

U-5791 Jacksonville Parkway Extension

NC 53 (Western Boulevard) to US 17 (New Bern Highway)

State Environmental Assessment



September 2025

AtkinsRéalis



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U-5791 Jacksonville Parkway Extension
NC 53 (Western Boulevard) to US 17 (New Bern Highway)



Jacksonville Parkway Extension

STIP Project U-5791

WBS No.: 44363.1.1

NC 53 (Western Boulevard) to US 17 (New Bern Highway)

Jacksonville, Onslow County

ADMINISTRATIVE ACTION
STATE ENVIRONMENTAL ASSESSMENT

September 2025

Documentation prepared for North Carolina Department of Transportation

Approved by:

9/11/2025

Date

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9/10/2025

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U-5791 Jacksonville Parkway Extension

NC 53 (Western Boulevard) to US 17 (New Bern Highway)



PROJECT COMMITMENTS

NC 53 (Western Boulevard) to US 17 (New Bern Highway)

Jacksonville, Onslow County

STIP Project No. U-5719

WBS No.: 44363.1.1

NCDOT Division 3

The Division will submit sealed As-built construction plans to the Hydraulics Unit upon completion of structure construction, certifying that the drainage structure(s) and roadway embankment that are located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.

The Division will coordinate with the City of Jacksonville Fire Department Station during final design on providing access to Jacksonville Parkway.

NCDOT Hydraulics Unit

The Hydraulics Unit will coordinate with the NC Floodplain Mapping Program (FMP) to determine the status of the project with regard to applicability of NCDOT's Memorandum of Agreement, or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR).

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U-5791 Jacksonville Parkway Extension
 NC 53 (Western Boulevard) to US 17 (New Bern Highway)



Table of Contents

- I. Description of the Proposed Action 1**
 - A. Project Location 1
 - B. Project Description 1
- II. Purpose and Need 3**
 - A. Project Need 3
 - B. Project Purpose 4
 - Description of Existing Land Use4
 - C. Traffic Conditions 5
 - Existing Roadways5
 - Existing and Future No-Build Traffic Volumes and Operations5
 - Existing Crash Data8
 - D. Other Proposed Improvements in the Area 9
 - E. Consistency with Local Plans 10
- III. Alternatives Considered..... 12**
 - A. Alternative Screening Process 12
 - B. Western Boulevard / Jacksonville Parkway Intersection Options..... 12
 - C. Alternatives Carried forward as Detailed Study Alternatives 12
 - Alternative 1 (Blue)14
 - Alternative 2 (Green)14
 - Alternative 3 (Purple)14
 - Typical Section.....14
 - D. Detailed Study Alternatives Future Build Traffic Volumes and Operations 15
 - Build Time Travel Savings16
 - E. No-Build Alternative Consequences 17
- IV. Resources and Impacts 18**
 - A. Natural Environment 18
 - Waters of the US18
 - Floodplains/Hydraulics20
 - Protected Species20
 - B. Human Environment 24
 - Community Resources25
 - Bicycle and Pedestrian26
 - Access Changes27
 - Residential and Commercial Impacts and Relocations29
 - Cultural Resources30
 - Farmland/Agriculture Operations30
 - Air Quality31
 - Traffic Noise35
 - Hazardous Materials38



U-5791 Jacksonville Parkway Extension
 NC 53 (Western Boulevard) to US 17 (New Bern Highway)



Indirect and Cumulative Effects	39
V. Public and Agency Involvement	40
A. Public Involvement	40
B. Agency Coordination	41
Scoping	41
NEPA/Section 404 Merger Team.....	42
VI. NCDOT Preferred Alternative.....	44
VII. References.....	46
VIII. Figures.....	47

Appendices

- Appendix A. Alternatives Screening Process**
- Appendix B. Alternative 1 Design**
- Appendix C. Alternative 2 Design**
- Appendix D. Alternative 3 Design**
- Appendix E. Cultural Forms**
- Appendix F. Public Involvement**
- Appendix G. Merger Team Information**

Exhibits

Exhibit 1. Project Vicinity Map.....	2
Exhibit 2. Detailed Study Alternatives Carried Forward	13
Exhibit 3. Typical Section – Jacksonville Parkway / Ramsey Road	14
Exhibit 4. Typical Section – Henderson Drive	15

Tables

Table 1. Existing and Future No-Build Traffic Volumes	6
Table 2. Existing and Future No-Build Intersection LOS Results.....	7
Table 3. Existing and Future No-Build AM and PM Peak Travel Time Results.....	8
Table 4. Mid-block and Intersection Crash Data for 2016-2021.....	9
Table 5. Detailed Study Alternatives Carried Forward	13
Table 6. Future and Build Traffic Volumes.....	15
Table 7. Year 2050 AM Peak Traffic Analysis Comparison.....	16



U-5791 Jacksonville Parkway Extension

NC 53 (Western Boulevard) to US 17 (New Bern Highway)



Table 8.	Year 2050 PM Peak Traffic Analysis Comparison.....	16
Table 9.	Jurisdictional Waters of the US Impacts	19
Table 10.	Floodplain Impacts.....	20
Table 11.	Protected Species listed for the Study Area (Onslow County)	21
Table 12.	Community Resource Impacts	26
Table 13.	Bicycle and Pedestrian Impacts	27
Table 14.	Intersection Impacts	28
Table 15.	ROW and Structure Impacts	30
Table 16.	Cultural Resources Impacts.....	30
Table 17.	Farmland/Agriculture Impacts	31
Table 18.	Predicted Traffic Noise Impacts by Alternative*	36
Table 19.	Preliminary Noise Barrier Evaluation Results	37
Table 20.	Potential Hazardous Material Sites in the Project Study Area	38
Table 21.	Hazardous Material Impacts	39
Table 22.	Start of Study Comments	41
Table 23.	Alternatives Evaluation	45

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U-5791 Jacksonville Parkway Extension

NC 53 (Western Boulevard) to US 17 (New Bern Highway)



I. Description of the Proposed Action

A. Project Location

State Transportation Improvement Project (STIP) U-5791 is located in the northeastern portion of the City of Jacksonville in Onslow County, between Western Boulevard (NC 53) and US 17 adjacent to Jacksonville Commons. The project length is approximately four miles.

More information regarding the State Transportation Improvement Program can be found here:

<https://connect.ncdot.gov/projects/planning/pages/state-transportation-improvement-program.aspx>

What is the STIP?

A 10 year State and Federal-mandated plan that identifies the funding for and scheduling of transportation projects throughout the state.

B. Project Description

The North Carolina Department of Transportation (NCDOT) proposes to extend Jacksonville Parkway (SR 2714) from Western Boulevard (NC 53) to US 17 (New Bern Highway) (**Exhibit 1**). The first segment of Jacksonville Parkway (south of Western Boulevard) opened in 2013. Multiple new-location alternatives are being considered for the project. The Jacksonville Parkway extension will be designed as a four-lane median divided facility. Out of fourteen alternatives considered for the project, three alternatives were advanced for preliminary design as detailed study alternatives: Alternative 1 (Blue), Alternative 2 (Green), and Alternative 3 (Purple), as described in **Section III.E** below.

Completion of the Jacksonville Parkway will serve as an important connector to Western Boulevard and US 17, improving overall mobility in the area.

The extension of Henderson Drive (connecting Henderson Drive with Jacksonville Parkway Extension) is included in this project to help to alleviate congestion identified along Western Boulevard and to minimize additional intersection improvements at Jacksonville Parkway/Western Boulevard.



II. Purpose and Need

A. Project Need

The population within the project study area has increased 34.2% from 2008 to 2022 resulting in an annualized growth rate of 3.0%. The overall population of Onslow County increased 15.4% during this same period with an annualized growth rate of 1.4%. This data indicates that the study area has grown approximately 2-3 times the rate of Onslow County. This growth is likely the result of newer development in the area, a transition in the region from agriculture to urban development, and proximity of the area to commercial development and military facilities.

According to the Jacksonville Urban Area MPO (JUMPO), the Jacksonville Parkway Extension Project is an important connection needed to enhance mobility and provide an alternate connection to US 17. The specific needs for the proposed project are described below.

- **There is congestion along existing roadways within the project study area (Western Boulevard and US 17), and it is projected to worsen in the future with growth and development.**

There are a few intersections along the Western Boulevard and the US 17 corridor that currently (2023) operate under congested conditions with “fair” to “poor” Level of Service (LOS) at peak (or rush) hours (AM and/or PM). LOS D (approaching unstable flow of vehicles) is considered “fair” conditions. LOS E (unstable flow of vehicles) and LOS F (complete stops in flow) are considered “poor” conditions.

Level of Service (LOS) is a rating system that uses a letter grade from A (free flow conditions) to F (stop and go). Intersections that operate at LOS E are considered to be at a maximum capacity of the roadway

Traffic operations for the year 2050 indicate there will be notable congestion during the peak hours particularly along Western Boulevard. Traffic along Western Boulevard is expected to increase 8-40% in the next 25 years. Traffic along US 17 is expected to increase 31-101% during this same time period. While traffic operations along Ramsey Road do not indicate congested conditions at this time, traffic levels along Ramsey Road are expected to increase 77-106% over the next 25 years. This increase in traffic is expected to worsen traffic conditions along these roadways in the future and decrease LOS along the roadways.

- **New Bern Highway (US 17) is a primary north/south route serving as a major travel corridor in the local and state transportation systems.**

US 17 is a Principal Arterial that runs north/south through the project area. US 17 is a highway of high economic development value from Virginia to South Carolina and is of high importance as both a regional and statewide corridor. It also serves as an important link to the tourism industry as it provides access to North Carolina’s coastal communities. US 17 is also vital to military operations as it provides access to the Camp Lejeune Military Base. The Annual Average Daily Traffic (AADT) along US 17 in the project area ranges from 14,300 to 29,000 vehicles per day (vpd). Traffic forecasts predict these levels will rise over the next 20 years with approximately 26,700 to 44,100 vpd using US 17 in the project area.



U-5791 Jacksonville Parkway Extension

NC 53 (Western Boulevard) to US 17 (New Bern Highway)



- **There are limited options for transportation access in this area of Jacksonville.**

Western Boulevard is a primary commercial and employment corridor. As such, it serves as a major east/west commuter route. As noted above, US 17 serves as a major north/south corridor within the project area, and throughout the state. Outside of Western Boulevard and US 17, there are limited alternative routes within the project study area and most traffic is forced onto one of these two roads for most trips to work, school, home, or for shopping.

B. Project Purpose

The purpose of the proposed project is to improve the transportation network within the study area by alleviating existing and future congestion along existing roadways and improving mobility. Completion of Jacksonville Parkway will provide a northern loop from existing Jacksonville Parkway (US 17 Bypass) to US 17 to the north.

Description of Existing Land Use

As shown in **Exhibit 1**, the project is located in northeast Jacksonville, which is located in Onslow County. The City of Jacksonville is the 14th largest city in North Carolina and is home to the largest Marine Corps base on the east coast, Camp Lejeune, and also to the Marine Corps Air Station New River, which are located south of the project study area. The project study area is located partially within the City of Jacksonville's limits and partially within unincorporated Onslow County.

As seen in **Figure 1** (located in **Section VIII**), the project study area contains a mix of undeveloped, forested lands and developed parcels (commercial, residential, institutional, and public). There are also agricultural uses, open space, and a large wetland mitigation site (state owned and managed) area. Onslow County has an economy that is focused mainly on tourism and commercial activity associated with Camp Lejeune. US 17 and US 258 are used as primary tourist commuter routes to coastal communities. The proposed project is located approximately 2.5 miles northeast of the New River and downtown Jacksonville. Jacksonville Commons, Branchwood Park, and Richard Ray Park are three prominent recreational resources located within the project vicinity.

Western Boulevard is a critical link in the area with heavy concentrations of various retail uses, residential development, and office and institutional uses.



U-5791 Jacksonville Parkway Extension

NC 53 (Western Boulevard) to US 17 (New Bern Highway)



C. Traffic Conditions

Existing Roadways

Currently, Jacksonville Parkway is a four-lane divided facility that begins at the interchange with US 17 and terminates at the intersection of Western Boulevard and Gateway Drive North.

NC 53 (Western Boulevard) is a four-lane divided roadway with a posted speed limit of 45 mph. It is a critical road that links two primary arterials, US 17 and NC 24, in the City of Jacksonville, and has some of the heaviest concentrations of retail uses in the city. Western Boulevard is also considered the “front door” to Marine Corps Base Camp Lejeune. North of US 17, the functional classification of Western Boulevard is a Minor Arterial, while south of US 17, Western Boulevard is classified as Other Principal Arterial.

New Bern Highway (US 17) is a four-lane divided roadway with a posted speed limit of 45 mph west of Piney Green Road and 55 mph east of Piney Green Road. The functional classification of US 17 is Other Principal Arterial. US 17 is a major north-south corridor in coastal North Carolina. US 17 is part of the North Carolina Strategic Transportation Corridor Program and is designated as a part of the state hurricane evacuation route system.

Ramsey Road (SR 1324) is a two-lane undivided roadway with a posted speed limit of 55 mph east of Drummer Kellum Road and 45 mph west of Drummer Kellum Road. The functional classification of Ramsey Road is a Major Collector.

Drummer Kellum Road is a two-lane undivided roadway with a posted speed of 45 mph. The functional classification is a Minor Collector.

Carolina Forest Boulevard is a two-lane divided roadway with a posted speed limit of 25 mph. The functional classification of Carolina Forest Boulevard is a Major Collector.

Jacksonville Parkway (SR 2714) is a four-lane divided roadway with a posted speed limit of 45 mph. The functional classification of Jacksonville Parkway is Other Freeway.

Henderson Drive (SR 1336) is a two-lane and three-lane undivided roadway with a posted speed limit of 35 mph. The extension of Henderson Drive as part of this project will provide access to areas of future development as well as to regional amenities such as Jacksonville High School and major shopping destinations. The functional classification of Henderson Drive is a Minor Arterial.

Exchange Drive (SR 2716) is a two-lane undivided roadway with a posted speed limit of 35 mph. The functional classification of Exchange Drive is a Local roadway.

Existing and Future No-Build Traffic Volumes and Operations

Travel demand is a function of various socioeconomic conditions such as residential densities, location of jobs and services, trip lengths, and distributions for various types of trip purposes. Travel demand models are used for simulating current travel conditions and forecasting future travel patterns and conditions.

Traffic forecasts were developed by HNTB (*STIP Project U-5791 Jacksonville Parkway Extension, February 13, 2024*). The Year 2023 Existing Scenario was analyzed in order to provide an assessment of the current conditions. This scenario assumed no modification to the existing roadway geometry and traffic control.



U-5791 Jacksonville Parkway Extension
 NC 53 (Western Boulevard) to US 17 (New Bern Highway)



A Traffic Operations Technical Memorandum (AtkinsRéalis, July 2025) was completed to evaluate the traffic operations of the Existing and No-Build Conditions, and to identify recommended improvements and assess the operations of the three build alternatives.

