) U.S. Highway 31/ U.S. Highway 72 Alternate/State Route 20 (existing corridor) replacement bridge (or improvements/repairs to the existing bridges) over the Tennessee River. As the Project Sponsor, the City was very engaged in the decision-making process and worked very closely with the Project Team. The Project Team conducting the Feasibility Study is comprised of the City of Decatur, Decatur Area Metropolitan Planning Organization, TTL, Inc., Jacobs Engineering, and Pugh Wright McAnally, Inc. (collectively referred to as the Project Team).

1.1 Definition of Project Study Area

The Project Study Area, a roughly circular shape, includes portions of Lawrence, Morgan, and Limestone counties (in Alabama) with the Tennessee River crossing through the center. The Project Study area boundaries were initially determined as the following: south - to follow along the existing US Hwy 72 Alt/SR-20 from the I-565 interchange to Beltline Road (a major thoroughfare on the western limits of the City); east - to follow along I-65; and north - to extend to Exit 347 (Huntsville Brownsferry Road) on I-65 (as this interchange is undergoing improvements). The northern boundary was then extended westward towards the Tennessee River and Beltline Road avoiding the TVA Browns Ferry Nuclear Plant. Once these preliminary boundaries were determined, the final Project Study Area was developed by expanding these original limits by one-mile in all directions to allow a more complete evaluation of resources and conditions. A figure depicting the 137-square-mile Project Study Area is provided below as Figure 1.1-1. An aerial image of the surrounding area and downtown Decatur is provided below as Figures 1.1-2 and 1.1-3.

The Project Study Area is bound by the town Tanner, Alabama (AL) to the north, Interstate 65 (I-65) to the east, and by U.S. Highway 72 Alt/State Route 20 to the west and south.

The Tennessee River runs through the center of the Project Study Area. The existing corridor and I-65 provide passage across the Tennessee River. Currently, the “Steamboat Bill” Memorial Bridges (existing corridor bridges), located along the existing corridor, span one of the widest points along the Tennessee River between Morgan and Limestone counties. The southbound (SB), cantilever truss bridge, constructed in 1963, is nearing the end of its life expectancy. The adjacent northbound (NB) bridge was constructed in 1999. Together these bridges are part of the Appalachian Development Highway System (ADHS) known as Corridor V. The set of bridges provide the only direct route into and out of the downtown area of Decatur. I-65 also provides passage across the Tennessee River and is located along the southeastern portion of the Project Study Area. The set of Steamboat Bill Bridges provides overflow traffic when incidents or lane closures occur on the neighboring I-65 bridge.

Once the Project Study Area was defined and shared with the public, the Project Team focused on developing logical termini points within it. Code of Federal Regulations (CFR) 23 CFR 771.111(f) states any action evaluated under the National Environmental Policy Act of 1969 (NEPA) must connect logical termini. Logical termini are defined as the rational end points for a transportation project. The logical termini then provide rational end points for the review of environmental impacts of the Project. Logical termini must also be of sufficient length to address environmental matters, have an independent utility, and not restrict consideration of alternatives for other reasonably foreseeable transportation improvements. Independent utility means the project will be usable once completed and not be dependent on completion of another project to be usable.

Since it is the intent for this Feasibility Study to be utilized in future NEPA compliance efforts, an independent utility analysis for the termini points was conducted. Determination of the logical terminus locations were based on public input, current traffic count data, and the desire of the City to provide an alternative route to truck traffic that does not have business in the downtown area.

Figure: 1.1-1: Project Area Located in Northern Alabama

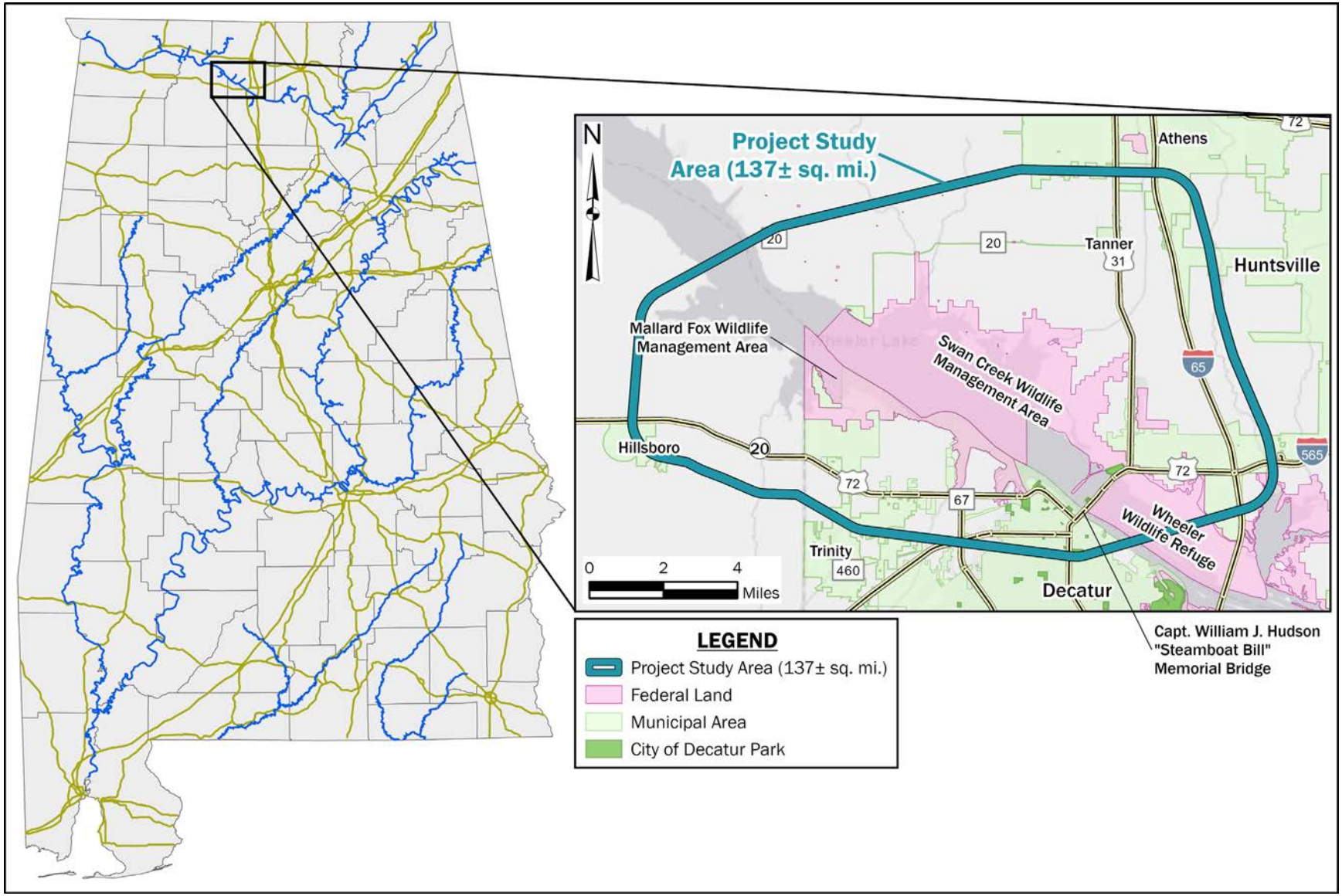
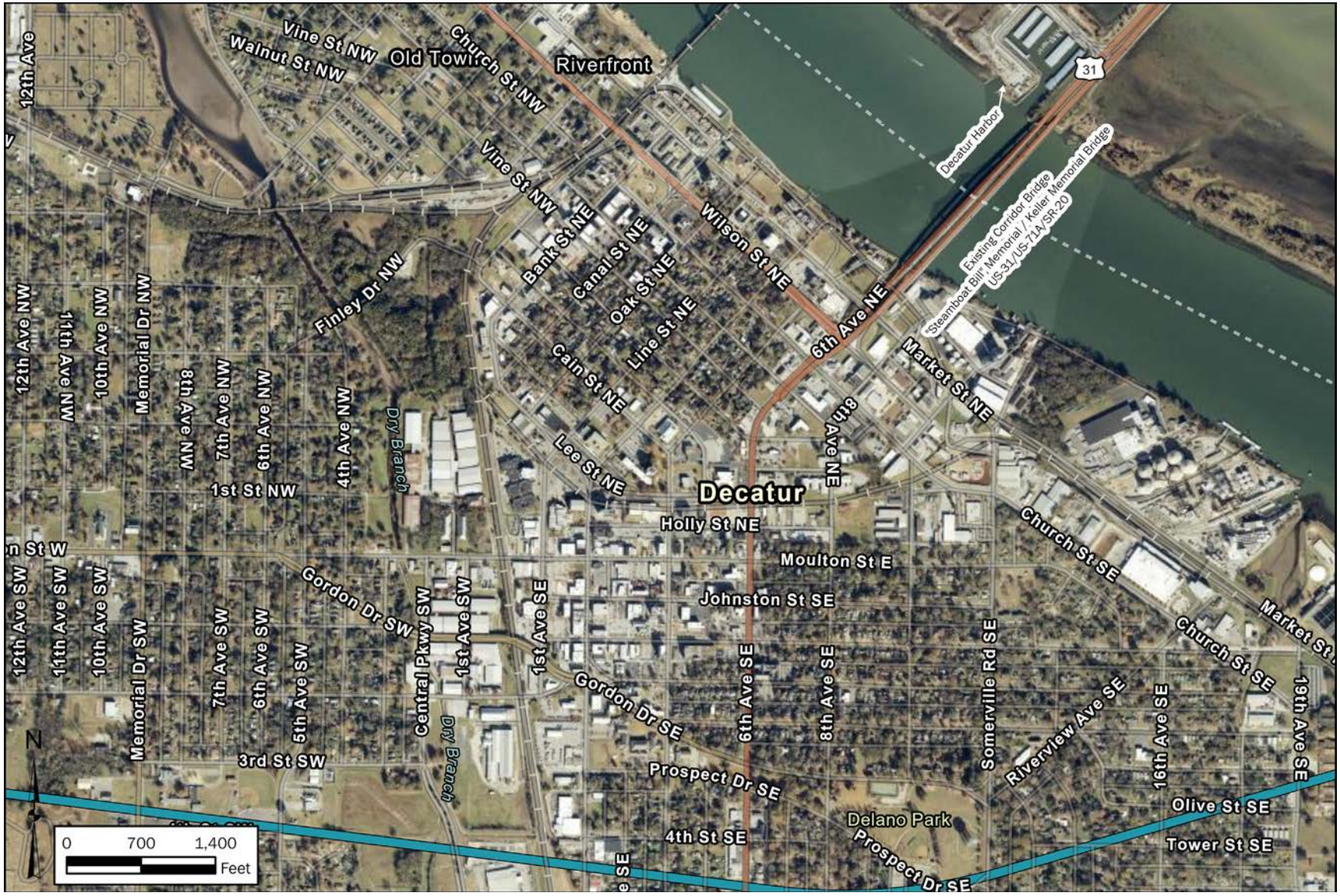


Figure 1.1-2: Aerial Photograph of Surrounding Area

Figure 1.1-3: Aerial Photograph of Downtown Decatur



Logical termini were established by the Project Team after the first Public Involvement Meeting (PIM). The southern terminus (on the south side of the Tennessee River) is located west of the downtown area, at the intersection of U.S. Highway 72 Alternate (U.S. Hwy-72 Alt/SR-20) and Beltline Road Northwest (NW)/SR-67. The northern terminus (on the north side of the Tennessee River) is located at the intersection of Interstate 565 and I-65.

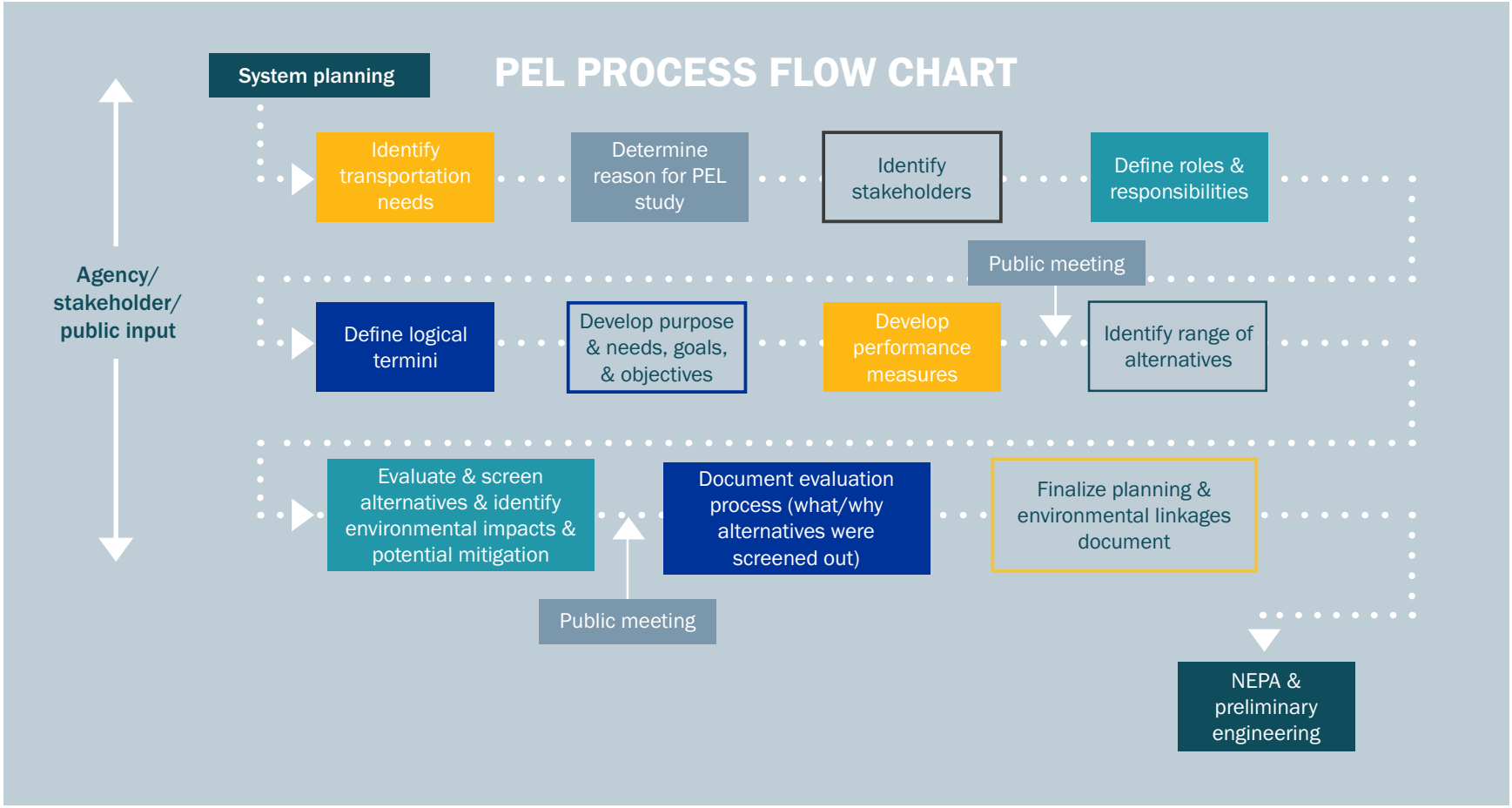
1.2 Planning Context

The Project Team used the Planning and Environmental Linkages (PEL) process as a planning guide for the Feasibility Study. The PEL process focused on early engagement with agencies, stakeholders, and the public as information was compiled for the Feasibility Study. The data gathering process included a review of previous work performed by the City to alleviate traffic congestion, as well as reviewing related studies that documented current and future traffic transportation needs. The data gathered is intended to be used during future NEPA processes.

1.2.1 Planning and Environmental Linkage Approach

A process known as PEL was used to accomplish the goals for the Feasibility Study. PEL is a collaborative process that is initiated early in transportation planning by incorporating environmental and community values into transportation decisions. The PEL process includes early engagement with agencies, stakeholders, and the public on the Project's purpose and need, potential alternatives, and impacts to the community and environment. The PEL process was used as the study approach because it gathers data that can be used during the NEPA process when (and if) the Project moves to the next step of establishing final design decisions to construct one of the proposed alternatives. NEPA prescribes the evaluations that are required for all projects that have a federal component such as federal funding or necessary federal permits. The PEL process provides an efficient way to identify and indicate potential NEPA required evaluations during a project's planning phase. The Project Team coordinated with the lead federal agency, the Federal Highway Administration (FHWA), and followed the PEL process such that these initial planning and evaluation efforts may be adopted by FHWA during the NEPA process.

Figure 1.2.1-1: PEL Process Flow Chart



The PEL process for the Feasibility Study included the following components:

Data Collection: The Project Team collected data to document traffic and environmental existing conditions that will be instrumental during the NEPA process.

Purpose and Need Development: The Project Team developed the purpose and need statement that will be incorporated into the NEPA process.

Agency Coordination/Involvement: The Project Team coordinated with the FHWA and the Alabama Department of Transportation (ALDOT) to identify and coordinate with appropriate federal, state, local, and tribal agencies with jurisdiction or special expertise in human and environmental considerations within the Project study area.

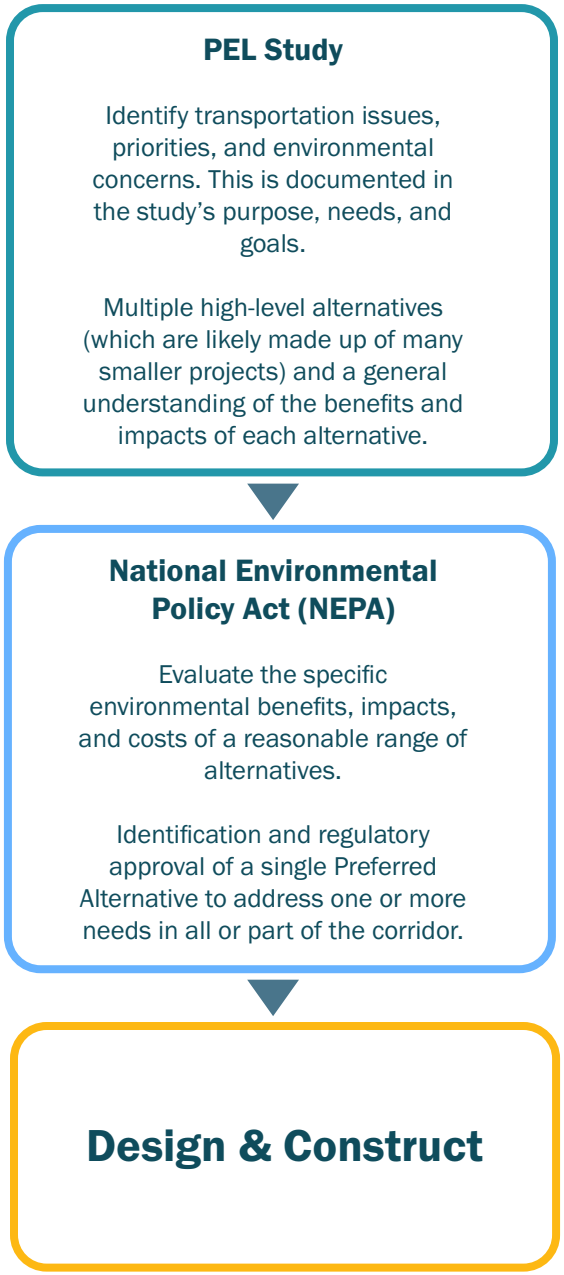
Stakeholder Involvement: The Project Team conducted small group meetings with stakeholders to solicit input about the Project and bolster working relationships in advance of the NEPA process. A list of the stakeholders can be found in Appendix A.

Public Involvement: The City, in coordination with the Project Team, hosted two PIMs to inform the public about the Project and gather feedback on the purpose and need as well as proposed alternatives.

Documentation: The Project Team provided this Feasibility Study that analyzes the proposed alternatives and potential impacts. This Feasibility Study documentation includes outreach activities and is able to link planning to the environmental review process.

Lead Agency Review and Involvement: The Project Team coordinated with the lead agency, FHWA, and followed the PEL process so that the initial planning and evaluation efforts may be adopted by FHWA during the NEPA process.

The FHWA provides a PEL Questionnaire or Checklist to aid in summarizing the PEL efforts. The Project Team completed a PEL Questionnaire which can be found in Appendix B.



1.2.2 Previous Work Performed

The City of Decatur, along with ALDOT, has been exploring various solutions to improve the traffic flow on the major roadways in the downtown area of Decatur and heading out of and into Decatur for many years. Multiple improvements have been recently completed within existing rights-of-way (ROW) in the downtown Decatur area and are briefly summarized below.

US Hwy-31 at SR-20 Improvements:

- Restriped eastbound (EB) approach on SR-20 to triple left turn lanes and one through/right turn lane onto U.S. Highway 31.
- Restriped NB direction on U.S. Highway 31 to three through lanes removing left-turn phase.
- Restriped SB left-turn lane on U.S. Highway 31 to a through movement removing the existing left-turn phase.
- Right-turn only movement westbound (WB) on SR-20 was permitted with yield control. All other WB movements on SR-20 are prohibited and use a new traffic pattern via Church Street Northeast (NE).

SR-20 at Well Street Improvements:

- Restriped to provide combined left-turn/right-turn lane with 100 feet of storage on Well Street. All SB traffic is restricted and will use the new traffic pattern via U.S. Highway 31 and Church Street Northeast.
- Installed a two-phase signal.
- Installed a continuous “T” configuration using bollards to separate the NB left-turns and the WB through approach on SR-20. The WB approach on SR-20 is a free flow.

US Hwy-31 at Church Street Improvements:

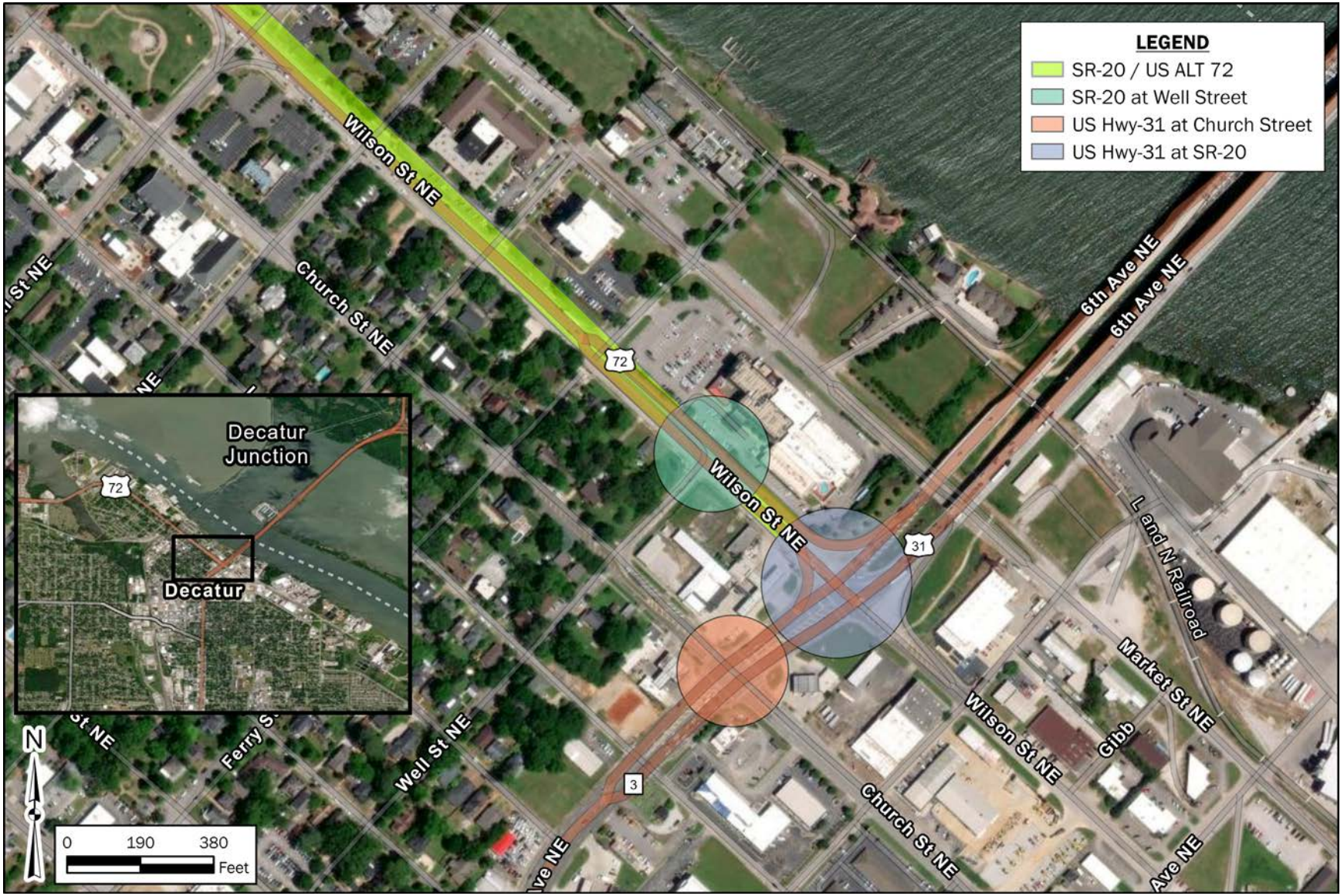
- Restriped to provide dual SB left-turns on U.S. Highway 31. Both left-turn lanes extend back to Wilson Street NE.
- Restriped to provide a NB left-turn lane on U.S. Highway 31 with 225 feet of storage.
- Restriped WB approach on Church Street Northeast to an exclusive left, through, and right-turn lane.
- Restriped EB approach on Church Street Northeast to an exclusive left-turn lane with 125 feet or storage and a through/righ-turn lane.

SR-20 / US ALT 72 Improvements:

- Roadway widening was constructed along the roadway at various locations.
- Safety barriers were installed along the roadway at various locations.

The above projects constitute the maximum improvements possible within the current design parameters for the existing space. The City believes all solutions possible within the existing ROWs have been implemented. Knowing that additional infrastructure updates will be needed in the future (outside of existing ROWs), the City of Decatur has been exploring various funding sources for solutions to the traffic congestion since the early 2000s. The above project locations are provided on Figure 1.2.2-1.

Figure 1.2.2-1: Previous Work Performed



1.2.3 Related Transportation Studies and Projects

A study was performed in 2014 regarding the possibility of a Toll Bridge which did not include federal, state, or city funding. The Project Team reviewed the 2014 study for the current PEL Study. A summary of the 2014 study is provided below.

ALDOT formally presented the concept of a possible toll bridge for a proposed Decatur bridge crossing in June 2014. A presentation was provided by ALDOT at an Industry Forum gathering by the Alabama Toll Road, Bridge and Tunnel Authority, the project sponsor, with ALDOT serving as the coordination agent for the Toll Authority. The project goal was simply to improve traffic flow. Specifically, tolls discussed included a toll bridge over the Tennessee River connecting U.S. Highway 72 Alt in Morgan County (in the south) to SR-20 in Limestone County (in the north). Additional toll lanes, open access through lanes, and interchanges along SR-20 through I-65 also were discussed. During the forum, environmental coordination and permits were discussed with an emphasis on early agency coordination. On May 14, 2014, an early agency coordination meeting was held that provided agencies with a project overview and encouraged their input with a question-and-answer session. Traffic and revenue analysis estimated a total gross revenue from 2018 to 2040 of $662 million and from 2018 to 2052 of $1.469 billion. To date, a toll bridge has not been constructed.

In addition to the 2014 Toll bridge efforts, other studies and plans have been conducted to provide guidance for finding appropriate solutions to Decatur's traffic congestion. **The Decatur Area Metropolitan Planning Organization (MPO) published the 2045 Long-Range Transportation Plan (LRTP) for the Decatur Metropolitan Planning Area (MPA) in May of 2021.**

The LRTP documents current and future transportation needs within the Decatur MPA with the goal of identifying current transportation needs, forecasting future needs, and establishing strategies and projects that address these needs. The base year of the LRTP was 2015 with a horizon year of 2045. ALDOT, FHWA, and the Federal Transit Administration (FTA) developed and analyzed a Travel Demand Model (TDM) that successfully mimics current traffic volumes and patterns and forecasts what these volumes and patterns will be 25 years in the future.

The objectives for the LRTP include developing highways and streets that are consistent with local land use and development plans, increase connectivity, develop highways and streets that relieve traffic congestion and travel times, reduce accident potential and severity, include sidewalks and bicycle facilities in the design of highways and streets to accommodate and encourage pedestrian and bicycle travel, and develop visually attractive highways and streets.

One of the roadways examined in the LRTP was the existing corridor, which is a focal point of the Feasibility Study and associated PEL Questionnaire. Using the data from the projected forecasts of the TDM, the LRTP predicts the future traffic for the existing corridor to have a Level of Service (LOS) grade of "F" in the year 2045. LOS F is described as "Forced Flow" with "very low speeds, volumes exceed(ing) capacity, long delays with stop-and-go traffic." The LRTP further states that the planning area currently has two bridges that cross the Tennessee River. The TDM predicts the bridges will be over capacity before 2045, and the MPA will likely need another bridge to relieve congestion. The Project Team has reviewed the LOS grade of F for the existing corridor and has examined multiple alternatives, including repairs and adjustments, to the current bridge that crosses the Tennessee River. Other alternatives have been considered as well, such as new builds that cross at different locations of the Tennessee River to alleviate the over congestion of the existing corridor. Since the LRTP is from May 2021, the Decatur Area MPO representatives provided an updated list of their current and planned projects. The following list of projects was obtained from the Decatur Area MPO and are located within the Project Study Area. The list is in no particular order.

Table 1.2.3-1: Decatur Area MPO 2045 LRTP Projects

Description:	Location:	Status:	Estimated Completion Date:	Possible Impact to Alternatives Proposed in the Feasibility Study:
Roadway Lighting Rehabilitation	SR-20 (U.S. Highway 31) between Market Street and a half-mile north of the Riverwalk Marina.	Planned	2023	Yes
Street Closing	Line Street and Ferry Street at SR-20 (U.S. Highway 72 Alt).	Long-range project. No project number assigned.	None assigned	Yes
Sidewalk Project	Along SR-3 (U.S. Highway 31/Sixth Avenue) between Moulton Street and Wilson Street	Planned, Project number assigned.	2023	No
Street Resurface Project	SR-3 (U.S. Highway 31) between 0.10 miles south of SR-67 and the existing corridor bridges.	Long-range project. No Project number assigned.	None assigned	No
Street Resurface Project	Gordon Drive Southwest/ Southeast between West Mouton Street and Fourth Avenue Southeast.	Long-range project. No project number assigned.	None assigned	No
Street Resurface Project	Central Parkway Southwest from Gordon Drive and Beltline Road Northwest.	Long-range project. No project number assigned.	None assigned	No
Street Resurface Project	County Road 684 (CR-684) (Church St NE) from Somerville Rd to Riverview Ave.	Long-range project. No project number assigned.	None assigned	No
Street Resurface Project	CR-684 (Church Street Northeast) between Somerville Road and Riverview Avenue.	Long-range project. No project number assigned.	None assigned	No
Pavement Rehabilitation Project	SR-20 (U.S. Highway 72 Alt) between milepost (MP) 67.147 east of railroad spur and milepost 68.600 west of the bridge over the railroad.	Long-range project. No project number assigned.	None assigned	No
Street Resurface Project	SR-3 (U.S Highway 31) between Thomas L. Hammons Road and SR-304. This project is located on the north side of the Tennessee River.	Authorized. Project number has been assigned. Classified as a “preventative maintenance level 2”	2022	No

Table 1.2.3-1: Decatur Area MPO 2045 LRTP Projects (cont.)

Description:	Location:	Status:	Estimated Completion Date:	Possible Impact to Alternatives Proposed in the Feasibility Study:
Street Resurface Project	SR-3 (U.S. Highway 31) between 0.10 miles south of SR-67 and the Tennessee River Bridge.	Long-range project. No project number assigned.	None assigned	No
Advanced Corridor Management is Planned	Advanced corridor management planned for Transportation Systems Management and Operations (TSMO) on I-65 between SR-67 (milepost 334) to SR-3 (U.S. Highway 31/milepost 354). This project is located on the north and south sides of the Tennessee River.	Long-range project. No project number assigned.	None assigned	Yes
Sidewalk Project	Beech Street, 14th Avenue, Seventh Street, Eighth Street Southeast, 19th Avenue Southeast, and 16th Avenue Southeast.	Long-range project. No project number assigned.	None assigned	No
Street Resurface Project	Resurfacing on North Seneca Drive between Old Highway 24 and SR-20 (U.S. Highway 72 Alt).	Long-range project. No project number assigned.	None assigned	No

Additional plans were established to guide future projects for the Decatur area. **The City of Decatur Comprehensive Plan (One Decatur)** is a comprehensive plan adopted by the Decatur City Council in February 2018. The plan describes the City's future goals, current challenges, and current and future opportunities. There has been no formal growth strategy as the City's population has been stagnant and likely has declined. Citizens are concerned that the appearance of the City's major corridors and gateways do not create a positive impression and believe improving the City will provide a lasting impression on visitors while enticing people to visit and move into Decatur. One Decatur includes a conceptual development strategy that includes enhancing major corridors and gateways. Encouraging new mixed-use development, improving the appearance of public and private development, and enhancing safety along primary corridors to promote a positive impression of the City are of upmost importance in One Decatur. The plan specifically states that development should improve aesthetics, better accommodate traffic flow, and offer safe opportunities to access sites by walking, bicycle, and public transportation. Fourteen percent of the ideas brought forward by the Decatur public pertained to transportation in some way. One Decatur specifically mentions improvements at the intersection of I-65 and I-565 as well as a desire to redefine the Sixth Avenue gateway. One Decatur discusses the existing corridor bridge crossing as the only major route into and out of downtown Decatur and the resulting traffic bottlenecks associated with peak traffic periods. One

Decatur further states that long-term solutions to the bridge and downtown traffic flow should be considered in the future. These aspects of One Decatur coincide with the purpose and need of the Feasibility Study. The One Decatur report also mentions creating a tree planting and street tree replacement program as well as improving downtown mobility. Given the importance of aesthetics in development, the City of Decatur can promote these principles during the design phase of the preferred alternative once selected.

The 2015 Bicycle and Pedestrian Plan (BPP), adopted in January 2015, is a Decatur Area MPO document that contains bicycle and pedestrian guidance without regard to any specific roadway. Title 23 of the United States Code (U.S.C.) requires that bicycle and pedestrian facilities be considered on all transportation projects. Additionally, the Americans with Disabilities Act (ADA), requires new pedestrian facilities that are being constructed (or undergoing improvements/modifications) be compliant with the ADA Accessibility Guidelines for Buildings and Facilities (ADAAG). The Decatur Area MPO aims to invest in planning directed at the development of "Complete Streets." These are streets "designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. A Complete Street makes it easy to cross the street, walk to shops, and bicycle to work and includes normal travel lanes, sidewalks, bicycle lanes, paved shoulders, crosswalks, median islands, pedestrian signals, and roundabouts. Once a preferred alternative evolves from the proposed alternatives (suggested in the Feasibility Study), the City can consider Complete Street design parameters in order to be compliant with the BBP goals.

The **ALDOT Statewide Transportation Plan (SWTP)**, completed in July 2017, culminated a one-year effort by ALDOT Bureau of Transportation Planning and Modal Programs to update the long-range SWTP. The plan documents the existing and projected travel and maintenance conditions of Alabama's transportation infrastructure through 2040. The plan, guided by federal regulations, is a multimodal plan that includes roadways and bridges, transit, bicycle/pedestrian, rail, aviation, and waterways, and addresses the needs of residents, visitors, and businesses. Multiple significant capacity improvements planned prior to 2040 were listed in the plan. However, none appeared to be located within the Project Study Area.

Since the Project Study Area extends into the Huntsville area, the Project Team examined the **Year 2040 Transportation Plan Final Huntsville Area Transportation Study (HATS).** This document, dated March 2015 and amended December 2016, was prepared by the City of Huntsville Planning Division in Cooperation with the ALDOT Bureau of Transportation Planning. The HATS is a comprehensive review of the area transportation network and modes of urban mobility, resulting in the identification of projects and the programs to be implemented. The study states that the predictability of future traffic flow is best determined by travel demand modeling or transportation modeling, which looks at the mathematical relationships between socio-economic data and trip-making. The plan has an extensive list (and maps) of planned projects. The Project Study Area for the Feasibility Study overlaps areas of the Huntsville project area. Several corridor improvements are planned that intersect with I-65 and I-565; however, none appear to intersect with the proposed alignments. The following projects were exported from the HATS and appear to be located near or somewhat near the end points of some of the proposed alignments (on the western side of Huntsville).

Table 1.2.3-2: 2040 HATS Transportation Projects

Description:	Location:	Status:	Estimated Completion Date:	Possible Impact to Alternatives Proposed in the Feasibility Study:
Greenbrier Parkway, Phase 3. (see pg. 73/620)	North of I-565 to Old Highway 20.	Long-range Project. (Project Number 21)	Appears to be completed, however, remains in Long-range plans. May have expansion plans in 2040. Greenbrier not seen in 2019 aerial photography.	Yes
Greenbrier Parkway, Phase 2.	Old Highway 20 to 5,000 feet north of Old Hwy 20.	Long-range Project. (Project Number 22)	Appears to be completed, however, remains in Long-range plans. May have expansion plans in 2040. Greenbrier not seen in 2019 aerial photography.	Yes
Greenbrier Parkway Phase 4.	From 5,000 feet north of Old Highway 20 to Huntsville-Browns Ferry Road.	Long-range Project. (Project Number 23)	Appears to be completed, however, remains in Long-range plans. May have expansion plans in 2040. Greenbrier not seen in 2019 aerial photography.	Yes
Old Highway 20, Phase 1. (see pg. 78/620)	From County Line Road (CR-3) to Segers Road.	Long-range Project. (Project Number 70)	None assigned	Yes
Old Highway 20, Phase 2.	From Segers Road to Greenbrier Road (CR-115).	Long-range Project. (Project Number 71)	None assigned	Yes

The following project was exported from the on-line City of Huntsville Geographic Information System (GIS) Database obtained via their public website.

Table 1.2.3-3 City of Huntsville GIS Database Transportation Projects

Description:	Location:	Status:	Estimated Completion Date:	Possible Impact to Alternatives Proposed in the Feasibility Study:
A City of Huntsville/Federal Highway Project.	Located along I-565 just east of I-65.	Upcoming. Estimated cost of $23,293,894. Project number is 35555	None assigned	Yes

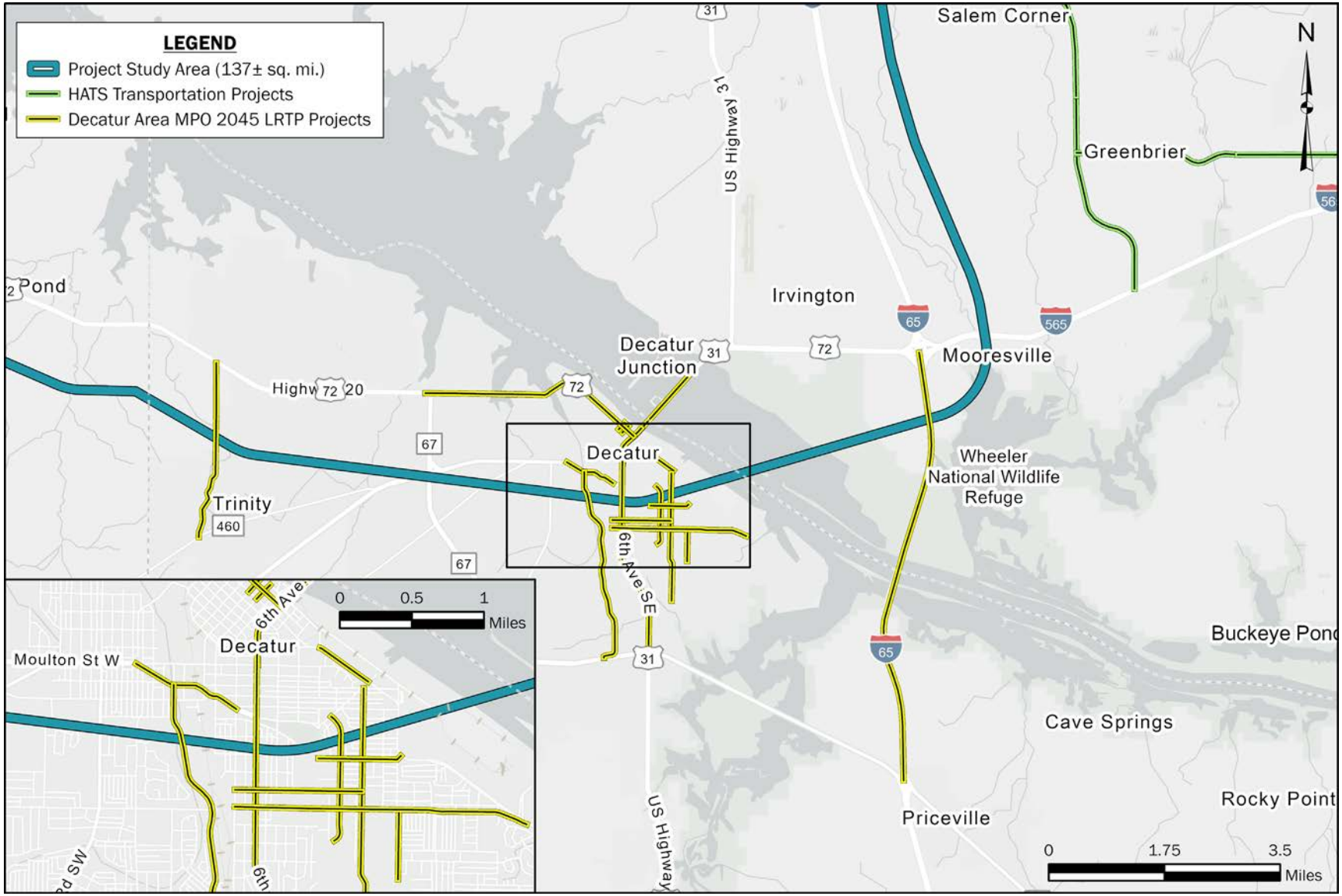
The **Transportation Regionally Innovative Projects (TRIP) 2045**, is a LRTP prepared by the City of Huntsville Area Planning Division and the Huntsville Area MPO. Funding was provided by the FHWA. This report contains both highway and transit projects. The Huntsville Area MPO made an effort to incorporate livability principles into the document by including bicycle and pedestrian facilities and coordinating with local governments on the land use impacts of proposed projects. Multiple projects are discussed in the report, but select projects are mentioned below that may impact proposed alignments and proposed improvements for the Decatur area.

