



MEMORANDUM

TO: Technical Coordinating Committee (TCC) Members
FROM: Deanna Trebil – MPO Administrator
DATE: July 1, 2021
RE: TCC Meeting – July 8, 2021

The Technical Coordinating Committee will meet at **10:30 AM** on **Thursday, July 8, 2021** at a **location to be determined**. Staff will update the calendar invitation once the location has been identified.

Discussion topics for this meeting include updates regarding Metropolitan Transportation Improvement Plan (MTIP) Amendment 4, Metropolitan Transportation Plan (MTP) Amendment 3, Introduction to the MPO, Prioritization 6.0, and the Camp Lejeune Rail as well as other transportation-related topics.

Your attendance, or that of your alternate, at this meeting is very important. Conference call participation is available upon request.

Please contact me at (910) 938-5073 with any questions or concerns.



AGENDA

TECHNICAL COORDINATING COMMITTEE

July 8, 2021 – 10:30 AM - Location to be determined

Staff will update the meeting location in the calendar invitation once known.

-
- | | | |
|------|---------------------------|--------------|
| I. | Call to Order | Wally Hansen |
| II. | Welcome and Introductions | Wally Hansen |
| III. | Public Comment | Wally Hansen |

Action Items

- | | | |
|-----|--|---------------|
| IV. | April 8, 2021 Meeting Minutes (Attachment 1)
<i>Recommended Action: Approval of meeting minutes</i> | Wally Hansen |
| V. | 2020-2029 MTIP Amendment 4 (Attachment 2)
<i>Recommended Action: Recommend approval to the TAC</i> | Deanna Trebil |
| VI. | MTP Amendment 3 (Attachment 3)
<i>Recommended Action: Recommend approval to the TAC</i> | Deanna Trebil |

Discussion Items

- | | | |
|-------|---------------------------------|----------------|
| VII. | Introduction to the MPO | Deanna Trebil |
| VIII. | P6.0 | Stephanie Kutz |
| IX. | Camp Lejeune Rail – Road Access | Anthony Prinz |

Reports/Comments

- | | | |
|-------|--|-----------------|
| X. | Report from MPO | Deanna Trebil |
| XI. | Report from NCDOT Division 3 | Caitlin Marks |
| XII. | Report from NCDOT Transportation Planning Division | Behshad Norowzi |
| XIII. | Report from FHWA Field Officer | Bill Marley |
| XIV. | Questions, Closing Comments | Wally Hansen |



JACKSONVILLE URBAN AREA
JUMPO
METROPOLITAN PLANNING ORGANIZATION

Attachment: 1
Technical Coordinating Committee
Action Required

To: Technical Coordinating Committee
From: Deanna Trebil, MPO Administrator
Subject: April 8, 2021 Meeting Minutes

7/8/2021

TCC Recommended Action: Approval of meeting minutes

Attachment: April 8, 2021 meeting minutes

**JACKSONVILLE METROPOLITAN PLANNING ORGANIZATION
TECHNICAL COORDINATING COMMITTEE
VIRTUAL/ REGULAR - MEETING
April 8, 2021**

**CITY OF JACKSONVILLE
JOHNSON BOULEVARD CONFERENCE ROOM**

Present Mr. Wally Hansen, Mr. Ryan King, Mr. Ron Massey, Ms. Debbie Jefferson, Ms.
In Person: Stephanie Kutz, Ms. Deanna Trebil, and Mr. Roy Bredahl

Virtually Mr. Behshad Norowzi, Ms. Caitlin Marks, Mr. Brian Kelly, Ms. Jessica Rhue, Mr. Bill
Present: Marley, Mr. BJ Eversole, Mr. Kerry Terrell, Mr. Steve Myers, Ms. Carol Long, Mr. Daniel
 Cumbo, Ms. Teresa Miller, Mr. Tim McCurry, Mr. Chris White, and Mr. George Hoops

I. [Call to Order](#)

Mr. Hansen called the TCC meeting to order at 10:32am, Thursday, April 8, 2021, at Jacksonville City Hall, Johnson Boulevard Conference Room – 815 New Bridge Street., Jacksonville, NC.

II. [Welcome and Introductions](#)

Mr. Hansen welcomed everyone to the meeting, both in person and virtual. Mr. Hansen asked those in person to identify himself or herself, and then he called everyone's name that was attending virtually.

III. [Public Comment](#)

No one had signed up for public comment.

Action Items

IV. [February 11, 2021 Meeting Minutes](#)

Mr. Hansen for a motion to approve the February 11, 2021 Meeting Minutes.

Mr. Ryan King made a motion to approve the February 11, 2021 Meeting Minutes as presented. Mr. Ron Massey seconded the motion.

The motion to approve the February 11, 2021 Meeting Minutes as presented was approved unanimously and approved by the Committee Members present both in person and virtual.

V. [2020-2029 MTIP Amendment 3](#)

Ms. Trebil mentioned that the Transportation Advisory Committee adopted the 2020-2029 Metropolitan Transportation Improvement Program (MTIP) on December 12, 2019. Amendment 1 was approved on June 11, 2020 and Amendment 2 was approved on November 19, 2020.

In February 2021, the State Board of Transportation (BOT) adjusted the funding for U-4906 (Gum Branch Widening Project) and the schedule for EB-6012 (Chaney Ave Trail). Additionally, in May 2021 the State Board of Transportation (BOT) plans on adjusting the funding for U5716 (US 258/NC 53 Interchange). When NCDOT modifies the State Transportation Improvement Plan (STIP), JUMPO is also required to update the MTIP to reflect those changes.

The initial Amendment was uploaded to JUMPO's website on March 22, 2021, and later amended to add the changes related to the U-5716 project. A public comment period was available through May 11, 2021 and posted on the JUMPO's website.

Mr. Hansen asked for a motion to recommend approval of the 2020-2029 MTIP Amendment 3 to the Transportation Advisory Committee.

Ms. Jessica Rhue moved to approve the 2020-2029 MTIP Amendment 3 as presented and Ms. Carol Long seconded the motion.

The motion to approve the 2020-2029 MTIP Amendment 3 was unanimously approved by the Committee Members present both in person and virtual.

VI. [Draft P6.0 Local Input Methodology](#)

Ms. Kutz stated the prioritization process for the selection of projects for the FY 2024 - 2033 State Transportation Improvement Program is known as P6.0, which establishes the quantitative scoring criteria. The quantitative score accounts for 70% of the Regional Impact and 50% of the Division Needs projects' scores. The remainder of the score comes from local input, divided equally between the MPO and the Division Engineer.

The methodology used by the MPO to assign local points, as required by state law, is a combination of quantitative and qualitative criteria. With P6.0, the MPO does have the option to apply the Local Input Point Flexing Policy. This means that up to 500 Local Input Points can be transferred from one category to the other. If the MPO chooses to flex Local Input Points, the MPO will provide written documentation to the SPOT Office prior to assigning Regional Impact Local Input Points.

The draft P6.0 Local Input Methodology has been submitted to NCDOT for approval. However, it also requires approval by the TCC and TAC. The proposed P6.0 Local Input Methodology has been uploaded to JUMPO's website (www.jumpo-nc.org) on March 22, 2021 for public comment until May 11, 2021.

After some discussion, Mr. Hansen asked for a motion to recommend approval of the raft P6.0 Local Input Methodology to the Transportation Advisory Committee.

Mr. Ron Massey moved to approve the Draft P6.0 Input Methodology and Ms. Carol Long seconded the motion.

The motion to approve the Draft P6.0 Input Methodology was unanimously approved by the Committee Members present both in person and virtual.

VII. [FY 2022 Unified Planning Work Program](#)

Ms. Trebil stated that each year the Jacksonville MPO produces a Unified Planning Work Program (UPWP) to outline expenditures necessary to carry out planning activities by the MPO and its member agencies during the upcoming fiscal year. NCDOT requires the UPWP be adopted and submitted by May 31, 2021 for the coming fiscal year. This deadline has been extended due to the pandemic.

The draft FY 2022 UPWP is similar to the current year's budget and is created to further the operational objectives identified by the TCC and TAC. The work program accounts for all direct operating expenses and includes a request for one additional position. This position is requested to continue conducting more feasibility and planning studies in-house.

After some discussion, Mr. Hansen asked for a motion to recommend adoption of the draft FY 2022 Unified Planning Work Program to the Transportation Advisory Committee.

Mr. Ryan King moved to approve the FY 2022 Unified Planning Work Program and Mr. Ron Massey seconded the motion.

The motion to approve the FY 2022 Unified Planning Work Program as presented was unanimously approved by the Committee Members present both in person and virtual.

Discussion Items

VIII. [P6.0](#)

Ms. Kutz discussed the P6.0 Work Plan. She noted that the Local Input Methodology was out for public comment and had been sent to NCDOT for their approval. Quantitative Scores for the projects are anticipated to be released at the end of July 2021. Once those scores are received the subcommittee would convene to assign points.

IX. [TRAC](#)

Ms. Trebil provided an update on the progress made to date on the Transportation Resiliency Action Committee Initiative to include a review of the goals and key areas of focus.

TRAC began meeting in January 2019 with the goal to strengthen mobility to improve community resiliency. They established the following objectives:

1. Reduce the frequency and duration of regional isolation.
2. Reduce the frequency and duration of local isolation from strategic points of interest.
3. Identify and implement operational systems that improve mobility.

The goal was to use data that is publicly available and maintained by others creating a framework that could be easily reproduced by others.

The key areas of focus were on frequency, criticality, and duration of flooding. We accomplished this by focusing efforts on NCDOT roads, classified the roads in order of significance, and identified FEMA regulated crossing. This led to identifying 83 drainage crossings which included bridges and culverts using a static model to compile results.

The methodology and results of the static model were reviewed by TRAC to validate the results. Stakeholders provided feedback on each crossing given their past experience with flooding events and with Hurricane Florence. From this meeting, some of the crossing priorities changed helping to inform the development of the two-dimension modeling basins, the next step in evaluating the transportation network. Additionally, two additional crossings were added: #84 – Stormwater pipe at Bear Creek Road and #85 – Pond at Kingsbridge Rd based on known historical flooding.

When evaluating where the 85 crossings are located within these drainage basins, TRAC made the decision to proceed forward with 3-D modeling portions of the New River Basin and the Southwest Creek Basin.

The basins chosen by TRAC have the largest number of crossings, proximity of these crossings to locations of importance, and historical knowledge of road closures. These basins included a total of 41 crossings, 33 crossings located within New River Basin and eight (8) crossings located within the Southwest Creek basin. These basins were modeled to determine duration of flooding by evaluating rain events and looking at the depth of flooding and the intensity of rainfall.

Next steps include completing the analysis of each crossing, finalize the narrative methodology, and publish the ArcGIS Online dashboard. The intent is to include the narrative of this initiative as a new chapter in the Metropolitan Transportation Plan.

Reports/Comments

X. [Report from MPO](#)

Ms. Trebil was happy to report that Douglass Gate project was recently let and that construction would hopefully start in mid-June. She also provided an update on the MPO Boundary stating that NCDOT should execute the Memorandum of Understanding by the end of May at which time we can begin the process of welcoming new members for the TCC and TAC Committees.

XI. [Report from NCDOT Division 3](#)

Ms. Marks gave her report on projects in development.