The forecasted Annual Average Daily Traffic (AADT) for year 2023 along Western Boulevard ranges from 26,600 vehicles per day (vpd) to 43,500 vpd within the study area (**Table 1**). Traffic along Western Boulevard is expected to increase 8-40% in the next 25 years, with a range of 30,500 vpd to 49,400 vpd. Traffic along US 17 is expected to increase 31-101% during this same time period. Forecasted AADT for the year 2023 varies along the corridor and ranges from 14,300 vpd to 29,000 vpd. In the year 2050, the traffic along US 17 is expected to range from 26,900 to 44,300 vpd. The large differences in percentage increase for each roadway is due to a number of factors, including the fact that the AADT volumes vary for different segments of each roadway within the Traffic Forecast (HNTB, 2024). These variations are calculated based on historic AADT growth rates, extrapolations of historical AADT volumes and previous forecasts completed, growth percentages calculated from models, socioeconomic data, and the application of engineering judgement.

Table 1. Existing and Future No-Build Traffic Volumes

Roadway	2023 AADT	2050 No-Build AADT	% Increase
NC 53 (Western Boulevard)	26,600 – 43,500 vpd	30,500 – 49,400 vpd	8-40%
US 17 (New Bern Highway)	14,300 – 29,000 vpd	26,900 – 44,300 vpd	31-101%
Ramsey Road	2,600 – 6,400 vpd	4,600 – 12,200 vpd	77-106%

Source: Traffic Operations Technical Memorandum (AtkinsRéalis, July 2025)

While traffic operations along Ramsey Road do not indicate congested conditions at this time, traffic levels along Ramsey Road are expected to double by 2050 with an increase of 77-106% over the next 25 years. These increases in traffic are expected to worsen traffic conditions along the roadway in the future and decrease LOS along the roadway.

There are seven intersections that are currently stop-controlled, including an all-way stop control at the intersection of Ramsey Road at Drummer Kellum Road. The intersection of US 17 (New Bern Highway) at Drummer Kellum Road is currently a four-legged reduced conflict intersection with U-turn locations along US 17 (New Bern Highway). The signalized intersections within the study area include:

- NC 53 (Western Blvd) at Carolina Forest Blvd/N Plain Road
- NC 53 (Western Blvd) at Forum Road/Marty Goldman Way
- NC 53 (Western Blvd) at Henderson Drive
- NC 53 (Western Blvd) at Marlin Drive
- NC 53 (Western Blvd) at Jacksonville Parkway/Gateway Drive N
- NC 53 (Western Blvd) at Gateway Drive S
- US 17 (N Marine Blvd) at NC 53 (Western Blvd)
- US 17 (N Marine Blvd) at McDaniel Drive/Workshop Lane
- US 17 (N Marine Blvd) at Piney Green Road/Car Dealership Driveway
- Ramsey Road at Carolina Forest Blvd/Carolina Plantations Blvd

The 2050 No-Build analysis indicates that during the AM peak period, all of the signalized intersections would operate with an acceptable LOS D or better (**Table 2**). However, during the PM peak, the intersection of Jacksonville Parkway at Western Boulevard would operate with an unacceptable LOS E. At



U-5791 Jacksonville Parkway Extension
 NC 53 (Western Boulevard) to US 17 (New Bern Highway)



this location, excessive queues were observed on the northbound approach of Jacksonville Parkway and westbound Western Boulevard.

Table 2. Existing and Future No-Build Intersection LOS Results

Intersection	2023 Level of Service (LOS)		2050 No-Build LOS	
	AM	PM	AM	PM
NC 53 (Western Blvd) at Plain Drive / Carolina Forest Boulevard	C	C	D	D
NC 53 (Western Blvd) at Forum Road	A	B	B	D
NC 53 (Western Blvd) at Henderson Drive	C	C	B ¹	D
NC 53 (Western Blvd) at Marlin Drive	A	C	B	C
NC 53 (Western Blvd) at Jacksonville Pkwy	C	D	C	E
NC 53 (Western Blvd) at Gateway Drive South	B	C	B	C
NC 53 (Western Blvd) at US 17 (Marine Blvd)	C	D	C	D
US 17 (Marine Blvd) at McDaniel Drive/Workshop Lane	C	C	C	C
US 17 (Marine Blvd) at Piney Green Road/Car Dealership Entrance	C	C	C	C
Ramsey Road at Carolina Forest Road/Carolina Plantation Road	C	C	C	C

Source: Traffic Operations Technical Memorandum (AtkinsRéalis, July 2025)

Note 1: W-5203U is currently under construction and is improving Henderson Drive to the south of Western Boulevard

The 2050 No-Build analysis indicates the existing stop-controlled intersections of US 17 at Drummer Kellum Road and US 17 at Kellum Loop Road have excessive delay queuing in either the AM or PM peak hours. The other stop-controlled intersections are projected to operate with an LOS D or better during either the AM or PM peak.

A travel time analysis was conducted to provide a comparison of the 2023 Existing and 2050 No-Build. The travel time analysis indicates that the travel time and speeds are expected to deteriorate along Western Boulevard during the AM peak due to the increase in traffic volumes. The travel times and speeds are expected to deteriorate along northbound US 17. Travel times and speeds for southbound US 17 show slight improvements, primarily attributed to the optimized signal timings that favor the southbound direction. The travel times and speeds are expected to deteriorate during the PM Peak for US 17 and eastbound Western Boulevard. Travel times and speeds for westbound Western Boulevard show slight improvements, primarily attributed to the optimized signal timings that favor the westbound direction.



U-5791 Jacksonville Parkway Extension
 NC 53 (Western Boulevard) to US 17 (New Bern Highway)



Table 3. Existing and Future No-Build AM and PM Peak Travel Time Results

Peak Hour	Facility		2023 Existing			2050 No-Build			Difference			Percentage		
	Corridor	Direction	Travel Time	Speed (mph)	Delay (min)	Travel Time (min)	Speed (mph)	Delay (min)	Travel Time (min)	Speed (mph)	Delay (min)	Travel Time (min)	Speed (mph)	Delay (min)
AM Peak	NC 53 (Western Blvd)	EB	2.3	31.3	0.7	2.5	28.5	1.0	0.2	-2.8	0.3	9%	-9%	43%
		WB	2.3	30.9	0.8	2.6	27.8	1.1	0.3	-3.1	0.3	13%	-10%	38%
	US 17 (New Bern Hwy)	NB	3.7	45.4	0.7	3.9	42.7	0.8	0.2	-2.7	0.1	5%	-6%	14%
		SB	4.6	36.8	1.3	4.4	38.6	1.2	-0.2	1.8	-0.1	-4%	5%	-8%
PM Peak	NC 53 (Western Blvd)	EB	2.6	27.4	1.0	3.0	24.4	1.3	0.4	-3	0.3	15%	-11%	30%
		WB	4.4	16.3	2.8	4.0	17.8	2.5	-0.4	1.5	-0.3	-9%	9%	-11%
	US 17 (New Bern Hwy)	NB	4.0	42.1	0.9	15.5	10.8	10.9	11.5	-31.3	10	>100%	-74%	>100%
		SB	4.7	35.8	1.5	4.8	35.3	1.5	0.1	-0.5	0	2%	-1%	0%

Source: Traffic Operations Technical Memorandum (AtkinsRéalis, July 2025)

Existing Crash Data

Mid-block and intersection crash data was used to assess existing crash rates along the US 17 and NC 53 (Western Blvd) corridors. Crash data reports were collected by NCDOT between 2016 and 2021. During the five-year reporting period, there were a total of 1,262 crashes within the study area. Of these, 304 were reported as injury crashes with no fatalities. **Table 4** provides a summary of the total number of crashes recorded along the corridor, the Average Annual Daily Traffic (AADT) volumes, the crash rate, the critical crash rate (for segments), and the safety ratio. The crash rate is the number of crashes per 100 million vehicles. The critical crash rate is a statistically derived number which serves as a screening measure to identify locations where crash occurrence is higher than should be expected for a given facility type and for which safety measures should be considered. The safety ratio is the critical crash rate divided by the actual crash rate. A ratio less than one may indicate a safety problem.

The mid-block crash rate analysis shows that half of the segments within the study area have a higher rate of total crashes than the average rate for similar facilities in North Carolina. The majority of crashes that occurred along the segments were rear end collisions which are typically associated with congestion and a lack of turn lanes into driveways and intersections. None of the segments appear on the North Carolina Highway Safety Improvement Program (HSIP) list of potentially hazardous section locations.

An intersection critical crash rate cannot be determined because a statewide average intersection crash rate is not available. Over the five-year span, the intersection with the highest number of crashes and crash rate was US 17 at Western Boulevard. The majority of the crashes at this intersection were angle and rear end crash types. The intersections of Western Boulevard at Marlin Drive, Western Boulevard at Exchange Drive, Western Boulevard at Trade Street and US 17 at McDaniel Drive appear in the North Carolina Highway Safety Improvement Program (HSIP) list of potentially hazardous intersections.



U-5791 Jacksonville Parkway Extension
 NC 53 (Western Boulevard) to US 17 (New Bern Highway)



Table 4. Mid-block and Intersection Crash Data for 2016-2021

Corridor	Segment	Length (miles)	AADT	Total Crashes (2016-2021)	Actual Crash Rate ¹	Critical Crash Rate ¹	Safety Ratio
US 17	Western Blvd to McDaniel Dr	0.30	32,000	69	779.40	494.61	0.63
	McDaniel Dr to Piney Green Rd	0.64	33,000	75	387.20	414.08	1.07
	Piney Green Rd to Drummer Kellum Rd	0.41	22,000	16	192.90	503.18	2.61
	Drummer Kellum Rd to Kellum Loop Rd	1.24	15,000	37	217.40	424.97	1.95
	North of Kellum Loop Rd	0.03	15,000	0	0.00	1704.20	>1.00
NC 53 (Western Blvd)	Henderson Dr to Marlin Dr	0.15	48,000	56	834.70	591.07	0.71
	Marlin Dr to Jacksonville Pkwy	0.21	48,000	93	996.00	542.77	0.54
	Jacksonville Pkwy to Gateway Dr	0.22	37,000	46	610.50	572.99	0.94
	Gateway Dr to Exchange Dr	0.18	37,000	20	323.40	604.54	1.87
	Exchange Dr to Circuit Ln	0.19	37,000	40	613.30	595.67	0.97
	Circuit Ln to Trade St	0.18	37,000	28	452.70	604.54	1.34
	Trade St to US 17	0.15	37,000	43	831.40	636.65	0.77
Intersections	Western Blvd at Henderson Dr	-	48,300	34	234.48	-	-
	Western Blvd at Marlin Dr	-	49,600	85	570.83	-	-
	Western Blvd at Jacksonville Pkwy	-	53,300	84	524.96	-	-
	Western Blvd at Gateway Dr	-	39,600	48	403.75	-	-
	Western Blvd at Exchange Dr	-	42,600	53	414.42	-	-
	Western Blvd at Circuit Lane	-	42,300	57	448.85	-	-
	Western Blvd at Trade St	-	41,300	66	532.31	-	-
	Western Blvd at US 17	-	64,500	207	1069.01	-	-
	US 17 at McDaniel Dr	-	37,100	53	475.85	-	-
	US 17 at Piney Green Rd	-	42,500	32	250.80	-	-
	US 17 at Drummer Kellum Rd	-	28,000	8	95.17	-	-
	US 17 at Kellum Loop Rd	-	16,800	12	237.93	-	-

Source: NCDOT Traffic Safety Unit

For segments, the crash rate is in crashes per 100 million vehicle miles and for intersections, the crash rate is in crashes per 100 million entering vehicles.

Note: Intersection crash rate and safety ratio cannot be determined because a statewide average crash rate is not available.

D. Other Proposed Improvements in the Area

The following NCDOT STIP Projects are within 3 miles of the proposed project:

- **U-6081:** Upgrade NC 53 (Western Boulevard) to RCIs from SR 1308 (Gum Branch Road) to US 17 (Marine Boulevard). This project is currently unfunded.
- **W-5203U:** Intersection improvements at NC 53 (Western Boulevard) and SR 1336 (Henderson Drive). This project is currently under construction.
- **U-5903:** Upgrade Henderson Drive to a RCI from SR 1308 (Gum Branch Road) to NC 53 (Western Boulevard). Right-of-way acquisition is scheduled for 2028 with construction occurring in 2030.



U-5791 Jacksonville Parkway Extension

NC 53 (Western Boulevard) to US 17 (New Bern Highway)



- **U-5789:** Intersection improvements at NC 53 (Western Boulevard) and SR 2714 (Jacksonville Parkway). Right-of-way acquisition is currently in progress with construction being scheduled for 2025.
- **U-4007E:** Add additional lanes on US 17 and construct new routes on new location from US 17 Business to SR 1326 (Drummer Kellum Road). Combined with U-5736 and U-5508. Right-of-way acquisition is set to occur in 2028 with construction occurring in 2031.
- **U-5787:** Trade Street; Construct roadway on new location from NC 53 (Western Boulevard) to McDaniel Drive. Right-of-way acquisition is set to occur in 2025 with construction occurring in 2027.
- **U-6107:** Upgrade intersection of McDaniel Drive/Workshop Lane with US 17. This project is currently funded for preliminary engineering only.
- **U-5878:** Commerce Drive Extension. Construct a roadway on new location from Commerce Drive to Piney Green Road. This project is under construction.
- **U-5951:** Upgrade US 17 at-grade intersection to partial interchange at US 17 Business and Marine Boulevard. Right-of-way acquisition is set to occur in 2026 with construction following in 2028.
- **U-5736:** Construct access management improvements along Western Boulevard between US 17 and NC 24. Right-of-way acquisition is set to occur in 2028 with construction occurring in 2030.
- **BL-0073:** Construct 1000 feet of sidewalk along Gum Branch Road from Western Boulevard to City of Jacksonville Limits. This project is currently in the design phase and will begin construction likely in 2026.

E. Consistency with Local Plans

The proposed project is included in the adopted *NCDOT 2024-2033 State Transportation Improvement Program (STIP)* and the following regional and local plans:

- **Jacksonville Urban Area Metropolitan Planning Organization (JUMPO) 2050 Metropolitan Transportation Plan (MTP) (March 2025).** This plan identifies current and future transportation needs and provides multi-modal strategies to meet these needs. The MTP proposes a bicycle lane along the Henderson Drive Extension, Jacksonville Parkway Extension, and Ramsey Road. The proposed project is also listed as a recommended future multimodal system within the plan. Ramsey Road widening is listed as a High Priority Corridor.
- **City of Jacksonville's FY2025-2034 Capital Improvement Plan.** This is a long-term plan that lists identified capital projects and acquisition needs within the city. Recommendations include a proposed greenway through the northern corridor of Western Boulevard that connects Carolina Forest to Jacksonville Commons, a 15,000 square-foot multi-purpose facility at Jacksonville Commons as well as a splash pad and two additional multi-purpose fields, the extension of the Drummer Kellum waterline, and the extension of water and sewer lines along US 17N and Drummer Kellum Road for a 17-acre commercial development.
- **City of Jacksonville Comprehensive Recreation Master Plan Update (2024).** This plan proposes the addition of tournament-caliber baseball complex within Jacksonville Commons as well as a splash pad, playground, and ninja course. The plan also recommends adding a drone zone/RC



U-5791 Jacksonville Parkway Extension

NC 53 (Western Boulevard) to US 17 (New Bern Highway)



course in Jacksonville Commons. The addition of a connection from Branchwood Park to Jacksonville Commons is also proposed.

