



U.S. Department of Transportation
Federal Highway
Administration



ENVIRONMENTAL ASSESSMENT

CANE RIVER BRIDGE CHURCH STREET ROUTE LA 1-X

State Project No. H.001271
Federal Aid Project No. H001271
Natchitoches Parish, Louisiana



PREPARED BY:

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OCTOBER 2019



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LIST OF ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
ACS	American Community Survey
ADT	Average Daily Traffic
APE	Area of Potential Effect
ASTM	American Society for Testing and Materials
BFE	Base Flood Elevation
BMP	Best Management Practices
CE	Categorical Exclusion
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CSS	Context Sensitive Solutions
CZMA	Coastal Zone Management Act
DA	Department of the Army
dBA	A-weighted decibels
DNR	Department of Natural Resources
EA	Environmental Assessment
EDSM	Engineering Directives and Standards Manual
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ESA	Environmental Site Assessment
ESI	Earth Search, Inc.
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
GIS	Geographic Information System
HABS	Historic American Buildings Survey
HHS	U.S. Department of Health and Human Services
JD	Jurisdictional Determination
LDEQ	Louisiana Department of Environmental Quality
LADOTD	Louisiana Department of Transportation and Development
LDWF	Louisiana Department of Wildlife and Fisheries
LEPA	Louisiana Energy and Power Authority
LHRI	Louisiana Historic Resource Inventory
LNHP	Louisiana Natural Heritage Program
LOS	Level of Service
LPDES	Louisiana Pollutant Discharge Elimination System
LWCA	Land and Water Conservation Act
LWCF	Land and Water Conservation Fund
MOA	Memorandum of Agreement
MSFCA	Magnuson-Stevens Fishery Conservation Act
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NEPA	National Environmental Policy Act

NFIP	National Flood Insurance Program
NGVD	National Geodetic Vertical Datum
NHL	National Historic Landmark
NHLD	National Historic Landmark District
NHPA	National Historic Preservation Act
NHPP	National Highway Performance Program
NHS	National Highway System
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resource Conservation Service
NRHD	National Register Historic District
NRHP	National Register of Historic Places
NTP	Notice to Proceed
NWI	National Wetland Inventory
NWP	Nationwide Permit
OPC	Opinion of Probable Cost
OSHA	Occupational Safety and Health Administration
PIP	Public Involvement Plan
PPV	Peak Particle Velocity
P/H	Public Hearing
REC	Recognized Environmental Conditions
RCRA	Resource Conservation and Recovery Act
ROE	Right-of-Entry
ROW	Right-of-Way
SHPO	State Historic Preservation Office
SONRIS	Strategic Online Natural Resources Information System
SOV	Solicitation of Views
SSA	Sole Source Aquifer
STAA	Surface Transportation Assistance Act
STIP	State Transportation Improvement Program
SUE	Subsurface Utility Engineering
SWPPP	Stormwater Pollution Prevention Plan
TIP	Transportation Improvement Program
TMP	Transportation Management Plan
TNM	Traffic Noise Model
TNM 2.5	Traffic Noise Model Version 2.5
USACE	United States Army Corps of Engineers
USC	United States Code
USCG	United States Coast Guard
USDA	United States Department of Agriculture
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
USFWS	United States Fish and Wildlife Service
UST	Underground Storage Tank
WQC	Water Quality Certification

ENVIRONMENTAL CHECKLIST

WBS NO. H.001271

NAME: CANE RIVER BRIDGE CHURCH STREET ROUTE LA 1-X

ROUTE: LA 1-X

PARISH: NATCHITOCHE

1. General Information

- | | | |
|--|--|---|
| <input type="checkbox"/> Conceptual Layout | <input checked="" type="checkbox"/> Line and Grade | <input type="checkbox"/> Preliminary Plans |
| <input type="checkbox"/> Survey | <input type="checkbox"/> Plan-in-Hand | <input type="checkbox"/> Advance Check Prints |

2. Class of Action

- | | |
|---|---|
| <input type="checkbox"/> Environmental Impact Statement (E.I.S.) | <input type="checkbox"/> Programmatic C.E. (P.C.E.) |
| <input checked="" type="checkbox"/> Environmental Assessment (E.A.) | <input type="checkbox"/> 23 CFR 771.177(c)_____ |
| <input type="checkbox"/> Categorical Exclusion (C.E.) | <input type="checkbox"/> 23 CFR 771.177(d)_____ |
| <input type="checkbox"/> State Funded Only (EE/EF/ER) | |

3. Project Description

SEE EXECUTIVE SUMMARY AND SECTION 1

4. Public Involvement

- Views were solicited on June 6, 2017 (*Appendix B*)
- Views were not solicited.
- Public Involvement events held December 7, 2017 and November 1, 2018. (*Appendix C and D*)
- A public hearing/opportunity for requesting a public hearing required.
- A public hearing/opportunity for requesting a public hearing not required.

5. Real Estate

- | | NO | YES | N/A |
|--|-------------------------------------|-------------------------------------|---------------------------------------|
| a. Will additional right-of-way be required? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> ¹ |
| Is right-of-way required from a burial/cemetery site? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is right-of-way required from a Wetland Reserve Program (WRP) property? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is required right-of-way prime farmland ? (Use form AD 1006, if needed) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Will any relocation of residences or businesses occur? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Are construction or drainage servitudes required? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> ² |

6. Section 4(f) and Section 6(f)

- | | NO | YES | N/A |
|--|-------------------------------------|-------------------------------------|---------------------------------------|
| a. Will historic sites or publicly owned parks, recreation areas, wildlife or waterfowl refuges (Section 4f) be affected? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> ³ |
| b. Are properties acquired or improved with L&WC funds affected? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

7. Cultural Section 106

- | | NO | YES | N/A |
|---|--------------------------|-------------------------------------|---------------------------------------|
| a. Are any known historic properties adjacent or impacted by the project? (If so, list below)..... | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> ⁴ |
| b. Are any known archaeological sites adjacent or impacted by the project? | | | |

4/23/19

- (If so, list site # below) ⁴
- c. Would the project affect property owned by or held in trust for a federally recognized **tribal government**?

8. Natural & Physical Environment

- | | | NO | YES | N/A |
|----|---|-------------------------------------|-------------------------------------|---------------------------------------|
| a. | Are wetlands affected? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> ⁵ |
| b. | Are other waters of the U.S. affected? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> ⁵ |
| c. | Are Endangered/Threatened Species/Habitat affected? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| d. | Is project within 100 Year Floodplain ? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> ⁶ |
| e. | Is project in Coastal Zone Management Area? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| f. | Is project in a Coastal Barrier Resources area? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| g. | Is project on a Sole Source Aquifer ? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| h. | Is project impacting a navigable waterway ? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> ⁷ |
| i. | Are any State or Federal Scenic Rivers/Streams impacted? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| j. | Is a noise analysis warranted (Type I project) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> ⁸ |
| k. | Is an air quality study warranted? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> ⁸ |
| l. | Is project in a non-attainment area? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| m. | Is project in an approved Transportation Plan, Transportation Improvement Program (TIP) and State Transportation Improvement Program (STIP)? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| n. | Are construction air, noise, & water impacts major? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| o. | Will the project affect or be affected by a hazardous waste site , leaking underground storage tank, oil/gas well, or other potentially contaminated site? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

9. Social Impacts

- | | | NO | YES | N/A |
|----|---|-------------------------------------|-------------------------------------|--|
| a. | Will project change land use in the area? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b. | Are any churches and schools impacted by or adjacent to the project?
(If so, list below) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c. | Has Title VI been considered? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d. | Will any specific groups be adversely affected?
(i.e., <i>minorities, low-income, elderly, disabled, etc.</i>) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| e. | Are any hospitals, medical facilities, fire police facilities impacted by or adjacent to the project? (If so, list below)..... | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| f. | Will Transportation patterns change? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| g. | Is Community cohesion affected by the project? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| h. | Are short-term social/economic impacts due to construction considered major? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| i. | Do conditions warrant special construction times ?
(i.e., <i>school in session, congestion, tourist season, harvest</i>) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> ⁹ |
| j. | Were Context Sensitive Solutions considered? (If so explain below)..... | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> ¹⁰ |
| k. | Were bike and pedestrian accommodations considered? (explain below)..... | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> ¹¹ |
| l. | Will the roadway/bridge be closed ? (If yes, answer questions below)..... | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> ¹² |
| | Will a detour bridge be provided? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | Will a detour road be provided? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Will a detour route be signed? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

10. Permits (Check all permits that may be required)

- | | | |
|--|--|---|
| <input checked="" type="checkbox"/> Corps Nationwide | <input type="checkbox"/> CUP/Consistency Determination | <input type="checkbox"/> LA Scenic Stream |
| <input type="checkbox"/> Corps Section 404/10 | <input type="checkbox"/> USCG Bridge | <input type="checkbox"/> LDEQ WQC |
| <input checked="" type="checkbox"/> Levee | <input checked="" type="checkbox"/> USCG Navigational Lights | <input checked="" type="checkbox"/> LPDES Storm Water |

11. Other (Use this space to explain or expand answers to questions above.)

¹Item No. 5-a. Additional Right-of-Way:

Between approximately 0.25 acres and 0.33 acres of additional permanent right-of- way will be required.

²Item No. 5-c. Construction or Drainage Servitudes:

Between approximately 0 acres and 0.44 acres of additional temporary construction servitude will be required.

³Item No. 6-a. Section 4(f) and Section 6(f):

The Rue Beauport Riverfront would be impacted by the proposed project; approximately 0.11 acres of permanent ROW and 0.16 acres of temporary construction servitude would be required from Rue Beauport Park within the direct APE. FHWA has determined that the required ROW from Rue Beauport Park will fall under a Programmatic Section 4(f) Net Benefit. SEE SECTION 4.2.4 AND 4.2.5 OF THE EA AND APPENDIX K FOR 4(F) EVALUATION.

⁴Item No. 7-(a-b). Cultural Section 106:

The Phase 1 Cultural Resources Survey recorded/re-recorded archaeological sites 16NA108, 16NA109, 16NA117, 16NA419, 16NA594, 16NA659, 16NA661, 16NA813 within the direct APE; however, the proposed project will have no effect to these sites.

The architectural field investigations yielded 27 structures within the indirect and direct APE. 20 of the 27 re-recorded structures are considered contributing elements to the Natchitoches Historic District. Three (3) of the contributing elements (Structures 35-00145, 35-00146, 35-00418) are considered individually eligible for nomination to the NRHP under Criterion C. If vibrations do not exceed the threshold set by FHWA standards for historic properties, then there will be no adverse effect.

The Natchitoches Historic District and the Natchitoches Historic Landmark District are within the direct APE of the project. The only recorded structure over 47 years of age within the direct APE is the Church Street Bridge (Str. #083500530414631) which is not a contributing element to the historic district, nor is it individually eligible for the NHRP. It was determined not eligible for the NRHP by Mead and Hunt, Inc. (September 2013), on behalf of LADOTD, for the LADOTD Historic Bridge Inventory. SHPO concurred with this finding on October 15, 2013. The proposed project will not have an adverse effect to the historic districts if the proposed bridge is designed to be sympathetic with the districts.

The bricks that pave Front Street are considered a part of the historic landscape and contributing elements to the district. Additionally, the live oaks, magnolias, and crepe myrtles are considered part of the historic landscape. If the trees and/or the bricks are not damaged, or are replaced in-kind, then there will be no adverse effect to the viewshed of the district.

SHPO concurred with the No Adverse Effect finding in a letter Dated March 28, 2019. SEE SECTION 106 CORRESPONDENCE APPENDIX J.

⁵Item No. 8-b. Natural & Physical Environment:

Other Water impacts are estimated to be 1.05 acres for the **Preferred Alternative**. SEE WETLANDS ANALYSIS APPENDIX H.

⁶Item No. 8-d. Floodplains:

A portion of the proposed project is located in Flood Zone A; an area with a 1% annual flood chance. The proposed construction activities will not increase flood risk in the flood zone.

⁷Item No. 8-h. Waterways:

The Cane River Bridge is exempt from permitting for Coast Guard Bridge Administration purposes; however, a Coast Guard permit will be required for adding necessary lights and signals to the bridge.

⁸Item No. 8- (j-k). Noise and Air:

SEE NOISE AND AIR ANALYSIS APPENDIX I.

⁹Item No. 9-i. Special Construction Times:

A priority goal of the project is to minimize impacts to the annual Christmas Festival which begins in mid-November and continues through the first week of January. The contract is recommended to include language prohibiting construction activities during this period.

¹⁰Item No. 9-j. Context Sensitive Solutions:

The conceptual design process included previous project history, research, scoping meetings, and input from the Natchitoches Bridge Taskforce, and the Cane River National Heritage Area Commission. A public meeting was held during the EA process to receive feedback on the alternatives as well as feedback on context sensitive solutions.

Aligning the proposed construction with its historic and cultural context is important, and each element should be considered during construction. The replacement Cane River Bridge decorative railings is recommended to match as reasonably possible to the existing railing design and must include a powder coated surface finish. Additionally, the street lights are to be such that they match the existing design as reasonably possible.

¹¹Item No. 9-k. Bicycle and Pedestrian Accommodations:

The proposed project would accommodate pedestrians and bicyclists by providing a 6-ft. paved sidewalk along the replacement bridge.

¹²Item No. 9-l. Roadway/Bridge Closures/Detours:

The bridge will be closed for the duration of the construction of the bridge. A detour bridge will be constructed to the south of the existing bridge connecting on the west end at the intersection of Front Street/Touline Street to the east intersection of Williams Avenue/Stephens Avenue.

Preparer: C.H. Fenstermaker & Associates, L.L.C.

Title: Cane River Bridge Church Street Route LA 1-X, Environmental Assessment

Date: October 22, 2019

Attachments

- ☒ SOV. and Responses (*Appendix B*)
- ☒ Project Description Sheet (See *Section 1.0* and *2.0*)
- ☒ Conceptual Stage Relocation Plan (See *Section 4.2.1* and *Appendix F*)
- ☒ Noise Analysis (See *Section 4.3.11* and *Appendix I*)
- ☒ Air Analysis (See *Section 4.3.1* and *Appendix I*)
- ☒ Exhibits and/or Maps (*Appendix A*)
- ☒ Wetlands Finding (*Appendix H*)
- ☒ 4(f) Evaluation (*Appendix K*)
- ☒ 106 Documentation (*Appendix J*)
- ☒ Other: Public Meeting Summary (*Appendix C* and *D*)

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SUMMARY OF PERMITS, MITIGATION, AND COMMITMENTS

The Louisiana Department of Transportation and Development (LADOTD) will implement the following permits, mitigation measures, and commitments to ensure that adverse environmental impacts associated with the project are avoided or minimized to the extent practicable. Please refer to *Section 4.0* of the report for further discussion.

Permits and Certifications

The following permits and certifications are required for the proposed project:

- A Jurisdictional Determination (JD) from the US Army Corps of Engineers (USACE) to confirm the presence/absence of jurisdictional wetlands and other waters will be required.
- A Water Quality Certification (WQC) under Section 401 of the Clean Water Act will be required if the project is processed by the USACE as an individual permit. A WQC is required for any dredge or fill activities that may occur in the Cane River Lake. The WQC will be obtained in conjunction with the USACE Section 404/10 permit process.
- A Louisiana Pollutant Discharge Elimination System (LPDES) Permit and Storm Water Pollution Prevention Plan (SWPPP) will be required. The contractor will be required to implement and maintain Best Management Practices (BMP) to reduce and/or eliminate any potential impacts to surface water quality in the immediate area due to discharges associated with construction activities.
- A Department of the Army Permit under Section 404 of the Clean Water Act (33 U.S.C. 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) will be required by the USACE for the installation of the bridge across the Cane River Lake, which is classified as a navigable waterway.
- The Natchitoches Levee and Drainage District requires a permit for any work within 1,500-ft. of a federal flood control structure, such as a levee.
- The proposed project may qualify for a Nationwide Permit 14 (NWP-14) for Linear Transportation Projects from the US Army Corps of Engineers (USACE). To qualify for the NWP-14 permit, the project impacts are limited to a maximum of 0.5-acres of loss in non-tidal waters. If the project does not qualify for the NWP-14 permit, then the permit may be processed as an individual permit.

Commitments and Mitigation Measures

The following commitments and mitigation measures are required for the proposed project:

- A construction sequencing plan is recommended to be developed to minimize disruption of traffic along the corridor. The construction sequencing plan will also address hurricane evacuation route needs during construction phases.
- A more detailed analysis of potential construction-related vibration levels near the Cane River Bridge will be conducted by a structural engineer and architectural historian prior to construction. The construction contract is to require vibration-related specifications for construction near the project and include monitoring vibration levels during construction. The construction contract should limit the allowable levels of vibration to within acceptable limits defined in an approved vibration

monitoring plan. The contractor should follow the 2016 LA Standard Specifications for Roads and Bridges Vibration Monitoring Section 804.12.

- Fitting the proposed construction into its historic and cultural context is important and each element should be considered during construction. The Cane River Bridge's decorative railings is recommended to match as reasonably possible to the existing railing design and must include a powder coated surface finish. Additionally, the street lights are to be such that they match the existing design as reasonably possible. These commitments are to ensure that the design is in harmony with the community, so that the economic, scenic, aesthetic, historic and natural resource values of the area is preserved.

1.0 INTRODUCTION

The Cane River Bridge is located on Church Street, between Front Street and Williams Avenue in Natchitoches, Louisiana (See Figure 1 for a project location map). The existing Cane River Bridge (Latitude 31.760718°, Longitude -93.084624°), constructed in the 1930's, is a two-lane concrete deck girder bridge with two 12-ft. bi-directional travel lanes and 5-ft. wide sidewalks on each side. As shown in Figure 1, the logical termini for the proposed project are Highland Park Drive to the north, Williams Avenue to the east, Martin Luther King Jr. Drive to the west, and the Pine Street Bridge to the south. These logical termini, which define the project area, were identified by the Louisiana Department of Transportation and Development (LADOTD) and approved by the Federal Highway Administration (FHWA).

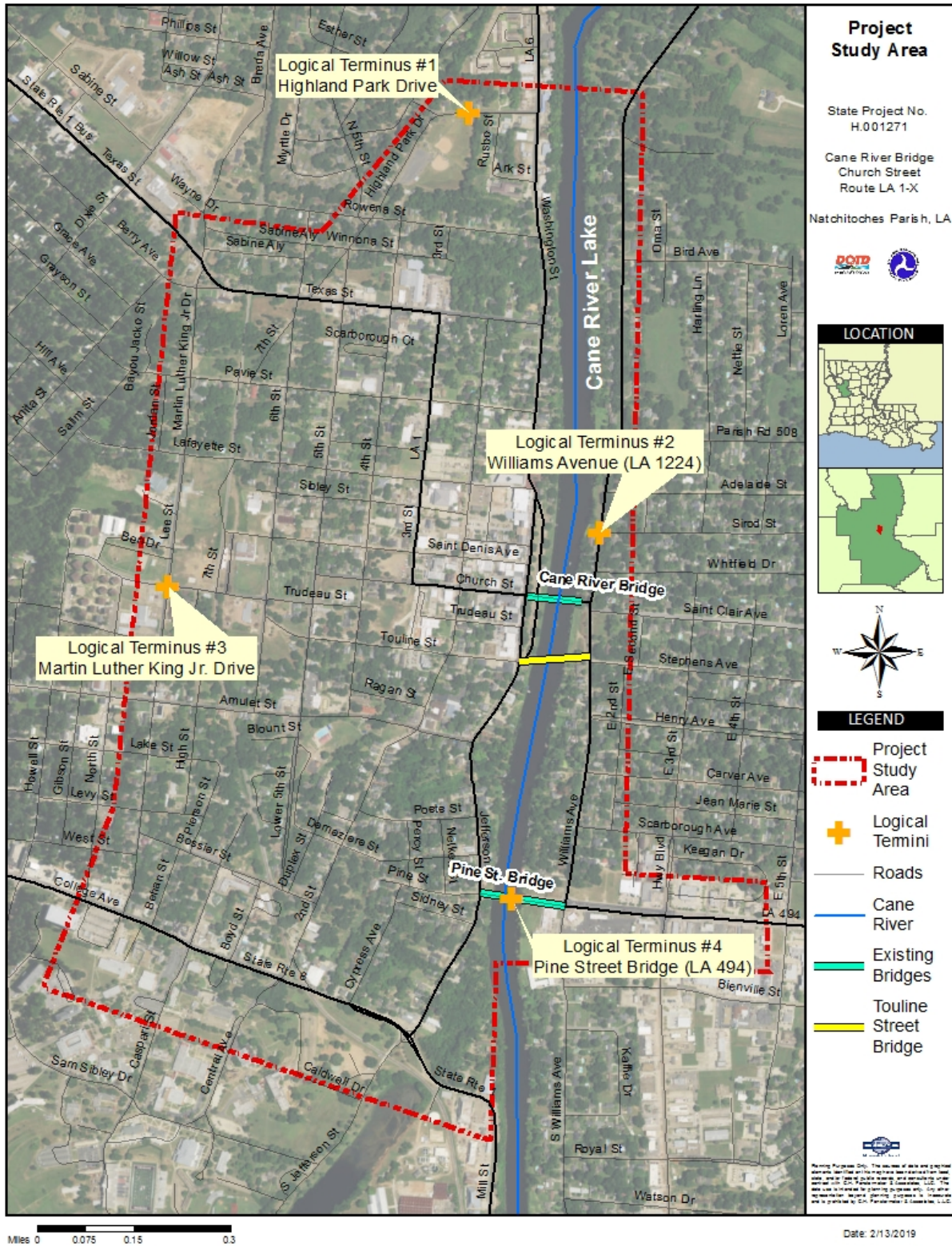
The Natchitoches Cane River Bridge Company was contracted in 1890 to construct and maintain a wagon bridge across the Cane River Lake within the city limits of Natchitoches. The Cane River Bridge was completed in 1894 at a cost of \$15,500 and measured 16-ft. wide by 480-ft. long. In April of 1931, almost 50 years after the first bridge was built, a hearing was held in Natchitoches to consider a new bridge across the Cane River Lake. The Louisiana Highway Commission issued a contract in July, and construction began in October 1931. By September 1933, the existing concrete bridge had replaced the original 19th century steel wagon bridge. This structure remains in place today.

The Cane River Bridge is located within the Natchitoches Historic District, which is a National Register of Historic Places (NRHP) and a National Historic Landmark District (NHLD), which are important architecturally to the state of Louisiana because of its number of buildings within the District constructed of bousillage type materials. Natchitoches is the oldest permanent settlement in Louisiana and the Louisiana Purchase, and the districts contain a combination of nineteenth century French and Spanish architectural styles. The bridge has been determined ineligible for the NRHP and is not a contributing element to the District.

The lead federal agency, FHWA, in partnership with the state agency, LADOTD, are proposing to replace the Cane River Bridge at Church Street in Natchitoches Parish, Louisiana. An environmental document must be prepared for the proposed project to evaluate the significance of impacts to the environment, as required by the National Environmental Policy Act (NEPA). In 2017, LADOTD sent out preliminary project information and a preliminary purpose and need for the project to federal, state, and local agencies, along with other potential stakeholders, requesting their views regarding the project.

C.H. Fenstermaker & Associates, L.L.C. (Fenstermaker), prepared this Environmental Assessment (EA) in accordance with the requirements of NEPA, addressing potential social, environmental, and economic impacts. The data presented in the report characterize conditions for the general project area as well as the specific site conditions. Data was collected by document and records review, meetings with the public and local and state officials, and through field investigations.

Figure 1: Project Location



1.1 Environmental Assessment

The National Environmental Policy Act (NEPA) directs federal agencies to conduct environmental reviews to consider potential impacts from proposed federal undertakings. The NEPA process requires coordination with federal, state, and local agencies through planning and project development decision-making.

FHWA and LADOTD are committed to the examination and minimization of potential impacts to the social and natural environment when considering approval of proposed transportation projects. NEPA project development considers a range of alternatives that would serve the purpose of the project while balancing the potential impacts on the human and natural environment with the public's need for safe and efficient transportation.

The NEPA process must be clearly documented to ensure transparency. Potentially affected communities and stakeholders are offered the opportunity to ask questions and provide comments about proposals, alternatives, and environmental impacts. Public input is formalized in the document as are the responses to public concerns and the choices made about the project.

When the significance of impacts from a proposed transportation project are uncertain, an EA is prepared. Unlike an Environmental Impact Statement (EIS) that is prepared when significant impacts are known, an EA is a concise document that presents sufficient evidence and analysis for determining whether the impacts from the proposed action warrant further analysis in an EIS, or whether a finding of no significant impact (FONSI) is appropriate.

This document records the Environmental Assessment process undertaken for the replacement of the Cane River Bridge at Church Street Route LA 1-X.

1.2 Where is the Proposed Project in the Development Process?

The bridge was determined not eligible for the National Register of Historic Places (NRHP) by Mead and Hunt, Inc. (September 2013) on behalf of LADOTD for their LADOTD Historic Bridge Inventory. The SHPO concurred with LADOTD's determination that there was no evidence to indicate the existing Cane River Bridge is an important example of bridge design, engineering, or construction. In addition, SHPO concurred with LADOTD that the existing bridge does not possess a direct and important association with historical events or trends or significance under the National Register Criteria for Evaluation and is not eligible for listing under Criteria A or C on October 15, 2013.

The Natchitoches Bridge Taskforce was activated at the request of Mayor Lee Posey, and their first meeting was held on October 31, 2013. The Natchitoches Bridge Taskforce was developed to determine a range of alternatives and present a preferred alternative to LADOTD, while ensuring that the needs and concerns of all local stakeholders were considered in the development and implementation of the bridge replacement project. The taskforce is comprised of representatives from the City and Parish of Natchitoches, Natchitoches Historic District Commission, National Park Service, the Natchitoches Genealogy and Historical Association, Cane River National Heritage Area, and LADOTD. In a meeting held in January of 2014, the following concepts were presented to the Natchitoches Bridge Taskforce:

- **Concept 1-** Construct a new bridge utilizing staged construction to maintain traffic on the existing bridge.
- **Concept 2-** Construct a temporary detour bridge crossing the Cane River Lake along Highland Park Drive.

- **Concept 3-** Construct a permanent bridge at Highland Park Drive to be utilized as a detour during construction of a new Cane River Bridge, but to remain in place following completion of the new bridge.
- **Concept 4-** Rehabilitate the existing bridge.

In February of 2015, LADOTD requested to initiate the Phase 1 Environmental Stage, stating that they had been working with the local government to build support and refine detailed alternatives that were identified during the Phase 0 Feasibility Study. On December 18, 2015, FHWA approved the project's logical termini being Martin Luther King Jr. Drive, Pine Street Bridge (LA 494), Williams Avenue (LA 1224), and Highland Park Drive. The project limits included the segment of the bridge to be replaced extending west from the intersection with Williams Avenue to the intersection with Front Street for approximately 441-ft. Figure 1 depicts both the logical termini and the project limits.

On May 1, 2017, a Notice to Proceed (NTP) was issued by LADOTD to a consultant team to initiate the Stage 1 Environmental Process. Notifications were sent to federal, state, and local agencies and officials along with potential stakeholders requesting their views regarding the project on June 6, 2017. The Solicitation of Views (SOV) correspondence, distribution list, and responses are provided in *Appendix B*. A Scoping Meeting was held on October 12, 2017, with local officials and stakeholders to provide preliminary project information. An open house public meeting was held on December 7, 2017 to provide information to the public and answer questions. Comments received during this meeting are provided in *Appendix C*. Alternative design refinements were made in the summer of 2018. A second open house public meeting was held on November 1, 2018, to provide additional information to the public and answer questions. Comments received during this meeting are provided in *Appendix D*. Alternatives and impact analyses were then completed and documented in this EA.

Following this environmental process, the project will proceed to Stage 2, which is the funding stage. The National Highway Performance Program (NHPP) provides support for the condition and performance of the National Highway System (NHS), for the construction of new facilities on the NHS and to ensure that the investments of federal aid funds in highway construction are directed to support progress toward the achievement of performance targets established in the State's asset management plan for the NHS. The Cane River Bridge at Church Street Project was identified in the LADOTD's Highway Priority Program for fiscal year 2018-2019 as a project that is in development. This document ultimately must be approved by the Louisiana State Legislature as a part of the annual State Budget. Due to the time required for project development, projects are added to the Highway Program several years in advance of construction. LADOTD's annual budget must include this project in order for it to be funded.

2.0 PROJECT PURPOSE AND NEED

The focus of this EA is the replacement of the Cane River Bridge at Church Street located in downtown Natchitoches in Natchitoches Parish.

2.1 What is the Purpose and Need of the Project?

The Cane River Bridge at Church Street provides a vital transportation connection to the historical commercial downtown areas of Natchitoches along the west bank of the Cane River Lake and to the historical residential areas along the east bank of the lake. This project is needed to maintain connectivity between the east and west bank of the Cane River Lake for both pedestrian and vehicular traffic, to provide a bridge that meets current design guidelines and is not weight-limited for use (structural deficiencies) and to improve traffic function between the bridge and adjacent intersections (functional deficiencies).

2.1.1 Structural Deficiencies

The Cane River Bridge is currently over 80 years old and has exceeded its useful service life. The May 2017 bridge inspection report prepared by LADOTD found the Cane River Bridge to be in poor condition. The bridge is currently posted with weight limits (10 tons for 2 axle trucks/15 tons for 3 axle trucks). This means that the type of traffic allowed to use the bridge is limited to only passenger vehicles, buses, and single-unit truck types. The project intends to replace the existing bridge with a new bridge that meets current design guidelines.

2.1.2 Functional Deficiencies

Functional deficiencies on the Cane River Bridge and adjacent intersections are listed below:

- **Capacity:** The Cane River Bridge is currently a two-lane bridge which accommodates one-lane of travel for each direction connecting to Front Street along the west bank of Cane River Lake and Williams Avenue along the east bank of the Cane River Lake. In 2017, the Cane River Bridge at Church Street serviced over 1,000 vehicles during the morning and evening peak hours, resulting in a failing peak hour Level of Service (LOS) (refer to *Section 4.1.5* for more detail).

The project will provide a center turning lane which will increase storage space for turning vehicles and improve existing queues at the adjacent intersections. Left turns are currently prohibited westbound as they result in long queues on the bridge; this is anticipated to reduce that queuing and allow for the previously-prohibited moved and also result in reduction of queues at upstream intersections.

- **Non-Standard Intersection Configuration:** The existing east approach on the Cane River Bridge is such that the eastbound and westbound approach lanes of Church Street and St. Clair Avenue are misaligned. This misalignment and the existing combined use of traffic signals and stop signs contribute to confusing traffic conditions and multiple conflict points at the intersection.

The project will present alternatives that address the non-standard intersection configuration at the east approach on the Cane River Bridge, which will seek to reduce conflict points and provide a more efficient and safe intersection.

The purpose of the project is to address the structural and functional deficiencies of the existing Cane River Bridge at Church Street and adjacent intersections by providing a new three-lane bridge, left-turn lanes at intersections, improved sidewalks, improve the intersection geometry of Church Street/St. Clair Avenue/Williams Avenue, and minimize traffic congestion near the project area.

3.0 ALTERNATIVES CONSIDERED

The National Environmental Protection Act (NEPA) requires that all reasonable alternatives which could address the identified needs and purposes be considered including the No-Build Alternative. A range of alternatives were identified and examined against the established need for the project. Some alternatives were eliminated because they did not meet the established objectives. Those that were determined to meet the project need and purpose were carried forward for further study. This document describes how the early concepts were developed into preliminary alternatives, how they were analyzed, which alternatives were eliminated and why, and the alternatives that were retained for further consideration.

3.1 Which Alternatives Were Initially Considered?

The alternatives presented in the EA have been developed based on alternatives considered since the inception of the project. As discussed in *Section 1.2*, a wide range of alternatives for the proposed bridge replacement dates back to the original EA process initiated in 1998.

3.1.1 Stage 0 Alternatives

The first stage of the LADOTD project delivery process is the feasibility stage, which involves the preliminary analysis of the feasibility of a project proposal and development of an initial scope and budget. Known as Stage 0, this report develops a preliminary purpose and need statement and initial project conceptual alternatives to address the projects purpose and need. The following three alternatives were developed in Stage 0, in the request to initiate the Phase 1 Process:

- Construction of a new bridge at Church Street aligned with St. Clair Avenue (i.e. skewed bridge alignment), utilizing either:
 - Phased construction maintaining traffic along the same alignment, or
 - Construction of a detour bridge at Highland Park Drive.
- Construction of a new bridge at Church Street maintaining the same alignment with a detour bridge at Highland Park Drive.

At the time the request was made, local governments discussed providing additional funding to offset the cost beyond a temporary bridge option to instead make the bridge at Highland Park Drive a permanent bridge. This option was later omitted, as the Natchitoches City Council voted against providing additional funds to construct a permanent bridge on December 12, 2016.

3.1.2 Alternatives Development

A review of all alternatives developed during the Stage 0 process, through the Natchitoches Bridge Taskforce, and any other suggested alternatives was performed to refine the proposed alternatives. The criteria used in the screening process are based on the purpose and need for the project. Alternatives that met the project purpose and need were considered practicable alternatives to be carried forward in the Stage 1 NEPA analysis.