XII. [Report from NCDOT Transportation Planning Division](#)

Mr. Behshad gave the Committee an update stating that the NCDOT cash flow has improved, and the census data might impact the MPO Boundary which is expected to be received around May 2022.

XIII. [Report from FHWA Field Officer](#)

Mr. Marley conquered on Mr. Behshad's comment on the cash flow. We are hoping for a re-authorization bill and an infrastructure bill, which will assist with roads, bridges, pedestrian accommodations, and rails.

XIV. [Questions, Closing Comments](#)

Mr. Hansen asked for an adjournment of the March 8, 2021 TCC meeting.

The meeting was adjourned at 11:38 a.m. Mr. Ryan King made a motion and Mr. Massey seconded the motion.



To: Technical Coordinating Committee
From: Deanna Trebil, MPO Administrator
Subject: 2020-2029 Metropolitan Transportation Improvement Program (MTIP) - Amendment 4

7/8/2021

The Transportation Advisory Committee adopted the 2020-2029 Metropolitan Transportation Improvement Program (MTIP) on December 12, 2019. Amendment 1 was approved on June 11, 2020; Amendment 2 was approved on November 19, 2020; and Amendment 3 was approved on May 13, 2021.

As a result of the MPO Boundary expansion, the State Board of Transportation (BOT) is adjusting projects to move them from the Down East Rural Planning Organization (DERPO) to JUMPO:

- R-5783: Division 3 Program to update intersection to comply with ADA
- W-5203: Division 3 Rumble strips, guardrail, safety and lighting improvements
- W-5703DIV: Safety Improvements in Division 3
- W-5703REG: Safety Improvements in Division 3
- W-5703SW: Safety Improvements in Division 3

Additionally, other modifications are proposed to include adjustments to funding or project schedules and/or the addition of projects:

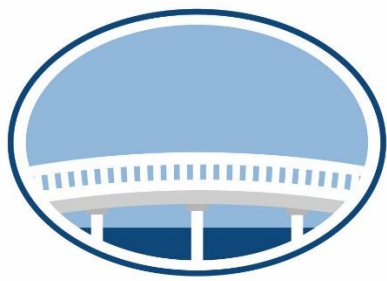
- U-4906: Gum Branch widening – funding adjustment
- TK-6150: OUTS Administration - new funding

When NCDOT modifies the State Transportation Improvement Plan (STIP), JUMPO is also required to update the MTIP to reflect those changes.

The Amendment was uploaded to JUMPO's website on July 1, 2021. Public comment will be received through August 10, 2021. The Amendment is available to view at: www.jumpo-nc.org.

TCC Recommended Action: Recommend approval to the TAC

Attachment: 2020-2029 Metropolitan Transportation Plan
Amendment 4



JACKSONVILLE URBAN AREA
JUMPO
METROPOLITAN PLANNING ORGANIZATION

FY 2020-2029
Transportation Improvement Program
TIP

Adopted

December 2019

Amendment 1 – June 11, 2020

Amendment 2 – November 19, 2020

Amendment 3 – May 13, 2021

Amendment 4 – August 12, 2021

The Jacksonville Urban Area Metropolitan Planning Organization (JUMPO) has cooperatively developed this Metropolitan Transportation Improvement Program (TIP) with the North Carolina Department of Transportation (NCDOT), Jacksonville Transit, Onslow United Transit System (OUTS), and the Albert J. Ellis Airport as required by the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA).

This document reflects transportation investment priorities and programs transportation projects for potential funding over the ten-year period of FY 2020-2029. Projects programmed in the first six years of the document (FY 2020-2025) depict the funding committed in the Transportation Improvement Program. Projects programmed in the remaining years (FY 2026-2029) are illustrative.

The Metropolitan Transportation Plan (MTP) is the basis for this programming document. JUMPO completed its most recent LRTP in January 2019. Additional information on individual projects can be found in the MTP online at www.jumpo-nc.org. JUMPO has incorporated safety performance targets as required by FHWA and NCDOT. Both the MTP and this TIP incorporate performance measures by including the adopted targets for pavement, bridge maintenance, system performance, freight, and transit assist management. These established performance measures have their beginnings in federal legislation (MAP-21 and the FAST Act) and are intended to increase the accountability and transparency of federal highway programs through performance based planning.

The North Carolina General Assembly passed Strategic Transportation Investment legislation in 2014 mandating how projects would be selected for the TIP. All projects were input into the SPOT Online system in fall 2017. Based on scores and funding availability, a list of Statewide Mobility projects was released in spring 2018. All projects in all categories had quantitative scores assigned based on modal criteria and were released in mid-summer. Public comment periods provided opportunities for members of the public to comment on projects and provide feedback to the Technical Coordinating Committee (TCC) and Transportation Advisory Committee (TAC) on how local input points should be assigned to projects in both the Regional and Division Impact tiers. The TAC later assigned their Regional local points at their July 2018 meeting and their Division points at their October 2018 meeting. The draft list of projects to be funded was released by NCDOT in January 2019, later revised in August 2019, and adopted by the Board of Transportation in September 2019.

In November 2020, the State Board of Transportation adopted a re-programmed STIP adjusting project schedules in order to ensure a fiscally constraint Program in accordance with federal law. Projects that were committed as a result of Prioritization 5.0 remain committed even if funding is shown through FY 2027. Projects that fall in FY 2030 or later are shown for either illustrative purposes or to show fiscal impact.

All highway projects in the TIP, including all phases, are the responsibility of NCDOT. Preliminary Engineering for all projects (except Bicycle and Pedestrian Projects) is accounted for under a Statewide Line Item which also includes environmental analysis.

Local match for all projects is provided by NCDOT unless otherwise stated. Costs listed in the document are total costs. Most federal sources require a 20% local match, although some federal funding types either require no match or only 10%.

The Public Transportation section documents the expenditures of the Sections 5307 and 5303 grants. The MPO public participation process for the development of the TIP meets the requirements for the FTA Programming of Projects.

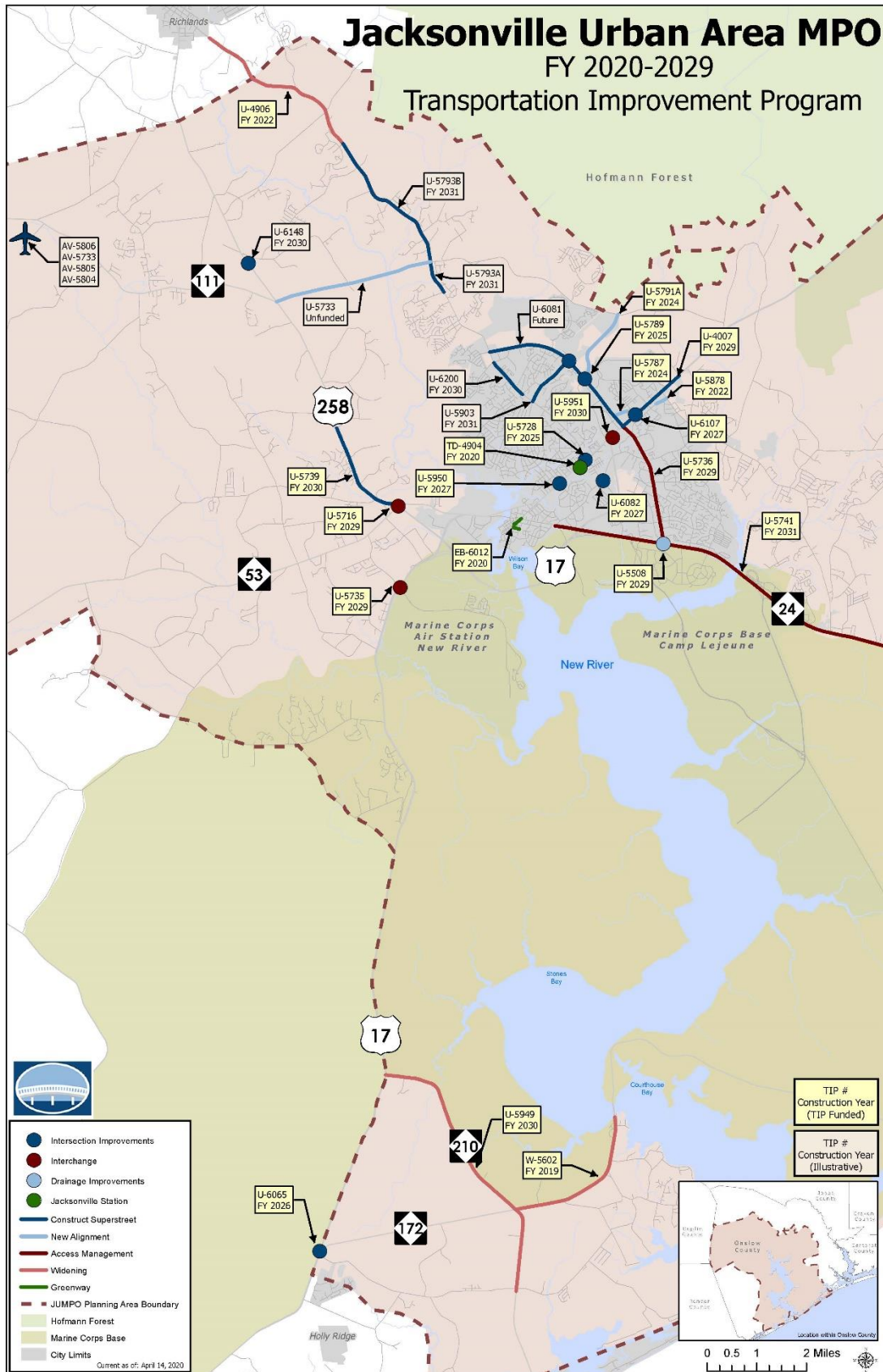
The final section of the document lists Statewide Projects. These projects are those that are programmed for work throughout the state and may be applicable in the Jacksonville area.

Performance Management

The Jacksonville Urban MPO has established performance management targets for highway safety, infrastructure condition, congestion, system reliability, emissions, freight movement and transit. The Jacksonville Urban MPO anticipates meeting their identified targets with the mix of projects included in the FY 2020-2029 TIP.

Transit Safety Planning and Target Setting

Public transit projects included in the STIP align with the transit safety planning and target setting process undertaken by the transit agencies and MPOs. While the North Carolina DOT aided with the development of a template for the initial Public Transportation Agency Safety Plans (PTASPs), each large urban transit provider is responsible for implementing its Public Transportation Agency Safety Plans (PTASP), which includes transit safety targets. Investments are made in alignment with PTASPs with the intent of keeping the state's public transit operations, vehicles, and facilities safe and meeting transit safety targets. State and federal funding sources that can be used by transit agencies for operations, vehicles, and facility improvements are outlined in the Public Transportation Project Funding section of the NCDOT 2020-2029 Current STIP. Individual transit agencies determine the use of these sources for capital and operating expenses based on their local needs.



Financial Plan

The Financial Plan includes projects in the first six years of the committed State Transportation Improvement Program (2020-2025) portion of the document as shown in Table 1. Information concerning the other years (2026-2029), including the Developmental Program projects, is included for illustrative purposes in Table 2.