- **City of Jacksonville Trials and Greenways Pedestrian Map (May 2020)**. This plan includes a multi-use path along the existing Jacksonville Parkway and the Henderson Drive Extension.
- **City of Jacksonville Unified Development Ordinance (2014, amended 2021) and City of Jacksonville Zoning Code (2019)**. These documents designate the property use where the proposed roadway would extend for commercial, office/institutional, and residential uses. The area has experienced substantial growth and there has been recent development activity in the study area, including new residential and commercial construction.

The project also is included in two NCDOT feasibility studies:

- **Feasibility Study for Jacksonville Bypass Extension**. The portion of the proposed roadway located on the eastern side of Western Boulevard recommended in the feasibility study was constructed as part of the Jacksonville Parkway project. The proposed roadway located west of Western Boulevard encompasses the U-5791 project study area. The study included an alignment that ran parallel to Ramsey Road instead of intersecting with it, as is proposed with U-5791. The first segment of the Jacksonville Parkway was completed (from the Jacksonville Bypass north of US 17 to NC 53) in December of 2013.
- **FS-0303C Proposed Connector (Northwest Corridor) From US 258/NC 24 to US 17**. The proposed project (U-5791) is included as part of a larger potential project beginning at US 258/NC 24 and ending at US 17, which is called the Northwest Corridor in Feasibility Study Number FS-0303C. The Northwest Corridor is a proposed connector to be used as an alternative route to reduce traffic congestion along US 17. Multiple alignments were proposed in this study, including connecting the extension to Drummer Kellum Road instead of Ramsey Road.

A separate corridor study (*Western Boulevard [NC 53] Corridor Study, 2015*) was also conducted south of the project along Western Boulevard (NC 53), which recommended the incorporation of a raised median along the corridor to help reduce crash and injury rates and improve traffic operations.

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III. Alternatives Considered

A. Alternative Screening Process

A systematic multi-step screening process was utilized to develop and evaluate alternatives presented in this State Environmental Assessment (SEA). The project is following the Section 404 / NEPA Merger Process which defines a process for agency concurrence and coordination during project development. More information on the process is included in **Section V** – Public and Agency Involvement.

General approaches were used for the first screening, and those that passed (new location alternatives and improvements to the existing roadway) were carried forward to the second screening. The second screening included the development and evaluation of five new-location and existing corridors, which included a 250-foot buffer. The third screening compared conceptual designs and their impacts. From there, Detailed Study Alternatives (DSA) were recommended based on design considerations, agency input, traffic operations, and impacts to the human and natural environments.

After the third screening, the project team was made aware by the City of Jacksonville of several additional proposed community developments and facilities that would potentially be impacted by the proposed alternatives. The designs were then refined further to avoid and/or minimize impacts to these proposed developments and facilities. Details and results of the screening process can be found in **Appendix A**.

B. Western Boulevard / Jacksonville Parkway Intersection Options

Two options at the intersection of Jacksonville Parkway and Western Boulevard have also been developed and analyzed.

- **At-grade Intersection.** An At-Grade intersection means that the existing intersection at Western Boulevard and Jacksonville Parkway would be updated to incorporate the addition of the extension.
- **Quad Interchange.** The quad interchange includes Jacksonville Parkway bridging over Western Boulevard and utilizes Gateway Drive South and Henderson Drive as the “legs” of the interchange. Traditional interchange ramps will not be utilized.

Both options were evaluated and the costs, traffic operations benefits and impacts were compared. From a traffic operation standpoint, both options operate at similar levels and provide a Level of Service (LOS) D or better for the majority of the surrounding intersections. Impacts to natural and human resources are also very similar. The quad interchange option would have higher costs than the at-grade intersection option due to the addition of a bridge.

In a meeting with the City of Jacksonville on April 3, 2025, the evaluation of the two options were discussed and the quad interchange option was eliminated from further analysis due to the additional costs associated with the bridge without any traffic benefits. The at-grade option is also the preference of the City of Jacksonville.

C. Alternatives Carried forward as Detailed Study Alternatives

Based on an evaluation of impacts and review by the Merger Team, three (3) alternatives were carried forward for detailed study (**Exhibit 2**). The three alternatives carried forward would have fewer and less significant impacts to natural resources and residential/commercial properties than the alternatives that were eliminated.



U-5791 Jacksonville Parkway Extension
 NC 53 (Western Boulevard) to US 17 (New Bern Highway)

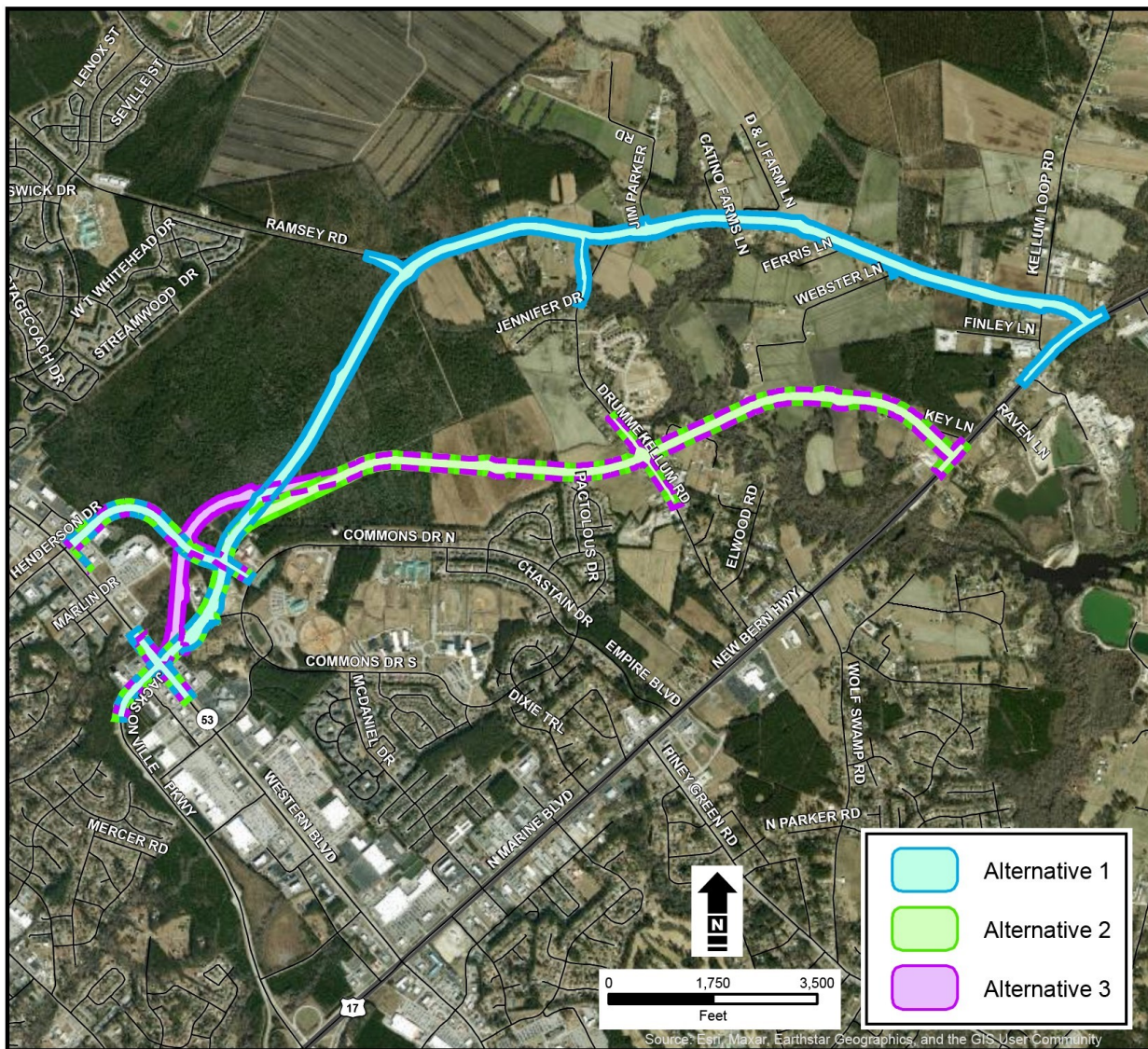


Due to the complexity of the alternative nomenclature during the evaluation process the three alternatives that moved forward have been renamed for presentation in the SEA as shown in **Table 5**.

Table 5. Detailed Study Alternatives Carried Forward

Build Alternative	Description
1 (Blue)	New Northern Location Roadway and Ramsey Widening Connection
2 (Green)	New Southern Location Roadway connecting to US 17
3 (Purple)	Variation of the New Southern Location Roadway to US 17. Follows the same alignment as Alt 2 (Green) north of Jacksonville Commons.

Exhibit 2. Detailed Study Alternatives Carried Forward





U-5791 Jacksonville Parkway Extension
 NC 53 (Western Boulevard) to US 17 (New Bern Highway)



Alternative 1 (Blue)

This alternative begins at the existing Jacksonville Parkway/Western Boulevard intersection and proceeds north on new location to Ramsey Road. It will then widen Ramsey Road connecting to US 17. The alternative will also include the extension of Henderson Drive from the existing Henderson Drive/Western Boulevard intersection connecting to the Jacksonville Parkway extension. **Appendix B** includes the preliminary design of Alternative 1.

Alternative 2 (Green)

This alternative begins at the existing Jacksonville Parkway/Western Boulevard intersection and proceeds north on all new location connecting to US 17 south of Key Lane. The alternative will also include the extension of Henderson Drive from the existing Henderson Drive/Western Boulevard intersection connecting to the Jacksonville Parkway extension. **Appendix C** includes the preliminary design of Alternative 2.

Alternative 3 (Purple)

This alternative is a slight variation of Alternative 2 (Green) in that after leaving the intersection of Western Boulevard and existing Jacksonville Parkway, the alignment is slightly west of Alternative 2. The alternative will also include the extension of Henderson Drive from the existing Henderson Drive/Western Boulevard intersection connecting to the Jacksonville Parkway extension. **Appendix D** includes the preliminary design of Alternative 3.

Typical Section

All alternatives include a four lane twenty-three-foot median divided roadway with bulb outs for U-turns at various locations along the alignment. **Exhibit 3** and **Exhibit 4** show the typical sections for Jacksonville Parkway, Ramsey Road, and Henderson Drive.

Exhibit 3. Typical Section – Jacksonville Parkway / Ramsey Road

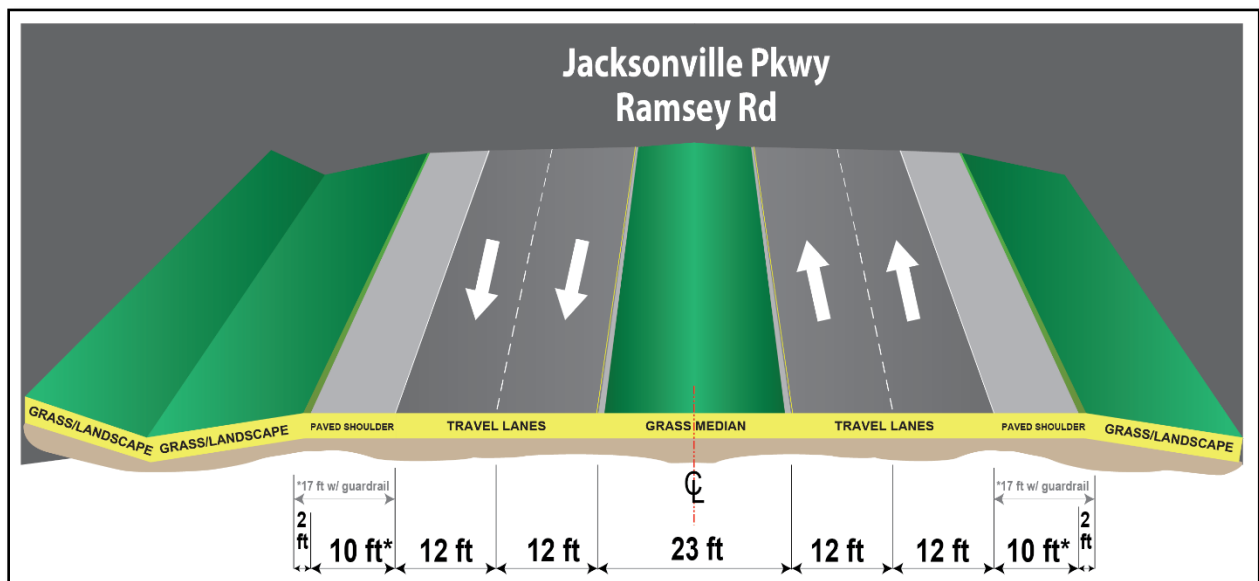
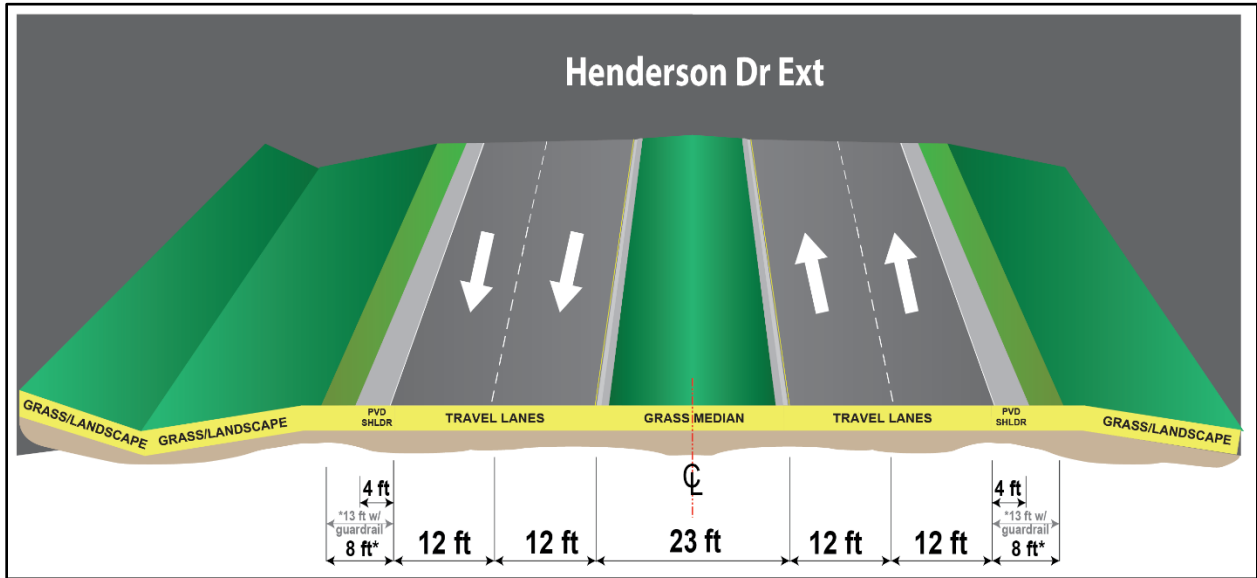




Exhibit 4. Typical Section – Henderson Drive



D. Detailed Study Alternatives Future Build Traffic Volumes and Operations

A Traffic Operations Technical Memorandum (AtkinsRéalis, July 2025) was completed to evaluate the traffic operations of the Existing and No-Build Conditions, and to identify recommended improvements and assess how the build alternatives would improve traffic operations in 2050 (Table 6).