Because the purpose of the project is to address structural and functional deficiencies (related to the capacity and traffic movement through the existing intersection of Church Street/St. Clair Avenue/Williams Avenue), the alternatives that were determined to be reasonable included versions of the three-lane (two through lanes and one center turning lane) bridge. Numerous configurations were evaluated including temporary bridges being placed in various locations along the Cane River. As such, six conceptual alternatives were originally considered:

- **Concept 1** – Replace the Cane River Bridge on a skewed alignment utilizing staged construction;
- **Concept 1A** – Replace the Cane River Bridge on a skewed alignment with a temporary bridge located at Highland Park Drive;
- **Concept 1B** – Replace the Cane River Bridge on a skewed alignment with a temporary bridge located at Touline Street– designated **Alternative 1** for purposes of this study;
- **Concept 2** – Replace the Cane River Bridge on the same alignment utilizing staged construction;
- **Concept 2A** – Replace the Cane River Bridge on the same alignment with a temporary bridge located at Highland Park Drive;
- **Concept 2B** – Replace the Cane River Bridge on the same alignment with a temporary bridge located at Touline Street– designated **Alternative 2** for purposes of this study.

On June 6, 2017, notifications were sent to federal, state, and local agencies and officials along with potential stakeholders requesting their views regarding the project. A scoping meeting was held on October 12, 2017, with local officials and stakeholders to provide information and answer questions. The six conceptual alternatives were presented to the public at an open house public meeting on December 7, 2017. The purpose of the meeting was to provide information regarding the proposed replacement of the Cane River Bridge, provide project exhibits for public review, offer the public an opportunity to speak informally with representatives of the project team, and to provide an opportunity of the public to provide comments.

3.1.3 Other Preliminary Alternatives

Based on the preliminary concepts that were presented at the first public meeting, Concepts 1 and 2 were eliminated for further consideration due to input received from agencies and the public based upon concerns of direct impacts to existing development, increased construction times, context sensitivity, and cost. Concept 1A and 2A were also eliminated for further consideration as both concepts would reroute traffic to Highland Park Drive, located in the east Natchitoches community and would have direct impacts on residential areas. The concept of finding another location for a temporary bridge crossing that would have little to no direct impacts to existing residential or commercial development was the primary reason for eliminating these two alternatives. During the public meeting comment period, 47 comments were received with 22 respondents opposing the Highland Park Drive temporary bridge location.

Two new alternatives were introduced in this study based upon public input. As a result of both documented public opposition to providing a temporary bridge at Highland Park Drive as well as the request to provide additional alternatives that addressed the community's need to speed up the construction duration and minimize impacts to community resources, four alternatives were omitted, and two new alternatives were introduced, as follows:

- **Alternative 3** – Remove and replace the existing Cane River Bridge on a skewed alignment, without utilizing staged construction nor a temporary bridge (detour on existing network).
- **Alternative 4** – Remove and replace the existing Cane River Bridge on the same alignment, without utilizing staged construction nor a temporary bridge (detour on existing network).

A second open house public meeting was held on November 1, 2018 to provide additional information to the public and answer questions. The refined four alternatives and the No-Build Alternative was presented to the public. The four alternatives presented at this meeting and studied as a part of this EA are as follows:

- **Alternative 1** – Replace the Cane River Bridge on a skewed alignment with a temporary bridge located at Touline Street.
- **Alternative 2** – Replace the Cane River Bridge on the same alignment with a temporary bridge located at Touline Street.
- **Alternative 3** – Remove and replace the existing Cane River Bridge on a skewed alignment, without utilizing staged construction nor a temporary bridge.
- **Alternative 4** – Remove and replace the existing Cane River Bridge on the same alignment, without utilizing staged construction nor a temporary bridge.

A bridge replacement project temporarily impedes existing traffic flow. Options to maintain traffic through or around a bridge site are to detour traffic to other routes, carry traffic on an offset alignment, carry traffic through the site with staged construction, or construct a temporary detour bridge within the project vicinity. Providing traffic flow on a temporary offset alignment was studied early in the environmental process. The Pine Street Bridge, located south of the existing Cane River Bridge, was recently reconstructed. A temporary detour bridge was constructed directly adjacent to the new bridge during construction allowing traffic to traverse across the river. Both terminal ends of the Pine Street Bridge are not directly situated in a sensitive historic area like the Cane River Bridge at Church Street. Although, providing an offset alignment (through a detour bridge) was a viable option for the Pine Street Bridge, providing this detour option for this project will have more noteworthy impacts to the downtown historic district along Front Street as well as would entail removal of more of the downtown's historic brick paving along Front Street. Staged construction of the new bridge was originally proposed in the first public meeting to keep traffic flowing along Church Street; however, it was determined that this alternative would cause an increase in overall construction duration and costs to the project. To maintain traffic through the downtown area, the options analyzed as a part of the Environmental Assessment primarily focused on providing a temporary detour bridge at a location that would have minimal impacts to both the natural and human environment, or re-routing traffic to other existing bridge crossings throughout the city.

3.2 Which Build Alternatives are Evaluated in this EA?

A range of reasonable alternatives to meet the purpose and need of the project was formulated through input from the LADOTD, local government agencies, the bridge taskforce, the public, stakeholders, and cooperating resource agencies. The alternative development process resulted in a total of four Build Alternatives, plus the No-Build Alternative, to be considered for the proposed action. These alternatives are detailed on the plates in *Appendix A*.

Two bridges are proposed as a part of the project's alternatives. The first bridge is a new permanent bridge to replace the existing Cane River Bridge at Church Street. The second bridge is a temporary bridge located just south of the existing Cane River Bridge at Church Street, aligned at the intersection of Touline Street/Front Street on the west bank of the Cane River, and aligned near the intersection of Stephens Avenue/Williams Avenue on the east bank. The following sections provide brief descriptions of each alternative and the No-Build Alternative.

3.2.1 Replacement of the Cane River Bridge

All alternatives propose to replace the existing Cane River Bridge with a new girder span structure. The new bridge will consist of two, 12-ft. wide travel lanes and a 12-ft. wide center turning lane, 4-ft. wide outside shoulders, and two 6-ft. wide sidewalks with barriers. The bridge will provide a clear roadway width of 44-ft. The outside edges of the bridge will contain a 42-in. tall decorative pedestrian metal railing

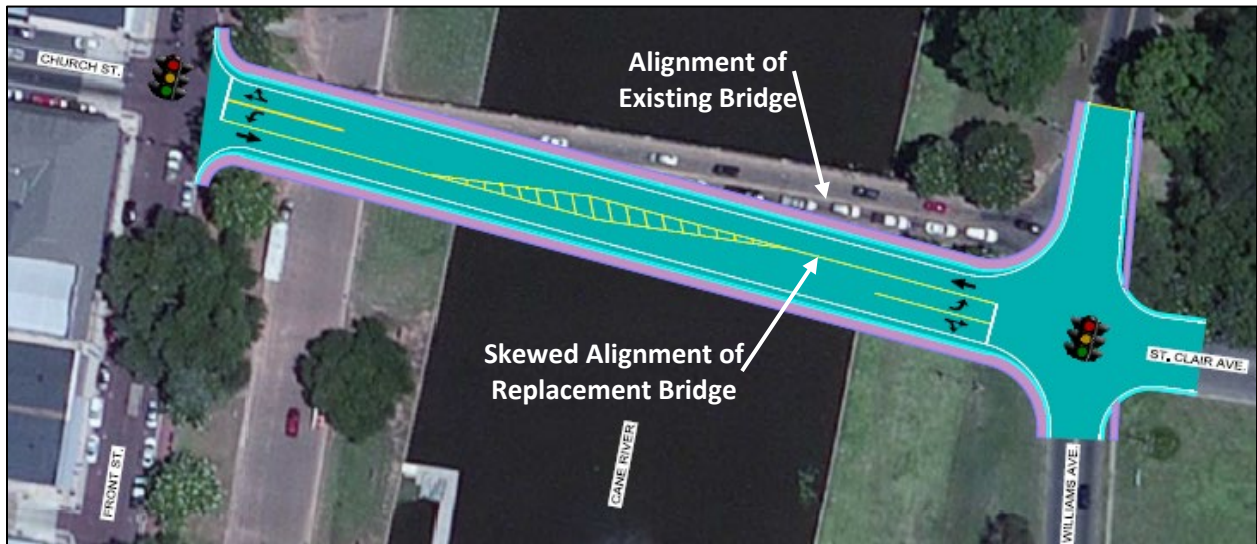
which is to match the existing metal railing as reasonably possible. A conceptual rendering of the bridge replacement typical section is illustrated below in Figure 2. Refer to *Appendix A* for the detailed replacement bridge typical section.

Figure 2: Conceptual Rendering of Proposed Replacement Bridge



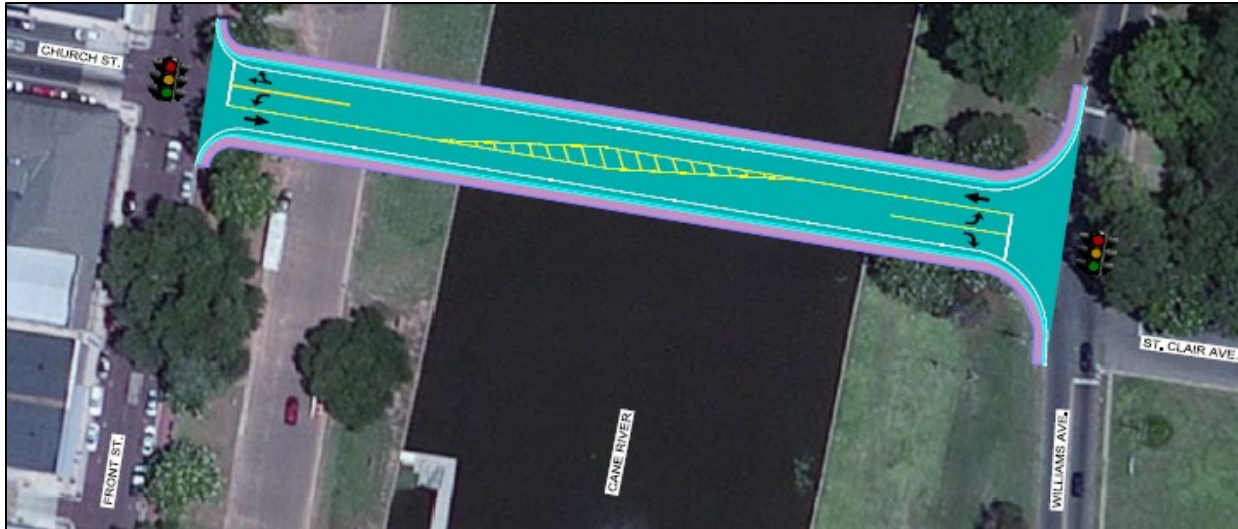
Alternatives 1 and 3, shown in Figure 3 propose to replace the existing bridge on a 6-degree skewed alignment, from its current position (84-degrees with St. Clair Avenue), terminating on the east bank of the Cane River Lake directly in line with St. Clair Avenue, eliminating the existing offset intersection. Refer to *Appendix A* for more detail on the skewed alignment replacement bridge alternative.

Figure 3: Proposed Skewed Alignment Replacement Bridge



Alternatives 2 and 4, shown in Figure 4 propose to replace the existing bridge along the same alignment, having the same intersection layout of the existing Church Street/St. Clair Avenue/Williams Avenue intersection. Refer to *Appendix A* for more detail on the same alignment replacement bridge alternative.

Figure 4: Proposed Same Alignment Replacement Bridge



The proposed permanent bridge structure for all alternatives will consist of five 86-ft. prestressed LG-36 girder spans with a cast-in-place concrete deck. The LG-36 prestressed girder spans will be supported by concrete column bents constructed on top of concrete drilled shaft foundations to minimize vibration during construction of the substructure. To minimize the depth of the superstructure while providing span lengths that exceed the existing lengths, LG-36 precast prestressed concrete (PPC) girders were chosen to support the bridge deck. This girder type allows for unsupported spans in the range of 70-ft. to 98-ft. depending on girder spacing and concrete strength. Span lengths of 86-ft. were chosen since this length avoids conflicts with existing substructure bent locations and provides over double the horizontal unobstructed clearance than the existing bridge substructure. The conceptual design of the bridge seeks to minimize construction complexity, minimize construction duration to least impact the annual Christmas Festival, and provides maximum horizontal and vertical clearance between substructure elements to allow for safer movement of recreational marine craft that routinely uses the river.

As previously described, the bridge's substructure column bents are to be supported on concrete drilled shaft foundations. A concern of the downtown business owners and historical groups is possible damage to existing historical structures located near the project caused by construction activities. A specific concern is damage caused by ground vibrations during pile driving activities. To minimize vibrations during construction of the substructure, drilled shaft foundations were chosen in lieu of the typical concrete pile bents or concrete column bents supported by pile footings. This type of substructure also provides a more aesthetically pleasing structure than the typical pile bent. A vibration monitoring plan will be required to be prepared, reviewed, and approved by all appropriate parties prior to any bridge substructure construction activities.

The new bridge is approximately 11-ft. shorter than the existing and will require some additional embankment to be placed on the east end of the bridge. This new embankment would be placed and capped with concrete revetment to minimize erosion. Refer to *Appendix A* for the roadway approach

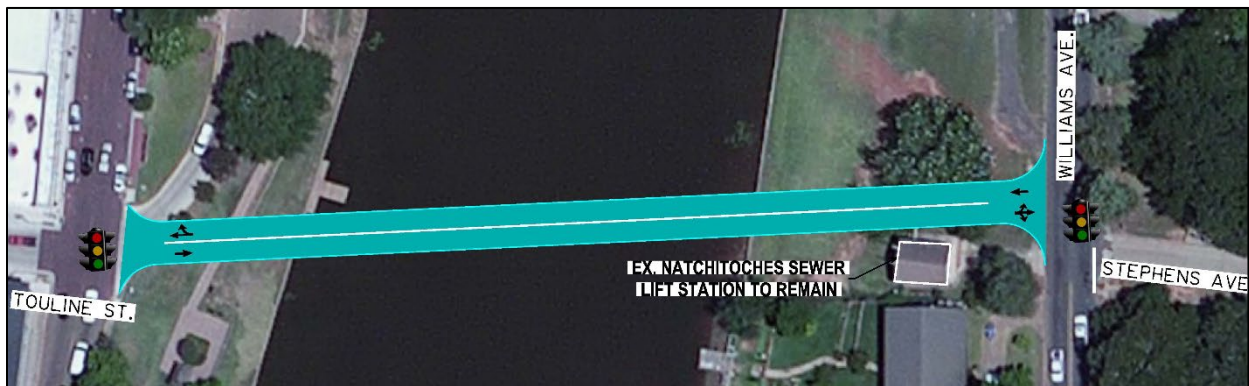
typical section. During the design phase, attention should be given to the east end of the bridge and the amount of embankment required. Lengthening the eastern most span to 90-ft. or even 95-ft. could potentially mitigate this concern. At the time of this report, a topographic survey was not available to accurately determine how the new east abutment slope will interact with the existing east abutment slope.

The new replacement bridge structure is to have decorative pedestrian railings that match as best as possible to the existing railing design. The railings are to have a powder coated surface finish to resist chipping and peeling of painted surfaces. The railings will be detailed and fabricated in-kind and installed on the outside edges of the new bridge. Additionally, street lights will be required and are to match as reasonably possible with the look, color, and context of the existing lights. These commitments are to ensure that the design is in harmony with the community so that the scenic, aesthetic, historic, and natural resource values of the area are preserved.

3.2.2 Temporary Touline Street Detour Bridge

Alternatives 1 and 2 propose a temporary bridge to be installed prior to the removal of the existing Cane River Bridge. The temporary bridge is to provide two 12-ft. bi-directional lanes allowing two-way traffic to be maintained across the Cane River Lake throughout the entire construction process. Figure 5 illustrates the conceptual layout for the proposed temporary bridge. Refer to *Appendix A* for more detail on the temporary bridge alternative.

Figure 5: Proposed Temporary Bridge



Historically, the two main types of temporary bridge structures that have been used by LADOTD include precast panel detour bridges and steel panel (Acrow) bridges. The precast panel bridge is the most common; however, the steel panel (Acrow) bridge was chosen for this project due to the following:

- This temporary structure provides longer span lengths which minimizes the number of pile bents placed in the river and along the riverbank. This will lessen impacts to the developed area along the western riverbank and will allow for greater usage space for pedestrians under the temporary bridge structure while the bridge is in service;
- The Acrow bridge provides longer span distances between bents thus requiring less piles to be driven compared to a pre-cast panel option. The Acrow bridge option is anticipated to have less impacts to surrounding structures caused by vibrations during pile driving activities; and
- The longer bridge spans allow for greater horizontal clearances for bents, which provides safer movement of boat traffic in the area.

The temporary bridge will span from the west side of the Cane River Lake at the intersection of Touline Street/Front Street across to the east side near the intersection of Stephens Avenue/Williams Avenue. The temporary bridge is proposed as an alternative to provide continual vehicular access across the Cane River Lake in the downtown area throughout the entire construction duration. The proposed temporary detour bridge provides an economical alternative to a phased construction approach of the new permanent bridge. The Acrow panel bridge will be 490-ft. long, consisting of six spans, having two 12-ft. wide bi-directional travel lanes, and will have a minimum clear roadway width of 24-ft. The Acrow superstructure is proposed to be supported by precast concrete bent caps and steel H-piles or open-ended pipe piles. This type of pile selection should be used to support the substructure to minimize vibrations during pile driving activities as compared to using pre-cast concrete piles.

3.2.3 No-Build Alternative

In addition to Build Alternatives, the alternative of taking no action is also evaluated. A No-Build Alternative is required by NEPA to be studied for purposes of comparison and for consideration in cases where adverse impacts to the environment may outweigh the benefits derived from addressing the purpose and need. The resulting environmental effects from taking no action will be compared with the effects of permitting the proposed action. Where a choice of “no action” by the agency would result in predictable actions by others, these actions are consequences of the No-Build Alternative and are included in the analysis. Other planned and programmed activities, such as road and right-of-way maintenance and other regional improvements, would be performed as scheduled under the No-Build Alternative.

For the No-Build Alternative, the proposed replacement bridge would not be constructed, and any project-related impacts because of new construction would be avoided. This would ensure that there would be no direct or indirect impacts to threatened and endangered species, wetlands, environmentally sensitive areas, aquatic resources, or historic sites because of this project. As a result, the existing bridge and roadway network in the region would remain in its current condition and continue to serve as the transportation network to travel. The No-Build Alternative in the EA serves as a benchmark against which Build Alternatives can be evaluated.

The No-Build Alternative would include recurring temporary improvements for keeping the bridge structurally acceptable to LADOTD and safe to the traveling public. This alternative would have recurring costs and cannot guarantee that if this bridge continues to degrade structurally that the LADOTD would not have to permanently close the bridge to all vehicular traffic.

3.2.4 Summary of Build Alternatives

With the proposed project, four Build Alternatives have been selected through the development and screening process. The four alternatives would each replace the existing Cane River Bridge, with the required right-of-way for each alternative varying based upon the section and development of the replacement as well as the temporary bridge. Figure 6 illustrates the proposed Build Alternatives, where the blue lines represent the proposed skewed replacement bridge, the red lines represent the proposed replacement bridge on existing alignment, and the green lines indicating the proposed temporary bridge at Touline Street. Refer to *Appendix A* for the replacement bridge and temporary bridge typical sections.

Alternative 1 proposes to replace the existing Cane River Bridge at Church Street on a 6° skewed alignment, as well as the installation of a temporary detour bridge at Touline Street. The replacement bridge will be skewed so that the eastern end of the bridge directly aligns with St. Clair Avenue, eliminating

the existing offset intersection layout. The bridge typical section will consist of two, 12-ft. wide travel lanes, a 12-ft. wide center turning lane, 4-ft. wide outside shoulders, and 6-ft. wide sidewalks with barriers. The temporary bridge will span from the west side of the Cane River Lake at Touline Street across to the east side near Stephens Avenue. The temporary bridge provides two 12-ft. lanes and allows two-way traffic to be maintained across the Cane River Lake throughout the entire construction process. The temporary bridge is slightly offset near Stephens Avenue as to not directly impact an existing sewer lift station. **Alternative 1** proposes to realign the existing intersection of Church Street/St. Clair Avenue/Williams Avenue by skewing the replacement bridge to align with St. Clair Avenue. This intersection would also be upgraded to a fully signalized intersection, eliminating the stop-controlled intersection along St. Clair Avenue. This alternative also includes upgrading the signal timing at the intersection of Church Street/Front Street as well as utilizing a new detection system. Upgrading the signal timing and realigning the intersection will eliminate the undesirable geometric intersection configuration and improve the overall functionality of the corridor. To transition the proposed replacement bridge to the adjacent roadways, existing pavement will be removed and replaced. Sidewalks along and adjacent to the corridor is also proposed.

Alternative 2 proposes to replace the existing Cane River Bridge at Church Street following the existing alignment, having a new temporary detour bridge aligned with Touline Street. The replacement bridge will follow the existing alignment intersecting with Williams Avenue on the east end of the Cane River Lake at the same location as currently exist. The bridge typical section will consist of two, 12-ft. wide travel lanes, a 12-ft. wide center turning lane, 4-ft. wide outside shoulders, and 6-ft. wide sidewalks with barriers. The temporary bridge will span from the west side of the Cane River Lake at Touline Street across to the east side near Stephens Avenue. The temporary bridge provides two 12-ft. lanes and allows two-way traffic to be maintained across the Cane River Lake throughout the entire construction process. The temporary bridge is slightly offset near Stephens Avenue as to not directly impact an existing sewer lift station. **Alternative 2** proposes the east end of the bridge to align in a similar way as it currently exists. This intersection would be upgraded to a fully signalized intersection, eliminating the stop-controlled intersection at St. Clair Avenue. This alternative also includes upgrading the signal timing at the intersection of Church Street/Front Street as well as utilizing a new vehicle detection system. Since the bridge will align offset with St. Clair Avenue, the signal upgrades require split phasing, which is inefficient and will result in increased delays compared to the alternatives that propose realigning the intersection. This signal change is necessary due to sight distance constraints from the offset. Upgrading the signal timing will improve the overall functionality of the corridor; however, the geometric configuration is not addressed as a part of **Alternative 2**.

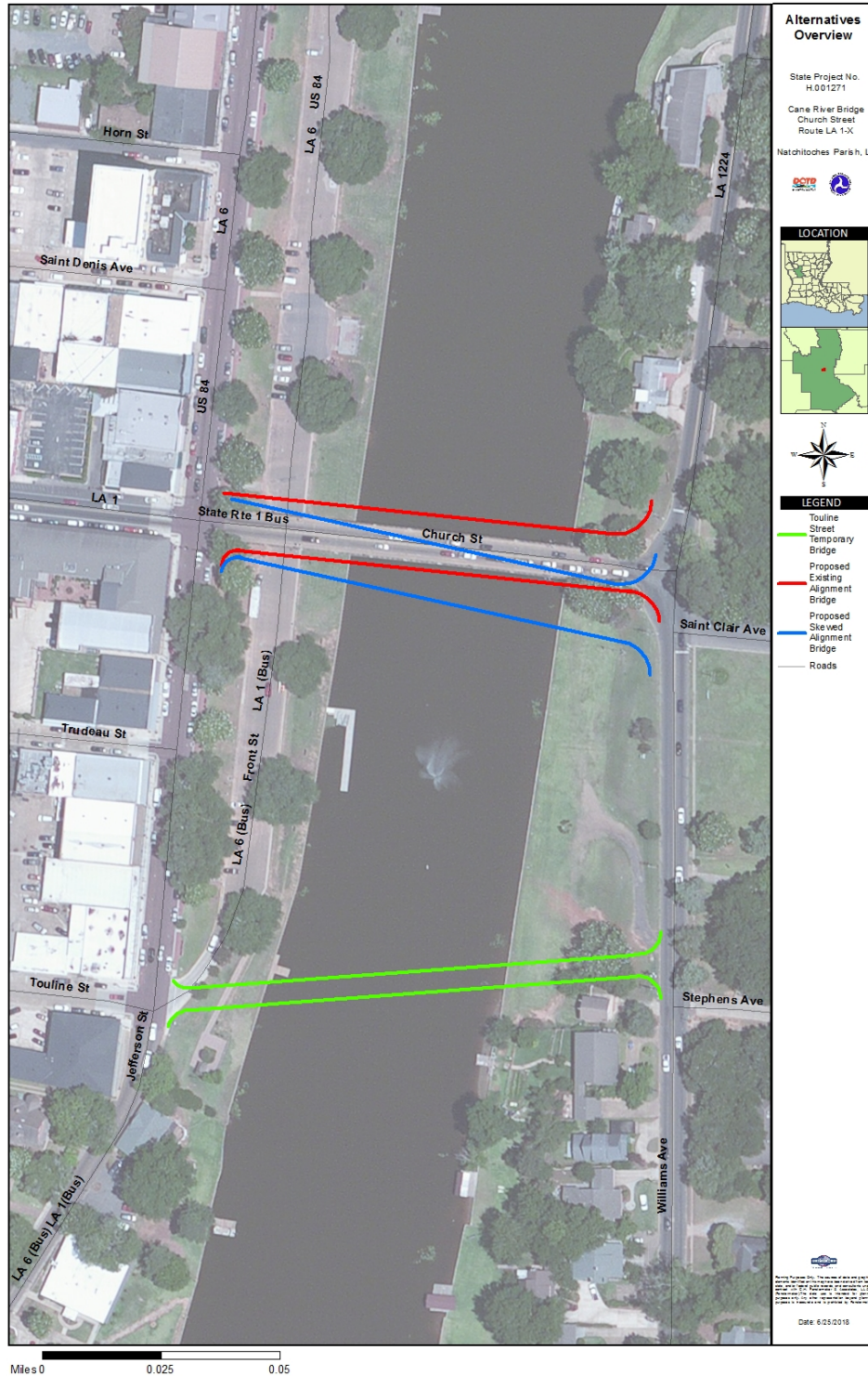
Alternative 3 proposes to replace the existing Cane River Bridge on a skewed alignment identical to **Alternative 1** having no temporary detour bridge with traffic being temporarily rerouted to the existing Pine Street Bridge. The bridge typical section will also be the same as previously described for **Alternative 1**.

Alternative 4 proposes to replace the existing Cane River Bridge on the same alignment identical to **Alternative 2** having no temporary detour bridge with traffic being temporarily rerouted to the existing Pine Street Bridge. The bridge typical section will also be the same as previously described for **Alternative 2**.

For all Build Alternatives, the amount of required right-of-way varies throughout the project due to differences in limits of construction, amount of grading, varied design elements along the alternative

alignments, and other similar factors. For all alternatives, additional right-of-way would need to be acquired, and utilities would need to be relocated.

Figure 6 : Alternatives Overview



*Note: Full size plate available in Line & Grade Study document under separate cover

4.0 ENVIRONMENTAL RESOURCES, IMPACTS, AND MITIGATION

The effects from each of the four alternatives chosen for detailed evaluation across a number of resources and issues were compared. This section discusses relevant environmental resources and issues that have the potential to be affected by the activities related to each of the alternatives studied in detail in the EA. A description of the existing resources within the study area and how they impact the human, built, and natural environment is the baseline condition in determining how the proposed action could impact these resources. In some cases, adverse effects cannot be avoided, so consideration to minimize and mitigate impacts must be given. The environmental resources, impacts, and mitigation information presented in this section are summarized from a series of technical documents that are incorporated into or referenced within this EA.

NEPA regulations (40 CFR 1508.20) define mitigation as:

- Avoiding the impacts altogether by not taking a certain action or parts of an action.
- Minimizing the impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments.

Agreements regarding mitigation measures for unavoidable impacts as discussed in the sections below have been established in coordination with relevant agencies.

The objective of the development of the Build Alternatives is to minimize impacts to existing structures by reducing the amount of right-of-way (ROW) while still providing elements of context sensitive design for the community. Elements of design to address the community's vision for the future improvements include sidewalks and bridge railings that are designed to be consistent with the existing bridge and historic districts' context. The CSS approach recognizes that the benefits of a contextual solution sometimes outweigh cost considerations, and it is a proactive way to avoid adverse impacts that would otherwise have to be mitigated. For those impacts that cannot be avoided, mitigation measures as described below would be implemented.

4.1 The Human Environment

The people who live, work, and travel on the Cane River Bridge corridor are important to how the decisions about this project have been made. Besides direct impacts to the population from potential relocation of their homes or businesses, transportation projects have the potential to affect land use and community character, travel patterns, lifestyles, community cohesion, and economic activities, which are also considered to be relevant human resources.

4.1.1 Land Use and Community Character

The study area is located entirely within Natchitoches Parish and the jurisdictional limits of the City of Natchitoches. The City of Natchitoches is a community of approximately 18,000 citizens located one hour southeast of the City of Shreveport and one-hour northwest of the City of Alexandria. Natchitoches was founded in 1714 as the oldest permanent settlement in the Louisiana Purchase, where trade and plantation agriculture shaped the city's early years. The original French settlement lay south of the current town center. As the Louisiana territory became Spanish and eventually American, the town moved north to Front Street. The course of the Red River, which provided a connection with the Mississippi River shifted

in the 1870's, bypassing Natchitoches, thus forming what is known as Cane River Lake today. The Cane River Lake, a 35-mile oxbow lake, runs through the city's downtown historic district and is the site of numerous downtown festivals and events.

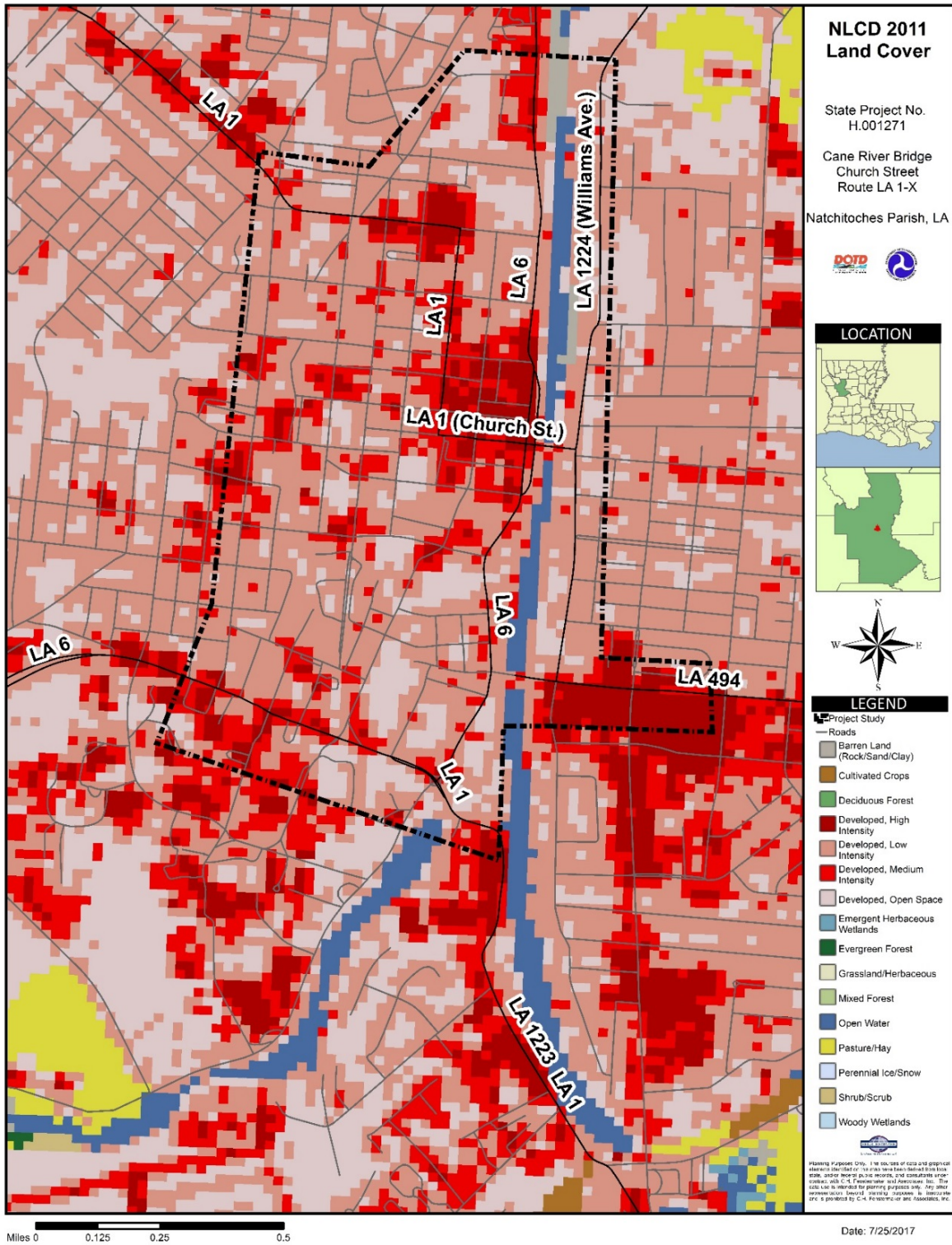
Land use in the study area consists of developed land ranging from open space to high development to open water and pasture, as displayed in Figure 7. Neighborhood and community cohesion in the project area are defined by its historic character, with the Cane River Bridge serving the area as a main access across the Cane River Lake. Neighborhood and community cohesion are made up of several neighborhoods on the east end of the bridge, each having a sense of neighborhood identity and cohesion.