ADHS was established in 1965 and annually receives dedicated funding for its projects from Congress. Georgia, Alabama, and Mississippi make up the southern portion of the ADHS and Alabama has three corridors: V, X, and X-1 within the ADHS. The Decatur bridge crossings are situated within Corridor V of the ADHS, which is west of I-65. This portion of Corridor V is classified as ADHS Miles Open to Traffic. According to ADHS Completion Plans, Alabama should have their ADHS projects completed in full by April 2045.

Table 1.2.3-4: TRIP 2045 Projects

Description:	Location:	Status:	Estimated Completion Date:	Possible Impact to Alternatives Proposed in the Feasibility Study:
Widening of I-565 to six lanes	From County Line Road to Wall-Triana Highway	Number 1 ranked Visionary Project.	None assigned	Could potentially affect traffic wait times on U.S. Highway 72 Alt leaving Decatur
Widening of I-565 to eight lanes	From Wall-Triana Highway to Madison Boulevard Crossover	Number 2 ranked Visionary Project.	None assigned	Could potentially affect wait times on U.S. Highway 72 Alt leaving Decatur
Interchange Modifications	From Madison Boulevard to Alabama Highway 255	Number 3 ranked Visionary Project.	None assigned	Could potentially affect wait times on U.S. Highway 72 Alt leaving Decatur
Memphis to Huntsville to Atlanta Highway	A new road will be created from I-65 to I-565	A non-ranked Visionary Project.	None assigned	Could potentially be accessed from one of the alternatives that join I-65.
Memphis to Huntsville to Atlanta Highway	A new road will be created from Arsenal East Connector to Marshall County	A non-ranked Visionary Project.	None assigned	Could potentially be accessed from one of the alternatives that join I-65.

Figure 1.2.3-1: Related Transportation Studies and Projects



1.3 Existing Conditions

The Project Team examined readily available data regarding the existing conditions within the Project Study Area and data collected from a recent traffic model prepared by the Project Team. Existing conditions for the bridges currently providing passageway across the Tennessee River, as well as existing road networks and traffic data, are documented below. Expected soil conditions, as predicted by the Project Team geologists and geotechnical engineers, are provided in this section. Existing navigational information as well as environmental resources are also presented below. A review of these existing conditions allowed the Project Team to make educated, informed decisions regarding which river crossings solutions would offer the most relief from traffic congestion and be the best solution for the future of Decatur.

1.3.1 Structures

Decatur's economy includes highly technical companies and manufacturing facilities that depend on both cargo transit and transportation of workers. Workers come into Decatur from surrounding areas and goods travel from Decatur to Athens and Huntsville or from Decatur to the Tri-Cities area of Tuscumbia, Sheffield, and Muscle Shoals, and beyond. The existing bridges and roadway networks are of vital importance to the citizens of Decatur and the local economy. The existing bridges and roadway network within the Project Study Area make it possible for employees to get to work and goods to get to the world. Currently, there is a 50-mile reach of river miles with only two sets of roadway crossings. These river crossings include the I-65 river bridges situated just north of Priceville and the existing corridor bridges in Decatur.

1.3.1.1 Existing Corridor Bridges over the Tennessee River

The U.S. Highway 72 Alt corridor is a major east-west route through the Project Study Area and across northern Alabama, providing direct access from Huntsville through Decatur and on to the Tri-Cities area of Tuscumbia, Sheffield, and Muscle Shoals. U.S. Highway 31 is the major north-south route through the Project Study Area providing direct access to Athens. These two corridors merge together in the northern part of Decatur to traverse the Tennessee River.

The original river crossing into Decatur was built in 1928 with an earthen causeway extending more than a mile to the Keller Memorial Drawbridge over the shipping channel. In 1963, the Capt. William J. Hudson "Steamboat Bill" Memorial Bridge was constructed as a replacement. This bridge is a steel cantilever truss bridge which spans over the shipping channel. The bridge deck and rails were re-constructed in 1997. This bridge is currently listed as functionally obsolete due to a lack of sufficient shoulder widths.

In the late 1990s as Decatur experienced continued growth and the traffic demands grew, a parallel concrete girder bridge was deemed necessary and was constructed in 1996. This two-lane bridge became the NB travelway (leaving downtown Decatur) and the existing 2-lane truss bridge became the SB travelway (entering downtown Decatur).

Approximately mid-river, between the two earthen causeways, is another set of bridges. These concrete girder bridges were constructed in 1995 and 1997 and join the earthen causeways while serving as relief bridges for high water flows on the Tennessee River.

1.3.1.2 Other Existing Corridor Bridges

There are two minor bridges within the Project Study Area. On the east side of the Tennessee River, at the U.S. Highway 72 Alt/SR-20 and U.S. Highway 31 Interchange (commonly known as the "Y-Interchange"), a single, one-lane flyover bridge provides WB passage for traffic on U.S. Highway 72 Alt/SR-20 heading into Decatur.

The second minor bridge consists of a set of dual bridges situated north of the Y-Interchange where U.S. Highway 31 passes over the Southern Railway railroad. This dual bridge is scheduled for replacement in late 2024.

Located along the eastern boundary of the Project Study Area, I-65 continues south and crosses over the southern boundary of the Study Area. As I-65 continues outside of the Project Study Area, dual bridges cross over the Tennessee River. These major bridges are scheduled for resurfacing and maintenance in 2025.

1.3.1.3 ALDOT Maintenance / Inspection Program

According to the ALDOT Bridge Inspection Manual, bridge inspections are scheduled for every 2 years, unless the structure is deemed fracture critical which would be every year. Inspections follow guidance of National Bridge Inspection Standard, which is referenced in Chapter 4 of the Alabama Bridge Inspection Manual. I would elaborate that the inspection parameters called out in the first paragraph come from the manual.

Other than the U.S. Highway 31 Railroad crossing bridges just north of the Y-Interchange, no other existing bridges in the Project Study Area are scheduled for replacement.

Table 1.3.1.3-1 Existing Structures

Roadway	Location	Direction	Length (Feet)	Width (Feet)	Lanes	Year Constructed	Type	Remarks
Existing Corridor Bridge	Tennessee River (Shipping Channel)	NB	2590	40	3	1996	Concrete Girder	High clearance over shipping channel
Existing Corridor Bridge	Tennessee River (Shipping Channel) – Truss	SB	2500	28	2	1963	Cantilever Truss	Functionally obsolete (side clearance)
Existing Corridor Bridges	Tennessee River (Shipping Channel) decks & rails					1997	Concrete	High clearance over shipping channel
Existing Corridor	Tennessee River (Mid River)	NB	376	40	3	1995	Concrete Girder	Minimal shoulders (2 feet wide)
Existing Corridor	Tennessee River (Mid River)	SB	376	40	2	1997	Concrete Girder	With 10-foot paved shoulder
U.S. Highway 72 Alt/SR-20	Y-Interchange Flyover	SB	315	30	1	unknown	Concrete Girder	Over U.S. Highway 31
U.S. Highway 31	North of Y-Interchange	NB	108	30	2	unknown	Steel Girder	Scheduled replacement in 2024
U.S. Highway 31	North of Y-Interchange	SB	108	30	2	unknown	Steel Girder	Scheduled replacement in 2024

1.3.2.3 Multimodal Road Use

Causeway at Tennessee River

The existing U.S. Highway 72 Alt/SR-20 and U.S. Highway 31 combine together across the Tennessee River as part of the ADHS known as Corridor V. This crossing consists of bridges and earthen causeways. A causeway is defined as a raised path or road that crosses water or wetland. Neither the NB or SB bridges currently have a dedicated bicycle lane or pedestrian sidewalk. There are currently paved shoulders across the causeway that vary from 2 feet to 10 feet wide. The Decatur Harbor/Riverwalk Marina, located along the north side of the bridge, hosts a bicycle and pedestrian path situated along the water's edge.

City of Decatur

Traditional urban bus service is not available in Decatur, Alabama. Therefore, there are no bus lanes within the City. ADA-compliant sidewalks are available on both sides of the streets and roads in many locations within the City. Along the Wilson Street Northeast/U.S. Highway 72 Alt/SR-20 corridor, sidewalks are available between Sixth Avenue Northeast and 12th Avenue Northwest. From that point westward, there are no sidewalks and only narrow, 2-foot wide, paved shoulders are available through Beltline Road Northwest/ SR-67.

The North Central Alabama Regional Council of Governments (NARCOG) provides transit services for the Decatur urban area. NARCOG provides a van ride to citizens of any age by scheduling rides at least 24 hours in advance. The fares are $2 each way and an additional $1 per mile outside of the urban service area. The NARCOG vans travel in lanes used by all vehicles.

There are a limited number of dedicated bike lanes within the City of Decatur.

North of the Tennessee River

Just north of the Tennessee River, the combined route splits, with U.S. Highway 72 Alt continuing north (in an east direction) and U.S. Highway 31 continuing northward. U.S. Highway 72 Alt combines with SR-20 as a limited access route. Both U.S. Highway 72 Alt and U.S. Highway 31 are high speed, four-lane roadways, with no bicycle lanes or pedestrian features provided.

Decatur Area MPO – 2015 BPP

The Decatur Area MPO is currently operating under the 2015 BPP which complies with FHWA requirements. This plan states the following:

- 23 U.S.C 217 states that "Bicyclists and pedestrians shall be given due consideration in the comprehensive transportation plans developed by each Metropolitan Planning Organization and State."
- FHWA guidance on this issue states that "due consideration of bicycle and pedestrian needs should include, at a minimum, a presumption that bicyclists and pedestrians will be accommodated in the design of new and improved transportation facilities. In the planning, design, and operation of transportation facilities, bicyclists and pedestrians should be included as a matter of routine, and the decision not to accommodate them should be the exception rather than the rule. There must be exceptional circumstances for denying bicycle and pedestrian access either by prohibition or by designing highways that are incompatible with safe, convenient walking and bicycling."

1.3.3 Traffic

The following sections provide insight to the existing traffic data as well as recent traffic patterns identified and preferred routes by motorists.

1.3.3.1 Traffic Data

In the 2045 LRTP for the Decatur MPA (May 2021), the Decatur Area MPO identified U.S. Highway 72 Alt/SR-20 as being overcapacity between Church Street Northeast and I-65. The planning area currently has two bridges that cross the Tennessee River. The Decatur Area MPO anticipated that both bridges would be over capacity before 2045.

The existing corridor bridges, which are classified as principal arterials, currently experience approximately 55,000 vehicles per day, 10% of which are trucks. Approximately 75% of trucks using the bridge turn on to, or from, Wilson Street Northeast. Typical afternoon/evening traffic patterns show congestion primarily SB on the existing corridor (towards Decatur) and SB Wilson Street Northeast (see Figure 1.3.3.1-1). Congestion SB on the existing corridor

(towards Decatur) queues as far back as I-65 (approximately 4.5 miles). Congestion on SB Wilson Street Northeast (approaching the existing corridor) queues approximately 1 mile north to the curve intersecting Church Street Northeast. When looking at the U.S. Highway 31 and U.S. Highway 72 Alt/SR-20 interchange, approximately 70% of SB evening traffic that is traveling across the existing corridor bridge towards Decatur is coming from SB U.S. Highway 72 Alt/SR-20 (see Figure 1.3.3.1-2 for turning movement counts at this interchange).

Typical morning traffic patterns show congestion along the same corridors and directions, but with less severity on the existing corridor (towards Decatur). In the mornings, SB traffic on the existing corridor (towards Decatur) experiences queuing half-way across the existing corridor bridge, which is approximately 1 mile. For both AM and PM peak periods, approximately half of the total traffic crossing the existing corridor bridges turns on to, or from, Wilson Street Northeast. Both the SB through and right turning movements at the existing corridor at Wilson Street Northeast have more than 1,000 vehicles per hour (see Figure 1.3.3.1-3 for detailed turning movement counts at the existing corridor intersection at Wilson Street Northeast).

Figure 1.3.3.1-1 Typical Traffic Conditions During Weekday Evenings (screenshot taken from Google Maps at 5 PM on a Wednesday, depicting heavy traffic (red), moderate traffic (orange), and light traffic (green)).

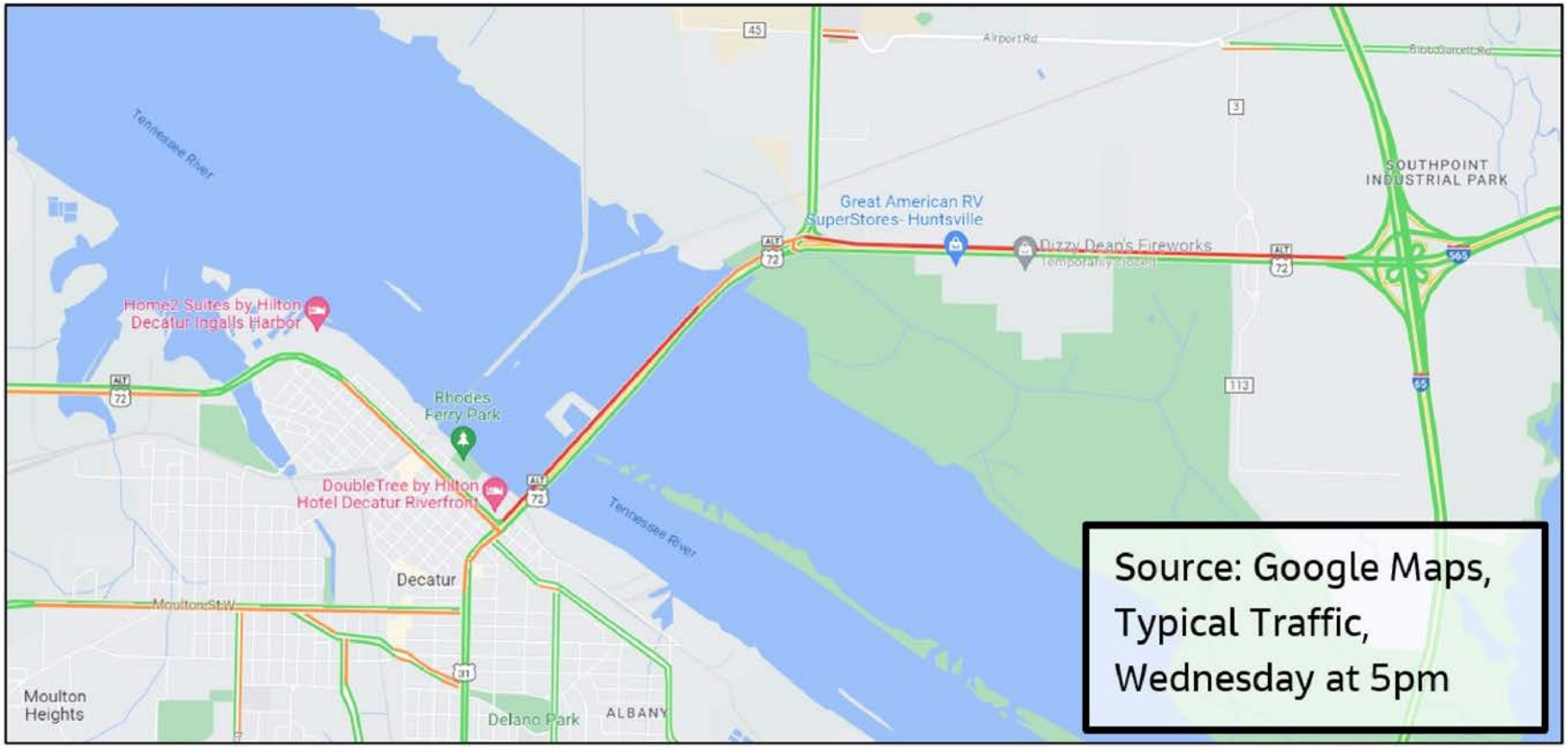
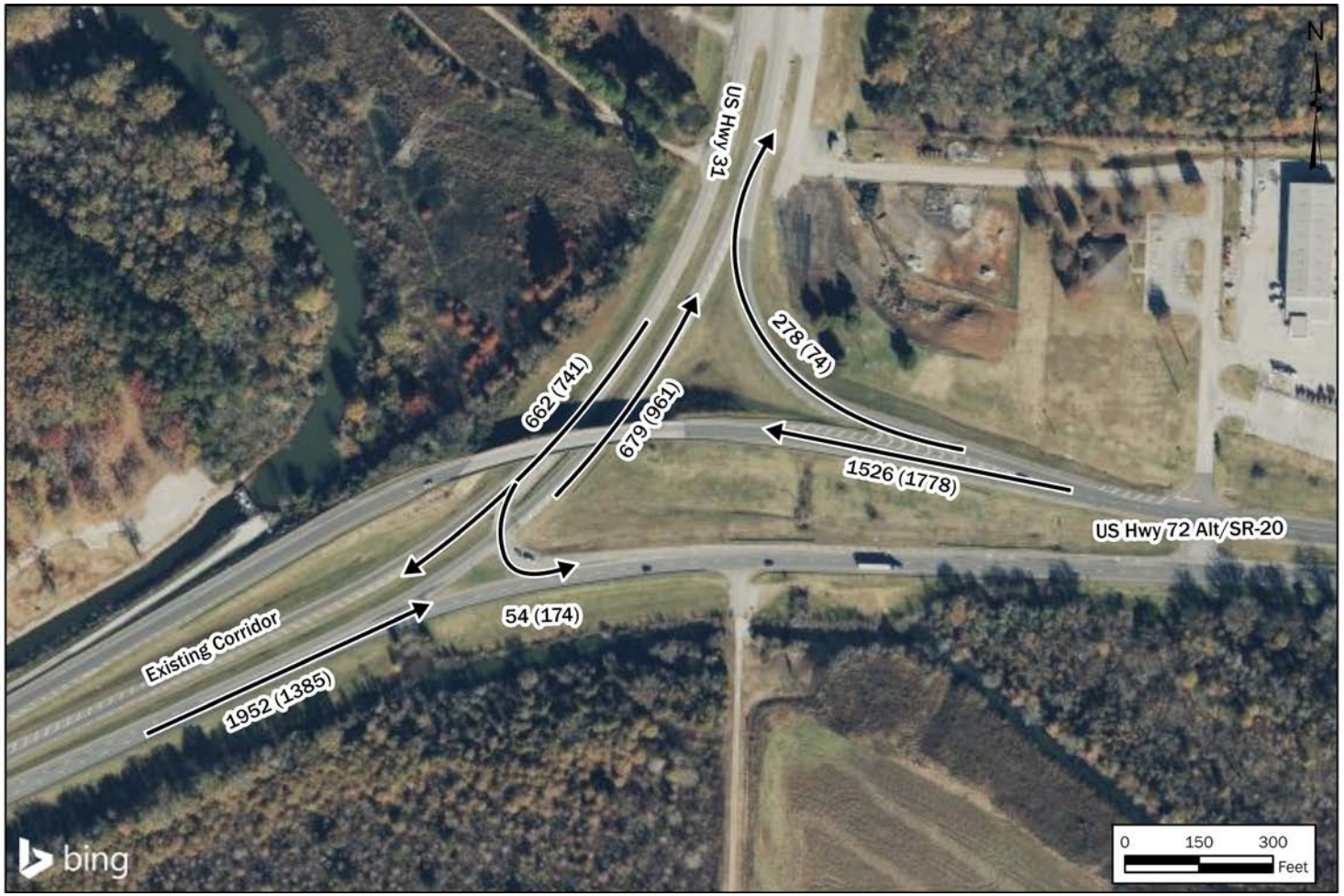


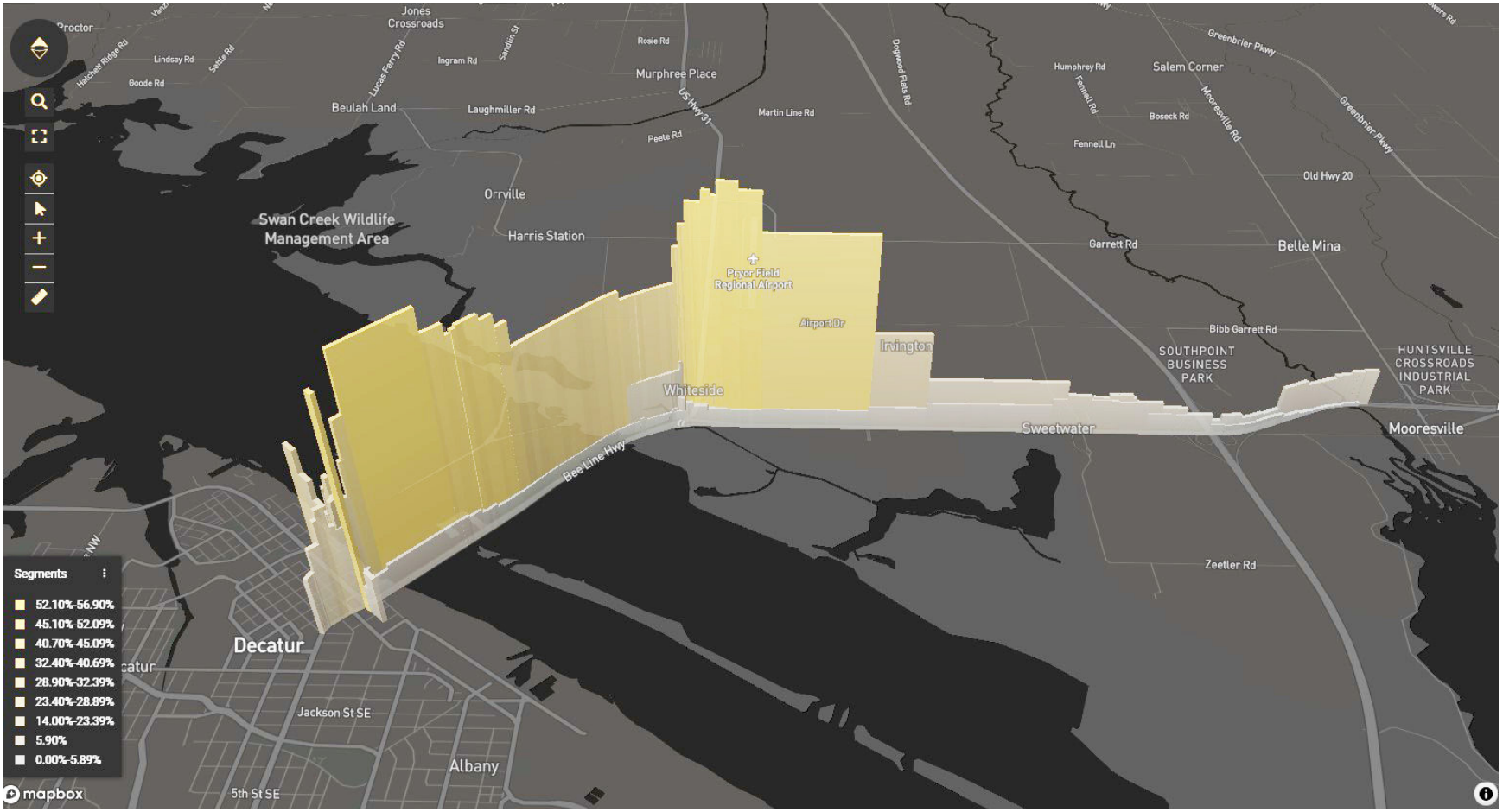
Figure 1.3.3.1-2. Existing Peak Hour Volume for U.S. Highway 31 and U.S. Highway 72 Alt/SR-20 Interchange (AM/PM)



From a metrics perspective, SB Wilson Street Northeast's average weekday delay totals 94 vehicle-hours. Half of the delays occur in the morning and evening peak hours (19% in between 7 AM – 9 AM and 31% between 4 PM – 6 PM). In the evening peak, average travel times increase by 40% and speeds average 23 mph. For the existing corridor (towards Decatur), the average weekday delay totals 279 vehicle-hours. More than half (51%) of these delays occur between 4 PM – 6 PM. Average travel times increase by 91% in the evening peak and speeds average 33 mph. StreetLight Data (StreetLight) congestion data for typical Tuesdays, Wednesdays, and Thursdays in April, May, September, and October 2022 are shown as a three-dimensional (3D) bar chart along the existing corridor (SB direction only) in Figure 1.3.3.1-4. This figure further shows that SB congestion extends past the U.S. Highway 31 interchange. StreetLight Data is a platform that processes transportation data that transforms millions of inputs (cell-phone navigation, GPS, etc.) into aggregated traffic patterns resulting in metrics of origins and destinations.

Figure 1.3.3.1-3. Existing Peak Hour Volume for the existing corridor intersection at Wilson Street Northeast (AM/PM)

Figure 1.3.3.1-4. StreetLight congestion data between Tuesday-Thursday during April, May, September, and October 2022



1.3.3.2 Origin-Destination Pattern of Trips

From the standpoint of traffic patterns, the existing corridor bridges funnel all of the Tennessee River crossing trips. An analysis of 2020 weekday traffic from StreetLight clearly shows preferred routes for both NB and SB trips as well as the distinctive areas from where the trips originate (Origins) to where they are going (Destinations). Figures 1.3.3.2-1 and 1.3.3.2-2 depict the Origins and Destinations (OD) pattern and preferred routes on a typical weekday for the NB and SB movements across the bridge, respectively. In both cases, ODs with highest density of trips are on each immediate side of the Tennessee River (local traffic) and towards the Moulton and Athens areas. A copy of the Origin and Destination Technical Memo is provided in Appendix C.

The highest volumes on the roadway area network are on U.S. Highway 72 Alt/SR-20 and U.S. Highway 31 on the northern side of the Tennessee River, and U.S. Highway 72 Alt and SR-20 in the southern side, with the existing corridor bridges concentrating all the traffic carried by these roads resulting in the identified capacity issues. The data also was analyzed specifically for truck traffic on the bridge.

In the NB direction, the truck OD distribution as well as favored routes show an east-west pattern along U.S. Highway 72 Alt/SR-20. For the SB direction, this pattern is maintained, but there is also traffic on U.S. Highway 31, following a north-south route.

Since both roadways (U.S. Highway 72 Alt/SR-20 and U.S. Highway 31) overlap over the bridge, just like with the general traffic, the heavy trucks volumes carried by each road are added over the bridge, thereby further increasing the overcapacity conditions identified by the Decatur Area MPO.

The “Steamboat Bill” Memorial Bridges in Decatur, AL

Figure 1.3.3.2-1. Typical Weekday NB OD Pattern for All Traffic

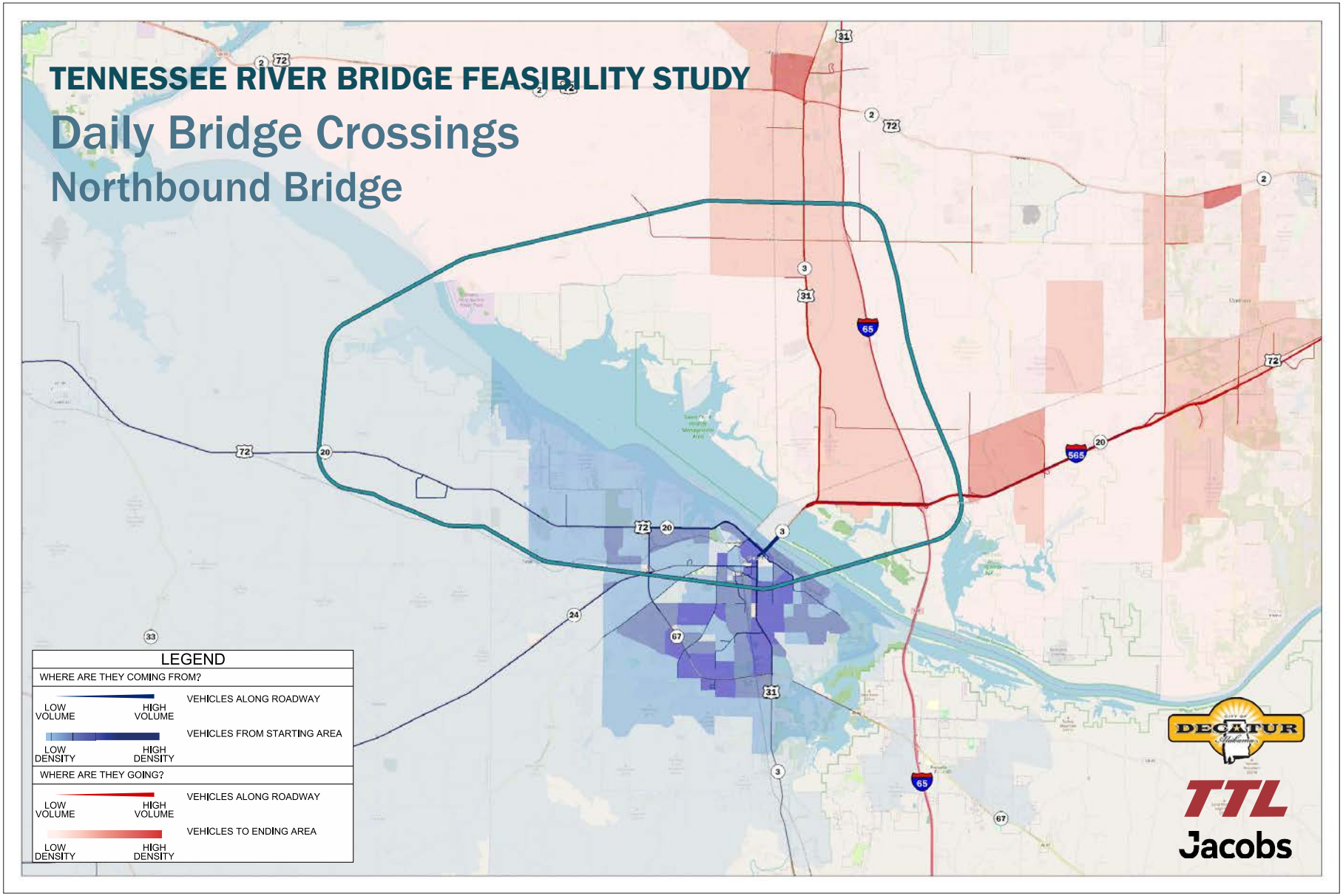
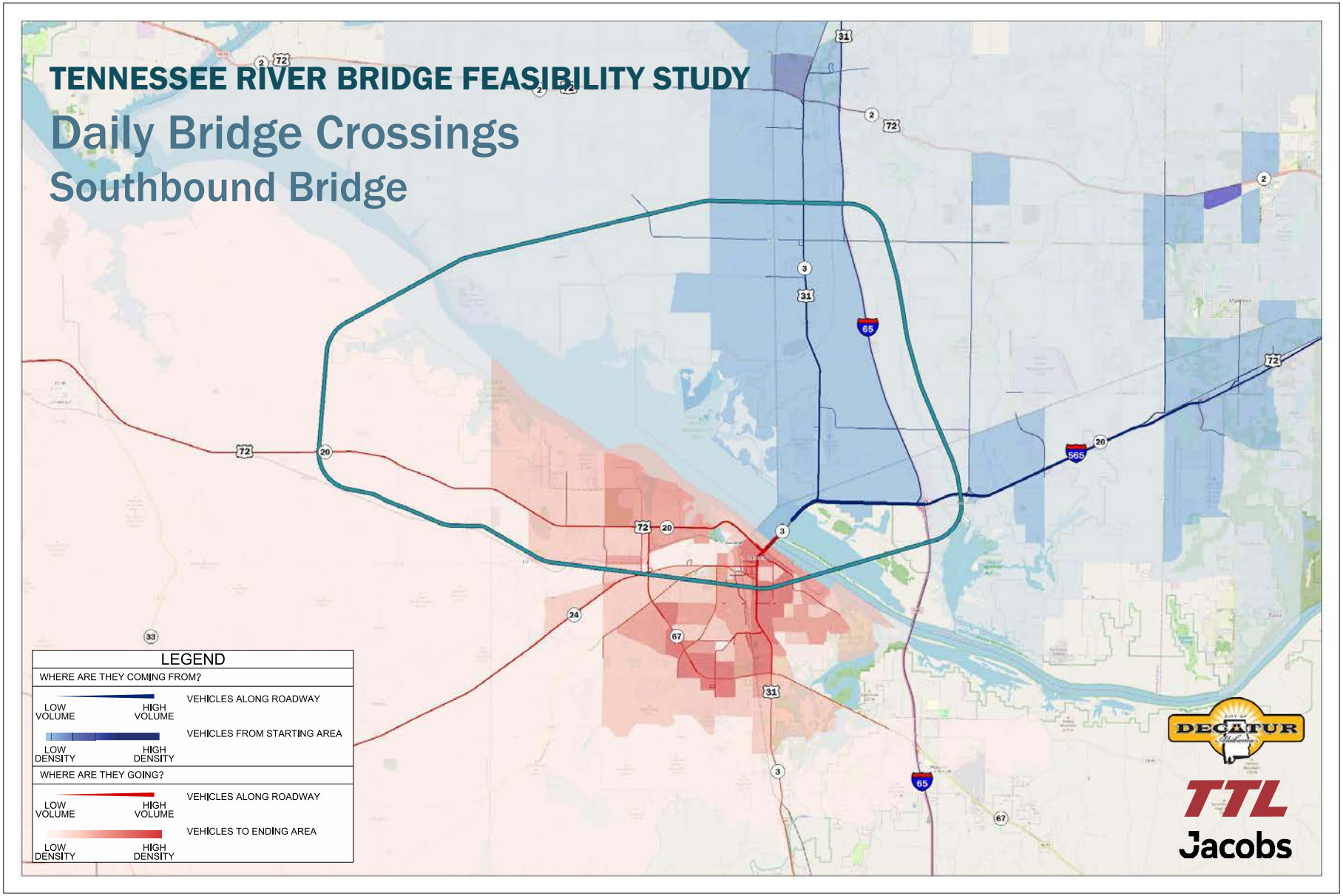


Figure 1.3.3.2-2. Typical Weekday SB OD Pattern for All Traffic



1.3.3.3 Safety

The corridor was reviewed to evaluate the existing conditions with respect to any safety concerns from a roadway and vehicle perspective. The existing corridor was reviewed from Church Street Northeast (south of the existing bridge over the Tennessee River) to the Y-Interchange with U.S. Highway 31 (north of the bridge). For reference, the existing corridor is assumed to run north-south.

Several areas within these limits were identified as having some levels of potential safety concerns or opportunities. These areas are depicted on Figures 1.3.3.3-1 and 1.3.3.3-2 below.

Church Street Northeast

Yellow hatched areas in the north, south, and west leg of the intersection as shown on Figure 1.3.3.3-1 could be converted into raised concrete islands for better channelization of vehicular traffic and pedestrian refuge space in crosswalks.

Wilson Street Northeast

There is no pedestrian crossing marked to cross the west leg of Wilson Street Northeast. With some pedestrian traffic expected from the hotel in the northwest corner of the intersection, the lack of pedestrian crossing may increase the chance of pedestrian crashes and reduce the number of pedestrians that attempt to cross the roadways in this area.

The pedestrian crossing at the east leg on Wilson Street Northeast is placed approximately 85 feet from the intersection, which may increase the chances of illegal pedestrian midblock crossings near the intersection rather than traveling to and utilizing the crosswalk. The EB through or NB right turning vehicles may accelerate after crossing through the intersection, which may cause pedestrian conflicts at the crossing and may increase the chance of rear-end crashes. Moving the pedestrian crossing closer to the intersection may provide a safer crossing condition by placing the pedestrian crossing in a more visible location (especially to NB right turning vehicles).

Hatched areas in all four legs of the intersection could be raised concrete for better channelization and pedestrian refuge space.

Merging traffic making the NB right-turn from Wilson Street Northeast on to the existing corridor get 300 feet before tapering before the bridge which may be an insufficient length for vehicles to properly accelerate and merge.

Existing corridor bridge at Decatur Harbor

Heading NB, the left turn lane begins about 400 feet upstream from the intersection. However, there is no signage or pavement marking arrows for this left turn lane, and this lane may be confused for an additional through lane. Also, any decelerating vehicles in this lane attempting to merge into the free-flowing travel lanes may increase the chances of sideswipe and/or rear end crashes.

There is a channelizing island to separate NB left-turning vehicles from the NB left-turning vehicles that are given an acceleration lane NB on the existing corridor, as shown in Figure 1.3.3.3-1. This triangular island could benefit from increased visibility and striping to better define channelization.

The acceleration lane NB on the existing corridor for vehicles making NB left turns exiting Decatur Harbor is a “left lane merge right.” Additional pavement marking and signing for a “left lane merge right” is suggested for this movement.

The acceleration lane SB on the existing corridor for vehicles making SB right turns exiting Decatur Harbor is approximately 165 feet. With free-flowing traffic at 45 mph on the existing corridor bridge, this lane may not provide sufficient minimum distances for lane merges. Additional lane merge signage may improve safety for both accelerating and free flowing traffic.

Decatur Day Use Park/Hospitality Park

The NB left-turn bay is 40 feet long which may not meet minimum thresholds for taper and storage lengths based on the speeds and traffic volumes at this location.

At the intersection, there are two SB roadways and therefore approaches that are side by side, one of which is U.S. Highway 72 Alt/SR-20, and the other is U.S. Highway 31. These two SB roadways merge approximately 550 feet south of the intersection, so they are divided with hatching on the pavement at the intersection. This separation and subsequent merge are uncommon and could be converted to a more typical layout with future intersection and roadway improvements. The vehicles making a NB left turn from the park are required to cross two separated SB lanes to join the NB lanes. This may induce wrong way movements onto U.S. Highway 31 which may increase the chance of crashes at the intersection. There is no signage to warn drivers of the wrong way movement in the existing conditions.

Y-Interchange

The SB U.S. Highway 31 is stop-controlled when making the left turn to travel EB on U.S. Highway 72 Alt/SR-20. The SB movement must come to a complete stop from traveling at 55 mph and cross over the NB traffic that is also traveling at 55 mph. Also, this crossing is on a curve and has a skewed geometry.

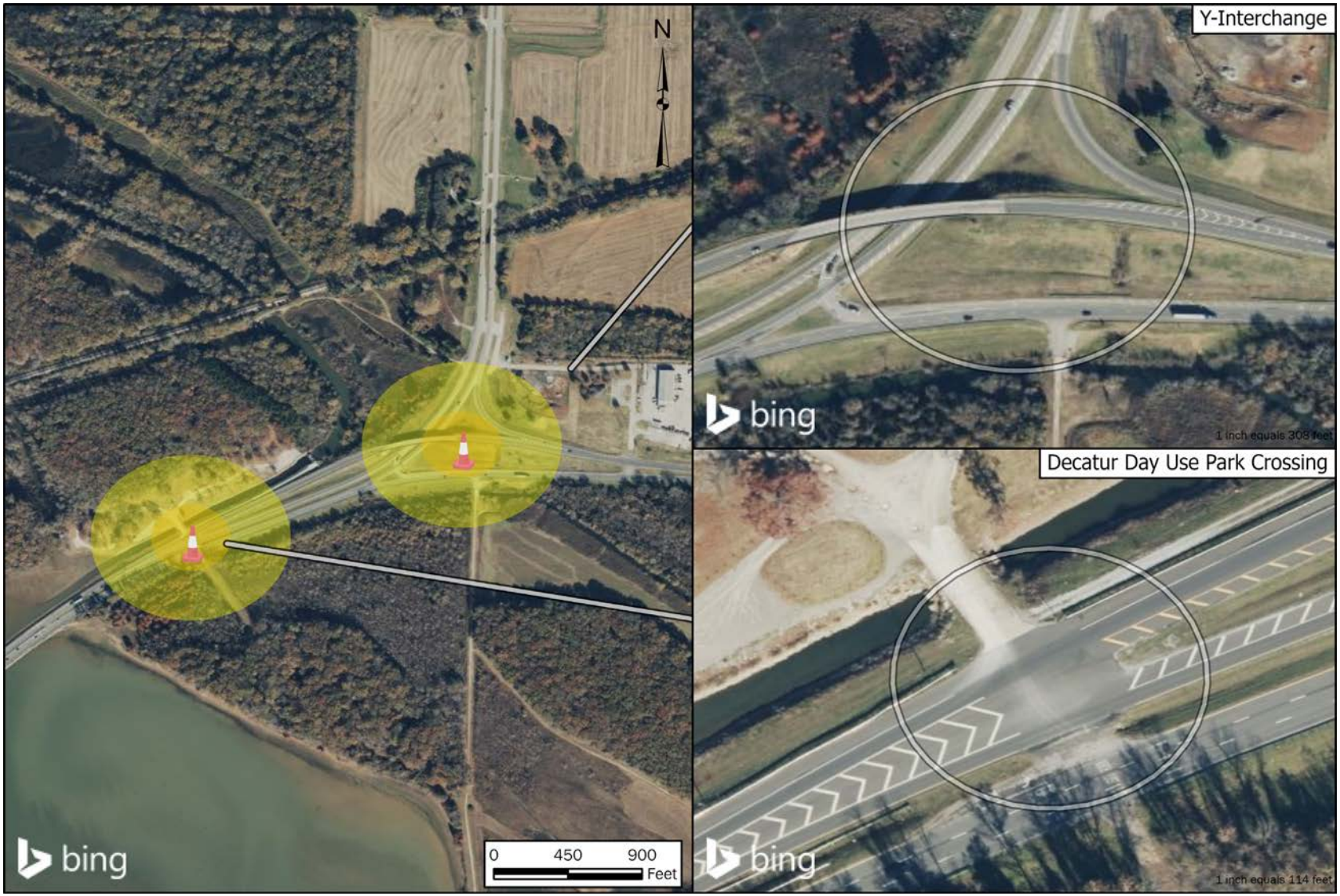
After the stop-controlled crossing, the vehicles traveling from SB U.S. Highway 31 to EB U.S. Highway 72 Alt/SR-20 get an acceleration lane of less than 200 feet to merge into the mainline traffic. With a driveway to Wheeler National Wildlife Refuge (NWR), this geometry may increase the risk of sideswipe crashes to both merging traffic from U.S. Highway 31 and the right-turning traffic from the driveway. This driveway is on a curve which may pose a potential sight distance constraint to the right-turning traffic from the driveway.