Scenarios that were analyzed within this traffic operations analysis included 2023 Existing, 2050 No-Build, and 2050 Build Alternatives 1-3. Because of how similar Alternative 2 and Alternative 3 are, traffic operations analyzed together for these alternatives.

For Build Alternative 1 in 2050, the forecasted AADT along Western Boulevard ranges from 23,900 vehicles per day (vpd) to 46,700 vpd. Traffic along US 17 is projected to range from 24,100 to 41,500 vpd. Traffic along Ramsey Road is projected to range from 5,200 to 15,400 vpd and Jacksonville Parkway extension is projected to range from 14,300 to 23,600 vpd.

Under Build Alternative 2 and 3, the forecasted AADT along Western Boulevard range from 25,200 to 49,400 vpd. Traffic along US 17 is projected to range from 26,800 to 36,400 vpd. Traffic along Ramsey Road is projected to range from 4,400 to 13,000 vpd and Jacksonville Parkway Extension is projected to range from 7,000 to 23,400 vpd.

Table 6. Future and Build Traffic Volumes

Roadway	2050 Build Alternative 1 AADT	2050 Build Alternative 2/3 AADT
NC 53 (Western Boulevard)	23,900 – 46,700 vpd	25,200 – 49,400 vpd
US 17 (New Bern Highway)	24,100 – 41,500 vpd	26,800 – 36,400 vpd
Jacksonville Parkway Extension	14,300 – 23,600 vpd	7,000 - 23,400 vpd
Ramsey Road	5,200 – 15,400 vpd	4,400 – 13,000 vpd

For Alternative 1: All of the signalized intersections are projected to operate with an acceptable LOS during the AM and PM peak hours. There is one lane movement for the unsignalized intersection at



U-5791 Jacksonville Parkway Extension
 NC 53 (Western Boulevard) to US 17 (New Bern Highway)



Kellum Loop at US 17 in each of the AM and PM peak hours that is projected to operate with an LOS E or F but is not considered unacceptable. The intersection of Kellum Loop Road at US 17 (New Bern Highway) is projected to operate with an LOS E in the AM Peak and LOS F in the PM peak for the eastbound shared left-right movement.

For Alternative 2/3: All signalized intersections are projected to operate with acceptable LOS during both the AM and PM peak hours. All lane groups for the unsignalized intersections are also projected to operate with acceptable LOS during both the AM and PM peak hours.

A summary of the traffic operations analysis results for all analyzed intersections comparing the different alternatives in the Year 2050 are provided in **Table 7** and **Table 8** for both the AM and PM Peak, respectively.

Table 7. Year 2050 AM Peak Traffic Analysis Comparison

LOS	Number of Intersections ¹			Percentage ²		
	No-Build	Build Alt 1	Build Alt 2/3	No-Build	Build Alt 1	Build Alt 2/3
A	2	2	3	9%	7%	10%
B	9	14	14	39%	47%	47%
C	8	11	12	35%	37%	40%
D	4	2	1	17%	7%	3%
E	0	1	0	0%	3%	0%
F	0	0	0	0%	0%	0%

Note: 1. Number of intersections include unsignalized intersections. For unsignalized, the critical movement represents the overall LOS.
 2. The percentage is the percent of the total number of intersections in each scenario.

Table 8. Year 2050 PM Peak Traffic Analysis Comparison

LOS	Number of Intersections ¹			Percentage ²		
	No-Build	Build Alt 1	Build Alt 2/3	No-Build	Build Alt 1	Build Alt 2/3
A	1	2	1	4%	7%	3%
B	6	8	10	26%	27%	33%
C	6	12	13	26%	40%	43%
D	9	7	6	39%	23%	20%
E	1	0	0	4%	0%	0%
F	0	1	0	0%	3%	0%

Note: 1. Number of intersections include unsignalized intersections. For unsignalized, the critical movement represents the overall LOS.
 2. The percentage is percent of the total number of intersections in each scenario.

Build Time Travel Savings

Simtraffic and Synchro software were used to calculate travel time savings associated with the project. The No-Build travel time run included analyzing the amount of time it currently takes to travel from the existing Jacksonville Parkway/Western Boulevard intersection to near the intersection of US 17 and Kellum Loop Road. The Build alternative travel time runs included analyzing the amount of time it currently takes to travel from existing Jacksonville Parkway/Western Boulevard intersection along the



U-5791 Jacksonville Parkway Extension

NC 53 (Western Boulevard) to US 17 (New Bern Highway)



proposed extension, all of which end near the intersection of US 17 and Kellum Loop Road. The travel time runs are shown below:

- No Build – 18.27 minutes
- Alternative 1 – 6.58 minutes
- Alternative 2 – 6.02 minutes
- Alternative 3 – 6.02 minutes

Therefore, a maximum travel time savings of 12.25 minutes is anticipated due to the project.

E. No-Build Alternative Consequences

As the population within the study area and Onslow County grows, traffic along Western Boulevard and US 17 are expected to increase and become more congested. Due to the nature of the projected population and development growth in the area, the availability of having another roadway option in the transportation network within the study area is needed to alleviate existing and future congestion along existing roadways and improve mobility.

If the project is not built, the existing roadway network would operate at unacceptable LOS and increase congestion; resulting in travel time delay for drivers and a potential increase in crashes. The No-Build Alternative would not improve the transportation network within the study area by alleviating existing and future congestion along existing roadways and improving mobility.

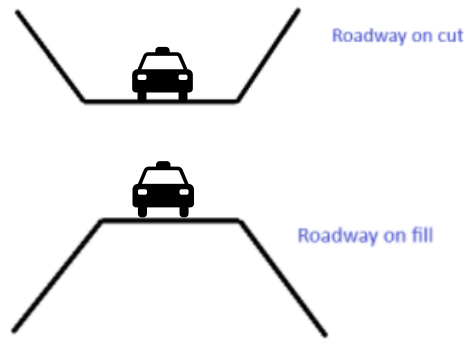


IV. Resources and Impacts

This chapter summarizes the impacts of each of the three (3) Detailed Study Alternatives on the natural and human environments within the study area. A comparison of the alternatives and their impacts is also included. The preliminary design of the alternative is based on slope stakes plus 25 linear feet. Map books of the preliminary design of each of the three alternatives are included in **Appendix B** (Alternative 1), **Appendix C** (Alternative 2), and **Appendix D** (Alternative 3).

What are slope stakes?

Slope stakes show where the side slopes of the project are, whether the proposed roadway is lower than the existing ground (cut) or higher than the existing ground (fill)



A. Natural Environment

Waters of the US

Water resources defined as Waters of the US are subject to regulation under Section 404 of the Clean Water Act. These are often termed “jurisdictional resources” since the US Army Corps of Engineers (USACE) has jurisdiction over impacts to these resources.

Existing Conditions

A Natural Resources Technical Report was completed for the project in December 2024 (AtkinsRéalis, 2024) to delineate (describe completely, locate) and evaluate water resources in the project area. Water resources in the study area are part of the White Oak River basin U.S. Geological Survey (USGS) Hydrologic Unit 03020302. Seventeen streams and thirty-five wetlands have been identified within the study area. The Jurisdiction Determination (USACE Action ID: SAW-2017-00842) was provided by the USACE on November 21, 2022, which means that the USACE verified and agreed with the accuracy of the water resources delineated. In addition, 5.55 acres and 29,000 linear feet of open surface waters were identified within the study area.

None of the streams within the U-5791 study area have been designated by the USACE as a Navigable Water under Section 10 of the Rivers and Harbors Act. There is one Coastal Area Management Act (CAMA) Areas of Environmental Concern (AEC) identified in the study area. Northeast Creek is a designated Public Trust Water. The National Marine Fisheries Service (NMFS) has not identified any streams within the U-5791 study area as an Essential Fish Habitat. The North Carolina Division of Marine Fisheries (NCDMF) has not identified streams in the study area as anadromous fish waters. There are no designated Outstanding Resource Waters (ORW), High-Quality Waters (HQW), or 303(d) listed streams present within the project study area.



U-5791 Jacksonville Parkway Extension
 NC 53 (Western Boulevard) to US 17 (New Bern Highway)



Impacts

Stream and wetland impacts are relatively consistent across all three design alternatives as shown in **Table 9**. Impacts to streams range from 1,004 to 1,270 linear feet. Wetland impacts range from 18.17 to 20 acres. Alternatives 2 and 3 have greater linear feet impacts for jurisdictional ditches (tributaries). Minimal impacts to open waters are expected for Alternatives 1 and 2. Due to the high concentration of Waters of the US in the project area, all design alternatives will have potential impacts to water resources.

Table 9. Jurisdictional Waters of the US Impacts

	Alternative 1	Alternative 2	Alternative 3
Wetlands (acres)	18.17	18.72	20
Open Water (acres)	0.14	0.14	0
Streams (linear feet (LF))	1,270	1,145	1,004
Jurisdictional Ditches (Tributaries) (LF)	2,589	4,581	8,327

Permits and Measures to Reduce Impacts

Permits will be required from the USACE (Section 404 permit) and the NC DEQ Division of Water Resources (Section 401 Water Quality Certification) for roadway encroachment into jurisdictional surface waters and wetlands. An Individual Permit (IP) will be required from the USACE and corresponding Individual Water Quality Certification from the NC DEQ Division of Water Resources (NCDWR). Both the permit and the certification need to be obtained before construction can begin.

The permit process includes demonstrating that all practicable measures to avoid and minimize impacts to Waters of the US have been incorporated into the final design plans before addressing compensation for remaining impacts. For this project, the avoidance and minimization started with developing the conceptual corridors. The available information in the public record was not very detailed in terms of information on wetlands. Therefore, a step-by-step process was used to develop resource layers to inform conceptual alternative development and preliminary impacts until the preferred alternative could be selected. The boundaries of all the developed alternatives then allowed for the creation of a proposed Natural Resources Technical Report (NRTR) boundary that was used for field verification. The entirety of the NRTR Boundary was visited in the field and the waters of the US were delineated. This allowed a more detailed understanding of the resource impacts from each alternative. This iterative process allowed avoidance and minimization to be considered from the initial development of the alternatives to bridge/culvert selection for each considered alternative.

During final design, NCDOT will continue to investigate ways to avoid and minimize impacts to streams, lakes/ponds, and wetlands. For remaining impacts, the permits from the USACE and the NCDEQ Division of Water Resources will identify the necessary mitigation measures needed to compensate for these impacts. NCDOT will coordinate with the NCDEQ Division of Mitigation Services to provide the required mitigation compensation.



Floodplains/Hydraulics

Floodways and floodplains (areas of flat land next to river or streams that are prone to flooding) are protected under federal and state laws. The Federal Emergency Management Agency (FEMA), in cooperation with other federal agencies and state and local governments, develops floodplain and floodway boundaries. Boundaries of the 100-year floodplains (land that has 1% annual chance of shallow flooding) and floodways are shown on Flood Insurance Rate Maps (FIRMs).

Existing Conditions

A Hydraulic Planning Report was completed for the project in October 2023 (AtkinsRéalis, 2023). The 100-year floodplain associated with Wolf Swamp is within the study area. The report identified three (3) major crossings for the alternatives. Alternative 1 will cross Wolf Swamp and Bucks Branch. Alternatives 2 and 3 will cross Wolf Swamp.

Impacts

Along Alternative 1, Wolf Swamp flows under Ramsey Road within a 155”x90” pipe arch culvert. Along Drummer Kellum Road, Bucks Branch flows under the roadway within a 103”x71” pipe arch culvert. Both structures are hydraulically sufficient.

Alternative 1 will impact approximately 1.9 acres of 100-Year floodplains at the crossing of Wolf Swamp due to the widening of Ramsey Road. There are no impacts to 100-Year floodplains associated with Bucks Branch with the improvements to Drummer Kellum Road.

Both Alternative 2 and 3 will create new crossing of Wolf Swamp and a 270’ 3-span 54” Prestressed concrete girder bridge is proposed at this crossing. The length of the bridge is controlled by the sinuosity (curve) of the stream, the 10-foot offset constraint from the top of banks, FEMA no rise compliance, and the width of the proposed road. Approximately 1.5 acres of 100-Year floodplains will be impacted associated with the new crossing of Wolf Swamp.

Table 10. Floodplain Impacts

	Alternative 1	Alternative 2	Alternative 3
100-Year Floodplains (acres)	1.9	1.5	1.5

Protected Species

Existing Conditions

The United States Fish and Wildlife Service (USFWS) and the National Oceanic Atmospheric Administration (NOAA) - National Marine Fisheries Service (NMFS) list twelve federally protected species under the Endangered Species Act (ESA) as potentially occurring within the Onslow County. These species are listed in **Table 11** followed by a discussion of the presence or absence of suitable habitat along with a Biological Conclusion rendered based on the results of habitat assessments and surveys conducted within the study area.



Table 11. Protected Species listed for the Study Area (Onslow County)

Type	Common Name	Scientific Name	Status	Biological Conclusion
Bat	Tricolored bat	<i>Perimyotis subflavus</i>	Proposed Endangered	May Affect, Likely to Adversely Affect
Bird	Eastern black rail	<i>Laterallus jamaicensis ssp. jamaicensis</i>	Threatened	No Effect
Bird	Piping plover	<i>Charadrius melodus</i>	Threatened	No Effect
Bird	Red-cockaded woodpecker	<i>Picoides borealis</i>	Threatened	No Effect
Bird	Rufa red knot	<i>Calidris canutus rufa</i>	Threatened	No Effect
Reptile	American alligator	<i>Alligator mississippiensis</i>	Similarity of Appearance (Threatened)	Not Required
Reptile	Green sea turtle	<i>Chelonia mydas</i>	Threatened	No Effect
Reptile	Kemp’s Ridley sea turtle	<i>Lepidochelys kempii</i>	Endangered	No Effect
Reptile	Leatherback sea turtle	<i>Dermochelys coriacea</i>	Endangered	No Effect
Plant	Cooley’s meadowrue	<i>Thalictrum cooleyi</i>	Endangered	No Effect
Plant	Pondberry	<i>Lindera melissifolia</i>	Endangered	No Effect
Plant	Rough-leaved loosestrife	<i>Lysimachia asperulaefolia</i>	Endangered	No Effect

Impacts

All of the alternatives will have the same impacts for the protected species within the study area. Impacts are described below. Further information regarding the species and their habitats can be found within the NRTR.