The City of Natchitoches Planning and Zoning Department is responsible for and directs activities in the areas of land development, housing, urban design, and building code enforcement. These activities include the research and implementation of policies and procedures and the coordination of special and long-range planning projects. The Planning and Zoning Department implements a project review process for single/multi-family development proposals, commercial and industrial projects, mobile home, and parks/subdivisions, to ensure compliance with zoning and building code requirements.

The **No-Build Alternative** will not adversely impact the neighborhoods, community cohesion, land use, and zoning in the project area.

The four Build Alternatives are not anticipated to adversely affect the land use or neighborhood and community cohesion in the study area. Improved roads and bridges may attract both traffic and businesses. The proposed project would also affect access patterns by providing a dedicated turning lane in the center of the Cane River Bridge. This could change the way businesses and residential properties are accessed. Although this change could initially affect patronage, the addition of a turning lane would improve traffic flow and would be expected to offset any impacts from the left-turn limitations. Land use planning with building codes, design guidelines, and height, setback, and landscaping requirements could be adopted by Natchitoches Parish and the City of Natchitoches to maintain and improve the character of the corridor and limit potential negative effects from changes in land use. It is anticipated that land use patterns would continue in a similar manner as past development. Substantial change is not anticipated to occur relative to the entire study area's land use character.

Figure 7: Land Cover



4.1.2 Community Facilities, Services, and Social Resources

The western end of the project is in downtown Natchitoches, and connects east across the Cane River Lake, to an area consisting of primarily residential households. The project study area has several public facilities offering a wide range of public services located on or near the project study area, as displayed in Figure 8. Locations and a listing of addresses for public facilities were obtained from Google Earth, ArcGIS, and the Natchitoches Parish Assessor. Analysis of the project study area indicates the public facilities as discussed in the following paragraphs.

Most community institutions are in the City of Natchitoches near the project study area. The Natchitoches Regional Medical Center and various outpatient clinics are in the southern area of the study area, near the Pine Street Bridge, and most schools are located on the outer edge of the study area.

There are six schools within the project study area: Louisiana School for Math, Science, and The Arts, A to Z 1, 2, 3 Preschool and Learning Center, Cobblestones Childhood Development Center, Funtime Palace Daycare, MLK Headstart, and Trinity Episcopal Preschool. Trinity Episcopal Preschool, located near the intersection of Trudeau Street/Second Street, is the closest school to the corridor and serves only Pre-K grades. Higher education such as Northwestern State University and Louisiana Technical College are both located near the southwestern edge of the project study area.

There are eight churches located within the project study area. American Cemetery is located near the Pine Street Bridge along Second Street near the intersection with University Parkway. Catholic Cemetery is located at the western commencement of Church Street, approximately 0.3 miles west of the existing bridge. Trinity Episcopal Church is located at the corner of Trudeau Street/Second Street with First Baptist Church located across from it.

Additional community facilities that serve the community include the Natchitoches Parish Library, Highland Park, the Natchitoches Parish Courthouse, the Natchitoches City Hall, the Utility Department, Fire Department, and the Natchitoches Parish Events Center. There is one United States Post Office located within the project study area, and numerous restaurants, bed and breakfasts, and gift shops in the area. The Natchitoches Regional Airport is a city-owned, public-use airport located outside the project study area. The properties that directly front the west end of the bridge are predominately commercial, and include restaurants, gift shops, and clothing stores. The proposed improvements to the bridge and intersections are expected to enhance community access and utilization of these commercial resources.

There are three fire stations located in the project vicinity—two being on the western end of the bridge at Martin Luther King Jr. Drive/Second Street and the other one on the eastern end of the bridge at East Fifth Street, as displayed in Figure 8. In an interview conducted on December 19, 2017, Natchitoches Fire Chief Crit Miller indicated the Cane River Bridge is utilized several times a day when responding to calls, as there is only one unit located on the eastern end of the bridge. He noted that if the existing bridge was closed completely and traffic was detoured, staffing would have to be increased at the East Fifth Street Station. Fire Chief Miller prefers the alternative that proposes a temporary bridge (**Alternatives 1 and 2**), as it would allow his staff to continue operating as they currently do. If a temporary bridge is not installed, as proposed in **Alternatives 3 and 4**, an increase in staffing will be required to maintain acceptable limits of service.

The Natchitoches Police Department is in the project study area, at Amulet Street, which is southwest of the proposed replacement bridge. In an interview conducted on December 19, 2017, Natchitoches Police Chief Micky Dove indicated that the existing Cane River Bridge is utilized heavily, as it is one of only three

bridges in the city. When asked how it would affect his department if the existing bridge became one lane or was shut down completely without a detour bridge, he responded that this decision would be critical to the city. The city gets experiences heavy congestion as it is with only three bridges; he believes that a temporary detour bridge is necessary to keep the traffic moving. He added that during inspections of the Cane River Bridge, congestion is widespread throughout the town, and if this situation is drawn out for more than what it takes for inspections, he would be concerned. Police Chief Dove prefers any alternative that proposes a temporary bridge, as proposed in **Alternatives 1** and **2**. If a temporary bridge is not installed, he is concerned for the public safety with regards to response times.

While the **No-Build Alternative** is not anticipated to adversely impact access to community facilities and services and emergency facilities, conversely it will not contribute to enhancing service levels of the road network or improving through traffic to community facilities and services outside the area. The **No-Build Alternative** will not improve access to public facilities, services, or emergency facilities.

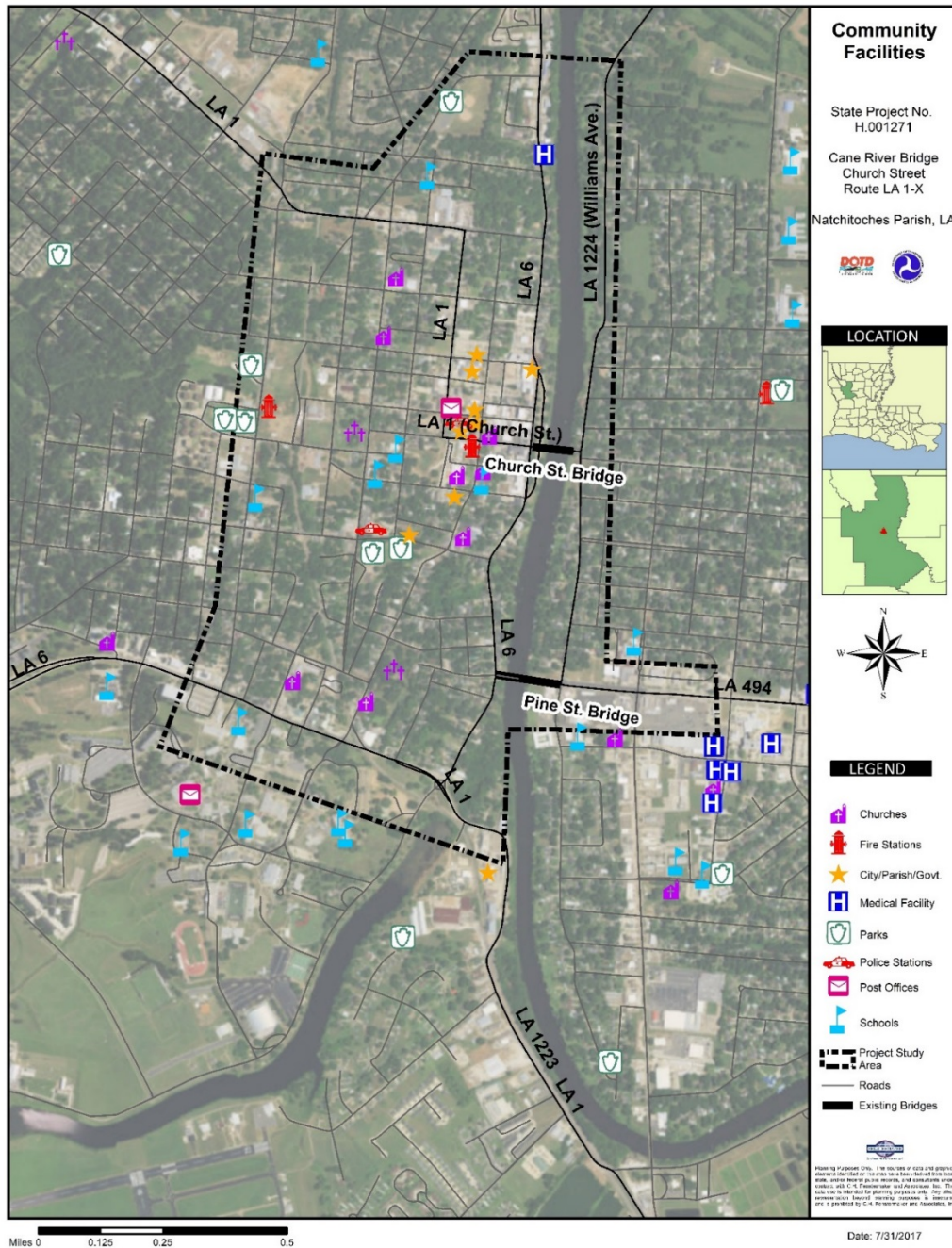
The development of any of the four Build Alternatives is expected to have a positive impact on access to community facilities, services, and emergency facilities once construction is complete. By improving local and regional access and providing storage for queueing vehicles, residents and businesses will be able to reach necessary facilities and services more efficiently. Emergency response across the bridge would benefit from the improved reliability of the updated design of the bridge and the widening in all proposed alternatives. Temporary impacts are expected to impact community facilities, services, social resources, and emergency response for all Build Alternatives. To limit the potential impacts, future design should develop a construction sequencing plan for all Build Alternatives. For all Build Alternatives, effects on emergency response times can be minimized by submitting bridge demolition, construction, and detour schedules to the emergency services personnel prior to activities beginning. The contractor is recommended to apprise fire, police, and emergency response agencies of construction activities, detours, and road blockages throughout the construction process. These practices, as well as techniques typically engaged by emergency vehicle personnel to pass or circumvent traffic, are expected to limit the potential for delays in emergency response times during construction of the project.

Alternatives 1 and **3** propose to skew the bridge, which will make it easier for motorists as well as emergency vehicles such as fire, police, and emergency medical services to traverse east across the bridge. The alignment of the Church Street/St. Clair Avenue/Williams Avenue intersection will function as a standard intersection; thus, driver confusion is expected to be minimized. These alternatives will provide a quicker and safer access to area amenities and community services. **Alternatives 2** and **4** propose an alignment that follows the existing configuration. Though the design will include a left-turn lane which will provide storage for turning vehicles, the intersection geometry would remain the same as what currently exists, thus no improvements to the traversability of the intersection would be anticipated.

Alternatives 1 and **2** would be more beneficial for emergency response time during construction due to the proposed temporary bridge, which allows for traffic to be maintained across the Cane River Lake during construction. Emergency access would continue to function in a similar manner as it does currently, as the temporary detour bridge will function as the third bridge crossing across the Cane River Lake. In addition, community facilities in the vicinity will remain accessible by the temporary bridge, with only minor detours proposed to access them. Impacts to the community facilities, services, social resources, and emergency response for these alternatives are anticipated to occur; however, the impacts are minor, with minimal delays and detouring proposed.

Alternatives 3 and 4 will cause short-term traffic delays during construction of the proposed replacement bridge. Traffic will be detoured to the Pine Street Bridge, resulting in increased traffic along the detour corridor. Temporary impacts to accessing community facilities and services as well as emergency response times are expected. To mitigate the delayed response times, additional emergency service vehicles can be staged strategically throughout the project vicinity, emergency personnel staffing can be temporarily increased, and priority access for emergency vehicles can be coordinated.

Figure 8: Community Facilities Map



4.1.3 Economic Activities

Education, healthcare, retail trade, and manufacturing are the largest employment industry sectors in Natchitoches Parish. The City of Natchitoches is the parish seat and houses Northwestern State University of Louisiana and the Natchitoches Parish Hospital. Both employers are listed as two of the top five major employers in Natchitoches Parish. Other major employers are Alliance Compressors and Pilgrim Pride Corporation, both manufacturing companies. The manufacturing industry has been a part of the area's economy. Today many residents are employed in a variety of manufacturing industries including: heating and air, poultry products, paper products, oil and gas, and lumber and plywood manufacturing.

Several businesses located within the project vicinity and within the City of Natchitoches provide goods and services for the residents including grocery stores, restaurants, bed and breakfasts, florist, banks, and clothing/gift stores. The Natchitoches Events Center is a 39,000-sq. ft. events center located just west of the existing Cane River Bridge and the Louisiana Sports Hall of Fame and Northwest Louisiana History Museum is located just northwest of the proposed project. The Natchitoches Historic District has served as an economic center of the city and continues to be a tourism attraction year-round. The Natchitoches Community Alliance Foundation, Inc., the parish' economic development entity, continues to promote and expand economic development opportunities throughout Natchitoches Parish (NCA, 2019).

The Natchitoches Historic District is home to the annual Festival of Lights from approximately mid-November to the beginning of January. The Festival of Lights is an important cultural and economic event in the community. The Festival of Lights is a six-week long Christmas season event where lights and set pieces are displayed every night. The festival also includes parades, fireworks, and various types of entertainment.

Additionally, a multi-use sports complex is proposed on University Parkway and is expected to be complete by the beginning of 2020. The plan for the complex includes soccer fields, baseball fields, concrete trails, nature trails, stocked ponds, pavilions, batting cages, and other recreational facilities. The opening of this complex will make Natchitoches more attractive for prospective businesses, citizens, and Northwestern State University students, which will be an economic development generator.

The **No-Build Alternative** is not anticipated to adversely impact economic activities; conversely, it will not contribute to enhancing the economic activities in the project vicinity. The **No-Build Alternative** will lead to continued and worsened traffic congestion within the study area and surrounding area and may have a negative impact on economic activities. The **No-Build Alternative** also would have no negative impact on the Festival of Lights.

All Build Alternatives is anticipated to enhance economic activities in the study area by improving traffic operations and providing increased storage along the existing bridge making the area more attractive for retail and light commercial development. The proposed project would also affect access patterns by providing a dedicated turning lane in the center of the Cane River Bridge. This could change the way businesses and residential properties are accessed. Although this change could initially affect patronage, the addition of a turning lane would improve traffic flow and would be expected to offset any impacts from the left-turn limitations. Those travelling near the project vicinity might be temporarily inconvenienced during construction; however, a detour route or temporary bridge will be provided, and any project-related adverse effects on economic activity are expected to be minor and temporary. All Build Alternatives will impact the annual Festival of Lights; however, bidding strategies should be considered to minimize these impacts. More information on these strategies is explained in *Section 4.5*.

4.1.4 Demographics and Environmental Justice

The population of the study area is contained within Census Tracts 400, 500, 600, and 700, with most of the study area within Census Tract 700. Census Tract 500, Blocks 1, 2, 3, and 4 and Census Tract 700, Blocks 1 and 3 are immediately adjacent to the project corridor (Figure 9).

Figure 9: 2010 Census Tracts

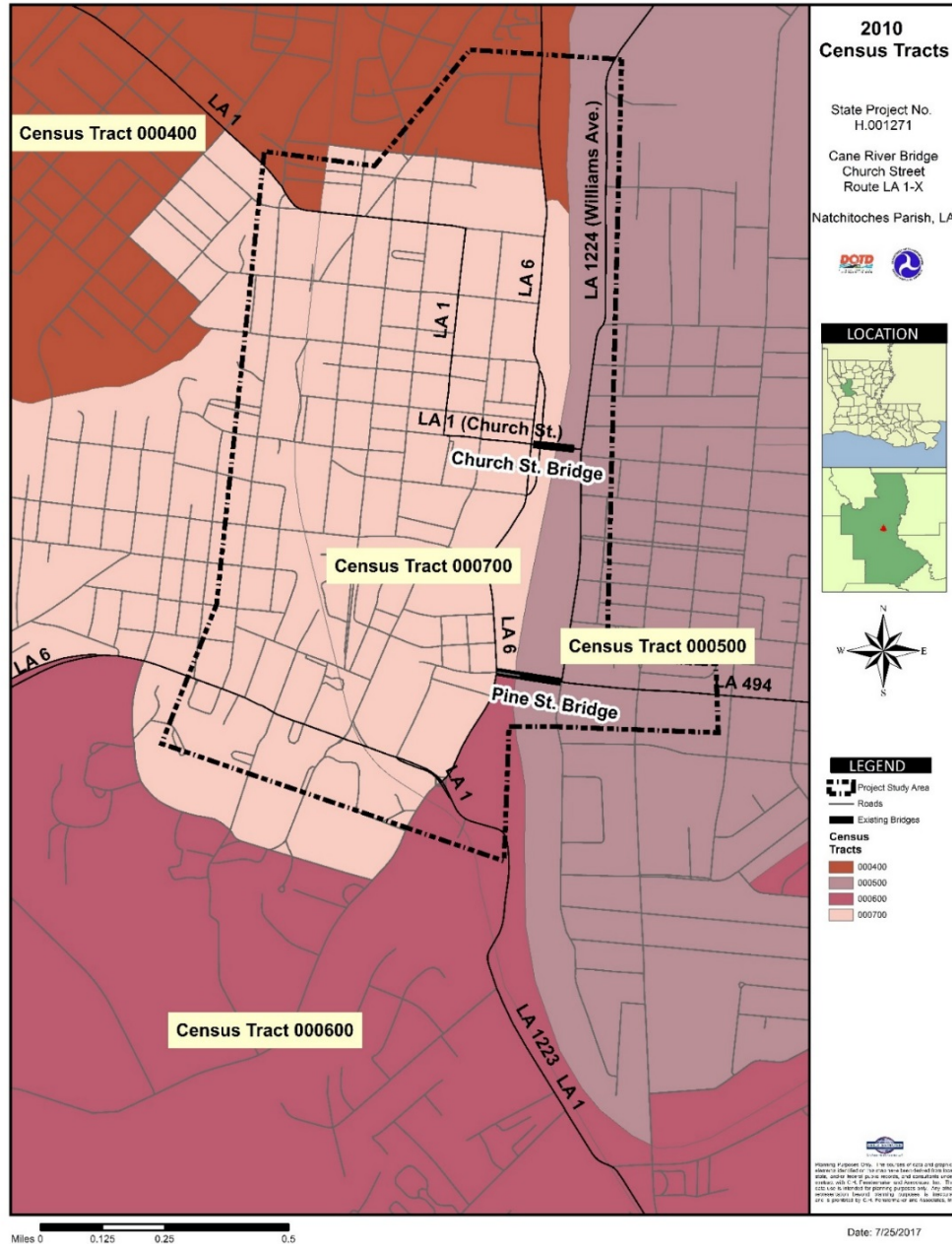


Table 1 illustrates the population change between 2000 and 2010 for the census blocks adjacent to the corridor, the City of Natchitoches, Natchitoches Parish, and Louisiana.

The population in Natchitoches Parish has remained approximately the same between the last two Censuses. From 2000 to 2010, the population of Natchitoches Parish grew at a rate of 1.22% compared

to 1.44% for Louisiana. The entire Census Tracts 500 and 700, which encompasses most of the project corridor, grew at a rate of 1.22% and declined at a rate of 22.39%, respectively. Census Blocks immediately adjacent to the corridor declined at an average rate of 12.82%. The City of Natchitoches grew at a rate of 2.56%. Although data specific to the project corridor are limited, the data indicates that growth within the project vicinity is slow and population fairly remains the same except for a decrease in population for the Census Tract 700 from 2000 to 2010.

Table 1 : Population Change

Census Geography	Total Population		
	2000	2010	Percent Change
Census Tract 500- Block 1	1,084	1,766	62.92%
Census Tract 500- Block 2	1,482	855	-42.31%
Census Tract 500- Block 3	682	628	-7.92%
Census Tract 500- Block 4	770	818	6.23%
Census Tract 700- Block 1	638	577	-9.56%
Census Tract 700- Block 3	1,406	641	-54.41%
Census Blocks Adjacent to Corridor Total	6,064	5,285	-12.82%
City of Natchitoches	17,865	18,323	2.56%
Natchitoches Parish	39,080	39,556	1.22%
Louisiana	4,468,976	4,533,372	1.44%

Source: US Census Bureau, 2000, 2010

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, educational level, or income with respect to the development, implementation, and enforcement of environmental laws. Title VI of the Civil Rights Act (42 United States Code [USC] 2000) and Executive Order 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (1994), requires an environmental justice review, which entails a thorough evaluation of project effects to persons belonging to the low-income populations and minority groups.

A review of the 2010 race and ethnicity data for the block groups within the census tract groups identified in Figure 9 was undertaken to determine whether any minority groups would be disproportionately affected by adverse impacts from the proposed project. Results of the review are provided in Table 2.

To ensure that no minority ethnic or racial group would be impacted disproportionately by the proposed project, the blocks adjacent to the Cane River Bridge corridor were also reviewed. According to the 2010 Census, most residents within the Census Tract Block Groups where the limits of construction of the corridor occur were not members of any minority. African Americans represented 29.6% of the block groups' population and American Indians and Native Alaskans represented 0.8% of the population. Asians represented 0.9% and there were no native Hawaiians or other Pacific islanders in the block groups. Hispanics were identified as 2.0% of the resident population.

Table 2: Race and Ethnicity by Project Corridor Census Tract and Block Group

Census Geography	Number of Persons	African American (%)	Asian (%)	American Indian and Alaskan Native (%)	Native Hawaiian or Other Pacific Islander (%)	Some Other Race (%)	Two or More Races (%)	Hispanic (%)
Census Tract 500- Block 1	1,766	21.8	1.5	0.7	0.0	1.2	0.7	2.4
Census Tract 500- Block 2	855	9.4	1.8	0.4	0.0	0.2	2.0	2.5
Census Tract 500- Block 3	628	8.8	0.0	1.1	0.0	0.8	2.2	1.6
Census Tract 500- Block 4	818	50.9	0.1	1.2	0.0	1.3	3.3	1.2
Census Tract 700- Block 1	577	68.1	0.0	0.7	0.0	1.4	1.7	1.9
Census Tract 700- Block 3	641	37.1	0.3	0.8	0.0	0.2	1.2	1.7
Census Blocks Adjacent to Corridor Total	5,285	29.6%	0.9%	0.8%	0.0%	0.9%	1.7%	2.0%
City of Natchitoches	18,323	59.2	0.6	0.5	0.0	0.8	1.7	1.7
Natchitoches Parish	39,566	41.4	0.3	1.0	0.0	0.9	2.1	1.9
Louisiana	4,533,372	32.0	1.5	0.7	0.0	1.5	1.6	4.2

Source: US Census Bureau, 2010 Summary File 1 (SF 10 100-Percent Data and 2006-2010 American Community Survey (ACS).

An environmental justice review also requires an evaluation of project effects belonging to low-income populations, which are defined as groups whose median household income is at or below the U.S. Department of Health and Human Services (HHS) poverty guidelines. American Community Survey (ACS) 2012-2016 income data are not available for census block geographies but are available for census tracts. Census Tracts 500 and 700 are the most predominant tracts in the study area. The poverty and income data from the US Census Bureau for the 2012-2016 ACS for these tracts are provided in Table 3.

As shown, it is estimated that 20.1% and 52.8% of households in Census Tracts 500 and 700 received income less than \$14,999 in 2016 compared to 39.7% and 28.9% in the City of Natchitoches and Natchitoches Parish, respectively.

Table 3: Income Data

Census Geography	Income in the Last 12 Months (In 2016 Inflation-Adjusted Dollars)							
	Median Household Income	Mean Household Income	Total Households	Households with Income below \$10,000	\$10,000 0-\$14,999	\$15,000 0-\$24,999	\$25,000 0-\$34,999	\$34,999 +
Census Tract 500	\$50,500	\$71,930	1,416	7.20%	12.90%	9.50%	9.00%	61.40%
Census Tract 700	\$13,638	\$26,932	1,413	38.60%	14.20%	8.00%	14.30%	24.90%
City of Natchitoches	\$21,406	\$41,730	6,454	28.80%	10.90%	13.80%	11.20%	35.30%
Natchitoches Parish	\$30,697	\$50,190	14,393	19.50%	9.40%	14.00%	11.70%	45.40%
Louisiana	\$45,652	\$65,229	1,731,398	10.10%	6.70%	12.60%	10.70%	59.90%

Source: US Census Bureau, 2012-2016 American Community Survey 5-Year Estimates.

Poverty status determined by the U.S. Census Bureau includes all people except for institutionalized persons, people in the military group quarters, college dormitories, and unrelated individuals under 15 years of age. If total income reported through the ACS for the past 12 months is less than the Census Bureau poverty threshold, then all individuals are living in poverty.

Results of the 2016 poverty determination for the study area are provided in Table 4. Based upon ACS data compiled for the five years from 2012 to 2016, the percent of population below the poverty level in the study area is almost the same compared to the level of poverty in the City of Natchitoches, and slightly higher than the percentage in the Parish of Natchitoches.

Table 4: Poverty Data

Census Geography	Persons for whom Poverty Status is Determined	% Persons below Poverty Level
Census Tract 500	3,928	19.2%
Census Tract 700	3,567	57.6%
Census Blocks Adjacent to Corridor Total	7,495	37.4%
City of Natchitoches	17,630	40.4%
Natchitoches Parish	38,306	29.8%
Louisiana	889,570	19.7%

Source: US Census Bureau, 2012-2016 American Community Survey 5-Year Estimates.

The small percentage of minorities and similar percentage of low-income persons within the census tracts along the project corridor reduces the possibility that the proposed project would cause adverse impacts to a disproportionate number of individuals in these groups. Generalized adverse impacts such as noise and loss of rural character would be shared equally among all residents. However, displacements from the home structure, business, or community facility removal could directly affect one group more than another. Estimated displacements can be studied in detail regarding the estimated income and minority status of the individuals who could be relocated to determine if any minority or low-income groups could be disproportionately affected; however, no relocations are anticipated for any of the alternatives; therefore, no minority or low-income groups will be disproportionately affected by adverse impacts from the proposed project.

4.1.5 Travel Patterns and Accessibility

Existing traffic data was collected and analyzed to determine the traffic conditions for the existing year 2017 and the design year 2038. The traffic analysis assessed existing and future traffic operations of ten intersections which make up the roadway network surrounding the project site. Seven additional intersections in the network surrounding the project site were also assessed to document current operations. The results of the traffic analysis are summarized in the Traffic Study Report, which was prepared by Cobb, Fendley, & Associates, Inc. (CobbFendley) as a part of the Environmental Assessment.

Data collection for the project included 7-day/24-hour and 48-hour traffic counts with vehicle classifications and speed data, intersection turning movement counts, and 15-minute turning movement spot counts. Peak period observations were performed to note signal timings, queues, lane geometry,

pedestrians, and overall operation and performance throughout the study area. The afternoon observations were completed on May 10, 2017 from 4-6 PM followed by the morning observations on May 11, 2017, from 7-8 AM.

All roadway and intersection analysis results were based on level of service and capacity analyses. The *Highway Capacity Manual* (TRB, 2010) and *A Policy on Geometric Design of Highways and Streets* (AASHTO, 2011) list the following levels of service (LOS):

- A=Free flow
- B=Reasonably free flow
- C=Stable flow
- D=Approaching unstable flow
- E=Unstable flow
- F=Forced or breakdown flow

The 24-hour daily traffic volumes collected in the project study area consisted of the morning (AM) and evening (PM) peaks along with average daily traffic (ADT) volumes. In 2017, the Cane River Bridge at Church Street services just over 1,000 vehicles during the AM and PM peak hours, resulting in a peak hour Level of Service (LOS) of "F." Refer to the Supplemental Traffic Reports for more details of the project's traffic analysis.

A LOS of "F" for a roadway corridor generally means that there is a forced or breakdown of traffic flow, with traffic mostly in stopped conditions with travel delays. This is considered a failing condition. The lack of storage for turning vehicles results in turn restrictions and queuing of traffic on the bridge through the adjacent intersections of Church Street/Front Street and Church Street/St. Clair Avenue/Williams Avenue. It is predicted that traffic volumes will increase in the year 2038 by another 67 vehicles per hour resulting in approximately 1,067 vehicles per hour on this same bridge with a continued LOS of "F". Due to these traffic volumes and a predicted poor level of service on the bridge, the existing vehicular queuing on the bridge from the Front Street/Williams Avenue intersection extend such that vehicles on Front Street, Williams Avenue, and St. Clair Avenue are unable to efficiently traverse across the bridge. The lack of capacity for storing turning vehicles results in turn restrictions and substantial queues at the adjacent intersections

The analyses showed for both existing peak periods (AM and PM) that the intersection of Church Street/Front Street functions at a free-flowing level of service A, the intersection Church Street/Williams Avenue functions at a failing level of service F and E in the AM and PM peaks, respectively, the intersection of St. Clair Avenue/Williams Avenue functions at a stable level of service C, the intersection of Washington Street/Lafayette Street functions at a reasonable level of service B in the AM peak and stable level of service, C in the PM peak, and the intersection of Church Street/Second Street functions at a reasonable level of service B during the AM and PM peaks.

The intersection analysis of Church Street/St. Clair Avenue/Williams Avenue was modeled as a one-way stop-controlled intersection with free flow in the north and south directions, being stop-controlled on the westbound approach. Volumes at this intersection exceed capacity on the southbound and eastbound approaches during AM and PM peak hours; thus, both approaches have a failing LOS during AM and PM peak hours in the Existing and No-Build conditions. The largest delay occurs for southbound through/right movements. Although queues from the signal at the intersection of Church Street/St. Clair Avenue/Williams Avenue exist on the northbound and southbound approaches, the impact of the stop-

controlled intersection is minor. The southbound and westbound left-turn volumes are low, causing very little delay. Overall, all approaches operate at LOS A or B at this intersection. Input parameters used for the traffic model analysis included bridge and roadway geometrics and future developments.

The bridge is posted with a weight limit (10 tons for 2 axle trucks/15 tons for 3 axle trucks), meaning the type of traffic allowed to use the bridge is limited. No tractor-trailer-style vehicles may use this bridge crossing. The project will replace the existing bridge with a new bridge that meets current design guidelines, which will allow for trucks to utilize the bridge crossing.

An analysis of bicyclist and pedestrian facilities was completed for the proposed project in accordance with the LADOTD Complete Streets Policy to consider the impact on safety for all users and make all reasonable attempts to mitigate negative impacts on alternate modes of transportation. Currently there are 5-ft. sidewalks located on both sides of the Cane River Bridge that accommodate pedestrians. The proposed project would accommodate pedestrians and bicyclists by providing a paved sidewalk along the replacement bridge. The proposed 6-ft. wide sidewalk would be contained within the proposed right-of-way (ROW). The Build Alternatives for the Cane River Bridge will have a positive impact on bicycle and pedestrian access, by including a Complete Streets typical section with sidewalks in both directions.

No adverse impacts to the travel patterns and accessibility are anticipated for the **No-Build Alternative**. Based on the 20-year growth projections, the 2038 traffic volumes on the bridge are expected to be approximately 13,000 vehicles per day.

The replacement Cane River Bridge typical section will consist of two, 12-ft. wide travel lanes, a 12-ft. wide center turning lane, 4-ft. wide outside shoulders, and 6-ft. wide sidewalks with barriers. The typical section for the proposed temporary bridge at Touline Street is a two-lane section with 12-ft. lanes, allowing two-way vehicular traffic to be maintained across Cane River Lake throughout the entire construction process. Pedestrian facilities are not proposed along the temporary bridge. Proposed design alternatives for the construction of the replacement Cane River Bridge include the realignment of the bridge and modified roadway geometries on two different intersections, including: Church Street/Front Street and Church Street/St. Clair Avenue/Williams Avenue.

For all Build Alternatives, the closest existing pedestrian facility is located at the Pine Street Bridge, thus pedestrians and bicyclists will be detoured to the Pine Street Bridge. Adequate pedestrian detour signage is recommended to be provided. Each alternative will require approximately 320-ft. of new sidewalks in between Scarborough Avenue and Keyser Avenue, to provide continual pedestrian facilities. A Transportation Management Plan (TMP) should be developed in the design process to further detail construction traffic routes as well as pedestrian detour routes.

Alternatives 1 and 2 both propose to replace the existing Cane River Bridge and install a temporary bridge at Touline Street; however, **Alternative 1** proposes a skewed alignment, whereas **Alternative 2** proposes the replacement bridge to follow the existing alignment. **Alternatives 1 and 2** have similar impacts on travel patterns and accessibility. The proposed construction sequencing consists of constructing a temporary bridge at Touline Street, while the existing bridge will remain open until completion of the temporary bridge. The installation will require the removal of the southern entrance to the existing Rue Beauport Riverfront Park. During the implementation of the temporary bridge, detours and one-ways within the Rue Beauport Riverfront Park should be implemented.