The WB U.S. Highway 72 Alt/SR-20 (towards Decatur) tapers from two lanes to a single lane in a “left lane merge right” manner. This occurs on the flyover bridge which may cause merging movements and may contribute to sideswipe or rear-end crashes on or near the bridge.

The lack of capacity on the interchange, the bridge, and the connecting intersections cause significant congestion in the area. The queuing of vehicles in the peak commuting hours in the area increases the likelihood of rear-end crashes, and the overall congestion appears to limit the travel time reliability and access of emergency vehicles in the cases of crashes or other emergencies that require travel across the bridge.

Figure 1.3.3.3-1: Decatur Harbor/Marina, Wilson Street, and Church Street Crossings

Figure 1.3.3.3-2: Y-Interchange and Decatur Day Use Park Crossing



1.3.4 Geology & Geotechnical - Expected Soil Conditions

The 137-square-mile study area is primarily located in the Tuscumbia Limestone geologic formation of the Mississippian Geologic period. The exposed surface is expected to consist of residual clays, weathered down from the parent limestone bedrock. These soils are typically slightly cherty clay, with minor sandy cherty clay, and bedded chert. The pinnacled nature of the Tuscumbia Limestone traps surface and subsurface water creating pockets of soft, wet soil and gravel immediately above the bedrock layer. The clay soils are typically firm to very stiff.

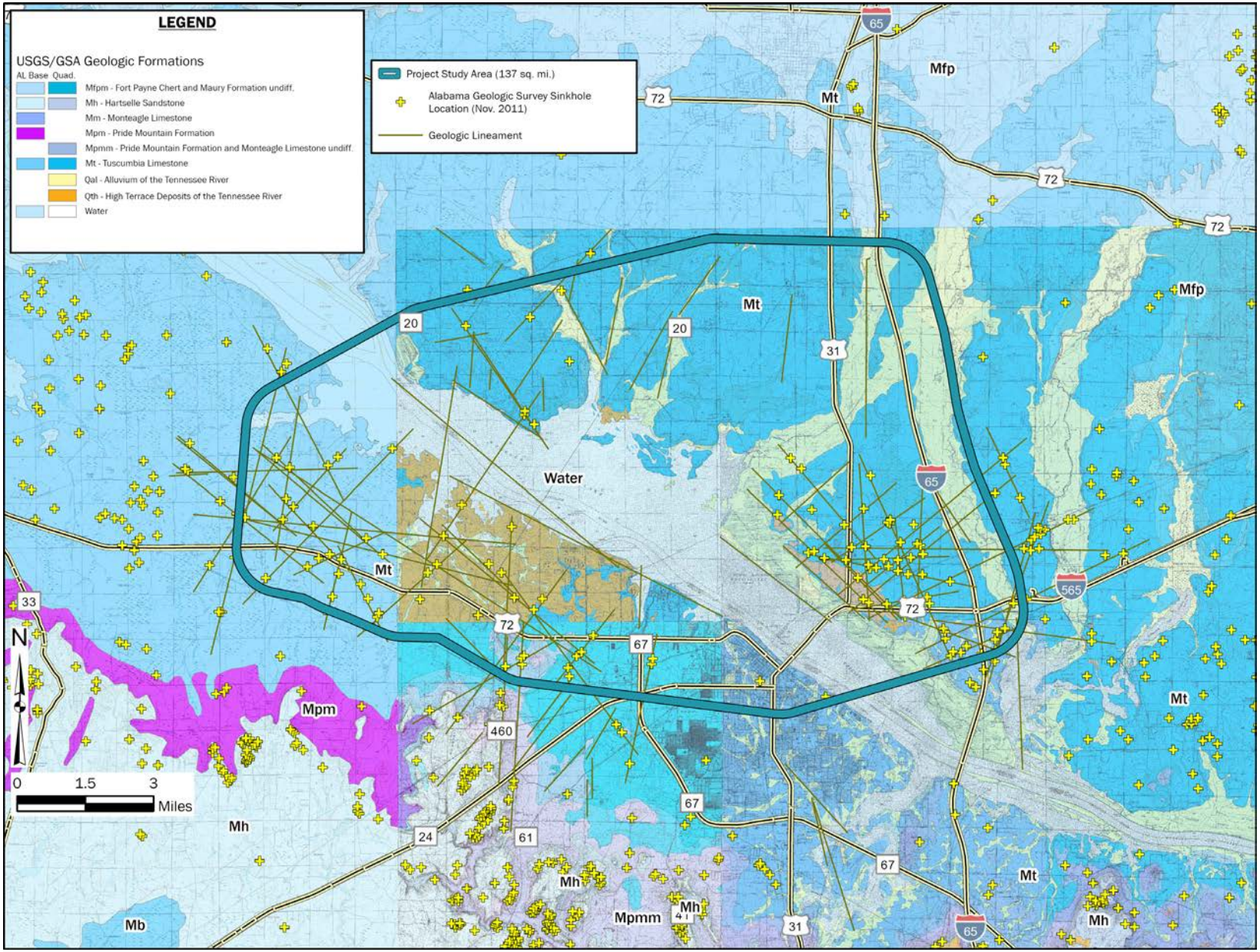
Alluvial in bottomlands and low terrace deposits can be found along both sides of the Tennessee River and its tributaries. Unconsolidated clay, silt, clayey gravelly sand, clayey sandy gravel, and fill material in Wheeler Lake make up most of the surface soils above the residual clay. These soils tend to be soft to very soft silts and clays or very loose to loose sands and gravels due to being recently deposited by water.

High terrace deposits of the Tennessee River consist of slightly gravelly sandy clay to clayey gravelly sand to clayey sandy gravel. These soils are located at higher elevations than the alluvial soils described above and are typically firm to stiff clays or loose to medium dense sands and gravels.

There are areas north of the Tennessee River where the Tuscumbia Limestone has been solutioned away and the underlying Fort Payne and Maury formation is exposed at the surface. The residual soils of the Fort Payne Chert consist of cherty clays to cherty sandy clays to sandy clayey gravel. Depending on the chert content and the density of the chert, these soils can be medium dense to very dense gravels or firm to hard clays.

Limestone bedrock is typically shallow across the study area including areas in the Tennessee River/Wheeler Lake. The depth to bedrock is highly variable due to the karstic nature of the limestone. Pinnacles, solution cavities (sinkholes), and caves are present throughout the study area. The following figure shows geologic formations found in the City of Decatur.

Figure 1.3.4-1: Geologic Features of Decatur and surrounding areas



1.3.5 Navigation

The following sections describe the regulations regarding bridges and other structures built over navigable waters; list specific requirements for clearances for the Tennessee River; describes locations of residential piers, docks, mooring cells, transmission lines, and pipelines; and provides a summary of waterway usages.

1.3.5.1 Regulations

United States Coast Guard Bridge Regulations

The 33 CFR Chapter 1, Subchapter J, Part 114 establishes rules and regulations to implement requirements for: (1) locations and clearances of bridges and causeways over navigable waters; (2) administrations of the alteration of unreasonably obstructive bridges; and (3) regulation of drawbridge operation. 33 CFR Chapter 1, Subchapter J, Part 115 provides the requirements for applying for a permit to construct or modify bridges crossing navigable waters of the US, as federal law prohibits the construction of any bridge across a navigable water of the US unless first authorized by the United States Coast Guard (USCG). The USCG permit authorizes the location and plans of bridges and causeways and imposes any necessary conditions relating to the construction, maintenance, and operation of a bridge in the interest of public navigation.

In addition to regulations set for by 33 CFR Chapter 1, Subpart J – Bridges, the USCG also defines navigational clearances for specific navigable waters of the United States to satisfy needs of navigation. Where guide clearances do not exist, the horizontal and vertical clearances of proposed bridge projects are evaluated on a case-by-case basis to determine if bridge clearances are reasonable for navigation. Guide clearances for the Tennessee River between Tennessee and Alabama have a vertical clearance requirement of 47 feet at regulated high-water.

American Association of State Highway and Transportation

Bridge design, evaluation, and rehabilitation of both fixed and movable highway bridges are governed under the specifications of the American Association of State Highway and Transportation Officials (AASHTO) Load and Resistance Factor Design (LRFD) Bridge Design Specifications. The AASHTO LRFD Bridge Design Specifications is maintained, updated, and changed upon approval from the Committee on Bridges and Structures and new editions are published on a three-year cycle.

ALDOT

ALDOT requires all bridges and miscellaneous transportation structures in Alabama be designed in accordance with the ALDOT Structural Design Manual. The ALDOT Structural Design Manual contains specific design criteria policies mandated by the ALDOT Bridge Bureau and apply equally to ALDOT and consultants completing structural designs. It also provides an interpretation of AASHTO LRFD Bridge Design Specifications and encourages the uniform preparation of plans and specifications.

1.3.5.2 Limitations

Bridges

There are two bridges located within the 137-square-mile Project Study Area spanning the Tennessee River. The clearances for these structures are provided below:

Table 1.3.5.2-1: Southern Railway Bridge Specifications

Southern Railway Bridge (Vertical Lift Bridge)	Lift Span (measured in feet)	
	Down	Raised
Elevation of Low Steel	565.8’	613. 8’
Vertical Clearance at Pool Stage	9.8’	57.8’
Vertical Clearance at Regulated High Water	5.8’	53.8’
Horizontal Clearance	388.0’	388.0’

Table 1.3.5.2-2: Existing Corridor Bridges Specifications

Existing Corridor Bridges	
Elevation of Low Steel	613.0’ (At Piers)
Vertical Clearance at Pool Stage	57.0’
Vertical Clearance at Regulated High Water	49.3’
Horizontal Clearance	350.0’

Structures

Residential Piers/Docks

Residential piers/docks are generally located along the northern bank of the Tennessee River between river mile 294 and 298, as shown on Figure 1.3.5.2-1.

Mooring Cells

Mooring cells are a sheet pile structure, filled with earth, stone, or concrete, that are used to hold barges and other vessels in place on the river. Mooring cells are used on the Tennessee River to control maritime traffic, they hold barges while they wait their turn to pass under the bridges. Public mooring cells are located within the outermost extent of the Tennessee River navigable channel at river miles 297-299, 300-304, and 306-307, as shown on Figure 1.3.5.2-1.

Transmission Line Areas

There are two transmission line areas extending across the Tennessee River at river miles 297.5 and 292.5, as shown on Figure 1.3.5.2-1. The clearances for these structures are provided below:

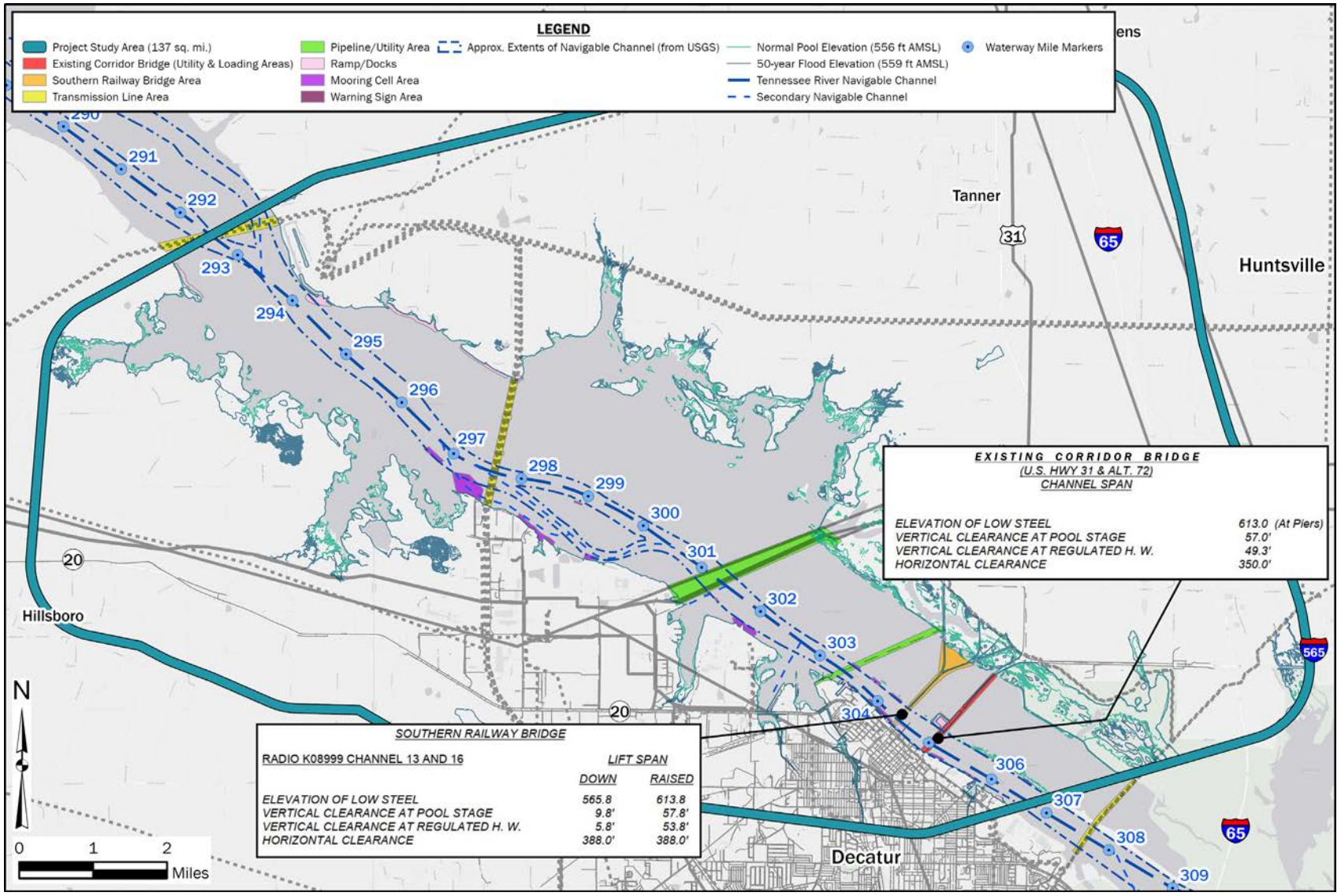
Table 1.3.5.2-3: Transmission Line Crossing Details

Details	Crossing 1	Crossing 2
River Mile Marker	297.5	292.5
Elevation Low Point of Sag	565.0’	655.0’
Vertical Clearance at Pool Stage	100’	99’
Vertical Clearance at Regulated Headwater	97’	98’

Pipeline/Utility Areas

There are two pipeline/utility areas extending across the Tennessee River near river miles 301 and 303, as shown on Figure 1.3.5.2-1.

Figure 1.3.5.2-1: Features associated with Navigable Waters.



1.3.5.3 Waterway Usage

Recreational Users

There are three marina operations and two public boat ramps located within the Project Study Area. Typically, 77 to 150 slips (boat water-parking) are available for use that can accommodate vessels up to 60 feet in length.

Industrial Users

There are several industrial operators within the Project Study Area that require barge access. These operators are located along the southern outermost extent of the Tennessee River navigable channel. These industrial users are depicted on Figure 1.3.5.3-1.

Industrial and Commercial Users

Industrial waterway usage was gathered from the U.S. Army Corps of Engineers (USACE) Navigation Data Center, U.S. Waterborne Commerce on the Waterways and Harbors. For this report, current data was available through calendar years 2017-2021. On the Tennessee River, from the mouth to Knoxville, Tennessee, there were 84,146 vessels carrying 30 million tons in commodities in 2021, as summarized in table to the right.

1.3.6 Environmental Resources

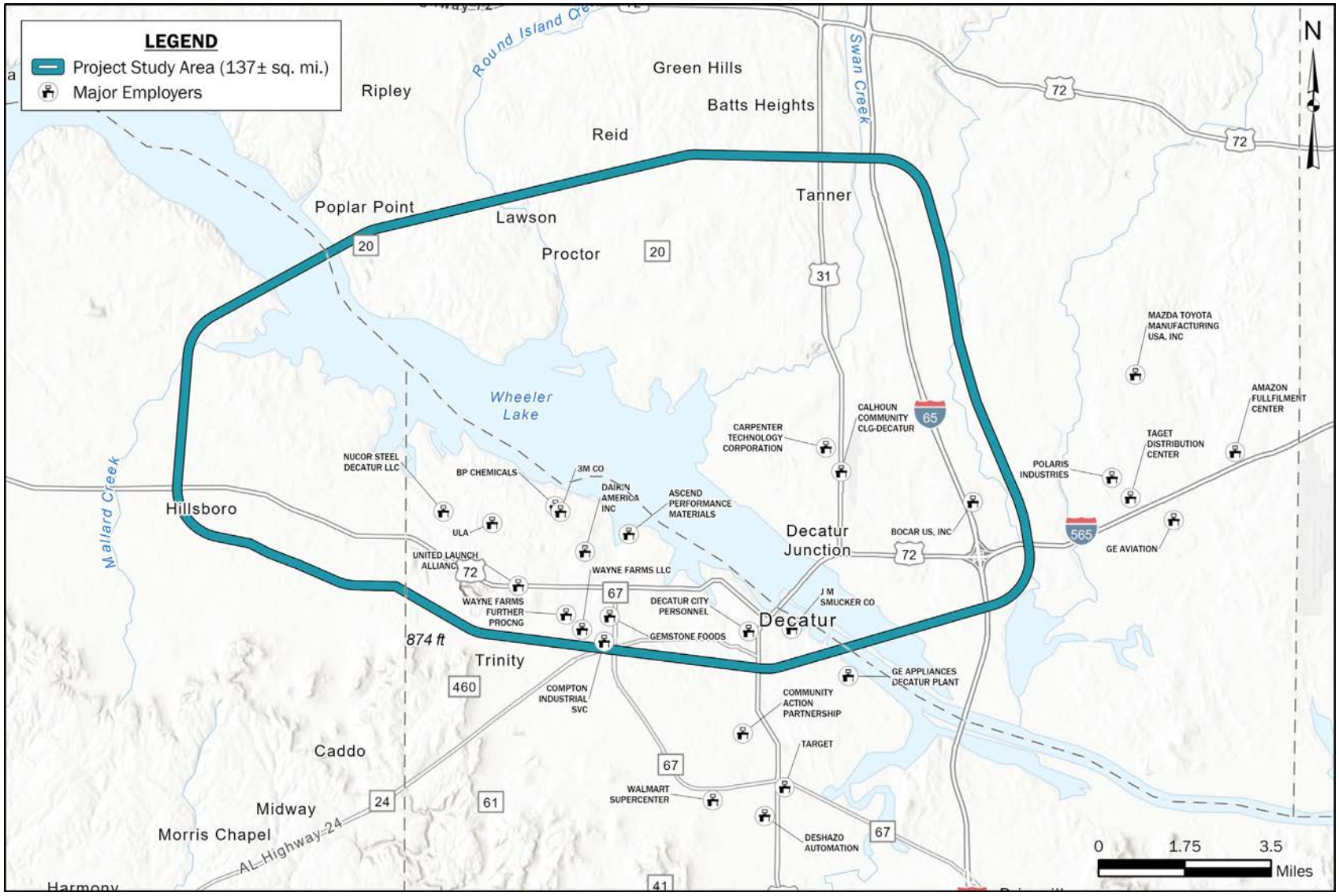
The following sections summarize the existing environmental conditions of the Project Study Area. The environmental resource information provided in this section is similar to the information usually found in the existing conditions portion of NEPA documents.

NEPA requires, to the fullest extent possible, that the policies, regulations, and laws of the federal government be interpreted and administered in accordance with its environmental protection goals, and that federal agencies use an interdisciplinary approach in planning and decision-making for any action that adversely impacts the environment (42 U.S.C. 4332). In addition to evaluating the potential environmental effects, the FHWA must also consider the need for safe and efficient transportation in

Table 1.3.5.2-4: Industrial Waterway Usage Details

Tennessee River, TN, AL, and Kentucky (KY) (Waterway) Includes mouth to Knoxville, TN, (head of river), approximately 652.2 miles. Maintained Depth: 9 feet. Traffic Types: All Traffic Types (Domestic and Foreign)					
Year	**2017**	**2018**	**2019**	**2020**	**2021**
All Vessels	90,980	87,325	83,218	82,135	84,146
Dry Cargo (Self-Propelled)	21	6	8	9	12
Tanker (Self-Propelled)	0	0	0	0	0
Tow Boat (Self-Propelled)	29,962	29,655	28,954	27,437	29,814
Dry Cargo (Non self-propelled)	56,917	52,942	49,762	50,549	50,208
Tanker Barge (Non self-propelled)	4,080	4,722	4,494	4,140	4,112

Figure 1.3.5.3-1: Industrial Users in the Project Area



reaching a decision that is in the best overall public interest (23 U.S.C. 109(h)). The FHWA policies and procedures for implementing NEPA are contained in regulation at 23 CFR Part 771.

The selection of resources examined in this report was based on the characteristics of the Project Study Area and regulatory requirements that align with NEPA, its implementing regulations, and guidelines from the FHWA and ALDOT. The following resources are considered potential critical environmental resources as they are subject to separate regulatory drivers such as the Endangered Species Act (ESA), Clean Water Act (CWA), or are typically areas of concern for the general public:

- Hazardous materials sites
- Wildlife and aquatic resources
- Wetlands and waters
- Noise
- Air quality
- Historic resources
- Recreational resources
- Land use
- Prime farmland
- Flood plains
- Environmental justice
- Climate change

Presented in this section are the analysis outcomes for each of these resource topics. Each resource subsection begins with an introduction of the resource and the specific regulations pertaining to the resource, followed by a description of the methodology employed, an overview of the existing conditions, and possible next steps.

1.3.6.1 Hazardous Materials Sites

Hazardous materials are defined as substances that possess, or have the potential to possess, either alone or in combination with other materials, detrimental effects on human health or the natural environment. This broad classification encompasses a range of materials, including asbestos-containing materials (ACM), lead-based paints (LBP), toxic chemicals, flammable liquids, corrosive agents, radioactive substances, and infectious materials, among others.

A hazardous materials site, according to the Environmental Protection Agency (EPA), is a location where hazardous substances or pollutants pose a risk to human health and the environment due to release, storage, disposal, or presence. It includes industrial facilities, Superfund sites, brownfields, spill sites, landfills, and military bases. The EPA and other environmental agencies oversee and regulate these sites to protect public health and the environment through containment, cleanup, and remediation measures.

Federal and state legislation (and subsequent regulations) specify that owners of property containing hazardous and/or toxic material can be held responsible for cleaning up the site(s). Such clean-ups can be extremely expensive, particularly if groundwater is contaminated, and can result in a tremendous escalation in project costs as well as considerable delays.

Regulations

Hazardous Materials Sites

The primary legislative framework for the management of hazardous materials sites (HMS) is established by the Resource Conservation and Recovery Act of 1979 (RCRA), as amended over the years to strengthen environmental protections. This law governs the generation, transportation, treatment, storage, and disposal of hazardous waste, aiming to minimize potential risks to human health and the environment. Additionally, the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) plays a vital role in addressing the cleanup of hazardous waste sites, often referred to as Superfund sites, which are heavily contaminated areas posing significant threats to public health and the environment. Lastly, the Superfund Amendments and Reauthorization Act of 1986 (SARA) further bolstered CERCLA by introducing provisions to improve site cleanups, enhance community involvement, and strengthen the financial responsibility of industries handling hazardous materials.

Asbestos Containing Materials and Lead-Based Paint

The EPA has established regulations to address ACM and protect public health and the environment. These regulations include the Asbestos Hazard Emergency Response Act (AHERA) for schools, National Emission Standards for Hazardous Air Pollutants (NESHAP) for demolition and renovation, the Asbestos Worker Protection Rule (40 CFR Part 763) for worker safety, and the Asbestos

Ban and Phase-Out Rule restricting certain asbestos-containing products. These measures aim to minimize asbestos exposure and guide the proper handling, removal, and disposal to prevent health hazards. Additionally, the EPA has regulations for LBP to protect public health, especially in residential properties and child-occupied facilities. The Renovation, Repair, and Painting (RRP) Rule mandates certified firms follow work practices when dealing with LBP, while the Lead Disclosure Rule requires providing information to buyers or tenants. The Lead-Safe Certification Program provides proper training for individuals conducting inspections and abatement activities, aims to reduce lead exposure, particularly in children, and works to prevent the harmful effects of lead poisoning.

Methodology

Environmental resources reviewed include federal resources obtained from EPA's Enforcement and Compliance History Online (ECHO) website such as the National Priority List (NPL), Superfund Enterprise Management System (SEMS) List, US Brownfield List, and a list of RCRA Corrective Action Report (CORRACTS) facilities. The review also included State of Alabama resources obtained from Alabama Department of Environmental Management's (ADEM) online map viewer, such as State Landfill List, Underground Storage Tank (UST), Leaking Underground Storage Tank (LUST), and per and polyfluoroalkyl (PFAS) facilities lists. Due to multiple factors, there may be or are HMS that have not been identified through our search.

Resources

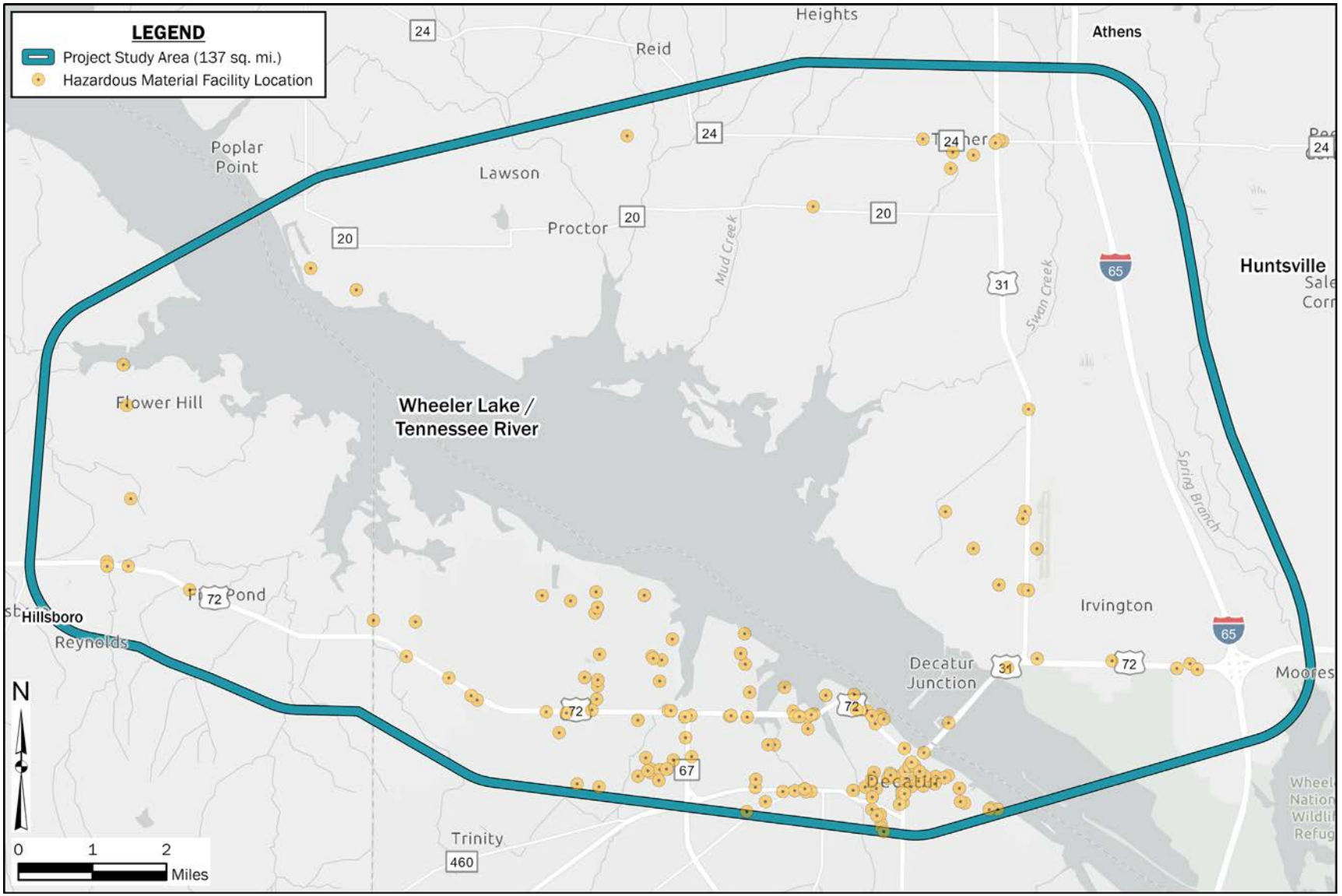
Asbestos was most widely used in buildings from the early 20th century until the late 1970s. Lead-based paint was commonly used until 1978 when it was banned in residential properties due to the health hazards associated with both materials. Some of the buildings within the Project Study Area that will be impacted during construction activities have the potential to contain ACM or LBP.

A total of 187 facilities within the Project Study Area were identified in the environmental databases reviewed. Descriptions of these databases, as well as the number of facilities identified in the Project Study Area, are shown in the following table. An overview of the listed facilities is shown on Figure 1.3.6.1-1.

Table 1.3.6.1-1: Environmental Resources Reviewed

Database	Description	Facilities Identified
NPL	CERCLA established the EPA's NPL of Federal "superfund" sites. These are the contaminated sites that have been assigned a high ranking, in terms of potential public health effects, by the EPA.	0
SEMS	The EPA SEMS List identifies documented and suspected contamination sites throughout the nation which were not ranked high enough to be listed on the NPL. This list was formerly known as EPA CERCLIS List renamed to SEMS by the EPA in 2015.	2
US Brownfields	U.S. Brownfields tracks provides information on properties listed by the Cleanups in My Community program which provides Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.	5
CORRACTS	RCRA is the EPA database of facilities that generate, transport, treat, store, and/or dispose of hazardous wastes as defined by the RCRA. CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.	1
State Landfills	The ADEM maintains a list of active and inactive landfills, artificial fills, and disposal sites. However, it should be noted that the ADEM Landfill List does not include unpermitted landfills or dumps.	2
UST	The State UST List is a listing of underground storage tank systems that are registered with ADEM.	128
LUST	ADEM maintains a list of sites with reported LUST located within the State of Alabama.	48
PFAS	PFAS have been associated with a range of adverse health effects in humans, including developmental issues, immune system disruptions, and an increased risk of certain cancers.	1

Figure 1.3.6.1-1: Hazardous Materials Location Map – Overview



Next Steps

During ground-disturbing activities near sites with potential environmental conditions, it is likely that hazardous materials may be encountered. The most straightforward approach to managing hazardous materials is to avoid contaminated sites whenever possible. It is advisable to conduct further investigations into known hazardous materials issues at properties slated for ROW acquisition prior to acquisition or construction, whenever feasible. It is crucial to have knowledge of existing hazardous materials concerns, including presence of ACM and LBP, before commencing construction, as this information is essential for implementing proper management practices during the construction phase. Special considerations such as materials management, handling, disposal, and worker health and safety practices need to be implemented.

1.3.6.2 Wildlife Resources (Protected/ Sensitive Species)

Wildlife, a valuable public asset, demands careful attention throughout the project development. Several federal statutes have been enacted to safeguard wildlife, including the ESA, the Migratory Bird Treaty Act (MBTA), and the Bald and Golden Eagle Protection Act (BGEPA).

Regulations

The ESA of 1973 is regulated by the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration-National Marine Fisheries Service (NOAA-NMFS) to protect critically imperiled species from extinction as a "consequence of economic growth and development untampered by adequate concern and conservation." Section 7 of the ESA, as amended (16 U.S.C. 1531-1534), requires all federal agencies to aid in the conservation of listed species and prevent activities from jeopardizing the continued existence of federally listed species or destroy or adversely modify designated critical habitat.

Species Protections under the ESA

Species can receive the protection provided by the ESA through species designation on the federal list of endangered and threatened wildlife and plants.

The ESA includes protections which makes it unlawful to "import or export, deliver, receive, carry, transport, or ship in interstate or foreign commerce in the course of a commercial activity; sell or offer for sale in interstate or foreign commerce, take (includes harm, harass, pursue, hunt shoot, wood, kill, trap, capture, or collect any wildlife within the United states); take on the high seas; possess, ship, deliver, carry, transport, sell, or receive unlawfully taken wildlife; remove and reduce to possession any plant from areas under federal jurisdiction; maliciously damage or destroy an endangered plant on areas under federal jurisdiction; and remove, cut, dig up, or damage or destroy any endangered plant in knowing violation of any state law or regulation or in the course of a violation of a state criminal trespass law."

Federal Levels of Species Protections

Species may be given a federal classification as a protected species under the ESA. Species may be classified as:

a. Petitioned Species – species undergoing the petition process
b. Candidate Species – species whose status is currently under review to determine whether the species warrants listing under the ESA. Candidate species specifically refer to:
    a. Species that are subject of a petition to list which have been determined that listing may be warranted
    b. Species that are not subject of a petition but for which USFWS/NOAA-NMFS have initiated a status review within the Federal Register
c. Proposed Species – species who have been found to warrant listing as threatened or endangered, or delisting, after completion of a status review and consideration of other protective conservation measures
d. Listed Species – species designated as endangered or threatened:
    a. Endangered – any species which is in danger of extinction throughout all or a significant portion of its range
    b. Threatened – any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range
e. Recovered Species – species is recovered when it no longer requires ESA protections and is delisted

f. Delisted Species – species who were formerly listed as threatened or endangered under the ESA but have since been removed.

Federal Levels of Habitat Protections

The ESA set forth provisions which established the designation of "critical habitat" for all listed domestic species. Critical habitat includes specific areas within a species' current range that have "physical or biological features essential to the conservation of the species" or areas outside of a species current range "that such areas are essential for the conservation of the species." Critical habitat provides key protections for federally protected species by prohibiting federal agencies from permitting, funding, or carrying out actions that "adversely modify" designated areas.

Species Protections at the State Level

While the ESA provides federal guidelines for the protection of listed species, states can create State Environmental Species Acts (SESA) within their borders that gives states the freedom to set ecosystem-wide priorities. SESAs can reflect specific regional concerns and can address gaps existing due to federal protection limitations. States can consider such issues as: listing new species, designating critical habitat/migratory corridors, requiring recovery plans, updating penalties for take, and exploring opportunities for conservation easements with private landowners.

Under the Alabama Department of Conservation and Natural Resources (ADCNR), Rule No.: 220-2-.9 – Protected Nongame Species, "It shall be unlawful to take, capture, kill, or attempt to take, capture or kill; possess, sell, trade, for anything of monetary value, or offer to sell or trade for anything of monetary value; or propagate the [listed] nongame wildlife species, (any parts or reproductive products of such species), or any hybrids of such species within a scientific collection permit or written permit from the commissioner, ADCNR, which shall specifically state what the permittee may do with regard to said species."

Methodology

USFWS Environmental Conservation Online System (ECOS) Information for Planning and Consulting (IPaC) was used to determine federally protected species within the Project Study Area. ECOS IPaC compiled an official species list and evaluated potential impacts on resources managed by the USFWS, which is described in the following sections.

Habitat communities within the Project Study Area were identified by using aerial photographs, the Natural Resources Conservation Service (NRCS) Web Soil Survey (WSS) Hydric Soil Rating Map, the National Wetland Inventory (NWI) Map, and United States Geologic Service (USGS) Light Detection and Ranging (LiDAR) Elevation & Hillshade, and USGS Ecoregions.

Resources

Habitat Communities within the Project Study Area

Using aerial photographs, the NRCS WSS Hydric Soil Rating Map, the NWI Map, and USGS LiDAR Elevation & Hillshade, and USGS Ecoregions, habitat communities within the Project Study Area were identified and categorized. An overview of the habitat communities identified is shown on Figure 1.3.6.2-1 Based on this desktop review, the following habitat communities (including estimated areas within the Project Study Area) are likely located within the Project Study Area:

a. Grassland/Herbaceous (<1 square mile) – Areas dominated by grasses or vegetated, non-woody ground-cover, generally greater than 80% of total vegetation. These areas are not subject to intensive management such as tilling but can be used for grazing.
b. Shrub/Scrub (1± square mile) – Areas dominated by shrubs; less than 5 meters tall with shrub canopy typically greater than 20% of total vegetation. This class includes true shrubs, young trees in an early successional stage, or trees stunted from environmental conditions.
c. Deciduous Forest (5± square miles) – Areas dominated by trees generally greater than 5 meters tall and greater than 20% of total vegetation cover. More than 75% of the tree species shed foliage simultaneously in response to seasonal change.
d. Mixed Forest (1± square mile) – Areas dominated by trees generally greater than 5 meters tall and greater than 20% of total vegetation cover. Neither deciduous nor evergreen species are greater than 75% of total tree cover.
e. Evergreen Forest (3± square miles) – Areas dominated by trees generally greater than 5 meters tall and greater than 20% of total vegetation cover. More than 75% of

the tree species maintain their leaves all year. Canopy is never without green foliage.

f. Emergent Herbaceous Wetlands (2± square miles) – Areas where perennial herbaceous vegetation accounts for greater than 80% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.

g. Woody Wetlands (19+ square miles) – Areas where forest or shrubland vegetation accounts for greater than 20% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.

h. Open Water (29± square miles) – Areas of open water, generally with less than 25% cover of vegetation or soil.

i. Tributaries (1,143,166± linear feet)

Gray bat
(Myotis grisescens)

Indiana bat
(Myotis sodalis)

Northern long-eared bat
(Myotis septentrionalis)

Tri-colored bat
(Perimyotis subflavus)

Whooping crane
(Grus americana)

Fleshy-fruit gladecress
(Leavenworthis crassa)

Slackwater darter
(Etheostoma boschungi)

Spring pygmy sunfish
(Elassoma alabamae)

Longsolid
(Fusconaia subrotunda)

Pink mucket
(Lampsis abrupta)

Rough pigtoe
(Pleurobema plenum)

Spectaclecase
(Cumberlandia monodonta)

Tennessee pigtoe
(Pleuronaia barnesiana)

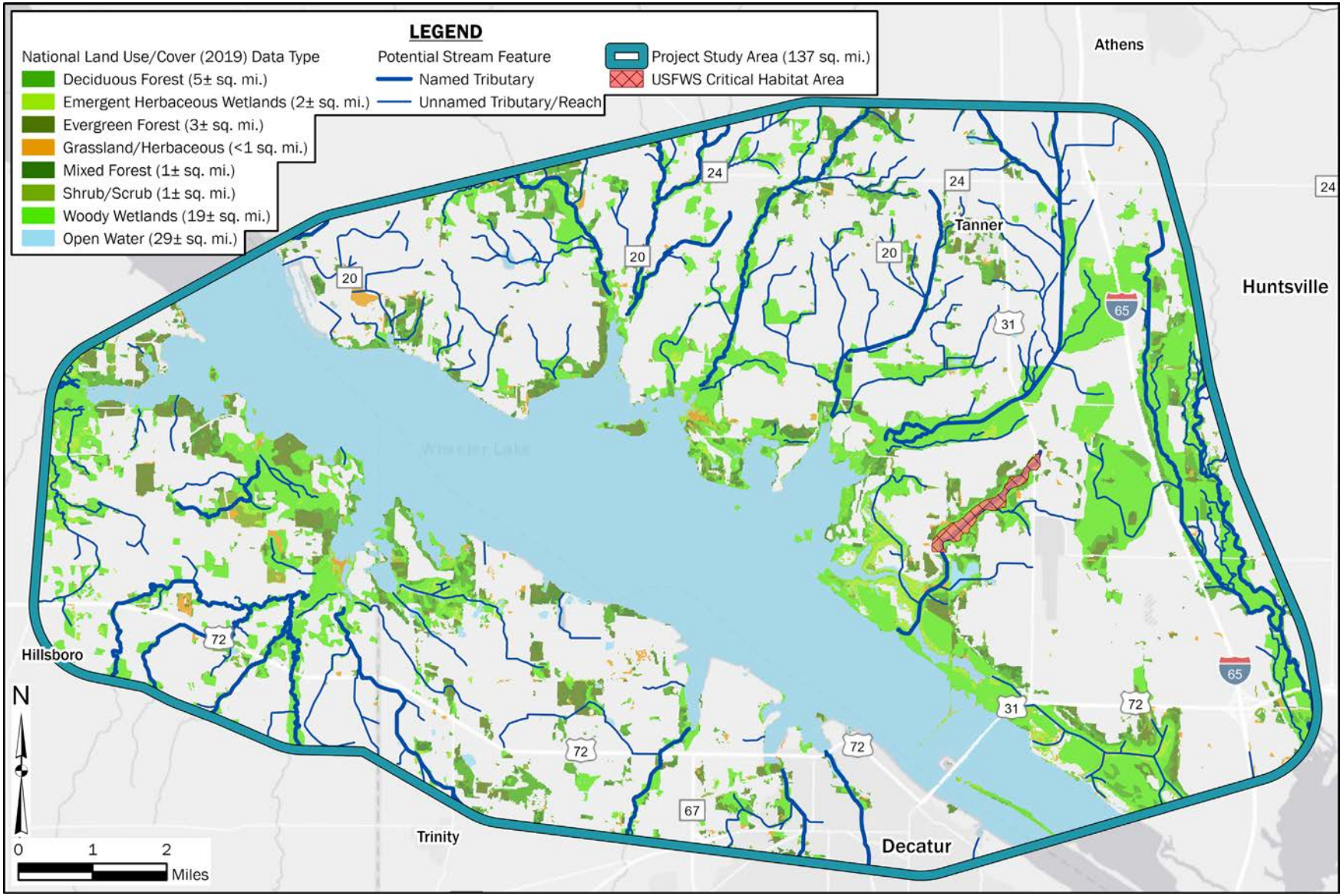
Monarch butterfly
(Danaus plexippus)

Anthony's riversnail
(Athearnia anthonyi)

Armored snail
(Marstonia parchyta)

Slender campeloma
(Campelmona decampi)

Figure 1.3.6.2-1: Habitat Community Map



Federally Protected Species

The USFWS ECOS IPaC Species List identified 17 federally protected species that may be located within the Project Study Area. A summary of these species is provided in the following table. A copy of the USFWS ECOS IPaC Species List is provided in Appendix D.