Tricolored bat

Biological Conclusion: **May Affect, Likely to Adversely Affect**

The US Fish and Wildlife Service has issued a programmatic conference opinion (PCO) in conjunction with the Federal Highway Administration (FHWA), the US Army Corps of Engineers (USACE), and NCDOT for the tricolored bat (TCB) (*Perimyotis subflavus*) in eastern North Carolina. The PCO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. NCDOT, FHWA, and USACE have agreed to three conservation measures (listed in the PCO) which will avoid/minimize take to TCBs. These conservation measures apply to all counties in Divisions 1-8. The programmatic determination for TCB for the NCDOT program is May Affect, Likely to Adversely Affect. Once the TCB is officially listed, the PCO will become the programmatic biological opinion (PBO) by formal request from FHWA and USACE. The PBO will ensure compliance with Section 7 of the Endangered Species Act. For approximately five



U-5791 Jacksonville Parkway Extension

NC 53 (Western Boulevard) to US 17 (New Bern Highway)



years (effective through December 31, 2028) for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Onslow County, where Project U-5791 is located.

Eastern black rail

Biological Conclusion: **No Effect**

The U-5791 study area lacks the wetland marsh complexes associated with the eastern black rail. No individuals of this species were observed within the study area. A review of NHP records updated October 1, 2024, indicates no known occurrences within 1.0 mile of the study area.

Piping plover

Biological Conclusion: **No Effect**

The piping plover in North Carolina is known to be within the species' breeding and wintering range, with birds present year-round. However, the U-5791 study area does not contain the specific coastal and marine habitats associated with the piping plover's habitat requirements. No individuals of this species were observed within the study area. A review of NHP records updated October 1, 2024, indicates no known occurrences within 1.0 mile of the study area.

Red-cockaded woodpecker

Biological Conclusion: **No Effect**

A desktop-GIS assessment of the study area, as well as the area within 0.5-mile radius of the study area was performed using February 2020 color aerial photography and 2014 QL2 LiDAR data. Suitable nesting habitat was identified by the desktop assessment within 0.5-mile of the study area, requiring field evaluation. These stands were field reviewed for the presence of RCW's or cavity trees by AtkinsRéalis biologists on September 29, 2022. Neither cavity trees associated with RCW nor RCWs were observed during the field evaluation. Additionally, a review of NHP records updated October 1, 2024, indicates no known occurrences within 1.0 mile of the study area.

Rufa red knot

Biological Conclusion: **No Effect**

The U-5791 study area does not contain the coastal marine and estuarine habitats associated with the specific requirements of migration and wintering areas of the red knot. No individuals of this species were observed within the study area. A review of NHP records updated October 1, 2024, indicates no known occurrences within 1.0 mile of the study area.

American alligator

Biological Conclusion: **Not required**

No biological conclusion is required for American alligator since it is listed due to similarity of appearance to the American crocodile, which does not have a range that extends into North Carolina. A review of NHP records updated October 1, 2024, indicates no known occurrences within 1.0 mile of the study area.



Green sea turtle

Biological Conclusion: **No Effect**

The U- 5791 study area does not contain the coastal marine and estuarine habitats associated with the green sea turtle. No individuals of this species were observed within the study area. A review of NHP records updated October 1, 2024, indicates no known occurrences within 1.0 mile of the study area.

Kemp's Ridley sea turtle

Biological Conclusion: **No Effect**

The U- 5791 study area does not contain the coastal marine habitats associated with the Kemp's Ridley sea turtle's specific habitat requirements. No individuals of this species were observed within the study area. A review of NHP records updated October 1, 2024, indicates no known occurrences within 1.0 mile of the study area.

Leatherback sea turtle

Biological Conclusion: **No Effect**

The U-5791 study area does not contain the coastal marine and habitats associated with the leatherback's required nesting habitats. No individuals of this species were observed within the study area. A review of NHP records updated October 1, 2024, indicates no known occurrences within 1.0 mile of the study area.

Cooley's meadowrue

Biological Conclusion: **No Effect**

Cooley's meadowrue habitat within the U- 5791 study area includes wet roadside ditches, intermittent streams, and frequently disturbed habitats within the Muckalee soil series. These areas were field reviewed for the presence of Cooley's meadowrue by AtkinsRéalís biologists on June 13-16, 2023. No individuals of this species were observed within the study area. A review of NHP records updated October 1, 2024, indicates no known occurrences within 1.0 mile of the study area.

Pondberry

Biological Conclusion: **No Effect**

The U-5791 study area does not contain the high peat content sandy soils, limestone stinks, or the longleaf and pond pine forest associated with the pondberry's specific habitat requirements. No individuals of this species were observed within the study area. A review of NHP records updated October 1, 2024, indicates no known occurrences within 1.0 mile of the study area.

Rough-leaved loosestrife

Biological Conclusion: **No Effect**

Rough-leaved loosestrife habitat within the U-5791 study area includes the interior road network and all-terrain vehicle trails associated with the Pungo soil series within the wet pine flatwoods natural community type. These areas were field reviewed for the presence of rough-leaved loosestrife by AtkinsRéalís biologist on June 13-16, 2023. No individuals of this species were observed within the study area. A review of NHP records updated October 1, 2024, indicates no known occurrences within 1.0 mile of the study area.



Northern Long-eared Bat (NLEB)

Biological Conclusion: **May Affect, Likely to Adversely Affect**

The US Fish and Wildlife Service has issued a **programmatic biological opinion** (PBO) in conjunction with the Federal Highway Administration (FHWA), the US Army Corps of Engineers (USACE), and NCDOT for the northern long-eared bat (NLEB) (*Myotis septentrionalis*) in eastern North Carolina. The PBO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. Although this programmatic covers Divisions 1-8, the USFWS only considers NLEBs to be known or potentially found in 30 counties within Divisions 1-8. NCDOT, FHWA, and USACE have agreed to two conservation measures which will avoid/minimize mortality of NLEBs. These conservation measures only apply to the 30-current known/potential counties of the PBO at this time. The programmatic determination for NLEB for the NCDOT program is May Affect, Likely to Adversely Affect. The PBO will ensure compliance with Section 7 of the Endangered Species Act for ten years (effective through December 31, 2030) for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Onslow County, where Project U-5791 is located.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act is enforced by USFWS. Golden eagles do not nest in North Carolina. Habitat for the bald eagle primarily consists of mature forests in proximity to large bodies of open water for foraging. Large dominant trees are utilized for nesting sites, typically within 1.0 mile of open water.

A desktop-GIS assessment of the project study area, as well as the area within a 1.13-mile radius of the project limits, was performed using February 2022 color aerials. Two water bodies large enough or sufficiently open to be considered potential feeding sources were identified. Surveys for suitable nesting trees, eagle nests, and eagles were conducted within a 660-foot buffer around the study area by AtkinsRéalis biologists on September 29, 2022. Additionally, a review of the North Carolina Natural Heritage Program (NHP) database on October 1, 2024, revealed no known occurrences of this species within 1.13 miles of the project study area. Due to the lack of habitat, known occurrences, and minimal impact anticipated for this project, it has been determined that this project will not affect this species

B. Human Environment

Resource information pertaining to the human environment was gathered and summarized from: Community Characteristics Report (AtkinsRéalis, 2019), Community Impact Assessment (AtkinsRéalis, 2025), Indirect and Cumulative Effects Report (AtkinsRéalis 2025), Traffic Noise Report (AtkinsRéalis, 2025). The corridor contains a mix of undeveloped, forested lands and developed parcels (commercial, residential, institutional, and public). There are also agricultural uses, open space, and a large wetland mitigation (state owned and managed) area. Western Boulevard and U.S. 17 are heavily developed with commercial uses and new/planned development has been noted on Western Boulevard in the vicinity of the project. The residential uses are primarily located on Ramsey Road and Drummer Kellum Road. Camp Lejeune Military Base is located approximately 1.5 miles southeast of the project. Several community resources (parks and schools) are located in the western portion of the study area and are primary traffic generating facilities.

The population within the area increased more than twice the rate of the county from 2008 to 2022. This growth is likely the result of newer development in the area, a large amount of vacant land, and proximity to commercial development and military facilities. There is a notable presence of minority and low-income populations within the project area.



Community Resources

Existing Conditions

There are several community resources located in the western portion of the study area along (**Figure 1**, located in **Section VIII**) Commons Drive including three parks (Branchwood Park, Richard Ray Park, and Jacksonville Commons Recreation Complex) and three schools (Jacksonville Commons Elementary School, Jacksonville Commons Middle School, and Northside High School). The parks are also listed as Natural Heritage Managed Areas (owned by local government) and are designated as open space.

Other community resources in the study area include seven cemeteries and three churches (First Pentecostal Church, Coastline Baptist Church, and Kellum Baptist Church).

One Place, formally known as the Onslow County Partnership for Children, recently constructed a new facility located within Jacksonville Commons. One Place is a 501(c)3 nonprofit that provides resources for child-care, early education, and child abuse prevention and intervention.

Three emergency services facilities are within the study area: The Onslow County Emergency Services Operation Center, the newly relocated City of Jacksonville Fire Department Station, and Pumpkin Center Volunteer Fire Department.

Impacts

Along Alternative 1, temporary impacts may occur at the Richard Ray Park and Jacksonville Commons Recreation Complex due to access delays and road detours during construction. Minor right-of-way (ROW) is needed for both parks; however, no direct impacts to park amenities are anticipated. The newly constructed One Place would be impacted by right-of-way (ROW) and would result in a relocation of the facility. Along Ramsey Road, temporary construction easements are needed at the Parker-Kellum Cemetery. Temporary access impacts and delays to emergency services may occur during construction, and there is a potential for the project to have a permanent impact to these services if access to the new roadway is not given to these facilities. The widening of Ramsey Road will require the acquisition and displacement of residential structures within an area where notable low-income populations are present. As Ramsey Road is a two-lane rural roadway with older residential buildings, residents are concerned with losing their home and/or the traffic impacts of a proposed four-lane roadway in front of their homes. See **Figure 1** (located in **Section VIII**) for location of resources.

For both Alternatives 2 and 3, temporary impacts may occur at the Richard Ray Park and Jacksonville Commons Recreation Complex due to access delays and road detours during construction. Minor ROW is needed for both parks; however, no direct impacts to park amenities are anticipated. The newly constructed One Place would not be impacted by Alternative 3 but would be impacted by Alternative 2 and would need to be relocated. Improvements to Drummer Kellum Road would impact ROW at a private cemetery. These impacts would be minimized during final design to avoid impacts to the graves within the cemetery. Temporary access impacts and delays to emergency services may occur during construction, and there is potential for the project to have a permanent impact to these services if access to the new roadway is not given to these facilities. The design for these two alternatives indicates that the new location may require acquisition and displacement of residential structures, particularly along Osage Lane, where a notable low-income population is present.

For all Build Alternatives, notably adverse community impacts are anticipated with this project and these effects appear to adversely affect the low-income population notably more than the general population



U-5791 Jacksonville Parkway Extension
 NC 53 (Western Boulevard) to US 17 (New Bern Highway)



thus, impacts to low-income populations appear to have disparate effects. Benefits and burdens resulting from the project are not anticipated to be equitably distributed throughout the community. Disparate impacts are anticipated under Title VI of the Civil Rights Act of 1964, which states that “No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance”. NCDOT will continue to minimize and avoid displacements and impacts to the human environment where possible and comply with NC Executive Order No. 292 (Advancing Environmental Justice for North Carolina) and Executive Order No. 246 (North Carolina’s Transformation to a Clean, Equitable Economy).

Through the right of way process, NCDOT is committed to ensuring that adequate compensation and aid are made available for a resident or business that is to be acquired as part of the proposed project. Assistance in the form of advice and compensation is available, as well as assistance in finding comparable housing and/or commercial establishments, moving procedures, and moving aid will be available. Moving expenses may also be paid as part of the process. Additional monetary compensation is available to help homeowners cope with mortgage increases, increased value of comparable homes, and other such expenses.

Table 12. Community Resource Impacts

	Alternative 1	Alternative 2	Alternative 3
Richard Ray Park	Temporary access impacts, minor ROW is needed, no impacts to park amenities	Temporary access impacts, minor ROW is needed, no impacts to park amenities	Temporary access impacts, minor ROW is needed, no impacts to park amenities
Jacksonville Commons Recreation Complex	Temporary access impacts, minor ROW is needed, no impacts to park amenities	Temporary access impacts, minor ROW is needed, no impacts to park amenities	Temporary access impacts, minor ROW is needed, no impacts to park amenities
Churches and Cemeteries	Temporary construction easements at the Parker-Kellum Cemetery	Impacts to private cemetery along Drummer Kellum Road	Impacts to private cemetery along Drummer Kellum Road
One Place	Would impact building and result in a relocation	Would impact building and result in a relocation	No Impacts
Emergency Service Facilities	Temporary access impacts and delays during construction. High impact if no access is given to new roadway	Temporary access impacts and delays during construction. High impact if no access is given to new roadway	Temporary access impacts and delays during construction. High impact if no access is given to new roadway
Schools	Temporary impacts to school transportation during construction	Temporary impacts to school transportation during construction	Temporary impacts to school transportation during construction
Vulnerable Populations	Higher adverse impacts on Title VI and low-income populations	Higher adverse impacts on Title VI and low-income populations	Higher adverse impacts on Title VI and low-income populations

Bicycle and Pedestrian

Existing Conditions

The Jacksonville Parkway (south of Western Boulevard) that opened in 2013 did not include sidewalks or bike lanes. Sidewalks are located on both sides of Western Boulevard, the south side of Henderson Drive, and portions of U.S. 17. There is a continuous network of sidewalks on Gateway Drive (North and South)



U-5791 Jacksonville Parkway Extension
 NC 53 (Western Boulevard) to US 17 (New Bern Highway)



and Commons Drive (North and South). There are no sidewalks along Ramsey Road, however, it is identified as a portion of the Ports of Call Bicycle Route (NC 3 Bike Route) from South Carolina to Virginia. There are also unpaved, off-road bike trails and paved multi-use paths located at Richard Ray Park.

The City of Jacksonville published a City of Jacksonville Trails and Greenways Pedestrian Map (May 2020) that proposes a multi-use path along the Henderson Drive Extension, existing Jacksonville Parkway, and a portion of US 17 (south of Jacksonville Parkway).