Alternatives 1 and 2 would require a temporary construction servitude along the banks of the Cane River near the proposed temporary bridge at Touline Street on both the east and west ends totaling approximately 0.44 acres altogether. The temporary construction servitude, necessary to construct the temporary bridge at Touline Street, will impact access to the existing Rue Beauport Riverfront Park due to the access required for the bridge. The temporary construction servitude is only needed during construction of the project and is to be abandoned upon completion of construction with the areas impacted being returned to their existing conditions. The access impacts to the Rue Beauport Riverfront Park will be mitigated by providing a dual use ingress/egress driveway at the northern access located on Front Street. The limits of the temporary bridge are entirely within property owned by the City of Natchitoches.

During the entire construction duration for **Alternatives 1 and 2**, the southern access to Rue Beauport Riverfront will remain closed, as well as vehicular access spanning from the existing Cane River Bridge south to the southern driveway access. Minimal pedestrian impacts are anticipated, as access is to be provided during construction, allowing continual access to the restroom facilities, located south of the entrance. Once the temporary bridge is constructed, access to the restroom facilities and the Santa House is expected to resume as normal. Vehicles are anticipated to be able to enter and exit the Rue Beauport Riverfront at the existing northern access location. Parking will remain in place from the northern entrance to just north of the existing amphitheater, which is where temporary dead-end signs should be placed. Temporary signage is to be placed near this area, due to the narrowing of the roadway, to not allow two-way traffic. The main purpose of the closure is to prohibit two-way traffic as there will only be one ingress/egress location in addition to park driveway narrowing. Pedestrian access in this vicinity will remain throughout construction of the temporary bridge; however, temporary closures may be expected during the construction of the replacement bridge. Temporary pedestrian access closures may be expected during major bridge construction within the Rue Beauport Riverfront such as pile and deck installation or during demolition. Pedestrians can be directed to use the existing steps leading to Front Street on the west to go around the construction to access the restroom facilities during these operations. Once deemed safe, pedestrian access can be provided during the construction of the replacement bridge in the form of pedestrian protected walkways.

Touline Street is proposed to temporarily be transformed into a one-way (heading westbound) during the time that the temporary bridge is in use. This temporary change to Touline Street will allow for a more efficient flow of traffic crossing the temporary bridge desiring to traverse westbound to the inner streets of downtown Natchitoches. To traverse eastbound across the temporary bridge from Touline Street, motorists are to be detoured appropriately by providing adequate detour signing. There is existing on-street parallel parking north and south of Touline Street within the downtown area which is to remain. Refer to *Appendix A* for more detail on the temporary one-way traffic on Touline Street.

Stephens Avenue is proposed to have a temporary closure westbound onto Williams Avenue, with a traffic detour placed one block away. Residents travelling westbound along Stephens Avenue can access the temporary bridge utilizing the existing local roadways grid system to either St. Clair Avenue or Henry Avenue which both run parallel to Stephens Avenue. Temporary signals are proposed at the temporary bridge location at the intersections of Touline Street/Front Street and at Stephens Avenue/Williams Avenue. A Transportation Management Plan (TMP) should be developed in the design process to further detail construction traffic routes.

Once the temporary detour bridge is constructed, the existing bridge is to be removed to commence construction of the new replacement bridge. Temporary lane closures may be warranted at Williams

Avenue and St. Clair Avenue during pavement reconstruction required to properly align the intersection for **Alternatives 1 and 3**. Upon completion of construction of the new replacement bridge, the bridge will be re-opened, the temporary bridge will be removed, and the temporary construction area will be returned to existing conditions.

Alternatives 3 and 4 propose to replace the existing Cane River Bridge, providing no temporary detour bridge, with traffic being temporarily rerouted to the existing Pine Street Bridge. **Alternatives 3 and 4** both propose complete removal and replacement of the existing Cane River Bridge; however, **Alternative 3** proposes a skewed alignment of the Cane River replacement bridge, whereas **Alternative 4** proposes the replacement bridge to follow the existing alignment. The proposed construction sequencing consists of detouring traffic to the existing Pine Street Bridge, located approximately 0.5-miles south of the Cane River Bridge, while demolition of the existing Cane River Bridge is ongoing. Dead end treatments will be installed at both ends of the existing Cane River Bridge, and detour routes will be signed appropriately to direct traffic from all directions to the Pine Street Bridge. Signal equipment upgrades with modified phasing and timing at both ends of the existing Pine Street Bridge will be required to manage the increased traffic as a result of the temporary detouring.

A temporary bridge is not proposed for **Alternatives 3 and 4**, thus pedestrian access to the restroom facilities and the Santa House and the southern driveway access are not anticipated to be interrupted in this vicinity. The Rue Beauport Riverfront will be open to ingress/egress at the current northern and southern access driveways. The riverfront will then be closed to vehicular traffic where the roadway transitions from concrete pavement to brick pavement near the amphitheater, and the same measures in the area of transitioning proposed in **Alternatives 1 and 2** are proposed to be implemented for **Alternatives 3 and 4**.

The replacement bridge will be removed and replaced. Temporary lane closures may be warranted near the intersection of Church Street/St. Clair Avenue/Williams Avenue during pavement reconstruction required to properly align the intersection. Upon construction completion of the new replacement bridge, the Cane River Bridge will be re-opened, the detour routes will be removed, and the routes will be returned to existing conditions. With the exception of the temporary signals and detection at the temporary Toulain Street Bridge, all new signal equipment and detection systems installed for the detour should remain in place post-construction to improve future traffic conditions.

To study the impacts of not having a temporary detour bridge during construction of the replacement Cane River Bridge (i.e. **Alternatives 3 and 4**), representatives from C.H. Fenstermaker & Associates, L.L.C. visited the site on November 2, 2018 during the time the existing bridge was undergoing a bridge inspection by LADOTD. The bridge is currently on a 6-month inspection cycle, and the inspection requires the entire bridge be closed during these inspections. The site was visited from 10:00 AM to 11:00 AM to understand the traffic impacts of the bridge closure during non-peak hours. During this time, it was observed that local law enforcement was directing traffic at the intersection of Keyser Avenue/Jefferson Street as well as Keyser Avenue/Williams Avenue. This is important to note as delay times incurred were being managed by local law enforcement in lieu of having the traffic signals at the intersections controlling traffic. It was observed that traffic from Keyser Avenue and Jefferson Street was queued from this intersection heading north to the downtown area between Toulain Street and Trudeau Street along Front Street for a total queue distance of approximately 2,220-ft. (0.42 miles). The total drive time delay was observed to be 10 minutes. In addition, it was also observed from the same intersection of Keyser Avenue/Jefferson Street heading south along Jefferson Street that traffic was queued to the signal at Mill Street/Jefferson Street for a total distance of approximately 1,278-ft. (0.24 miles). It should be noted that

no direct observations were made to all connecting side streets to Jefferson Street; however, it was apparent that traffic patterns within these areas were impacted by the closure of this bridge for this one day.

All Build Alternatives will require that a construction sequencing plan be developed and followed to minimize traffic disruptions during construction. The construction should be staged to avoid closures during the Christmas Festival season. Travel patterns for residents, customers, and employees within the area is expected to experience short-term congestion impacts during construction of the new bridge. More details on the proposed local road closures can be found in the supplemental *Line and Grade Report*.

4.1.6 Safety

A crash analysis report, entitled *Cane River Bridge Church Street Route LA 1-X, Existing Conditions Traffic Analysis* and dated November 2018, reviewed the crash history and computed crash rates for each intersection during a period of three years (2013 to 2015). These rates were compared to statewide averages to determine over-represented crashes, abnormal crash location(s), severity, and other contributing factors. The *LADOTD Guidelines for Conducting a Crash Data Analysis* (January 2016) was followed in the preparation of this report. There are two major intersections located in the study area, and both locations were analyzed for these stated three years, utilizing the LADOTD Crash 1b and Crash 3b databases as a part of the crash analysis.

From the data collected, an average of 9.00 crashes per year occurred within the 150-ft. radius of the intersection of Church Street/Front Street, yielding a crash rate of 1.77 crashes per million entering vehicles. Approximately 48% of crashes were rear-end crashes. An average of 10.67 crashes per year occurred at the Church Street/St. Clair Avenue/Williams Avenue intersection, yielding a crash rate of 2.43 crashes per million entering vehicles. Approximately 91% of those crashes were rear-end collisions.

The *LADOTD Guidelines for Conducting a Crash Data Analysis* (January 2016) outlines the criteria for “abnormal locations” as a location where the average crash rate is at least five crashes and twice the statewide average crash rate for its functional classification. Based on the two-lane urban roadway classification, the statewide average number of crashes per year for signalized intersections of similar type is 9.51 crashes per location with a statewide average crash rate of 1.45 crashes per million entering vehicles. Both intersections at the Cane River Bridge, Church Street/Front Street and Church Street/St. Clair Avenue/Williams Avenue, are not considered abnormal crash locations as neither meets the “twice the statewide average” (2.90 for this location type). To determine the cause of crashes at these locations, individual crash reports were reviewed to identify over-represented crash types.

The over-represented crash types occurring at the intersection of Church Street/Front Street include rear-end, left-turn, and non-collision with motor vehicles. Based upon the narratives within the individual crash reports, the large number of rear-end crashes were mostly attributed to driver inattention or distraction within the queue from the Cane River Bridge. The high number of left-turn crashes were caused by drivers who performed various infractions, as well as the signal operations or geometric layout of the intersection. The high number of non-collisions with motor vehicle crashes represents crashes involving parallel parked vehicles. Crashes at this location were less severe than the statewide average.

The intersection of Church Street/St. Clair Avenue/Williams Avenue includes geometry that is offset by approximately 50-ft. Both intersections, Church Street/St. Clair Avenue and Church Street/Williams Avenue, operate under the control of a single signal with span-wire configuration. The intersections operate under signalized control on the eastbound, northbound, and southbound approaches. The

westbound approach on St. Clair Avenue is stop-controlled. The layout of this intersection is non-standard. The over-represented crash type included only rear-end collisions at the intersection of Church Street/St. Clair Avenue/Williams Avenue. The rate of rear-end collisions was more than double that of the statewide average. Based upon the narratives within the individual crash reports, the large number of rear-end crashes were mostly attributed to driver inattention or distraction. Four of the rear-end crashes involved drivers who failed to stop at the onset of a red signal indication, resulting in that vehicle striking the vehicle in front of it on the Cane River Bridge at Church Street or north of the intersection. Collisions at this location may be attributed to the offset of St. Clair Avenue from the Cane River Bridge as well as the signal operations or geometric layout of the intersection. The existing configuration incorporates signalized control on three approaches and stop control on the westbound approach, which is offset from the bridge. Crashes at this location were less severe than the statewide average.

Both intersections at the Cane River Bridge, Church Street/Front Street and Church Street/St. Clair Avenue/Williams Avenue, exceed the average number of crashes compared to the statewide averages for signalized intersections on urban two-lane roadways; however, the crash rate does not exceed double the statewide average, thus the locations are not considered to be “abnormal” as defined by LADOTD. Twenty-seven (27) crashes were recorded at the intersection of Church Street/Front Street, 32 crashes were recorded at the intersection of Church Street/St. Clair Avenue/Williams Avenue, totaling 59 crashes at these intersections during the studied years.

The **No-Build Alternative** is not anticipated to adversely impact safety in the project vicinity; conversely, it will not contribute to improving the safety of the corridor and the adjacent intersections. No changes to the existing facility are proposed, thus crash rates are not expected to change as a result of the **No-Build Alternative**. The non-standard intersection of Church Street/St. Clair Avenue/Williams Avenue will continue operating in its current condition.

While both intersections at the Cane River Bridge, Church Street/Front Street and Church Street/St. Clair Avenue/Williams Avenue are not considered abnormal crash locations, the number of future crashes can be reduced through proposed improvements. All Build Alternatives propose the addition of a center left-turn lane on the replacement Cane River Bridge, which will provide queue storage for left-turning vehicles, thus accessibility can be increased, and crashes may be reduced. Traffic performance is anticipated to be further enhanced at each intersection by improved signal timing and upgrading detection equipment. Specifically, the signal at Church Street/Front Street will be improved by utilizing the video detection cameras previously installed. In addition, safety can be improved at the intersection of Church Street/St. Clair Avenue/Williams Avenue by realigning the Cane River Bridge with St. Clair Avenue and signaling all four approaches of the intersection, as proposed in **Alternatives 1 and 3**. The current configuration of this intersection is non-standard and violates driver expectation. Signaling the St. Clair Avenue approach in the existing geometric configuration is not recommended, as there is limited sight distance resulting from the misalignment of the approaches. In **Alternatives 1 and 3**, the skewed alignment of the proposed bridge creates a traditional four-legged intersection with St. Clair Avenue, allowing for the installation of a signal for all approaches, including adequate sight distances and detection use. All elements of the proposed project would adhere to current design guidelines and would be expected to improve safety within the corridor for drivers, bicyclists, and pedestrians.

4.2 The Built Environment

The homes and businesses in the project vicinity are important physical resources that make up the built environment. A summary of required right-of-way and temporary construction servitude by alternative is provided in *Appendix F*. Other resources within the built environment are community facilities and

services, other social resources, and public or semi-public owned infrastructure. Infrastructure includes transportation facilities, pipelines, and utilities. Another consideration related to the built environment and relevant to the project is the presence of potentially hazardous waste sites that may be disturbed by construction of the project. These resources were also considered to be relevant to the project.

4.2.1 Real Estate and Right-of-Way Acquisition

Acquisition of right-of-way (ROW) and relocation activities are governed by the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Relocation Act). Relocation programs available through LADOTD to displaced residents can include relocation assistance, moving payments, and replacement housing payments, as well as rent supplements. Acquisition of ROW and relocations will be handled in accordance with the LADOTD *Acquisition of Right-of-Way and Relocation Assistance Policy* (2016).

The apparent existing ROW was based on aerial photography and GIS shapefiles provided by the Natchitoches Parish Assessor at the time of this study and is to be considered approximate for this phase of the project. A more precise boundary survey is to be performed as this project progresses into the next phase to establish more accurate existing ROW limits and property boundaries.

A supplemental report entitled *Conceptual Stage Relocation Plan*, located as *Appendix F* contains a detailed analysis of the ROW impacts for each of the project alternatives. The project plates (provided in *Appendix A*) illustrate areas where ROW would be required for each alternative. The required ROW shown within the project plates is the minimum amount of ROW which would be required based upon geometric requirements and constructability of each of the alternatives.

To determine the required ROW, an analysis was performed to best develop the limits of construction necessary for all improvements for each alternative. As a part of the *Conceptual Stage Relocation Plan*, preliminary fair market values of land acquisition and property damages were researched along the study corridor by reviewing comparable land and improved sales within the project area, primarily in the City of Natchitoches and Natchitoches Parish. Data was collected from field reviews, aerial photography, the Natchitoches Parish Tax Assessor, Google Maps, on-the-ground site visits, and census data. Field inspections were conducted to assess the properties for potential right-of-way acquisition. The number of impacts were mitigated by reducing the amount of required ROW and aligning the bridge to avoid as many structures as possible.

Under the **No-Build Alternative**, existing conditions would be maintained. The **No-Build Alternative** would not require any displacements or relocations, and thus, would not result in any direct or indirect impacts to the study area. In addition, no right-of-way acquisition would be required and no impacts to real estate would occur.

The right-of-way (ROW) required for the proposed Build Alternatives would impact both ends of the existing Cane River Bridge. The ROW anticipated is necessary to widen the existing bridge, provide sidewalks along the eastern end of the bridge, and to align the existing intersection of Church Street/St. Clair Avenue/Williams Avenue. The required ROW of all Build Alternative alignments will require acquisition of land from some unimproved waterfront land, owned by the City of Natchitoches, and vacant residential properties. Most structures are set back from the roadway by a sufficient distance to put them outside the limits of the ROW required for the proposed project; therefore, there are no homes and businesses that are within the proposed ROW that would have to be relocated. It should be noted that the alignment of the temporary bridge is to be established as to avoid impacts to the existing sewer lift

station located on the eastern end of the proposed temporary bridge. Staging and construction operations should be primarily performed on the western end or to the north of the eastern end, if a temporary bridge is constructed.

The replacement Cane River Bridge proposed for **Alternative 1** and **3** is not entirely contained within the existing right-of-way (ROW) for present conditions; however, most of the required ROW to construct the project is located within existing City of Natchitoches owned property. Since the replacement bridge is to be widened, additional ROW is required on both the northern and southern end of the west end of the bridge (Church Street/Front Street intersection). Due to the proposed skew of the bridge, additional ROW is only required on the southern side of the east end of the bridge (Church Street/St. Clair Avenue/Williams Avenue intersection), as adequate ROW exists to construct the proposed alternative on the northern side. At the intersection of Church Street/St. Clair Avenue/Williams Avenue, additional ROW is needed to realign the intersection properly, provide sidewalks, and for pavement reconstruction. Two small portions of private residential empty lots totaling approximately 0.024 acres is required at the intersection, and a total of 0.303 acres of City of Natchitoches owned property is required, totaling approximately 0.33 acres of required permanent ROW for the skewed replacement bridge.

The replacement Cane River Bridge proposed for **Alternative 2** and **4** is not entirely contained within the existing ROW for present conditions; however, all the required ROW to construct the project is located within existing City of Natchitoches owned property. Since the replacement bridge is to be widened and the alignment remains the same, additional ROW is required on both the northern and southern sides of the west and east ends of the bridge. This alternative would not require any ROW along St. Clair Avenue as the bridge is proposed to follow the existing alignment. A total of 0.25 acres of property owned by the City of Natchitoches is required as permanent ROW for the same alignment replacement bridge for **Alternatives 2** and **4**.

Alternatives 1 and **2** requires a temporary construction servitude along the Cane River Lake banks near the proposed temporary bridge at Touline Street on both the east and west banks of the lake. The required temporary construction servitude for constructing a temporary bridge is all within existing property owned by the City of Natchitoches. **Alternatives 1** and **2**, which include installing a temporary bridge, will require approximately 0.44 acres of temporary construction servitude. The temporary construction servitude necessary to construct the temporary detour bridge will impact access to the existing Rue Beauport Riverfront. More information on the impacts and mitigation to the Rue Beauport Riverfront is detailed in *Section 4.1.5* and *4.2.4*.

Table 5 details the summary of ROW and temporary construction servitudes required for this project. A detailed quantification and comparison of ROW acquisition impacts and relocations for each alternative is provided in *Appendix F*.

Table 5: Estimated ROW Impacts

Alternative	Permanent ROW Required (Acres)	Temporary Construction Servitude (Acres)	Total (Acres)
1	0.33	0.44	0.77
2	0.25	0.44	0.69
3	0.33	0.00	0.33
4	0.25	0.00	0.25
No-Build	0.00	0.00	0.00

It is the policy of LADOTD to pay just compensation for all property required for the project. Owners of required properties may be contacted by an appraiser or appraisers who will provide owners an opportunity to point out areas of importance during the evaluation of the property. After the evaluations have been reviewed and approved, a real estate agent will contact each property owner. A letter will be sent establishing a cash offer for the purchase of the property or property rights. The agent will also explain the property value and discuss possible options for relocation of fences, parking, canopies, and other appurtenances.

4.2.2 Infrastructure

The City of Natchitoches has its own utility system and purchases bulk electrical power which is then resold through the city's electrical distribution system. The city's utility department is made up of the following divisions: Sibley Lake municipal water supply, electrical distribution, metering department, water treatment and distribution, and sewer treatment and collection. Electrical service for the City of Natchitoches is provided by an independent municipal power system. Natchitoches is a member of Louisiana Energy and Power Authority (LEPA), which consist of 18 Louisiana cities and towns that maintain their own municipal power system.

The city supplies water and provides wastewater services to the project area. The water source, Sibley Lake, is the drinking water supply for the city and other incorporated areas outside of the city limits, including 37 surrounding water systems. Sibley Lake provides potable drinking water to a population of approximately 25,000 residents.

Sewer rehabilitation on the main gravity sewer line in the City of Natchitoches is currently under construction. There is a sewer lift station located on the east side of the Cane River Lake, directly across the proposed Toulain Street temporary bridge. Special attention should be given in this area during the design stage to avoid any conflicts with the sewer lift station. A sewage line runs parallel to Front Street within the access road to the riverfront park and crosses near both Toulain Street and Church Street.

Within the City of Natchitoches, telephone service is provided by Suddenlink Communications, and fiber optic communications are provided by CP-TEL. Dish Network, HughesNet, and DirecTV are also available for the area. Service lines for the telephone, cable, and internet services are typically located parallel to the underground electrical service lines. There is an extensive network of fiber optic lines located near Toulain Street. Natural gas within the project area is provided by Atmos Energy.

During construction, utility lines carrying gas, water, electricity, and telecommunications should be protected. Construction and relocation should be programmed to limit disruption of service. It is anticipated that some of the existing utility lines would be affected during construction and may need to be relocated within the project area as needed.

Under the **No-Build Alternative**, existing conditions would be maintained and no impacts to existing utilities and infrastructure will occur.

Construction of all Build Alternatives will cause various impacts to utilities. Given the context of the project and the density of utilities near the east and west banks of the Cane River Lake, it is recommended that subsurface utility engineering (SUE) be performed at appropriate levels to establish the type of utility and horizontal and vertical location. Various levels of disruption to service can be anticipated for all Build

Alternatives; however, **Alternatives 3 and 4** consists of less overall impacts. More information on impacts to utilities is to be addressed during the design phases of the project. Approximate locations of existing utilities and type are detailed for each of the alternatives in the project plates, found in *Appendix A*.

4.2.3 Potential Hazardous Waste Sites and Wells

The Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulate hazardous materials and waste sites. Hazardous waste is generally defined as any material that has, or when combined with other materials, will have a deleterious effect on humans or the natural environment. Hazardous wastes are characterized as reactive, toxic, infectious, flammable, explosive, corrosive, or radioactive. Hazardous wastes may occur as solids, sludges, liquids, or gases. Potential hazardous waste sites include landfills, dumps, pits, lagoons, salvage yards, and industrial sites, as well as above and below ground storage tanks. Service stations are one of the most common generators of potential hazardous material sites because older underground storage tanks may deteriorate and contaminate surrounding soil and groundwater with gasoline.

A review of the Louisiana Department of Natural Resources (DNR) Strategic Online Natural Resources Information System (SONRIS) showed that there are no active oil and gas leases in the project area; however, there are plugged and abandoned wells drilled in search of hydrocarbons just outside of the project area. There are no anticipated mineral resource concerns with either the Build or No-Build Alternatives.

Phase I Environmental Site Assessment

A Phase I Environmental Site Assessment (ESA) was conducted for the proposed project in accordance with ASTM International E 1527-13 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. Regulatory database information, historic topographic maps, and historic aerial photographs were obtained from GeoSearch, Inc. In addition, a site reconnaissance was conducted in the project area by a representative from H&H Environmental, Inc. A local governmental official was interviewed in association with sites identified in the regulatory database report. There were 30 industrial, commercial, unconfirmed, or unauthorized potential hazardous waste sites investigated in the project area. The Phase I ESA was completed for three sites, including locations near the proposed replacement Cane River Bridge, and the proposed temporary detour bridge site located at Toulain Street, as well as the original temporary detour bridge site located at Highland Park Drive. Though the temporary detour bridge located at Highland Park Drive was eliminated, as discussed in *Section 3*, the Phase I ESA includes the results of this area.

Since the three study areas are within close proximity, some environmental sources were duplicated; therefore, after omitting the duplicated conditions, 23 environmental sources were analyzed. The assessment of these sites revealed evidence of seven Recognized Environmental Conditions (REC) in connection with the project corridor.¹ Figure 10 displays the 23 environmental sites, including the location of the RECs. The Phase I ESA, which includes detailed information on the RECs can be found in

¹ As defined in ASTM Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process Designation E 1527-05, RECs means the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. A material threat is a physically observable or obvious threat which is reasonably likely to lead to a release that in the opinion of the environmental professional is threatening and might result in impact to public health or the environment. Obvious threats are those which are plain or evident; a condition or fact that could not be ignored or overlooked by a reasonable observer while visually or physically observing the property.

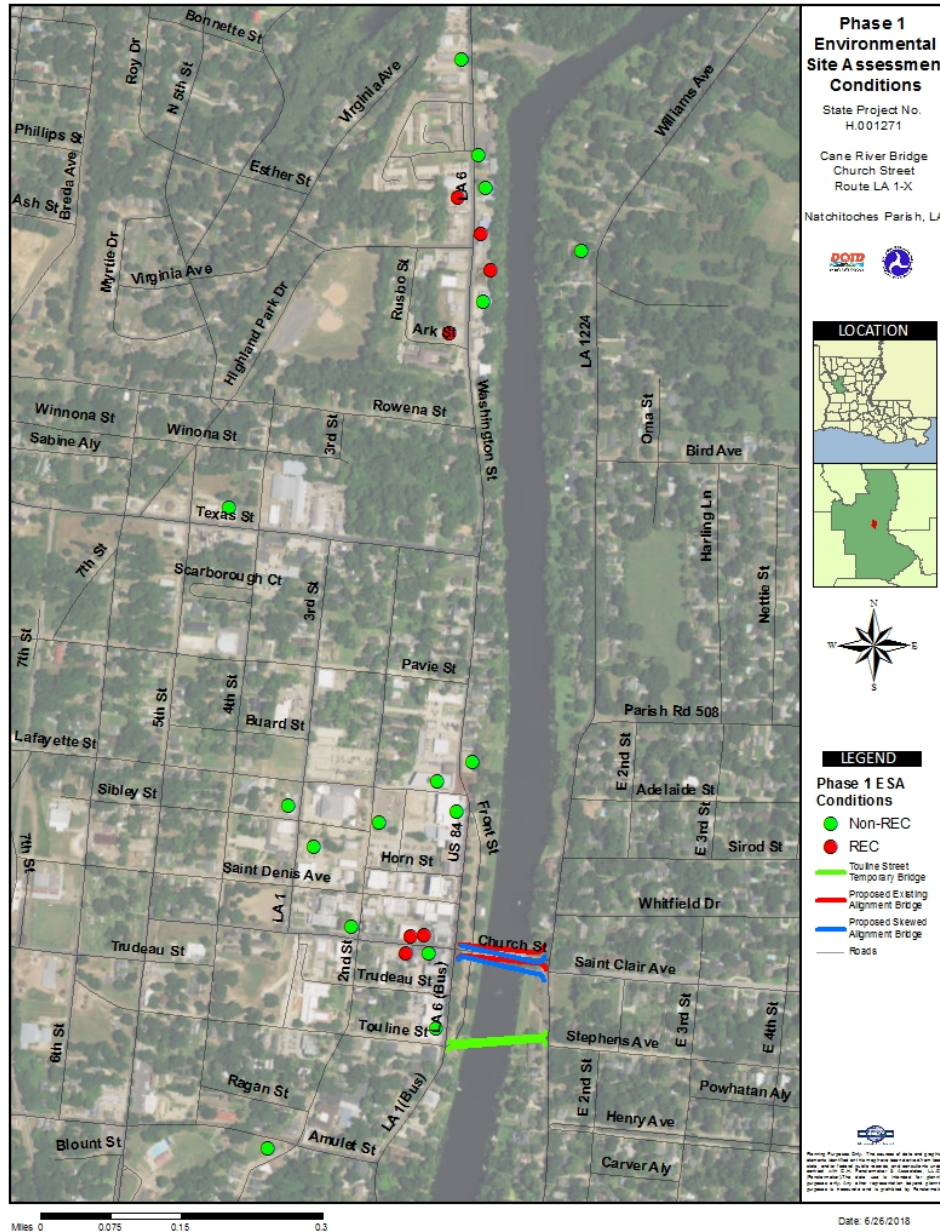
the *Cane River Bridge Church Street Route LA 1-X Environmental Site Assessment* located in the EA as *Appendix G*.

Of the seven RECs, six are underground storage tanks (UST) related to historical automotive businesses including service and filling stations, repair and detail shops, and automotive sales shops. One of the four UST locations is listed as a leaking underground storage tank. Associated RECs include in-ground hydraulic lifts and sumps, carwashes with water permits, and hazardous waste generators. There is one REC related to a historical filling station within the project area, in which tanks appear to be located above ground in the 1930, 1950, and 1959 fire insurance maps, but it cannot be determined whether any leaks or spills occurred.

The **No-Build Alternative** will not impact any potentially contaminated materials sites or oil and gas wells.

The Build Alternatives are not anticipated to affect any potentially contaminated materials sites because no RECs were identified within the construction area. In addition, the Build Alternatives are not anticipated to impact any oil and gas wells, as none are located within the project corridor. Figure 10 illustrates that there are no RECs or non-RECs located within the proposed right-of-way.

Figure 10: Phase 1 Environmental Site Assessment Conditions

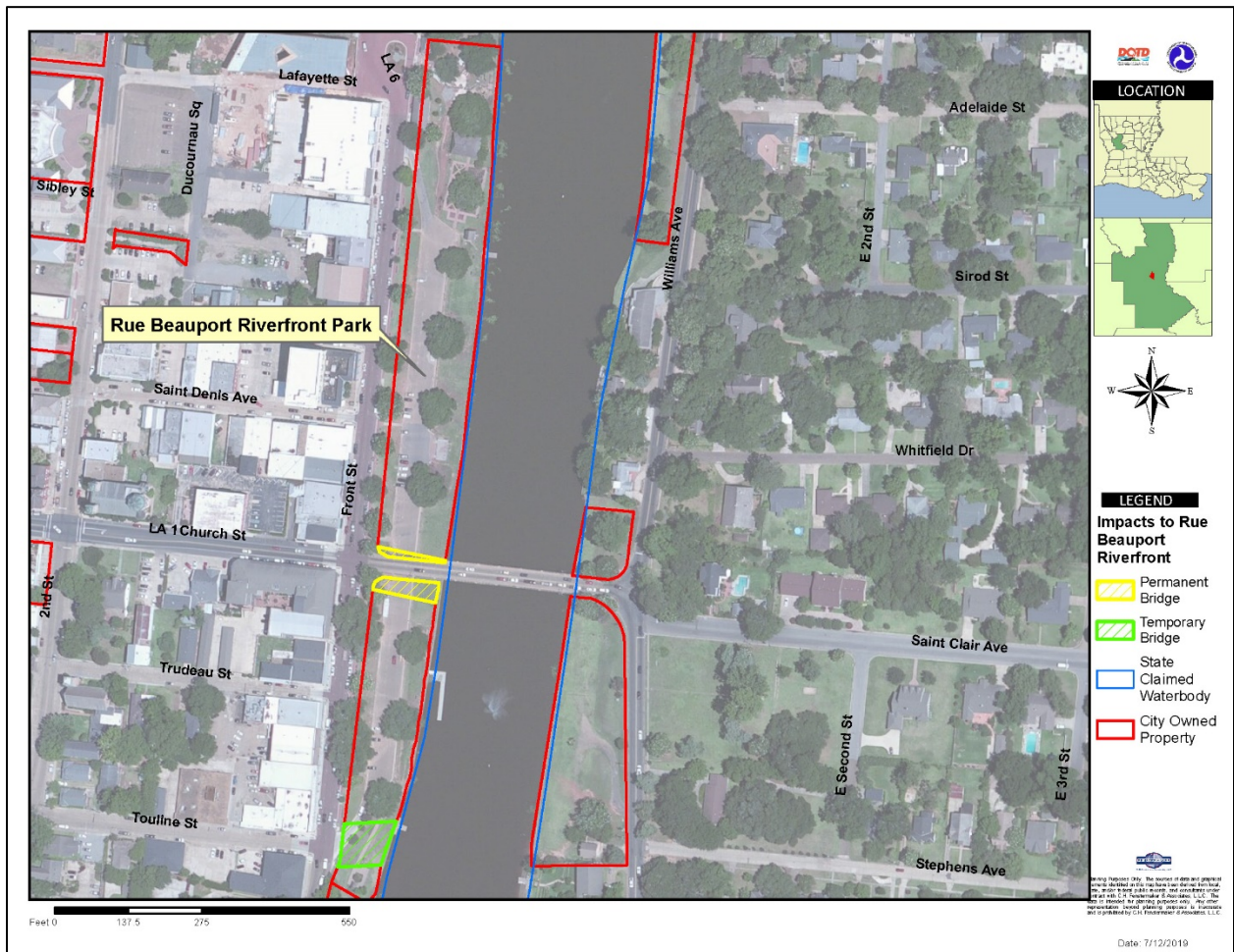


4.2.4 Section 4(f) Resources

Section 4(f) of the Department of Transportation Act of 1966 stipulates that FHWA cannot approve the use of land from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites, unless there is no feasible and prudent avoidance alternative following all possible planning to minimize harm to the property; or if the use of the land would have only a *de minimis* impact, or no adverse effect, to key features of the property. Using the Area of Potential Effect (APE), 4(f) properties were reviewed by researching existing mapping, conducting field investigations, property searches, and consultation with jurisdictional officials.

There is one recreational resource that exists along the project corridor—the Rue Beauport Riverfront Park (Figure 11). The Rue Beauport Riverfront Park is approximately 4.63 acres and is located adjacent to and underneath the existing Cane River Bridge on the west bank of the Cane River Lake. According to the Natchitoches Parish Assessor’s office, the limits of the park span from just north of Lafayette Street to just south of Toulaine Street. Rue Beauport Riverfront Park is publicly owned and operated by the City of Natchitoches. The riverfront primarily serves as an event park within the downtown Natchitoches area. The park is open to the public and visitation is essentially permitted at any time. The proposed project would require the conversion of existing recreational land within the Rue Beauport Riverfront to transportation use. This facility has not received funding through the Department of Interior Land and Water Conservation Act and does not require Section 6(f) documentation. On April 9, 2019, FHWA made an official determination that the Rue Beauport Riverfront would be eligible for a Section 4(f) designation.