Table 1.3.6.2-1: Federally Listed Species

Group	Name	Status
Mammals	Gray bat *(Myotis grisescens)*	Endangered
	Indiana bat *(Myotis sodalis)*	Endangered
	Northern long-eared bat *(Myotis septentrionalis)*	Endangered
	Tri-colored bat *(Perimyotis subflavus)*	Proposed Endangered
Birds	Whooping crane *(Grus americana)*	Endangered
Flowering Plants	Fleshy-fruit gladecress (*Leavenworthis crassa)*	Endangered
Fishes	Slackwater darter *(Etheostoma boschungi)*	Threatened
	Spring pygmy sunfish *(Elassoma alabamae)*	Threatened
Clams	Longsolid *(Fusconaia subrotunda)*	Threatened
	Pink mucket *(Lampsis abrupta)*	Endangered
	Rough pigtoe *(Pleurobema plenum)*	Endangered
	Spectaclecase *(Cumberlandia monodonta)*	Endangered
	Tennessee pigtoe *(Pleuronaia barnesiana)*	Threatened
Insects	Monarch butterfly *(Danaus plexippus)*	Candidate
Snails	Anthony's riversnail *(Athearnia anthonyi)*	Endangered
	Armored snail *(Marstonia parchyta)*	Endangered
	Slender campeloma *(Campelmona decampi)*	Endangered

Gray Bat (Myotis grisescens)

The gray bat *(Myotis grisescens)* is long with glossy, light brown to brown fur, and dark ears usually black. The ears, when laid forward, extend 0.28 inches beyond the nose and are longer than any other bat within the Myotis genus. The bat's wing membrane connects to its ankle instead of at the toe, where it connects in other species of Myotis. Gray bats live in caves year-round. During the winter, gray bats hibernate in deep, vertical caves. In the summer, they roost in caves which are scattered along rivers. These caves are in limestone karst areas of the southeastern US.

Indiana Bat (Myotis sodalis)

The Indiana bat *(Myotis sodalis)* is a medium-sized bat, closely resembling the little brown bat *(Myotis lucifugus)* but differing in coloration. Its fur is a full grayish chestnut rather than bronze, with portions of the hair on the back a dull-lead color. This bat's underparts are pinkish to cinnamon, and its hind feet are smaller and more delicate than in *M. lucifugus*. Suitable winter habitat for the Indiana bat consists of caves or abandoned underground mine shafts that are cool, humid, and with stable temperatures of under 50°F. Summer maternity roosting habitat consists of living trees with deeply furrowed or exfoliating bark, dead trees (snags), and living trees with cavities. Primary roosts usually receive direct sunlight for more than half the day. Roost trees are typically within canopy gaps in a forest, in a fence line, or along a wooded edge. Habitats in which maternity roosts occur include forested areas along streams, bottomland and floodplain habitats, wooded wetlands, and upland communities. Indiana bats typically forage in semi-open to closed (open understory) forested habitats, forest edges, and riparian areas.

Northern Long-Eared Bat (Myotis septentrionalis)

The northern long-eared bat *(Myotis septentrionalis*) is a medium-sized bat about 3 to 3.7 inches in length with a wingspan of 9 to 10 inches. Suitable winter habitat for the northern long-eared bat consists of caves or abandoned underground mine

shafts that are cool, humid, and with stable temperatures of under 50°F. Summer maternity roosting habitat consists of living trees with deeply furrowed or exfoliating bark, dead trees (snags), and living trees with cavities. Primary roosts usually receive direct sunlight for more than half the day. Roost trees are typically within canopy gaps in a forest, in a fenceline, or along a wooded edge. Habitats in which maternity roosts occur include riparian zones, bottomland and floodplain habitats, wooded wetlands, and upland communities. Indiana bats typically forage in semi-open to closed (open understory) forested habitats, forest edges, and riparian areas.

Tri-colored Bat (Perimyotis subflavus)

The tri-colored bat *(Perimyotis subflavus)* is a small to medium-sized bat distinguished by its unique tricolored fur composition that appears dark at the base, lighter in the middle, and dark at the tip. Suitable natural summer habitat for the tri-colored bat *(Perimyotis subflavus)* consists of a variety of forested/wooded habitats which may include adjacent and/or interspersed non-forested habitats. Potential roosting habitat includes living trees with deeply furrowed or exfoliating bark, dead trees (snags), and living trees with cavities and/or dead leaf clusters of live and recently dead deciduous trees, Spanish moss *(Tillandsia usneoides)*, and bear lichen *(Usnea trichodea)*. Roost sites may be located within linear features including fence rows, riparian forests, and other wooded corridors.

Whooping Crane (Grus americana)

The whooping crane *(Grus americana)* occurs only in North America and is the continent's tallest bird, with males approaching 5 feet when standing erect. The whooping crane adult plumage is snowy white except for black primaries, black or grayish alula (specialized feathers attached to the upper leading end of the wing), sparse black bristly feathers on the carmine crown and malar region (side of the head from the bill to the angle of the jaw), and a dark gray-black wedge-shaped patch on the nape. The common name "whooping crane" probably originated from the loud, single-note vocalization given repeatedly by the birds when they are alarmed. Whooping cranes are a long-lived species, with current estimates suggesting a maximum longevity in the wild of at least 30 years.

Whooping cranes move at a quick pace, browsing and probing for food rather than hunting patiently. They tend to occur in small flocks (or among much larger numbers of sandhill cranes) rather than singly. Whooping cranes breed in shallow, grassy wetlands interspersed with grasslands or scattered evergreens. During migration they stop over on wide shallow river flats. They winter mainly in coastal marshes and estuaries. They sometimes forage in crop fields. Whooping crane are known to visit Wheeler NWR from mid-November to mid-January.

Fleshy-fruit Gladecress (Leavenworthia crassa)

Fleshy-fruit gladecress *(Leavenworthia crassa)* is a winter annual with basal leaves forming a rosette with very deeply, innately lobed or divided leaves up to 3 inches in length that grows from 4 to 12 inches tall. The flowers are typically 0.5-inch in length and are yellow with orange or white with orange in color. Fleshy-fruit gladecress blooms in mid-March through mid-April in sunny opening, in wooded glades, or cedar glades with black mucky soils with underlying limestone.

Slackwater Darter (Etheostoma boschungi)

The slackwater darter *(Etheostoma boschungi)* is characterized by dusky, irregularly spaced blotches on the underside of the head and body, separate or nearly separate gill membranes, and terminal mouth with a broad frenum. Males have a large bar below the eye. Slackwater darter occupies two habitat types. The majority of the year, slackwater darter inhabit gravel-bottomed pool areas of small streams where they burrow under piles of old leaf litter and detritus that accumulate in areas of slow flow. Slackwater darter migrate in late winter and early spring into adjacent flooded lowland areas with spring seepages to spawn. Slackwater darter are opportunistic and will spawn in vegetation found in stream channels if there is enough flowing water to keep eggs oxygenated.

The historic range of the slackwater darter includes four tributaries to the southern bend of the Tennessee River in northern Alabama and southwestern Tennessee. Additionally, slackwater darter are known from one locality in the headwaters of the Buffalo

River in Lawrence County, Tennessee; 19 localities in Cypress Creek drainage in Wayne County, Tennessee and Lauderdale County, Alabama; three localities in Swan Creek in Limestone County, Alabama; and three localities in the Flint River drainage in Madison County, Alabama.

Spring Pygmy Sunfish (Elassoma alabamae)

The spring pygmy sunfish *(Elassoma alabamae)* exhibit different color patterns between male and females. Breeding males are typically dark brown with five to seven narrow, silver or gold vertical bars along their sides. The dorsal and anal fins have darkened bases. Clear areas are in the last two or three membranes of the dorsal and anal fins. Females are brown on the back, mottled brown and white along the sides, cream to white on the venter, and contain a golden crescent beneath and behind the eye. Spring pygmy sunfish are usually found in spring pools and spring runs within calm, clear water with abundant aquatic vegetation *(Myriophyllum)*.

The spring pygmy sunfish is endemic to the Tennessee River drainage in Alabama. The spring pygmy sunfish occurs in two spring systems in northern Alabama: the Beaverdam Creek and Spring system and Blackwell Swamp in northern Alabama. Early collection recorded the species at Cave Spring in Lauderdale County, Alabama in 1937 and Pryor Spring in Limestone County, Alabama in 1941. Spring pygmy sunfish are opportunistic breeders and have been documented to spawn in a range of water quality and temperature conditions which can occur between January and October, but typically begin spawning between March and April.

Effective July 1, 2019, 6.7 miles of streams and 1,330 acres of adjacent lands in Limestone and Madison counties, Alabama, were designated a critical habitat for the Spring pygmy sunfish. Included in this designation is 2.1 miles of Pryor Spring and Pryor Branch and 102 acres of adjacent lands within the Project Study Area.

Longsolid (Fusconaia subrotunda)

The longsolid *(Fusconaia subrotunda)* shell is thick, medium-sized (up to five inches long), light brown (darkening with age), and elongates with age. Juveniles typically have a bold green ray pattern near the raised portion of the dorsal edge of the mussel shell. The foot of the longsolid varies from orange, pale orange, or white. Longsolid are usually found in sand and gravel streams and small rivers but may also be found in coarse gravel and cobble in larger rivers. Within smaller tributaries, longsolid may be found at depths less than 2 feet, but can be found at depths ranging from 12 to 20 feet in large rivers.

This species can be found in Alabama, Kentucky, New York, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, and West Virginia, and is currently known from three major river basins: the Ohio, the Cumberland, and the Tennessee.

Pink Mucket (Lampsilis abrupta)

The pink mucket *(Lampsilis abrupta)* is a rounded, slightly elongated mussel with a thick, inflated, and smooth shell, which is usually yellow-brown in color. Pink mucket are usually found in mud and sand along shallow riffles and shoals, swept free of silt in major rivers and tributaries. Pink mucket often bury themselves in sand or gravel, with only the edge of shell and feeding siphons exposed. The pink mucket requires stable, undisturbed habitat and sufficient population of fish hosts to complete larval development.

This species historical range includes the Tennessee, Cumberland, and Ohio river drainages with greater concentrations in the Tennessee, Cumberland Osage, and Meramec rivers.

Rough Pigtoe (Pleurobema plenum)

The rough pigtoe *(Pleurobema plenum)* shell is somewhat triangular, high, moderately thick, and inflated. The anterior and posterior ends are rounded and the dorsal and ventral margins are curved. The umbos are inflated and elevated above the hinge line. The shells are textured, with a satin-like appearance. The periostracum is yellowish brown or light brown in small shells, becoming dark brown in adults, with faint green rays visible near the beaks in some shells. Rough pigtoe are usually found in a variety of stream sizes (large to small) with stable substrates comprised of a mixture of relatively firm and clean gravel, sand, and silt. Rough pigtoe bury

themselves in bottoms of firmly packed sand or gravel with feeding siphons exposed. The rough pigtoe requires stable, undisturbed habitat and a sufficient population of host fish to complete larva development.

Historically, rough pigtoe were distributed in many of the major rivers and streams within the Mississippi basins.

Spectaclecase (Cumberlandia monodonta)

The spectaclecase *(Cumberlandia monodonta)* shells are elongated, sometimes curved, inflated and dark brown to black with poorly developed teeth. The anterior and posterior ends are rounded, the ventral margins are arched/pitched. Spectaclecase are usually found in large rivers in areas sheltered from the main force of the river current. Spectaclecase often cluster in firm mud in sheltered areas (i.e., beneath rock slabs, between boulders, under tree roots).

Historically, the spectaclecase occupied 44 streams of the Mississippi, Ohio, and Missouri river basins within 14 states. The spectaclecase's current range is limited to 20 streams in Alabama, Arkansas, Illinois, Iowa, Kentucky, Minnesota, Missouri, Tennessee, Virginia, West Virginia, and Wisconsin. Dams are the greatest contributor to the decline of spectaclecase by affecting upstream and downstream populations by disrupting seasonal flow patterns, scouring river bottoms, altering water temperatures and quality, and eliminating river habitat.

Tennessee Pigtoe (Pleuronaia barnesiana)

The Tennessee pigtoe *(Pleuronaia barnesiana)* shell is a brown-yellow (darkening with age) with sometimes present narrow green rays around the umbo and along the posterior ridge for the majority of its length. Tennessee pigtoe are usually found in areas of clean-swept substrates of sand, gravel, and cobble and prefers riffles and shoals.

This species is endemic to the Tennessee River Basin within Alabama, Georgia, North Carolina, Tennessee, and Virginia.

Monarch Butterfly (Danaus plexippus)

Monarch butterfly *(Danaus plexippus)* are typically found in meadows, edges of agricultural fields, or flowering areas with available nectar in regions of moderate temperatures with clean water sources. Monarch butterflies in eastern and western North America exhibit long-distance migration and overwinter as adults at forested locations in Mexico and California. Reproduction is dependent on the presence of milkweed, which serves as the sole food source for larvae. Adult monarch butterflies possess two sets of orange wings spanning 3 to 4 inches with black veins and white spots located along the edges. The body is black with white marking. Male monarch butterflies also possess black dots along the veins of their hind wings and are larger in size than females.

The caterpillars are striped with yellow, black, and white bands, have a set of antennas, and reach a length of 2 inches before metamorphosis.

Anthony's Riversnail (Athearnia anthonyi)

Anthony's riversnail *(Athearnia anthonyi)* shells are thick and ponderous and ovate in outline. The body whorl is flat to slightly convex and strongly shouldered, with an ovate aperture, showing some purple coloration. The outermost coating of the shell is yellowish green to dark brown, usually darkening with age. Anthony's riversnail are usually found in areas of rapidly moving fresh water, but are occasionally found in pools adjacent to shoals.

Main populations of Anthony's riversnail within the Tennessee River populations are in water 3 to 4 meters deep in riverine habitat downstream of NickaJack Dam. Anthony's riversnail prefers substrates varying from gravel to boulders or submerged woody debris and aquatic vegetation in and around lotic habitats. Historically, Anthony's riversnail occurred in the Tennessee River from Knoxville, Tennessee downstream to Muscle Shoals, Alabama. Currently, there are two known populations of Anthony's riversnail, the first located in the Tennessee River in Marion County, Tennessee to Jackson County, Alabama and the second located in Limestone County, Alabama.

Armored Snail (Marstonia pachyta)

Armored snail *(Marstonia pachyta)* shells are ovate-conical shaped. Armored snails are characterized by their shell's thickness. Armored snails are usually found in submerged roots, leaves, bryophytes (i.e. mosses, etc.) along stream edges, and submerged bryophytes growing on rocks in moderate current. Armored snails are also found in areas of slow to moderate flow in submerged detritus, leaves, and tree rootles along pool edges and are highly correlated with filamentous algae mats.

Armored snails are endemic to Limestone and Piney Creeks, adjacent tributaries of the Tennessee River in North Alabama.

Slender Campeloma (Campeloma decampi)

Slender campeloma *(Campeloma decampi)* shells are medium to large, typically between 5 millimeters (mm) and 35 mm in length. The slender campeloma shells are ovate-conical shaped, and a tapered pointed spire. Slender campeloma are usually found burrowing in soft sediments or detritus and may sometimes be found in gravel substrates where they may occur from stream margins to midstream. Slender campeloma is often found at shallow depths in substrates.

Slender campeloma are known to occur in tributaries to the Tennessee River in north Alabama, including Cypress Creek in Lauderdale County and Round Island Creek, Piney Creek, and Limestone Creek in Limestone County.

State Protected Species

ADCNR's Nongame Species Regulation (220-2-.92) identifies species protected by the state of Alabama. A summary of the state protected species is provided in Appendix D. State protected species do not receive legal protection from the ESA.

Migratory Birds

Migratory birds are also provided Federal protection under the MBTA of 1918 (16 U.S.C. 703-712). The MBTA protects migratory species by the designation that it is "unlawful to pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird, or any part, nest, or egg or such bird, unless authorized under a permit issued by the Secretary of the Interior."

In addition to the MBTA, the BGEPA of 1940 (16 U.S.C. 668-668c) was established to prohibit the "taking" of bald or golden eagles, including their parts, nests, or eggs without a Secretary of the Interior issued permit. A summary of protected migratory birds that may be present within the Project Study Area is provided in the following table.

Table 1.3.6.2-2: Migratory Birds

Name
Bachman's sparrow *(Aimophila aestivalis)*
Bald eagle *(Haliaeetus leucocephalus)*
Black-billed cuckoo *(Coccyzus erythropthalmus)*
Bobolink *(Dolichonyx oryzivorus)*
Brown-headed nuthatch *(Sitta pusilla)*
Cerulean warbler *(Dendroica cerulea)*
Chimney swift *(Chaetura pelagica)*
Eastern whip-poor-will *(Antrostomus vociferus)*
Field sparrow *(Speizella pusilla)*

Name
Golden eagle *(Aquila chrysaetos)*
Kentucky warbler *(Oporornis formosus)*
King rail *(Rallus elegans)*
Lesser yellowlegs *(Tringa flavipes)*
Prairie warbler *(Dendroica discolor)*
Prothonotary warbler *(Protonotaria citera)*
Red-headed woodpecker *(Melanerpes erythrocephalus)*
Rusty blackbird *(Euphagus carolinus)*

Next Steps

After identifying a federally protected species in the Project Study Area, the next steps involve verifying its presence through field assessment, evaluating potential impacts, consulting with the USFWS, and maintaining compliance with regulations. Mitigation measures should be developed and implemented to minimize impacts on the species and its habitat. A monitoring program should be established, and modifications to the project may be needed to provide protection and conservation of the species. Cooperation with wildlife authorities and adherence to regulatory requirements are vital throughout the process to safeguard these sensitive species.

1.3.6.3 Wetlands & Waters

The CWA was enacted by the US Congress to safeguard the physical, biological, and chemical integrity of US waters, including the adjoining wetlands. Section 404 of the CWA specifically outlines the definition of waters of the US (WOTUS), which encompasses traditional navigable waters and their tributaries, interstate waters and their tributaries, wetlands abutting these waters, and impoundments of these waters. The administration of Section 404 of the CWA falls under the purview of the USACE Regulatory Program, while the enforcement is carried out by the EPA. This section focuses on wetlands and other water bodies located within the Project Study Area.

Regulations

Wetlands and waters are regulated by multiple federal, state, and local agencies/authorities that oversee jurisdiction of these aquatic resources via several legislative documents.

Clean Water Act

The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters," and to achieve "wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water" (CWA Sections 101(a) and 101(a)(2)). Section 404 of the CWA regulates the discharge of dredge or fill material into WOTUS. The CWA provides oversight and guidance on regulating point and nonpoint source pollutant discharges into WOTUS.

Executive Order 11990 – Protection of Wetlands

Executive Order (EO) 11990 sets forth directives as Federal policy recognizes that wetlands have unique and significant public values and require protections. EO 11990 defines wetlands as "areas that are inundated by water or groundwater with a frequency sufficient to support vegetative of aquatic life that requires saturated or seasonally saturated soil conditions." The policy directives prescribed by EO 11990 include: "(a) avoid long and short-term adverse impacts associated with the destruction or modification of wetlands; (b) avoid direct or indirect support of new construction in wetlands; (c) minimize the destruction, loss or degradation of wetlands; (d) preserve and enhance the natural and beneficial values served by wetlands; and (e) involve the public throughout the wetlands protection decision-making process."

Federal Legislation for Navigable Waters and Bridges

Modifications to navigable waters are generally regulated by Sections 9 and 10 of the Rivers and Harbors Act of 1899 (RHA), and specific regulations for bridge construction over navigable waters are governed by the General Bridge Act of 1946 (GBA). These Acts are intended to preserve the public right of navigation and prevent interference with interstate and foreign commerce. The USCG maintains federal oversight and review of proposed bridges and/or other obstructions to navigable waters.

Regional Legislation for Navigable Waters

The Tennessee River also has a regional authority, the Tennessee Valley Authority (TVA), which was created in 1933 to oversee management of the TVA Act. According to the preamble of the TVA Act, the Act's purpose was "To improve the navigability and to provide for the flood control of the Tennessee River; to provide for reforestation and the proper use of marginal lands in the Tennessee Valley; to provide for the agricultural and industrial development of said valley; to provide for the national defense by the creation of a corporation for the operation of Government properties at and near Muscle Shoals in the State of Alabama, and for other purposes." Activities that may affect flood control along the Tennessee River require TVA review and authorization.

Methodology

Methodology for evaluating wetlands and waters within the Project Study Area consisted of a desktop review of existing data sources including the following:

a. **USGS - National Hydrography Dataset (NHD):** This geospatial database represents the water drainage network of the US and includes features such as rivers, streams, canals, lakes, ponds, dams, and stream gages.
b. **U.S. Department of Agriculture (USDA) NRCS WSS - Hydric or Predominantly Hydric Soils Classifications:** The NRCS maintains a geospatial database of soil types (map units) for most areas of the U.S. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit which represents a large area dominated by one or more major types of soil. Hydric and predominately hydric soil classifications were used in this analysis. Map units are further classified with a hydric rating as described in the following table.

Table 1.3.6.3-1: Hydric Soil Classifications

Classification	Description
Hydric	All major and minor components listed for a given map unit are rated as being hydric.
Predominately Hydric	All major components listed for a given map unit are rated as hydric, and at least one contrasting minor component is not rated hydric.
Partially Hydric	At least one major component listed for a given map unit is rated as hydric, and at least one other major component is not rated hydric.
Predominately Non-Hydric	No major component listed for a given map unit is rated as hydric, and at least one contrasting minor component is rated hydric.
Non-Hydric	No major or minor components for the map unit are rated hydric.

c. **USFWS NWI:** The NWI is a geospatial database of wetland and deepwater habitats throughout the U.S. This information is useful for planning purposes and provides an overall understanding of the habitats that may be present in or around the site. The NWI utilizes the Cowardin Classification System, which classifies habitat types as marine, estuarine, riverine, lacustrine, or palustrine, with additional modifiers as appropriate to identify the water regime, water chemistry, soil or other characteristics based on Classification of Wetlands and Deepwater Habitats of the U.S. (Cowardin, 1979).
d. **Google Earth Satellite Imagery, Fall 2022:** Recent satellite imagery was used to evaluate and discern areas of development from undeveloped natural habitats. The imagery was used to remove developed areas (i.e., roads/railroads, buildings, paved parking, site-specific observations, etc.) from those identified as wetland areas.

Resources

Wetlands

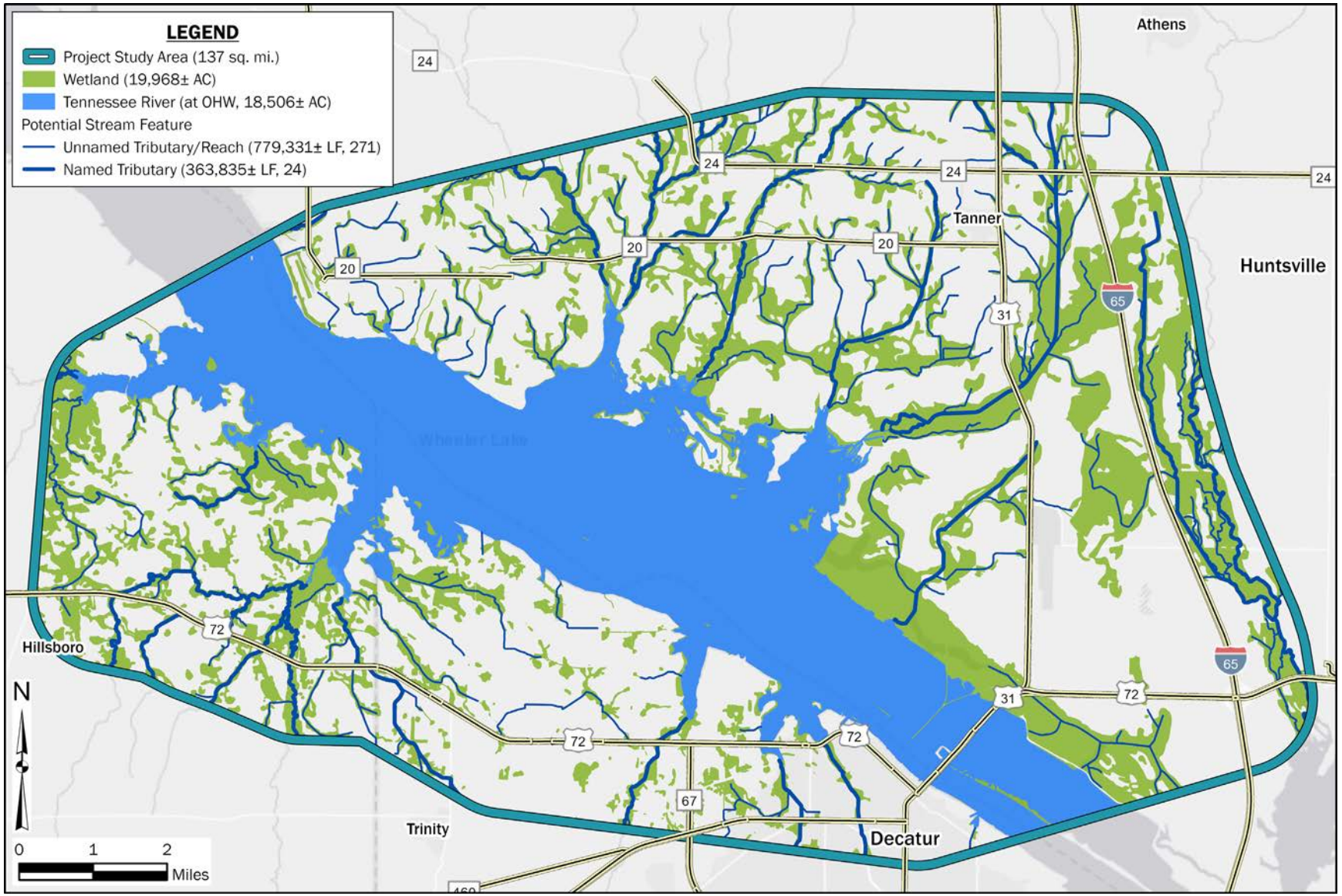
Approximately 19,968 acres of possible wetlands as delineated by data sources (NRCS WSS and NWI) were identified within the Project Study Area.

Tributaries

The following details the desktop evaluation of tributaries within the Project Study Area:

- Tennessee River/Wheeler Reservoir – 18,506 acres; 87,680 linear feet
- 24 named perennial tributaries – 363,835 linear feet
- 271 unnamed tributaries – 779, 331 linear feet

Figure 1.3.6.3-1: Potential Aquatic Resources Map



Next Steps

It will be essential to conduct a reconnaissance survey to verify the presence of features mentioned in this section and to identify any additional potential wetlands or other WOTUS that were not initially identified. The impacts to WOTUS, including wetlands and surface water features, are regulated under Section 404 of the CWA. Preventing a net loss of wetland functionality requires avoiding, minimizing, and mitigating impacts to the greatest extent possible through future planning and design.

For potential projects involving dredge and fill material in any WOTUS, a Section 404 permit from the USACE may be required based on the project's size and scope. Mitigation would typically be required for impacts exceeding 0.1 acre of jurisdictional WOTUS, including wetlands. A wetland delineation survey would need to be conducted before applying for a permit to document wetland boundaries and impact footprints.

1.3.6.4 Noise

Noise is defined as any sound that is undesired or interferes with one's hearing/ livelihood. In a general setting there is what is considered "background noise" which can include traffic, wildlife, and people. With respect to the impact of people, elevated noise levels can cause damage to one's hearing. Other effects may impact one's sleep cycle or general discomfort due to elevated noise. Noise is measured in decibels (dB). On average a 5-dB change in noise level is noticeable with a 10-dB change considered "doubling in loudness."

This scale is dependent on the sensitivity of individuals; therefore, for a more standard unit of measurement, the A-weighting system is used. The A-weighting pertains to adjusting the amplification or reduction of various sound frequencies (in terms of pitch) to match how the human ear perceives these frequencies. Highway traffic noise levels are expressed in terms of the hourly, A-weighted equivalent sound level in decibels (dBA). The table below shows common sources of noise and their dBA levels.

Sound Source	dBA
Softest sound that can be heard	00
Normal breathing	10
Ticking watch	20
Soft whisper	30
Refrigerator hum	40
Normal conversation	60
Washing machine	70
City traffic (inside the car)	80
Motorcycle	95
Approaching subway train	100
Loud entertainment venues	110
Standing beside or near sirens	120
Firecrackers	140

Source: Centers for Disease Control and Prevention (CDC)

Regulations

When planning a transportation project, it is important to consider how the development will increase the noise level for the surrounding area and if there will be adverse effects to the area as a result. Based on 23 CFR 772, with respect to transportation projects, noise impacts can be anticipated when either potential noise levels exceed existing noise levels at a substantial rate or when the predicted noise levels from a project reach or exceed the FHWA Noise Abatement Criteria (NAC) for an area's respective activity category.

Noise can be estimated for areas through assigning an activity category based on the area's current land use. Each activity category has certain allowable equivalent continuous sound levels (Leq). Leq is a measure used to represent the average sound level over a specific period, typically one hour. Leq is used to quantify and compare different noise levels, considering both the intensity and duration of the noise. It provides a way to express the overall noise exposure or impact in a single value, making it easier to assess and regulate noise in various settings and activities. Descriptions of the seven noise categories are shown in the table below.

Table 1.3.6.4-2: Noise Activity Categories

Activity Category	Description/Land Use	Evaluation Location	Leq (dB)
A	Lands 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.	Exterior	57
B	Includes all single/multi-family residential uses. Hotels and motels that function as apartment dwellings also fall under Category B.	Exterior	67
C	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycares, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, trail crossings.	Exterior	67
D	Auditoriums, daycares, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.	Interior	52
E	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.	Exterior	72
F	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.	--	--
G	Undeveloped lands that are not permitted.	--	--

Source: FWHA

Methodology

The methodology included integrating FHWA noise activity categories with the county zoning and the national land use/cover data. By correlating these noise activity categories with the specific county zoning regulations, the analysis aimed to assess how different land uses in the Project Study Area are regulated concerning noise sensitive zones. This correlation facilitated an examination of potential noise impacts on various land uses, such as residential neighborhoods, schools, hospitals, and recreational areas. Additionally, by integrating FHWA noise activity categories with national land use/cover data, the study gained insights into the broader environmental context, allowing for an assessment of potential impacts on land cover, wildlife habitats, and natural resources due to increased noise levels from a planned transportation project.

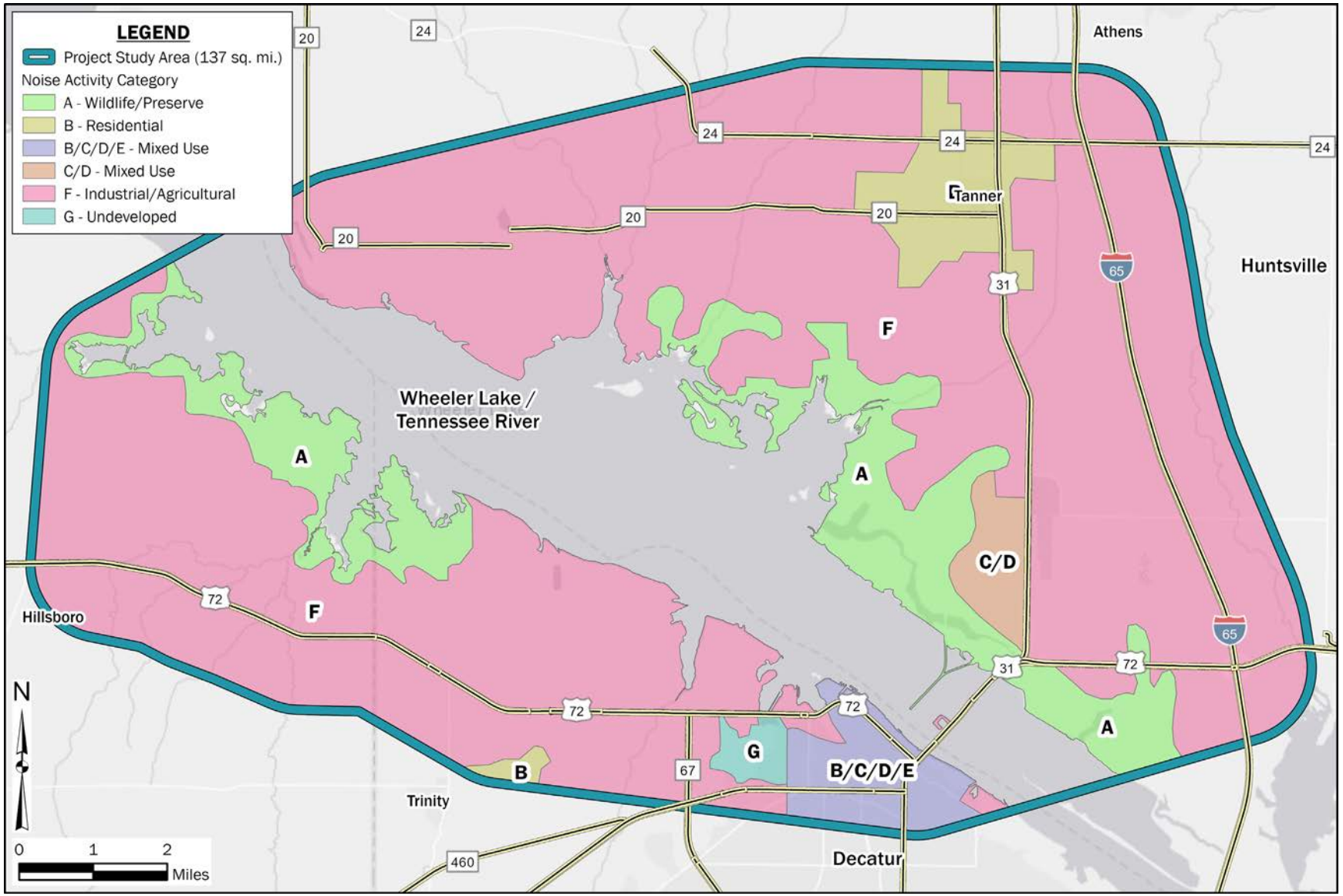
Resources

The figure below provides the noise activity categories within the Project Study Area that were identified through this Feasibility Study.

Next Steps

If the planned roadway improvements result in noise levels surpassing the NAC, mitigation measures must be evaluated and, depending on the land use category, may be necessary. In future NEPA processes, a comprehensive noise study will be necessary. During construction, it is important to adopt a practical approach to mitigate noise impacts caused by construction equipment and activities. Best Management Practices (BMP) can be implemented to minimize the construction's impact on nearby residents and sensitive areas without disrupting the construction schedule.

Figure 1.3.6.4-1: Noise Activity Categories Map



1.3.6.5 Air Quality

Air pollution arises from a multitude of origins: fixed sources like factories, power plants, and dry cleaners; moving sources like cars, buses, planes, trucks, and trains; and natural sources such as windblown dust. The pollution released from these sources can significantly impact air quality in various ways.

Regulations

Atmospheric Pollutants

The EPA has established the National Ambient Air Quality Standards (NAAQS) for atmospheric pollutants that are considered harmful to public health and the environment in accordance with the Clean Air Act of 1970, amended (CAA). The CAA section 176(c) requires that federal transportation projects be consistent with state air quality goals found in the State Implementation Plan (SIP) which was developed by the ADEM. The process to verify this consistency is called Transportation Conformity and means that transportation activities will not cause or contribute to new violations of the NAAQS, increase the frequency or severity of NAAQS violations, or delay timely attainment of the standard.

Atmospheric pollutants which are considered by the NAAQS include carbon monoxide (CO2), lead (Pb), nitrogen dioxide (NO2), ozone (O3), particulate matter (PM10 and PM2.5) and sulfur dioxide (SO2). The EPA also regulates mobile source air toxics (MSAT). Due to their association with roadway transportation sources, CO2, O3, PM2.5, and MSAT are typically reviewed for potential effects on nearby receptors with respect to roadway projects. ADEM's Air Division is responsible for regulating and maintaining compliance with the CAA in Alabama.

Section 107 of the CAA requires the EPA to publish a list of all geographic areas in compliance with the NAAQS as well as those not in compliance. This designation is made on a pollutant-by-pollutant basis for a particular geographic area. The EPA's current designations and scale of an area are found in the following table.

Table 1.3.6.5-1: EPA Current Designations

Designation	Description
Attainment	In compliance with NAAQS
Maintenance	Once classified as nonattainment but has since demonstrated attainment of the NAAQS
Nonattainment	Not in compliance with the NAAQS
Unclassified	Insufficient data to determine compliance; considered in attainment

Mobile Source Air Toxics

Toxic air pollutants, or hazardous air pollutants (HAP), are those that are known to cause, or are suspected of causing, cancer or other serious health ailments. The CAA Amendments of 1990 listed 188 HAP and addressed the need to control toxic emissions from automobiles and trucks. In 2001, the EPA issued its first MSAT Rule, which identified 21 MSAT compounds as being HAP that required regulation. A subset of nine of these MSAT compounds were identified as having the greatest influence on health and included benzene, ethylbenzene, naphthalene, 1,3-butadiene, formaldehyde, acrolein, acetaldehyde, and diesel particulate matter (DPM). EPA issued a second MSAT Rule in February 2007, which generally supported the findings in the first rule and provided additional recommendations of compounds having the greatest impact on health. Unlike the criteria pollutants, toxics do not have NAAQS, making evaluation of their impacts more subjective.

The FHWA issued an interim guidance update regarding analyzing MSAT in NEPA documents for highway projects. Depending on the specific project circumstances, FHWA has identified three levels of analysis:

- No analysis for project with no potential for meaningful MSAT effects.
- Qualitative analysis for projects with low potential MSAT effects.
- Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

Most highway projects, including minor widening and new interchanges, among others, where design year traffic is expected to be less than 140,000 to 150,000 annual average daily traffic (AADT) fall into the "projects with low potential MSAT effects" category.

Methodology

Motor Vehicle Emission Simulator

The EPA's Motor Vehicle Emission Simulator (MOVES) is an emission modeling system that estimates emissions for mobile sources at the national, county, and project level for criteria and toxic air pollutants and greenhouse gases. Using the EPA's MOVES model, as shown in Figure 1.3.6.5-1, FHWA estimates that even if vehicle miles traveled (VMT) increases by 31% from 2020 to 2060 as forecast, a combined reduction of 76% in the total annual emissions for the priority MSAT is projected for the same time period.

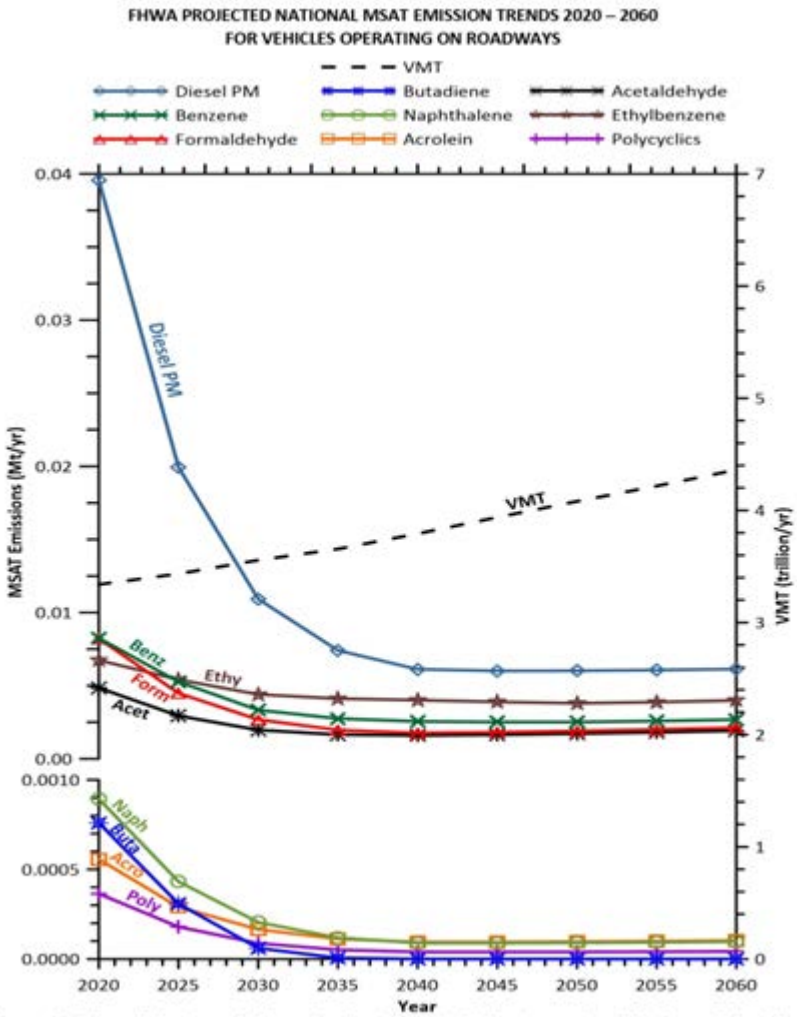
Resources

An air quality monitoring station operated by the ADEM is located in the City of Decatur. This station monitors for PM2.5 and ozone. Based on air quality data collected in the area and presented in the EPA Green Book, the Decatur, Alabama area (Morgan and Limestone counties) is in attainment for all criteria, meaning Transportation Conformity does not apply.

Next Steps

The maximum AADT on the existing corridor is approximately 50,000 vehicles; therefore, a quantitative MSAT emission analysis is not warranted. A qualitative analysis will provide a basis for identifying and comparing the potential differences among MSAT emissions, if any, from various alternatives.

Figure 1.3.6.5-1: FHWA Projected National MSAT Trends – 2020 - 2060



Note: 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: EPA MOVES3 model runs conducted by FHWA, March 2021.

1.3.6.6 Water Quality

Water quality refers to the chemical, physical, biological, and radiological characteristics of water that determine its suitability for specific uses and the overall health of aquatic ecosystems. It is a measure of the condition and purity of water, reflecting its ability to support various beneficial uses, such as drinking, swimming, fishing, irrigation, and sustaining aquatic life.

Regulations

The CWA establishes water quality standards (WQS) as a fundamental component of its regulatory framework to protect and restore the nation's waters. WQS are specific criteria and guidelines that define the desired conditions for waterbodies, ensuring that they are suitable for their designated uses, such as drinking water supply, swimming, fishing, and supporting aquatic life. The CWA's WQS consist of three key elements:

1. Designated Uses: Each waterbody is assigned a designated use or uses, reflecting its intended purpose. For example, a river may have designated uses for drinking water supply, recreation, and supporting aquatic life. States have the flexibility to set specific designated uses based on their unique environmental and societal needs.
2. Water Quality Criteria: Water quality criteria establish the scientific and measurable parameters necessary to protect the designated uses. These criteria typically include specific numerical values for pollutants or physical attributes that must not be exceeded to safeguard the water's quality. The CWA 303(d) list is a compilation of impaired waters in the US that do not meet state water quality standards for their intended uses due to various sources of pollution. The impairment may be due to pollutants from various sources, including industrial discharges, agricultural runoff, urban stormwater, and other human activities.
3. Antidegradation Policy: The antidegradation policy is designed to maintain and protect existing high water quality conditions. It requires water quality in outstanding or unique waters to remain preserved, even when there might be pressures for development or increased pollutant discharges.