Project prioritization is accomplished through the STI. The process for this TIP is known as P5.0 and was developed cooperatively by a workgroup designated in state law made up of NCDOT staff and representatives of MPOs, RPOs, and urban and rural coalitions. Criteria was established, defined, and weighted for all modes to be used to calculate quantitative scores. These scores account for 100% of the score at the Statewide Mobility tier, 70% at the Regional Impact tier, and 50% at the Division Needs tier. Local input points, in accordance with established local methodology, account for the remaining percentages at the Regional Impact and Division Needs tiers. The local input is divided equally between the NCDOT Division 3 Engineer and the MPO.

All expenditures are expressed in current year dollars as is listed in the document tables. However, it is anticipated that costs will rise over the life of the document by approximately 2% per year. Revenue is anticipated to be stable through the life of the document, ensuring funding availability for all projects within the first four years. Adjustments are made by NCDOT on an annual basis to ensure anticipated costs are reflective of the most current assessments.

Funding from the following federal programs is included:

- HSIP - Highway Safety Improvement Program
- NHP - National Highway Performance Program
- T – State Highway Trust Funds
- FBUS - Bus and Bus Facilities (5339)
- FMPL – Metropolitan Planning (Transit)
- FUZ - Urbanized Area Formula Grant (Transit)

Highway

Highway projects fall within many categories, including roadway widening, new roadway, roadway modernization, access management, intersection improvements, interchange upgrade, and bridge replacement. All highway projects, except bridge and safety, compete for funding through STI. Project selection ensures fiscal constraint at all levels. It is anticipated that revenue from all sources, both federal and state, will be available at the necessary levels for completion of programmed projects.

Highway Expenditures FY 2020-2025 (\$thousands)	
Funding Source	Total Amount
Surface Transportation Block Grant (Any Area)	\$8,700
Highway Safety Improvement Program	\$0
National Highway Performance Program	\$400
State Highway Trust Funds	\$59,877
Total	\$68,977

Table 1

Highway Expenditures* FY 2025-2029 (\$thousands)	
Funding Source	Total Amount
National Highway Performance Program	\$1,000
Highway Safety Improvement	\$1,500
State Highway Trust Funds	\$78,977
Total	\$81,477

Table 2

*Anticipated funding

Public Transportation

The primary funding source for public transportation is through the Urbanized Area Formula Grant (Section 5307) fund. This requires a local match for operating expenses of 50% (Table 3). The local match for capital projects is 20% (Table 4). While the state can provide matching funds for capital projects, these are awarded on a competitive basis through STI and are therefore not assumed to be available. All revenue/expenditures for public transportation are based on year of expenditure, computed at 2% annually.

Transit Operating Expenditures FY 2020-2025 (\$thousands)			
FUZ	Local Match		Total
	SMAP	Local	
\$2,937	\$668	\$2,268	\$5,874

Table 3

Transit Capital/Construction Expenditures FY 2020-2025 (\$thousands)					
FUZ	T	FBUS	Local Match		Total
			State	Local	
\$10,669	\$295	\$4,500	\$153	\$2,567	\$18,184

Table 4

The state provides assistance with planning and operating expenses.

Transit Planning Expenditures FY 2020-2025 (\$thousands)				
		Local Match		Total
		State	Local	
FUZ	\$437	\$55	\$55	\$547
FMPL	\$183	\$32	\$32	\$247

Table 5

Anticipated public transportation revenue includes

Anticipated Revenue FY 2020-2025 (\$thousands)							
FUZ	FMPL	T	FBUS	State	SMAP	Local	Total
\$14,043	\$183	\$295	\$4,500	\$240	\$240	\$4,923	\$24,852

Table 6

HIGHWAY PROGRAM

										TYPE OF WORK / ESTIMATED COST IN THOUSANDS / PROJECT BREAKS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
COUNTY	ROUTE/CITY	ID NUMBER	LOCATION / DESCRIPTION	LENGTH (MILES)	TOTAL PROJECT COST (THOU)	PRIOR YEARS COST (THOU)	FUNDS	STATE TRANSPORTATION IMPROVEMENT PROGRAM					DEVELOPMENTAL PROGRAM					UNFUNDED																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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(1) IDENTIFICATION NUMBER	
I	- Interstate
R, A	- Rural
M, X	- Special
U	- Urban
B	- Bridge Replacement
AV	- Aviation
E	- Enhancements, Call, Bicycle & Pedestrian
EL	- Local
ER	- Roadside
S	
EE	- Mitigation
K	- Rest Area
L	- Landscape
P, SB	- Passenger Rail
SR	- Safe Routes to School
W, SI, SF	- Highway Hazard (Highway Safety)
Y, Z	- Railroad-Highway Crossings
F	- Ferry
FS	- Feasibility Study
T	- Public Transportation

(2) FUNDING KEY FOR HIGHWAY FUNDING SOURCES		
APD - Appalachian Development	HSIP - Highway Safety Improvement Program	HRRR - High Risk Rural Roads
BA - Bonus Allocation	L - Local	
BG - Surface Transportation Block Grant Program (Uncategorized)	NHP - National Highway Performance Program	
BG5200 - Surface Transportation Block Grant Program (5K - 200K)	NHPB - National Highway Performance Program (Bridge)	
BGANY - Surface Transportation Block Grant Program (Any Area)	NHPBA - National Highway Performance Program (Bonus Allocation)	
BGBA - Surface Transportation Block Grant Program (Bonus Allocation)	NHPIM - National Highway Performance Program (Interstate Maintenance)	
BGDA - Surface Transportation Block Grant Program (Direct Attributable)	O - Other	
BGIM - Surface Transportation Block Grant Program (Interstate Maintenance)	S - State	
BGLT5 - Surface Transportation Block Grant Program (Less than 5K)	S (M) - State Match	
BGOFF -Surface Transportation Block Grant Program (Off System Bridge)	T - State Highway Trust Funds	
BOND (R) - Revenue Bond	TA - Transportation Alternatives Program (Uncategorized)	
CMAQ - Congestion Mitigation	TA5200 - Transportation Alternatives Program (5K - 200K)	
DP - Discretionary or Demonstration	TAANY - Transportation Alternatives Program (Any Area)	
ER - Emergency Relief Funds	TADA - Transportation Alternatives Program (Direct Attributable)	
FLAP - Federal Lands Access Program	TALT5 -Transportation Alternatives Program (Less than 5K)	
HP - Federal-Aid High Priority		

(3) FUNDING CATEGORY
DIV - Division
EX - Exempt
HF - State Dollars (Non-STI)
REG - Regional
SW - Statewide
TRN -Transition Project

(4) WORK TYPE (ACTIVITY)
A - Acquisition
C - Construction
CB - Construction (BUILD NC)
CG - Construction (GARVEE)
F - Feasibility Study
G - Grading and Structures
I - Implementation
L - Landscaping
M - Mitigation
O - Operations
P - Paving
PE - Preliminary Engineering
R - Right of Way
RB - Right of Way (BUILD NC)
RG - Right of Way (GARVEE)
S - Structure
U - Utilities

NON HIGHWAY PROGRAM

TYPE OF WORK / ESTIMATED COST IN THOUSANDS / PROJECT BREAKS

[illegible]

(1) FUNDING CATEGORY	
DIV	- Division
HF	- State Dollars (Non-STI)
REG	- Regional
SW	- Statewide

(2) FUNDING SOURCES KEY	
ADTAP - Appalachian Development Transportation Assistance Pgm.	FSRP - State Planning and Research
BGDA - STBG Program - Direct Attributable	FSSO - Federal State Safety Oversight (Rail) (5329)
CMAQ - Congestion Mitigation	FUZ - Urbanized Area Formula Program (5307)
DP - Discretionary or Demonstration	HP - Federal-Aid High Priority
FBBF - Bus and Bus Facilities Formula (5339)	JARC - Job Assistance and Reverse Commute (5316)
FBUS - Bus and Bus Facilities (5339)	L - Local
FED - Federal Rail Funds	O - Other
FEDT - Undesignated Federal Transit Funds	RR - Rail-Highway Safety
FEPD - Enhanced Mobility Adults and People with Disabilities (5310)	RTAP - Rural Transit Assistance Program
FF - Federal Ferry	S - State
FLAP - Federal Lands Access Program	S (M) - State Match
FMOD - Fixed Guideway Modifications	SMAP - Operating Assistance and State Maintenance
FMPL - Metropolitan and Statewide Planning (5303/5304)	SRTS - Safe Routes to School
FNF - New Freedom Program (5317)	STHSR - Stimulus High Speed Rail
FNS - New Starts - Fixed Guideway CIG - Capital (5309)	T - State Highway Trust Funds
FNU - Non Urbanized Area Formula Program (5311)	TADA - Transportation Alternatives Program - (Direct Attributable)
FSGR - State of Good Repair Formula (Rail) (5337)	TIGER DISC - TIGER Discretionary Grants

(3) WORK TYPE (ACTIVITY)	
A	- Acquisition
AD	- Administrative
C	- Construction
CP	- Capital
I	- Impementation
O	- Operations
Oc	- OPS Funded Capital
PE	- Preliminary Engineering
PL	- Planning / Design
R	- Right-of-Way

JACKSONVILLE URBAN AREA METROPOLITAN PLANNING ORGANIZATION

TYPE OF WORK / ESTIMATED COST IN THOUSANDS / PROJECT BREAKS

[illegible]

DIV - Division Category	EX - Exempt Category
HF - State Dollars (Non STI)	REG - Regional Category
SW - Statewide Category	TRN - Transition Project

**COST AND SCHEDULES ARE PRELIMINARY AND SUBJECT TO
SIGNIFICANT CHANGE AS MORE INFORMATION BECOMES AVAILABLE**

[illegible]