Figure 11: Rue Beauport Riverfront Park



The Rue Beauport Riverfront Park primary use includes hosting festivals, parades, live music, and other various activities. Most of the activities occur at the newly constructed amphitheater, which is located just north of the existing bridge; however, the events expand throughout the riverfront with vendors and other activities spread out along the entire riverbank of the downtown area. The riverfront was recently renovated with an unveiling ceremony held in November 2017. Recent renovations included a new festival

stage with amphitheater seating, a new Santa Claus house with restroom facilities, handicapped accessible ramps and staircases leading down to the riverfront, and a brick promenade which is adjacent to Cane River Lake. The riverfront park also contains a walking path, parking spaces, park benches, trash receptacles, and restroom facilities. Photographs of the Rue Beauport Riverfront Park are provided in *Appendix K*.

An evaluation was completed to address the No-Build Alternative, the improvement without using adjacent Section 4(f) lands alternative, and an alternative on a new location, which all avoid the property. There is no feasible and prudent alternative to the use of the Section 4(f) property. **Alternative 1**, **Alternative 3**, and the **No-Build Alternative** were evaluated for impacts on the Section 4(f) property. A Programmatic Section 4(f) Net Benefit Evaluation was developed which summarizes the unavoidable impacts to the Rue Beauport Riverfront property as a result of proposed reconstruction of the Cane River Bridge. This document is contained within *Appendix K*.

The proposed project is expected to provide an overall enhancement to the property when compared to the future No-Build Alternative (i.e. no reconstruction of the Cane River Bridge), Avoidance Alternatives, and the present condition of the Section 4(f) Property. A "net benefit" is achieved when measures to minimize harm are incorporated into the project that results in an overall enhancement of the Section 4(f) property when compared to existing conditions or providing for a No-Build Alternative. A project does not achieve a "net benefit" if it will result in a substantial diminishment of the function or value that made the property eligible for Section 4(f) protection.

A letter dated September 12, 2019 was sent to the City of Natchitoches outlining the proposed action, impacts to the Section 4(f) property, the description of alternatives and findings, and details on the mitigation and measures to minimize harm. Mayor Lee Posey, Mayor of the City of Natchitoches, concurred with the net benefit finding on October 8, 2018. The FHWA determined that this project meets the applicability criteria, and that the findings in the programmatic evaluation result in a clear net benefit to the Section 4(f) property. FHWA also determined that the project complies with the Minimization and Mitigation Plan and the coordination and public involvement efforts have been successfully completed. FHWA approved the Section 4(f) findings on October 15, 2019. All coordination efforts with the officials with jurisdiction over the Section 4(f) lands are included within *Appendix K*. The Programmatic Section 4(f) Net Benefit Evaluation document will be released for public review at the same time as this Environmental Assessment, included as *Appendix K*.

The **No-Build Alternative** will have no impact on Section 4(f) Resources.

Alternative 1 and **Alternative 3** will result in a "net benefit" to the Section 4(f) property as described in *Appendix K*.

4.2.5 Section 6(f) Resources

Section 6(f) of the Land and Water Conservation Act (LWCA) requires that unavoidable conversion of lands or facilities acquired or developed with Land and Water Conservation Act funds be replaced in kind or coordinated with the Department of Interior. There are no recreational facilities in the project area acquired or developed with Land and Water Conservation Funds (LWCF).

Correspondence received during the Solicitation of Views comment period from the Department of Culture, Recreation, and Tourism, Office of State Parks indicated, "We have no parks, sites, or other recreational areas located near this project and have no objections or concerns" (*Appendix B*).

The **No-Build Alternative** will have no impacts on Section 6(f) Resources.

No state or federal parks, wildlife refuges, scenic streams, or wildlife management areas were identified within the project limits, thus no impacts to Section 6(f) resources are anticipated to occur for all Build Alternatives.

4.3 The Natural and Physical Environment

Within the natural environment, there are several relevant resources such as wetlands and other surface waters, which are protected by Section 404 of the Clean Water Act. Subsurface waters used for drinking, irrigation, and industry are additional water resources that were considered in the project decision-making process. Floodplains or land areas adjacent to surface waters that are subject to recurring inundation were also analyzed for this EA. Vegetation and wildlife are also relevant resources that were identified and considered. Additional consideration was given to species identified as protected or endangered. These species may be listed for protection by the state or may be classified as threatened or endangered in accordance with the Endangered Species Act. This section discusses impacts to the existing natural and physical environment.

4.3.1 Air Quality

The United States Environmental Protection Agency (USEPA) established criteria for evaluating air quality in accordance with the 1990 Clean Air Act Amendments. The project corridor is located within an airshed that meets air quality standards established by USEPA; however, the NEPA process requires an evaluation of air quality impacts from the proposed project.

The **No-Build Alternative** would have no impact on air quality.

The comparative study, provided in the *Cane River Bridge Church Street Route LA 1-X Noise and Air Quality Assessment Report* located in this document as *Appendix I*, did not indicate that a project like the one proposed for the Cane River Bridge would violate air standards and this study demonstrated that there would be no variation in the effects among the proposed Build Alternatives. There would be no adverse air quality impacts associated with the implementation of the Build Alternatives; therefore, no mitigation measures are proposed with respect to operational activities. All Build Alternatives has the potential to produce temporary, construction related, localized air quality impacts. Mitigation measures can be implemented using Best Management Practices (BMP) as described below.

Construction has the potential to produce short-term, localized air quality impacts. Potential impacts include increased mobile source air toxics emissions from construction equipment and vehicles and temporary impacts due to fugitive dust emissions. Mitigation measures to alleviate temporary impacts from construction include: using fugitive dust control measures such as covering or treating disturbed areas with dust suppression techniques and implementing federal measures that require the use of low emission diesel fuel for non-road diesel construction equipment. Other measures include limiting construction equipment idling and various emission-limiting techniques.

4.3.2 Wild and Scenic Rivers

The Louisiana Natural and Scenic Rivers System established in 1970 is administered by the Louisiana Department of Wildlife and Fisheries (LDWF). Its purpose is to preserve, develop, reclaim, and enhance the wilderness quality, scenic beauty, and ecological regimen of designated free-flowing water bodies.

The **No-Build Alternative** would have no impacts to wild and scenic rivers.

Bayou Kisatchie is listed as a Louisiana Natural and Scenic River under the Scenic Rivers Act, “from its entrance into Kisatchie National Forest to its entrance into Old River.” Bayou Kisatchie is located approximately 12 miles south of the project study area. There are no other designated Wild and Scenic Rivers near the project study area; therefore, the Build Alternatives will have no adverse direct impacts on Bayou Kisatchie or other Scenic Rivers.

Additionally, correspondence during the Solicitation of Views comment period from the LDWF indicated “No state or federal parks, wildlife refuges, wildlife management areas, or scenic streams are known to occur at the specified site within Louisiana’s boundaries” (*Appendix B*).

4.3.3 Surface Water

The proposed study area is within the Red River Basin. The Red River has its origin in eastern New Mexico and flows across Texas, Oklahoma, and Arkansas before it enters Louisiana. In Louisiana, The Red River forms the boundary between Caddo and Bossier Parishes and flows through Red River, Natchitoches, Rapides, and Avoyelles Parish. The river turns southeast to its junction with the Atchafalaya River and this outflow is controlled by the U.S. Army Corps of Engineers (USACE) through the Old River Control Structure. From Arkansas to Alexandria, the Red River is contained within a levee system which ranges from 20 to 30-ft. above the low water level. Below Alexandria, Louisiana, the river flows through a flat alluvial plain, which is subject to backwater flooding during periods of high water. The Red River drains approximately 7,760 square miles within Louisiana.

The drainage areas surrounding the project area consists of businesses, commercial developments, and residential homes. The major drainage outfall for the area is the Cane River Lake. The project area primarily consists of a subsurface drainage system that collects and conveys stormwater through a network of inlets and culverts to an outfall at the Cane River Lake. Pavement runoff from Church Street flows east towards Front Street. There are several inlets located along Church Street that collects the runoff into a series of 18-in. drainage pipes that conveys the stormwater to a 54-in. culvert at Horne Street, which is the river outfall. Pavement runoff from Toulain Street flows east to Front Street, then flows north along the same subsurface system. The inlets and culverts may be impacted during construction. If impacted, the proposed system will be designed in accordance with the *LADOTD Hydraulics Manual* (2011).

Soil erosion is generally the most critical water quality impact resulting from construction activities. The degree of erosion is dependent on factors such as the amount of vegetation and soil removal, slope of the exposed area, and the effectiveness of erosion-control measures. Erosion can lead to deposition of sediment in waterways causing a reduction of the natural flow of the waterway and degradation of water quality.

The **No-Build Alternative** would not affect any surface waters or adjacent soils.

All Build Alternatives will result in impacts to the soils outside of the existing Cane River Bridge during construction. Adverse impacts to water quality will be reduced by application of Best Management Practices (BMP) and adhering to an erosion and sedimentation control plan. Appropriate measures, such as provisions for proper disposal and storage of materials and wastes, will also be taken to avoid accidental spillage of fuels or other chemicals and to control runoff into public drainage systems. National Pollutant Discharge Elimination System (NPDES) guidelines for Phase II construction activities will be followed during construction, and a site-specific Storm Water Pollution Prevention Plan (SWPPP) will be developed

for the project. Any water quality degradation that may occur during construction activities will be localized and short-term.

4.3.4 Subsurface Water

The USEPA defines a sole source aquifer as an underground water source that supplies at least 50% of the drinking water consumed in the area overlying the aquifer. These areas have no alternative drinking water source(s) that could physically, legally, and economically supply all those who depend upon the aquifer for drinking water. There is no sole source aquifer underlying the project corridor.

A review of the Louisiana Department of Natural Resources (DNR) Strategic Online Natural Resources Information System (SONRIS) showed that there are registered water wells adjacent to the project site. Figure 12 shows the locations of registered wells. There may be unregistered water wells near the project.

The **No-Build Alternative** would not adversely affect water quality or sole source aquifers.

The Build Alternatives are not anticipated to affect water quality in the project area. Correspondence from the United States Environmental Protection Agency (USEPA), Sole Source Aquifer (SSA) Program stated, "Based on the information provided, we have concluded that the project does not lie within the boundaries of a designated sole source aquifer and is thus not eligible for review under the SSA program" (*Appendix B*).

Correspondence from the Department of Natural Resources, Office of Conservation stated, "A review of our computer records for the referenced project area indicates that there are no oil, gas or injection wells located in the vicinity of the project area. The DNR water well database indicates that there are no registered water wells near the project area. However, unregistered water wells may be in the area. The Office of Conservation maintains records of all activities within its jurisdiction" (*Appendix B*).

There is minimal potential for adverse effects to the subsurface waters, such as construction methods influencing underground resources, from the proposed project. A stormwater discharge permit may be required by the Louisiana Department of Environmental Quality (LDEQ) for the project and best management practices will be implemented to manage runoff and prevent pollution.

4.3.5 Floodplains

Floodplains are areas of land adjacent to a stream or river which experience flooding during periods of high discharge. Floodplains are protected by Executive Order 11988, Floodplain Management; 23 Code of Federal Regulations (CFR) Part 650, Location and Hydraulic Design of Encroachments on Floodplains; and the US Department of Transportation 5650.2, Floodplain Management and Protection.

The National Flood Insurance Program (NFIP) was adopted by Congress in 1968 to provide flood insurance to owners, renters, and businesses. Communities that participate in the NFIP agree to adopt and enforce ordinances established by the Federal Emergency Management Agency (FEMA) to reduce the risk of flooding. The NFIP regulates development within floodplains for substantial improvements to ensure projects do not present new obstructions to existing drainage patterns. Both the City of Natchitoches and Natchitoches Parish participate in the NFIP.

Flood Zones within the project study area are identified on Figure 13 and the topography of the study area is shown in Figure 14. Flood Zones are geographic areas that FEMA has defined according to varying levels of flood risk. These zones are depicted on a community's FIRM or Flood Hazard Boundary Map. Each zone reflects the severity or type of flooding in the area. Definitions of the FEMA Flood Zone designations found in the project study area are as follows:

- “Flood Zone A” is a high-risk area in which mandatory flood insurance is required with a 1.0% annual change of flooding (100-year or “base flood”) and a 26.0% chance of flooding over the life of a 30-year mortgage. Zone A corresponds to the 100-year floodplains that are determined in the Flood Insurance Study (FIS) by approximate methods. Because detailed analyses are not performed for such areas, no depths or base flood elevations (BFE) are shown within these zones.
- “Flood Zone X (Unshaded)” is an area of minimal flood hazard, usually depicted being above the 500-year flood level (0.2% chance of flooding in any given year).

Findings indicate the project study area is primarily composed of minimal flood hazards such as Flood Zone X with the proposed construction areas primarily composed of high-risk flood areas within Flood Zone A. The Cane River Lake is included in the 100-year floodplain for the entire project limits, and other waterways such as Chaplin Lake and Sibley Lake are included as well. The flood hazard zones shown in Figure 13 illustrate the extent of the flood zones within the project area. The unshaded areas indicate Zones X, which are predominantly located throughout the project area and the areas shaded red indicate Zones A, which are the secondary zones found in the area.

The proposed replacement bridge is located directly within Flood Zone A. Flood Zones designated as “A” are areas subject to inundation by a 100-year storm event generally not having a detailed hydraulic analysis performed to establish a base flood elevation. As such, BFE’s or flood depths are generally based upon historical knowledge or approximating methodologies. Preliminary consultation was made with Mrs. Juanita Fowler, Director of Planning and Zoning and Floodplain Administrator for the City of Natchitoches on January 18, 2019. In the absence of FEMA mapped base flood elevations, the best available support documentation on file are the 100-year frequency flood elevations provided by the Vicksburg District of the USACE at locations south near the Pine Street Bridge of elevation 111-ft. NGVD. Further consultation with the parish’s Floodplain Administrator suggests that this river does not have any continuous flow and is considered to be “still” water. It is recommended, given the existing bridge elevation is above 111-ft. NGVD, that the replacement bridge be at the same elevation as it currently exists.

Figure 13 : FEMA Flood Zones Map

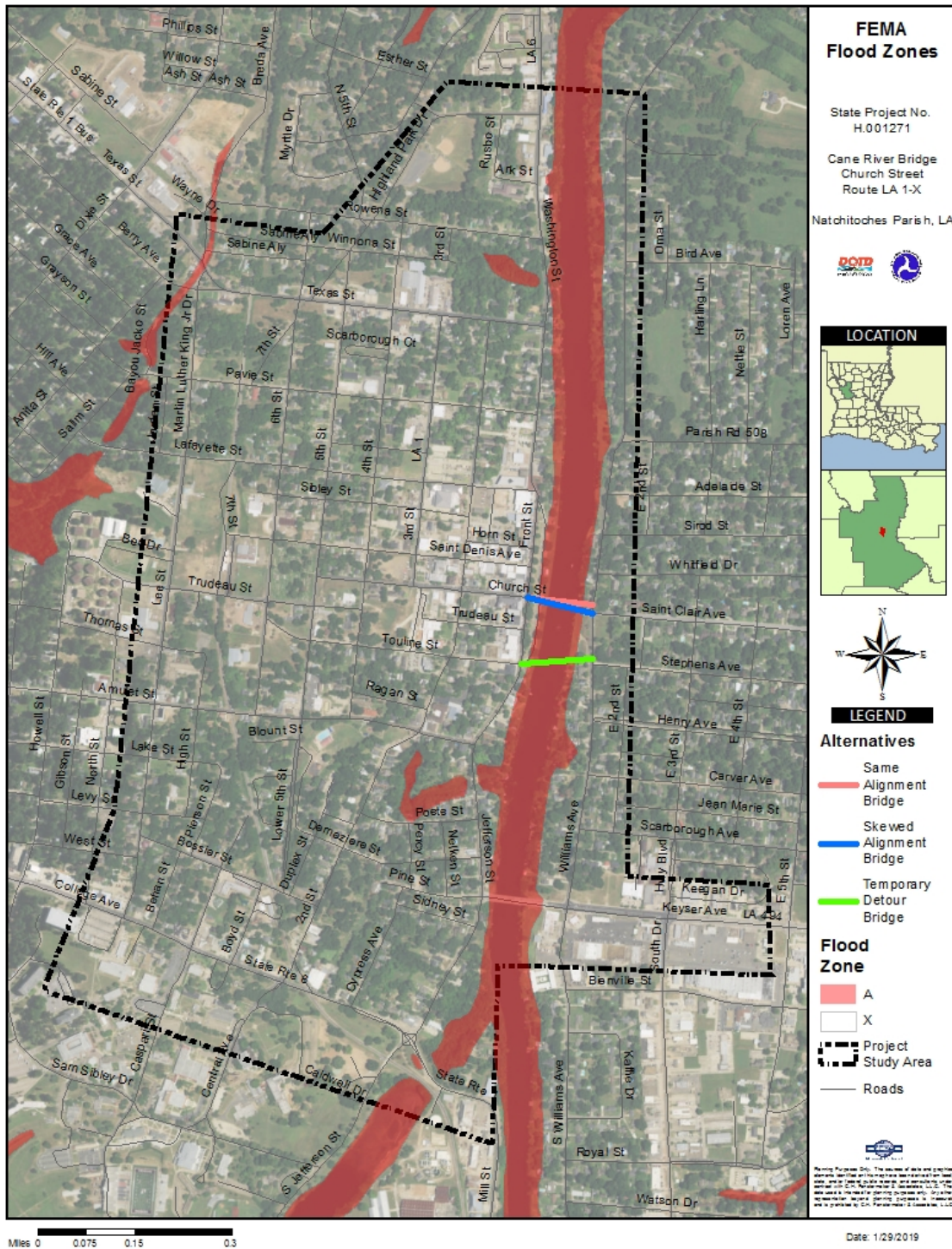
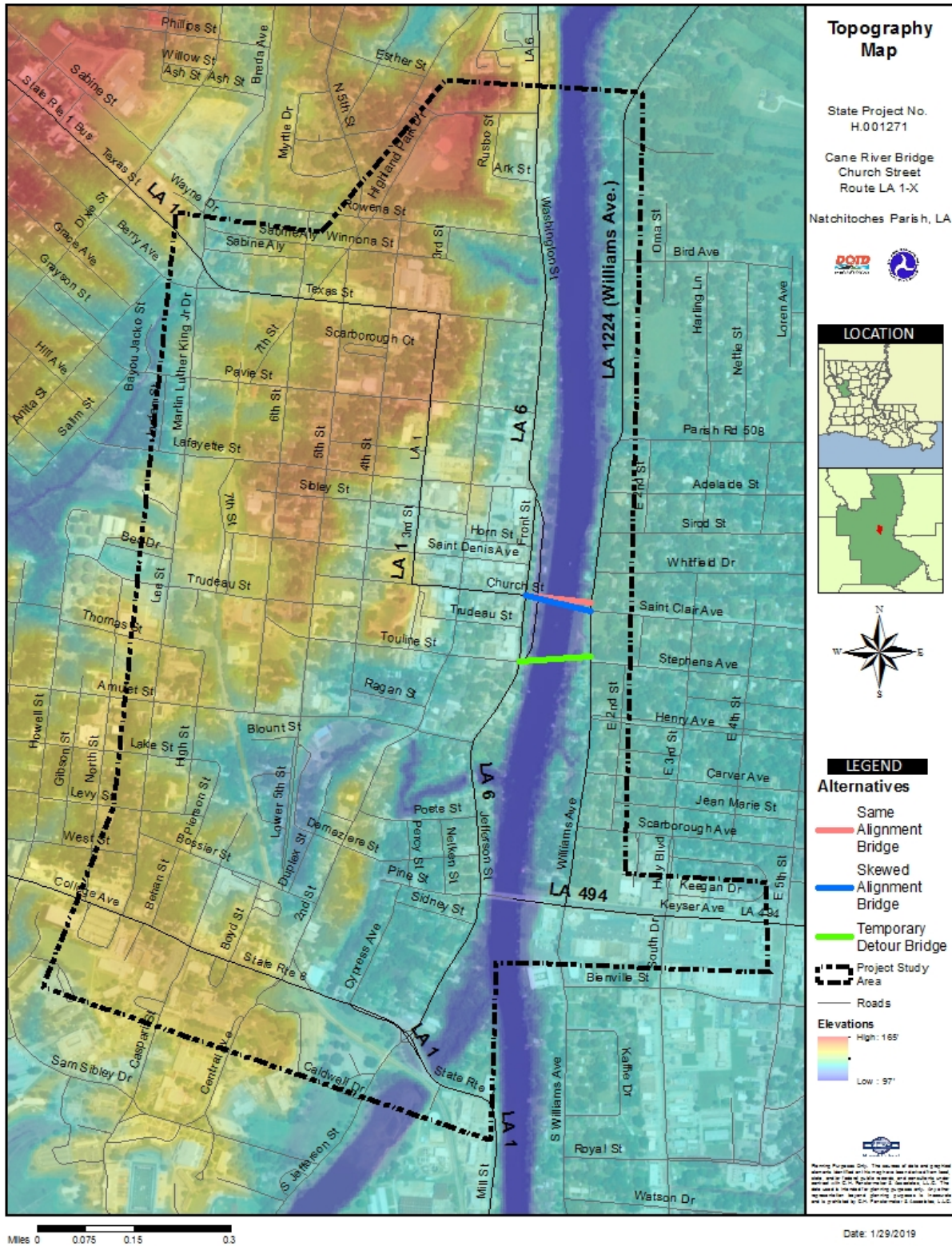


Figure 14: Topography Map



The **No-Build Alternative** will not impact the floodplains in the area, nor will it affect the hydrology or flooding of the project area.

All Build Alternatives include support piers for the new replacement bridge structure within Flood Zone A. The existing Cane River Bridge currently consists of eleven spans containing pile bents, each consisting of six concrete piles. Six pile bents (36 concrete columns total), spaced 40-ft. apart, are currently located within the Cane River Lake. The proposed replacement Cane River Bridge is designed having only three column bents, each containing four columns each (12 concrete columns total), within the waterway. The bridge replacement alternatives are designed with a similar deck elevation as the existing bridge, thus the alternatives are not anticipated to constrain upstream flows or have any negative impacts to floodplains.

Encroachments upon the floodplains are not expected to violate applicable floodplain regulations by adversely impacting the floodplain. The proposed project incorporates appropriately designed bridge structures. The project is anticipated to not impede the flow of flood waters through the floodplain. The bridges would be constructed to provide adequate flow and is not expected to cause backwater flooding or a rise in flood elevations in the floodplain as compared to existing conditions.

For **Alternatives 1 and 2**, the proposed temporary detour bridge support piles will be within Flood Zone A. The temporary bridge alternative is designed to match both the east and west top of bank elevations. There will be minor impacts to the floodplain with this new temporary bridge structure. Future design stages of the project should analyze and quantify these impacts with appropriate reporting to the local floodplain administrator as appropriate. Upon completion of constructing the new permanent Cane River Bridge at Church Street, all structures associated with the temporary detour bridge are to be removed.

The community Flood Insurance Rate Map (FIRM) was examined and the floodplain manager of Natchitoches Parish was contacted to examine the flood risk in the project study area. No adverse comments were received concerning the existing waterways, floodplains, or other water resources.

Correspondence from LADOTD's Floodplain Management Program Coordinator stated, "During the improvements and construction, there must be allowance for the adequate flow of water and assurance that there will be no back up of water. There must be no instance of the creation of flooding where there was no flooding prior to construction. At this time, consideration must be given to the responsibility for cleaning debris and keeping the surrounding area clear so as not to interfere with its function" (*Appendix B*).

Correspondence from FEMA stated, "We would request that the community floodplain administrators be contacted for the review and possible permit requirements for this project. If federally funded, we would request project to be in compliance with EO11988 & EO11990" (*Appendix B*). The Natchitoches Parish Floodplain Administrator and the Natchitoches Parish Engineer offered no objections to the project during the Solicitation of Views comment period, Agency Scoping Meeting, and the Public Meeting comment period.

Correspondence from U.S. Army Corps of Engineers stated, "The Cane River is a navigable waterway and subject to Corps' jurisdiction under Section 10 of the Rivers and Harbors Act. A DA Section 10 permit will be required prior to any work in this waterway. You are advised that you must obtain a permit from the Natchitoches Levee and Drainage District for any work within 1,500-ft. of a federal flood control structure such as a levee. You must apply by letter to the Natchitoches Levee and Drainage District including full-size construction plans, cross sections, and details of the proposed work" (*Appendix B*).

Correspondence from FHWA stated, “We have determined under provisions of Section 144(c) of Title 23 U.S. Code that a USCG permit is not needed for the subject project since the waterway is not used and is not susceptible to use in its natural condition or by reasonable improvements as a means to transport interstate or foreign commerce and is non-tidal, or if tidal is used only by recreational boating, fishing, and other small vessels less than 21-ft. in length” (*Appendix B*).

Correspondence from United States Coast Guard stated, “The Coast Guard accepts your determination that this bridge project meets the criteria for Surface Transportation Assistance Act (STAA) and is exempt from permitting for Coast Guard Bridge Administration purposes. However, this bridge is not exempt from the Coast Guard required lights and other signals, as the subject Act which amended Title 23 U.S. Code, include 23 USC. 144(c), did not exclude this category of bridges from the application of 14 USC 85” (*Appendix B*).

In summary, the floodplain crossings cannot be avoided as there is no practicable Build Alternative that will not impact the floodplains. All Build Alternatives involve construction within flood areas, requiring federal, state, and local permits. The existing bridge and proposed temporary bridge are both located within the floodplain. While the floodplain crossings would occur in an area of existing crossings, detailed flood studies of stream and river crossings would be required as part of the final roadway design. Impacts to floodplains will be minimized through careful design and construction methods. The applicant will be required to coordinate with various agencies, including but not limited to FEMA, the floodplain administrator, USACE, the Natchitoches Levee and Drainage District, USCG, and other entities regarding floodplain permit(s) prior to the start of any activities.

4.3.6 Vegetation

The vegetation within the project corridor is predominantly herbaceous with a few trees. These herbaceous communities can be characterized as maintained grassy areas along the river banks. Herbaceous species such as white clover, St. Augustine grass, and Bermuda grass grow along the river banks. The areas studied also contain trees such as southern magnolias, crepe myrtles, and southern live oak trees. Dominant and sub-dominant species of vegetation associated with the project area can be referenced in the *Wetlands Delineation Report* included in this EA as *Appendix H*.

No impacts to vegetation in the project area are anticipated as a result of the **No-Build Alternative**.

The primary impact on the vegetation communities from the proposed Build Alternatives would be the direct loss of vegetation due to clearing and grubbing operations within the proposed right-of-way. During construction, fugitive dust may accumulate on adjacent vegetation, causing a temporary reduction in photosynthesis and transpiration rates. Soil erosion may result in sedimentation of downstream plant communities and off-site pollution may occur as runoff carries oil and grease from heavy equipment to adjacent plant communities. These potential impacts would be minimized; however, by implementing proper runoff and erosion control measures, dust suppression and control, and removal of accidental spills of fuel or waste oil during construction. As soon as possible after construction is complete, exposed soils should be stabilized by re-vegetation.

Significant Trees

According to LADOTD’s Engineering Directives and Standards Manual Directive (EDSM) I.1.1.21 regarding treatment of significant trees, “...a significant tree is a live oak, red oak, white oak, magnolia or cypress tree that is considered aesthetically important, 18-in. or greater in diameter at breast height (4-ft.-6-in.

above the ground), and having a form that separates it from the surrounding vegetation or is considered historic. A historic tree is a tree that stands at a place where an event of historic significance occurred that had local, regional, or national importance. A tree may also be considered historic if it has taken on a legendary stature to the community; mentioned in literature or documents of historic value; considered unusual due to size, age; or has landmark status. Significant trees must be in good health and not in a declining condition.”

A Cultural Resource investigation was completed for the project, and the results of these investigations are in the full *Cultural Resources Survey Report* which is available under separate cover. As detailed in the report, the live oaks, magnolias, crepe myrtles, and other trees are considered part of the historic landscape and were discussed in the Natchitoches National Register of Historic District (NRHD) nomination. Since the trees are mentioned in literature or documents of historic value, these trees are also considered significant trees through LADOTD standards.

During the environmental process, many coordination efforts were completed to determine the impacts to the significant trees. Field investigations were performed by EarthSearch, Inc. (ESI) in October of 2017 during the cultural resource surveys. During the wetland delineation, performed in April of 2018, the terrain and vegetation was analyzed. A site visit performed in November of 2018 indicated two southern magnolia trees located on the west end of the existing bridge, which measure approximately 2-ft. in diameter. A site visit performed in January of 2019 confirmed the tree species on the east bank of the Cane River Lake. Coordination efforts with LADOTD’s Environmental Section and Landscape Architects confirmed the magnolia trees to be considered significant trees per LADOTD Standards.

A survey was taken of the trees along the proposed routes. Some of the trees to be removed in the proposed required right-of-way did not fit the species criteria for significant trees; these included crepe myrtles, live oaks, and sweet bay magnolia trees. However, the survey and coordination efforts revealed that nine magnolia trees meet the criteria of significant. The trees are located both on the western and eastern banks of the Cane River Lake. A list of these trees with location is provided below, from north to south, along with a further description of each related to its qualification for being significant; the locations of the trees are displayed in Figure 15.

West Bank

There are four southern magnolia trees located near the west bank of the existing Cane River Bridge; two are located to the north of the bridge and two are to the south of the bridge. The southern magnolia tree located immediately north of the existing bridge on the west end, measuring approximately 2-ft. in diameter, is offset approximately 5-ft. from the existing back of curb. The southern magnolia tree located immediately south of the existing bridge, measuring approximately 2-ft. in diameter, is offset approximately 6-ft. from the existing back of curb. Both trees are situated such that the roots are being impeded by the bridge structure. Both trees fit the definition of significant trees for its species and size, as well as being considered part of the historic landscape.

There are two newly planted sweet bay magnolia trees and one newly planted southern live oak located on the west end of the riverbank, within the Rue Beauport Riverfront near the proposed temporary detour bridge. These trees do not fit the definition of significant trees.

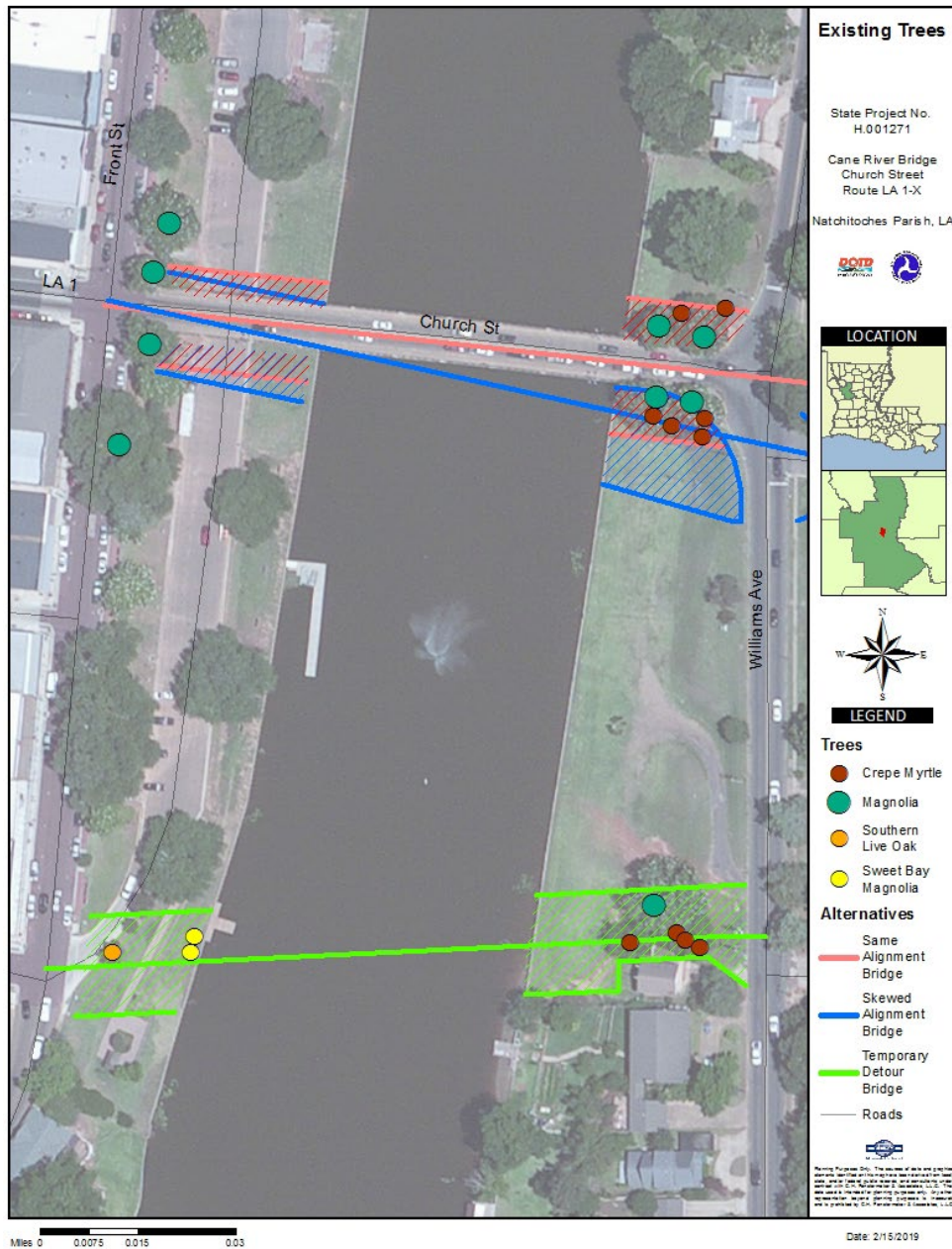
East Bank

Two southern magnolia trees and two crepe myrtle trees are located to the north of the existing Cane River Bridge. Two southern magnolia trees and four crepe myrtle trees are located south of the existing

bridge on the east end. The magnolia trees fit the definition of significant trees for their species and size, as well as being considered part of the historic landscape; however, the crepe myrtles do not, but are considered part of the historic landscape.