Impacts

The Build Alternatives do not currently propose pedestrian or bicycle improvements. Coordination with the City of Jacksonville will occur during final design and there may be opportunities for pedestrian and bicycle improvements to be evaluated for inclusion.

The NC 3 Bike Route could experience temporary access impacts during construction, and access impacts are also anticipated for pedestrian and bicycle activity occurring within the study area from construction.

Table 13. Bicycle and Pedestrian Impacts

	Alternative 1	Alternative 2	Alternative 3
Bicycle/Pedestrian Facilities	Opportunities to improve the NC 3 Bike Route along Ramsey Road	Opportunities for pedestrian and bicycle improvements	Opportunities for pedestrian and bicycle improvements
Bicycle/Pedestrian Activity	Temporary access impacts during construction	Temporary access impacts during construction	Temporary access impacts during construction

Access Changes

Existing Conditions

There are multiple driveways and cross streets along Western Boulevard, U.S. 17, Drummer Kellum Road, and Ramsey Road.

Impacts

Access impacts, including the creation of new intersections and changes in access at existing intersections, are included below in **Table 14** for each build alternative.

As Onslow County Emergency Services is located off Firehouse Drive and the Jacksonville Fire Station has been relocated to Marketplace Drive; therefore, there will be access impacts regarding how fire and EMS trucks will be able to access Western Boulevard and Jacksonville Commons for all alternatives. However, it will positively benefit EMS response and access to the Ramsey Road corridor.



U-5791 Jacksonville Parkway Extension

NC 53 (Western Boulevard) to US 17 (New Bern Highway)



Table 14. Intersection Impacts

	Alternative 1	Alternative 2	Alternative 3
Gateway Drive North at Western Boulevard	Will be cul-de-sac'd and no longer connect to Western Boulevard	Will be cul-de-sac'd and no longer connect to Western Boulevard	Will be cul-de-sac'd and no longer connect to Western Boulevard
Western Boulevard at Jacksonville Parkway Extension	New Intersection. Jacksonville Parkway Extension will connect on the other side of the existing Jacksonville Parkway/Western Boulevard intersection rather than Gateway Drive N.	New Intersection. Jacksonville Parkway Extension will connect on the other side of the existing Jacksonville Parkway/Western Boulevard intersection rather than Gateway Drive N.	New Intersection. Jacksonville Parkway Extension will connect on the other side of the existing Jacksonville Parkway/Western Boulevard intersection rather than Gateway Drive N.
Jacksonville Parkway Extension at Henderson Drive/Fireplace Drive	New Intersection. Fireplace Drive will provide access to N. Commons Drive	New Intersection. Fireplace Drive will provide access to N. Commons Drive	New Intersection. Fireplace Drive will provide access to N. Commons Drive
Marketplace Drive at Gateway Drive North	No longer connects to Gateway Drive North but will instead be a dead-end on either side of Jacksonville Parkway Extension	No longer connects to Gateway Drive North but will instead be a dead-end on either side of Jacksonville Parkway Extension	No longer connects to Gateway Drive North but will instead be a dead-end on either side of Jacksonville Parkway Extension
Ramsey Road	Addition of a center median	No Impacts	No Impacts
Ramsey Road at Drummer Kellum Road	Drummer Kellum Road is realigned to the east	No Impacts	No Impacts
Ramsey Road at Catino Farms Lane	Right-In/Right-Out	No Impacts	No Impacts
Ramsey Road at Ferris Lane	Right-In/Right-Out	No Impacts	No Impacts
Ramsey Road at Webster Lane	Webster Lane realigned to the east	No Impacts	No Impacts
Ramsey Road at Kellum Loop Road	Ramsey Road realigned to the north	No Impacts	No Impacts
Ramsey Road at US 17	New Intersection. Ramsey Road will directly connect to US 17.	N/A	N/A
Kellum Loop Road at US 17	US 17 southbound will no longer be able to make a left/U-turn onto US 17 northbound	N/A	N/A
Jacksonville Parkway Extension at Drummer Kellum Road	No Impacts	New Intersection at Jacksonville Parkway Extension and Drummer Kellum Road	New Intersection at Jacksonville Parkway Extension and Drummer Kellum Road
Osage Lane at Drummer Kellum Road	N/A	Osage Lane will no longer connect to Drummer Kellum Road due to the new intersection of Jacksonville Parkway Extension	Osage Lane will no longer connect to Drummer Kellum Road due to the new intersection of Jacksonville Parkway Extension



U-5791 Jacksonville Parkway Extension
 NC 53 (Western Boulevard) to US 17 (New Bern Highway)



	Alternative 1	Alternative 2	Alternative 3
Key Lane at US 17	No Impacts	Key Lane will no longer connect to US 17	Key Lane will no longer connect to US 17
Jacksonville Parkway Extension at US 17	N/A	New intersection. Jacksonville Parkway Extension will connect to US 17 near Key Lane	New intersection. Jacksonville Parkway Extension will connect to US 17 near Key Lane
Bicycle/Pedestrian Activity	Temporary access impacts during construction	Temporary access impacts during construction	Temporary access impacts during construction

Residential and Commercial Impacts and Relocations

Existing Conditions

An Indirect and Cumulative Effects (ICE) Report was completed for the project (AtkinsRéalis, 2025) that documented the study area having 36% of undeveloped land. While there is a large portion of undeveloped land located within the study area, there also is a large amount of developed land along Western Boulevard, within Jacksonville Commons, and along Ramsey Road. As all three alternatives feature a portion (or all) of the project being on new alignment, permanent new ROW and temporary construction easements will be needed to construct any of the Detailed Study Alternatives.

NCDOT will follow their established process for acquiring property and assisting residents and businesses in relocating. More information regarding the property acquisition process can be found here:
<https://www.ncdot.gov/projects/Pages/property-owner-resources.aspx>

Impacts

Based on the preliminary designs of the alternative, which includes slope stakes plus 25 linear feet, **Table 15** shows the amount of new ROW needed for the project as well as the number of residential and commercial property impacts. Some properties will only have a portion of their land permanently or temporarily needed, but for others, permanent relocation may be necessary.

For Alternative 1, the widening of Ramsey Road would result in a number of potential relocations along the corridor.

For Alternatives 2 and 3, Osage Lane would no longer connect to Drummer Kellum Road due to the new intersection of Jacksonville Parkway Extension and multiple residences located along Osage Lane will lose access and therefore potentially result in a relocation. Coordination regarding access to Osage Lane will occur as design progresses.

For Alternatives 2 and 3, due to Jacksonville Parkway Extension connecting to US 17 in the same area as Key Lane, a large portion of the roadway would become inaccessible, including the residences located along the road (resulting in potential relocations).



U-5791 Jacksonville Parkway Extension
 NC 53 (Western Boulevard) to US 17 (New Bern Highway)



Table 15. ROW and Structure Impacts

	Alternative 1	Alternative 2	Alternative 3
ROW (acres)	109.6	100.3	100.2
Potential Residential Relocations	33	15	15
Potential Commercial Relocations	7	6	5

Cultural Resources

Existing Conditions

Review of Historic Preservation Office (HPO) quad maps, HPO GIS information, historic designations roster, and indexes was undertaken on September 21, 2022. Based on this review, there are documented and undocumented properties over fifty years of age within the Area of Potential Effects, which follows the boundary of the Study Area. An Historic Architecture Survey was required and performed on November 7, 2022. All alternatives were visually surveyed for resources over fifty years of age and reconfirmed through County GIS Tax Information. From this identification and evaluation, it was determined that there are no resources over fifty years of age that warrant further evaluation, as all are either unremarkable, common for their type, or have diminished integrity. The Survey Site Benjamin Lee Parker House (ON0419), a previously recorded resource, is gone based on this survey. There are no National Register listed or eligible properties. Based on the results of the survey there are no properties eligible for or listed in the National Register of Historic Places within the study area. A Historic Architecture and Landscapes No Historic Properties Present form was completed on November 15, 2022 (**Appendix E**).

An Archaeological Survey was required and performed in December 2022. The survey did not identify any archaeological sites in the study area and a No National Register of Historic Places Eligible or Listed Archaeological Sites Present form was completed on October 10, 2024. (**Appendix E**)

Impacts

Since there are no historic properties or archaeological sites present for all three alternatives, there are no cultural resource impacts (**Table 16**).

Table 16. Cultural Resources Impacts

	Alternative 1	Alternative 2	Alternative 3
Historic Properties	No Historic Properties Present – No Impacts		
Archaeological Sites	No Archaeological Sites Present – No Impacts		

Farmland/Agriculture Operations

Existing Conditions

Prime farmland soils, Farmlands of Statewide Importance, and Prime Farmland if Drained are present within the study area. There are a number of large-scale farming operations located within the project study area off of Ramsey Road and Drummer Kellum Road.



U-5791 Jacksonville Parkway Extension
 NC 53 (Western Boulevard) to US 17 (New Bern Highway)



Hofmann Forest is an 80,000-acre property owned by the State and used for forestry research, located just north of the study area. Portions of the property are leased for logging operations and trucks frequently travel along Ramsey Road and U.S. 17.

Impacts

For Alternative 1, approximately 51.2 acres of farmland is anticipated to be converted into non-farmland. ROW impacts are anticipated for the active farms located adjacent to Ramsey Road due to the widening. There are no impacts to Hoffman Forest, however, access impacts to agricultural resources may occur along Ramsey Road if detours or lane reductions delay or impede access to agricultural operations during construction (**Table 17**).

For Alternative 2, approximately 46.63 acres of farmland is anticipated to be converted into non-farmland. Approximately 45.35 acres of farmland is anticipated to be converted into non-farmland for Alternative 3. ROW impacts are anticipated for the large farming operation located along Drummer Kellum Road near Osage Lane as well as the JS Lowland Cattle farm located off of Webster Lane.

Table 17. Farmland/Agriculture Impacts

	Alternative 1	Alternative 2	Alternative 3
Amount of Farmland Converted (acres)	51.2	46.63	45.35
Active Farming Operations	ROW impacts and access impacts	ROW impacts	ROW impacts

Air Quality

Introduction

Air pollution originates from various sources. Emissions from industry and internal combustion engines are the most prevalent sources. The impact resulting from highway construction ranges from intensifying existing air pollution problems to improving the ambient air quality. Changing traffic patterns are a primary concern when determining the impact of a new highway facility or the improvement of an existing highway facility. Motor vehicles emit carbon monoxide (CO), nitrogen oxide (NO), hydrocarbons (HC), particulate matter, sulfur dioxide (SO₂), and lead (Pb) (listed in order of decreasing emission rate).

The Federal Clean Air Act of 1970 established the National Ambient Air Quality Standards (NAAQS). These were established in order to protect public health, safety, and welfare from known or anticipated effects of air pollutants. The NAAQS contain criteria for SO₂, particulate matter (PM₁₀, 10-micron and smaller, PM_{2.5}, 2.5-micron and smaller), CO, nitrogen dioxide (NO₂), ozone (O₃), and lead (Pb).

The primary pollutants from motor vehicles are unburned HC, NO_x, CO, and particulates. HC and NO_x can combine in a complex series of reactions catalyzed by sunlight to produce photochemical oxidants such as O₃ and NO₂. Because these reactions take place over a period of several hours, maximum concentrations of photochemical oxidants are often found far downwind of the precursor sources. These pollutants are regional problems.



U-5791 Jacksonville Parkway Extension

NC 53 (Western Boulevard) to US 17 (New Bern Highway)



A project-level air quality analysis was prepared for this project. The unabridged version of the full technical report is entitled *Air Quality Report Jacksonville Parkway Extension From NC 53 (Western Boulevard) To US 17 (New Bern Highway), Onslow County* dated August 18, 2025.

Attainment Status

The proposed project is located in Onslow County, which complies with the U.S. Environmental Protection Agency's National Ambient Air Quality Standards. The proposed project is located within an attainment area; therefore, 40 CFR Parts 51 and 93 are not applicable.

Mobile Source Air Toxics (MSAT)

Background

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the U.S. Environmental Protection Agency (EPA) regulate 188 air toxics, also known as hazardous air pollutants. The EPA assessed this expansive list in its rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007) and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS)¹. In addition, EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 2014 National Air Toxics Assessment (NATA)². These are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority MSAT, the list is subject to change and may be adjusted in consideration of future EPA rules.

According to EPA, MOVES3 is a major revision to MOVES2014 and improves upon it in many respects. MOVES3 includes new data, new emissions standards, and new functional improvements and features. It incorporates substantial new data for emissions, fleet, and activity developed since the release of MOVES2014. These new emissions data are for light- and heavy- duty vehicles, exhaust and evaporative emissions, and fuel effects. MOVES3 also adds updated vehicle sales, population, age distribution, and vehicle miles traveled (VMT) data. In the November 2020 EPA issued [MOVES3 Mobile Source Emissions Model Questions and Answers](#)³ EPA states that for on-road emissions, MOVES3 updated heavy-duty (HD) diesel and compressed natural gas (CNG) emission running rates and updated HD gasoline emission rates. They updated light-duty (LD) emission rates for hydrocarbon (HC), carbon monoxide (CO) and nitrogen oxide (NOx) and updated light-duty (LD) particulate matter rates, incorporating new data on Gasoline Direct Injection (GDI) vehicles.

Using EPA's MOVES3 model, FHWA estimates that even if VMT increases by 31 percent from 2020 to 2060 as forecast, a combined reduction of 76 percent in the total annual emissions for the priority MSAT is projected for the same time period.

¹ <https://www.epa.gov/iris>

² <https://www.epa.gov/national-air-toxics-assessment>

³ Federal Register, Vol. 86, No 4. Page 1106, January 7, 2021 Available at: <https://www.govinfo.gov/content/pkg/FR-2021-01-07/pdf/2021-00023.pdf>



U-5791 Jacksonville Parkway Extension

NC 53 (Western Boulevard) to US 17 (New Bern Highway)



Diesel PM is the dominant component of MSAT emissions, making up 36 to 56 percent of all priority MSAT pollutants by mass, depending on calendar year. Users of MOVES3 will notice some differences in emissions compared with MOVES2014. MOVES3 is based on updated data on some emissions and pollutant processes compared to MOVES2014 and also reflects the latest Federal emissions standards in place at the time of its release. In addition, MOVES3 emissions forecasts are based on slightly higher VMT projections than MOVES2014, consistent with nationwide VMT trends.

MSAT analyses are intended to capture the net change in emissions within an affected environment, defined as the transportation network affected by the project. The affected environment for MSATs may be different than the affected environment defined in the NEPA document for other environmental effects, such as noise or wetlands. Analyzing MSATs only within a geographically defined “study area” will not capture the emissions effects of changes in traffic on roadways outside of that area, which is particularly important where the project creates an alternative route or diverts traffic from one roadway class to another. At the other extreme, analyzing a metropolitan area’s entire roadway network will result in emissions estimates for many roadway links not affected by the project, diluting the results of the analysis.