**COST AND SCHEDULES ARE PRELIMINARY AND SUBJECT TO
SIGNIFICANT CHANGE AS MORE INFORMATION BECOMES AVAILABLE**

JACKSONVILLE URBAN AREA METROPOLITAN PLANNING ORGANIZATION

COMMITTED /NON	ROUTE/CITY COUNTY	ID NUMBER	LOCATION / DESCRIPTION	LENGTH	TOTAL PROJ COST (THOU)	PRIOR YEARS COST (THOU)	TYPE OF WORK / ESTIMATED COST IN THOUSANDS / PROJECT BREAKS																				
							FUNDS	FY 2020	FY 2021	FY 2022	STATE TRANSPORTATION IMPROVEMENT PROGRAM					DEVELOPMENTAL PROGRAM					UNFUNDED						
											FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FUTURE YEARS						
URBAN PROJECTS																											
<input checked="" type="checkbox"/>	<input type="checkbox"/> NC 24 (LEJEUNE BOULEVARD)	U-5508 H140840	NC 53 (WESTERN BOULEVARD) IN JACKSONVILLE. UPGRADE INTERSECTION AND DRAINAGE.	0.5	2812	1262	T																				
SW	ONSLOW																										
RIGHT-OF-WAY IN PROGRESS - COMBINE WITH U-5736 AND U-4007E.																											
<input type="checkbox"/>	<input checked="" type="checkbox"/> NC 53 (WESTERN BOULEVARD)	U-6081 H150380	SR 1308 (GUM BRANCH ROAD) TO US 17 (MARINE BOULEVARD). UPGRADE TO SUPERSTREET.	3.4	32400	1000	T								R	2400											
REG	ONSLOW						T								U	1000											
							T													C	9334		C	9333		C	9333
<input checked="" type="checkbox"/>	<input type="checkbox"/> NC 53 (WESTERN BOULEVARD)	U-5736 H090798	US 17 (MARINE BOULEVARD) TO NC 24 (LEJEUNE BOULEVARD) IN JACKSONVILLE. CONSTRUCT ACCESS MANAGEMENT IMPROVEMENTS.	2.6	42479	5580	T		R	7499																	
REG	ONSLOW						T													C	9800		C	9800		C	9800
COMBINED WITH U-4007E AND U-5508 - RIGHT-OF-WAY IN PROGRESS.																											
<input checked="" type="checkbox"/>	<input type="checkbox"/> NC 210	U-5949 H111205-A	US 17 TO SOUTH OF SR 1518 (OLD FOLKSTONE ROAD). WIDEN TO MULTI- LANES.	5.8	96986	1150	T								R	4171		R	4171								
REG	ONSLOW						T								U	8797		U	8797								
							T													C	17475		C	17475		C	17475
<input checked="" type="checkbox"/>	<input type="checkbox"/> SR 1308 (GUM BRANCH ROAD)	U-4906	WEST OF SR 1313 (MILLS FIELDS ROAD) TO EAST OF SR 1324 (RAMSEY ROAD) IN JACKSONVILLE. WIDENING.	5.3	15178	5278	B	GANY					C	9900													
TRN	ONSLOW																										
RIGHT-OF-WAY IN PROGRESS																											
<input checked="" type="checkbox"/>	<input type="checkbox"/> SR 2714 (JACKSONVILLE PARKWAY EXTENSION)	U-5791 H111194	NC 53 (WESTERN BOULEVARD) TO US 17 (NEW BERN HIGHWAY). WIDEN TO MULTI- LANES, PART ON NEW LOCATION.	3.83	83636	1750	T								R	6707	A										
DIV	ONSLOW						T								U	1963	A										
							T																				
							T																				
							T																				
							T																				
P4.0 COMMITTED							DIV			A	NC 53 (WESTERN BOULEVARD) TO SR 1324 (RAMSEY ROAD). - PLANNING/DESIGN IN PROGRESS																
NOT FUNDED										B	SR 1324 (RAMSEY ROAD) TO US 17 (NEW BERN HIGHWAY).																
<input checked="" type="checkbox"/>	<input type="checkbox"/> SR 2715 (TRADE STREET)	U-5787 H140510	NC 53 (WESTERN BOULEVARD) TO MCDANIEL DRIVE IN JACKSONVILLE. CONSTRUCT ROADWAY ON NEW LOCATION.	0.3	10139	800	T								R	1930											
DIV	ONSLOW						T								U	2209											
							T																				

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[illegible]

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COMMITTED / NON	ROUTE/CITY COUNTY	ID NUMBER	LOCATION / DESCRIPTION	LENGTH	TOTAL PROJ COST (THOU)	PRIOR YEARS COST (THOU)	FUNDS	FY 2020	FY 2021	FY 2022	STATE TRANSPORTATION IMPROVEMENT PROGRAM					DEVELOPMENTAL PROGRAM					UNFUNDED																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
											FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FUTURE YEARS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
BRIDGE PROJECTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
<input checked="" type="checkbox"/>	<input type="checkbox"/>	SR 1509 (QUEENS CREEK ROAD)	B-5944	REPLACE BRIDGE 660077 OVER QUEEN'S CREEK.	11100	500	T																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

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COMMITTED / NON	ROUTE/CITY COUNTY	ID NUMBER	LOCATION / DESCRIPTION	LENGTH	TOTAL PROJ COST (THOU)	PRIOR YEARS COST (THOU)											STATE TRANSPORTATION IMPROVEMENT PROGRAM					DEVELOPMENTAL PROGRAM					UNFUNDED		
							FUNDS	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FUTURE YEARS								
HIGHWAY SAFETY PROJECTS																													
<input checked="" type="checkbox"/>	<input type="checkbox"/>	VARIOUS	W-5703	SAFETY IMPROVEMENTS AT VARIOUS LOCATIONS IN DIVISION 3.	2586	2536	HSIP	C	15	DIV																			
							HSIP	C	15	REG																			
							HSIP	C	20	SW																			
		BRUNSWICK					ALTERNATE CRITERIA			DIV	DIV	SAFETY IMPROVEMENTS AT VARIOUS LOCATIONS.																	
		DUPLIN					ALTERNATE CRITERIA			REG	REG	SAFETY IMPROVEMENTS AT VARIOUS LOCATIONS.																	
		NEW HANOVER					ALTERNATE CRITERIA			SW	SW	SAFETY IMPROVEMENTS AT VARIOUS LOCATIONS.																	
		ONSLow																											
		PENDER																											
		SAMPSON																											
IN PROGRESS																													
<input checked="" type="checkbox"/>	<input type="checkbox"/>	VARIOUS	W-5203	DIVISION 3 RUMBLE STRIPS, GUARDRAIL, SAFETY AND LIGHTING IMPROVEMENTS AT SELECTED LOCATIONS.	22135	21485	HSIP	C	650																				
		BRUNSWICK					ALTERNATE CRITERIA			DIV	DIV	DIVISION 3 RUMBLE STRIPS, GUARDRAIL, SAFETY AND LIGHTING IMPROVEMENTS AT SELECTED LOCATIONS.																	
		DUPLIN					ALTERNATE CRITERIA			REG	REG	DIVISION 3 RUMBLE STRIPS, GUARDRAIL, SAFETY AND LIGHTING IMPROVEMENTS AT SELECTED LOCATIONS.																	
		NEW HANOVER					ALTERNATE CRITERIA			SW	SW	DIVISION 3 RUMBLE STRIPS, GUARDRAIL, SAFETY AND LIGHTING IMPROVEMENTS AT SELECTED LOCATIONS.																	
		ONSLow																											
		PENDER																											
		SAMPSON																											
DIVISION PURCHASE ORDER CONTRACT (DPOC) - IN PROGRESS																													
AVIATION PROJECTS																													
<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALBERT J. ELLIS	AV-5733	DESIGN AND CONSTRUCT RUNWAY 23 HOLDING APRON.	750		T																						
		AIRPORT (OAJ)	A130292																										
		REG	ONSLow																										
<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALBERT J. ELLIS	AV-5805	ACQUIRE LAND FOR RUNWAY EXTENSION AND ROADWAY RELOCATION.	361		O																						
		AIRPORT (OAJ)	A150604				T																						
		REG	ONSLow																										
OTHER FUNDS ARE AIRPORT FUNDS																													
<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALBERT J. ELLIS	AV-5806	EXTEND RUNWAY 23 AND TAXIWAY A.	12880		O																						
		AIRPORT (OAJ)	A150610				T																						
		REG	ONSLow																										
OTHER FUNDS ARE AIRPORT FUNDS																													
<input checked="" type="checkbox"/>	<input type="checkbox"/>	ALBERT J. ELLIS	AV-5804	ACQUIRE LAND FOR ROADWAY RELOCATION, RPZ AND RUNWAY EXTENSION.	697		O																						
		AIRPORT (OAJ)	A150605				T																						
		REG	ONSLow																										
OTHER FUNDS ARE AIRPORT FUNDS																													
BICYCLE AND PEDESTRIAN PROJECTS																													
<input checked="" type="checkbox"/>	<input type="checkbox"/>	DOWNTOWN	EB-6012	CHANEY AVENUE TO WARDOLA DRIVE IN JACKSONVILLE. CONSTRUCT MULTI-USE PATH.	0.6	799	TA5200					C	639																
		GREENWAY	B171216				L					C	160																
		DIV	ONSLow																										
<input checked="" type="checkbox"/>	<input type="checkbox"/>	JACKSONVILLE	EB-4705	LEJEUNE BOULEVARD GREENWAY, SOUTH SIDE OF NC 24 (LEJEUNE BOULEVARD), MONTFORD POINT ROAD TO U-5132 GREENWAY TERMINI.	1.5	1956	1956																						
		TRN	ONSLow																										
UNDER CONSTRUCTION																													

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COMMITTED / NON	ROUTE/CITY COUNTY	ID NUMBER	LOCATION / DESCRIPTION	LENGTH	TOTAL PROJ COST (THOU)	PRIOR YEARS COST (THOU)	FUNDS	FY 2020	FY 2021	FY 2022	STATE TRANSPORTATION IMPROVEMENT PROGRAM					DEVELOPMENTAL PROGRAM					UNFUNDED						
											FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FUTURE YEARS						
FERRY PROJECTS																											
<input checked="" type="checkbox"/>	<input type="checkbox"/> VARIOUS	F-5703 F130001	REPLACEMENT VESSEL (SUPPORT FLEET) FOR TUGS AND BARGES		11600	6250	T	C	3250	A																	
							T	C	2100	B																	
DIV	BEAUFORT					P4.0 COMMITTED		DIV	A	F130001	Z-DRIVE TOWING AND PUSHING TUG - UNDER CONSTRUCTION																
	BERTIE					P4.0 COMMITTED		DIV	B	F130001	TWO SUPPORT/ANCHOR TUGS, ONE SUPPORT TUG, THREE BARGES - UNDER CONSTRUCTION																
	BRUNSWICK																										
	CAMDEN																										
	CARTERET																										
	CHOWAN																										
	CRAVEN																										
	CURRITUCK																										
	DARE																										
	DUPLIN																										
	GATES																										
	GREENE																										
	HERTFORD																										
	HYDE																										
	JONES																										
	LENOIR																										
	MARTIN																										
	NEW HANOVER																										
	NORTHAMPTON																										
	ONSLow																										
	PAMLICO																										
	PASQUOTANK																										
	PENDER																										
	PERQUIMANS																										
	PITT																										
	SAMPSON																										
	TYRRELL																										
	WASHINGTON																										
PUBLIC TRANSPORTATION PROJECTS																											
<input checked="" type="checkbox"/>	<input type="checkbox"/> JACKSONVILLE	TA-4944	REPLACEMENT BUS - FIXED ROUTE		4450	1934	5307	CP	260		CP	250		CP	250		CP	250		CP	250						
	TRANSIT						L	CP	65		CP	63		CP	63		CP	63		CP	63						
PT	ONSLow																										
<input checked="" type="checkbox"/>	<input type="checkbox"/> JACKSONVILLE	TA-4943	EXPANSION BUS - FIXED ROUTE		3080	1493	5307	CP	390		CP	125		CP	125		CP	125		CP	125						
	TRANSIT						L	CP	49		CP	16		CP	16		CP	16		CP	16						
							S	CP	49		CP	16		CP	16		CP	16		CP	16						
PT	ONSLow																										
<input checked="" type="checkbox"/>	<input type="checkbox"/> JACKSONVILLE	TD-4904	FACILITY - TRANSIT CENTER - DOWNTOWN		11810	755	5307	C	4950																		
	TRANSIT						5309	C	4500																		
							L	C	1310																		
							T	C	295																		
DIV	ONSLow																										