One southern magnolia tree and four crepe myrtle trees are located on the eastern banks of the Cane River Lake at the site of the proposed temporary bridge near the sewer lift station. The magnolia tree fits the definition of significant trees for their species and size, as well as being considered part of the historic landscape; however, the crepe myrtles do not.

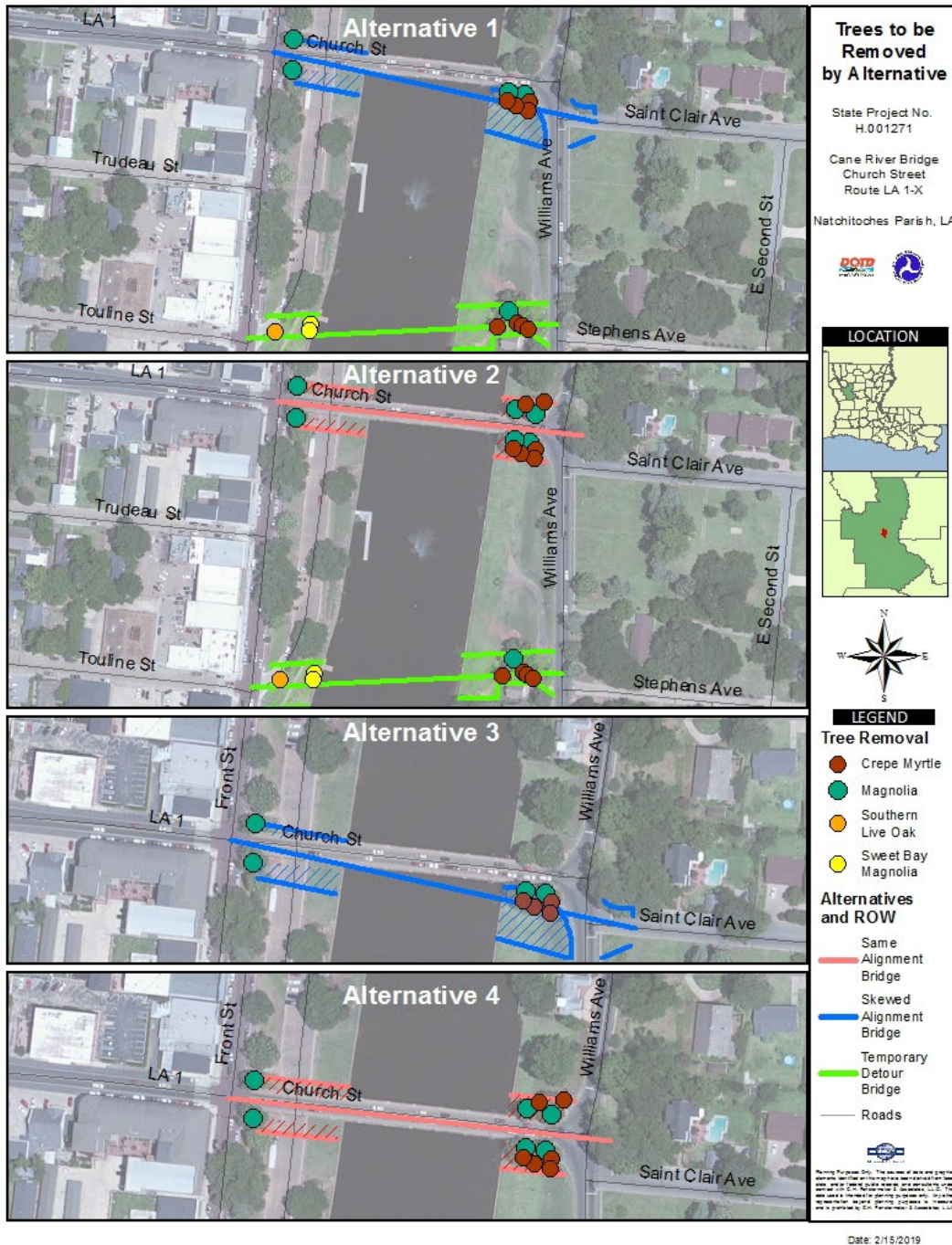
Figure 15: Existing Trees



The **No-Build Alternative** will have no impacts to existing trees in the project area.

Avoidance was considered for the removal of the trees; however, due to the proposed widening of the existing bridge and the alternatives which propose a temporary bridge, these trees cannot be avoided. The following paragraphs detail the anticipated impacts to the existing trees for each alternative. Figure 16 displays the tree removal, by species, for each alternative

Figure 16: Trees to be Removed for Each Alternative



Alternative 1 will require the removal of the two magnolia trees on the west bridge end of the existing Cane River Bridge and two magnolia trees and four crepe myrtle trees on the east end of the bridge. The trees located on the eastern end of the bridge to the north will be avoided with the proposed skewed alignment. In addition, at the proposed temporary detour bridge site, two small sweet bay magnolia trees and one small southern live oak will be removed on the western side of the temporary bridge near Toulaine Street and five trees, including one magnolia tree and four crepe myrtle trees will be removed on the eastern side near Stephens Avenue. **Alternative 1** will require the removal of 16 total trees, including five magnolia trees, eight crepe myrtle trees, two sweet bay magnolia trees, and one live oak tree.

Alternative 2 will require the removal of the two magnolia trees on the west bridge end of the existing Cane River Bridge and four magnolia trees and six crepe myrtle trees on the eastern bank. In addition, at the proposed temporary detour bridge site, two small sweet bay magnolia trees and one small southern live oak will be removed on the western side of the temporary bridge near Toulaine Street and five trees, including one magnolia tree and four crepe myrtle trees will be removed on the eastern side near Stephens Avenue. **Alternative 2** will require the removal of 20 total trees, including seven magnolia trees, ten crepe myrtle trees, two sweet bay magnolia trees, and one live oak tree.

Alternative 3 will require the removal of the two magnolia trees on the west bridge end of the existing Cane River Bridge and two magnolia trees and four crepe myrtle trees on the east end of the bridge. The trees located to the north of the bridge on the eastern end will be avoided with the proposed skewed alignment. **Alternative 3** will require the removal of eight total trees, including four magnolia trees and four crepe myrtle trees.

Alternative 4 will require the removal of the two magnolia trees on the west bridge end of the existing Cane River Bridge, and four magnolia trees and six crepe myrtle trees on the eastern bridge end. **Alternative 4** will require the removal of 12 total trees, including six magnolia trees, and six crepe myrtle trees.

All trees to be removed surrounding the replacement bridge and the temporary detour bridge will be removed during construction. Most of the existing trees are too large or too old to be removed, saved, and re-planted, thus new trees are proposed to be replanted. Mitigation measures for the removal of significant trees may take the form of replacing/replanting trees of the same species in the same general location. The replacement magnolia trees are recommended to be a minimum of 2-in. in caliper, and 8-ft. to 10-ft. tall or larger, if available. Coordination between LADOTD and The City of Natchitoches will be necessary to negotiate an agreement and obtain a permit to replant trees within LADOTD right-of-way if the city chooses to replant the trees; however, the installation could be included in the contractor if the city opts not to replant themselves. Areas that would be temporarily disturbed would be vegetated and landscaped consistent with the surrounding landscape.

As outlined in the LADOTD *EDSM; Treatment of Significant Trees in DOTD ROW Policy*, the engineering design team is to indicate significant trees on the construction plans and, if practical, the engineer is to ensure that the contractors' operations protect these trees. Prior to construction authorization, a professional arborist licensed in the State of Louisiana will be retained by the LADOTD District or the LADOTD contractor to ensure protection of the significant trees. The policy further states that any issues arising during construction will be managed by the District Roadside Coordinator.

Significant trees outside the required ROW, but with overhanging branches within the required ROW lower than 16-ft., will be trimmed by a professional arborist licensed in the State of Louisiana. When

cutting, trimming, or removing a large tree or a group of trees located within or adjacent to the required ROW, the stakeholders and local government will be informed regarding those actions. Care should be taken to avoid damage to significant trees near the proposed construction that are not to be removed. The contractor will be required to install tree protection fencing, per LADOTD special detail LD-02, which is recommended to be a part of the engineering and construction plans so that damage during construction of the proposed alternative is avoided. The protected trees shall be identified in the plan and profile sheets.

The location of the bridge and its required clearance would result in the removal of several trees that contribute to the historic district and are considered significant; therefore, this action would be considered an adverse effect. However, the overall impact will be minor because the trees would be replaced consistent with the species lost and within the same general vicinity of its original location. Table 6 summarizes and compares the tree impacts for each alternative.

Table 6: Impacts to Trees

Impacted Tree Species	No-Build	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Southern Magnolia	0	5	7	4	6
Crepe Myrtle	0	8	10	4	6
Southern Live Oak	0	1	1	0	0
Sweet Bay Magnolia	0	2	2	0	0
TOTAL	0	16	20	8	12

4.3.7 Wetlands and Other Waters

Section 404 of the Clean Water Act requires that anyone proposing to deposit dredged or fill material into waters of the United States, including wetlands, must receive authorization for such activities. The United States Army Corps of Engineers (USACE) has been assigned the responsibility for administering the Section 404 permitting process and makes the determination of whether wetlands fall under their jurisdiction.

An assessment of jurisdictional waters of the United States that occur within the project corridor was performed by the study team for all four Build Alternatives using United States Geological Survey (USGS) topographic maps, National Wetland Inventory (NWI) maps, and parish soil survey maps, and then were further refined during a field visit. A field investigation was conducted for all Build Alternatives. A wetland delineation was conducted on April 12, 2018 and an additional site visit was made on June 27, 2018. The additional site visit was conducted to determine the presence of the northern long-eared bat (*Myotis septentrionalis*) following online research of the United States Fish and Wildlife Service (USFWS) for potential threatened and endangered species.

Fenstermaker personnel inspected and made observations along the project corridor. Four sample locations were chosen to characterize conditions within this area. All wetlands located during the field visit were delineated using the three parameters (dominant vegetation, soil characteristics, and hydrology) and methods described within the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region* (2010) and the *Corps of Engineers Wetland Delineation Manual* (1987). The wetland delineation discovered that none of the four sampled plots met the technical criteria of a wetland. As a result, no wetlands were identified within the ROW for the four alternatives; however, all alternatives cross the Cane River Lake, which is listed as a navigable waterway by the Vicksburg District of the USACE. The detailed results of these investigations can be found in the full Wetlands and Threatened Endangered Species Report which is located as *Appendix H* within this EA.

Correspondence from USACE stated, "Information and signatures obtained from recent maps, aerial photography, information provided with your request, and local soil surveys concerning this site are indicative of the occurrence of waters of the United States, including wetlands. Department of the Army (DA) permits are required prior to the deposition or redistribution of dredged or fill material into jurisdictional wetlands or waters. If an approved delineation is needed, please furnish us with the detailed field data concerning vegetation, soils, and hydrology that we require for all jurisdictional decisions. The fact that a field wetland delineation/determination has not been completed does not alleviate your responsibility to obtain the proper DA permits prior to working in jurisdictional wetlands or waters occurring on this property. Additionally, the Cane River is a navigable waterway and subject to Corps' jurisdiction under Section 10 of the Rivers and Harbors Act. A DA Section 10 permit will be required prior to any work in this waterway. You are advised that you must obtain a permit from the Natchitoches Levee and Drainage District for any work within 1,500-ft. of a federal flood control structure such as a levee. You must apply by letter to the Natchitoches Levee and Drainage District including full-size construction plans, cross sections, and details of the proposed work." (*Appendix B*).

Correspondence from FHWA stated, "We have determined under provisions of Section 144(c) of Title 23 U.S. Code that a USCG permit is not needed for the subject project since the waterway is not used and is not susceptible to use in its natural condition or by reasonable improvements as a means to transport interstate or foreign commerce and is non-tidal, or if tidal is used only by recreational boating, fishing, and other small vessels less than 21-ft. in length" (*Appendix B*).

The **No-Build Alternative** would not impact potential wetlands or other waters because there would be no acquisition of additional ROW nor clearing for construction of bridge infrastructure.

Construction of all Build Alternatives is not anticipated to adversely affect potential wetlands as there were no wetlands documented in the field delineation. A jurisdictional wetland determination can only be made by the USACE. It is the opinion of this EA that a Department of the Army Permit will be required prior to any construction activities that occur within the banks of the river. These construction activities include, but are not limited to, the deposition of fill material, dredging, or installation or replacement of structures. Consultants can perform field delineations, collect data in a prescribed manner, and submit it to the USACE along with recommendations; however, it is the USACE that makes the final determination.

All Build Alternatives cross the Cane River Lake, which is listed as a navigable waterway by the Vicksburg District of the U.S. Army Corps of Engineers. Navigable waterways are jurisdictional under Section 10 of the Rivers and Harbor Act. Impacts to these resources were calculated using geographic information system (GIS) technology to view the footprint of the Build Alternatives being considered and to compare the potential impacts. The potential impacts to waterways from the proposed project are minor. The potential direct impacts to the jurisdictional riparian waterways from the Build Alternatives range between 0.53 and 1.05 acres. Table 7 identifies the jurisdictional waters and the acreage located within the ROW for the four Build Alternatives.

Table 7: Potential Impacts to Waters of the U.S.

Alternative	Impacts to Waters of the U.S. (Acres)		
	Permanent Impacts	Temporary Impacts	Total Impacts
Alternative 1	0.55	0.50	1.05
Alternative 2	0.53	0.50	1.03
Alternative 3	0.55	0	0.55
Alternative 4	0.53	0	0.53
No-Build Alternative	0	0	0

4.3.8 Wildlife and Protected Species

Section 7 of the Endangered Species Act of 1973 requires federal agency actions (e.g., project approvals, funding, other actions) to be implemented so that species listed as protected are not jeopardized in terms of their existence or habitat. The United States Fish and Wildlife Service (USFWS) is charged with implementing this law and maintaining a list of protected plants and animals and their protection status. The Louisiana Natural Heritage Program (LNHP) maintains sighting records of federally protected species and species of state concern.

Online research was conducted at the *USFWS Louisiana Endangered Species Act Project Review and Guidance for Other Federal Trust Resources* (2017) website. The application is designed to streamline the review of projects for potential effects to federally-listed threatened and endangered species and their critical habitats.

The results of the research indicate that Natchitoches Parish provides habitat for endangered and threatened species. The threatened and endangered species known to exist in Natchitoches Parish are the red-cockaded woodpecker (*Picoides borealis*), the northern long-eared bat (*Myotis septentrionalis*), and the interior least tern (*Sterna antillarum*). The habitat near the project area is not conducive for the red-cockaded woodpecker or the interior least tern. The northern long-eared bat can roost under bridges; therefore, a site visit was performed on June 27, 2018 to determine the presence of this species. The northern long-eared bat was not detected under or near the bridge or within the project corridor. No state or federal parks, wildlife refuges, scenic streams, or wildlife management areas are known at the specified project site.

Additionally, correspondence from USFWS during the Solicitation of Views process stated, "This project has been reviewed for effects to federal trust resources under our jurisdiction and currently protected by the Endangered Species Act of 1973 (Act). The project, as proposed, will have no effect on those resources." Correspondence from the Louisiana Wildlife and Fisheries, Office of Wildlife stated, "After careful review of our database, no impacts to rare, threatened, or endangered species or critical habitats are anticipated for the proposed project. No state or federal parks, wildlife refuges, wildlife management areas, or scenic streams are known to occur at the specified site within Louisiana's boundaries" (*Appendix B*). During the wetland field survey, the presence of threatened or endangered species or their habitat was not detected within the project corridor.

The **No-Build Alternative** will have no impact to threatened and endangered species or critical habitats.

For all Build Alternatives, animals that occupy the ROW will be temporarily displaced during construction; however, sufficient habitat exists adjacent to the ROW to absorb any displaced wildlife. No threatened

or endangered species will be impacted by this action. In the event species of concern are encountered in the project area, further consultation with the USFWS will be necessary.

4.3.9 Farmland

The Farmland Protection Policy Act of 1981 (FPPA) requires federal agencies to minimize adverse effects of federal actions related to irreversible conversion of farmland to nonagricultural uses. Farmlands of concern include prime farmland, unique farmland, and land of statewide or local importance. Prime farmland is one of several types of important farmland defined by the United States Department of Agriculture (USDA).

The construction areas in the project study corridor have been designated as within urban areas by the National Resources Conservation Service (NRCS) and are therefore exempt from the rules and regulations of the FPPA.

The **No-Build Alternative** will have no impacts to farmlands.

The Build Alternatives will have no impacts to farmlands, as the project area is designated as urban areas. Correspondence from USDA Natural Resources Conservation Service stated, “The project map and narrative submitted with your request indicates that the proposed construction area is in an urban area and therefore is exempt from the rules and regulations of the Farmland Protection Policy Act (FPPA)—Subtitle I of Title XV, Section 1539-1549. Furthermore, we do not predict impacts to NRCS work in the vicinity” (*Appendix B*).

4.3.10 Coastal Resources and Essential Fish Habitat

The Coastal Zone Management Act (CZMA) of 1972 authorizes the Coastal Zone Management Program, a federal-state partnership dedicated to comprehensive management of the nation’s coastal resources. The Louisiana Department of Natural Resources (DNR) is charged with the development of local coastal zone management programs in the coastal parishes. Natchitoches Parish is not considered a coastal parish and therefore does not have a coastal management program.

The Magnuson-Stevens Fishery Conservation Act (MSFCA) (50 CFR 600) states essential fish habitat (EFH) is “those waters and substrate necessary for fish for spawning, breeding, or growth to maturity.” The amendments to the MSFCA set forth a mandate for the National Marine Fisheries Service (NMFS), regional Fishery Management Councils, and other federal agencies to identify and protect EFH of economically important marine and estuarine fish. A review of the National Oceanic and Atmospheric Administration (NOAA) NMFS data identified no EFH in the project area (NOAA, 2018).

The **No-Build Alternative** will have no impacts to coastal resources and essential fish habitat.

All Build Alternatives will have no impacts to coastal resources and essential fish habitat, as the area is not located within a coastal parish and contains no essential fish habitat.

4.3.11 Noise

A Noise Impact Analysis, included as *Appendix I*, was performed to establish the magnitude of the potential impact on the ambient levels from existing and future noise for all four Build Alternatives.

A total of eight Traffic Noise Models (TNM) were used to determine the sound levels at each of the 67 receivers, including an AM and PM value for the following conditions:

- 2017 Existing Conditions
- 2038 No-Build Alternative
- 2038 Build Alternative on Existing Alignment
- 2038 Build Alternative on Skewed Alignment

The 2038 No-Build conditions resulted in a sound level noise impact to 35 of the 67 receivers modeled, with all but eight receivers representing residential (category B) receptors. All impacts were sound level impacts that resulted from the predicted noise reaching the NAC of 66 dBA for category B and 71 dBA for category C. The same 67 receivers were modeled for the two 2038 Build Alternative conditions and the same 35 sound level impacts occurred. Both the Build Alternatives and the No-Build Alternative will have some impacts on receptors.

The temporary detour bridge route was also analyzed. A total of two TNM models were used to determine the sound levels at the 20 Touline Street receptors, including an AM and PM value for the 2017 existing conditions and the 2018 construction conditions. Of the 20 receivers at Touline Street, nine experienced noise impacts during the Construction Year 2018.

The 2011 LADOTD *Highway Traffic Noise Policy* requires that if a noise impact is identified, abatement measures must be considered and evaluated for all impacted receivers identified in the noise impact analysis. Noise abatement should be considered primarily to exterior areas where frequent human use occurs. In determining and abating traffic noise impacts, two tests must be met to justify noise abatement measures: feasibility and reasonableness. The abatement measures were evaluated using FHWA's guidelines as promulgated by Title 23 CFR Part 772 and guidelines from LADOTD's *Highway Traffic Noise Policy*.

Noise abatement measures were evaluated for the 35 impacted receptors for the 2038 Build Alternatives. Of the 35 impacted receptors, 34 are located near the signalized intersection of Church Street/Front Street. Various abatement measures including traffic management, alteration of alignments, acquisition of property rights, noise insulation, and noise barriers were studied. Traffic management measures such as "No Engine Brake" signs could be beneficial; however, modified speed limits proved ineffective in abating the impact to the receptors in the build models.

Noise barriers were also considered for all impacted receptors and a noise barrier analysis was conducted. For a noise barrier to be considered acoustically feasible, 75.0% of the first row of impacted receptors adjacent to the barrier must achieve at least a 5-dBA reduction in highway traffic noise. If a barrier cannot meet this criterion, abatement is considered to not be acoustically feasible. Additionally, the noise barrier should be feasible from an engineering perspective. Engineering feasibility considers topography, drainage, safety, barrier height, utilities, and access and maintenance needs (which may include right-of-way considerations). If a barrier poses engineering problems, it may be judged as not feasible even if it meets the acoustical feasibility criterion, and it will not be recommended for construction. Other feasibility factors that are considered are safety, barrier height, topography, drainage, utilities, maintenance of the abatement measure, and access to adjacent properties. None of the studied barriers met the feasibility and reasonableness criteria for the replacement bridge Build Alternatives, and no noise abatement measures were considered for the temporary detour bridge impacted receivers.

It is important to note that during Stage 1 Planning/Environmental, the noise analysis identifies noise abatement measures that are likely to be incorporated into the project's design. The final determination of any proposed noise abatement measure(s) will be made during the design stage. If during design, conditions substantially change that impact the implementation of proposed barriers, the reasonableness will need to be reevaluated. Only barriers determined to be both reasonable and feasible will be incorporated into the project and constructed. Detailed information on the noise study results are in the *Traffic Noise Analysis Report*, included as *Appendix I*.

For the 2038 **No-Build Alternative**, the growth in traffic volumes will cause sound level noise impacts to 35 of the 67 receivers modeled. Similarly, the same receivers will be impacted for the Build Alternatives.

For the Build Alternatives, receptors within the vicinity of the proposed reconstruction of the Cane River Bridge at Church Street and the temporary detour bridge are likely to experience temporary increases in noise related to construction activities. Any other noise-sensitive land uses that are located farther from the project area would likely experience insignificant increases in noise levels because of the background noise of traffic on other roads and other community noise sources. The construction noise would be generated primarily from heavy equipment used in construction. It is difficult to predict levels of construction noise at a particular receptor or group of receptors since heavy machinery is constantly moving in unpredictable patterns. There are no anticipated disruptions of normal activities; however, the project plans and specifications will include provisions requiring the contractor to make every reasonable effort to minimize construction noise through noise abatement measures, such as ensuring all construction equipment is properly muffled and all motor panels are shut during operation. The construction contractor has the responsibility for protection of the public in all aspects of construction throughout the life of the project. The city, parish, or LADOTD contractors and developers is recommended to comply with local construction noise ordinances, and all construction equipment will be required to comply with Occupational Safety and Health Administration (OSHA) regulations.

Noise barriers were considered to all impacted receptors and a noise barrier analysis was conducted. None of the barriers met the feasibility and reasonableness criteria. Non-barrier measures such as traffic management, modified speed limits, alterations of horizontal and/or vertical alignments are not feasible for this project, however traffic management measures such as "No Engine Brake" signs could be beneficial.

4.4 Cultural Resources

Historical properties and archaeological sites are physical resources that also represent cultural values and human history. Special consideration must be given to the effects of the proposed project upon any district, site, building, structure, or object that is included or eligible for inclusion in the National Register of Historic Places (NRHP) as required by Section 106 of Public Law 89-665; 80 Stat. 915; 16 USC 470 as amended, also known as the National Historic Preservation Act (NHPA). These properties are also afforded protection under Section 4(f) of the USDOT Act of 1966. To meet the requirements of these acts, a Phase I Cultural Resources Survey for the proposed project corridor was conducted from November 2017 to August 2018 by Earth Search, Inc. (ESI). The investigation was performed in accordance with guidelines provided by the Louisiana Division of Archaeology and the Louisiana Office of Historic Preservation within an Area of Potential Effect (APE), which coincides with the project corridor. The results of these investigations can be found in the full *Cultural Resources Survey* supplemental report which is available under separate cover.

Bridge History

In 1890, an act was approved by the United States Congress authorizing the Natchitoches Cane River Bridge Company to construct and maintain a wagon bridge across the Cane River Lake within the city limits of Natchitoches. The company was also given the authority to impose tolls on traffic across the bridge. The act stipulated the bridge would be a postal route of the United States, which would have the right-of-way across to install a postal telegraph. Prior to construction, the bridge company was to submit to the Secretary of War a design and drawings of the bridge and all relevant information concerning impacts upon navigation on the Cane River Lake. The act declared a three-year limit for the completion of the bridge from the time of the act's passage. The act was amended by Congress in 1893 and the Secretary of War approved plans for the first wagon bridge at Natchitoches (United States, 1891). The Cane River Bridge was completed in 1894 at a cost of \$15,500 and measured 16-ft. wide and 480-ft. long.

In April 1931, almost fifty years after the first bridge was built in 1894, a hearing was convened in Natchitoches to consider a new bridge across the Cane River Lake. The Louisiana Highway Commission issued a contract in July and construction began in October 1931. By September 1933, the present concrete tee-beam bridge had replaced the original nineteenth-century steel wagon bridge at the same location across the Cane River Lake at Church Street.

Historic District

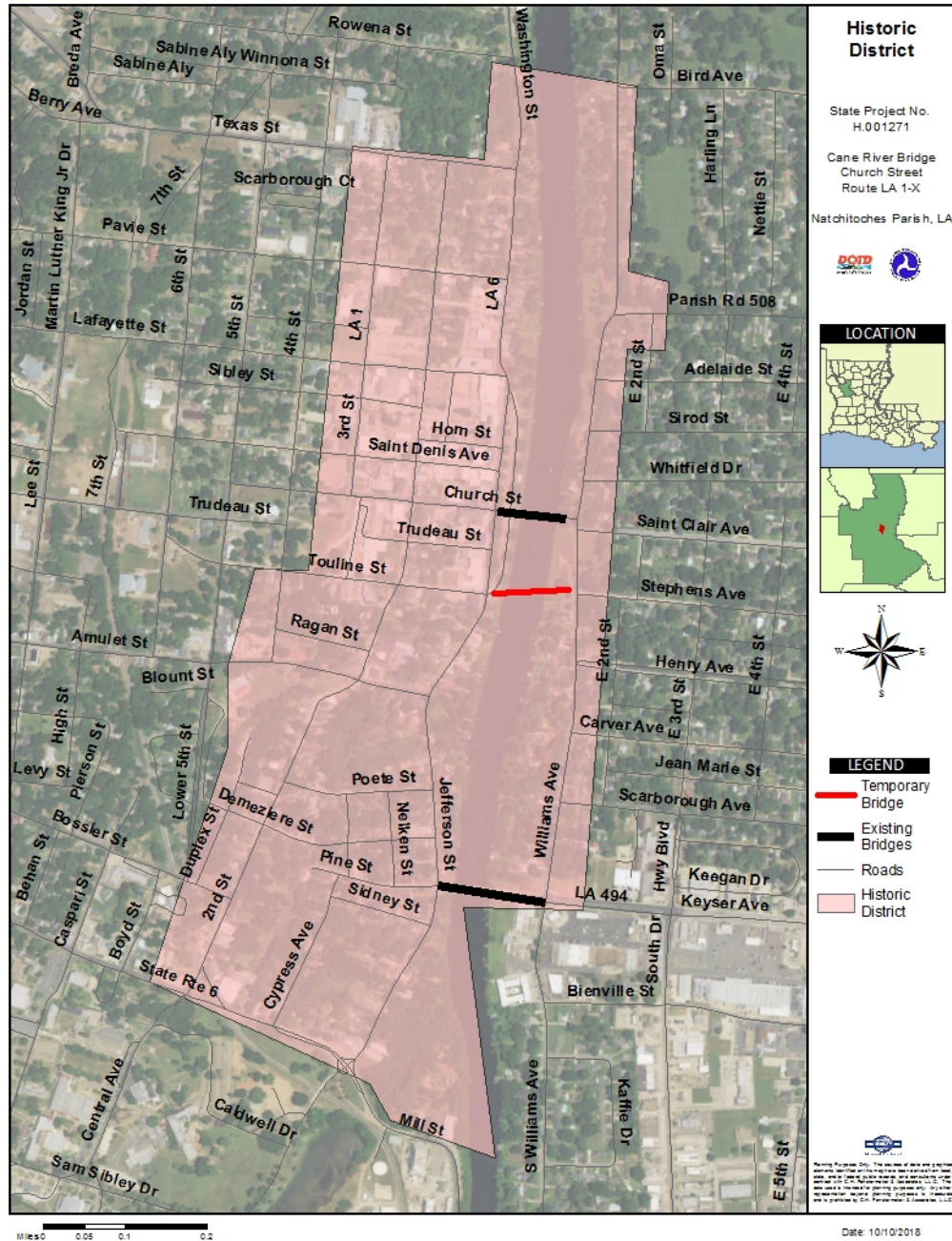
The NRHP District was placed on the National Register in 1974 and expanded in 1980 for its significance in the areas of historic architecture, art, commerce, military, politics, and transportation. The Natchitoches National Historic Landmark District was designated as a National Historic Landmark (NHL) property in 1984 for the same reasons. The NRHP District is listed under Criterion C as established under the National Historic Preservation Act of 1966. Criterion C states that a property must have "the distinctive characteristics of a type, period, or method of construction, or (represents) the work of a master, or (possesses) high artistic values or (represents) a significant and distinguishable entity whose component may lack individual distinction." Therefore, it is worth noting that although the building materials, construction methods, historic integrity, and character of each individual building was deemed valuable, the relationship between the building, the variety of building, and how they symbolize the town's development is an overarching theme. Additionally, the nomination emphasizes the importance of the historic landscape and setting on the banks of the Cane River Lake, and the "narrow, crooked streets, old trees dotting the landscape, foliage such as crepe myrtles and oaks" are all referenced in the nomination as adding historic character and being significant in creating the historic setting of the district (National Register, 1977).

Figure 17 indicates the boundaries of the Natchitoches Historic District. The Natchitoches Historic District's northern most point is between Texas Street and Rowena Street. The western boundary runs south to Texas Street near the intersection with Washington Street, then turns west along Texas Street. The boundary turns south between Third and Fourth Streets and continues to Touline Street, where it extends west slightly and then south to Amulet Street. The boundary continues southwest to a point in between Boyd Street and Second Street along LA 6, then turns southeast, which forms the southern boundary until a point in the Cane River Lake. The eastern boundary runs north to a point on the Pine Street Bridge within the Cane River Lake, extends east along Keyser Avenue to a point that aligns with East Second Street. The eastern boundary continues north along East Second Street to Bird Avenue. A line from this point running west to the intersection of Washington Street between Rowena Street and Texas Street forms the northern boundary of the Historic District.

Cultural Resource Investigations

Prior to commencement of field work, a comprehensive literature search and records review regarding the project area was performed. Background research included examination of records on file at the Divisions of Archaeology and Historic Preservation with the Louisiana Department of Culture, Recreation and Tourism. Cultural resource reports, site files, and National Register of Historic Places were reviewed, and geomorphological data, maps, and aerial images were examined. The following sections detail the archaeological investigations and architectural surveys that were completed for the project.

Figure 17: Natchitoches Historic District Boundaries



4.4.1 Archaeological Resources

The archaeological field investigations studied the footprint of all alternatives, within the direct Area of Potential Effects (APE) as well as in the indirect area, which included a 98.4-ft. buffer to provide adequate coverage for construction and equipment (Figure 18). Systematic shovel testing was attempted within the direct APE; however, the high degree of disturbances greatly hindered the tests. Positive shovel tests were treated as potential sites, and each previously recorded site was revisited, and shovel tested.