Incomplete or Unavailable Information for Project Specific MSAT Health Impact Analysis

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

The EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is “a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects”⁴. Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). A number of HEI studies are summarized in Appendix D of FHWA’s *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents*. Among the adverse health effects linked to MSAT compounds at high exposures are: cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations⁵ or in the future as vehicle emissions substantially decrease.

⁴ EPA, <https://www.epa.gov/iris/>

⁵ HEI Special Report 16, <https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects>



U-5791 Jacksonville Parkway Extension

NC 53 (Western Boulevard) to US 17 (New Bern Highway)



The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts – each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupported assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI⁶. As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA states that with respect to diesel engine exhaust, “[t]he absence of adequate data to develop a sufficiently confident dose-response relationship from the epidemiologic studies has prevented the estimation of inhalation carcinogenic risk (<https://www.epa.gov/iris>).”

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an “acceptable” level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA’s approach to addressing risk in its two-step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable.

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

⁶ Special Report 16, <https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects>



U-5791 Jacksonville Parkway Extension

NC 53 (Western Boulevard) to US 17 (New Bern Highway)



Qualitative Analysis Results

For each alternative (Build Alternative 1, Build Alternative 2, Build Alternative 3) there may be localized areas where VMT would increase, and other areas where VMT would decrease. Therefore, it is possible that localized increases and decreases in MSAT emissions may occur. Because the VMT estimated for the No-Build alternative is higher than for any of the Build Alternatives along Western Boulevard, US 17, and Ramsey Road, a decrease in localized levels in MSAT are expected along those roadways for all Build Alternatives. In addition, the localized increases in MSAT emissions would likely be most pronounced along the new location roadway extension of Jacksonville Parkway under all Build Alternatives. However, even if these increases do occur, they, too, will be substantially reduced in the future due to implementation of EPA's vehicle and fuel regulations.

In sum, under all build alternatives in the design year it is expected there would be reduced MSAT emissions in the immediate area of the project, relative to the No-Build Alternative, due to EPA's MSAT reduction programs.

Summary

Vehicles are a major contributor to decreased air quality because they emit a variety of pollutants into the air. Changing traffic patterns are a primary concern when determining the impact of a new highway facility or the improvement of an existing highway facility. New highways or the widening of existing highways increase localized levels of vehicle emissions, but these increases could be offset due to increases in speeds from reductions in congestion and because vehicle emissions will decrease in areas where traffic shifts to the new roadway. Significant progress has been made in reducing criteria pollutant emissions from motor vehicles and improving air quality, even as vehicle travel has increased rapidly.

The proposed project is located in Onslow County, which complies with the NAAQS. The proposed project is located within an attainment area; therefore, 40 CFR Parts 51 and 93 are not applicable. Therefore, the project is not anticipated to create any adverse effects on the air quality of this attainment area. This evaluation completes the assessment requirements for air quality of the 1990 Clean Air Act Amendments and the SEPA process. No additional reports are necessary.

Traffic Noise

Introduction

In accordance with Title 23 Code of Federal Regulations Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise (Title 23 CFR 772) and the North Carolina Department of Transportation Traffic Noise Policy, each Type I highway project must be analyzed for predicted traffic noise impacts. In general, Type I projects are proposed State or Federal highway projects that construct a highway on new location, add new through lanes to an existing highway, substantially change the horizontal or vertical alignment of an existing highway, add or relocate interchange ramps or loops to complete an existing partial interchange, or involve new construction or substantial alteration of transportation facilities such as weigh stations, rest stops, ride-share lots or toll plazas.

Traffic noise impacts are determined through implementing the current Traffic Noise Model (TNM[®]) approved by the Federal Highway Administration (FHWA) and following procedures detailed in Title 23 CFR 772, the NCDOT Traffic Noise Policy and the NCDOT Traffic Noise Manual. When traffic noise impacts are predicted, examination and evaluation of alternative noise abatement measures must be considered for reducing or eliminating these impacts. Construction noise impacts may occur if noise-sensitive



U-5791 Jacksonville Parkway Extension
 NC 53 (Western Boulevard) to US 17 (New Bern Highway)



receptors are in proximity to project construction activities. All reasonable efforts should be made to minimize exposure of noise sensitive areas to construction noise impacts.

The source of this traffic noise information is the STIP U-5791 *Draft Traffic Noise Report, Jacksonville Parkway Extension NC 53 (Western Boulevard) to US 17 (New Bern Highway), Jacksonville, Onslow County* (AtkinsRéalis, August 2025). The noise impacts and preliminary noise barrier results presented in the section below are based on a draft noise analysis and are thus preliminary and subject to change, pending completing of the final Traffic Noise Report (TNR). Any changes in impacts and preliminary noise barriers based on the final TNR will be included in the anticipated Finding of No Significant Impact (FONSI).

Traffic Noise Impacts

The maximum number of receptors in each project alternative predicted to become impacted by future traffic noise is shown in **Table 18**. The table includes those receptors expected to experience traffic noise impacts by either approaching or exceeding the FHWA Noise Abatement Criteria or by a substantial increase in exterior noise levels as defined in the NCDOT Traffic Noise Policy.

Table 18. Predicted Traffic Noise Impacts by Alternative*

	Alternative 1	Alternative 2	Alternative 3
Residential (NAC B)	32	18	18
Places of Worship/Schools, Parks, etc. (NAC C & D)	0	0	0
Businesses (NAC E)	0	0	0
Total	32	18	18

*Per TNM 2.5 and in accordance with 23 CFR Part 772

Traffic Noise Abatement Measures

Measures for reducing or eliminating the traffic noise impacts were considered for all impacted receptors in each alternative. The primary noise abatement measures evaluated for highway projects include highway alignment changes, traffic system management measures, establishment of buffer zones, noise barriers and noise insulation (NAC D only). For each of these measures, benefits versus allowable abatement quantity (reasonableness), engineering feasibility, effectiveness and practicability and other factors were included in the noise abatement considerations.

Substantially changing the highway alignment to minimize noise impacts is not considered to be a viable option for this project due to engineering and/or environmental factors. Traffic system management measures are not considered viable for noise abatement due to the negative impact they would have on the capacity and level of service of the proposed roadway. Costs to acquire buffer zones for impacted receptors will exceed the NCDOT base dollar value of \$22,500 per benefited receptor plus an incremental increase as defined in the NCDOT Traffic Noise Manual, causing this abatement measure to be unreasonable.

Noise Barriers

Noise barriers include two basic types: earthen berms and noise walls. These structures act to diffract, absorb and reflect highway traffic noise. For this project, earthen berms are not found to be a viable



U-5791 Jacksonville Parkway Extension
 NC 53 (Western Boulevard) to US 17 (New Bern Highway)



abatement measure because the additional right of way, materials and construction costs are estimated to exceed the NCDOT maximum allowable base quantity of 4,200 cubic yards per benefited receptor plus an incremental increase as defined in the NCDOT Traffic Noise Policy.

A noise barrier evaluation was conducted for this project utilizing the Traffic Noise Model (TNM 2.5) software developed by the FHWA. **Table 19** summarizes the results of the evaluation.

Table 19. Preliminary Noise Barrier Evaluation Results

Noise Study Area	Noise Barrier (NW) and Location Description	Approximate Length/Height ¹ (Feet)	Square Footage	Number of Benefited Receptors	Square Feet per Benefited Receptor / Allowable Square Feet per Benefited Receptor	Preliminary Feasible and Reasonable ("Likely") for Construction ²
Alternative 1						
NSA 20	NW20 - Along the shoulder of the proposed WB Jacksonville Parkway Extension east of Kellum Loop Road adjacent to Kellum Place Apartments	578	9,025	19	475/2,500	Yes
Alternative 2 and 3						
NSA 7	NW7 – Along the shoulder of proposed EB Jacksonville Parkway Extension west of Drummer Kellum Road near Jacksonville Commons neighborhood.	1,117	18,497	9	2,055/2,500	Yes
NSA 9	NW9 - Short – Along the shoulder of the proposed EB Jacksonville Parkway Extension east of Drummer Kellum Road	706	7,415	3	2,472/2,500	Yes
NSA 9	NW9 - Long - Along the shoulder of the proposed EB Jacksonville Parkway Extension east of Drummer Kellum Road	1,002	10,558	4	2,640/2,500	No
NSA 11	NW11 – Along the shoulder of the proposed WB Jacksonville Parkway Extension east of Drummer Kellum Road	800	9,233	5	1,847/2,500	Yes

Note: ¹Average wall height. Actual wall height at any given location may be higher or lower.

²The likelihood of a barrier’s construction is preliminary and subject to change, pending completion of final design and the public involvement process.

³Barrier is not reasonable due to the quantity per benefited receptor exceeding the allowable quantity per benefited receptor

Summary

A traffic noise evaluation was performed that identified 4 noise barriers that preliminarily meet feasibility and reasonableness criteria found in the NCDOT Traffic Noise Policy. A more detailed analysis will be completed during project final design. Noise barriers preliminarily found to be feasible and reasonable during the preliminary noise analysis may not be found to be feasible and reasonable during the final design noise analysis due to changes in proposed project alignment and other design considerations, surrounding land use development, or utility conflicts, among other factors. Conversely, noise barriers



U-5791 Jacksonville Parkway Extension
 NC 53 (Western Boulevard) to US 17 (New Bern Highway)



that preliminarily were not considered feasible and reasonable may meet the established criteria and be recommended for construction.

In accordance with NCDOT Traffic Noise Policy, the Federal/State governments are not responsible for providing noise abatement measures for new development for which building permits are issued after the Date of Public Knowledge. The Date of Public Knowledge of the proposed highway project will be the approval date of the anticipated Finding of No Significant Impact (FONSI). NCDOT strongly advocates the planning, design and construction of noise-compatible development and encourages its practice among planners, building officials, developers and others.

Hazardous Materials

Existing Conditions

A GeoEnvironmental Phase 1 Report was completed for the project (Falcon Engineering, September 2024) to document sites of concern within the study area. Sites of concern may include, but are not limited to, underground storage tank (UST) sites, dry cleaning facilities, hazardous waste sites, regulated landfills and unregulated dumpsites. Seven (7) sites of concern were identified. **Table 20** lists the identified sites within the project study area.

Table 20. Potential Hazardous Material Sites in the Project Study Area

Site	Property Name	Location	Comments
1	Miracle Meadows 2	318 Ramsey Road	This site is a City of Jacksonville Monitoring well and water supply well (PWS ID No. NC0467010) with an associated emergency generator with an assumed internal Above Ground Storage Tank (AST).
2	Stone Collins Motor Rewinding	111 Ramsey Road	The site is currently operating as Stone Collins Motor Rewinding, a motor rebuilding, repair, and rewinding facility with a hydraulic lift and service bay.
3	SuperVac of Jacksonville	1103 Kellum Loop Road	According to the AST Release Remediation Report dated June 2005 an incident occurred at a location outside of the study area at 1183 Kellum Loop Road. The contaminated soil was adequately removed.
4	Morton Trucking	121 Garnet Lane	This site is listed as a Solid Waste Facility / Landfill Facility (SWF/LF) and has an asphalt plant.
5	Foss Recycling	199 Drummer Kellum Road	The company operates a metal recycling facility and a 10-acre auto salvage yard.
6	Marine Chevrolet	1408 Western Boulevard	This site was identified as an automotive dealer and service provider. The site has thirty-six aboveground hydraulic lift stations with fourteen service bays.
7	Handy-Mart/Exxon Gas Station	3495 Western Boulevard	This site is an active gas station with three (3) USTs (10,000, 12,000 & 20,000 gallons).



Impacts

The anticipated monetary, scheduling risks, and potential impacts to the project from these sites is “low” for each of three alternatives (**Table 21**). Sites not listed under an alternative are not present within that corridor.

Table 21. Hazardous Material Impacts

	Alternative 1	Alternative 2	Alternative 3
Hazardous Material Sites of Concern	Sites 1, 2, 3, 4, 6, and 7. Anticipated impact is “Low”	Sites 5, 6, and 7. Anticipated impact is “Low”	Sites 5, 6, and 7. Anticipated impact is “Low”

Indirect and Cumulative Effects

The population within the study area has grown approximately 2-3 times the rate of Onslow County. This growth is likely the result of newer development in the area, a transition in the region from agriculture to urban development, and proximity of the area to commercial development and military facilities.

Because of the population growth and available land in the project study area, growth is already being seen. New developments along Drummer Kellum have already begun construction and several along Ramsey Road are proposed.

An Indirect and Cumulative Effects (ICE) Report was completed in January 2025 (AtkinsRéalis, 2025) for the project. The ICE concluded that Indirect effects are anticipated due to the large number of available land parcels, a high amount of time travel savings, a high amount of current and future development occurring in the area, established water and sewer services as well as future extension projects planned, and a large number of notable human and natural environmental features. The ICE also concluded that it is anticipated that the project would spur additional development to occur in the Future Land Use Study Area (FLUSA). Based on the results of the Indirect Effects Matrix, a Land Use Scenario Assessment (LUSA) was warranted for the project.

A LUSA analysis is currently underway and based on the Land Use Scenario Assessment Matrix for all three build alternatives. It currently shows that for the majority of the categories, the Build scenarios compared to the No-Build scenarios had similar ratings regarding development intensity, employment growth, and land use regulations. For some of the categories, Alternatives 2 and 3 are predicted to spur additional development compared to the No-Build scenario, such as with the scope of development and Future Shift of Regional Population Growth. Based on these findings, the LUSA analysis has tentatively concluded “Indirect Land Use Impacts Not Likely”.

According to the City of Jacksonville, it is anticipated that probable development areas (PDAs) within the study area would continue to be developed in their current zone use whether the project is or is not constructed. As stated earlier, a number of residential developments are currently underway. The City also anticipates that additional residential/commercial development would continue along the new roadway.



V. Public and Agency Involvement

A. Public Involvement

A newsletter was mailed to over 2,000 addresses in October of 2018 introducing the public to the project and opportunities to provide comments. A project website (<https://ncdot.publicinput.com/jacksonville-parkway-extension>) was created and featured on the newsletter. Because of the COVID pandemic, NCDOT suspended traditional face-to-face meetings in 2021. In order to gain public engagement, NCDOT utilized online platforms to reach the public. In August of 2021, a website public meeting was held to provide the public with an update on the project status and ability to comment on the project's alternatives. The website had a recorded video presentation that went through the project's purpose and need, alternative screening process, alternatives, and overall planning process and schedule. Also available on the website was the alternative design KMZ files for five alternatives (Alternative 1a, 1b, 2a, 2b, and 3) in Google Earth.

The website allowed the viewers to review the alternatives on Google Earth and rank or choose their preference for an alternative. They were also able to provide questions or comments specific to an alternative as well as the project in general.