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							FUNDS	FY 2020	FY 2021	FY 2022	STATE TRANSPORTATION IMPROVEMENT PROGRAM					DEVELOPMENTAL PROGRAM					UNFUNDED FUTURE YEARS					
											FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032						
PUBLIC TRANSPORTATION PROJECTS																										
<input checked="" type="checkbox"/>	<input type="checkbox"/>	JACKSONVILLE TRANSIT	TG-5220	JACKSONVILLE TRANSIT - MOBILITY MANAGEMENT	478	166	5307	CP	29	CP	30	CP	30	CP	31	CP	31	CP	32	CP	32	CP	33			
							L	CP	4	CP	4	CP	4	CP	4	CP	4	CP	4	CP	4	CP	4			
							S	CP	4	CP	4	CP	4	CP	4	CP	4	CP	4	CP	4	CP	4			
PT		ONSLOW																								
<input checked="" type="checkbox"/>	<input type="checkbox"/>	JACKSONVILLE TRANSIT	TG-5225	ROUTINE CAPITAL-BUS STOP SHELTERS, BENCHES, SHOP EQUIPMENT, SPARE PARTS, ENGINES, SERVICE VEHICLES, ETC.	767	618	5307	CP	14	CP	14	CP	14	CP	14	CP	15	CP	16	CP	16	CP	16			
							L	CP	3	CP	3	CP	4	CP	4	CP	4	CP	4	CP	4	CP	4			
PT		ONSLOW																								
<input checked="" type="checkbox"/>	<input type="checkbox"/>	JACKSONVILLE TRANSIT	TG-4952	NON-FIXED ROUTE ADA PARATRANSIT	927	166	5307	CP	70	CP	71	CP	74	CP	76	CP	78	CP	80	CP	80	CP	80			
							L	CP	17	CP	18	CP	18	CP	19	CP	20	CP	20	CP	20	CP	20			
PT		ONSLOW																								
<input checked="" type="checkbox"/>	<input type="checkbox"/>	JACKSONVILLE TRANSIT	TG-5109	PREVENTIVE MAINTENANCE - FIXED ROUTE	3102	1026	5307																			
							5307	CP	189	CP	194	CP	201	CP	206	CP	213	CP	219	CP	219	CP	219			
							L	CP	47	CP	49	CP	50	CP	52	CP	53	CP	55	CP	55	CP	55			
PT		ONSLOW																								
<input checked="" type="checkbox"/>	<input type="checkbox"/>	JACKSONVILLE TRANSIT	TG-5225C	MOBILITY MANAGEMENT	890	237	5307	CP	59	CP	62	CP	63	CP	65	CP	67	CP	69	CP	69	CP	69			
							L	CP	15	CP	15	CP	16	CP	16	CP	17	CP	17	CP	17	CP	17			
PT		ONSLOW																								
<input checked="" type="checkbox"/>	<input type="checkbox"/>	JACKSONVILLE TRANSIT	TL-0002	CONSTRUCT PEDESTRIAN ACCESS AND SAFETY IMPROVEMENTS FOR JACKSONVILLE TRANSIT WITHIN 1/2 MILE OF HIGH VOLUME URBAN FIXED ROUTE BUS STOPS. IMPROVEMENTS WILL INCLUDE NEW SIDE WALK CONNECTIONS, ADA RETROFIT OF EXISTING SIDE WALKS AND CONSTRUCTION OF HIGH VISIBILITY CROSSWALKS AT KEY ROADWAY INTERSECTIONS.	900		5307	C	900																	
PT		ONSLOW																								
NEW PROJECT DEVELOPED FOR FEDERAL FUNDING AWARD.																										
<input checked="" type="checkbox"/>	<input type="checkbox"/>	JACKSONVILLE TRANSIT	TL-0001	CONSTRUCT AN URBAN FIXED-ROUTE SATELLITE TRANSFER FACILITY FOR JACKSONVILLE TRANSIT TO INCLUDE PUBLIC PARKING, SHELTERS, RESTROOMS AND PESSENGER TERMINAL	1000		5307	C	1000																	
PT		ONSLOW																								
NEW PROJECT DEVELOPED FOR FEDERAL FUNDING AWARD.																										
<input checked="" type="checkbox"/>	<input type="checkbox"/>	JACKSONVILLE TRANSIT	TO-4923	OPERATING ASSISTANCE	14066	6076	5307	O	466	O	475	O	484	O	494	O	504	O	514	O	524	O	534			
							L	O	344	O	357	O	371	O	385	O	399	O	413	O	427	O	441			
							SMAP	O	122	O	118	O	113	O	109	O	105	O	101	O	97	O	93			
PT		ONSLOW																								
<input checked="" type="checkbox"/>	<input type="checkbox"/>	JACKSONVILLE TRANSIT	TP-5102	PLANNING ASSISTANCE - 5303	605	270	5303	PL	29	PL	30	PL	30	PL	31	PL	31	PL	32	PL	32	PL	32			
							L	PL	5	PL	5	PL	5	PL	5	PL	6	PL	6	PL	6	PL	6			
							S	PL	5	PL	5	PL	5	PL	5	PL	6	PL	6	PL	6	PL	6			
PT		ONSLOW																								

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							FUNDS	FY 2020	FY 2021		FY 2022		STATE TRANSPORTATION IMPROVEMENT PROGRAM					DEVELOPMENTAL PROGRAM					FUTURE YEARS										
PUBLIC TRANSPORTATION PROJECTS											FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032													
<input checked="" type="checkbox"/>	<input type="checkbox"/>	JACKSONVILLE TRANSIT	TP-4908	PLANNING ASSISTANCE - 5307	1093	348	5307	PL	67	PL	70	PL	72	PL	74	PL	76	PL	78	PL	78	PL	80										
							L	PL	8	PL	9	PL	9	PL	9	PL	10	PL	10	PL	10	PL	10										
							S	PL	8	PL	9	PL	9	PL	9	PL	10	PL	10	PL	10	PL	10										
PT		ONSLOW																															
<input checked="" type="checkbox"/>	<input type="checkbox"/>	JACKSONVILLE TRANSIT	TS-5114	SAFETY & SECURITY - MIN. 1% SET ASIDE	254	138	5307	CP	17	CP	18	CP	19	CP	20	CP	21	CP	21														
PT		ONSLOW																															
FUNDS AUTHORIZED IN PROGRESS																																	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	JACKSONVILLE TRANSIT	TT-4907	TECHNOLOGY - VEHICLE TRACKING, FARE COLLECTION, PASSENGER INFORMATION, DATA COMMUNICATIONS, TRAFFIC SIGNAL PRIORITY	2433	1293	5307	CP	216	CP	216	CP	80	CP	80	CP	80	CP	80	CP	80	CP	80										
							L	CP	54	CP	54	CP	20	CP	20	CP	20	CP	20	CP	20	CP	20										
PT		ONSLOW																															
<input checked="" type="checkbox"/>	<input type="checkbox"/>	ONSLOW UNITED TRANSIT	TK-6150	ADMINISTRATION	3018	2150	5311	AD	127	AD	127	AD	127	AD	127																		
							L	AD	32	AD	32	AD	32	AD	32																		
							S	AD	58	AD	58	AD	58	AD	58																		
PT		JONES ONSLOW PAMLICO																															
FUNDS AUTHORIZED IN PROGRESS																																	
PASSENGER RAIL PROJECTS																																	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	VARIOUS	RC-2003	TRAFFIC SEPARATION STUDY IMPLEMENTATION AND CLOSURES IN DIVISION 3.																													
DIV		BRUNSWICK DUPLIN NEW HANOVER ONSLOW PENDER SAMPSON																															
PROGRAMMED FOR PRELIMINARY ENGINEERING ONLY. INDIVIDUAL PROJECTS AND FUNDING TO BE REQUESTED IN THE FUTURE AS NEEDED.																																	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	VARIOUS	RX-2003	HIGHWAY-RAIL GRADE CROSSING SAFETY IMPROVEMENTS IN DIVISION 3.																													
DIV		BRUNSWICK DUPLIN NEW HANOVER ONSLOW PENDER SAMPSON																															
PROGRAMMED FOR PRELIMINARY ENGINEERING ONLY. INDIVIDUAL PROJECTS AND FUNDING TO BE REQUESTED IN THE FUTURE AS NEEDED.																																	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	VARIOUS	Y-5803	TRAFFIC SEPARATION STUDY IMPLEMENTATION AND CLOSURES IN DIVISION 3.																													
DIV		BRUNSWICK DUPLIN NEW HANOVER ONSLOW PENDER SAMPSON																															
INDIVIDUAL PROJECTS AND FUNDING TO BE REQUESTED IN THE FUTURE AS NEEDED.																																	

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TRN - Transition Project

JACKSONVILLE URBAN AREA METROPOLITAN PLANNING ORGANIZATION

COMMITTED / NON		ROUTE/CITY COUNTY	ID NUMBER	LOCATION / DESCRIPTION	LENGTH	TOTAL PROJ COST (THOU)	PRIOR YEARS COST (THOU)	FUNDS	FY 2020	FY 2021	FY 2022	TYPE OF WORK / ESTIMATED COST IN THOUSANDS / PROJECT BREAKS										UNFUNDED FUTURE YEARS		
												STATE TRANSPORTATION IMPROVEMENT PROGRAM					DEVELOPMENTAL PROGRAM							
												FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032			
PASSENGER RAIL PROJECTS																								
<input checked="" type="checkbox"/>	<input type="checkbox"/>	VARIOUS	Z-5803	HIGHWAY-RAIL GRADE CROSSING SAFETY IMPROVEMENTS IN DIVISION 3.																				
DIV		BRUNSWICK																						
		DUPLIN																						
		NEW HANOVER																						
		ONSLow																						
		PENDER																						
		SAMPSON																						
INDIVIDUAL PROJECTS AND FUNDING TO BE REQUESTED IN THE FUTURE AS NEEDED.																								

DIV - Division Category
HF - State Dollars (Non STI)
SW - Statewide Category

EX - Exempt Category
REG - Regional Category
TRN - Transition Project



**RESOLUTION ADOPTING AMENDMENT 4 RE-PROGRAMMING OF THE JACKSONVILLE
URBAN AREA METROPOLITAN PLANNING ORGANIZATION FY 2020-2029
TRANSPORTATION IMPROVEMENT PROGRAM**

A motion was made by _____ and seconded by _____
for adoption of the following resolution, and upon being put to a vote, was duly adopted.

WHEREAS, the Federal Highway Administration and the Federal Transit Administration require Metropolitan Planning Organization (MPO) to develop a Transportation Improvement Program (TIP) in cooperation with the State and affect public transportation operators within their planning jurisdiction; and

WHEREAS, the Jacksonville Urban Area MPO has developed a TIP to include capital and non-capital surface transportation projects within the Jacksonville urban planning area;

WHEREAS, the TIP includes a financial plan that demonstrates how it can be implemented within anticipated fiscal constraints; and

WHEREAS, the Transportation Advisory Committee reviewed the FY 2020-2029 Metropolitan Transportation Improvement Program (MTIP), originally adopted in December of 2019; and

WHEREAS, Amendment 1, adopted on June 11, 2020; Amendment 2, adopted on November 19, 2020; and Amendment 3, adopted on May 13, 2021 included a re-programming of projects by adjusting project schedules and/or funding in order to be a fiscally constrained Plan; and

WHEREAS, the TIP now requires an adjustment in project schedules and funding in order to be a fiscally constrained Plan, which is hereby presented as Amendment 4; and

WHEREAS, a draft of the MTIP has been advertised for public comment in accordance with the Jacksonville Metropolitan Planning Organization Public Participation Plan and no comments were received; and

NOW, THEREFORE, BE IT RESOLVED, that the Transportation Advisory Committee hereby adopts Amendment 3 to the FY 2020-2029 Transportation Improvement Program, on this 12th day of August, 2021.