Three previously recorded sites were identified on the western side of the Cane River Lake near the same and skewed alignment alternatives; however, these sites were all inaccessible as they are covered by urban areas (i.e., parking lots, buildings, sidewalks, local streets, and highways). Four initial shovel tests and one previously recorded shovel test were excavated on the eastern side of the same and skewed alignment alternatives. One previously recorded site was identified, and it was determined that the proposed project will have no effect on the site. Additionally, one new archaeological site was identified. Six shovel tests were performed at this location, and two delineation tests were positive. This location yielded three sherds of colorless glass, the base of an aquamarine bottle, one sherd from a plate, a buff-paste stoneware sherd, and an electrical fuse. The sandy loam nature of the soils at the site and the inclusion of gravel suggest that they are associated with fill episodes and roadway construction. There is no evidence of intact cultural features within the tested portion of the site.

Shovel tests were not performed near the temporary bridge alternative on the west side due to the presence of commercial buildings, streets, and parking lots; however, one previously recorded site was identified. The previously recorded site is inaccessible, as it is located under the historical brick pavement. Based upon the previous work at the site, ESI considers it very unlikely that construction of a temporary bridge will have any effect on the site. Five shovel tests were conducted in one area located on the eastern portion of the temporary bridge alternative, near Stephens Avenue. Additionally, two previously recorded sites were analyzed, and it was determined that the construction of a temporary bridge and associated roadway updates will have no effect on the site.

The **No-Build Alternative** will have no impact on the archaeological resources within the project area.

In summary, the archaeological investigations analyzed seven total previously recorded sites within the project area, in which four of those sites are covered by urban areas. Shovel tests were conducted on all three accessible previously recorded sites, and it was determined that the Build Alternatives will have no effect on these sites. One new site was identified, and a shovel test was conducted, and it was determined that there was no evidence of intact cultural features. Consequently, all Build Alternatives will have no impact on the archaeological resources within the project area.

4.4.2 Architectural Resources

Identification and assessment of potential cultural resources were conducted for the APE and included all areas that could include cultural resources and be directly or indirectly impacted by the proposed project. The architectural survey area encompassed a 0.125-mile corridor consisting of the direct APE and an area extending 250-ft. from the edges of the direct APE (Figure 19). This is the typical indirect APE that ESI utilizes for architectural surveys to provide adequate distance to address direct and indirect impacts. Through consultation with the State Historic Preservation Office (SHPO), it was requested that any previously recorded structures be updated; therefore, any structures that had been previously recorded were re-recorded and re-evaluated using the NRHP criteria to determine potential eligibility for inclusion to the NRHD. Structures were also evaluated to determine the potential for adverse effects and to update the existing SHPO records. Any structures that were deemed appropriate for recordation but had not been previously recorded were also recorded and evaluated.

During the survey, 27 structures were recorded in the direct and indirect APE. All recorded structures are shown in Figure 19 and listed in Table 8 with the approximate distance from the direct APE noted for historic properties. A total of 20 of the 27 structures are considered contributing elements, and seven are non-contributing.

Table 8: Standing Structures Recorded in the Direct and Indirect APE

State ID #	Historic Name	NRHD Status	NRHP Individual	Approximate Distance to Church Street Direct APE (ft.)	Approximate Distance to Touline Street Direct APE (ft.)
35-00069	-	Contributing	Ineligible	418.7	43.0
35-00070	-	Contributing	Ineligible	295.9	138.5
35-00071	-	Contributing	Ineligible	245.6	199.6
35-00072	Old Baxter Plantation Store	Contributing	Ineligible	138.4	281.8
35-00073	Opera House	Contributing	Ineligible	97.9	366.4
35-00074	-	Contributing	Ineligible	43.5	408.3
35-00075	McClung's Drug Store	Contributing	Ineligible	49.0	542.8
35-00076	-	Contributing	Ineligible	68.8	496.0
35-00077	-	Contributing	Ineligible	89.4	622.0
35-00078	-	Contributing	Ineligible	119.0	661.0
35-00079	-	Contributing	Ineligible	157.3	705.0
35-00144	Natchitoches Parish Library	Non-Contributing	Ineligible	N/A	N/A
35-00145	Prudhomme-Ronquier	Contributing	Eligible Individual	734.1	225.0
35-00146	Kaffie House	Contributing	Eligible Individual	653.7	163.4
35-00146b	-	Non-Contributing	Ineligible	N/A	N/A
35-00328	-	Non-Contributing	Ineligible	N/A	N/A
35-00342	Old Baxter Plantation Store Annex	Contributing	Ineligible	210.0	198.2
35-00416	-	Non-Contributing	Ineligible	N/A	N/A
35-00146b	-	Non-Contributing	Ineligible	N/A	N/A

State ID #	Historic Name	NRHD Status	NRHP Individual	Approximate Distance to Church Street Direct APE (ft.)	Approximate Distance to Touline Street Direct APE (ft.)
35-00417	-	Contributing	Ineligible	146.0	441.0
35-00418	Tauzin-Williams-Wells House	Contributing	Eligible Individual	204.8	584.5
35-00419	-	Non-Contributing	Ineligible	N/A	N/A
35-01217/00413	-	Contributing	Ineligible	547.6	161.8
35-01234/00412	-	Contributing	Ineligible	583.4	196.2
35-01235/00410	-	Contributing	Ineligible	668.0	282.2
35-01236/00411	-	Contributing	Ineligible	201.3	282.0
35-01358	Church Street Bridge	Non-Contributing	Ineligible	N/A	N/A

The only structure located within the direct APE is the Cane River Bridge at Church Street, with the other 26 structures located within the indirect APE. The Cane River Bridge is considered a non-contributing element. The bridge is not listed as a contributing element in any of the historic nomination records and it does not have a Louisiana Historic Resource Inventory (LHRI) form completed prior to 2018 that could be found during research. In 2013, Mead and Hunt evaluated all bridges in Louisiana for LADOTD and determined that the Cane River Bridge was not eligible for the NRHP.

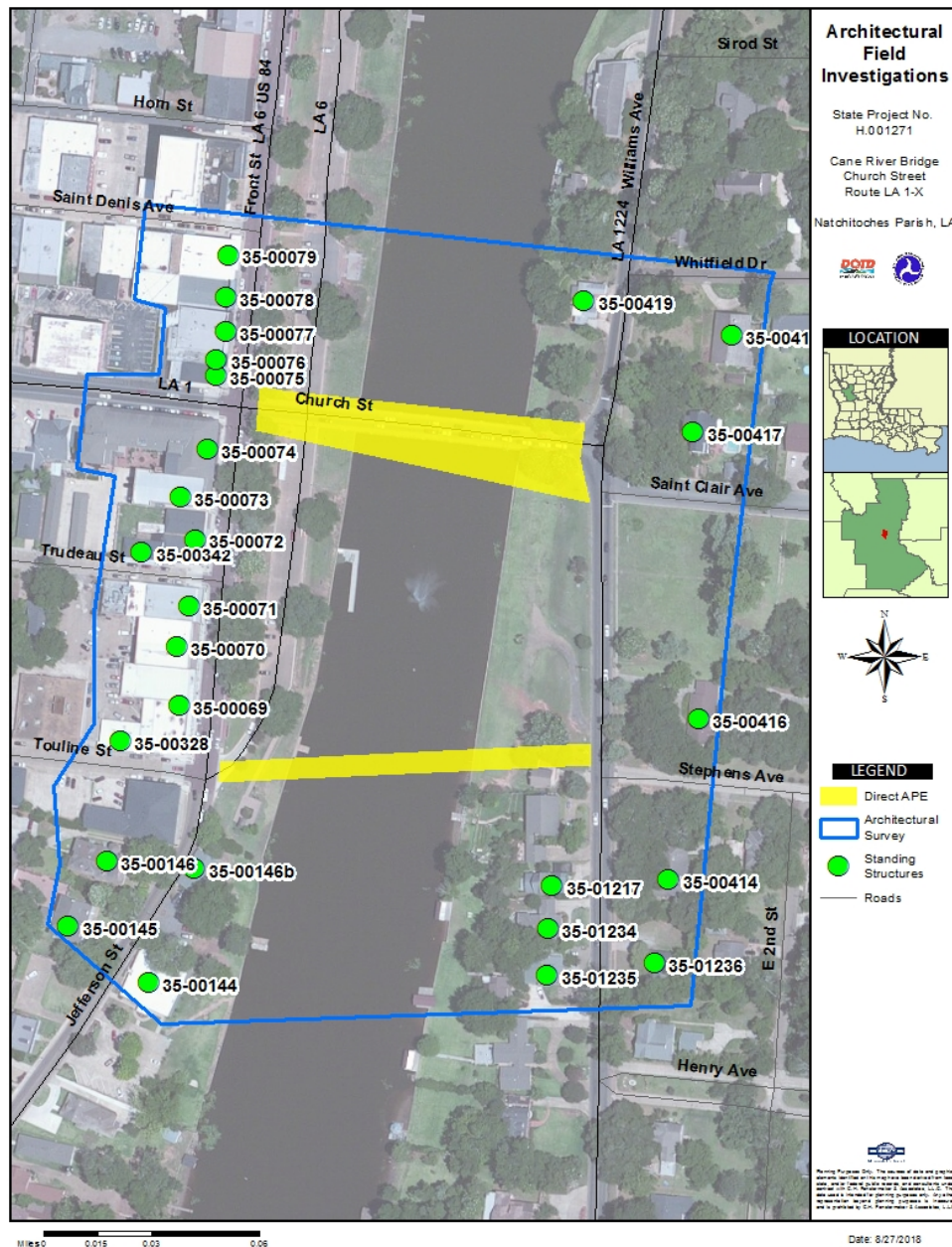
The **No-Build Alternative** will have no impact on the architectural resources within the project area.

None of the residential or commercial buildings that were re-recorded during field investigations overlap the direct APE of any Build Alternatives. The only structure located within the direct APE is the Cane River Bridge at Church Street, which is proposed to be removed and replaced in all Build Alternatives. Since the bridge has no unique or architecturally significant features and is not recommended as eligible for inclusion to the NRHP or as a nomination to the NRHP as an individual, the Build Alternatives will cause no adverse effects to historic materials or to the integrity of the district. Suggested mitigation of any impacted historic properties is to avoid the property by altering the alignment or moving the structure. If construction requires demolition of historic structures, mitigation in the form of Historic American Buildings Survey (HABS) documentation should be conducted in consultation with the SHPO. No impacts to historic properties are anticipated for the Build Alternatives.

It is expected that the construction methods proposed for the replacement Cane River Bridge will cause the least impacts to surrounding sites; however, if vibration exceed the threshold set for historical properties, vibration monitoring is required to ensure no damage to historic materials. Vibration monitoring measures potential effects on structures from construction activities such as pile driving, drilled shafts, and the movement of heavy construction equipment. LADOTD will establish a vibration monitoring program prior to construction. As part of that program, seismic readings for vertical, radial, and transverse plane monitoring and frequency determination will be established to ensure no damage occurs to the adjacent sites during construction. According to the LADOTD Standard Specification for Roads and Bridges, the limit Peak Particle Velocity (PPV) for historic structures is 0.1 (in/sec). PPV due to pile driving operations should be monitored with a seismograph at critical structures, pavements and utilities. The record of peak particle velocities will provide information in assessing potential damage and the need for changes in the pile driving operations. The substructure of the new bridge at the Cane River Lake will consist of drilled shafts and the temporary bridge at Touline Street will utilize steel H-piles, which

both result in less vibrations compared to conventional pile driving. If it is determined that driving the drilled shafts or the temporary H-piles results in vibrations beyond the allowed limit, all construction causing the vibrations will be halted, and the contractor is recommended to propose corrective measures for the affecting construction activity to ensure that vibration monitoring limits is not anticipated to be exceeded again. This measure applies to any Build Alternative.

Figure 19: Architectural Field Investigations



4.4.3 Aesthetic and Visual Resources

Natchitoches' aesthetic and visual resources are an important component of the area's tourism industry and contribute to the quality of life in Natchitoches. The aesthetic and visual resources are important to evaluate to determine the potential effects that the project will have on the unique landscape that influences the historic setting of the project area. Aligning the proposed construction with its historic and cultural context is important and each element shall be considered during design and construction.

Front Street Bricks

On the west side of the Cane River Lake along Front Street is the central commercial portion of the Natchitoches NRHD. This portion of Front Street is paved with brick, which has been determined to be a contributing element to the Natchitoches National Landmark Historic District and the Natchitoches Historic District, as it provides scenic vistas of the Cane River Lake and evokes the feeling of early twentieth century Natchitoches. The nomination mentions the bricks and their enhancement of the district. Front Street was originally paved with bricks in 1904, widened in 1927, and repaired in 2008 through 2009. The project was needed to repair the base failures, improve the riding surface of the roadway, upgrading the stormwater collection system, and upgrading existing water utilities. The street was excavated, repairs were made, and then it was repaved using as many original bricks as possible in the original pattern.

For all Build Alternatives, the existing bricks bordering the western end of the Cane River Bridge at the intersection of Church Street/Front Street will be removed to transition the proposed replacement bridge to the adjacent roadway. **Alternative 1** and **3** requires approximately 440-sq. ft. of brick paving to be removed and replaced, and **Alternatives 2** and **4** requires approximately 230-sq. ft of brick paving to be removed and replaced. The area of disturbance is an estimated value and is recommended to be accurately determined in the engineering and design phase. Special care will be required when reconstructing the pavement area on Front Street as the roadway is paved with bricks which are contributing elements to the historic landscape and character of the city's downtown district. As such, the existing bricks will need to be carefully removed by hand and temporarily stored in a locked, covered, and enclosed storage area to prevent breakage, theft, and vandalism. All recoverable and structurally sound bricks removed from the project area will be reused for the current project. New, custom made bricks will be used to replace all deficient or unrecoverable brick paving material and is recommended to be identical to the existing brick pavers. The custom-made bricks will be, to the extent possible, identical in size, shape, and color to the existing brick pavers and will have slightly chamfered edges to match the form of the existing pavers. If the bricks are not damaged, or they are damaged and subsequently replaced appropriately, then there would be no adverse effect.

Trees

Many large old trees in the district, such as Live Oaks, Magnolias, and Crepe Myrtles are considered a part of the historic landscape and historic setting and are included in the National Register nomination (National Register, 1974). Avoidance was considered for the removal of the trees; however, due to the proposed widening of the existing bridge, these trees cannot be avoided. Section 4.3.6 provides detailed information about the existing trees, the impacts to the trees, and mitigation measures.

Bridge

It is important to ensure the proposed replacement bridge is designed and reasonably constructed to be sympathetic with the historic district. The decorative railings are recommended to match as best as reasonably possible to the existing railing design and must include a powder coated surface finish. Additionally, the street lights are to be such that they match the existing design as close as possible. Temporary impacts due to demolition, construction, and the proposed temporary detour bridge will

detract from the view in the project area; however, following construction, these impacts would no longer exist. Renderings of the proposed Cane River Bridge were developed to illustrate how the replacement bridge would look. The replacement bridge will be wider to include the center turning lane; however, the bridge will still be situated at the same height it currently is and will cause no visual impacts. These commitments are to ensure that the design is in harmony with the community, so that the economic, scenic, aesthetic, historic and natural resource values of the area is preserved.

The **No-Build Alternative** will not impact the Natchitoches Historic District and the Natchitoches National Historic Landmark District and will not cause any adverse effects to the aesthetic and visual resources that contribute to the districts.

All the proposed Build Alternatives will have no adverse effect to the Natchitoches Historic District and the Natchitoches National Historic Landmark District. There is no feasible and prudent alternative that would fulfill the purpose and need of the project without impacting contributing elements, and the proposed project includes all possible planning to minimize and mitigate potential harm to the contributing elements. The Build Alternatives will impact aesthetic and visual resources that contribute to the historic districts. The bricks that pave Front Street are considered contributing elements to the historic district which is planned to be removed and replaced. If the bricks are not damaged, or they are damaged and subsequently replaced appropriately, then there would be no adverse effect. The location of the bridge and its required clearance would result in the removal of several trees that contribute to the historic districts; therefore, this action would be considered an adverse effect. However, the overall impact will be minor because the trees would be replaced and the existing viewshed will be restored as trees continue to grow. If the replacement bridge is designed and constructed to be sympathetic with the districts, then it also is anticipated to not cause any appreciable impacts to the aesthetic and visual resources in the historic district. Temporary impacts to the aesthetic and visual resources that contribute to the historic districts can be anticipated during construction of the Build Alternatives. Vibration monitoring policies should be implemented during all construction activities to ensure that vibrations do not exceed the threshold set for historical properties. The impacts to cultural resources for all Build Alternatives as well as the No-Build Alternative is displayed in Table 9. The full *Cultural Resources Survey* supplemental report is available under separate cover.

It is recommended that ongoing consultation among LADOTD, FHWA, SHPO, and interested historic groups occur throughout the engineering and construction stages, to ensure that the bridge design is appropriate, the vibration thresholds are observed, and any mitigation for trees and bricks, if they cannot be avoided, is appropriate.

In subsequent consultation, SHPO concurred in a letter dated March 28, 2019, and LADOTD, in conjunction with FHWA concurred in a letter dated June 18, 2019, both found in *Appendix J*, that the actions would constitute having no adverse effect on historic properties, including the NHL, only if the following conditions were met:

1. Design plans for the new replacement bridge must be submitted to SHPO for review and comment. SHPO will respond with comments on the design within 30 days and must concur that the new bridge design will not adversely affect the Natchitoches National Register Historic District.
2. Landscape plans must be submitted to SHPO for review and comment. This includes details on any trees that will be removed/replaced, as well as any new landscaping. SHPO must concur that the landscape plan will not adversely affect the Natchitoches National Register Historic District.

3. The brick pavers along Front Street are also a contributing element to the district. In order to ensure that there is not an effect on this feature, the following stipulations must be met if any bricks are disturbed:
 - All bricks removed from the project area during construction must be carefully removed by hand to minimize breakage;
 - All recoverable, structurally sound bricks removed from the project area will be reused as paving material for the current project;
 - All recoverable structurally sound bricks removed from the project area will be manually cleaned, handled, and stacked to minimize breakage;
 - New custom-made bricks must be used to replace any damaged bricks. These must be, to the extent possible, identical in size, shape, and color to the existing brick pavers; and
 - The construction contractor will relay the new street surface to replicate the existing brick pattern, including the diamond shaped pattern at intersections where these patterns occur.

Table 9: Summary of Cultural Resources for Each Alternative

Impacts	Alternatives				
	No-Build	1	2	3	4
Natchitoches NRHP District/Historic Landmark District (Direct Impacts)	None	None*	None*	None*	None*
Natchitoches NRHP District/Historic Landmark District (Indirect Impacts)	None	Temporary Impacts to Viewshed during use	Temporary Impacts to Viewshed during use	None	None
NRHP-Eligible Standing Structures (Direct Impacts)	None	None*	None*	None*	None*
NRHP-Eligible Standing Structures (Indirect Impacts)	None	Temporary Impacts to Viewshed during use	Temporary Impacts to Viewshed during use	None	None
NRHP-Eligible Archaeological Sites (Direct Impacts)	None	None	None	None	None
NRHP-Eligible Archaeological Sites (Indirect Impacts)	None	None	None	None	None

* Assumes the described mitigation measures will be implemented as to not cause any impacts

4.5 Constructability and Project Implementation

During construction of the project, installation of the replacement or temporary bridge, intersection realignment, detouring, and other roadway related work would result in various construction related impacts. Construction sequencing, traffic maintenance criteria, and plans are to be developed as part of the final design to coordinate construction activities and ensure continued access between all affected roadways. Needs for special considerations would be identified and addressed during final design stages.

In general, each of the project alternatives will have varying indirect impacts to residents and businesses in downtown Natchitoches. Each alternative was analyzed to determine the most appropriate sequencing of construction to minimize such impacts.

The **No-Build Alternative** has no construction activities associated with it; therefore, no impacts will occur.

All Build Alternatives will require the removal of the existing Cane River Bridge that spans over the Cane River Lake. As a result of the condition of the existing bridge as previously described, it is recommended to replace the bridge with a new bridge designed upon current design standards. Demolition of structures in or under the water may employ mechanical cutting or impaction techniques. Barge based operations may be required for removal of the existing structure and construction of the replacement structure. On land, demolition, earth moving, and heavy construction will occur. Unless otherwise directed or shown on future design plans, the existing bridge substructure is to be removed to the natural stream bottom and those bridge substructure components outside of the Cane River Lake are to be cut to a minimum of 1-ft. below natural ground. Existing structures is recommended to be removed within the limits of the new structure as necessary to accommodate construction of the new structure. Earthen fill material for this project is readily available locally and is to be placed as necessary to construct the bridge abutments.

The classification of impacts to traffic during roadway construction can vary from high to low. High impacts to traffic during construction would include road closures with rerouting of traffic with detours along major roadways. Medium impacts to traffic during construction would include temporary closures for the reconstruction of the bridge which would require the rerouting of existing traffic. Low impacts to traffic during construction would require the use of temporary roadways and providing temporary driveway access.

Based on the constructability of each of the Build Alternatives, **Alternatives 1 and 2** would have a low to medium impact to motorists; however, these alternatives would create longer temporary construction impacts due to an increased overall construction time. The impacts near the existing Pine Street Bridge would be minimal, as these alternatives provide a temporary bridge crossing while the Cane River Bridge is being re-built. Bridges, including approach slabs, is recommended to not be removed until satisfactory arrangements have been made to effectively detour traffic. **Alternatives 1 and 2** will require the temporary bridge to be open to the travelling motorists before demolition of the existing bridge. In addition, during construction of **Alternative 1 or 2**, it should be noted that the contractor will be required to avoid impacts to the existing sewer lift station located on the eastern end of the proposed temporary bridge. Staging locations should be strategically selected as to cause the least impact to this existing structure.

Alternatives 3 and 4 would have medium to high impacts to local businesses and residents and would create additional traffic impacts to the capacity of the Pine Street Bridge. These alternatives provide no temporary bridge crossing near the existing bridge, thus impacting motorists' travel patterns, as discussed in *Section 4.1.5*. **Alternatives 3 and 4** will require all necessary detour routes to be properly established and signed before demolition of the existing bridge commences.

Bidding Strategies and Duration

A priority goal of the project is to minimize impacts to the annual Christmas Festival which begins in mid-November and continues through the first week of January. To minimize impacts and to expedite the construction process, the following should be considered when the project begins to move towards the bidding stage:

- **Alternatives 1 and 2:** Improvements for only the temporary bridge should be let as a stand-alone project during the year prior to letting the new bridge. The temporary bridge could be strategically let so that it would be complete prior to beginning construction (demolition) on the new bridge. It is estimated that this could save 4 to 6 months of overall construction time when compared to the temporary bridge and the new bridge being bid and constructed under the same project.
- The construction contract could be structured in a way that promotes the use of construction techniques to minimize construction time. An example of this would be utilizing the concept of “A+B Bidding”. A+B Bidding is a method of rewarding a contractor for completing a project as quickly as possible. The time to complete the project (B) is assigned a monetary value and combined with the contract items base bid (A) to select the contractor. The bidder with the lowest overall combined bid (A+B) is awarded the contract. The contract could also offer dollar amount incentives to finish the project ahead of the allowable schedule and in contrary, could issue penalties if not completed on time.

For **Alternatives 1 and 2**, if a temporary bridge is contracted and constructed separately, then it can be constructed in the year prior to replacing the existing Cane River Bridge. By letting the project in this manner, construction of the temporary bridge becomes no longer part of the critical path of constructing a new replacement bridge. The project can be strategically let so that a notice to proceed (NTP) can be issued immediately after the Christmas Festival ends in early January. This will maximize the duration from the issuance of an NTP and the beginning of the Festival in the following November. Additionally, this would allow for construction of the temporary bridge to occur between the first quarter and third quarter of that year. Concurrently, a separate contract to demolish and replace the existing Cane River Bridge only could be let and bid in the second quarter of the same year that the temporary bridge is being built such that an NTP be issued immediately upon completing construction of the temporary bridge. It is recommended that letting and bidding of the new permanent bridge be during the third quarter of this same year the temporary bridge is being constructed. With this concept, the NTP for construction of the new permanent replacement bridge at the beginning of January of the following year could be issued with construction estimated to be in the fourth quarter of that year to minimize impacts to that year’s Christmas Festival. If this bidding strategy is utilized, it is estimated that the temporary bridge can be built in approximately six to eight months following the NTP, and the new permanent replacement bridge can be constructed in approximately eleven to twelve months following a separate NTP.

Another alternative means of constructing **Alternatives 1 and 2** is that both the permanent and temporary bridges be let and bid within the same contract. If this alternative is chosen, then the construction of the replacement bridge cannot begin until traffic is diverted completely to the temporary bridge. It is estimated that the temporary bridge could take approximately six to eight months following the issuance of the NTP. Once traffic is diverted to the temporary bridge, it is estimated that the removal of the existing bridge and construction of the new bridge will take approximately twelve to fourteen months, for a total construction time of approximately 18 to 22 months.

For **Alternatives 3 and 4**, since there is no temporary bridge proposed, construction for the replacement bridge is estimated to take approximately twelve to fourteen months.

4.6 Indirect and Cumulative Impacts

The Council on Environmental Quality regulations (40 CFR Subsections 150-1508) define three types of impacts routinely assessed for proposed federal actions:

1. Direct impacts, as discussed in previous sections of the report, are effects caused by the action and occur at the same time as the action.
2. Indirect impacts, which are caused by the action and occur later in time or farther away from the project vicinity but are still reasonably foreseeable.
3. Cumulative impacts, which include the incremental impacts of the action when added to the other past, present, and future actions which may become significant as time passes.

Indirect Impacts

The **No-Build Alternative** would have no impact on the potential for inducing changes in economic development, land use, population, or demographics. Compared to the Build Alternatives, the **No-Build Alternative** would result in further increased traffic delays and queuing, which may result in impacts to businesses and residents.

The Build Alternatives are not anticipated to change the overall development within the project area; however, as an indirect benefit, the Build Alternatives may enhance economic development by improving access for local citizens and tourists. Meeting the project purpose would also improve the functional deficiencies for the public utilizing the Cane River Bridge. The improvements could create a more accessible bridge to downtown Natchitoches, thus making the downtown area more appealing to residents or businesses.

Cumulative Impacts

The cumulative impact assessment will determine the impact(s) upon quality of life and environmental quality. Consideration of past, present, and foreseeable future actions in conjunction with anticipated effects of the Build Alternatives is required. The point of the assessment is to determine the past impacts that have occurred, the present impact implications, and future impacts to the entire study area.

The **No-Build Alternative** would have no cumulative impacts on past, current, and future projects on most environmental resources; however, traversability along the Cane River Bridge will not be improved, the bridge structure will continue to deteriorate, and levels of service (LOS) will only continue to diminish.

The methodology of assessing the cumulative impacts of the Build Alternatives considers the impacts from past projects within the study area. Cumulative past impacts include the completion of the Pine Street Bridge and the Rue Beauport Riverfront Project. All Build Alternatives will impact one of these past projects, as the Build Alternatives propose to reroute traffic to the Pine Street Bridge or construct a temporary bridge, which would impact the Rue Beauport Riverfront ingress/egress.

The methodology of assessing the cumulative impacts of the Build Alternatives also considers the impacts on other major current projects within the study area. Current, ongoing projects or developments that are included in the Build Alternative's cumulative impact analysis include upgrades to the existing sewer infrastructure in Natchitoches, water and sewer line replacement, brick surfacing along St. Denis Street, and minor roadway rehabilitation to a portion of Martin Luther King Jr. Drive between Amulet and Texas Streets. Efforts to avoid impacts to the sewer upgrades have been discussed in the EA document and should be revisited in the final design phase.

The methodology of assessing the cumulative impacts of the Build Alternatives also considers the impacts on future foreseeable projects or developments within the study area. A project currently listed as priority C in the Louisiana Statewide Transportation Plan is the East Bypass from LA 1 to LA 6 in Natchitoches. This project proposes to build a new two-lane roadway. This project is currently prioritized as a level C,

meaning there is no funding currently earmarked for this project to be built. Additionally, the Natchitoches Sports Complex is proposed on University Parkway and is expected to be complete by summer 2020. The opening of this complex will make Natchitoches more attractive for prospective businesses, citizens, and Northwestern State university students, which is anticipated to be an economic development generator.

If the proposed project is built in any of its alternative forms, it may provide development potential within downtown Natchitoches by improving traffic patterns and efficiency. As discussed previously, population has slightly grown in both the City and Parish of Natchitoches. This continued steady growth is expected to continue. With improved access in place, there is also an opportunity for further economic growth.

The cumulative impact of this project on the roadway system is that the proposed addition of a center turning lane will create more storage for motorists who traverse across the Cane River Bridge. The project's cumulative impact on the route is expected to be positive as it would ease congestion along the route, and if the bridge is skewed to align with St. Clair Avenue, the traversability will be improved at the intersection of Church Street/St. Clair Avenue/Williams Avenue. The overall cumulative impact of the Build Alternatives on past, current, and future projects in the area would be mostly beneficial, as the Build Alternatives will serve the surrounding area by better facilitating traffic through the corridor. Efforts to avoid or minimize cumulative impacts have been undertaken and will again be examined during the final design phase to reduce the potential for cumulative impacts.

5.0 PUBLIC COMMENTS AND AGENCY COORDINATION

This chapter describes the public participation process for the project, including documentation of public meetings and various coordination efforts associated with the development of the project.

5.1 Public Involvement Plan

A Public Involvement Plan (PIP) was prepared for the Cane River Bridge EA to ensure that every reasonable opportunity was available to interested citizens, civic groups, public officials, and state and federal resource agencies to participate in the planning process. The PIP included a variety of methods for providing project feedback and obtaining information on the project.

Information about the public involvement process is provided in this section up to the date of the publication of the EA. Upon approval by FHWA, the EA will be circulated to local, state, and regional clearinghouses and the public will be notified through appropriate channels of the EA's availability. There will be a 45-day comment period following the Notice of Availability. During that time, a Public Hearing will be held in Natchitoches, Louisiana. Comments from the public received during the comment period will be considered and documented appropriately.

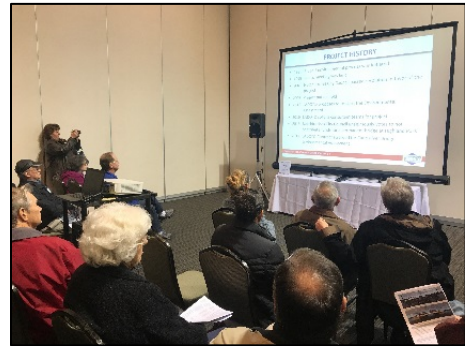
5.2 Solicitation of Views

Information on the proposed project was sent to federal, state, and local agencies in the form of a Solicitation of Views (SOV) request on June 6, 2017, and in a Scoping Meeting invitation on September 21, 2017. All comments received from various federal, state, and local agencies, organizations, and individuals are included in *Appendix B*. A total of 59 responses were received. These comments are included for the record and were considered during the alternatives screening process. Copies of the SOV and Scoping Meeting letters, maps, mailing lists, and all responses are also included in *Appendix B*.

5.3 Public Involvement in the Environmental Process

5.3.1 December 2017 Public Meeting

The first public meeting was held on December 7, 2017, at the Natchitoches Events Center for the Cane River Bridge project as part of the EA process. The meeting was held as an informal open house format including a short presentation on the project and exhibits for each proposed Build Alternative.

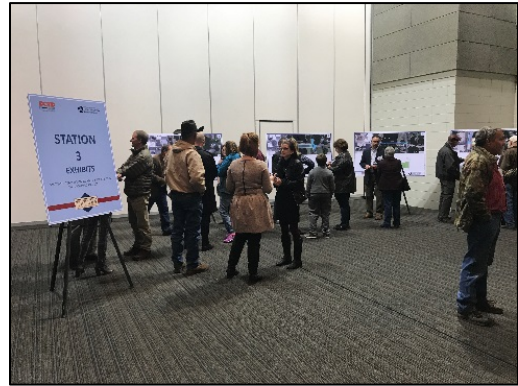


The public meeting was advertised in several ways. Property owners along the project corridor were mailed a meeting notice on November 9, 2017. Notices of the meeting were advertised in *The Natchitoches Times* on Thursday, November 23, 2017 and Thursday, November 30, 2017 and the *Natchitoches Parish Journal* on Wednesday, November 22, 2017 and Thursday, November 30, 2017. Agencies and stakeholders were emailed on November 8, 2017 and mailed a notice on November 9, 2017. Press releases were emailed to the media through LADOTD and posted on the LADOTD project website on November 8, 2017.

The public meeting provided an opportunity to view the proposed alternatives, ask questions of the project team, and provide written and verbal comments for consideration. Comment forms were handed out to each attendee when signing in. During the open house, attendees were able to turn in a completed written form or submit via mail or email following the public meeting. Comments were received through

December 18, 2017. The exhibits, materials, and handouts presented at the Public Meeting were also made available on the LADOTD project website. The December 2017 public meeting summary is included as *Appendix C*.

Two comments were received by mail regarding the Cane River Bridge at Church Street project prior to the public meeting. One verbal comment was recorded at the public meeting and twenty-seven written comments were received at the public meeting held on December 7, 2017. Nine comments were received following the public meeting through the end of the comment period on December 18, 2017, and eight comments were received following the public comment period. A summary of the comments received is included in *Appendix C*.