A postcard was mailed to approximately 7,500 people inviting them to review the project website and provide comments on the corridor alternatives that were developed. The website had over 3,000 views and 366 responders. Over 150 people provided comments through the website or phone calls. Overall, comments included concerns with impacts to property, traffic, environmental, and community impacts and costs. The preference for the alternatives was: Alternative 1a (79%), Alternative 1b (73%), Alternative 3 (72%), Alternative 2b (71%), Alternative 2a (63%).

There were numerous changes to project alternatives and designs due to new information and developments, which delayed additional public outreach.

A project website update was completed in April 2023 to provide responses to comments received and provide updates to the design.

The project website was updated in July 2025, and a newsletter was mailed to inform the public on the alternatives that are being analyzed.

A Public Hearing will be held to receive input on this SEA. A Public Hearing includes three segments: an open house segment, followed by a formal presentation by NCDOT, and then an opportunity for people to speak in front of attendees about the project. The presentation and comment segment of the Public Hearing are recorded.

The SEA will be made available for review on the project website and in hard copy a minimum of 15 days before the Public Hearing. The public comment period will remain open for at least 30 days, unless NCDOT determines, for good cause, that a different period is warranted. All comments received during the comment period will be taken into consideration when informing project design. A summary of public comments and responses to comments will be provided in the Finding of No Significant Impact (FONSI). The FONSI will be posted on the project website.

Appendix F includes the public involvement materials.



B. Agency Coordination

Scoping

Internal Scoping

The NCDOT Project Development and Environmental Analysis Unit held an Internal Scoping Meeting on February 15, 2017, with various NCDOT Units in attendance to gain information, issues, and concerns with the project. Invitations for this meeting were emailed on January 20, 2017.

The meeting was held at the NCDOT PDEA Large Conference Room, in Building B, Century Center, 1000 Birch Ridge Road in Raleigh.

Attendees included Division 3 staff, PDEA Project Development, Human Environment Section, Traffic Management Unit/Congestion Management, Signing and Delineation, Natural Environment Section, STIP Development Unit, Transportation Planning Branch, and Jacksonville Urban Area MPO.

External Scoping

A Start of Study letter was sent by NCDOT to state and federal agencies on October 16, 2017. The letter included the Scoping Fact Sheet, Project Vicinity Map, and Environmental Features Map. The purpose of distributing the letter was to solicit comments and collect pertinent project information early in the project development process. The coordination (NEPA scoping) between the NCDOT and various agencies will assist with the development of the purpose and need statement, identifying the range of alternatives, and defining the scope of the environmental analyses.

In addition to agencies’ standard/generalized comments submitted for all projects, several responses included comments related directly to the project. **Table 22** lists the agencies that provided comments in response to the letter, along with any specific project comments. Comments are listed in order of the date they were provided, from earliest to latest.

Table 22. Start of Study Comments

Agency	Date	Project Comments
US Army Corps of Engineers – Wilmington District	October 17, 2017	The Corps Wilmington Field Office has completed final Jurisdictional Determinations (JD) with the project study area, therefore please alert this office before beginning any new JDs to promote consistency.
NC Division of Water Resources – Wilmington Regional Office	October 20, 2017	Mill Creek and Northeast Creek are class SC; NSW and Wolf Swamp is class C; NSW waters of the State. The NCDWR is very concerned with sediment and erosion impacts that could result from this project. The NCDWR recommends that highly protective sediment and erosion control BMPs be implemented to reduce the risk of nutrient runoff to these creeks. Additionally, to meet the requirements of NCDOT’s NPDES Permit NCS0000250, the NCDWR requests that road design plans provide treatment of the storm water runoff through best management practices as detailed in the most recent version of the <i>North Carolina Department of Transportation Stormwater Best Management Practices Toolbox</i> manual.



U-5791 Jacksonville Parkway Extension
 NC 53 (Western Boulevard) to US 17 (New Bern Highway)



Agency	Date	Project Comments
US Fish and Wildlife Service – Raleigh Field Office	October 23, 2017	Although the North Carolina Natural Heritage Program (NCNHP) database does not indicate any known occurrences of listed species near the project vicinity, use of the NCNHP data should not be substituted for actual field surveys if suitable habitat occurs near the project site.
NC Wildlife Resources Commission	November 6, 2017	The state-owned parcel identified in the Environmental Features map is held in a conservation easement by the NC Ecosystem Enhancement Program (since renamed the Division of Mitigation Services). NCDOT should establish a project study area that will allow the development of alternatives that avoid direct and indirect impacts to this parcel.
NC Coastal Management	November 9, 2017	DCM requests that NCDOT ensure that the final project provides adequate passage for aquatic life at the crossing of Ramsey Road over Wolf Swamp. DCM would prefer that the existing culvert is replaced with a bridge. If that is not practicable, then DCM would recommend a box culvert as a second choice. A corrugated pipe is not preferred at this stream crossing.

NEPA/Section 404 Merger Team

The project is following the Merger process for agency concurrence and coordination contained in the 2023 NEPA/404 Merger Process Update Memorandum of Understanding signed by NCDOT, Federal Highway Administration (FHWA), US Army Corps of Engineers (USACE), and the NC Department of Environmental Quality (NCDEQ). The NEPA/404 Merger Team for this project included stakeholder agencies and local units of government listed below. The Merger process allows agency representatives to coordinate more efficiently by providing a common forum for discussion of project issues as they relate to each agency’s mission. The merger process documents how competing agency mandates are balanced during a shared decision-making process, which results in agency representatives reaching a "compromise-based decision" to the regulatory and individual agency mandates at specific project milestones. See **Appendix G** for the signed concurrence forms.

What is the Merger Team?

The NCDOT Merger Team includes federal and state agencies as well as local officials that review the project at different stages of development to assess impacts and approve of project milestones.

Merger Team Members

- US Army Corps of Engineers (USACE)
- Federal Highway Administration (FHWA)
- North Carolina Department of Environmental Quality (NCDEQ)
- US Environmental Protection Agency (EPA)
- US Fish and Wildlife Service (USFWS)
- North Carolina Wildlife Resources Commission (WRC)
- North Carolina Department of Natural and Cultural Resources, Historic Preservation Office (HPO)
- North Carolina Division of Coastal Management (NCDCM)
- Jacksonville Urban Metropolitan Planning Organization (JUMPO)



U-5791 Jacksonville Parkway Extension

NC 53 (Western Boulevard) to US 17 (New Bern Highway)



On September 8, 2021, the project team met with the Merger Team for a combined Concurrence Point No. 1 (CP1) to discuss the purpose and need and project study area, and Concurrence Point No. 2 (CP2) for the Detailed Study Alternatives Carried Forward. As a result of this meeting, additional information was needed in order for the Merger Team to concur with CP1. A new alternative was also requested by the City of Jacksonville to be included in the alternative analysis.

On October 20, 2021, the project team met with the Merger Team to review the revised information that was submitted as a result of the previous CP1 and CP2 merger meeting held on September 8, 2021. As a result of the discussion, the Merger Team concurred with CP1 and CP2.

On April 19, 2023, the project team met with the Merger Team to review updated information on the alternatives since their concurrence of CP2 on October 20, 2021. This meeting also reviewed information for Concurrence Point No. 2a (CP2a) for Bridging Decisions and Alignment Review. As a result of this meeting, the Merger Team concurred with CP2 and CP2a.

The project team will meet with the Merger Team in late 2025 to review the environmental analysis and public input at a Concurrence Point 3 (CP3) Meeting. The purpose of CP3 is to establish the Least Environmentally Damaging Practicable Alternative (LEDPA). The LEDPA is the best solution to the problem satisfying the purpose and need, considers environmental and community resources, and meets the US Army Corps of Engineers' (USACE) Section 404 (b)(1) guidelines of the Clean Water Act (CWA) regulatory requirements.



VI. NCDOT Preferred Alternative

A comparative evaluation of the No-Build Alternative and the Build Alternatives has been completed to demonstrate the relative effectiveness of the Build Alternatives compared to the No-Build Alternative. The No-Build Alternative provides a baseline for comparing the alternatives.

The No-Build Alternative does not meet the purpose and need as it does not relieve existing and predicted congestion along existing roadways nor does it improve mobility in the area. Improvements to existing Western Boulevard and US 17 were also evaluated but had the same determination of not meeting the project purpose and need. The Build Alternatives will meet the project purpose and need and will provide a northern loop from the existing Jacksonville Parkway (US 17 Bypass) to US 17 to the north.

Based on the evaluation of the impacts and benefits of each alternative, Alternative 3 has been identified as NCDOT's Preferred Alternative. As shown in **Table 23**, impacts for each alternative are slightly different per resource, but there are a few resources which stand out. The benefits for each alternative are very similar for travel timing savings and the percentage of intersections with LOS C or better; although Alternative 2 and 3 are slightly better for each.

Alternative 1 has higher cost and twice as many noise impacts and residential and commercial relocations (and associated costs with these ROW impacts). Alternatives 2 and 3 have similar impacts for natural resources, farmlands, floodplain impacts, and noise impacts. Alternative 2 has lower impacts to wetlands and jurisdictional ditches (tributaries), while Alternative 3 has lower impacts to open waters and streams. Since both alternatives have impacts that will require an USACE Individual Permit, the impacts to natural resources are not an adequate qualifier for selecting an alternative. Alternative 2 has a slightly higher cost and impact to a newly constructed community resource. Alternative 3 is the City of Jacksonville and NCDOT preferred alternatives as it does not impact a newly constructed community resource center that will provide childcare and educational services for the community. Overall, Alternative 3 has the lowest commercial relocations, cost, open water impacts, stream impacts and farmland impacts of the three detailed study alternatives.



U-5791 Jacksonville Parkway Extension

NC 53 (Western Boulevard) to US 17 (New Bern Highway)



Table 23. Alternatives Evaluation

Resource	Alternative 1 Impacts	Alternative 2 Impacts	Alternative 3 Impacts
Wetland Impacts (acres) ²	18.17	18.72	20
Open Water Impacts (acres) ²	0.14	0.14	0
Stream Impacts (linear feet) ²	1,270	1,145	1,004
Jurisdictional Ditches (Tributaries) Impacts (linear feet) ²	2,580	4,581	8,327
Travel Timing Savings (minutes)	11.29	12.25	12.25
Percent of Intersections with LOS C or better (AM/PM Peak)	83% / 74%	97% / 79%	97% / 79%
Residential Relocations	33	15	15
Commercial Relocations	7	6	5
Farmlands (acres)	51.2	46.63	45.35
100-Year Floodplains Impacts (acres)	1.9	1.5	1.5
Noise Receptor Impacts	32	18	18
Cost (Millions) ³	\$126.1	\$96.8	\$93.7

- Notes:
1. Alternative width is based on preliminary design with slope stakes plus 25 linear feet.
 2. Wetland, open water, stream, ditches impacts determined through field delineations and USACOE PJD.
 3. Cost estimates completed in 2023/2024.



U-5791 Jacksonville Parkway Extension

NC 53 (Western Boulevard) to US 17 (New Bern Highway)



VII. References

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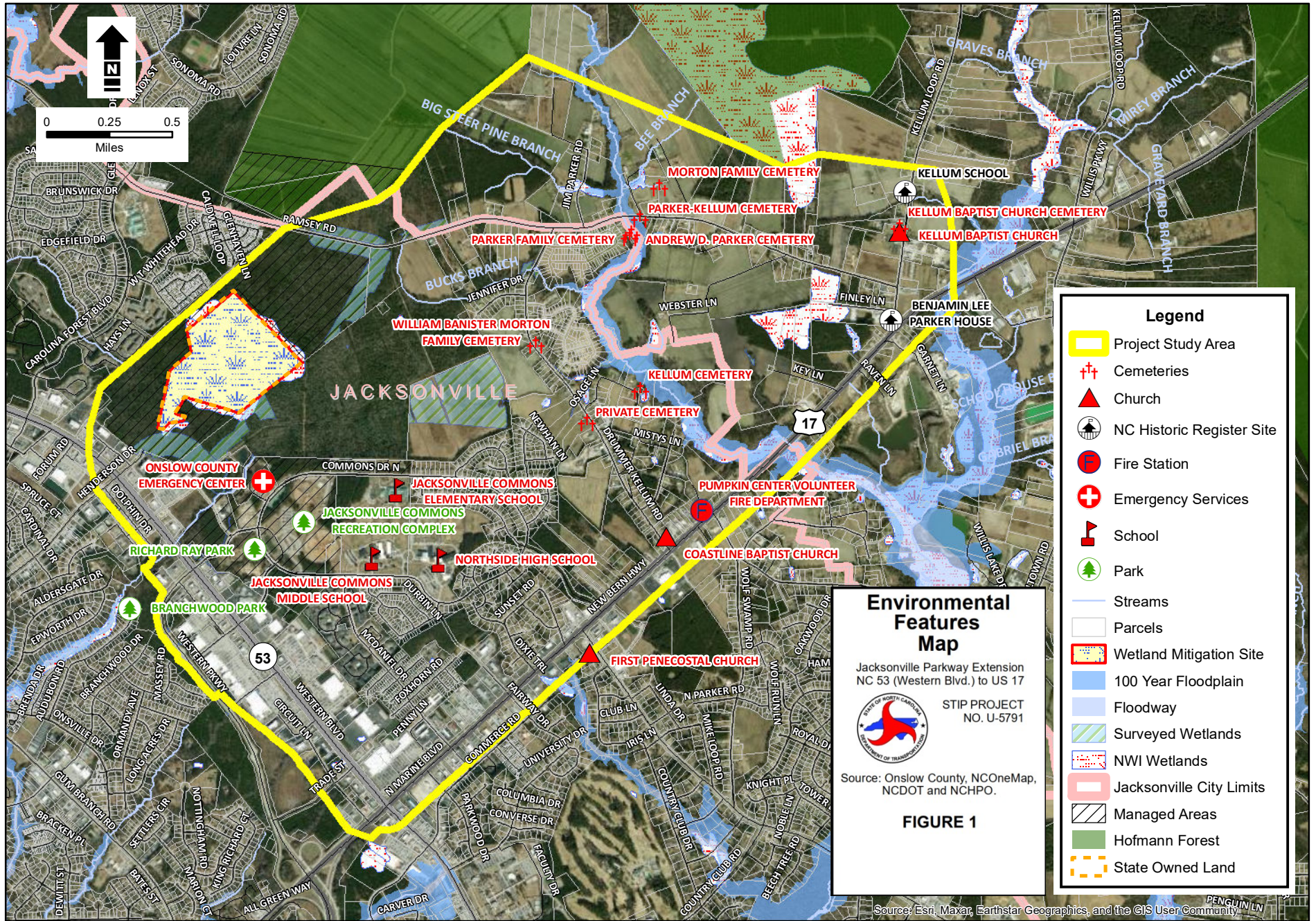
VIII. Figures



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Appendix A. Alternatives Screening Process



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Appendix B. Alternative 1 Design



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Appendix C. Alternative 2 Design



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Appendix D. Alternative 3 Design



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Appendix E. Cultural Forms



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Appendix F. Public Involvement



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Appendix G. Merger Team Information



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