Robert Warden, Chairman

Subscribed and sworn to me this _____ day of _____ 2021.

Notary Public

My commission expires _____.



To: Technical Coordinating Committee
From: Deanna Trebil, MPO Administrator
Subject: 2045 Metropolitan Transportation Plan (MTP) Amendment 3

7/8/2021

The Transportation Advisory Committee adopted the 2045 Metropolitan Transportation Plan (MTP) on March 12, 2020, Amendment 1 on November 19, 2020, and Amendment 2 on March 11, 2021. The MTP is our long range plan for the Jacksonville urbanized area. Staff is recommending updates to include adding Bicycle and Pedestrian projects that have been identified and submitted as part of the Prioritization 6.0 cycle. In order for projects to be scored and funded, one criteria is that the project must be identified in our MTP.

Additionally, this Amendment to the MTP includes the a new section on Resiliency, which is a culmination of the efforts of the Transportation Resiliency Action Committee (TRAC) that began two years ago after Jacksonville endured the effects of Hurricane Florence. TRAC identified and prioritized crossings that flooded in Florence as well as an unnamed event in 2010, with the goal of working with NCDOT either through future State Transportation Improvement Program (STIP) projects or through maintenance projects to make improvements to crossings where needed.

The Draft 2045 MTP Amendment 3 was uploaded to JUMPO's website for public comment on July 1, 2021, which can be viewed here: <http://jumpo-nc.org/>.

TCC Recommended Action: Recommend approval to the TAC

Attachment: 2045 MTP Amendment 3



Introduction

Hurricane Florence, a large and slow moving category one hurricane, made landfall during the morning of September 14, 2018. After the eye crossed Wrightsville Beach, the storm spent the next two days producing record-breaking rainfall across eastern North Carolina. Over 30 inches of rain fell, exceeding the highest single-storm rainfall amounts ever seen in North Carolina according to the National Weather Service.

The City of Jacksonville and Onslow County experienced flooding countywide in areas that have never flooded before. Higher grounds were surrounded by water creating pockets of islands as well as flooding of major highways and corridor roads. This resulted in the inability for goods and services to be delivered and emergency personnel unable to respond. This record-breaking flooding event highlighted the need to develop a resiliency plan to ensure that if an event such as this occurred again, the transportation network in Onslow County would be robust enough that it would not be impacted as bad as it was with Hurricane Florence.

After the storm passed, the Jacksonville Urban Area Metropolitan Planning Organization (JUMPO) identified members of the community to begin discussing how to evaluate and mitigate the flooding within Onslow County and its impact on the transportation network. Stakeholders included members from Marine Corps Installations East, Marine Corps Base Camp Lejeune, Onslow County Emergency Services, North Carolina Department of Transportation (NCDOT), MPO, and City of Jacksonville Departments: Fire, Public Services, and Planning. These members formed the Transportation Resiliency Action Committee (TRAC).

Objectives

TRAC began meeting in January 2019 with the goal to strengthen mobility to improve community resiliency. They established the following objectives:

1. Reduce the frequency and duration of regional isolation.
2. Reduce the frequency and duration of local isolation from strategic points of interest.
3. Identify and implement operational systems that improve mobility.

The goal was to use data that is publicly available and maintained by others creating a framework that could be easily reproduced by others.

Key Areas of Focus

The goal of this study is to systematically determine which transportation improvements will affect the most substantial reduction in frequency and duration of isolation in the transportation network.

- **Frequency:** How often does a crossing overtop the road?
- **Criticality:** How critical is a crossing to the overall transportation network?
- **Duration:** When a crossing does overtop, how long does the road remain impassible?



Road Classification

Stakeholders agreed to focus the study on NCDOT roads, as existing culvert and bridge elevations are readily available thereby eliminating the need to survey crossings throughout Onslow County.

Roads were then subdivided into three categories:

- **Regional Corridor (Arterial)** – significant roadway that serves major movement within an urbanized area around major areas of activity with higher volume corridors. Carries designation of interstate, other freeway or expressway or other principal arterial (with no control of access). Examples include US 258, US 17, NC 53, etc.
- **Major Collector Road** – serves as both land access service and traffic circulation in higher density residential, commercial/industrial areas. Operates at higher speeds and has more signalized intersections. Examples include Henderson Drive, Bell Fork Road, Gum Branch Road, etc.
- **Minor Collector Road** – serves as both land access service and traffic circulation in lower density residential, commercial/industrial areas. Operates at lower speeds and has fewer signalized intersections. Examples include Blue Creek Road, Liberty Drive, Corbin Road, etc.

Crossings Identified

All FEMA studied streams that intersect with NCDOT road were then identified resulting in 158 crossings in Onslow County. By using the road classification stated above, TRAC was able to reduce the number of intersections to 83 priority drainage crossings as identified in [Table 1](#).

Frequency

With crossings identified, the next step was to figure out how often that crossing floods and at what depth. NC QL2 LiDAR was used to determine the road overtopping elevation at each drainage crossing.

Minor modifications were made to the raw NC QL2 LiDAR:

- NC QL2 LiDAR elevation points classified as road surface and classified as bridge deck points were used to create a road surface elevation raster for Onslow County outside of Marine Corps property.
- Within the Camp Lejeune area, NC QL2 LiDAR did not contain road surface or bridge deck classifications. All LiDAR elevation points contained only the elevation. The federal TIGER roads centerline file was buffered and all LiDAR points within that buffer were confirmed to be representative of the road elevations within Camp Lejeune and added to the road surface elevation raster.



- In several bridge crossings, the LiDAR represented the channel beneath the bridge deck and not the bridge deck itself. In these locations, the road surface elevation raster was edited based on the adjacent road surface.
- For each drainage crossing the road overtopping elevation is the lowest elevation covering the width of the road surface raster.

NC flood maps (FEMA) provided water surface elevation raster datasets for the 10, 25, 50, 100, 500-year return interval flood events for both the most up to date preliminary and effective HEC-RAS model outputs. The effective raster datasets was used to fill in areas where the preliminary raster datasets did not fully cover the FEMA floodplain for all five (5) return interval events within the county. This created five (5) combined raster datasets with full coverage of the FEMA floodplain within the county, utilizing the more recent (preliminary) data where possible.

The water surface elevation grids were then compared to the road overtopping elevation to determine the frequency of overtopping at each crossing.



Figure 1: Example of a Depth Raster provided by NC Floodmaps (100yr).

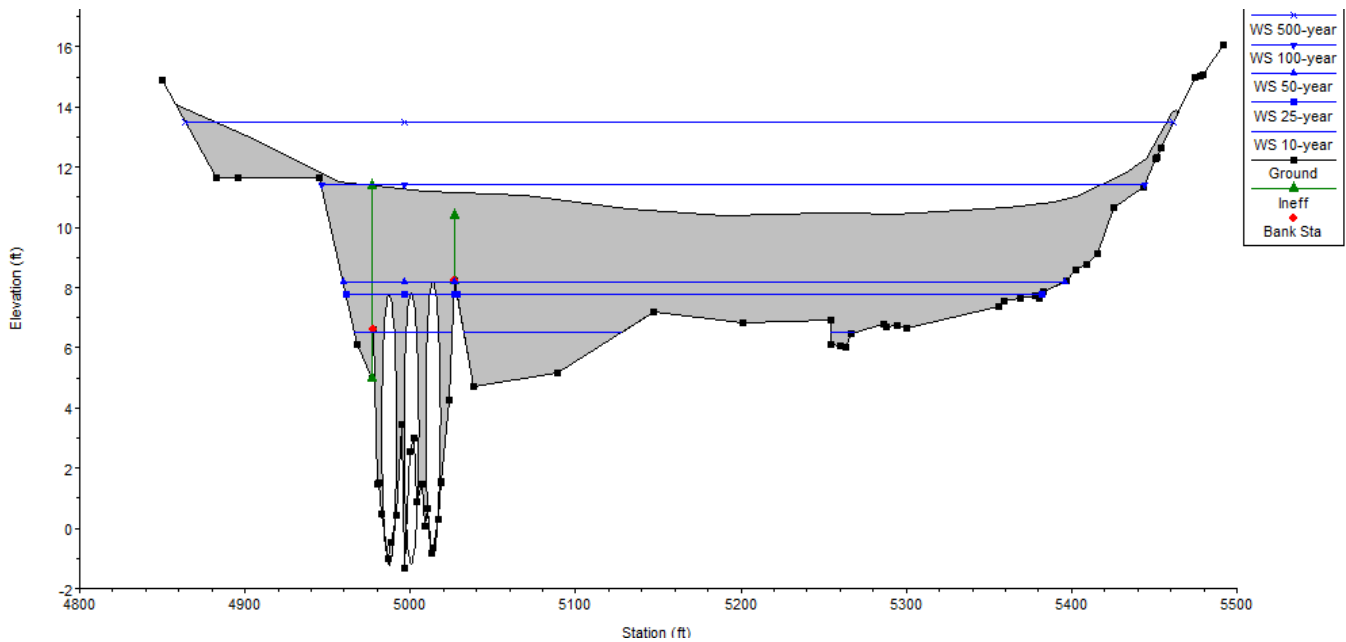


Figure 2: Example of 1 Dimensional HEC-RAS model water surface elevations. These water surface elevations were used to create the Depth Raster seen above (100yr).

Criticality

The next element to consider is the criticality of the road, meaning is there a reasonable detour route available if a crossing was flooded and the road impassable. Detours were routed along paved roads only. Six (6) detour routes include roads on Camp Lejeune property and were noted in the detour attributes. [Table 2](#) shows the detour length in miles used to add a priority rating to each crossing.

The existence of a detour for adjacent studied crossings were considered together only when there were no residences between them (refer to Figures 3 and 4). Crossings with no detour (crossings that do not overtop) in a given return period interval (10, 25, 50, 100, 500-year) event were set to 100 miles resulting in an unreasonable detour length or no detour was available. These results further added to the priority rating for each crossing.



Figure 3: In this situation, there are residences located between both crossings, so detour routing was analyzed for each crossing to provide a route for those residences. These are Crossings 14 and 11 (left and right respectively) along Beulaville Hwy.



Figure 4: In this situation, there are no residences located between the crossings so detour routing was analyzed around both crossings rather than each one individually. These are Crossings 83 and 82 (left and right respectively) along Sneads Ferry Road.

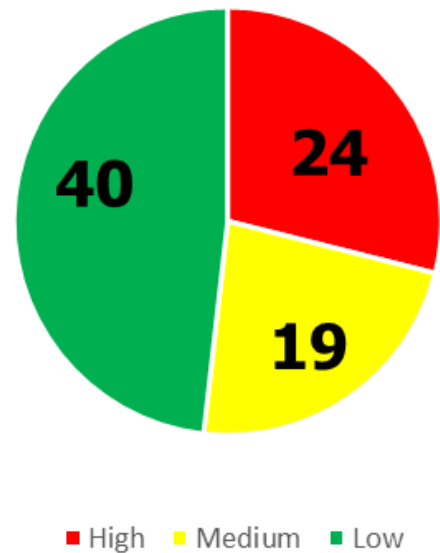


Initial Analysis

Each crossing location was then prioritized based on the road classification, frequency and criticality of the road. The results provided insight that a majority of the crossings were a low priority, meaning that the probability of them overtopping were minimal if at all. Likewise, 24 crossings were high priority meaning that the crossing would flood.