The CWA requires states to develop their WQS and submit them to the EPA for approval. ADEM manages regulatory authority over surface water quality (Chapter 334-6-10: Water Quality Criteria), which was codified in 1975 (Title 22, Section 22-22-1 et. Seq., Code of Alabama 1975). Alabama waters, both interstate and intrastate, have water quality criteria established for particular use classifications (Chapter 335-6-11: Water Use Classifications for Interstate and Intrastate Waters). Water Use Classifications and the conditions related to best usages are detailed in the table following this page.

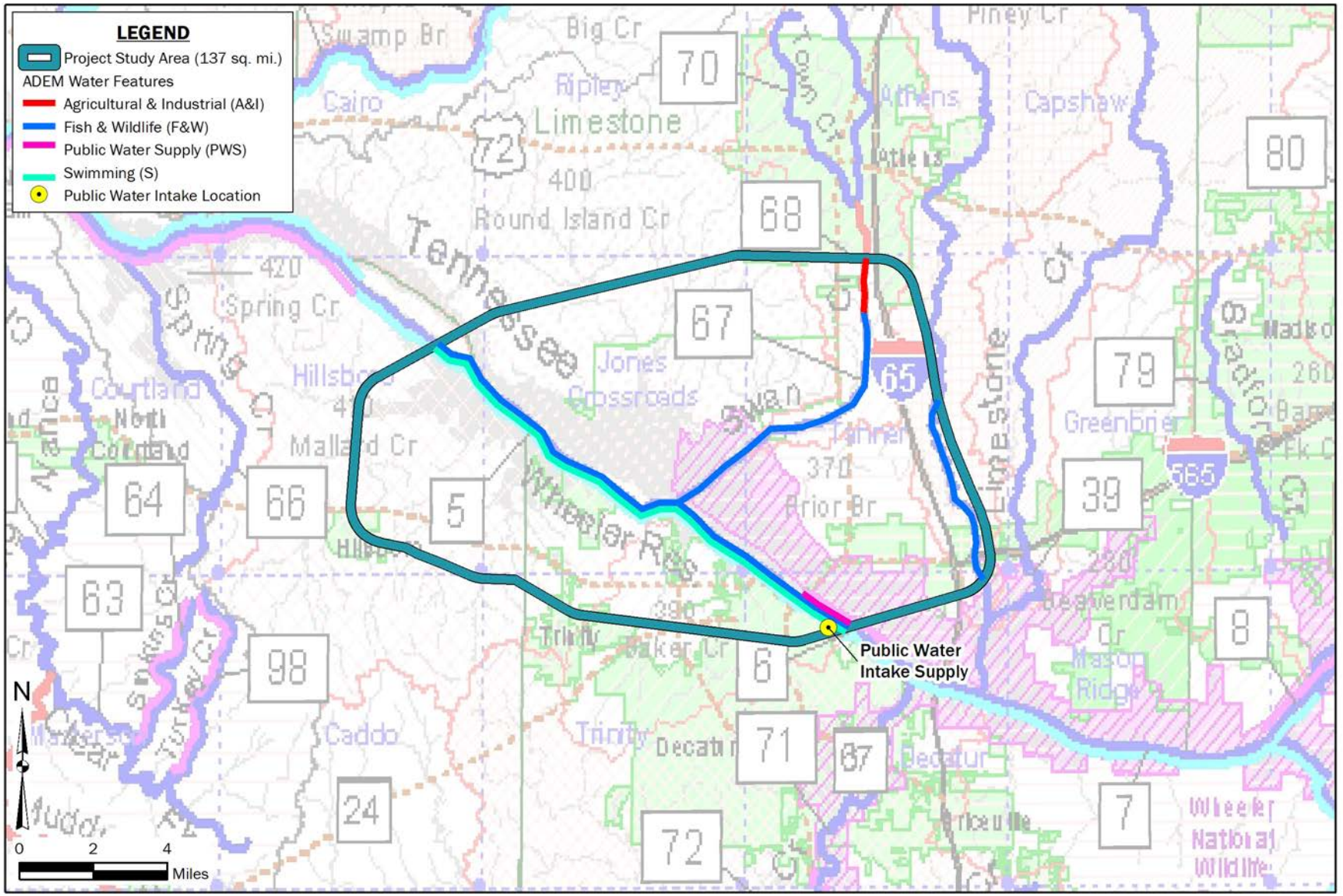
ADEM priority construction sites include any site that discharges to (1) a waterbody which is listed on the most recently EPA approved 303(d) list of impaired waters for turbidity, siltation, or sedimentation; (2) any waterbody for which a total maximum daily load (TMDL) has been finalized or approved by EPA for turbidity, siltation, or sedimentation; (3) any waterbody assigned the Outstanding Alabama Water use classification in accordance with ADEM Administrative (Admin.) Code r. 335-6-10-.09; and (4) any waterbody assigned a special designation in accordance with ADEM Admin. Code r. 335-6-10-.10.

Table 1.3.6.6-1: ADEM Water Use Classifications

Classification	Water Quality Criteria
Outstanding Alabama Water	High quality waters that constitute an outstanding Alabama resource, such as waters of state parks and wildlife refuges and waters of exceptional recreational or ecological significance.
Public Water Supply	Waters which are subjected to treatment approved by ADEM will be considered safe for drinking or food processing purposes.
Swimming	Waters which are under proper sanitary supervision by the controlling health authorities. The quality of waters will also be suitable for the propagation of fish, wildlife, and aquatic life. The quality of salt waters and estuarine waters to which this classification is assigned will be suitable for the propagation and harvesting of shrimp and crabs.
Shellfish Harvesting	Coastal waters which meet the sanitary and bacteriological standards included in the National Shellfish Sanitation Program (NSSP) Guide for the Control of Molluscan Shellfish: 2015 Revision, published by the Food and Drug Administration (FDA), and the US Department of Health and Human Services (HHS).
Fish and Wildlife	Waters which are suitable for fish, aquatic life, and wildlife propagation. The quality of salt and estuarine waters to which this classification is assigned will also be suitable for the propagation of shrimp and crabs.
Limited Warmwater Fishery	During the months of May through November, waters which are suitable for agricultural irrigation, livestock watering, and industrial cooling waters. The waters will be usable after special treatment for industrial process water supplies. The waters are also suitable for other uses for which waters of lower quality will be satisfactory.
Agricultural and Industrial Water Supply	Waters, except for natural impurities which may be present therein, which are suitable for agricultural irrigation, livestock watering, industrial cooling waters, and fish survival. The waters will be usable after special treatment for industrial process water supplies. The waters are also suitable for other uses for which waters of lower quality will be satisfactory.

Source: ADEM Admin. Code r 335-6-10-.09

Figure 1.3.6.6-1: ADEM Water Use Classification Map showing 303(d) Impaired Waters



Methodology

The methodology for obtaining water resource classifications involved the use of Alabama's Surface Water Classifications Map specific to the Project Study Area. Information regarding the 303(d) list of Impaired Waters and Construction Stormwater Priority Watersheds was obtained from the ADEM Water Quality data viewers. ADEM also maintains a fish consumption advisory list which was accessed via an ADEM e-Maps viewer.

Resources

Water Resource Classifications

Within the Project Study Area, approximately 8,183 linear feet are designated as public water supply, 7,763 linear feet are designated as agricultural and industrial, 74,118 linear feet are designated as swimming, and 145,082 linear feet are designated as fish and wildlife. According to the City of Decatur Water Treatment Supply, the public water intake is located in the southeast portion of the Project Study Area upstream of the current SR-20 bridge. Figure 1.3.6.6-1 on the previous page provides an ADEM Water Use classification map.

Three water bodies located in the Project Study Area are on the 303(d) list of Impaired Waters. The following table describes the impaired water bodies.

Table 1.3.6.6-2: 303(d) Impaired Waters

Water Body	Cause	Source of Impairment
Tennessee River (Wheeler Lake)	Nutrients	Agriculture
	Metals (mercury)	Atmospheric deposition
Swan Creek	Nutrients	Agriculture, Municipal, Urban runoff/storm sewers
Bakers Creek	Per-fluorooctanesulfonic acid (PFOS)	Industrial

Source: ADEM Water Quality Branch

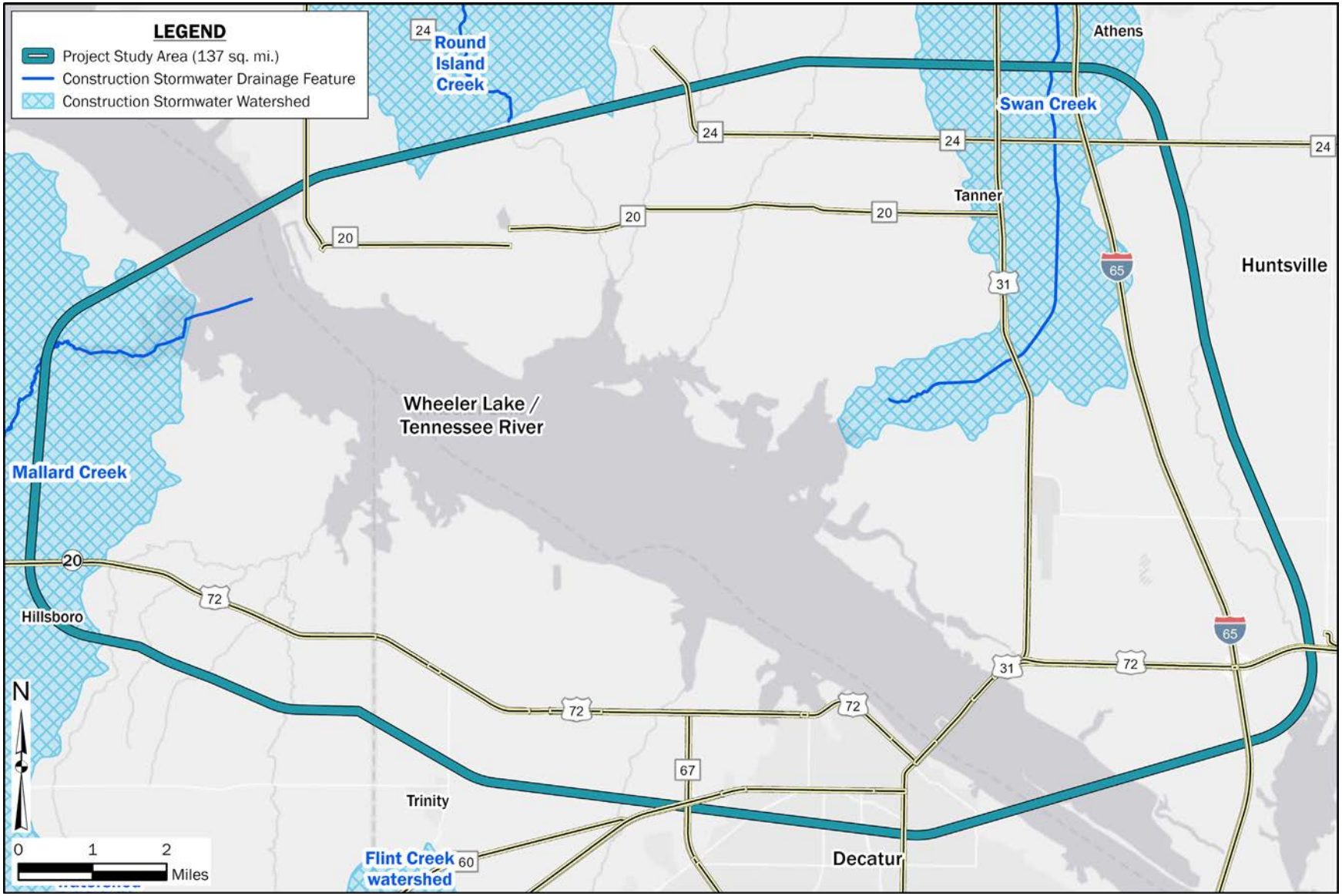
Fish Consumption Advisories

Within the Project Study Area, the Tennessee River/Wheeler Lake is listed as one largemouth bass meal per month due to PFOS contamination. The Round Island Creek (Wheeler Lake) is listed as do not eat any largemouth bass for mercury.

Construction Stormwater Priority Watersheds

Three watersheds located in the Project Study Area are on the Construction Stormwater Priority Watershed list. Figure 1.3.6.6-2 displays the Construction Stormwater Priority Watersheds.

Figure 1.3.6.6-2: Construction Stormwater Priority Watersheds



Next Steps

To protect water quality during construction of the proposed bridge, implement erosion and sediment control measures, adopt stormwater management practices, avoid disturbing sensitive areas, control pollutants, schedule construction wisely, conduct regular inspections, monitor water quality, and educate workers about best practices to minimize environmental impact.

1.3.6.7 Historic Resources

Historic resources encompass sites, buildings, structures, districts, or objects from prehistoric and historic times that hold cultural significance. They either are listed on, or are eligible for inclusion in, the National Register of Historic Places (NRHP). Additionally, properties of traditional religious and cultural importance to Native American tribes also are considered part of these historic resources.

Regulations

Section 106 of the National Historic Preservation Act (NHPA) mandates that Federal agencies consider the impact of their projects on historic properties. Cultural resources encompass various elements, including archaeological sites and locations holding cultural value. These resources undergo evaluations to determine their eligibility based on specific criteria outlined in the regulations. The criteria consider factors such as historical significance, association with important events or individuals, architectural or artistic value, and information yielded through research (36 CFR 60.4). Certain resources may require additional evaluation based on specific considerations. These considerations include religious properties, buildings or structures of architectural value, birthplaces or graves of historically significant figures, cemeteries with exceptional importance, reconstructed buildings, commemorative properties, and properties of significance within the past 50 years.

Section 106 treats listed NRHP properties and eligible properties equally. Once cultural resources within the Area of Potential Effects (APE) are identified and evaluated, assessments are conducted to determine the potential effects of the proposed project on historic properties. These assessments aim to determine whether the project would result in no effect, no adverse effect, or a potential adverse effect on the historic properties.

A Section 4(f) resource refers to a provision within the US Department of Transportation (DOT) Action of 1966, specifically Section 4(f). Please reference Section 1.3.6.8 for additional details regarding Section 4(f) properties.

Methodology

The evaluations of effects entail assessing how the proposed project would affect the specific qualities that make a property eligible for NRHP listing and its overall condition. Adverse effects can encompass physical damage, such as partial or complete destruction of the resource, as well as actions that undermine its historical context even without causing physical harm. Evaluations also involve considering noise and vibration impacts based on established standards, changes to important viewsheds, and considering cumulative effects or potential impacts that may arise in the future.

Resources

According to the Desktop Archaeological Survey Report dated April 2023 (Appendix E), a total of 151 cultural resources investigations have been conducted in the records review area. Most of these investigations took place before 2013; however, 32 investigations were conducted between 2013 and 2023. Approximately 15% of the Project Study Area has been surveyed for cultural resources in the past. Within the records review area, 486 previously recorded archaeological resources were identified and 436 archaeological resources were identified within the Project Study Area. These resources include precontact lithic scatters, mounds, middens, historic artifact scatters, and historic cemeteries. None of the archaeological resources within the Project Study Area have undergone NRHP evaluations; however, 56 of the previously recorded archaeological sites appear to be potentially significant based on their descriptions.

Next Steps

Based on the provided information, an extensive archaeological investigation of the Project Study Area is advised once a specific alignment has been selected and

ground disturbance limits are determined. If the Project is found to have a negative impact on historical or culturally significant properties, steps can be taken to prevent, reduce, or mitigate such effects. In certain cases, adjustments to the Project's plan can be made to avoid adverse impacts. However, if adverse effects cannot be avoided, mitigation measures will be proposed and agreed upon by all parties involved prior to further advancement of the Project. It is important to assess previously recorded archaeological resources that may be affected by the Project's activities for potential inclusion in the NRHP. If further survey and shovel testing are necessary to complete an NRHP evaluation, these additional tasks should be carried out.

1.3.6.8 Recreational Resources

Recreational resources, including parks, open space, and major trail networks, are crucial community facilities that offer environmental, aesthetic, and recreational benefits. They provide green spaces for relaxation, physical activity, and social interactions, contributing to a healthier lifestyle and enhanced well-being. Moreover, these resources play a significant role in preserving biodiversity and fostering ecological resilience, making them vital components of sustainable urban development.

Regulations

Section 4(f) – US Department of Transportation Act of 1966, amended.

A Section 4(f) resource refers to a provision within the US Department of Transportation (DOT) Act of 1966, specifically Section 4(f). This provision protects significant publicly owned parks, recreational areas, wildlife and waterfowl refuges, and historic sites from adverse impacts caused by transportation projects receiving federal funding or requiring federal approval.

Under Section 4(f), transportation agencies must make all possible efforts to avoid using Section 4(f) resources as part of their project plans. If there are no feasible alternatives to using a Section 4(f) resource, the agency must demonstrate that all possible mitigation measures have been taken to minimize harm to the resource. This provision aims to maintain the preservation of important cultural, recreational, and environmental resources while promoting transportation infrastructure development.

Use of a Section 4(f) property occurs when:

- land is permanently incorporated into a transportation project;
- when there is a temporary occupancy of land that is adverse in terms of the statute's preservation purpose;
- when there is a constructive use (a project's proximity impacts are so severe that the protected activities, features, or attributes of a property are substantially impaired).
- An alternative is feasible if it can be constructed as a matter of sound engineering.

An avoidance alternative is prudent if it meets the definition in 23 CFR 774.17, which includes, among other factors, assessing safety or operational problems; how well the project's purpose and needs are met; the severity of social, economic, or environmental impacts; and the severity of impacts to environmental resources protected under other Federal statutes, among other factors. When multiple alternatives use Section 4(f) property and the evaluation of avoidance alternatives concludes there is no feasible and prudent avoidance alternative, then FHWA may approve, from the remaining alternatives that use Section 4(f) property, only the alternative that causes the least overall harm considering the preservation purpose of the statute.

Section 6(f) – Land and Water Conservation Fund Act of 1965

A Section 6(f) resource refers to a provision within the Land and Water Conservation Fund (LWCF) Act of 1965, specifically Section 6(f). Section 6(f) establishes certain restrictions on the use or conversion of these lands to maintain their preservation and availability for outdoor recreation and conservation purposes. Section 6(f) prohibits the conversion of property acquired or developed with these funds to a non-recreational purpose without approval from the National Park Service.

Methodology

Section 4(f) resources were identified using the City's GIS "parks" layer, Wildlife Management Area (WMA) boundaries, and the wildlife refuge boundary. Remaining sites were identified with aerial photography. Section 6(f) resources were identified utilizing LWCF GIS data.

Resources

The Project Study Area encompasses 137 square miles and includes many potential Section 4(f) properties and several Section 6(f) properties. The lists below are not exhaustive, but they highlight many of the Section 4(f) and Section 6(f) properties in the Project Study Area. Figure 1.3.6.8-1 shows potential Section 4(f) site locations. Figure 1.3.6.8-2 show potential Section 6(f) site locations.

Section 4(f) Resources:	

• Wheeler National Wildlife Refuge
• Swan Creek WMA
• Mallard-Fox Creek WMA
• Historic Districts
  • Albany Heritage Neighborhood Historic District
  • Bank Street Historic District
  • Bank Street Old Decatur Historic District
  • New Decatur-Albany Historic District
  • New Decatur-Albany Residential Historic District
	• National Register of Historic Places
	  • Boxwood Plantation Slave Quarter
	  • Col. Francis Dancy House
	  • Cotaco Opera House
	  • Forest Home
	  • New Decatur-Albany Historic District
	  • Rhea-McEntire House
	  • State Bank Building, Decatur Branch
	  • Southern Railway Depot
	• Parks
	  • Public parks throughout the Project Study Area

Section 6(f) Resources:

- Carrie Mathews Center Park
- Delano Park
- Founders Park
- 1987 Consolidated Project
- Tanner Community Park

Figure 1.3.6.8-1: Potential Section 4(f) Site Locations

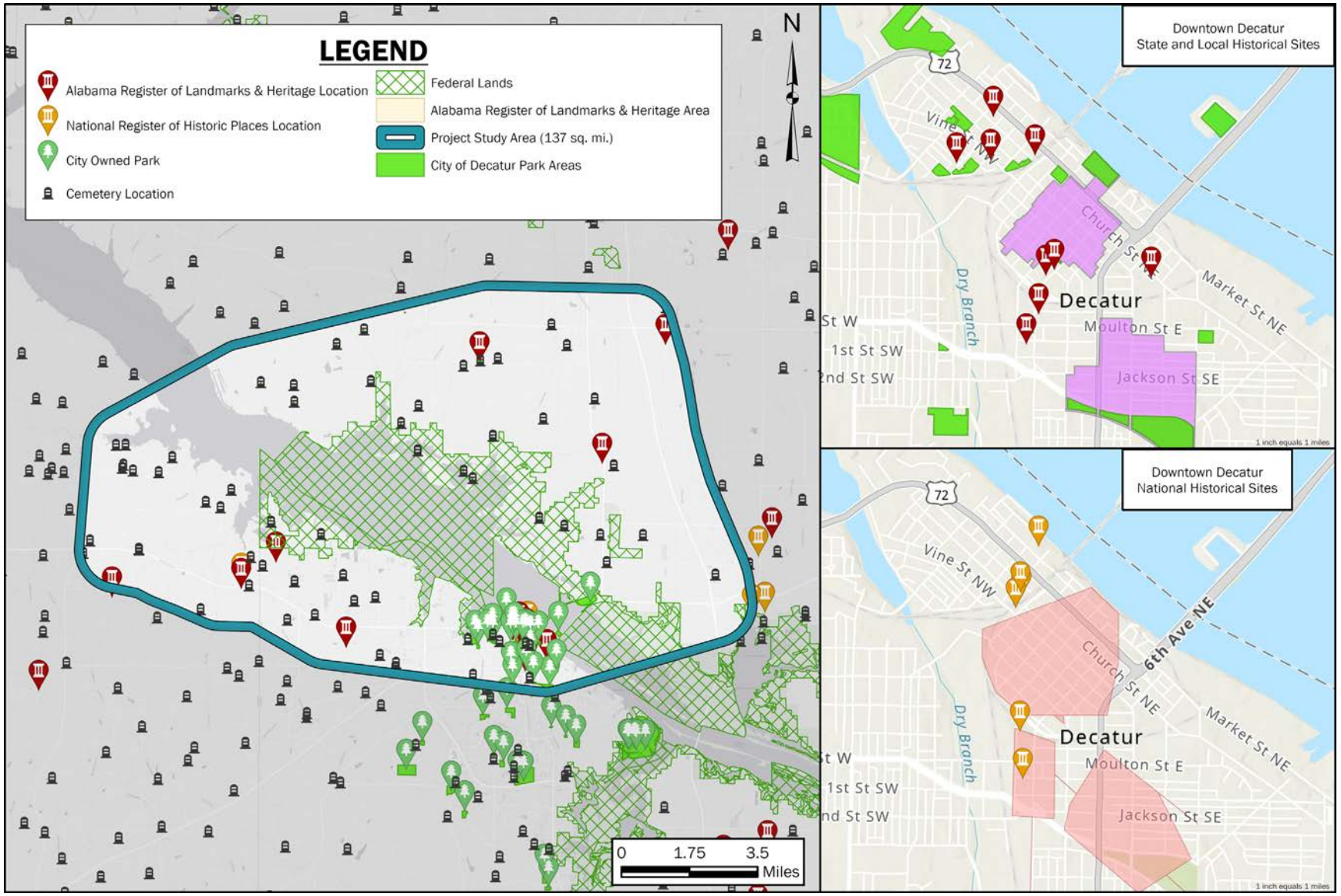
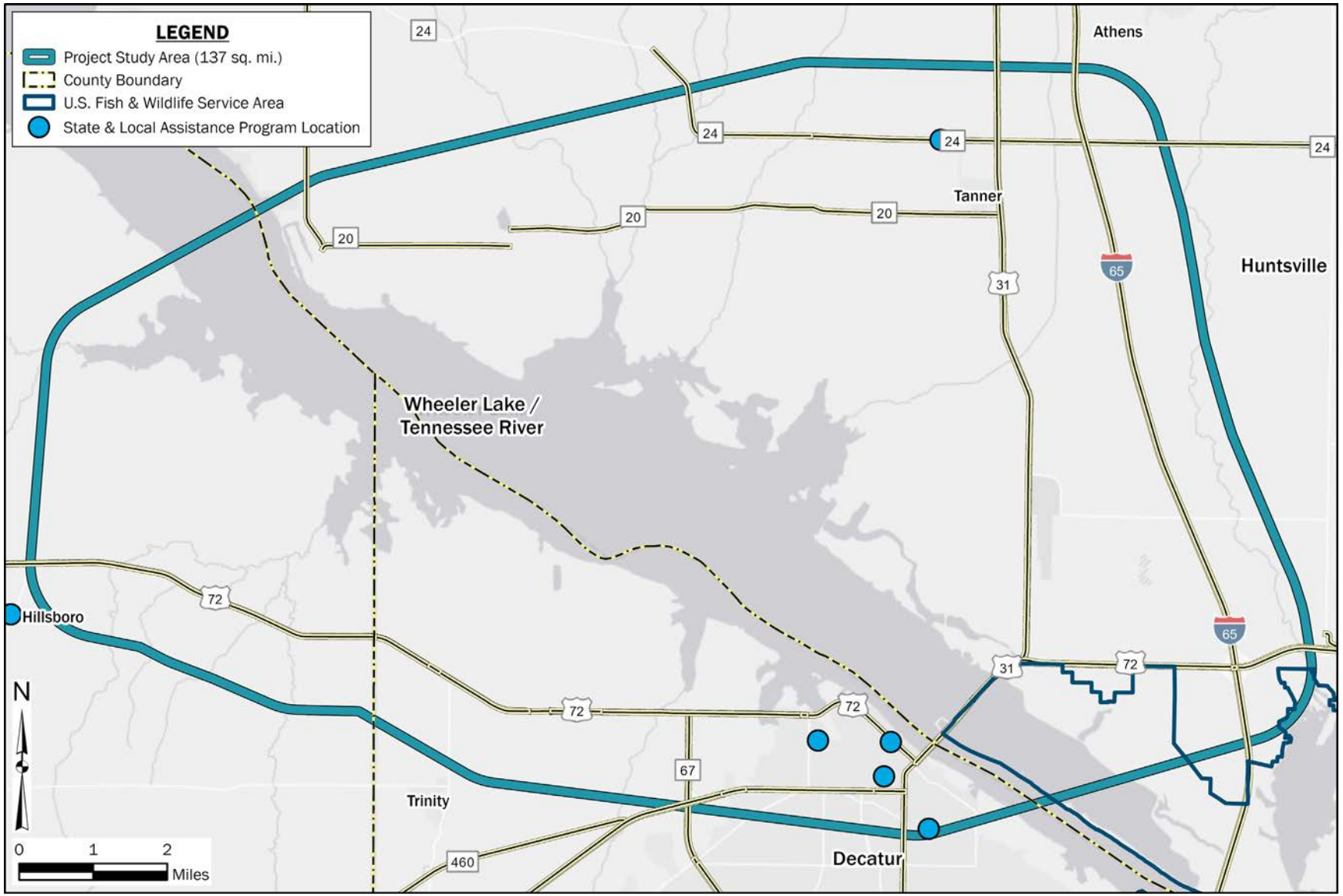


Figure 1.3.6.8-2: Potential Section 6(f) Site Locations



Next Steps

Numerous facilities consisting of parks and recreational resources have been identified as being publicly owned and designated Section 4(f) properties under the DOT Act. Five properties have received funding from the LWCF and are categorized as Section 6(f) properties. Any future projects identified within the Project Study Area that may affect these resources will necessitate further assessment and evaluation.

1.3.6.9 Land Use

Land use encompasses the deliberate and current utilization of land for specific designated purposes or activities, representing a pivotal aspect of urban and rural planning and development. It encompasses a wide array of decisions and actions that dictate how land is allocated, zoned, developed, and managed, reflecting the complex interplay of social, economic, and environmental factors. This multifaceted concept considers a diverse range of land use categories, including:

1. Residential areas that cater to housing needs
2. Commercial zones that facilitate business activities and commerce
3. Industrial sectors that support manufacturing and production
4. Agricultural lands that sustain food production and farming
5. Recreational spaces that foster leisure and outdoor activities
6. Conservation areas that preserve and protect natural resources and biodiversity

Successful land use planning involves striking a delicate balance between the needs of the population, economic growth, and environmental sustainability so land is appropriately used to meet both present and future requirements while safeguarding the natural environment and overall well-being of communities.

Regulations

The responsibility for land use planning within the Project Study Area lies mainly with local municipalities and county governments. For the City, the Planning Commission is “authorized and empowered to make and adopt a master plan for the physical development of the city, including any areas outside its boundaries which, in the commission’s judgment, bear relation to the planning of such municipality” (Section 2-242(a) of the Code of Decatur, Alabama).

Methodology

The methodology employed for land use analysis involves the use of National Land Use/Cover data, which provides comprehensive information on the existing land use patterns across the Project Study Area. This dataset was crucial in identifying and categorizing the different types of land uses, such as residential areas, agricultural fields, industrial zones, and natural areas, allowing for a detailed understanding of how the land is currently being utilized. Future/planned uses of the Project Study Area were determined by analyzing One Decatur’s comprehensive plan as adopted by the Decatur City Council in February 2018.

Resources

Current Land Use

The Project Study Area predominantly consists of agricultural and residential lands, with the City of Decatur primarily composed of residential, industrial, and commercial areas. Along the northeastern side of the Tennessee River, the land use is characterized by vacant or undefined lands. Within the Project Study Area, numerous industrial properties are located along the southern bank of the Tennessee River. The Browns Ferry Nuclear Plant is located in the north-central portion of the Project Study Area. Figure 1.3.6.9-1 displays generalized land uses within the Project Study Area. Figure 1.3.6.9-2 displays a zoning map for the Project Study Area.

Figure 1.3.6.9-1: Generalized Land Use Map

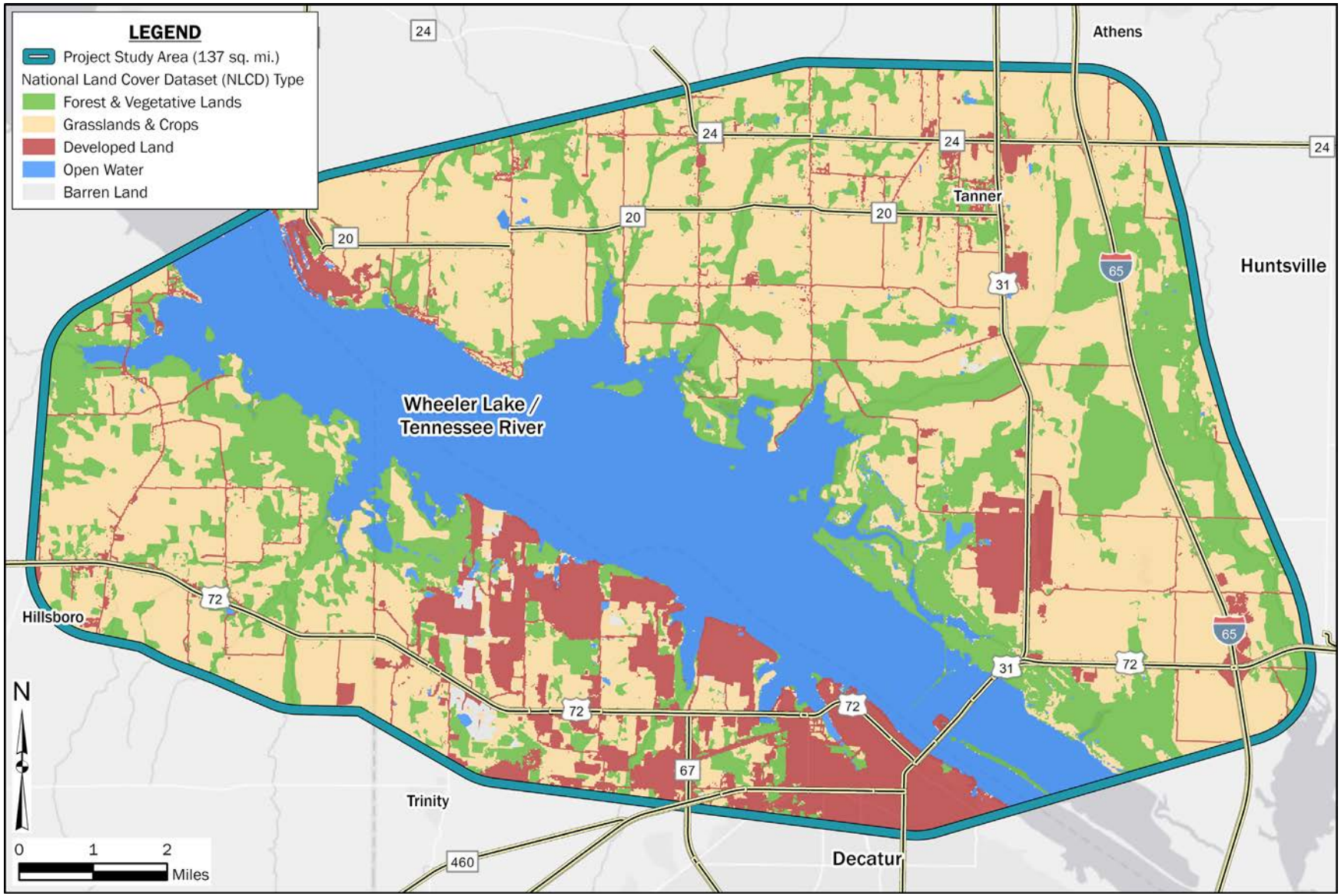
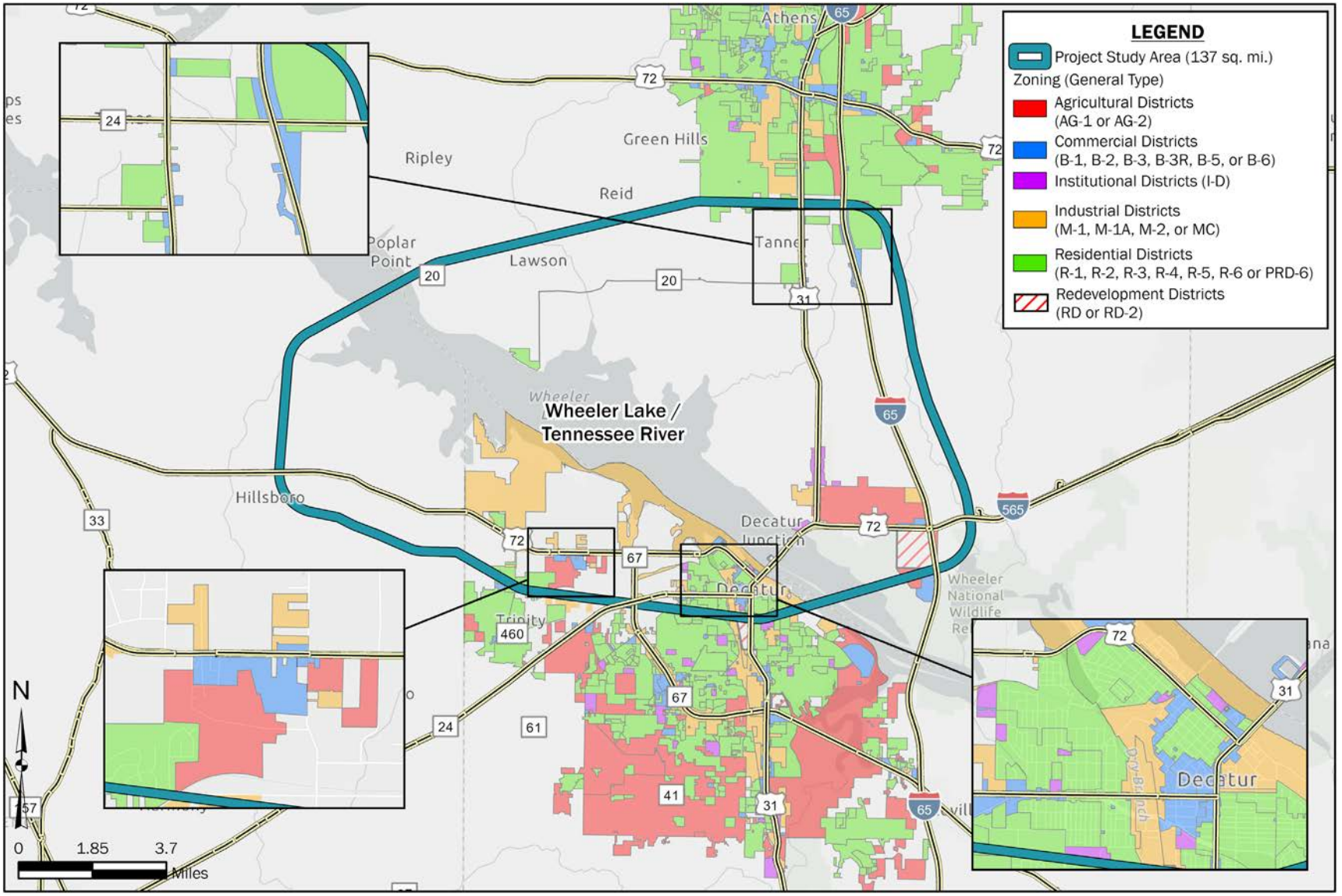


Figure 1.3.6.9-2: Zoning Map for Project Study Area



Future/Planned Land Use

According to One Decatur's comprehensive plan, there are plans to revitalize current infrastructure within Decatur while also expanding its footprint. With regards to the City of Decatur, the north side of the Tennessee River is planned to have an increase in residential neighborhoods and commercial development along SR-20. The area north of SR-20 is planned to have an increase in new industry and employment. South of the Tennessee River, Decatur is planning to revitalize its downtown district and surrounding neighborhoods while preserving the character of these neighborhoods. The area to the northwest of Decatur is planned to have an increase in new industry to expand employment opportunities. Areas to the south and southeast of Decatur are planned to have an expansion in new residential and commercial development.

Lawrence and Limestone Counties do not currently have a list of planned development within the Project Study Area.

Next Steps

Future development within and around the City of Decatur will significantly affect transportation needs. With increased residential, commercial, and industrial developments, the City's population and economic growth will drive higher demands for efficient transportation options. The projected expansion of commercial and industrial areas will require well-connected transportation corridors to facilitate the movement of goods and people. Adopting sustainable and multi-modal transportation solutions will prepare Decatur's transportation infrastructure for the City's growth vision and enhance the overall quality of life for residents and businesses.

1.3.6.10 Farmland

According to the 2017 Census of Agriculture, there are more than 550,000 acres of land in Lawrence, Limestone, and Morgan counties designated as farms. The predominant use of the farms is for cropland, with soybeans, cotton, and wheat being the most common crops harvested. Pastureland also makes up a significant portion of farmland, with hay being the common crop. The Alabama Cooperative Extension System reported in 2010 that agriculture and related industries contributed 84.1% of Lawrence County's, 14.5% of Limestone County's, and 24% of Morgan County's economic activity.

Regulations

The Farmland Protection Policy Act (FPPA) aims to prevent the unnecessary and irreversible conversion of farmland to nonagricultural uses through compatible administration of Federal programs with state, local, and private efforts to protect farmland. FPPA considers farmland as prime farmland, unique farmland, or land of statewide/local importance (described below), encompassing various types of agricultural land, like cropland, pastureland, and forest land.

1. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion, as determined by the Secretary of Agriculture. Prime farmland includes land that possesses the above characteristics but currently is being used to produce livestock and timber. It does not include land already in or committed to urban development or water storage.
2. Unique farmland is land other than prime farmland that is used for production of specific high-value food and fiber crops, as determined by the Secretary. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality or high yields of specific crops when treated and managed according to acceptable farming methods. Examples of such crops include citrus, tree nuts, olives, cranberries, fruits, and vegetables.
3. Farmland, other than prime or unique farmland, that is of statewide or local importance for the production of food, feed, fiber, forage, or oilseed crops, as determined by the appropriate State or unit of local government agency or agencies, and that the Secretary determines should be considered as farmland for the purposes of this chapter.

FPPA protects these vital agricultural resources while allowing for various agricultural land uses.

"Farmland" does not include land already in or committed to urban development or water storage. Farmland "already in" urban development or water storage includes all such land with a density of 30 structures per 40-acre area. Farmland already in urban development also includes lands identified as "urbanized area" (UA) on the Census Bureau Map, or as urban area mapped with a "tint overprint" on the USGS topographical maps, or as "urban-built-up" on the USDA Important Farmland Maps.

Methodology

The NRCS WSS was used to identify areas of prime farmland and farmland of statewide importance within the study area. These areas were plotted on a map of the Project Study Area. Areas identified by the U.S. Census Bureau as UA were excluded on the map.