A summary of the overall comments received include the following:

- Most respondents agree that the project serves a purpose and is needed.
- The majority opposed a temporary bridge at Highland Park Drive, explaining that this alternative is not in the best interest of Natchitoches. Of the two temporary bridge alternatives, the Touline Street Bridge was favored.
- Twenty-one (21) respondents were in favor of skewing the bridge to align with St. Clair Avenue. There were no comments received in opposition of the skewed bridge; only one person cited making St. Clair Avenue a dead end if the bridge is skewed.
- Seven (7) respondents preferred demolishing the bridge completely and replacing having no temporary bridges or staged construction.

The comments received during the public comment period and thereafter were considered during the subsequent development and refinement of alternatives which were evaluated in this EA.

5.3.2 November 2018 Public Meeting

A second public meeting was held on November 1, 2018, at the Natchitoches Events Center for the Cane River Bridge Project as part of the EA process. The meeting was held as an informal open house format including a short presentation on the project and exhibits for each proposed Build Alternative.

The public meeting was advertised in several ways. Property owners within the project vicinity, citizens who responded to the Solicitation of Views, and citizens who offered comments at the first public meeting were mailed a meeting notice on September 27, 2018. Notices of the meeting were advertised in *The Natchitoches Times* and the *Natchitoches Parish Journal* on Thursday, October 18, 2018 and Thursday, October 25, 2018. Agencies and stakeholders were emailed on September 26, 2018 and mailed a notice on September 27, 2018. Press releases were posted on the LADOTD project website on October 23, 2018. Various newspapers and news stations also advertised the public meeting.

The public meeting provided an opportunity to view the refined proposed Build Alternatives, ask questions of the project team, and provide written and verbal comments for consideration. Comment forms were handed out to each attendee when signing in. During the open house, attendees were able to turn in a completed written form. Attendees were also able to turn in comment forms via email or mail. Comments were received through November 12, 2018. The exhibits, materials, and handouts

presented at the Public Meeting were also made available on the LADOTD project website. The November 2018 public meeting summary is included in *Appendix D*.

Eleven (11) written comments were received at the public meeting held on November 1, 2018. Four comments were received following the public meeting through the end of the comment period on November 12, 2018.

A summary of the overall comments received include the following:

- Most respondents preferred **Alternative 1**, to replace the existing bridge on a skewed alignment, having a temporary bridge at Touline Street.
- More respondents were in favor of skewing the bridge compared to replacing the bridge on existing alignment.

The comments received during the public comment period and thereafter were considered during the subsequent development and refinement of alternatives which were evaluated in this EA. The entire comment summary is included in *Appendix D*.

5.3.3 Public Hearing

A public hearing will be held within a 45-day public comment period following the release of this Draft Environmental Assessment as a part of the Environmental Assessment process. The hearing will be held as an informal open house with a station format including a short presentation on the project and project exhibits for proposed alternatives and typical sections.

The objective of the public hearing is to seek final input from individuals and community organizations on issues and concerns related to the potential impacts associated with the proposed replacement of the Cane River Bridge in Natchitoches Parish, LA. Following the completion of the public hearing and the comment period, this section will be updated.

5.3.4 Additional Public and Agency Outreach

Additional public outreach was conducted throughout the project process. On August 29, 2017, landowners were mailed a right-of-entry (ROE) letter (see *Appendix E*). The ROE letter informed the landowners that various activities may be occurring on or adjacent to their properties throughout the environmental process. On December 19, 2017, a phone interview with the Natchitoches Fire Chief and Police Chief was conducted. The purpose was to receive feedback on the impacts to emergency services based upon various alternatives, as discussed in *Section 4.1.2*. On November 28, 2018 a SOV letter was sent to the Natchitoches Levee and Drainage Board inviting feedback on the proposed project. On December 13-14, 2018, coordination efforts with the Cane River Waterway Commission Administrator, Betty Fuller, and the Natchitoches Director of Planning and Zoning, Juanita Fowler, were completed in an attempt to obtain documentation regarding management and maintenance for the Rue Beauport Riverfront Park. Numerous coordination efforts occurred with the Natchitoches Director of Recreation and Parks, Chris Laurence, and the Director of Community Development, Randy LaCaze, for the same reasons. On January 17, 2019, a phone interview was conducted with the Natchitoches Parish Floodplain Administrator, Juanita Fowler. This interview is detailed in *Section 4.3.5*.

Numerous meetings and coordination occurred throughout the EA process with the various participating parties. Meetings with LADOTD, FHWA, SHPO, City of Natchitoches, and Natchitoches Parish representatives occurred throughout the process. Interagency coordination played an important role in

the decision-making process. The City of Natchitoches approved a council resolution on May 13, 2019 officially stating their support for **Alternative 1**. The resolution stated “A resolution of the city council of the City of Natchitoches, Louisiana stating its support for the alignment of the Church Street Bridge with St. Clair Avenue and for the placement of a temporary bridge at Touline Street to handle traffic during the construction of the new Church Street Bridge, and further authorizing and directing the mayor to communicate its support and preference to the Louisiana Department of Transportation and Development.” The entire council resolution is in *Appendix B*.

5.4 Tribal Coordination

Letters to regional Tribes were mailed at the start of the project on June 6, 2017, opening communication between the Tribes and FHWA. The Osage Nation Historic Preservation Office responded on June 29, 2017 and the Choctaw Nation of Oklahoma responded on July 12, 2017, with their views on the project (see *Appendix B*). LADOTD and FHWA continued coordination with the Tribes throughout the project. The scoping meeting invitation, public meeting announcements, and consulting parties’ requests were sent to tribes. The Tribes will also receive a public hearing announcement and a copy of the EA document.

5.5 Section 106 Consultation

Section 106 of the NHPA requires consultation with the SHPO during the environmental review process and identification of other potential consulting parties if historic resources protected under Section 106 are potentially affected. This section describes how the Section 106 process was initiated and how the agencies and the public were involved in the process.

A Section 106 consultation with SHPO was initiated on April 24, 2018. Other potential consulting parties, including Tribes and agencies, were identified and invited to participate in the Section 106 consultation.

A Section 106 meeting was held on June 7, 2018, with representatives in attendance from the project team, SHPO, and LADOTD. The APE was refined to represent the preliminary alternatives carried forward during this meeting and approved by SHPO. At this meeting, no alternatives were eliminated, and it was discussed that the official impacts of a skewed bridge versus the same alignment bridge will be determined as the consulting process progresses. The second public meeting held on November 1, 2018, was announced as another opportunity for any interested parties from the public to request participation in Section 106 consultation, as agreed upon in the June 7, 2018 meeting.

A cultural resources analysis was completed as a part of this project. Following LADOTD and FHWA review, SHPO received the report December 12, 2018, with a recommendation of a finding of no adverse effects. The SHPO concurred with these findings on March 28, 2019 and an official notice, from LADOTD in conjunction with FHWA, for the finding of No Adverse Effects with conditions letter was issued and distributed to consulting parties on June 18, 2019. A copy of the SHPO concurrence of no adverse effect, the LADOTD no adverse effect notice, along with the Section 106 correspondence is included in *Appendix J*.

6.0 COMPARISON AND SELECTION OF ALTERNATIVES

6.1 Resource Impact Analysis

A comparison of quantifiable project impacts is provided in Table 10, offering a basis for discussion and selection of a preferred alternative. The screening criteria identified represents both human and natural environmental impacts as well as cultural resources impacts on four identified proposed Build Alternatives and the No-Build Alternative.

Table 10: Cane River Bridge Alternatives Screening Details

Evaluation Measure	Units	No-Build	1 Skewed Replacement Bridge + Temporary Bridge	2 Same Alignment Replacement Bridge + Temporary Bridge	3 Skewed Replacement Bridge + No Temporary Bridge	4 Same Alignment Replacement Bridge + No Temporary Bridge
Physical Resources						
Residential Relocations	Each	0	0	0	0	0
Business Relocations	Each	0	0	0	0	0
Community/Other Relocations	Each	0	0	0	0	0
ROW Acquisition	Acres	0	0.33	0.25	0.33	0.25
Temporary Construction Servitude Acquisition	Acres	0	0.44	0.44	0	0
Total ROW and Temporary Servitude Acquisition	Acres	0	0.77	0.69	0.33	0.25
Residential Receivers (Category B) Design Year Noise Impacts ^a	Each	26	26	26	26	26
Residential Receivers Design Year Increase > 10 dBA ^a	Each	0	0	0	0	0
Recreational (Category C) Design Year Noise Impacts ^a	Each	1	1	1	1	1
Commercial (Category E) Design Year Impacts ^a	Each	8	8	8	8	8
Total Number of Impacted Receivers ^a	Each	35	35	35	35	35
Cultural and Recreational Resources						
Natchitoches NRHP District/Historic Landmark District (Direct Impacts)	Each	0	0 ^b	0 ^b	0 ^b	0 ^b
Natchitoches NRHP District/Historic Landmark District (Indirect Impacts)	Each	0	Temporary Impacts to Viewshed	Temporary Impacts to Viewshed	0	0
NRHP-Eligible Standing Structures (Direct Impacts)	Each	0	0 ^b	0 ^b	0 ^b	0 ^b
NRHP-Eligible Standing Structures (Indirect Impacts)	Each	0	Temporary Impacts to Viewshed	Temporary Impacts to Viewshed	0	0
NRHP-Eligible Archaeological Sites (Direct Impacts)	Each	0	0	0	0	0
NRHP-Eligible Archaeological Sites (Indirect Impacts)	Each	0	0	0	0	0

Evaluation Measure	Units	No-Build	1 Skewed Replacement Bridge + Temporary Bridge	2 Same Alignment Replacement Bridge + Temporary Bridge	3 Skewed Replacement Bridge + No Temporary Bridge	4 Same Alignment Replacement Bridge + No Temporary Bridge
6(f) Lands	Each	0	0	0	0	0
Permanent Impacts to 4(f) Lands	Acres	0	0.11	0.12	0.11	0.12
Temporary Impacts to 4(f) Lands	Acres	0	0.16	0.16	0	0
Natural and Environmental Resources						
Wetlands	Acres	0	0	0	0	0
Scenic Streams	Each	0	0	0	0	0
Waterbody Crossings	Each	0	2	2	1	1
Permanent Impacts to Other Waters of the U.S.	Acres	0	0.55	0.53	0.55	0.53
Temporary Impacts to Other Waters of the U.S.	Acres	0	0.50	0.50	0	0
Total Impacts to Other Waters of the U.S.	Acres	0	1.05	1.03	0.55	0.53
Trees	Each	0	16	20	8	12
Sole Source Aquifer Impacts	Acres	0	0	0	0	0
Protected Species	Each	0	0	0	0	0
Prime and Unique Farmland	Acres	0	0	0	0	0
Coastal Res./Essential Fish Habitat	Each	0	0	0	0	0
Water Wells ^c	Each	0	0	0	0	0
Recognized Environmental Concerns (REC)	Each	0	0	0	0	0
Oil and Gas Wells ^c	Each	0	0	0	0	0

^a The quantity does not reflect temporary impacts due to the alternatives that propose a temporary bridge at Toulain Street. The full noise analysis, including this information, is presented *Appendix I*.

^b No impact assumes that the brick paving on Front Street will be removed and replaced as outlined in this EA document, and the magnolia trees adjacent to the existing bridge will be maintained or replaced in kind.

^c Water well and oil and gas locations from SONRIS are approximate and may be located anywhere on the parcel they are attributed to.

An Opinion of Probable Cost (OPC) was developed for each of the four Build Alternatives. An OPC is an opinion of cost that represents the best judgement of this EA given the limited amount of information that is typical for this level of study. The OPC is used to provide guidance in which this study has no control over the cost of labor and material, competitive bidding, or market conditions at the time this project would commence construction. Costs have been developed using anticipated major pay items and current year unit prices at the time of this study. Minor pay items were not calculated but are included as an applied 20% contingency added to the construction costs. Unit prices for estimated construction costs were based upon several data sources including the LADOTD weighted bid prices for the year 2018 and recent bid tabulations on projects within the state and project area. A comparative opinion of probable costs of all alternatives can be found in Table 11. A more detailed description of each cost estimate can be found in the supplemental *Line and Grade Study*, located under separate cover.

Table 11: Comparison of Probable Costs by Build Alternative

Phase	Alternative 1 Skewed Replacement Bridge + Temporary Bridge	Alternative 2 Same Alignment Replacement Bridge + Temporary Bridge	Alternative 3 Skewed Replacement Bridge + No Temporary Bridge	Alternative 4 Same Alignment Replacement Bridge + No Temporary Bridge
Construction*	\$9,683,372	\$9,585,583	\$6,718,310	\$6,620,527
Engineering (10%)	\$968,337	\$958,558	\$671,831	\$662,053
Right-of-Way	\$757,317	\$683,606	\$454,586	\$383,251
Project Totals	\$11,409,026	\$11,227,747	\$7,844,727	\$7,665,831

* Construction costs include 20% contingency and have been rounded.

The OPC estimates for each alternative are a sum of each major component of the construction project. The construction quantities for the alternatives were derived from typical sections and plan layouts located as *Appendix A*. The costs for **Alternatives 1** and **2** are similar, which is higher than **Alternatives 3** and **4** because of the proposed temporary bridge. Including a 20% construction contingency, the estimated construction costs range between approximately \$6.6-million and \$9.7-million.

6.2 Alternatives Comparison

While the EA analyzes each Build Alternative and the No-Build Alternative, this section focuses on the comparative advantages and disadvantages for **Alternatives 1** and **3**. Following the Public Meeting on November 1, 2018, and after receiving the finding of no adverse effect from Section 106 consultation in a letter dated March 28, 2019, **Alternatives 1** and **3** were identified as the preferred alternatives on which to analyze further. This was based on the impact data obtained during desktop and field evaluations for each alternative and the proposed realigned eastern intersection meets the project's purpose and need and may help to improve the operations and overall safety, coupled with the no adverse findings from SHPO. A discussion of the comparative advantages and disadvantages of **Alternatives 1** and **3** is described in the following paragraphs.

Alternatives 1 and **3** are identical when it pertains to the replacement Cane River Bridge, as they both propose a skewed alignment to tie directly into St. Clair Avenue. The difference between the two alternatives is that **Alternative 1** proposes a temporary detour bridge at Toulain Street, whereas **Alternative 3** proposes no temporary bridge, and instead will detour traffic to the existing Pine Street Bridge.

The following subsections provide an analysis of the potential beneficial or adverse impacts of the project's two alternatives, **Alternative 1** and **3**. The project was evaluated with respect to community, economic, transportation, social, cultural, physical, natural, and biological resources. The project was evaluated using the below scale for the impacted environment. A degree of effect to each resource was assigned to the impacted resources for both alternatives through a scoring system displayed in Table 12 and the score is shown at the top of the resource heading.

Table 12: Degree of Effect to Resources

Degree of Effect to Resource	Description	Definition
0	Negligible	The alternative has no measurable effect.
1	Minor	The project has little adverse effect.
2	Moderate	The alternative has some adverse effect. Avoidance and minimization of impacts have been evaluated during the EA process.
3	Substantial	The alternative has substantial adverse impacts. Avoidance and minimization are identified and listed in the respective section. Additional coordination will be required during final design and permitting.
4	Improved	A positive, restorative, or mitigating effect to a resource will result from the alternative.

Community Facilities

Alt. 1	Alt. 3
1	2

Both **Alternative 1** and **3** propose to skew the bridge, which will make it easier for motorists to traverse east across the bridge and provide for increased safety potential at the intersection of Church Street/St. Clair Avenue/Williams Avenue. **Alternative 1** would be more beneficial for emergency response time during construction due to the proposed temporary detour bridge, which allows for traffic to be maintained across the Cane River Lake during construction. For **Alternative 3**, the lack of a temporary detour bridge will impact emergency access across the Cane River Lake. Emergency response may be delayed, as emergency vehicles will be required to re-route to the Pine Street Bridge. Fire Chief, Crit Miller, indicated that if a temporary bridge is not proposed, an increase in staffing will be required to continue responding as normal. Similarly, Police Chief, Micky Dove, indicated he prefers any alternative that proposes a temporary bridge. To mitigate the delayed response times, additional emergency service vehicles can be staged strategically throughout the project vicinity, temporary emergency personnel staffing can be increased, and priority access for emergency vehicles can be coordinated.

Economic Activities

Alt. 1	Alt. 3
2	1

Alternatives 1 and **3** both will impact the annual Festival of Lights; however, bidding strategies should be considered to minimize these impacts. Though these strategies can be implemented to minimize impacts to the Christmas Festival, the viewshed may be temporarily altered during construction, thus impacting the festival. **Alternative 1** will cause more impacts to the festival as construction time is prolonged when compared to **Alternative 3**.

Temporary Travel Patterns

Alt. 1	Alt. 3
1	2

Both alternatives will cause temporary impacts to the existing traffic and travel patterns. For **Alternative 1**, the temporary bridge ensures that two lanes of travel within the project vicinity will always be open throughout the entire duration of construction, thus impacts to traffic will be less when compared to **Alternative 3**. **Alternative 1** would have a low to medium impact on motorists’ travel delays but would create longer temporary construction impacts due to increased overall construction time. The impacts to traffic near the existing Pine Street Bridge would be minimal for **Alternative 1**. **Alternative 3** would have a medium to high impact to motorists and would create additional traffic congestion impacts to the network near the Pine Street Bridge. Increased travel delay and congestion near the Pine Street Bridge and along the detour route can be anticipated for **Alternative 3**. Both alternatives will require detouring of traffic; however, **Alternative 3** will cause a longer delay to travelers when compared to **Alternative 1**.

While **Alternative 3** may provide less temporary construction impacts and fewer impacts to businesses located Downtown Natchitoches, it may increase traffic congestion and delay local circulation for residents accessing these businesses. Not having a temporary detour bridge in Downtown Natchitoches may impact the patronage to these businesses. **Alternative 1** provides a temporary bridge to be located in Downtown Natchitoches, thus, continued access to these businesses will remain.

Alt. 1	Alt. 3
2	1

Travel Patterns and Accessibility- Rue Beauport Riverfront

The Rue Beauport Riverfront will be impacted by both **Alternative 1** and **Alternative 3**; however, impacts are greater for **Alternative 1**, as this alternative requires a temporary bridge in addition to the replacement bridge, which are both located within the Rue Beauport Riverfront footprint. During the entire duration of construction for **Alternative 1**, the southern access would remain closed, as well as vehicular access spanning from the existing Cane River Bridge south to the southern driveway access. Pedestrian impacts would occur during construction of the temporary bridge but can be mitigated by providing temporary pedestrian crossings to access the restroom facilities and the Santa House. Touline Street would be temporarily transformed into a one-way (heading westbound) and Stephens Avenue will have a temporary closure westbound onto Williams Avenue during the time that the temporary bridge is in use. The construction footprint of **Alternative 3** is much smaller than **Alternative 1**, resulting in reduced accessibility impacts for **Alternative 3** when compared to **Alternative 1**.

Alt. 1	Alt. 3
1	0

Real Estate and Right-of-Way

Both alternatives are not within the existing ROW for present conditions. **Alternatives 1** and **3** will both require 0.33 acres of permanent right-of-way; however, **Alternative 1** requires an additional 0.44 acres of temporary construction servitude to build the temporary bridge. The temporary construction servitude is only needed during construction of the project and this area will be returned to its prior state following construction.

Alt. 1	Alt. 3
1	0

Infrastructure

Both alternatives will impact existing utilities; however, **Alternative 1** has a larger construction footprint, thus the potential to impact utilities is greater when compared to **Alternative 3**. In addition, the temporary bridge proposed for **Alternative 1** is situated near an existing sewer lift station on the east bank of Cane River Lake. Special attention will be required within this area during the design and construction stages to avoid any conflicts.

Alt. 1	Alt. 3
4	4

4(f) Resources

Both alternatives will impact the Section 4(f) property. **Alternatives 1** and **3** will both permanently impact 0.11 acres of the Rue Beauport Riverfront Park; however, **Alternative 1** requires an additional 0.16 acres of temporary construction servitude to build the temporary bridge. The temporary construction servitude is only needed during construction of the project and this area will be returned to its prior state following construction. Both alternatives were determined to meet the requirements of a Programmatic Section 4(f) Net Benefit Determination; thus, the impacts are both positive.

Alt. 1	Alt. 3
2	1

Floodplains

Both **Alternative 1** and **3** proposes a replacement bridge within FEMA Flood Zone A; however, **Alternative 1** proposes a temporary detour bridge south of the existing bridge. **Alternative 1** will cause an additional temporary impact to the floodplains when compared to **Alternative 3**.

Alt. 1	Alt. 3
2	2

Trees

Both alternatives will require the removal of existing trees; however, **Alternative 1** will require the removal of more trees when compared to **Alternative 3**. Both alternatives require the removal of the following trees near the proposed replacement bridge: two magnolia trees on the western bridge end and two magnolia trees and four crepe myrtle trees on the eastern bridge end. The additional tree removal for **Alternative 1** is caused by the temporary bridge, which requires the removal of the following trees: two newly planted sweet bay magnolia trees and one southern live oak located on the west end of the riverbank near Toulain Street and one magnolia tree and four crepe myrtle trees on the eastern banks of the Cane River Lake, near Stephens Avenue. **Alternative 1** requires a total of 16 trees to be removed, whereas, **Alternative 3** requires the removal of eight trees. Mitigation measures for the removal of significant trees may take the form of replacing/replanting trees of the same species in the same general location.

Alt. 1	Alt. 3
1	1

Wetlands and Other Waters

Both **Alternative 1** and **Alternative 3** will directly impact the jurisdictional riparian waterways. The proposed permanent ROW required within the waterway required for both alternatives equal approximately 0.55 acres; however, **Alternative 1** will temporarily impact an additional 0.50 acres.

Alt. 1	Alt. 3
2	2

Cultural Resources

Both **Alternatives 1** and **3** will impact the Natchitoches Historic District and the Natchitoches National Historic Landmark District, including contributing elements such as the brick paving along Front Street, the trees that are considered a part of the historic landscape and historic setting, and temporary impacts to the aesthetic and visual resources in the historic district.

Both **Alternatives 1** and **3** will impact approximately 440-sq. ft. of existing brick paving along Front Street, which are considered contributing elements to the historic district. As discussed previously, both alternatives will also require the removal of trees which are part of the historic landscape; however, **Alternative 1** will impact eight more trees when compared to **Alternative 3**. Temporary impacts to the visual and aesthetic resources can be anticipated during construction for both alternatives; however, **Alternative 1** will cause extended temporary impacts to the district’s viewshed due to the proposed temporary bridge. Construction is not anticipated to impact surrounding historic sites; however, a vibration monitoring plan is recommended to be developed prior to construction to ensure vibrations do not exceed the threshold.

Alt. 1	Alt. 3
1	1

Noise

Both **Alternatives 1** and **3** will result in elevated temporary noise levels near the project vicinity during construction; however, **Alternative 1** will cause extended temporary impacts to noise levels due to the construction of the proposed temporary bridge.

Alt. 1	Alt. 3
2	1

Construction

Alternative 1 will have more construction impacts compared to **Alternative 3**, as it impacts a larger footprint and includes the construction of two bridges. Increased temporary construction air impacts from heavy equipment can be expected for **Alternative 1** when compared to **Alternative 3**. In addition, a longer construction duration can be anticipated for **Alternative 1** when compared to **Alternative 3**.

6.3 Identifying the Preferred Alternative

NEPA requires that all reasonable and feasible alternatives that meet the purpose of the proposed project be considered. For some projects, the best alternative becomes apparent early in the planning process and an official position can be stated; however, some projects may not identify a Preferred Alternative until later in the EA process.

The final selection of the Preferred Alternative for this project was determined following the Section 4(f) process. A Programmatic Net Benefit Determination was applied for both **Alternative 1** and **Alternative 3**. Both alternatives best meet the purpose and need of the project and have similar permanent impacts. Though additional temporary impacts occur for **Alternative 1**, returning to the primary evaluation measures based on the Purpose and Need for the project, **Alternative 1** minimizes traffic congestion near the project area when compared to **Alternative 3**. The Preferred Alternative was selected for implementation due to its inherent reliability on maintaining traffic and reducing congestion throughout the construction process. After consideration of traffic operations and coordination with local officials, sufficient information exists to identify **Alternative 1** as the **Preferred Alternative**. **Alternative 1** meets the established purpose and need of the project, and it addresses public input and stays within required NEPA, FHWA, LADOTD, and AASHTO guidelines.

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8.0 REFERENCES

- American Association of State Highway and Transportation Officials (AASHTO). (2011). *A Policy on Geometric Design of Highways and Streets*.
- American Association of State Highway and Transportation Officials (AASHTO). (2011). *Roadside Design Guide*. 4th Edition.
- American Association of State Highway and Transportation Officials (AASHTO). (2017). *AASHTO LRFD Bridge Design Specifications*. 8th Edition.
- American Association of State Highway and Transportation Officials (AASHTO). (2018). *AASHTO Manual for Bridge Evaluation*. 3rd Edition.
- Cane River National Heritage Area Commission. (2009). *Church Street Bridge: A Study on its History and Future Rehabilitate or Replace*. Natchitoches, Louisiana.
- City of Natchitoches. (2012). <http://www.natchitochesla.gov/>
- Deblieux, Robert. (2002). *The Cane River Plantations*. Natchitoches and Louisiana's Timeless Cane River. Louisiana State University, Baton Rouge.
- Federal Emergency Management Agency (FEMA). (1977). *Executive Order 11988: Floodplain Management*.
- Federal Emergency Management Agency (FEMA). (2018). *FEMA Map Service Center*. <http://msc.fema.gov>
- Federal Highway Administration (FHWA). (2015). National Highway Institute, Publication No. FHWA-NHI-142005. *NEPA and the Transportation Decision Making Process (Participant Workbook)*.
- Fortier, Alcee. (1914). *Louisiana: Comprising Sketches of Parishes, Towns, Events, Institutions, and Persons, Arranged in Cyclopedic Form*. Volume 2. Century Historical Association, New Orleans.
- Grenfell, Jan. Russo, Vincent. (2001). *History of Bridge Letter, Advisory Council*. Louisiana Department of Transportation and Development (LADOTD).
- Lafon, B. (1814). *Plan of the Fort Claiborne*. Natchitoches. Historic New Orleans Collection.
- LeBreton, Marietta. (1985). *Northwestern State University of Louisiana, 1884-1984*. Northwestern State University. Natchitoches, Louisiana.
- Leonard, B. (1823). *Map of Front or River Street*. Natchitoches Parish Police Jury. 1983.001.004, Louisiana State Museum, Baton Rouge, LA.
- Louisiana Department of Natural Resources (DNR). (2018). *SONRIS (Strategic Online Natural Resources Information System)*. <http://www.sonris.com/>

- Louisiana Department of Transportation and Development (LADOTD). (1995). *Secretary's Policy and Memorandum No. 48: Underground Storage Tank (UST) and Contaminated Site Policy*.
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Real_Estate/Improvement%20Control%20Forms/Contamination%20Policy.pdf
- Louisiana Department of Transportation and Development (LADOTD). (1999). *Public Meeting for State Project Numbers 053-04-0031 & 700-35-0109 FAP NOS. BRN-03-07(019) & BRN-03-07(018) Cane River Bridge Replacement*. LADOTD and FHWA.
- Louisiana Department of Transportation and Development (LADOTD). (2006). *Environmental Assessment with Finding of No Significant Impact (FONSI) and Section 4f Statement for Front Street in Natchitoches, Route LA 6, State Project NO. 700-35-0123 FAP NO. ENH-MISC(314)*. LADOTD and FHWA.
- Louisiana Department of Transportation and Development (LADOTD). (2009). *Roadway Design Procedures and Details*.
- Louisiana Department of Transportation and Development (LADOTD). (2011). *Hydraulics Manual*.
- Louisiana Department of Transportation and Development (LADOTD). (2011). *Highway Traffic Noise Policy*.
- Louisiana Department of Transportation and Development (LADOTD). (2016). *Acquisition of Right-of-Way and Relocation Assistance Policy*.
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Real_Estate/Manuals/2016%20Acquisition%20Brochure%20revised%208.31.16.pdf
- Louisiana Department of Transportation and Development (LADOTD). (2016). *Complete Streets Policy*.
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Multimodal/Highway_Safety/Complete_Streets/Misc%20Documents/cs-la-dotpolicy.pdf
- Louisiana Department of Transportation and Development (LADOTD). (2016). *Guidelines for Conducting a Crash Data Analysis*.
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Multimodal/Highway_Safety/Misc%20Documents/Guidelines%20for%20Crash%20Data%20Analysis%20using%20the%20Number-Rate%20Method%20and%20Overrepresentation%20-%20Jan%202016.pdf
- Louisiana Department of Transportation and Development (LADOTD). (2016). *Louisiana Standard Specifications for Roads and Bridges*.
- Louisiana Department of Transportation and Development (LADOTD). (2017). *Minimum Design Guidelines*.
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Road_Design/Memoranda/Minimum%20Design%20Guidelines.pdf
- Louisiana Department of Transportation and Development (LADOTD). (2017). *Bridge Inspection Report, 038060 LA0001-X over Cane River*. May 25, 2017.

Louisiana Department of Transportation and Development (LADOTD). (2017). *Bridge Inspection Report, 038060 LA0001-X over Cane River*. November 6, 2017.

Louisiana Department of Transportation and Development (LADOTD). (2018). *Bridge Design and Evaluation Manual*.

Louisiana Department of Transportation and Development (LADOTD). (2018). *Stage 1 Planning/ Environmental Manual of Standard Practice*.
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Environmental/Stage_1/Stage%201%20Manual%202018.pdf

Louisiana Department of Transportation and Development (LADOTD). *Engineering Directives and Standards (EDSMs)*.
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/EDSM/Pages/default.aspx

Louisiana Department of Wildlife and Fisheries (LDWF). (2018). *Louisiana Department of Wildlife and Fisheries*.

Louisiana Department of Wildlife and Fisheries (LDWF). (2018). *Louisiana Natural and Scenic Rivers Descriptions and Map*. <http://www.wlf.louisiana.gov/louisiana-natural-and-scenic-rivers-descriptions-and-map>

Mead and Hunt. (2013). *National Register Eligibility Determination Report: Pre-1971 Louisiana Highway Bridges*. Prepared for LADOTD and submitted to Louisiana SHPO.

Natchitoches Bridge Taskforce. (2013-2014). *Natchitoches Bridge Taskforce Summary of Meeting Minutes*.

Natchitoches Community Alliance (NCA). 2018. <https://nca-la.com/infrastructure/>

National Register, Division of Historic Preservation. (1977). *Natchitoches National Register of Historic Places Nomination #35015001*.

National Register of Historic Places (NRHP). (2018). *Louisiana Division of Historic Preservation, Office of Culture, Recreation, and Tourism*. <https://www.crt.state.la.us/>

National Oceanic and Atmospheric Administration (NOAA). (2018). *Essential Fish Habitat (EFH) Mapper*. <https://www.habitat.noaa.gov/protection/efh/efhmapper/>

Neel-Schaffer, Inc. (2008). *2030 Natchitoches Transportation Plan Report*. City of Natchitoches—Louisiana Department of Transportation and Development (LADOTD).

Seale, Richard. (2002). *Natchitoches and Louisiana's Timeless Cane River*. The Town of Natchitoches. Louisiana State University, Baton Rouge.

Southern Publishing Company. (1890). *Memoirs of Northwest Louisiana: Comprising a Large Fund of Biography of Actual Residents, and an Interesting Historical Sketch of Thirteen Counties*. Southern Publishing Company. Avoyelles Parish, Louisiana.

Transportation Research Board (TRB). (2010). *Highway Capacity Manual*.

United States. (1891). *Statutes at Large of the United States*. United States Department of State. U. S. Government Printing Office, Washington, D. C.

United States Army Corps of Engineers (USACE). (1987). *Wetlands Delineation Manual*. Regulatory Branch, Corps of Engineers.
<https://www.lrh.usace.army.mil/Portals/38/docs/USACE%2087%20Wetland%20Delineation%20Manual.pdf>

United States Army Corps of Engineers (USACE). (2010). *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region*. Version 2.0. Wetlands Regulatory Assistance Program.
https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1046490.pdf

United States Census Bureau. (2010, 2012). *United States Census Bureau*.

United States Census Bureau. (2012-2016). *American Community Survey 5-Year Estimates*.

United States Census Bureau. (2015). *2015 TIGER/Line Shapefiles, Prepared by the United States Census Bureau*.

United States Department of Agriculture (USDA). (2015). *Plant Guide for Southern Magnolia*.
https://plants.usda.gov/plantguide/pdf/pg_magr4.pdf

United States Fish and Wildlife Service (USFWS). (2017). *USFWS Louisiana Endangered Species Act Project Review and Guidance for Other Federal Trust Resources*.
<https://www.fws.gov/southeast/lafayette/project-review/>



APPENDICES

Appendix A: Atlas and Plates

Appendix B: Agency Coordination and Correspondence

Appendix C: December 2017 Public Meeting Summary

Appendix D: November 2018 Public Meeting Summary

Appendix E: Additional Public Outreach Summary

Appendix F: Conceptual Stage Relocation Plan

Appendix G: Phase I Environmental Site Assessment

Appendix H: Wetlands and Threatened & Endangered Species Report

Appendix I: Noise and Air Impact Analysis

Appendix J: Section 106 Consultation

Appendix K: Section 4(f) Evaluation



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