The methodology and results of the static model were reviewed by TRAC to validate the results. Stakeholders provided feedback on each crossing given their past experience with flooding events and with Hurricane Florence. From this meeting, some of the crossing priorities changed helping to inform the development of the two-dimension modeling basins, the next step in evaluating the transportation network. Additionally, two additional crossings were added: #84 – Stormwater pipe at Bear Creek Road and #85 – Pond at Kingsbridge Rd based on known historical flooding.

Crossing Priority



Duration

When evaluating where the 85 crossings are located within these drainage basins, TRAC made the decision to proceed forward with 3-D modeling portions of the New River Basin and the Southwest Creek Basin as shown in Figure 5.

The basins chosen by TRAC have the largest number of crossings, proximity of these crossings to locations of importance, and historical knowledge of road closures. These basins included a total of 41 crossings, 33 crossings located within New River Basin and eight (8) crossings located within the Southwest Creek basin. These basins were modeled to determine duration of flooding by evaluating rain events and looking at the depth of flooding and the intensity of rainfall.



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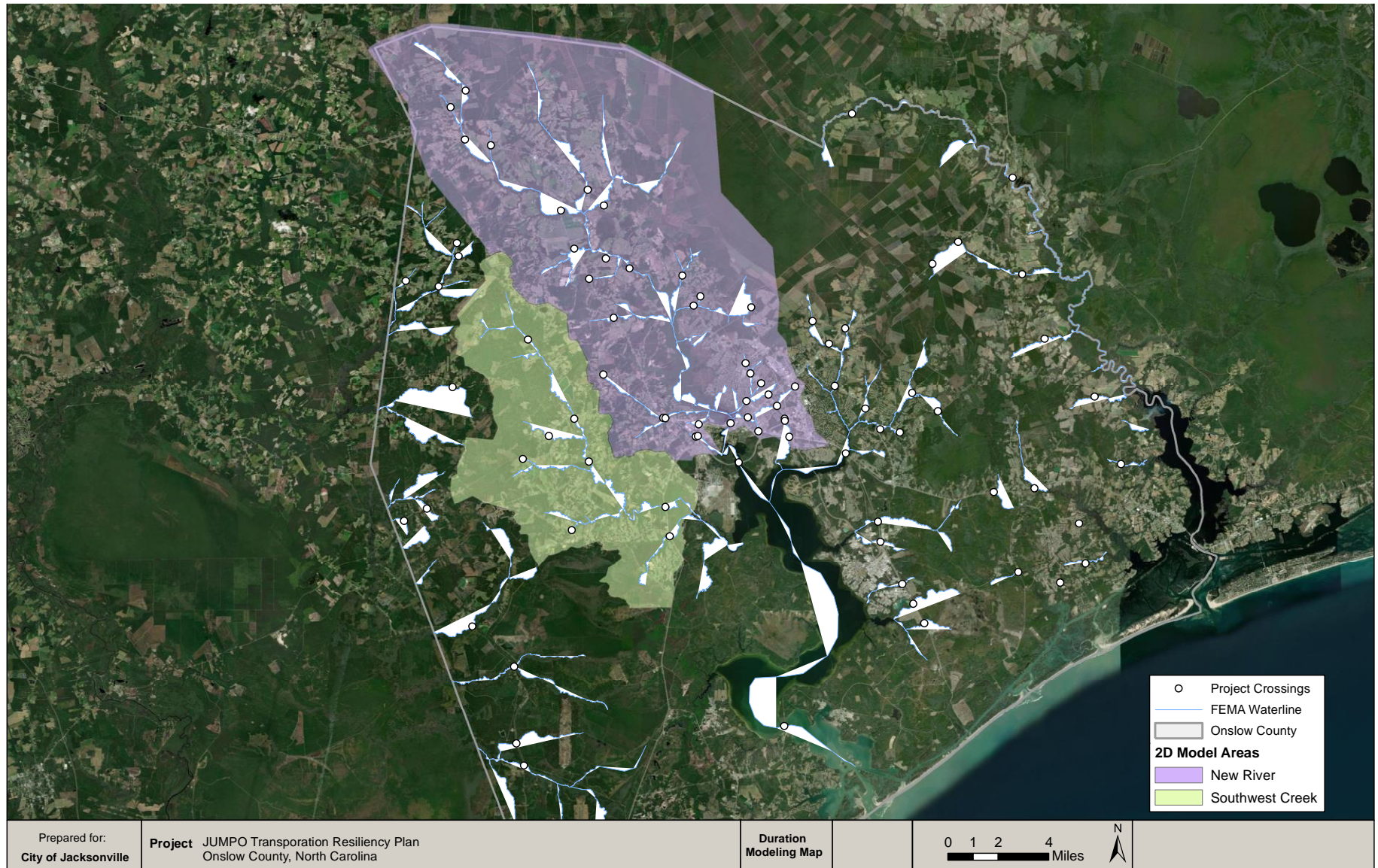


Figure 5: Two-Dimensional HEC-RAS Model Extents



Unsteady (change over time) two-dimensional HEC-RAS modeling was used to determine the duration of overtopping for the crossings. This differs from typical FEMA models that are one-dimensional and steady flow (peak flow only) which determine the maximum water surface elevation, but do not provide any information about the length of time of flow or flooding. In flooding events, it is important to know how long certain roads will be impassible and for how long certain neighborhoods will be isolated.

The basins were delineated based on LiDAR data provided by the NC Floodplain Mapping Program. Existing preliminary and effective one-dimensional HEC-RAS model geometry data was leveraged where possible to incorporate more detail into the model and to represent structures more accurately (culvert specifications for example). Breaklines utilizing smaller cell sizes were enforced to better define major flow paths and roadways within the two-dimensional model geometry.

The downstream end of the two-dimensional HEC-RAS model was set to be approximately at the location where the New River crosses under Old Bridge Road so that existing gauge data from that location could be leveraged when possible. If gauge records did not cover the time span needed, data from Coastal Emergency Risks Assessment (CERA), public tidal records, and NCSU Climate Office were used to supplement needed model inputs.

In order to gain a level of sensitivity of the model, a second storm in addition to Hurricane Florence was chosen, an unnamed heavy rainfall event from September 2010 was. The amount of rainfall for this second storm equates to NCDOT's current design standard. By choosing two storms, it allowed for a minimum and maximum rain event to be evaluated.

Hurricane Florence is commonly stated as being a 500 year storm event. This equates to a 0.2% chance of occurring within a given year. This statement (500 year storm) applies when looking at the storm from a three (3) day period of rainfall depth/accumulation (i.e. ~18 inches of rain over a 3 day period). Florence from a 24 hour depth/accumulation perspective qualifies as a 25 year rainfall event (~9 inches of rain over a 24 hour period).

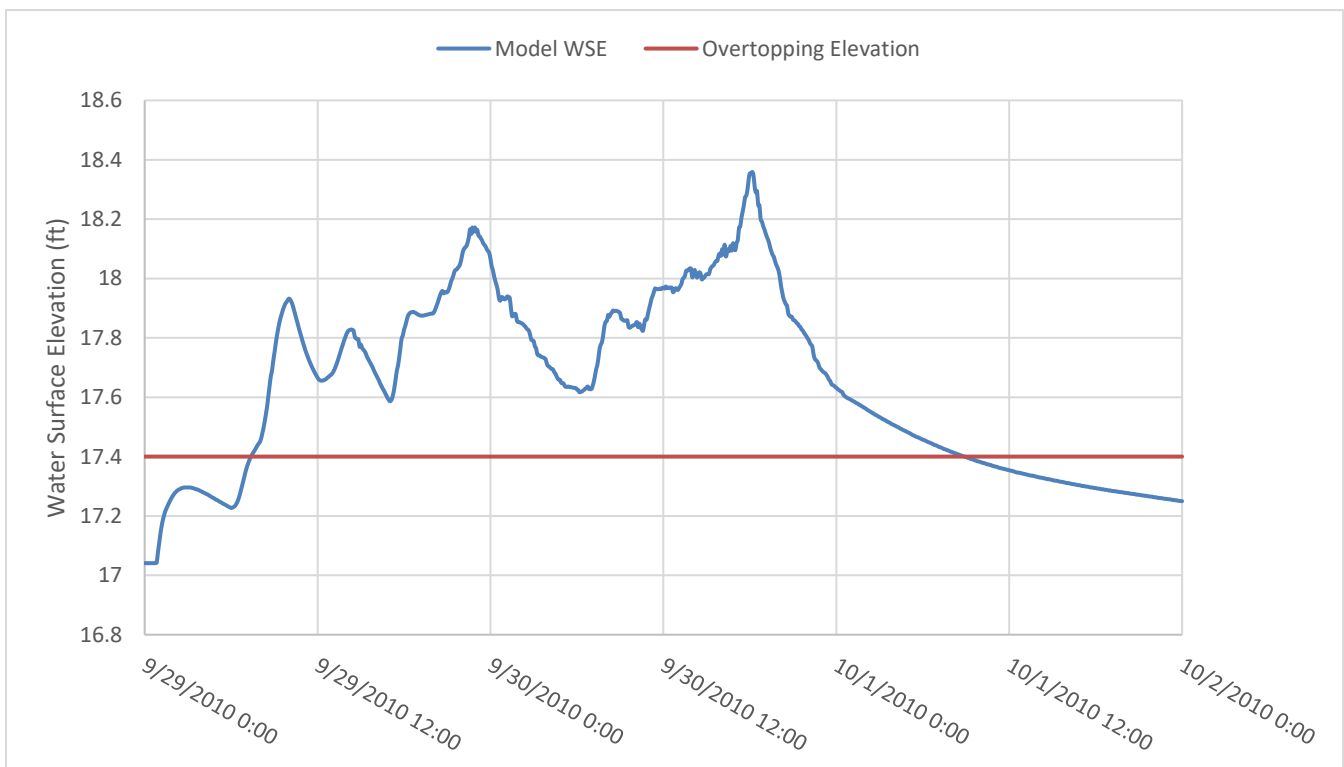
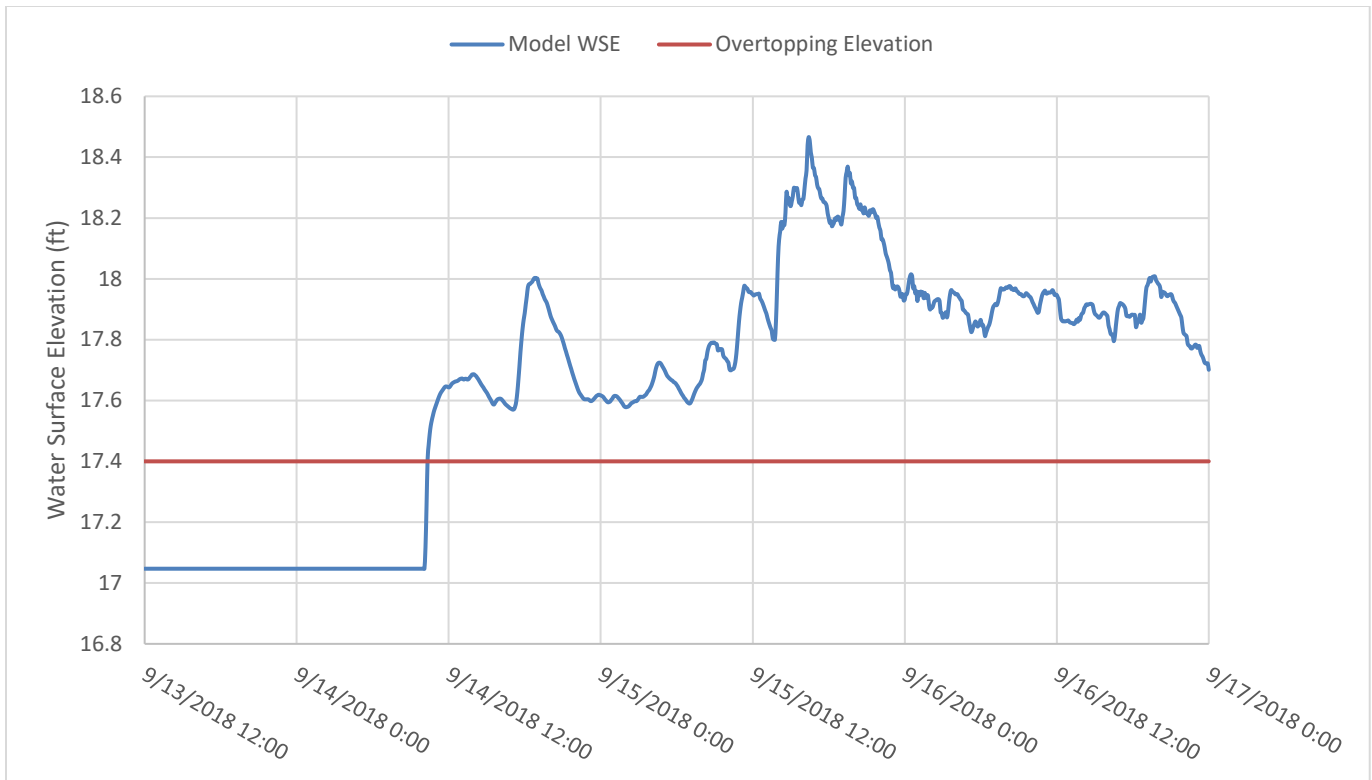
Event	3 hour	6 hour	12 hour	24 hour	2 day	3 day
Florence	2 year	5 year	10 year	25 year	200 year	500 year
Sept 2010	1 year	1 year	2 year	10 year	25 year	25 year