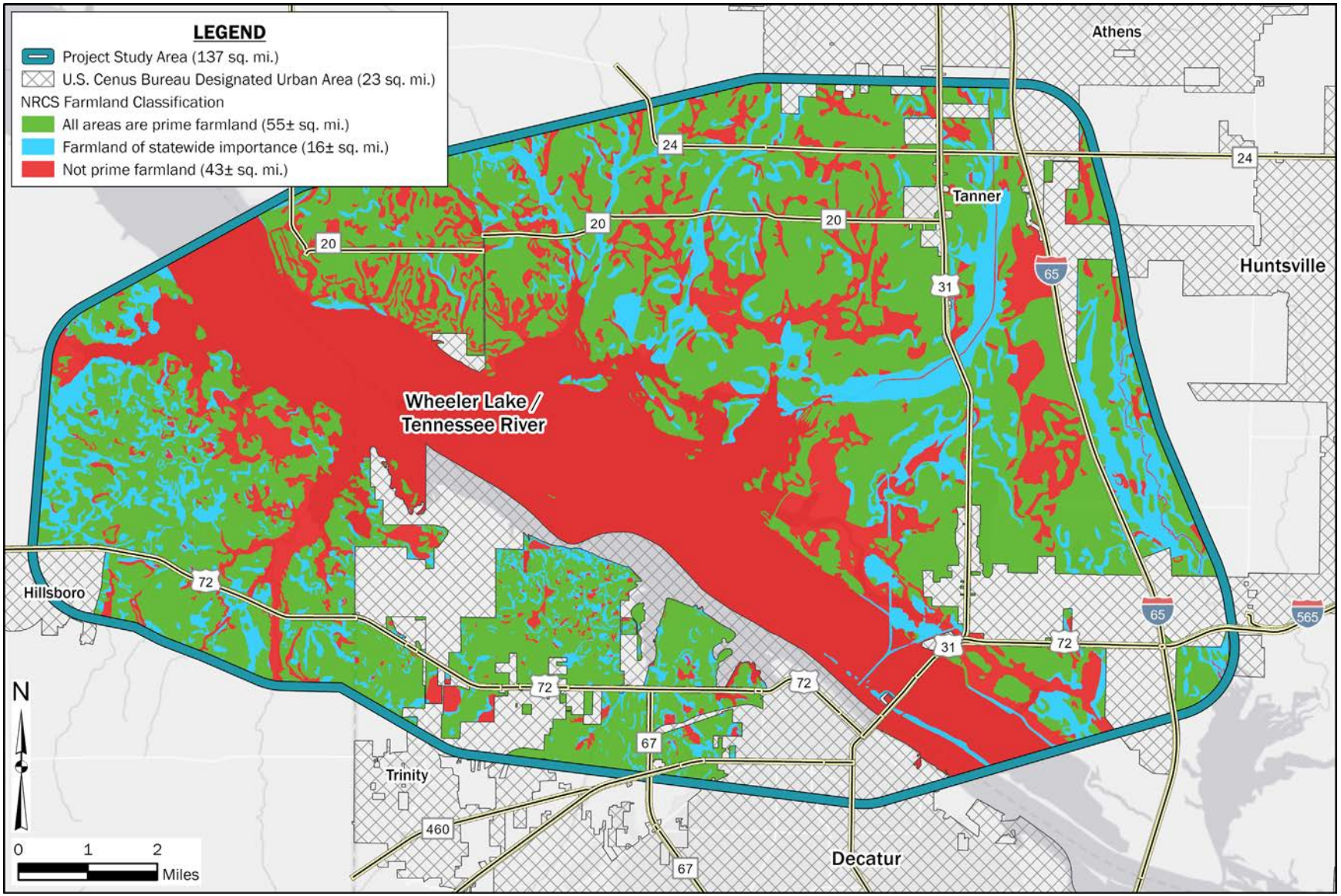
Resources

Within the Project Study Area, approximately 55 square miles are designated as prime farmland and 16 square miles are farmland of statewide importance. Together, they account for 66% of the land with the Project Study Area, with 23 acres considered "designated urban area." Figure 1.3.6.10-1 provides a farmland classification map.

Next Steps

When a future transportation project is identified to potentially impact prime farmland and farmland of statewide importance, the next steps involve conducting a detailed impact assessment, seeking alternatives and mitigation strategies, collaborating with agricultural experts and stakeholders, maintaining regulatory compliance, engaging in public consultation, and considering long-term preservation efforts.

Figure 1.3.6.10-1: NRCS Farmland Classification Map



1.3.6.11 Federal Emergency Management Agency (FEMA) Floodplains

FEMA floodplains refer to the areas of land that are prone to flooding during certain weather conditions or natural events, particularly heavy rainfall, snowmelt, storm surges, or the overflow of nearby rivers, lakes, or coastal areas. These floodplains are identified and mapped by FEMA to assess the potential risks posed by flooding and to aid in disaster management and preparedness. FEMA Flood Insurance Rate Maps (FIRM) highlight the extent of flooding that could occur during various flood scenarios, helping communities and individuals understand the potential hazards and make informed decisions about land use and development. Managing and regulating development in FEMA floodplains is crucial for reducing flood risks, protecting lives and property, and promoting community resilience in the face of natural disasters.

Regulations

EO 11988, Floodplain Management, EO 13690, Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input, and 23 CFR 650.111, Location hydraulic studies provide guidelines to Federal agencies regarding floodplain management. These orders mandate that Federal agencies must strive to avoid providing any direct or indirect support for development within the 100-year floodplain if there are practical alternatives available. The 100 year floodplain represents the area that has a 1% chance of flooding in any given year, also known as the base flood or a flood with a one-in-100 chance of occurring annually.

FEMA flood zones are specific geographic areas designated by FEMA based on the likelihood of flooding in those regions. The zones are classified according to their level of flood risk and are essential for determining flood insurance requirements and establishing building regulations and standards in flood-prone areas.

Table 1.3.6.11-1: FEMA Flood Zone Descriptions

FEMA Flood Zone	Description
A	This zone represents areas with a high risk of flooding, typically located near rivers, streams, and other bodies of water. These areas are usually prone to frequent and severe flooding.
AE*	This zone indicates areas at high risk for flooding due to a 1% annual chance (100-year) flood event. It incorporates the base flood elevation.
AH*	This zone signifies areas at high risk for shallow flooding, usually due to a 1% annual chance (100-year) flood event. These areas have water depths between 1 and 3 feet.
AD	This zone denotes areas at high risk for shallow flooding, primarily due to sheet flow from rainfall. It is like Zone AH but has an average water depth of less than 1 foot.
VE	This zone is specific to coastal areas and represents areas at high risk for flooding due to wave action. It incorporates both the base flood elevation and the wave effects.
X (shaded)	This zone represents areas with moderate flood risk, typically located outside the high-risk zones. These areas still have a potential for flooding but at a reduced intensity compared to the higher-risk zones.
X (unshaded)+	This zone denotes areas with minimal flood risk, usually located in areas with a low probability of flooding.

*100-year floodplain (1% annual chance); +500-year floodplain (0.2% chance)

A FEMA regulatory floodway is a specific area within the floodplain that is designated and regulated by FEMA due to its critical role in conveying floodwaters during a 100-year flood event. The regulatory floodway is the portion of the floodplain where floodwaters are expected to flow with the highest velocity and depth during a major flood event.

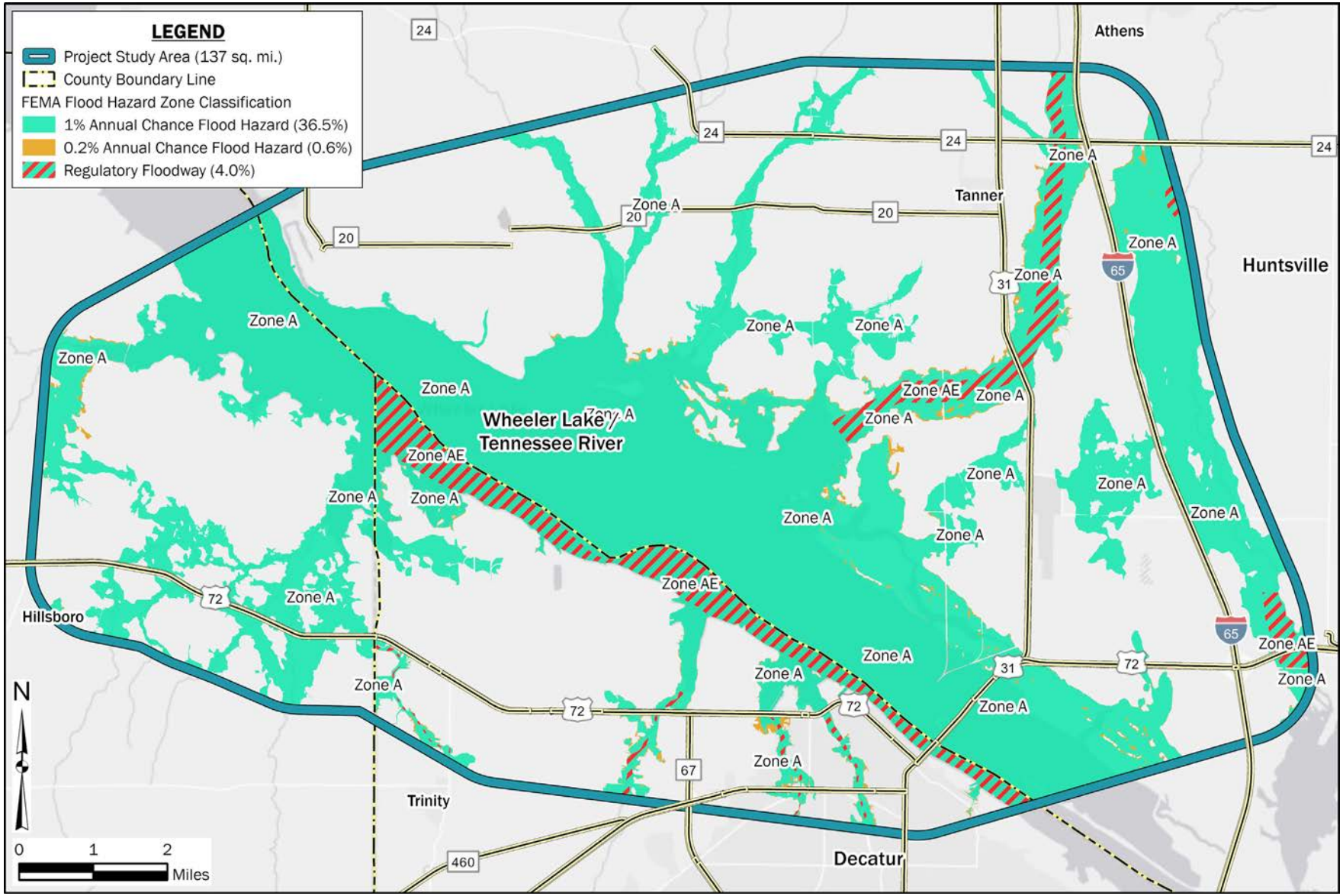
Methodology

The methodology for obtaining flood risk information involved consulting the FEMA FIRM specific to the Project Study Area.

Resources

According to the FEMA National Flood Hazard Layer (NFHL) Map (Figure 1.3.6.11-1), 36.5% of the Project Study Area is in the 100-year (1%) floodplain (zones AE and AH) and is heavily concentrated along the Tennessee River and its tributaries. Another 0.6% of the Project Study Area is in the 500-year (0.2%) floodplain (zone X, unshaded).

Figure 1.3.6.11-1: FEMA NFHL Map



Next Steps

City officials should conduct a comprehensive floodplain analysis for the proposed bridge, considering factors such as the bridge's elevation, impact on water flow, and potential changes to floodplain boundaries. They should also engage with local floodplain management authorities and FEMA to discuss the project, maintain compliance with regulations, and obtain necessary permits or approvals for building within the floodplain. Additionally, the City should implement appropriate mitigation measures, such as building retention or detention basins, improving stormwater management, or enhancing natural drainage systems, to reduce potential flood impacts in nearby areas.

1.3.6.12 Environmental Justice

Environmental Justice (EJ) is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations, and policies (EPA.gov). The purpose of this section is to evaluate existing conditions of certain populations within the Project Study Area and to assess specific demographic characteristics, including Minority and Low-Income populations.

There are several regulations and executive orders related to EJ Screenings in the US. The most notable are described below:

EO 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations"

Issued by President Bill Clinton in 1994, this executive order directs federal agencies to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. Populations with limited English proficiency and individuals aged above 64 are not considered minorities under EO 12898.

According to the EPA, minority populations are defined as those who list their racial status as a race other than white alone and/or list their ethnicity as Hispanic or Latino. That is, all people other than non-Hispanic white-alone individuals. The word "alone" in this case indicates that the person is of a single race, not multiracial. Low-Income populations include households where the household income is less than or equal to twice the federal “poverty level.”

NEPA

Enacted in 1970, this act requires federal agencies to consider the environmental effects of their proposed actions and involve the public in their decision-making processes. Through NEPA, agencies may conduct environmental justice screenings to evaluate and address potential impacts on minority and low-income communities.

Title VI of the Civil Rights Act of 1964

Title VI prohibits discrimination based on race, color, or national origin in programs and activities receiving federal financial assistance. It has been interpreted to include environmental justice considerations, allowing for the examination of disparate impacts on minority and low-income communities.

EPA's Environmental Justice Policy

The EPA has developed its own policy framework for integrating environmental justice into its programs, policies, and activities. This includes conducting environmental justice screenings to assess potential disproportionate impacts on disadvantaged communities.

Since its implementation, the EPA has employed diverse information sources to ensure compliance with EO 12898. These resources have aided the agency in assessing the likelihood of unequal environmental impacts and addressing significant environmental justice issues affecting populations throughout the U.S. Recognizing the advancements in computer mapping technology, EPA acknowledged the need for a comprehensive tool that could be used by EPA, government partners, and the public to understand environmental and demographic characteristics across the U.S. Consequently, EPA developed EJScreen and made it accessible to anyone interested in environmental justice issues. EJScreen aims to fulfill the Agency's obligations

regarding the protection of public health and the environment in alignment with EO 12898 and the objectives of EJ 2020, EPA's environmental justice strategic plan.
An EJ Screening Report outlining potential EJ concerns that the Project may encounter is included in Appendix F.

1.3.6.13 Climate Change

Climate change is the variation in the Earth's climate over time. Greenhouse gases (GHG) – carbon dioxide (CO2), methane (CH4), and nitrous oxide (N20) – are components of the atmosphere that trap heat near the surface of the Earth contributing to the greenhouse effect and, ultimately, climate change. An increase in GHG could impact climate components including temperature, precipitation, humidity, wind, and other meteorological variables. Most GHG occur naturally in the atmosphere, but human activities (such as fossil fuel emissions) cause increases in their concentrations. Global temperatures are expected to continue to rise as human activities continue to add GHG to the atmosphere. The effects of temperatures rising extends beyond atmospheric climate change alone and can include changes to water resources, agriculture, ecosystems, human health, and ocean systems.

Regulations

EO 14008, Tackling the Climate Crisis at Home and Abroad, also known as the Justice40 Initiative, outlines policies to reduce GHG emissions to limit the impacts of climate change. The Justice40 Initiative ensures that federally funded projects do not have a disproportionate impact on disadvantaged and marginalized communities in regards to climate change. Climate change considerations may include both potential effects of a proposed action on climate change and the implications of climate change for the environmental effects of a proposed action.

Methodology

The methodology for obtaining climate change data involved using weather models to estimate the average temperatures and rainfall specific to the Project Study Area.

Resources

Muscle Shoals, Alabama is the closest climate-analyzed site to the Project Study Area. The average high temperature in Muscle Shoals, Alabama, is 81.5°F in the hottest month of July, and its average low temperature is 33.5°F in the coldest month of January. Muscle Shoals has an average annual precipitation of 54.24 inches per year. The wettest month of the year is December, with an average rainfall of 5.48 inches.

Next Steps

The future of climate change is expected to include a warmer atmosphere, a warmer and more acidic ocean, higher sea levels, and larger changes in precipitation patterns. The future of climate change will be dependent on the amount of reduction in GHG emissions. The City will evaluate future changes in climate in regard to GHG emissions and rising water levels along the Tennessee River. Those aspects will be considered during the design process in addition to conducting a study evaluating the reduction in idle time for all transit and its impacts on GHG emissions in the surrounding area.

2.0 Study Vision and Purpose and Need

The Project Team envisioned a Feasibility Study process that provides sufficient information to aid in identifying the best multimodal transportation solution for the City. The Project Team envisioned a successful NEPA process that could build upon the information gathered from the PEL Study and Feasibility Study. Ultimately, the Project Team sees a safe and aesthetically pleasing multimodal corridor providing access to and from Decatur.

2.1 Vision for the Study

The Project Team envisioned a Feasibility Study process that provides enough background information (regarding the Project Study Area) and traffic research to aid in identifying the best multimodal transportation solution for the City that would improve the current traffic congestion and accommodate future growth. Currently, the existing corridor bridges provide transportation across the Tennessee River, but do not provide adequate capacity for the current traffic volumes. Congestion during peak morning travel times heading into Decatur is usually experienced half-way across the existing corridor bridges.

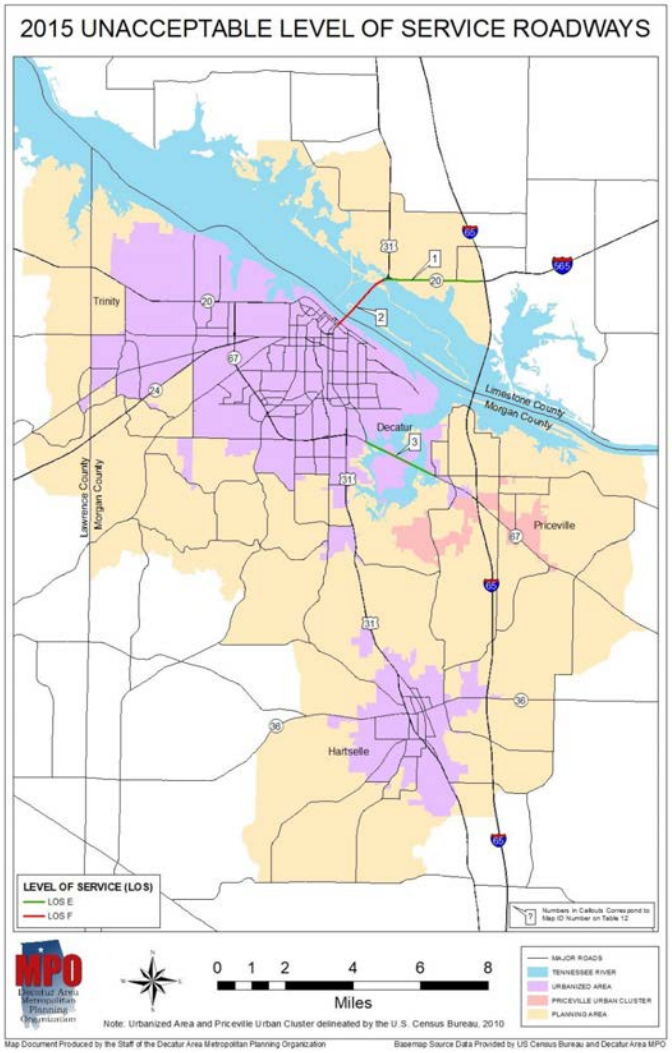
Congestion on SB Wilson Street Northeast is usually backed up approximately 1 mile north towards Ingalls Harbor. Congestion during peak evening travel times occurs as far back as the I-65 interchange.

Given the current state of traffic congestion across the existing corridor bridges, the Project Team envisions a Feasibility Study and associated PEL Study that leads to a successful NEPA process which, in turn, will pave the way for a long-awaited groundbreaking ceremony for a new bridge crossing. The Project Team looks into the future and sees a safe, aesthetically pleasing corridor that can be utilized by commuters, visitors, bicyclists, and pedestrians to cross the Tennessee River and come into and out of Decatur. The current existing corridor bridges do not have shoulder widths that can accommodate emergency response vehicles during heavy traffic times. The Project Team foresees a completed bridge that provides sufficient capacity to keep the traffic flow moving and allows emergency response to service the bridge. The bridge will provide congestion relief and maintain regional connectivity with Huntsville and nearby towns and cities. We envision a beautiful bridge that the citizens of Decatur can be proud of!

2.2 Purpose and Need of the Project

The existing corridor bridges span one of the widest points along the Tennessee River between Morgan and Limestone counties in the City of Decatur. The existing corridor bridges are located along U.S. Highway 31/U.S. Highway 72 Alt/SR-20, which is classified as a principal arterial and is part of the primary route providing a direct linkage between the Decatur Metropolitan Statistical Area (MSA) and Huntsville MSA. These two MSAs are for the Decatur-Huntsville Consolidated Metropolitan Statistical Area (CMSA), which is the fastest growing CMSA in the State of Alabama. The growth experienced by the area has resulted in significant increases in traffic volumes along the existing corridor route.

The existing corridor SB cantilever truss bridge, constructed in 1963, is functionally obsolete. As the only Tennessee River crossing connecting Decatur to Huntsville, the route has experienced increased congestion which has been attributed to growth and increased traffic volumes across the region.



During peak morning travel times, congestion on the SB existing corridor (towards Decatur) is typically experienced half-way across the Tennessee River. Congestion on SB Wilson Street Northeast (approaching the intersection of the existing corridor) is known to back up approximately 1 mile north towards Ingalls Harbor.

During peak evening travel times, congestion on SB U.S. Highway 72 Alt/SR-20 is experienced as far back as the I-65 interchange, a distance of approximately 4.5 miles. Congestion on the SB portion of Wilson Street Northeast (approaching the intersection of the existing corridor) backs approximately 1 mile north towards Ingalls Harbor.

Purpose

The purpose of this Project is to:

- Relieve congested conditions along U.S. Highway 31/U.S. Highway 72 Alt/SR-20 in the areas adjacent to the existing corridor bridges over the Tennessee River. The goal for reducing congestion is for the existing corridor to function at an acceptable LOS, C or above. Initial corridor analysis estimates that it is currently 30% over capacity. Updated traffic models and analysis in the scoping phase of the project will better define the capacity.
- Increase corridor capacity to accommodate the existing and future traffic volumes to include heavy truck/freight and vehicular traffic crossing the Tennessee River.
- Maintain regional connectivity between the Decatur MSA, Huntsville MSA, Shoals area, and the North Alabama region.
- Provide dedicated bicycle and pedestrian access over the Tennessee River along the existing corridor.
- Address route deficiencies associated with the aging existing corridor SB bridge as the primary crossing over the Tennessee River to provide a reliable conveyance.

Need

The following justifies the need for the Project:

- **Capacity** – Per the Decatur Area MPO's 2045 LRTP (2021), the segment of U.S. Highway 72 Alt/SR-20 from the U.S. Highway 31 interchange to Wilson Street Northeast intersection operated at a LOS E in 2015 and projects LOS F operations by 2045.
- **Alternative Connection** – The existing corridor bridge serves as the only direct crossing over the Tennessee River into the downtown and northwest side of Decatur from the Huntsville MSA. As a result, the existing corridor serves as an unreliable conveyance in high traffic volume scenarios such as, rush hour, collisions, etc. Furthermore, as the existing corridor serve as only direct crossing, emergency transportation vehicles are limited in accessibility in these scenarios.
- **Bicycle/Pedestrian Access** – The Decatur Area MPO's 2015 BPP included a resolution "to ensure that bicycles and pedestrians are fully considered in the planning of all transportation projects within the MPO Planning Area" and recommended that the Decatur Area MPO invest in the development of Complete Streets. Currently, bicycle and pedestrian routes across the Tennessee River, in or near the City of Decatur, is along the existing corridor which does not include dedicated bicycle/pedestrian access or lanes.
- **Route deficiencies** – The SB bridge across the Tennessee River along the existing corridor has narrow 4-foot shoulders which do not allow sufficient space to safely remove inoperable vehicles from the travel lane. Additionally, these narrow shoulders can exacerbate emergency situations when vehicles are unable to move out of the way of first responders.

Complete Streets

Streets "designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. A Complete Street makes it easy to cross the street, walk to shops, and bicycle to work. A Complete Street includes normal travel lanes, sidewalks, bicycle lanes, paved shoulders, crosswalks, median islands, pedestrian signals, and roundabouts.

2.3 Goals of the Feasibility Study

To assess the need and potential locations of either a new crossing, a replacement bridge, or bridge repairs/improvements to the existing bridge, the Project Team reviewed the existing conditions, looked at future traffic modeling scenarios, created Project Goals, and established a purpose and need statement that evolved from the Project Goals.

Each proposed alignment, replacement bridge, or bridge repairs/improvements was evaluated to determine if it met the purpose and need of the project. According to ALDOT, 65,550 vehicles per day will cross the Tennessee River on the existing corridor by the year 2030. This Feasibility Study was deemed necessary by the City to examine the transportation infrastructure that will be needed to support the expected growth of the area.

The Feasibility Study was designed to engage the public early in the planning process. Over the course of this Feasibility Study, the Project Team has met several times with various agencies, Project stakeholders, and the public to establish the Project's Goals which led to establishing the purpose and need statement. To accomplish the goals of the Feasibility Study, a PEL Study was initiated. The PEL approach includes early engagement with local, state, and federal agencies, stakeholders, and the public on the Project's purpose, need, potential alternatives, and impacts to the community and environment. The PEL approach is further explained in Section 1.4.

The Feasibility Study goals are to examine the current traffic situation, determine whether current infrastructure will accommodate traffic demand, and determine the best solution for future traffic demands. Simply put, the goal of the Feasibility Study is to determine whether there are feasible solutions to the traffic congestion problems. The purpose of this Feasibility Study is to provide recommendations to improve traffic flow while maintaining regional connectivity. The proposed alignments will provide congestion relief, improve emergency response access, accommodate future growth, accommodate freight needs, as well as provide multimodal transportation options, including that for bicyclists and pedestrians.

3.0 Stakeholder Engagement and Public Involvement

The Stakeholders and the general public were essential in the decision-making process for the Feasibility Study. Early in the process, the Project Team created a Stakeholder Engagement Plan (SEP) and Project Communication Plan (PCP) so that the Project Team could establish the framework to coordinate with both the stakeholders and public throughout the Feasibility Study process. Both the PCP and the SEP served as guidance for effective communication and documentation of the communication process during major outreach activities. Copies of the PCP and SEP are provided in Appendix G.

Throughout the Public Involvement and Stakeholder Engagement process, support for the Project was evident from the public with most agreeing that there is a problem with the current transportation network. The following sections provide details regarding the involvement with various agencies, interested Native American tribes, stakeholders, and the public.

3.1 Project Communication Plan

A PCP was developed early in the PEL process to establish clear lines of communication between the City of Decatur (the Project Sponsor), the Project Team, and the various agencies, stakeholders, and the public.

3.1.1 Management Structure

An organizational chart of the Project Team was documented within the PCP for easy reference. Dewayne Hellums, Director of Transportation Planning for the Decatur Area MPO, was the representative for the Project Sponsor and was the Project Team's direct point of contact throughout the PEL process.

3.1.2 Communication Protocols

The PCP established communication protocols for significant, internal, and agency meetings. Each meeting conducted was recorded and minutes were made available for attendees. A copy of the meeting minutes for these meetings can be found in Appendix H.

3.1.3 Goals

The goals of the PCP were to establish a framework for all communication (including formal meetings and informal correspondence) on the Feasibility Study. The Feasibility Study had a short turn-around time, but the Project will extend into multiple years with numerous team members. For this reason, maintaining effective communication protocols is necessary to minimize project delays. Proper lines of communication also will boost transparency and accountability, resulting in high-quality deliverables for the City of Decatur.

3.2 Agency Coordination

The Project Team held regular meetings with various agencies during the Feasibility Study process. A project Kick-Off Meeting took place on Jan. 26, 2023. Various tasks were assigned to team members, such as developing an agency list, creating a SEP, and developing a PCP, so that the Project Team could effectively communicate with various agencies and document the process.

The Project Team held multiple agency coordination meetings with the agencies listed in the table below. The agency meetings were held in February, March, July, and September of 2023. Meeting schedules were determined by a poll of invitees with the meeting date and time selected based on that which most invitees could attend. Agency contacts also were encouraged to forward the meeting invitation to additional personnel within their agency. Copies of the meeting minutes for the Agency Coordination meetings are provided in Appendix H.

3.2.1 Federal

The City coordinated with federal agencies throughout the PEL process. A list of the coordination points/meetings along with attendees and their contact information are listed in the table on the following page.

Table 3.2.1-1: Federal Agency Contacts and Coordination Efforts

Agency	Contact	Feb. 23, 2023 FHWA & ALDOT Meeting	Feb. 28, 2023 Initial Agency Coordination Meeting	March 20, 2023 FHWA & ALDOT Meeting	April 4, 2023 Federal Agency Coordination Meeting	April 6, 2023 Navigation Interest Coordination Meeting	Aug. 15, 2023 FHWA & ALDOT Meeting	Aug. 28, 2023 Federal Agency Coordination Meeting
FHWA Alabama Division	Matt Bartlett Division Administrator (334) 274-6350 Mark.Bartless@dot.gov	X	X	X			X	
	Aaron M. Dawson Planning & Program Management Team Lead 334-274-6341 Aaron.Dawson@dot.gov		X	X			X	X
	Lynne A. Urquhart Environmental Engineer 334-274-6371 Lynne.Urquhart@dot.gov		X	X	X		X	X
	Shontrill Lowe Community Planner 334-274-6359 Shontrill.lowe@dot.gov			X				
	Vontra Giles Planner 334-274-6344 Vontra.giles@dot.gov			X				
TVA	Anne Patrick Land Use Specialist, Program Manager awpatrick@tva.gov		X		X	X		
	Bradley Hubbard Watershed Representative 256-386-2250 bdhubbard0@TVA.gov		X		X	X		X
	Nikki Berger Navigation Program Supervisor 865-632-8980 ncberger@tva.gov					X		X
USACE Mobile District	Leslie Turney Regulatory Chief, North Branch Leslie.E.Turney@usace.army.mil		X		X	X		X
	Amy Gavin Regulatory Project Manager ALDOT Project Liaison		X		X	X		

Agency	Contact	Feb. 23, 2023 FHWA & ALDOT Meeting	Feb. 28, 2023 Initial Agency Coordination Meeting	March 20, 2023 FHWA & ALDOT Meeting	April 4, 2023 Federal Agency Coordination Meeting	April 6, 2023 Navigation Interest Coordination Meeting	Aug. 15, 2023 FHWA & ALDOT Meeting	Aug. 28, 2023 Federal Agency Coordination Meeting
USACE Nashville District	Eric Sinclair Western Regulatory Field Office Sr. Project Manager 256-316-7188 William.E.Sinclair@usace.army.mil				X	X		X
	Owen Traughber Navigation Branch owen.traughber@usace.army.mil							X
USCG 8th Coast Guard District	Ryan Christensen Bridge Management Specialist 618-772-9106 Ryan.D.Christensen@uscg.mil		X		X	X		
	Eric Washburn Bridge Supervisor, Western Rivers 314-269-2378 Eric.Washburn@uscg.mil		X			X		
	Peter Sambor Bridge Management Specialist 314-269-2380 Peter.j.sambor@uscg.mil				X			
	David Orzechowski Bridge Management Specialist 314-539-3900 x2382 David.A.Orzechowski@uscg.mil							X
USFWS	Josh Rowell Fish & Wildlife Biologist - Transportation Liaison 251-441-5836 Josh_Rowell@fws.gov		X		X			X
	William (Bill) Pearson Alabama Ecological Services Field Supervisor 251-441-5181 Bill_Pearson@fws.gov		X					
	Ricky Ingram Refuge Manager, Wheeler National Wildlife Refuge 256-353-7243 ricky_ingram@fws.gov		X					
	Drew Wirwa Deputy Refuge Manager, Wheeler National Wildlife Refuge 256-353-7243 drew_wirwa@fws.gov		X					X

3.2.2 State

The City coordinated with state agencies throughout the PEL process. A list of the coordination points/meetings along with attendees and their contact information are listed in the table to the right:

Table 3.2.2-1: State Agency Contacts and Coordination Efforts

Agency	Contact	Feb. 23, 2023 FHWA & ALDOT Meeting	Feb. 28, 2023 Initial Agency Coordination Meeting	March 20, 2023 FHWA & ALDOT Meeting	Aug. 15, 2023 FHWA & ALDOT Meeting
ALDOT	Curtis Vincent Region Engineer, North Region 256-505-4956 vincentc@dot.state.al.us	X	X		
	Laura Wood Sr. Archaeologist, ALDOT Liaison 334-242-6293 WoodL@dot.state.al.us		X	X	
	Rodney Ellis Pre-Construction Engineer (256) 505-4960 ellisro@dot.state.al.us	X	X	X	
	Judson Young Pre-Construction Engineer (256) 389-1419 youngju@dot.state.al.us	X	X	X	X
	Natasha Clay Environmental Technical Administrator (334) 242-6315 clayn@dot.state.al.us		X	X	
	Logan Jolley Designer jolleyl@dot.state.al.us		X		
	Pat Patterson Environmental Technical Section pattersonp@dot.state.al.us		X		
	Robin Rhoden Assistant Region Engineer 256-505-4958 rhodenr@dot.state.al.us				X
Alabama Historic Commission (AHC) State Historic Preservation Office (SHPO)	Eric Sipes Asst. State Archaeologist & Section 106 Program Head 334-230-2667 Eric.Sipes@ahc.alabama.gov		X		
	William Lowe Project Reviewer/ALDOT Liaison/Senior Archaeologist 334-230-2670 William.Lowe@ahc.alabama.gov		X		
	Amanda McBride Environmental Review Coordinator 334-230-2692 Amanda.McBride@ahc.alabama.gov		X		

Agency	Contact	Feb. 23, 2023 FHWA & ALDOT Meeting	Feb. 28, 2023 Initial Agency Coordination Meeting	March 20, 2023 FHWA & ALDOT Meeting	Aug. 15, 2023 FHWA & ALDOT Meeting
ALDOT	Leanne Trupp Project Reviewer/ALDOT Liaison/Historical Markers/ Historic Cemetery Programs 334-230- 2653 leanne.trupp@ahc.alabama.gov		X		
ADCNR	Drew Able Swan Creek WMA Manager 256-353-2634 Drew.Able@dcnr.alabama.gov		X		
	Wendell Fulks Captain, Wildlife and Freshwater Fisheries Division Law Enforcement Section 256-353-2634 Wendell.Fulks@dcnr.alabama.gov		X		
	Seth Maddox Migratory Game Bird Coordinator, Alabama Division of Wildlife and Freshwater Fisheries 334-353-2057 Seth.Maddox@dcnr.alabama.gov		X		
	Phil Ekema Supervisor, District 1, Freshwater Fisheries Section 256-353-2634 Phil.Ekema@dcnr.alabama.gov		X		
	Todd Fobian Environmental Coordinator, Freshwater Fisheries Section 334-242-2061 todd.fobian@dcnr.alabama.gov		X		
	Marisa Futral Hunter Education Coordinator, Alabama Division of Wildlife and Freshwater Fisheries 334-242-3620 Marisa.Futral@dcnr.alabama.gov		X		
	Heath Haley Biologist, District 1, Freshwater Fisheries Section 256-353-2634 Heath.Haley@dcnr.alabama.gov		X		
	Nicholas Sharp Non-game Wildlife Biologist, Alabama Division of Wildlife and Freshwater Fisheries 256-353-2634 Nicholas.Sharp@dcnr.alabama.gov		X		

3.3 Large Group Stakeholder

The City created a list of stakeholders that would have a stake in the proposed Project. For the first PIM, stakeholders were organized into three groups: 1) elected officials, 2) industrial facilities, and 3) other stakeholders (special interest organizations). The City held three large group stakeholder meetings on April 10, 2023, prior to the first PIM. The agenda topics included an introduction to the Project, grant overview, Project Study Area, the schedule, and the PEL process followed by open discussion. The attendees also were invited to attend the first PIM held on May 2, 2023. For the second PIM, stakeholders were organized into four groups: 1) elected officials, 2) industrial facilities, 3) other stakeholders (special interest organizations), and 4) utility companies. The City held four large group stakeholders meetings, two meetings on Aug. 29, 2023, and the other two meetings on Aug. 30, 2023. The agenda topics included an overview of the Project, a review of the first PIM, the alignment selection process, the purpose and need, a review of the Feasibility Study Decision Matrix (Feasibility Matrix), and the proposed alignments followed by open discussion. The attendees were invited to attend the second PIM held on Aug. 31, 2023. A list of the large group stakeholders is provided in Appendix A.

3.4 Individual Stakeholders

Prior to the second PIM, the City and Project Team met with individual stakeholders that could potentially be impacted by the proposed alignments. These meetings were held between Aug. 28, 2023, and Aug. 31, 2023. The agenda topics of these meetings were an overview of the Project, a review of the first PIM, the alignment selection process, the purpose and need, a review of the Feasibility Matrix, and the proposed alignments followed by open discussion. The attendees were invited to attend the second PIM held on Aug. 31, 2023.

3.4.1 Residential

The City identified individual residential stakeholders. Information regarding residential stakeholder meetings and potential project concerns are included within the PIM #2 Summary, provided in Appendix I.

3.4.2 Industrial/Commercial/Agricultural

The City identified multiple individual stakeholders that were industrial/commercial/agricultural. A list of these individual stakeholders and their concerns are provided below. Information regarding remaining stakeholder meetings and potential project concerns are included within the PIM #2 Summary, provided in Appendix I.

3.5 Public Involvement

The City hosted two PIMs complete with display boards, maps, comment cards, and advertising materials in both English and Spanish. The Project, Project goals, PEL process, and Feasibility Matrix were presented to the public in the first PIM held on May 2, 2023. The audience of approximately 70 people was shown how to use the Feasibility Matrix when thinking about potential bridge crossings. The Feasibility Matrix included traffic impacts, bridges, intersections, ROW impacts, utilities, flood hazards, river navigation impacts, and environmental impacts. Specific environmental impacts included review of hazardous materials, wildlife and aquatic resources, wetlands and WOTUS, noise, air quality, historic resources, archaeological resources, Section 4(f) and Section 6(f) resources, land use, river hydraulics, and environmental justice. At the first PIM, the public physically drew (with a marker) onto large, printed maps where they thought a new Tennessee River crossing would benefit their community. Public comments and printed maps resulted in 32 public preferred new bridge crossings (referred to as “alignments”).

For the second PIM, held Aug. 31, 2023, TTL created multiple interactive stations in lieu of a traditional sit-down presentation. Each station, manned by subject matter experts (SME), utilized large TV screen/monitors with digital GIS information. The audience of approximately 200 people was shown alignments showcased on ArcGIS Online where SMEs could turn on/off various layers while explaining things to small groups. Interactive stations were self-paced, and attendees were provided the opportunity to ask questions and submit formal comments. A Spanish translator and sign language interpreter were provided to the public, if needed.

A copy of the PIM Summaries for the two PIMs are provided in Appendix I.

3.6 Major Takeaways and Findings

Throughout the Public Involvement/Stakeholder Engagement process, the City received an overwhelming amount of support for the proposed Project. The majority of the public and stakeholders agreed that there is a problem with the current transportation network and that a remedy is necessary. The City also identified additional stakeholders during the Public Involvement/Stakeholder Engagement process. These stakeholders include Ducks Unlimited, the Delta Waterfowl Foundation, and ADCNR. These groups will need to be involved in the Stakeholder Engagement process in future phases of the Project.

4.0 Methodology, Development, and Evaluation

The City of Decatur conducted planning, engineering, and outreach efforts between February 2023, and November 2023. These efforts were built on the goals, objectives, needs, and purpose identified in the Feasibility Study kick-off, agency, stakeholder, and community meetings. During the first agency meeting, it was determined that FHWA would be the lead agency for this Feasibility Study and ALDOT would adopt the PEL Checklist.

4.1 Methodology

The goal of the Feasibility Study is to determine if there are feasible solutions to the traffic congestion problem.

A Feasibility Matrix is the tool the Project Team used to evaluate the viability of the corridor/bridge alternatives based on multiple criteria. The Project Team was able to compare different options and identify potential risks and benefits. The team developed the Feasibility Matrix based on cost, performance, impacts, and risks. Each alternative was evaluated using a uniform grading. Impacts were rated low, moderate, or severe, and benefits were rated good, better, or best. A rating of “no impact” also was available. The Project Team did not rank the alternatives, but rather recommended they be carried into the next planning phase of the Project for further development and screening.

Figure 4.1-1: Alignment Selection Process

ALIGNMENT SCREENING PROCESS

STEP 1

Full range of alternatives from previous studies, public input, and current consulting/engineering team

The original alignments consisted of:

- **32** received from public comments
- **8** from the previous studies
- **17** from the current engineering/consulting team

STEP 2

Alignments for preliminary screening

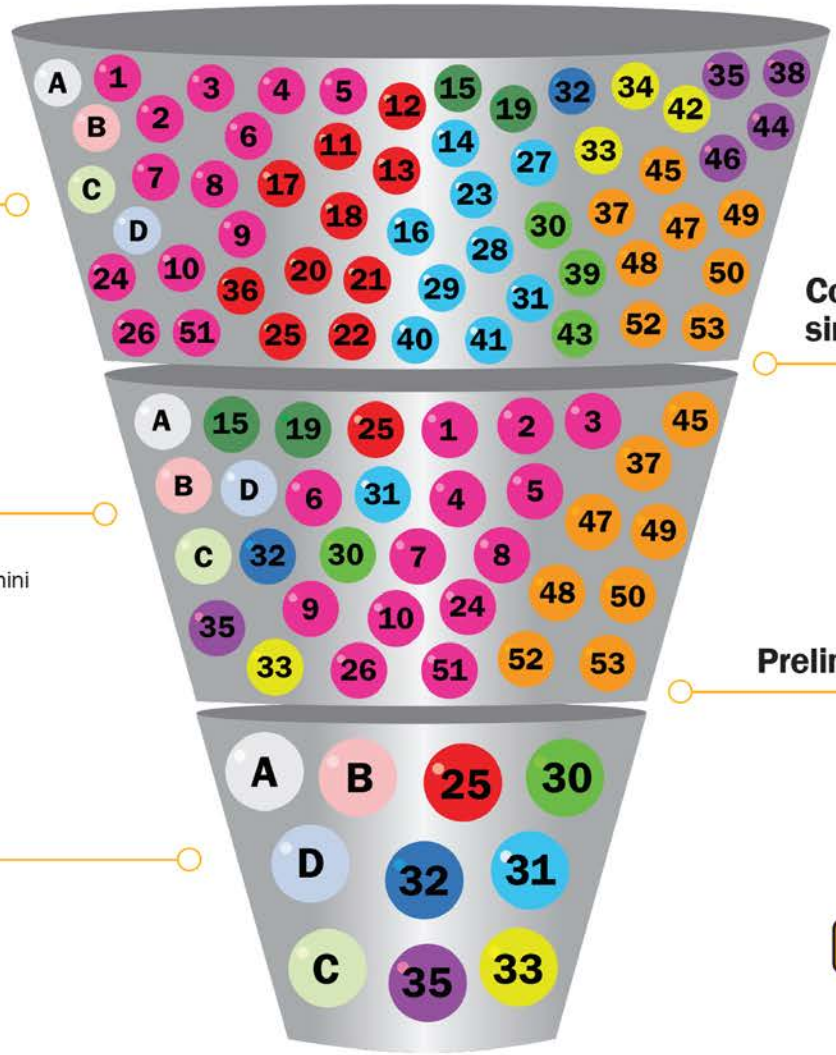
The project team screened out alignments as follows:

- **13** alignments did not meet the purpose and need/logical termini
- **8** alignments had significant land use conflicts
- **2** alignments had significant navigation impacts and constructability concerns

STEP 3

Alignments remaining following preliminary screening

10 alignments selected for further evaluation



Consolidation of similar alignments

Preliminary screening

4.2 Development of Alternatives

At the PIM held May 2, 2023, the Project Team presented the proposed purpose and need and Project goals. The methodology for developing alternatives and evaluating alternatives was presented. The public was able to provide suggestions for potential solutions, including drawing alternative alignments for the Project. Following the PIM and comment period, the Project Team collected and digitized proposed alignments generated from the public.

The proposed solutions are two-fold for this Project as the existing corridor will need improvements regardless of the selected alternative. The initial corridor analysis determined that improvements are needed but will not completely address the purpose and need of the Project. Along with the no-build alternative, there are three alternatives that were developed to address the aging infrastructure and improve operations on the existing corridor. Once the team determined the existing corridor is over capacity and the proposed solutions do not adequately address the problem, the need for an additional river crossing was explored. Please refer to Section 5.1 for further details regarding the evaluated alternatives and traffic operations.

The existing corridor is anticipated to remain in all scenarios. The Project Team looked at the existing corridor as it is today and with several versions of improvements. These are included in the Feasibility Matrix as Alignments A, B, C and D.

The Project Team developed a full range of alternatives from previous studies, public input, and current consulting/engineering team.

4.3 Evaluation of Alternatives

4.3.1 Qualitative Screening

Once the full range of alternatives was created for evaluation, an initial screening of all the alternatives was conducted to determine if there were fatal flaws associated with each alternative that would make them not feasible solutions. Fatal flaws such as significant land use impacts (i.e., Section 4(f) properties, Section 6(f) properties, critical habitat for protected species, major industrial/residential/commercial areas, Pryor Field, etc.), significant impacts to river navigation, significant constructability concerns (i.e., subterranean tunnel), and for meeting the Project's purpose and need were analyzed.

Alternatives with significant problematic or unmitigable impacts or those which did not meet the purpose and need were eliminated from further consideration.

4.3.2 Quantitative Screening

If the alternatives made it through the qualitative screening process, they were further studied by the Project Team to reduce impacts, costs, and improve their operational performance. These alignments were assigned a number and represent feasible alternatives for further screening. A copy of the Feasibility Matrix is provided in Appendix J.

Figure 4.2-1: Map of Full Range of Alternatives

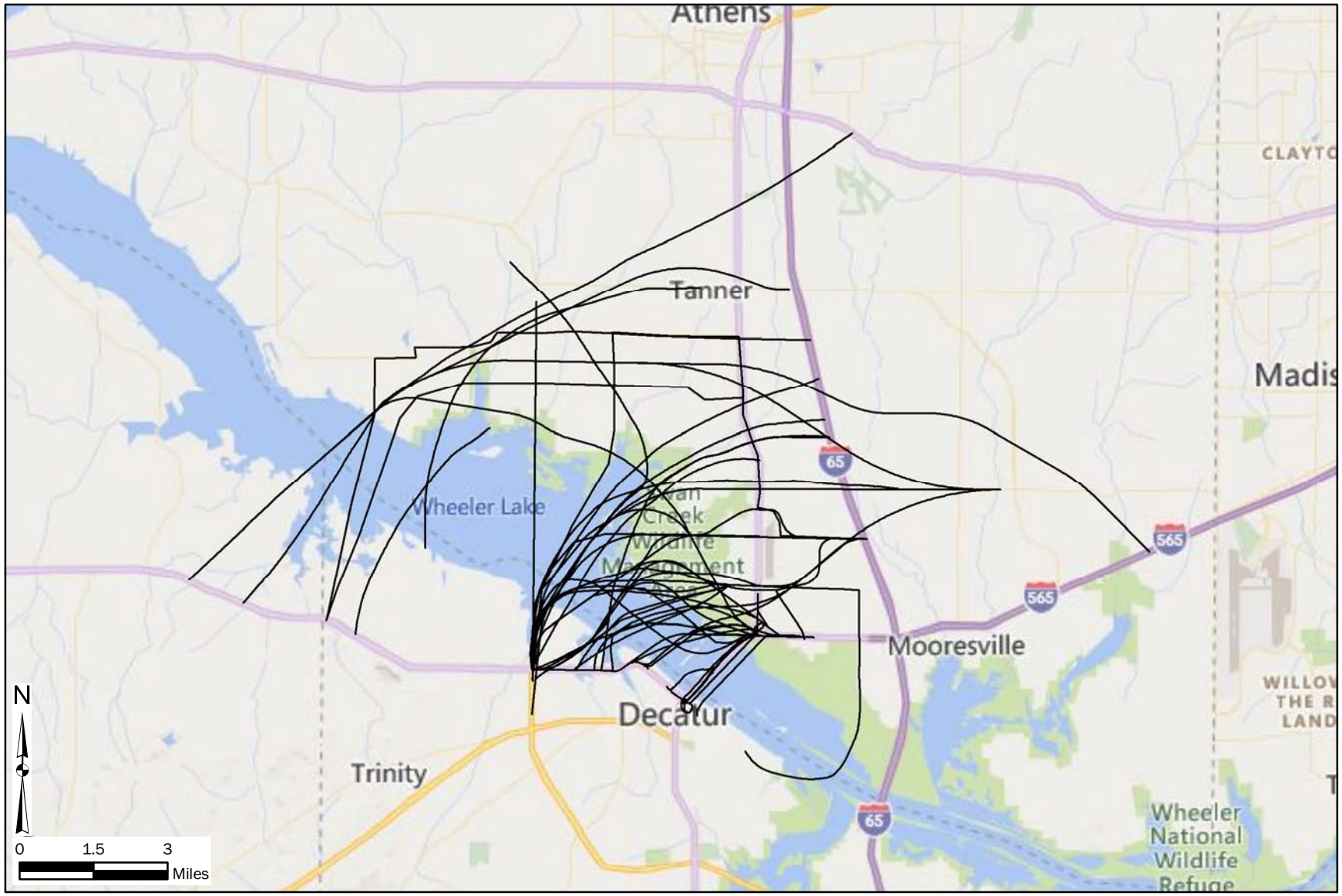


Figure 4.3.1-1: Map of Existing Corridor Alignments

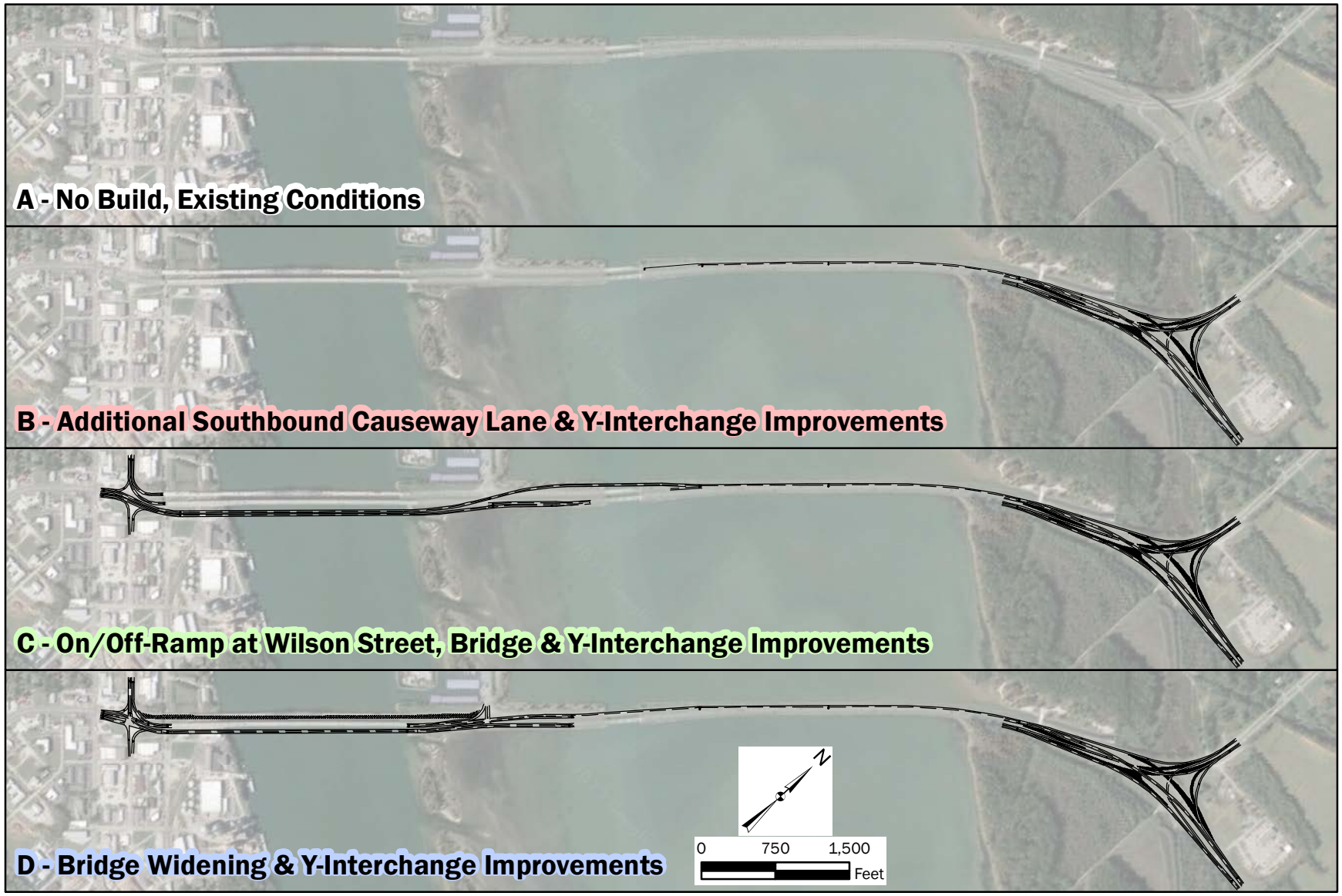
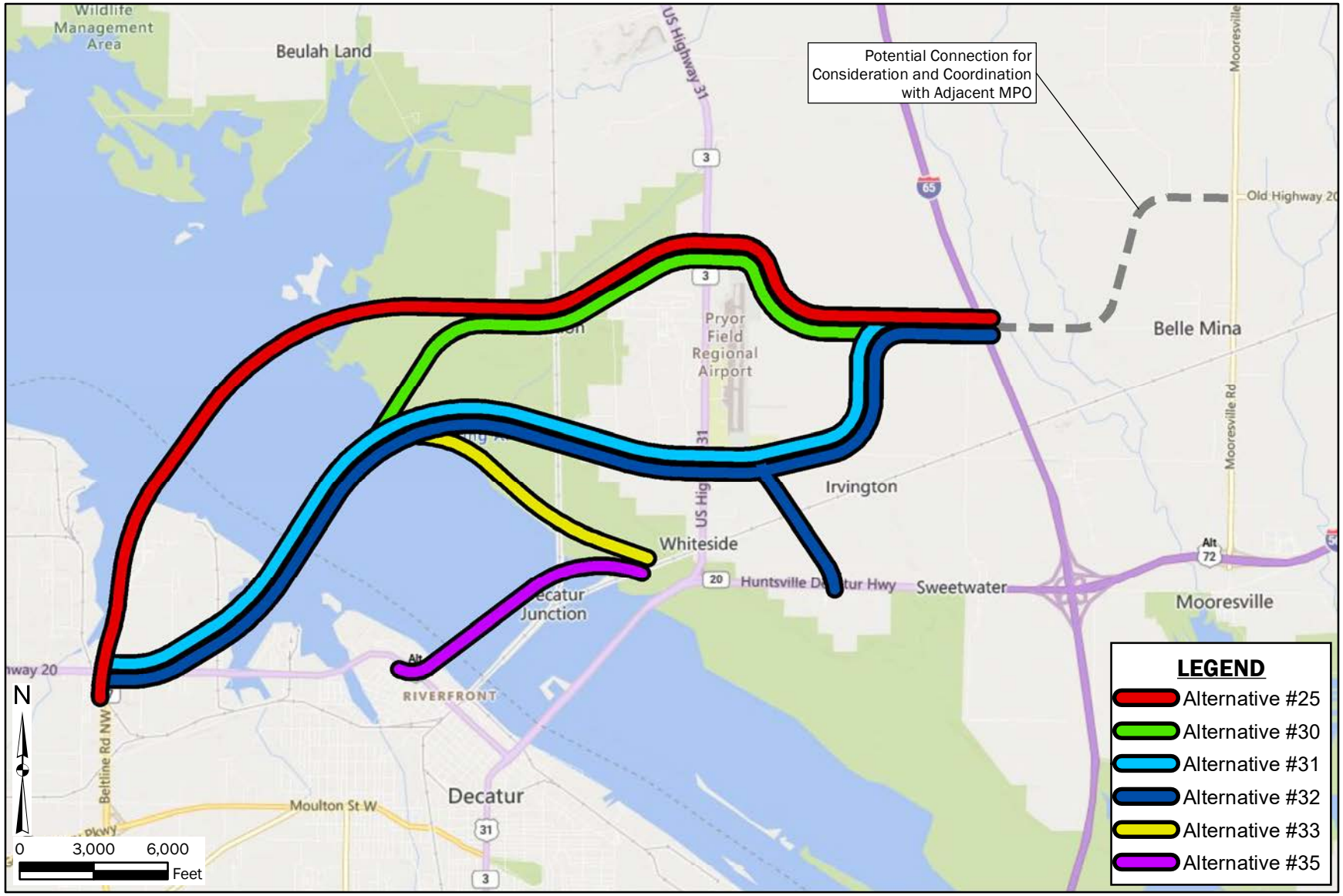


Figure 4.3.1-2: Map of Alternative Corridor Alignments



5.0 Alternatives and Recommendations

The Project Team conducted an in-depth traffic analysis on three of the future 2050 build alternatives that fit within the existing corridor. The analysis included a Highway Capacity Manual (HCM) review for the No Build and each Build Alternative. The Project Team also analyzed the AADT trends and traffic operations for the future 2050 build alternatives. The safety of each alternative as well as the estimated costs were documented. and the logical next steps were identified. They include a discussion of a Tennessee River Bridge Scoping Study (Scoping Study) and NEPA analysis.

5.1 Alternatives and Safety

Alternatives B to D propose to improve upon the existing corridor bridges only.

Alternatives 25, 30, 31, 32, 33, and 35 each propose a new roadway and/or bridge to connect across the Tennessee River.

These alternatives propose new geometries and lane configurations that improve capacity and safety of the roadway. Each alternative may have additional safety concerns arising from the new geometry. But in general, all the alternatives reduce conflict points, reduce congestion and queuing of vehicles, and propose lane merges, storage lanes, and tapers that will meet current standards.

Y-Interchange Improvement

All alternatives propose improvements on Y-Interchange shown in Figure 5.2-1 on the following page.

The improvements proposed on EB U.S. Highway 72 Alt/SR-20 include 1) diverging into NB U.S. Highway 31 earlier, 2) removing the stop-controlled crossing, 3) merging U.S. Highway 31 into SB U.S. Highway 72 Alt downstream of the existing location.

The improvements proposed on WB U.S. Highway 72 Alt/SR-20 include 1) removing the taper on the bridge and 2) moving SB U.S. Highway 31 approach to intersect on the north side of U.S. Highway 72 Alt/SR-20. Travelling SB on the existing corridor continues in three-lanes.

The improvement on the Y-Interchange addresses many of the safety issues observed in the existing condition of the interchange and the existing condition of the driveway to Decatur Day Use Park.

Alternative B – Additional SB Causeway Lane & Y-Interchange Improvement

Alternative B proposes to extend the three-lane SB on the existing corridor for approximately 0.5 miles and taper into two lanes entering the bridge. This alternative improves existing safety issues observed in the Y-Interchange and the driveway to Decatur Day Use Park.

Alternative C – On/Off Ramp at Wilson Street Northeast, Existing Corridor Bridge, & Y-Interchange Improvements

Alternative C proposes to extend the three-lane SB on the existing corridor approximately 0.5 miles further from the Y-Interchange. Closer to the bridge, the roadway diverges into a two-lane that feeds to Wilson Street Northeast, and another two-lane that feeds into the Church Street Northeast intersection. The drivers on the original bridge would have options to travel to the north and west area of Decatur, and the drivers that travel to south or east area of Decatur have an option to bypass the Wilson Street Northeast intersection and access the Church Street Northeast intersection directly from the proposed bridge. This alternative would disperse the traffic demand to two bridges running parallel to each other, potentially reducing the traffic congestion level on the bridge and in the two intersections serving vehicles from the bridge (Wilson Street Northeast and Church Street Northeast). This alternative improves existing safety issues observed in the Y-Interchange and the driveway to Decatur Day Use Park. Existing safety issues in the Wilson Street Northeast intersection also would be improved with the removed taper for WB right-turn vehicles. In addition, if the scope includes the intersection restriping and placing concrete islands in place of the hatched areas, the safety concern with pedestrian crossing at Wilson Street Northeast and at Church Street Northeast would be improved.

Figure 5.2-1: Concept Sketch of Y-Interchange Improvement

Alternative D – Bridge Widening & Y-Interchange Improvements

Alternative D proposes the three-lane configuration on both SB and NB on the existing corridor, a new bridge for the NB traffic, utilizing the existing NB bridge as the new SB bridge, and demolishing the existing SB bridge. The Wilson Street Northeast intersection is proposed to be reconfigured to accommodate the new bridge. This alternative improves existing safety conditions observed in the Y-Interchange and the driveway to Decatur Day Use Park. Existing safety concerns at the Wilson Street Northeast intersection also would be improved with the removed taper for WB right-turn vehicles. In addition, if the scope includes the intersection restriping and placing concrete islands in place of the hatched areas, the safety concern with pedestrians crossing at Wilson Street Northeast and at Church Street Northeast would be improved.

Alternative 25

Alternative 25 proposes to connect from I-65 and U.S. Highway 31 to Chemstran Avenue/SR-67 in Decatur, along with the Y-Interchange improvements. This alternative routes traffic around Decatur for those who may not be headed to the downtown area. This alternative may require an interchange at I-65 and another interchange or an intersection upgrade at U.S. Highway 31. Traffic volume significantly higher than normal will feed into Chemstran Avenue with this alternative, and the new traffic pattern would impact other intersections in the area. This alternative improves existing safety issues observed in the existing Y-Interchange and the driveway to Decatur Day Use Park. It improves the existing safety issues arising from the overall congestion on the bridge by dispersing and detouring traffic to the new bridge. The lane changes, new interchanges, and new intersections would have additional conflict points due to the new locations of roadways and may derive additional safety concerns that do not exist in the existing condition.

Alternative 30

Alternative 30 proposes the same connection from I-65 and U.S. Highway 31 and crossing the Tennessee River as Alternative 25. However, this alternative proposes to connect to Decatur through U.S. Highway 72 Alt/SR-20 near Chemstran Avenue. Alternative 30 proposes the Y-Interchange improvements, as well. This alternative may require an interchange at I-65 and another interchange or an intersection upgrade at U.S. Highway 31. Traffic volumes higher than existing will feed into U.S. Highway 72/SR-20 and Chemstran Avenue with the new bridge, and the new traffic pattern would impact other intersections in the Project Study Area. This alternative improves existing safety issues observed in the existing Y-Interchange and the driveway to Decatur Day Use Park. It improves the existing safety issues arising from the overall congestion on the bridge by dispersing and rerouting traffic to the new bridge. The lane changes, new interchanges, and new intersections would have additional conflict points due to the new locations of roadways and may derive additional safety concerns that do not exist in the existing condition.

Alternative 31

Alternative 31 proposes a new roadway from I-65, intersecting with U.S. Highway 31 across the Swan Creek WMA. Once across the river, the roadway connects to U.S. Highway 72 Alt/SR-20 near Chemstran Avenue. This alternative routes traffic around Decatur for those who may not be headed to the downtown area and proposes the Y-Interchange improvements, as well. This alternative may require an interchange at I-65 and another interchange or an intersection upgrade at U.S. Highway 31. Traffic volume significantly higher than normal will feed into U.S. Highway 72 Alt/SR-20 and Chemstran Avenue with this alternative, and the new traffic pattern would impact other intersections in the area. This alternative improves existing safety issues observed in the existing Y-Interchange and the driveway to Decatur Day Use Park. It improves the existing safety issues arising from the overall congestion on the bridge by dispersing and detouring traffic to the new bridge. The lane changes, new interchanges, and new intersections would have additional conflict points due to the new locations of roadways and may derive additional safety concerns that do not exist in the existing condition.

Alternative 32

Alternative 32 proposes a very similar layout to Alternative 31 – a new roadway

from I-65, intersecting with U.S. Highway 31 across the Swan Creek WMA, along with the Y-Interchange improvements. Once across the Tennessee River, the roadway connects to U.S. Highway 72 Alt/SR-20 near Chemstran Avenue. However, this alternative also provides connection at U.S. Highway 72 Alt/SR-20 from the east of the Y-Interchange. This alternative provides a detour/freeway route for traffic that comes from I-565 and I-65 that may not be headed to the downtown area. This alternative may require an interchange at I-65 and another interchange or an intersection upgrade at U.S. Highway 31 and U.S. Highway 72 Alt/SR-20. Traffic volume significantly higher than normal will feed into U.S. Highway 72 Alt/SR-20 and Chemstran Avenue with this alternative, and the new traffic pattern would impact other intersections in the area. This alternative improves existing safety issues observed in the existing Y-Interchange and the driveway to Decatur Day Use Park. It improves the existing safety issues arising from the overall congestion on the bridge by dispersing and detouring traffic to the new bridge. The lane changes, new interchanges, and new intersections would have additional conflict points due to the new locations of roadways and may derive additional safety concerns that do not exist in the existing condition.

Alternative 33

Alternative 33 proposes a new roadway across the Swan Creek WMA, across the river with a new bridge, and connecting to U.S. Highway 72 Alt/SR-20 near Chemstran Avenue. Alternative 33 also proposes the Y-Interchange improvements. This alternative may require an intersection upgrade at U.S. Highway 31 and U.S. Highway 72 Alt/SR-20. Traffic volume significantly higher than normal will feed into U.S. Highway 72 Alt/SR-20 and Chemstran Avenue with this alternative, and the new traffic pattern would impact other intersections in the area. This alternative improves existing safety issues observed in the existing Y-Interchange and the driveway to Decatur Day Use Park. It improves the existing safety issues arising from the overall congestion on the bridge by dispersing and detouring traffic to the new bridge. The lane changes, new interchanges, and new intersections would have additional conflict points due to the new locations of roadways and may derive additional safety concerns that do not exist in the existing condition.

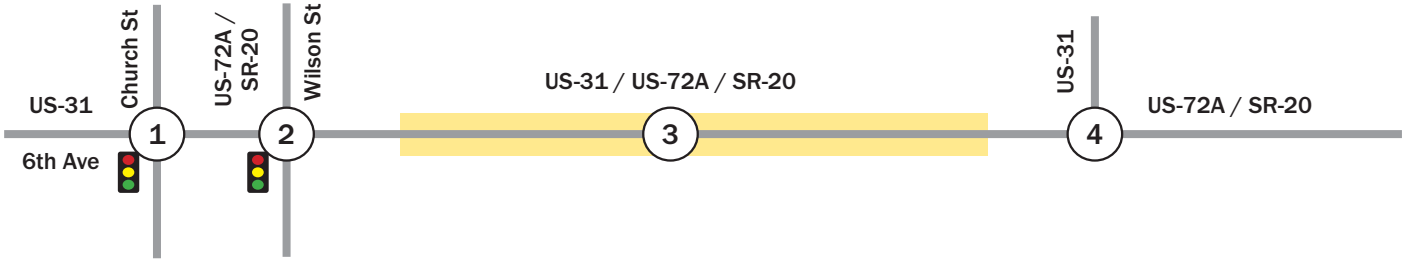
Alternative 35

Alternative 35 proposes to take SB U.S. Highway 31 and WB U.S. Highway 72 Alt/SR-20 from the Y-Interchange across the Tennessee River and connect to Wilson Street Northeast near the Port of Decatur. Alternative 35 also proposes the Y-Interchange improvements. This alternative may require an interchange or an intersection upgrade on Wilson Street Northeast. This alternative may serve as a detour route to travel around the downtown area but also as a secondary route to get to the downtown area. There may be an increase in traffic volume on the local streets near the interchange since those are the only available routes to get back on Wilson Street Northeast to travel towards the historic district. This alternative improves existing safety issues observed in the Y-Interchange and the driveway to Decatur Day Use Park. It improves the existing safety issues arising from the overall congestion on the bridge by dispersing and detouring traffic to the new bridge. The lane changes, new interchanges, and new intersections would have additional conflict points due to the new locations of roadways and may derive additional safety concerns that do not exist in the existing condition.

5.2 Traffic Operations

Based on previous studies and engagement between the public and engineering consultants, three future 2050 Build Alternatives that fit within the existing corridor alignment were chosen for in-depth traffic analyses. The details of No Build and Build Alternatives B, C, and D are shown in Figure 5.1-1. It should be noted that the Alternative Corridor Alignment Nos. 25, 30, 31, 32, 33 and 35 were not analyzed in this section.

Figure 5.1-1: Description of Future 2050 Build Alternatives

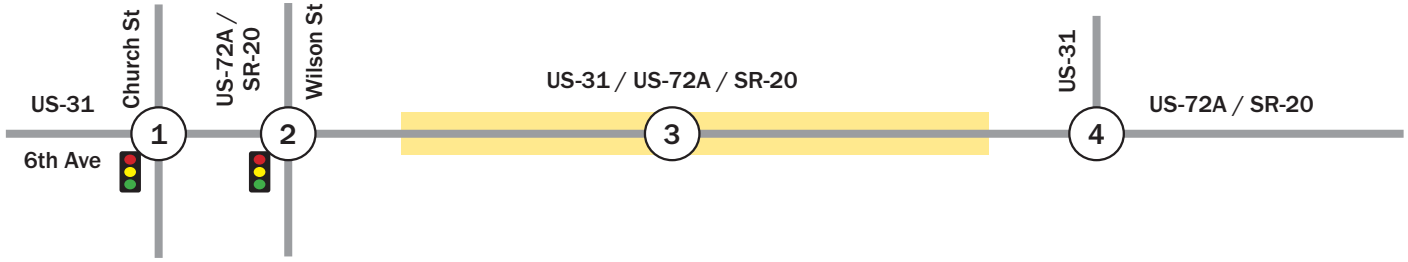


	Location	No-Build	Alternative A	Alternative B	Alternative C
Modifications	1 Church St at 6th Avenue	No changes	No changes	No changes	No changes
	2 Wilson St at US-72A / SR-20	No changes	No changes	Wilson St (north) separated from traffic signal	Three WB lanes from bridge, striped as through, through/right, and right
	3 US-31 / US-72A / SR-20 Bridge	No changes	No changes	On/Off-Ramps between bridge and Wilson Street (north)	Additional (third) westbound lane
	4 US-31 at US-72A / SR-20 “Y Interchange”	No changes	Interchange ramp modifications	Interchange ramp modifications	Interchange ramp modifications

A HCM analysis was completed for the No Build and Build Alternatives. Figure 5.1-2 shows the 2050 volume-to-capacity (v/c) ratios for each alternative. A v/c ratio measures the amount of traffic on a given roadway relative to the amount of traffic the roadway was designed to accommodate. It should be noted that results show performance of individual movements and segments separate from other network elements and do not include the effects of spill-over, lane changes, or poor signal coordination. A microsimulation model should be prepared in the next phase of analysis to quantify the extent of these issues.

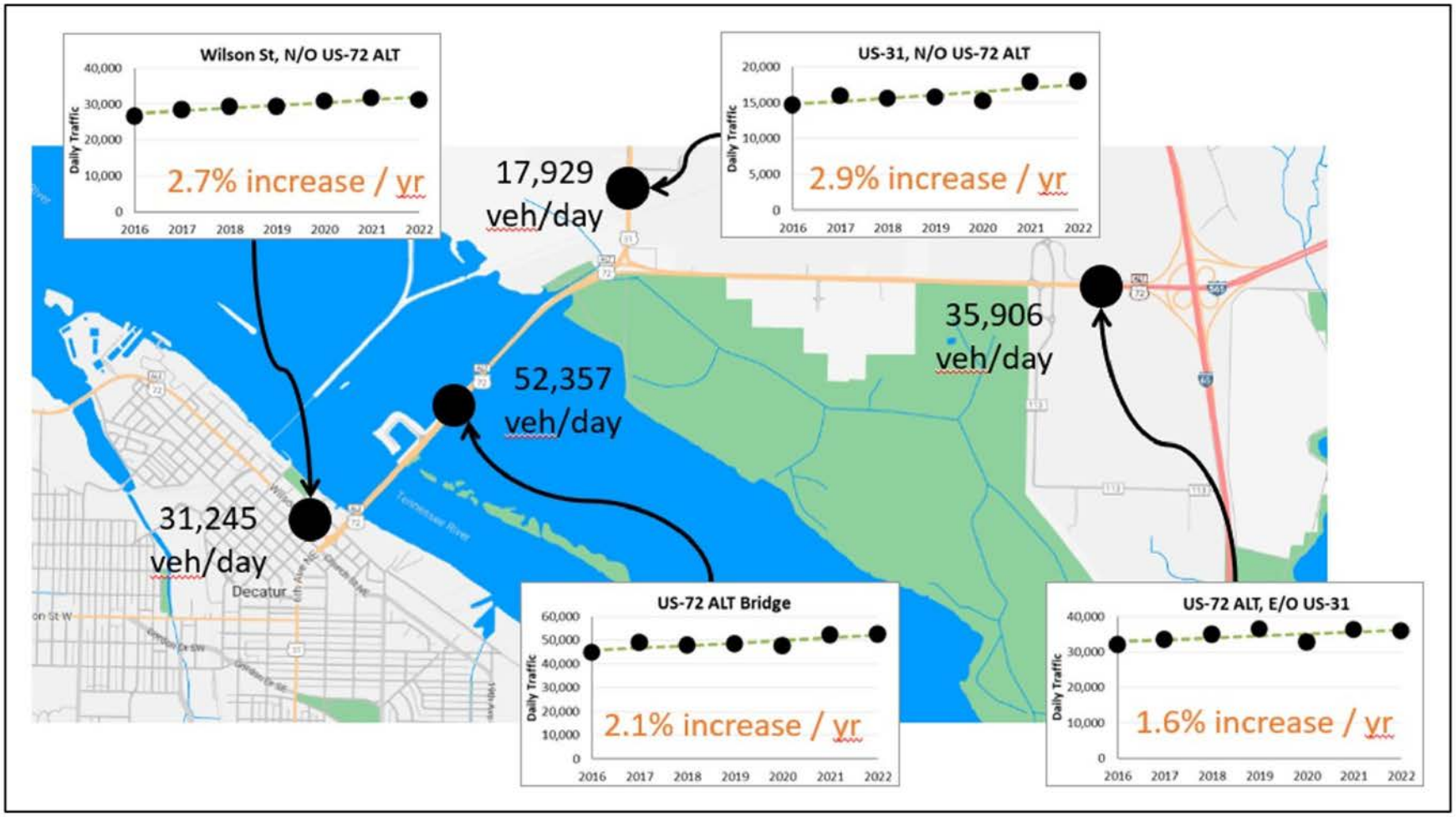
Growth rates were estimated using historic AADT counts from the ALDOT Traffic Data website. There has been an average annual increase of 2.3% in daily traffic volumes between 2016-2022. This trend has been used to estimate future traffic demands in the Design Year (2050). The Figure below shows AADT trends for each of the locations used to create the overall growth rate.

Figure 5.1-2: Traffic Operations Summary for Future 2050 Build Alternatives



	Location	No-Build	Alternative A Y-interchange Improvements without Bridge Modifications	Alternative B "Y interchange" Improvements with 3-lanes to/from New Wilson Street On/Off Ramps	Alternative C "Y interchange" Improvements with 3-lane Bridge Widening (Replacement)
2050 Volume to Capacity Ratio	1 Church St at 6th Avenue	US-31 WB: 111% US-31 EB: 119% Church St NB: 110% Church St SB: 108%	US-31 WB: 111% US-31 EB: 119% Church St NB: 110% Church St SB: 108%	US-31 WB: 113% US-31 EB: 109% Church St NB: 116% Church St SB: 113%	US-31 WB: 120% US-31 EB: 110% Church St NB: 110% Church St SB: 113%
	2 Wilson St at US-72A / SR-20	US-31 WB: 143% Wilson St SB: 125%	US-31 WB: 143% Wilson St SB: 125%	N/A (intersection removed)	US-31 WB: 169% Wilson St SB: 162%
	3 US-31 / US-72A / SR-20 Bridge	US-31 / US-72A / SR-20 WB: 108%	US-31 / US-72A / SR-20 WB: 108%	All segments within capacity and operating at LOS D or better	All segments within capacity and operating at LOS D or better
	4 US-31 at US-72A / SR-20 "Y Interchange"	US-31 SB to US-72A / SR-20 EB: 530%	US-72A / SR-20 WB to US-31WB: 107%	All segments within capacity and operating at LOS E or better	All segments within capacity and operating at LOS E or better

Figure 5.1-3: AADT Trends from ALDOT Traffic Data Website



For the No Build Alternative, results of the HCM analysis indicate that the U.S. Highway 31 SB approach to the bridge and the U.S. Highway 31 SB lane to U.S. Highway 72 Alt/ SR-20 EB movement are overcapacity in 2050 AM and PM. Results of the HCM analysis also indicate that the bridge approach to Wilson Street NE is 43% over capacity. A sensitivity analysis of future traffic for the intersection of the existing corridor at Wilson Street NE indicates that significant reductions in traffic demand are required for the intersection to operate within its capacity and avoid queueing onto the bridge. The intersection of Wilson Street NE is anticipated to operate within capacity and at an acceptable LOS if there is a ≥35% decrease in the anticipated future 2050 traffic volumes. A breakdown of the sensitivity analysis is provided in Figure 5.1.4 below.

The LOS classifications are as follows:

- (A) Free Flow Traffic. Users are practically unaffected by the presence of other vehicles on a road section. The choice of speed and the maneuverability are free. The level of comfort is excellent, as drivers need minimal attention.
- (B) Steady Traffic. The presence of other vehicles begins to affect the behavior of individual drivers. The choice of speed is free, but the maneuverability has somewhat decreased. The comfort is excellent, as drivers simply need to keep an eye on nearby vehicles.
- (C) Steady Traffic but Limited. The presence of other vehicles affects drivers. The choice of speed is affected and maneuvering requires vigilance. The level of comfort decreases quickly at this level because drivers have a growing impression of being caught between other vehicles.
- (D) Steady Traffic at High Density. The speed and the maneuverability are severely reduced and there is a low level of comfort for drivers as collisions with other vehicles constantly must be avoided. A slight increase in traffic risks causing some operational problems and saturating the network.
- (E) Traffic at Saturation. Low but uniform speed. Maneuverability is possible only under constraint for another vehicle. Users are in a state of frustration.
- (F) Congestion. Unstable speed with the formation of waiting lines at several points. Cycles of stop and departure with no apparent pattern created by the behavior of other drivers. A high level of vigilance is required for the user with practically no comfort. This LOS implies that the road segment is used above design capacity.

Figure 5.1-4: Sensitivity Analysis

Volume Reduction	0%	10%	15%	20%	25%	30%	35%
2050 AM							
LOS	F	F	F	F	F	E	C
V/C	1.43	1.29	1.22	1.15	1.08	1.00	0.93
Queue (ft)	1,656	1,199	971	861	766	682	605
2050 PM							
LOS	F	F	F	F	C	C	B
V/C	1.29	1.15	1.10	1.03	0.97	0.90	0.84
Queue (ft)	1,803	1,519	1,383	1,249	1,053	908	791

The sensitivity analysis is based on several assumptions about future growth. The volume reductions were estimated with Decatur Travel Demand Model (TDM) with select-link analysis for each of the proposed alignments. It was found, as documented in Appendix J, that the traffic reduction on the existing bridge varied between 10 and 35% for the different alignments. Like the other operational results in this report, levels of congestion for these analyses are based solely on individual movements and have not fully accounted for the effects of spill-over, lane changes, or signal coordination. A microsimulation model should be prepared in the next phase of analysis to quantify the extent of these issues.

For Build Alternative B, results of the HCM analysis indicate that the U.S. Highway 31 SB approach to the existing corridor bridge and the U.S. Highway 31 SB to U.S. Highway 72 Alt/SR-20 WB merge are overcapacity in 2050 AM and PM with the proposed interchange design. Overall, the U.S. Highway 31 NB to U.S. Highway 72 Alt/SR-20 EB movement is improved at the interchange. However, the two-lane segments on the existing corridor bridge remain overcapacity. Likewise, the intersection at Wilson Street Northeast remains significantly overcapacity.

For Build Alternative C, results of the HCM analysis indicate that all segments will operate within capacity at LOS "E" or better. The highest capacity constraints are the NB departure lanes towards I-65 (91% capacity). Results of the HCM analysis also indicate that the ramp segments and merge/diverge areas will have sufficient capacity and operate at LOS "D" or better and the existing corridor bridge approach to Church Street Northeast is 13% over capacity. Carrying three lanes of traffic to the proposed Wilson Street Northeast ramps allows the bridge to operate within capacity. The removal of turning traffic at Wilson Street Northeast improves the U.S. Highway 31 operations. However, the Church Street Northeast intersection remains a bottleneck with long delays and queues.

For Build Alternative D, results of the HCM analysis indicate that all segments will operate within capacity at LOS "E" or better. The highest capacity constraints are the NB departure lanes towards I-65 (91% capacity). Results of the HCM analysis also indicate that a three-lane bridge segment will have sufficient capacity and operate at LOS "D" or better and that the bridge approach to Wilson Street Northeast is 68% over capacity. A shared ("choice") lane on the bridge reduces the capacity. Widening the bridge to have three lanes of traffic allows the bridge to operate within capacity. Without additional through lanes on U.S. Highway 31 at Wilson Street Northeast or Church Street Northeast, these signals remain overcapacity with long delays and queues. Please note that HCM methodology does not account for what may be downstream bottlenecks or lane change problems.

5.3 Cost

Order of magnitude cost estimates were developed for design and construction of each bridge alternative discussed above, including adjoining roadway improvements. The cost estimates focused on the major bid items and Project soft costs. They included order of magnitude costs of all major bridge replacement components, including street transitions, walls, traffic, utilities, modifications of surrounding properties and accesses, sidewalks, and streetscape items. Figure 5.3-1 summarizes the range of Project costs for each of the alternatives as well as improvements to the Y-interchange and to the existing bridges. Depending on the alternative concept chosen in the environmental/ preliminary engineering phase, actual Project costs should fall within these ranges. The engineering estimate, including cost buildups for equipment, materials and labor, cost implications, and assumptions for each concept are provided in the Figure below. Additional costs details can be found in the Captain William J. Hudson Memorial Bridge Repair/Replacement Feasibility Study and provided in Appendix K.

DECATUR BYPASS ALTERNATES COSTS

Alignment No.	Description	Total Length (Mi)	Rural Rdwy (Mi)	Urban Rdwy (Mi)	Bridges (Mi)	Interchange Major (Each)	Interchange Minor (Each)	Intersection Major (Each)	Intersection Minor (Each)	Residential Acquisitions (Each)	Roads Cost ($M)	Bridge Cost ($M)	Land Costs ($M)	Utility Costs ($M)	Env. Mit. Costs ($M)	Total Costs ($M)
25	Betline Rd to New I-65 Interchange	9.0	4.6	1.4	3.0		1	2	3		$106.9	$296.0	$6.8	$1.1	$12.0	$422.8
30	US-72 Alt to New I-65 Interchange (North of Airport)	8.5	4.6	1.2	2.7		1	3	3		$106.2	$265.0	$6.3	$1.0	$11.5	$390.0
31	US-72 Alt to New I-65 Interchange (South of Airport)	8.1	4.4	1.2	2.5		1	3	5		$105.2	$240.0	$6.6	$0.7	$10.5	$363.0
32	US-72 Alt to I-65 New Interchange (w/ SR-20 Tie)	9.4	5.6	1.2	2.6	1	2	4	4		$128.8	$245.0	$7.5	$0.8	$10.5	$392.6
33	US-72 to US-72 / US-31 Interchange	5.2	1.6	1.1	2.5	1	1	2		2	$33.8	$246.0	$3.1	$0.3	$16.5	$299.7
35	US-72 / Wilson St to US-72 / US-31 Interchange	2.1	0.2	0.2	1.7	1	1	1		2	$18.1	$170.0	$0.6	$0.5	$9.5	$198.7
A	Y-Interchange & Rdwy Widen	0.9	*0.7	0.2	Truss Repair	1	1	1	2		$3.3	$14.0		$0.4	$3.5	$21.2
B	Redesign Intersection, Y-Interchange & New 4-lane Br.	1.8	*0.6	0.2	1.0		1	1	2		$3.0	$51.0	$1.0	$0.4	$4.0	$59.4
C	Redesign Intersection, Y-Interchange & New 3-lane Br.	1.5	*0.9	0.2	0.6		1	1	2		$3.9	$33.0	$1.0	$0.4	$4.0	$42.3

Estimated Costs

Rural Road = $6.9M/Mi
Urban Road = $6.1M/Mi
Bridges = $79.5/Mi
Major Interchanges (I-65) = $50M/Ea
Minor Interchange = $15M/Ea
Major Intersection = $500K/Ea

*Roadway Widening = $3.0M/mi

Land Costs

	$ / acre	$ / mi
Better Farmland	$50K	$1.2M
Poor Farmland	$10K	$0.25M
Comm / Indust	$100K	$2.4M

Acqd Residential $220K / ea

5.4 Feasible Alternatives

Achieving the vision for the Feasibility Study relies not only on developing and advancing projects based on the recommendations of this Feasibility Study but making sure that all projects in the Project Study Area consider and incorporate measures to support commerce and provide connections that have a positive effect on surrounding neighborhoods. The Feasibility Study provides feasible improvements to the existing corridor as well as several feasible alternative alignments meeting the purpose and need for the Project while meeting the City of Decatur's vision for its city. All alternatives evaluated remain potential alternatives to be evaluated during the NEPA process.

5.5 Next Steps

With the completion of the Feasibility Study, the findings can be incorporated into the upcoming NEPA analysis. ALDOT and FHWA will review the Feasibility Study, including all information required for issuance of a NOI for a DEIS or the equivalent information for an EA. Once the complete review of the required documentation is complete, an official determination is made and the timeline begins.

The subsequent NEPA and permitting timeline will need to be coordinated and approved by the resource agencies. This would need to be approved shortly prior to the NOI being issued. A Scoping Study, which occurs after completion of the Feasibility Study and continues through the Notice of Intent (NOI) for the Project, should be the next phase of this process.

Ultimately, the Project Team forecasts that the ALDOT and FHWA will consider incorporating this Project into federal and state adopted transportation plans so that appropriate funding can be secured and appropriate scheduling can be planned.

Below is an overview of the scope and process to advance the Project to a stage where the NOI can be submitted and the preliminary engineering and design can begin.

The purpose of the Scoping Study is to build on the planning efforts of the completed Feasibility Study. The feasible alternatives and alignments will be studied and evaluated in more detail with the Scoping Study.

Some key deliverables would include:

- Database
- Field survey enhancements (where required)
- Channel survey
- Geotechnical investigation (where required)

Alternative Analysis and Screening

- Feasibility study decision matrix expansion
- Alignment adjustments/reductions
- Evaluation of non-bridge alternatives
- Draft alternative analysis for NEPA document

Traffic Analysis
- Corridor analysis (2050)
- Intersection/Interchange analysis
- Traffic model development (2050)
- ALDOT/Decatur Area MPO/Huntsville Area MPO model incorporation/integration

Utility/Railroad Coordination

Public Involvement
- Stakeholder group engagement/expansion
- Individual stakeholder meetings
- Citizen Advisory Committee
- City Council presentation
- Formal public meeting
- ALDOT/FHWA
- Huntsville area MPO

Alternative Alignments
- 15% level roadway design on screened alignments
- 15% level bridge design on screened alignments
- 15% Level bridge/roadway design on existing corridor alignments

Pre-NEPA
- Expand cultural and natural resource data beyond desktop level screening
- Expand HMS screening to a hazardous materials survey
- Explore NEPA permitting strategy (level of permit[s], lead agency)
- Agency coordination
- Navigation study
- Prepare NOI

Completion of the Scoping Study includes conceptual Alternatives Analysis for an additional Tennessee River crossing or rehabilitation and/or replacement of SB U.S. Highway 31 bridge over the Tennessee River. The Scoping Study builds upon the previous Feasibility Study efforts and will identify the alternatives and prepare the Project for NEPA analysis and Preliminary Engineering and Design.

6.0 Potential Impacts to Project Study Area Resources and Anticipated Permitting/Mitigation and NEPA Process

The Project Team conducted a review of environmental resources in the Project Study Area and provided a desktop review of potential impacts to those resources for both the existing and alternative corridor alignments. A limited summary of anticipated permitting and agency coordination requirements is also outlined and discussed below. A brief introduction to NEPA and the three classes of action are also presented.

6.1 Potential Impacts and Mitigation Measures

In order to determine potential impacts to environmental resources associated with the proposed undertaking, the Project Team analyzed anticipated impacts to these resources by independently evaluating each top alternative. The Project Team considered the following environmental resources, detailed in Section 1.3.6 when evaluating potential each alternative:

- Hazardous materials
- Wildlife and aquatic resources
- Wetland and waters
- Noise
- Air quality
- Historic/Prehistoric resources;
- Section 4(f) and Section 6(f) resources;
- Land use
- Prime farmland
- FEMA floodplain
- Environmental justice

6.1.1 Hazardous Materials

As noted in Section 1.3.6, hazardous materials are defined as substances that possess, or have the potential to possess, either alone or in combination with other materials, detrimental effects on human health or the natural environment. This broad classification encompasses a range of materials, including ACM, LBP, toxic chemicals, flammable liquids, corrosive agents, radioactive substances, and infectious materials, among others. A summary of the estimated number of HMS associated with each alternative is provided in the tables below.

Table 6.1.1-1: Existing Corridor Alignments – Hazardous Materials

Alternative ID	A No Build	B Min. Build 1	C Min. Build 2	D Rep. Bridge
HMS Impacts	0	58	58	55

Table 6.1.1-2: Alternative Corridor Alignments – Hazardous Materials

Alternative ID	25	30	31	32	33	35
HMS Impacts	29	36	39	40	36	30

As each of the evaluated alternatives, excluding the no build alternative, proposes impacts to HMS, further investigation into properties slated for ROW acquisition or construction under the final selected alternative would be warranted. Mitigation considerations would include avoidance where practicable. Should avoidance of HMS be unattainable, additional mitigation considerations may include the implementation of on-site treatment or engineering controls to reduce/remove hazardous materials. Each HMS potentially impacted will warrant further evaluation and development of mitigation measures to be implemented during the construction phase.

6.1.2 Wildlife & Aquatic Resources

As noted in Section 1.3.6.2, several federal statutes have been enacted to safeguard wildlife, including the ESA, the MBTA, and the BGEPA. A summary of the potential impacts to protected wildlife associated with each alternative is provided in the tables to the right.

Table 6.1.2-1: Existing Corridor Alignments – Wildlife & Aquatic Resources

Alternative ID	A No Build	B Min. Build 1	C Min. Build 2	D Rep. Bridge
Wetland & Waters Impacts	None	Mussel; Whooping Crane	Mussel; Whooping Crane	Mussel; Whooping Crane; Bat (along existing corridor bridge)

Table 6.1.1-2: Alternative Corridor Alignments – Hazardous Materials

New Construction Alignment Alternatives						
Alternative ID	25	30	31	32	33	35
Wetland & Waters Impacts	Mussel; Whooping Crane; Bat; Pygmy sunfish (crucial habitat)	Mussel; Whooping Crane; Bat; Pygmy sunfish (crucial habitat)	Mussel; Whooping Crane; Bat	Mussel; Whooping Crane; Bat	Mussel; Whooping Crane; Bat	Mussel; Whooping Crane; Bat

As each of the alternatives, excluding the no build alternative, proposes impacts to wildlife and aquatic resources habitat, presence/absence surveys for species potentially impacted by the selected alternative would be warranted. Furthermore, should the findings of these surveys determine the proposed undertaking may adversely affect federally protected species, formal Section 7 consultation with USFWS would be required. Mitigation considerations for the selected alternative would initially include avoidance of potentially suitable habitat and/or federally protected species. Should avoidance of suitable habitat and/or identified species populations be unattainable and the project is determined to adversely affect protected species, additional mitigation considerations would be required through formal consultation with USFWS. Each federally protected species potentially impacted will require specific mitigation requirements set forth by USFWS.

Most migratory bird deaths by transportation projects result from removal of active nests from infrastructure or unknown active nests during mowing or vegetation removal. Construction and maintenance activities associated with transport can disturb active nests, stranding eggs and nestlings. Some direct take of adult birds can also occur as part of vegetation clearing or vehicle strikes. Most of these conflicts occur during nesting season. (USFWS, 2022 - https://www.fws.gov/story/incidental-take-beneficial-practices-transportation)

If migratory bird populations are found to be nesting within the project corridor, a mitigation consideration would be limiting ground disturbance to occur outside of the nesting season. The project should be designed to avoid destroying active nests. If an active nest is detected, no construction activities should be conducted within an agreed upon buffer zone around the nest until the nest is unoccupied.

6.1.3 Wetlands & Waters

As noted in Section 1.3.6.3, the CWA was enacted by Congress to safeguard the physical, biological, and chemical integrity of U.S. waters, including adjoining wetlands. Section 404 of the CWA specifically outlines the definition of WOTUS, which encompasses traditional navigable waters and their tributaries, interstate waters and their tributaries, wetlands abutting these waters, and impoundments of these waters. The administration of Section 404 of the CWA falls under the purview of the USACE Regulatory Program, while the enforcement is carried out by the EPA. A summary of the potential impacts to wetlands and waters associated with each alternative is provided in the tables to the right.

As each of the evaluated alternatives, excluding the no build alternative, proposes impacts to wetlands and waters, further investigation (i.e., an Aquatic Resources Delineation) of the alternative corridors would be warranted. The impacts to WOTUS, including jurisdictional wetlands and surface water features, are regulated under Section 404 of the CWA. Maintaining no net loss of wetland functionality requires avoiding, minimizing, and mitigating impacts to the greatest extent possible through future planning and design. For potential projects involving dredge and fill material in any WOTUS, a Section 404 permit from the USACE may be required based on the project's size and scope. Mitigation would typically be required for impacts exceeding 0.1 acres of jurisdictional WOTUS, including wetlands. Mitigation considerations for the selected alternative would initially include avoidance measures. Should avoidance of wetlands and waters be unattainable, additional mitigation considerations may be required through formal consultation with the project's lead federal agency and/or the USACE. Mitigation measures may include compensatory mitigation (i.e., mitigation banking), permittee-responsible mitigation, or in-lieu fee mitigation. The final mitigation requirement and cost for impacts to wetlands and waters will be finalized upon the final impacts to aquatic resources and approval by the lead federal agency and/or the USACE.

Table 6.1.3-1: Existing Corridor Alignments – Wetlands & Waters

Alternative ID	A No Build	B Min. Build 1	C Min. Build 2	D Rep. Bridge
Wetland & Waters Impacts	None	Streams: 2 crossings, ±2,000 feet (ft); Wetland: ±6 acres (ac) TN River: ±4,000 ft	Streams: 2 crossings, ±2,000 ft; Wetland: ±8 ac TN River: ±8,200 ft	Streams: 2 crossings, ±2,000 ft; Wetland: ±8 ac TN River: ±8,200 ft

Table 6.1.3-2: Alternative Corridor Alignments – Wetland & Waters

New Construction Alignment Alternatives						
Alternative ID	25	30	31	32	33	35
Wetland & Waters Impacts	Streams: 5 crossings, ±1,700 ft; Wetland: ±55 ac TN River: ±11,200 ft	Streams: 6 crossings, ±2,100 ft; Wetland: ±61 ac TN River: ±9,000 ft	Streams: 2 crossings, ±300 ft; Wetland: ±47 ac TN River: ±9,200 ft	Streams: 2 crossings, ±300 ft; Wetland: ±47 ac TN River: ±9,200 ft	Streams: 3 crossings, ±3,200 ft; Wetland: ±68 ac TN River: ±11,700 ft	Streams: 2 crossings, ±3,100 ft; Wetland: ±31 ac TN River: ±7,200 ft

6.1.4 Noise

As noted in Section 1.3.6.4, noise is defined as any sound that is undesired or interferes with one's hearing/livelihood. In a general setting there is what is considered "background noise" which can include traffic, wildlife, and people. With respect to the impact of people, elevated noise levels can cause damage to one's hearing. Other effects may include impact to one's sleep cycle or general discomfort due to elevated noise. A summary of the potential noise impacts associated with each alternative is provided in the tables to the right.

As each of the evaluated alternatives, excluding the no build alternative, proposes noise impacts associated with roadway modification or new construction, further investigation (i.e., a noise study) of the alternative alignments would be warranted. Should a noise study of the final selected alignment determine project activities would result in a significant increase in noise volumes, mitigative measures would be evaluated. Significant noise impacts to potentially sensitive areas will require specific mitigation requirements to implement proper management practices prior to the construction phase. During construction, it is important to adopt a practical approach to mitigate noise impacts caused by construction equipment and activities. BMP can be implemented to minimize the construction's impact on nearby residents and sensitive areas without disrupting the construction activities.

Table 6.1.4-1: Existing Corridor Alignments - Noise

Alternative ID	A No Build	B Min. Build 1	C Min. Build 2	D Rep. Bridge
Noise Impacts	None	Along existing corridor	Along existing corridor	Along existing corridor

Table 6.1.4-2: Alternative Corridor Alignments - Noise

New Construction Alignment Alternatives						
Alternative ID	25	30	31	32	33	35
Noise Impacts	Swan Creek WMA (±94 ac)	Swan Creek WMA (±81 ac)	Swan Creek WMA (±52 ac)	Swan Creek WMA (±52 ac)	Hospitality Park; Swan Creek WMA (±70 ac), (adjacent to Wheeler NWR)	Hospitality Park; Swan Creek WMA (±38 ac), (adjacent to Wheeler NWR)

6.1.5 Air Quality

As noted in Section 1.3.6.5, air pollution arises from a multitude of origins: fixed sources like factories, power plants, and dry cleaners; moving sources like cars, buses, planes, trucks, and trains; and natural sources such as windblown dust. The pollution released from these sources can significantly impact air quality in various ways. As the alignments are located within an attainment area and the maximum AADT on the Project corridor is approximately 50,000 vehicles, a quantitative MSAT emission analysis would not be warranted.

6.1.6 Historic/Prehistoric Resources

As noted in Section 1.3.6.7, historic resources encompass sites, buildings, structures, districts, or objects from prehistoric and historic times that hold cultural significance. They are either listed on or eligible for inclusion in the NRHP. Additionally, properties of traditional religious and cultural importance to Native American tribes are also considered as part of these historic resources. A summary of the potential impacts to known historic/prehistoric resources associated with each alternative is provided in the following tables to the right.

Table 6.1.6-1: Existing Corridor Alignments – Historic/Prehistoric Resources

Alternative ID	A No Build	B Min. Build 1	C Min. Build 2	D Rep. Bridge
Historic / Prehistoric Impacts	None	Steamboat Bill Memorial Bridges (likely eligible) Potential archaeological sites	Steamboat Bill Memorial Bridges (likely eligible) Potential archaeological sites	Steamboat Bill Memorial Bridges (likely eligible) Potential archaeological sites

Table: 6.1.6-2: Alternative Corridor Alignments – Historic/Prehistoric Resources

New Construction Alignment Alternatives						
Alternative ID	25	30	31	32	33	35
Historic / Prehistoric Impacts	Garrett residence (potential eligible) Potential archaeological sites	Garrett residence (potential eligible) Mosley Cemetery (southern termini) Potential archaeological sites	Garrett residence (potential eligible) Mosley Cemetery (southern termini) Potential archaeological sites	Garrett residence (potential eligible) Mosley Cemetery (southern termini) Potential archaeological sites	Mosley Cemetery (southern termini) Potential archaeological sites	Historic downtown with several historic structures nearby Port of Decatur (southern termini) Potential archaeological sites

As each of the alternatives, excluding the no build alternative, potentially impact historic and/or prehistoric resources, further investigation (i.e. extensive archaeological investigation) of the alternative corridor would be warranted. Mitigation considerations for the selected alternative would initially include avoidance measures. Should avoidance of historic/prehistoric sites be unattainable, mitigation considerations will be determined by the lead federal agency, the AHC, and tribal communities. Proposed mitigation measures will be proposed and agreed upon by all parties involved with the undertaking. Each historic and prehistoric site potentially impacted will require development of site-specific mitigation requirements.

6.1.7 Section 4(f) and Section 6(f) Resources

As noted in Section 1.3.6.8, recreational resources, including parks, open space, and major trail networks, are crucial community facilities that offer environmental, aesthetic, and recreational benefits. They provide green spaces for relaxation, physical activity, and social interactions, contributing to a healthier lifestyle and enhanced well-being. Moreover, these resources play a significant role in preserving biodiversity and fostering ecological resilience, making them vital components of sustainable urban development. A summary of the potential impacts to Section 4(f) and Section 6(f) resources associated with each alternative is provided in the following tables.

During the public comment period, numerous comments and form letters were received advocating for consideration regarding impacts to Swan Creek WMA (a Section 4[f] resource) and potential impacts to waterfowl hunters by the disturbance and reduction of hunting area should a new transportation corridor be placed through Swan Creek WMA. The Project Team has initiated a stakeholder group to encompass the specific interests of Swan Creek WMA which includes ADCNR Swan Creek management staff, Delta Waterfowl, and Duck's Unlimited. It is recommended that this stakeholder group continue to be engaged during future phases of the Project.

As each of the evaluated alternatives, excluding the no build alternative, proposes impacts to Section 4(f) resources, further investigation and an evaluation of the alternatives is warranted to determine whether a feasible and prudent avoidance alternative exists which addresses the purpose and need of the Project. An alternative is feasible if it can be designed and built as a matter of sound engineering judgment. Thus, most alternatives are feasible. If a potential avoidance alternative cannot be built as a matter of sound engineering judgment, the engineering problem with the alternative should be documented in the project files with a reasonable degree of explanation. If, according to 23 CFR 774.3(c), there is no feasible and prudent avoidance alternative, then the administration may approve only the alternative that causes the least overall harm considering the statute's preservation purpose. The least overall harm is determined by balancing the factors on the following page.

Table 6.1.7-1: Existing Corridor Alignments – Recreational Resources

Alternative ID	A No Build	B Min. Build 1	C Min. Build 2	D Rep. Bridge
Section 4(f) and *Note: NWR: National Wildlife Refuge	None	Hospitality Park (Adjacent to Wheeler NWR)	Hospitality Park Intersect Wheeler NWR near existing bridge/marina	Hospitality Park Intersects Wheeler NWR at existing bridge/marina
Section 6(f)	None	None	Intersect Wheeler NWR near existing bridge/marina	Intersects Wheeler NWR at existing bridge/marina

Table 6.1.7-2: Alternative Corridor Alignments – Recreational Resources

New Construction Alignment Alternatives						
Alternative ID	25	30	31	32	33	35
Section 4(f)	Swan Creek WMA (±94 ac)	Swan Creek WMA (±81 ac)	Swan Creek WMA (±52 ac)	Swan Creek WMA (±52 ac)	Hospitality Park; Swan Creek WMA (±70 ac), (adjacent to Wheeler NWR)	Hospitality Park; Swan Creek WMA (±38 ac), (adjacent to Wheeler NWR)
Section 6(f)	None	None	None	None	None	None

i. The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property)
ii. The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection
iii. The relative significance of each Section 4(f) property
iv. The views of the official(s) with jurisdiction over each Section 4(f) property
v. The degree to which each alternative meets the purpose and need for the Project
vi. After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f)
vii. Substantial differences in costs among the alternatives.

Based on the potential impacts to Section 4(f) resources by the proposed alternatives, and if no additional alternatives that avoid Section 4(f) or qualify for de minimis determination are identified during the Scoping Study and evaluation, an Individual Section 4(f) Evaluation will likely be required to include a least harm analysis. The supporting documentation should describe the Section 4(f) Evaluation's findings of no feasible and prudent alternatives and all possible planning to minimize harm. Documentation is required to clearly explain the process and its results.

6.1.8 Land Use

As noted in Section 1.3.6.9, land use encompasses the deliberate and current utilization of land for specific designated purposes or activities, representing a pivotal aspect of urban and rural planning and development. It encompasses a wide array of decisions and actions that dictate how land is allocated, zoned, developed, and managed, reflecting the complex interplay of social, economic, and environmental factors. Successful land use planning involves striking a delicate balance between the needs of the population, economic growth, and environmental sustainability allowing the land to be appropriately utilized to meet both present and future requirements while safeguarding the natural environment and the overall well-being of communities. A summary of the potential impacts to land use associated with each alternative is provided in the tables below.

Table 6.1.8-1: Existing Corridor Alignments – Land Use

Alternative ID	A No Build	B Min. Build 1	C Min. Build 2	D Rep. Bridge
Noise Impacts	None	Along existing corridor	Along existing corridor	Along existing corridor

Table 6.1.8-2: Alternative Corridor Alignments – Land Use

New Construction Alignment Alternatives						
Alternative ID	25	30	31	32	33	35
Land Use Impacts	Southern termini is in industrial area Most of corridor is undeveloped	Southern termini is in industrial area Most of corridor is undeveloped	Southern termini is in industrial area Most of corridor is undeveloped	Southern termini is in industrial area Most of corridor is undeveloped	Southern termini is in industrial area Most of corridor is undeveloped	Southern termini is in industrial area Most of corridor is undeveloped

The alignments that propose modification to the existing roadway would not result in significant changes in land use, therefore no further assessment would be required. Each of the alternatives proposing a new construction alignment include impacts to land use. The roadway and associated ROW within the alternative limits are not specifically zoned for transportation corridors. But given projected expansion of commercial and industrial areas, the project is generally consistent with the zoned land uses. Also, the activity will improve traffic conditions to allow the surrounding areas to function more efficiently and successfully. Adopting sustainable and multi-modal transportation solutions will allow Decatur's transportation infrastructure to align with the City's growth vision and enhance the overall quality of life for residents and businesses.

6.1.9 Prime Farmland

As noted in Section 1.3.6.10, the FPPA aims to prevent the unnecessary and irreversible conversion of farmland to nonagricultural uses through compatible administration of Federal programs with state, local, and private efforts to protect farmland.

As each alternative, excluding the no action alternative, proposes impacts to prime farmland, further evaluation will be required upon the finalization of the selected alternative. For areas designated as Prime Farmland, a USDA Farmland Conversion Impact Rating form will be required to evaluate impacts.

6.1.10 FEMA Floodplain

As noted in Section 1.3.6.11, FEMA floodplains refer to the areas of land that are prone to flooding during certain weather conditions or natural events, particularly heavy rainfall, snowmelt, storm surges, or the overflow of nearby rivers, lakes, or coastal areas. These floodplains are identified and mapped by FEMA to assess the potential risks posed by flooding and to aid in disaster management and preparedness. A summary of the potential impacts to FEMA floodplains associated with each alternative is provided in the tables below.

Table 6.1.10-1: Existing Corridor Alignments – FEMA Floodplain

Alternative ID	A No Build	B Min. Build 1	C Min. Build 2	D Rep. Bridge
FEMA Floodplain Impacts	None	No Impact to Floodway Crosses 20.6ac Floodplain	Crosses 3.9ac Floodway Crosses 37.5 ac Floodplain	Crosses 3.9ac Floodway Crosses 39.1 ac Floodplain

Table 6.1.10-2: Alternative Corridor Alignments – FEMA Floodplain

New Construction Alignment Alternatives						
Alternative ID	25	30	31	32	33	35
FEMA Floodplain Impacts	Crosses 9.7 ac Floodway Crosses 116.7 ac Floodplain	Crosses 5.4 ac Floodway Crosses 115.5 ac Floodplain	Crosses 5.4 ac Floodway Crosses 89.1 ac Floodplain	Crosses 5.4 ac Floodway Crosses 89.1 ac Floodplain	Crosses 5.4 ac Floodway Crosses 110.3 ac Floodplain	Crosses 3.2 ac Floodway Crosses 63.5 ac Floodplain

As the majority of alternatives propose impacts to FEMA floodplains, further investigation and evaluation of the final alternative would be warranted. Additional evaluations may include comprehensive floodplain analysis for the proposed bridge, considering factors such as the bridge's elevation, impact on water flow, and potential changes to floodplain boundaries.

Furthermore, engaging local floodplain management authorities and FEMA to discuss the Project, maintain compliance with regulations, and obtain necessary permits or approvals for building within the floodplain will be required. Mitigation considerations for the selected alternative would initially include avoidance measures. As total avoidance is likely unattainable, mitigation considerations also would require evaluations. Mitigation measures, such as building retention or detention basins, improving stormwater management, or enhancing natural drainage systems may be evaluated.

6.1.11 Environmental Justice

As noted in Section 1.3.6.12, EJ is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations, and policies (EPA.gov). Each of the alternative alignments do not propose a disproportional impact to minority or low-income populations. However, this criterion would likely require further evaluation upon the finalization of the selected alternative. Should the final alternative propose impacts to minority or low-income populations, mitigation considerations including avoidance measures would be developed and evaluated with the lead Federal agency. Please refer to Environmental Justice Screening Report, provided in Appendix F.

6.2 Anticipated Permitting/ Agency Coordination Requirements

The following sections summarize the anticipated permitting/agency coordination requirements associated with the NEPA evaluation of the Project. It should be noted that the anticipated permitting/agency coordination requirements may not include all state and federal requirements for the Project.

6.2.1 USCG Bridge Permit

As noted in Section 1.3.6.3, modifications to navigable waters are generally regulated by Sections 9 and 10 of the RHA, and specific regulations for bridge construction over navigable waters are governed by the GBA. These acts are intended to preserve the public right of navigation and prevent interference with interstate and foreign commerce. The USCG maintains federal oversight and review of proposed bridges and/or other obstructions to navigable waters. Federal law requires USCG authorization for any activity that includes the construction of a new bridge, causeway, and/or reconstruction or modification to an existing bridge or causeway across any navigable waterway.

As the proposed undertaking includes the construction and/or modification of a bridge structure over a navigable waterway (the Tennessee River), USCG authorization via bridge permit approval would be required. Authorization from the USCG may be obtained through the submittal of a USCG Bridge Permit Application.

6.2.2 TVA Section 26a Permit

As noted within Section 1.3.6.3, the TVA Act was enacted “to improve the navigability and to provide for the flood control of the Tennessee River; to provide for reforestation and the proper use of marginal lands in the Tennessee Valley; to provide for the agricultural and industrial development of said valley; to provide for the national defense by the creation of a corporation for the operation of Government properties at and near Muscle Shoals in the State of Alabama, and for other purposes.” Section 26a of the TVA Act confers TVA authority related to unified conservation and development of the Tennessee River Valley and surrounding areas. Section 26a of the TVA Act requires TVA approval be acquired prior to the construction, operation, or maintenance of any dam, appurtenant works, or other obstruction affecting navigation, flood control, or public lands or reservations along or in the Tennessee River or any of its tributaries.

As the Project proposed the construction and/or modification of a bridge structure over the Tennessee River, authorization from TVA would be required. Authorization from TVA associated with bridge construction and/or modification activities may be obtained through the submittal of a TVA Section 26a Application Package.

6.2.3 USACE Section 404 CWA Permit

As noted in Section 1.3.6.3, the CWA was enacted by Congress to safeguard the physical, biological, and chemical integrity of

US waters, including any adjoining wetlands. Section 404 of the CWA specifically outlines the definition of WOTUS which encompasses traditional navigable waters and their tributaries, interstate waters and their tributaries, wetlands abutting these waters, and impoundments of these waters. Section 404 of the CWA regulates the discharge of dredge or fill material into WOTUS. The CWA provides oversight and guidance on regulating point and nonpoint source pollutant discharges into WOTUS. Should Project activities propose impacts to WOTUS, a Section 404 would be required.

Depending on the extent of Project activities and proposed impacts to WOTUS, a Section 404 permit would likely be required. USACE permit authorization may be obtained through the submittal of the appropriate USACE Section 404 Permit Application.

6.2.4 USACE Section 10 RHA Authorization

Section 10 of the RHA of 1899 requires USACE authorization/approval prior to the accomplishment of any work in, over, or under a navigable WOTUS or which affects the course, location, condition, or capacity of such waters. Navigable waters are defined as "those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use, to transport interstate or foreign commerce".

As Project activities propose the construction of and/or modification to a bridge structure, a USACE Section 10 permit would be required. USACE authorization may be obtained through the submittal of a Letter of Permission.

6.2.5 CWA Section 401 Water Quality Certification

Section 401 of the CWA stipulates that federal agencies may not issue a permit or license to conduct any activity that may result in any discharge into WOTUS unless Section 401 water quality certification is issued or certification is waived. States and authorized tribes where discharge would originate are responsible for issuing water quality certifications.

Within the State of Alabama, ADEM is the responsible authority for issuing water quality certification. Water quality certification issued by ADEM is generally applicable for a period of five years from the date of issuance when there is reasonable assurance that discharges resulting from the proposed activities will not violate applicable water quality standards established under Section 303 of the CWA and Title 22, Section 22-22-9(g), Code of Alabama 1975.

As Project activities would likely require USACE Section 404 authorization, a Section 401 water quality certification would likely be required. Water quality certifications are conducted in conjunction with CWA Section 404 permits that are issued by the Mobile and Nashville Districts of the USACE.

6.2.6 USFWS Section 7 Consultation

As noted in Section 1.3.6.2, the ESA of 1973 is regulated by the USFWS and the NOAA-NMFS to protect critically imperiled species from extinction as a "consequence of economic growth and development untampered by adequate concern and conservation." Section 7 of the ESA, as amended (16 U.S.C. 1531-1534), requires all federal agencies to aid in the conservation of listed species and ensure activities are not likely to jeopardize the continued existence of federally listed species or destroy or adversely modify designated critical habitat.

As Project activities would likely impact wildlife and aquatic resources habitat, presence/absence surveys for federally protected species potentially impacted would be warranted. Should the findings of these surveys determine the proposed undertaking may adversely affect federally protected species, the Project's lead federal agency would likely initiate formal Section 7 consultation with the USFWS.

6.2.7 Section 106 Consultation

As noted in Section 1.3.6.7, Section 106 of the NHPA mandates that federal agencies consider the impact of their projects on historic properties. Cultural resources encompass various elements, including archaeological sites and locations holding cultural value. These resources undergo evaluations to determine their eligibility based on specific criteria outlined in the regulations. The criteria consider factors such as historical significance, association

with important events or individuals, architectural or artistic value, and information yielded through research (36 CFR 60.4). Certain resources may require additional evaluation based on specific considerations. These considerations include religious properties, buildings or structures of architectural value, birthplaces or graves of historically significant figures, cemeteries with exceptional importance, reconstructed buildings, commemorative properties, and properties of significance within the past 50 years.

As Project activities would potentially impact historic and/or prehistoric resources, further investigation (i.e. extensive archaeological investigation) within the Project corridor would be warranted. Mitigation considerations for the selected alternative would initially include avoidance measures. The Project's lead federal agency would likely initiate formal consultation with the AHC and tribal communities.

6.3 NEPA Classes of Action

NEPA establishes a national policy to protect the environment, which includes the assessment of potential environmental impacts of all major Federal actions. Once project-level funding is secured, NEPA and preliminary design activities can be initiated. These activities will build on the existing conditions information, public and stakeholder outreach, transportation strategy analyses, and recommendations contained in this PEL Study. There are three classes of action that prescribe the level of documentation required in the NEPA process, as summarized below. Refer to FHWA regulations (23 CFR 771.115 and 23 CFR 771.117) for details:

- **Class I (EIS):** Actions that significantly affect the environment require an EIS (40 CFR 1508.27). An EIS is a full disclosure document that details the process through which a transportation project was developed, includes consideration of a range of reasonable alternatives, analyzes the potential impacts resulting from the alternatives, and demonstrates compliance with other applicable environmental laws and executive orders.
- **Class II (Categorical Exclusion [CE]):** Actions that do not individually or cumulatively have a significant environmental effect are excluded from the requirement to prepare an EA or EIS. A list of CEs normally not requiring NEPA documentation is provided in 23 CFR 771.117(c). FHWA and ALDOT executed a programmatic agreement on Jan. 12, 2016, that allows ALDOT environmental staff to approve projects on this list as CEs without FHWA concurrence. These are referred to as Programmatic Categorical Exclusions (PCEs). Per 23 CFR 771.117(b), any action that normally would be classified as a CE but could involve unusual circumstances will require FHWA, in cooperation with the applicant (ALDOT), to conduct appropriate environmental studies to determine if the CE classification is proper. Such unusual circumstances include:
    - Significant environmental impacts
    - Substantial controversy on environmental grounds
    - Significant impact on properties protected by Section 4(f) of the DOT Act or Section 106 of the NHPA
    - Inconsistencies with any federal, state, or local law, requirement or administrative determination relating to the environmental aspects of the action. ALDOT prepares a PCE or a CE II form for actions qualifying for a CE but requiring FHWA approval.
- **Class III (EA):** Actions in which the significance of the environmental impacts is not clearly established require preparation of an EA to determine the appropriate environmental document required. All actions that are not Class I or II are Class III. An EA:
    - Provides sufficient evidence and analysis for determining whether to prepare an EIS or a Finding of No Significant Impact (FONSI)
    - Aids an agency's compliance with NEPA when no EIS is necessary
    - Facilitates preparation of an EIS when one is necessary

If it is determined under the EA that significant impacts will result, preparation of an EIS is required. If it is determined that no significant impacts will occur, a FONSI will be prepared that will serve as the decision document for the proposed action.

6.3.1 Potential NEPA Process

The lead federal agency will be responsible for determining the future NEPA class of action for the Project. Based on the Project's potential for impacts as defined by NEPA, discussions with FHWA and ALDOT environmental staff, and considering the information provided in this report, it has yet to be determined whether an EIS or EA will be needed. Because this study took a PEL approach, the environmental analysis was conducted at a planning level based on existing mapping and data resources. The future NEPA study will provide that requirements for either an EIS or EA and will involve more detailed analyses for environmental resources that could be impacted by the Project.

6.4 Independent Utility and Logical Termini

When developing a project that will be advanced through the stages of planning, environmental assessment, design, and construction, a project must meet two conditions: independent utility and logical termini.

- The project must be inclusive of all improvements required to meet its purpose and need.
- Additional improvements beyond its termini or intersecting routes are not required or forced to accomplish the project.

Independent utility occurs when the improvement project can be completed and function properly independent of other improvements, meaning it does not rely on other projects to solve a problem. Logical termini relate to independent utility and are defined as the rational end points for a transportation improvement (the project limits) and for assessing environmental impacts. The intent of establishing logical termini is to see that proposed transportation improvements satisfy an identified need, avoid unexpected side effects, and that environmental considerations can be sufficiently evaluated.

Logical termini represent rational end points for a transportation project that are of sufficient length to address the transportation improvement and the scope of the environmental analysis. The logical termini for this Project include a northern terminus, on the north side of the Tennessee River, at the I-65, U.S. Highway 72/SR-20, I-565 interchange and a southern terminus, on the south side of the Tennessee River, at the intersection of U.S. Highway 72 Alt/SR-20 and Beltline Road NW/SR-67.

The logical termini for this Project support the need for a project by establishing limits in the evaluation of alternatives. Determination of the logical termini locations were driven by the purpose and need, public input during the initial PIM, and current traffic information. The logical termini will allow alternatives to be integrated into other regional transportation elements that have been previously adopted during long range planning efforts. A detailed description of Project Termini is described below; however, these termini will be further evaluated and validated during the Scoping Study through the development of a Travel Demand Model.

Northern Terminus

The northern terminus for potential alternatives was identified as the I-65, U.S. Highway 72 Alt/SR-20, I-565 interchange. This location allows the corridor Project to evaluate improvements to the existing U.S. Highway 72 Alt/SR-20 corridor and bridge along with the U.S. Highway 31 interchange. The I-65 and U.S. Highway 72 Alt/SR-20 interchange captures inbound and outbound traffic from I-565 to the east and from the NB and SB lanes on I-65. Furthermore, this location also allows for the evaluation of a potential new interchange along I-65, as additional improvements to I-65 would not necessarily be warranted to allow traffic to reach this terminus.

Southern Terminus

The southern terminus is located as the intersection of U.S. Highway 72 Alt/SR-20 and Beltline Road NW/SR-67. This location was selected based on traffic analysis and significant public interest in tying into this location. During the PIM and subsequent public comment period, approximately 32 alternative alignments were

proposed by the public. Of those alignments, 17 alignments placed the southern terminus at or near Beltline Road Northwest/SR-67. Beltline Road Northwest/SR-67 is predominantly developed as a six-lane divided highway providing access to SR-24, U.S. Highway 31, and large commercial shopping centers effectively serving as an informal bypass of downtown Decatur and ultimately tying into I-65 near the City of Priceville. In addition to connect to Beltline Road Northwest/SR-67, this terminus allows vehicles to travel east or west along U.S. Highway 72 Alt/SR-20, while also providing access to numerous industrial parks and facilities.

7.0 Future Actions

Next Steps to be anticipated after completion of the Feasibility Study include presenting the Feasibility Study to the City of Decatur. Should the City decide to move forward with the next step, various environmental documentation will need to be prepared and will include preparation of an EA or EIS, pursuant to the NEPA, to evaluate the effects of the Project on the environment. NEPA was established to assure that all branches of the US government document proper consideration to the environment before undertaking a federal action. Since the Project will require federal permits and could also rely upon federal funding, the NEPA process will be required for the Project. Details regarding the NEPA Process are further described in Section 7.2 below.

7.1 Funding

On Nov. 15, 2021, the Infrastructure Investment and Jobs Act (IIJA) (Public Law 117-58, also known as the "Bipartisan Infrastructure Law") passed into law. The Bipartisan Infrastructure Law is the largest long-term investment in our infrastructure and economy in our nation's history. It provides $550 billion over fiscal years 2022 through 2026 in new federal investment in infrastructure, including roads, bridges, mass transit, water service, resilience, and broadband.

Traditionally, transportation infrastructure has been financed primarily through a combination of state and local taxes and fees and – for major projects – federal grants funded by national motor fuels taxes. These resources are typically combined to fund projects on a "pay-as-you-go" basis, meaning that projects have often been built in phases or increments as funds become available over a period of years. Project funding has been tied closely to federal and state cash management policies, with nearly exclusive responsibility for the process vested in state and local public transportation agencies.

Motor fuel and vehicle taxes are deposited into the Federal Highway Trust Fund (HTF) from which federal aid grants are provided, typically on an 80%-20% federal-to-state matching ratio. However, state and local funding provides the majority of revenue available to highway projects through state motor fuels and vehicle taxes, tolls, local property taxes, sales taxes and other special assessments, general fund appropriations, and bond issue proceeds.

7.1.1 Phase One Funding: Tennessee River Bridge Feasibility Study

The City of Decatur recognized the need to provide infrastructure improvements that better connect its traveling public to the north side of the Tennessee River. This improvement is critical to support the increasing growth in and around the city. The City of Decatur received a $1 million grant from the Appalachian Regional Commission (ARC) and provided $1 million in local matching funds for the Feasibility Study.

7.1.2 Phase Two Funding: Tennessee River Bridge Scoping Study

The purpose of the Scoping Study is to build on the planning efforts of the completed Feasibility Study. Feasible alternatives for a location for a new Tennessee River crossing, and alternatives for the SB U.S. Highway 31 replacement bridge over the Tennessee River were identified as part of Feasibility Study. The feasible alternatives will be studied and screened in more detail with the Scoping Study. This study will provide ALDOT with the documentation and analysis needed to advance the Project into the NEPA Permitting and Preliminary Engineering phase. The Scoping Study is anticipated to cost approximately $3.5 million. The funding strategy for this phase is currently in negotiations with FHWA and ALDOT partners.

The funding will likely be an 80%-20% grant with the match funding provided by local and state partnerships.

7.1.3 Phase Three Funding: Decatur Bridge Design and Construction

The City of Decatur will continue to be a valuable partner and advocate for this Project through the Preliminary Engineering and Construction phases, but a project of this magnitude will be sponsored by ALDOT for the delivery of this phase. The Scoping Study will include a detailed analysis of all federal grants and innovative delivery opportunities that are appropriate for this size project. The probable project costs range from $250 million to more than $500 million. The Scoping Study will refine these numbers and provide a clearer picture of the level of environmental permitting that will be required as well as the probable project costs.

7.2 Next Steps

The purpose of the Scoping Study is to build on the planning efforts of the Feasibility Study completed in November 2023. Feasible alternatives for a location for a new Tennessee River crossing, or a SB U.S. Highway 31 replacement bridge over the Tennessee River in the City of Decatur, Alabama were identified as part of Feasibility Study. The feasible alternatives will be studied and screened in more detail with the Scoping Study.

7.2.1 Key Actions for Next Phase

During the next phase of the Project, the Project Team will maintain close coordination with the City of Huntsville, City of Decatur, known utility companies, and property owners/development interests. These activities should include:

- The preparation of a digital terrain model for each corridor.
- An analysis of the feasible alternatives with more detail regarding cost-effectiveness, reduction of risks, and performance.
- An Alternative Alignments Enhanced Design for the bridge concept (15% level design) and the roadway concept (15% level design) to support decision-making and document the impacts of the Project to the City of Decatur.
- A comprehensive traffic analysis utilizing Transcad software (or ALDOT's current model software) and StreetLight AADTs/ data to inform traffic forecasting, create up to three build alternatives, and develop an existing conditions model.
- A safety analysis built on available crash data provided by the City of Decatur and ALDOT.
- A robust outreach process to engage affected property owners and key agency participation, including known utility companies and railroad owners.

Prior to advancing the Project through NEPA evaluation, the Project Team will advance the NEPA work on this Project. The findings from these tasks can ultimately impact the alternative alignments for the proposed road and bridge resulting in additional project delays and location revisions if the findings are not accounted for early. Due to the large Project Study Area size and the overall scope, the current Feasibility Study reviews are restricted to "desktop" data with a very limited on-site review. Detailed analysis of the environmental impacts associated with the alignments will be required during NEPA evaluation. By beginning these field assessment tasks early, the City of Decatur is better able to plan and understand potential changes that may be required for the Project alternatives. Once the field assessments are completed, existing alternatives will need to be analyzed and refined to avoid and minimize, to the maximum extent practical, effects on the environment. This additional analysis and review will warrant expansion and further development of the purpose and need discussion and refinement of the logical termini narratives. We also recommend continued coordination with the involved agencies as the Project progresses:

- Coordinate and organize with various community/interest groups to identify Project concerns and opportunities.
- Conduct an HMS survey to include review of federal and state regulatory records and review each alignment to identify potential HMS which may warrant further investigation, mitigation and/or avoidance.
- Conduct ecological and biological surveys for each alignment and identify areas which may be classified as wetlands, streams, and other sensitive habitats.
- Utilize publicly available information to evaluate each alignment for potential impacts to federally or state-listed threatened and endangered species.

Conduct a field assessment (including aquatic habitats) to validate desktop findings. Provide a baseline habitat assessment for each alignment to include habitat, vegetation descriptions (including invasive species), observed species along each alignment, and a list of species that have the potential to be affected/impacted either directly or indirectly.

- Perform a wetland delineation for each alignment. Prepare a report which includes topographic and aerial photography-based exhibits to depict the extent of potential WOTUS and other habitats, such as wetlands, as mapped within the survey area and include USACE data sheets and photographs.
- Conduct a survey and identify potential historic sites and resources located within each alignment. Prepare a report to include exhibits depicting the location of potential historic sites and resources. Methods should include a detailed desktop review and windshield survey.
- Conduct a desktop review of each alignment for archaeological sites, including GIS data, to compare alignments and known resources along each. Prepare a summary report and exhibits to depict the extent and location of identified resources.
- Further refine the Project's purpose and need to prepare for future NEPA evaluation.
- Further refine the Logical Termini to prepare for future NEPA evaluation.
- Coordinate with all federal and state agencies with interest in the Project to determine permitting requirements and level of NEPA review.

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