Figure 6: Rainfall Depth Return Periods for the two modeled storms

The results of this modeling effort for both basins can be found in Table 3 and Table 4. The amount of time that the water surface elevation exceeded the previously determined overtopping elevation was deemed the overtopping duration. The two figures below highlight how the duration of overtopping was determined for Crossing 49 for both Hurricane Florence (9/2018) and the second storm (9/2010).



Chapter 8 – Resiliency





Some crossings showed lengthy durations of overtopping where the water on the roadway was not the result of the culvert or bridge overtopping, but rather more localized street flooding or a nearby pond. One example of this is Crossing 11: State Hwy 24 over Cowford Branch (see figure below). At this crossing, the flood waters from Cowford Branch itself are able to be conveyed through the culvert without overtopping the road, but the analysis showed a long duration of overtopping (being impassible) due to the near constant presence of stormwater on the roadway. This stormwater is the result of lateral roadway flooding coming from the west, rather than the stream itself.

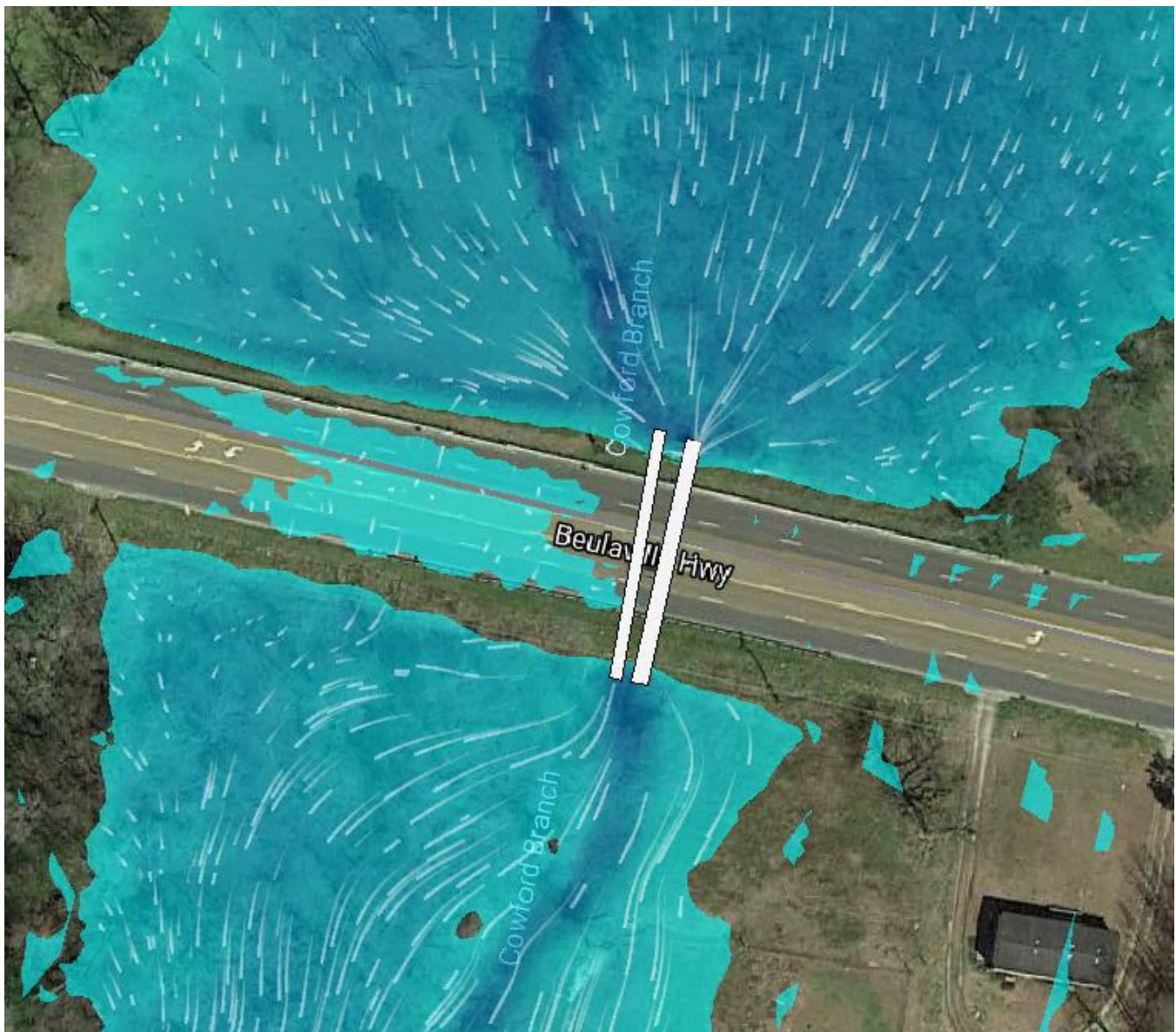


Figure 7: Crossing 11



Prioritization

The three main areas of focus that were evaluated for each crossing include:

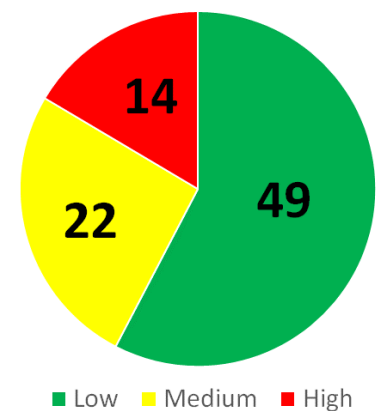
- **Frequency:** How often does a crossing overtop the road?
- **Criticality:** How critical is a crossing to the overall transportation network?
- **Duration:** When a crossing does overtop, how long does the road remain impassible?

Applying the model to each crossing allowed stakeholders to visualize the model effects and compare it with their own experience and history of flooding at these crossings.

The end result is a list of crossings that are prioritized as either high, medium, or low. The Committee identified 14 high priorities, 22 medium priorities and 49 low priority crossings. By prioritizing each crossing and applying the parameters previously discussed, the Committee can now focus on the 14 high priority crossings which have been determined to be critical to the transportation network in Onslow County.

The intent of prioritizing each crossing allows a focused approach to discuss possible improvements at these crossings with NCDOT either through future State Transportation Improvement Program (STIP) projects or through maintenance projects.

Crossing Priority



The STIP is a multi-year plan that identifies the construction funding for and scheduling of transportation projects throughout the state. The STIP is updated every two years through a Strategic Prioritization, which uses a transparent, systematic and data-driven process for prioritizing the major transportation needs in North Carolina and making investment decisions. Projects are evaluated based on their merit through an analysis of the existing and future conditions, the benefits the project is expected to provide, the project's multi-modal characteristics and how the project fits in with local priorities. The outcome of the strategic prioritization process serves as input to the Draft State Transportation Improvement Program.

Modeling the no named storm of September 2010 also allows JUMPO the opportunity to discuss with NCDOT the possibility of amending their design standards in areas that are known to flood. The results of this initiative provide a data-driven discussion for modified design approaches where appropriate.

Results of this study have been compiled in a virtual dashboard for the public to review. This dashboard uses ArcGIS Online and can be found on either JUMPO's website at www.jumbo-nc.org or <https://www.arcgis.com/apps/dashboards/3f32ec95f6f6459aa369c262d7353682>.



Many thanks to the members of TRAC who contributed to the success of this initiative:

Ben Warren, Assistant County Manager, Onslow County
Jessica Rhue, Planning and Development Director, Onslow County
Chris White, Airport Director, Albert J Ellis Airport, Onslow County
Stacie Miles, Emergency Services Deputy Director, Onslow County
Caitlin Marks, Division Planning Engineer, NC Department of Transportation
Dan Cumbo, District 1 Engineering Supervisor III, NC Department of Transportation
David Sawyer, County Maintenance Engineer, NC Department of Transportation
Robert Vause, Division Maintenance Engineer, NC Department of Transportation
Trevor Carroll, Assistant Division Construction Engineer, NC Department of Transportation
Brian Kelly, Fire Marshal, City of Jacksonville
Jeremy Smith, Senior Planner, City of Jacksonville
Ryan King, Director of Planning and Inspections, City of Jacksonville
Shaun Hayes, Deputy Fire Chief, City of Jacksonville
Stephanie Kutz, Transportation Project Manager, City of Jacksonville
Anthony Prinz, Transportation Services Director, City of Jacksonville
Deanna Trebil, MPO Administrator, City of Jacksonville
Gregg Whitehead, Richlands Town Manager
Tim McCurry, Marine Corps Liaison, Government and External Relations, MCI East



High Priority

Crossing ID	Location	Overtopping Elevation	Overtopping Frequency	Narrative
5	Nine Mile Rd	66.60	100yr	
7	Haw Branch Rd	55.90	10yr	
9	Haw Branch Rd	54.20	50yr	
14	Beulaville Hwy	47.80	100yr	
25	State Rd 1333	35.00	50yr	
32	Blue Creek Rd	29.10	50yr	
39	Gum Branch Rd	24.70	50yr	
52	Sneads Ferry Rd	16.50	100yr	
56	Rhodes town Rd	14.10	50yr	
61	Lejeune Blvd	16.70	25yr	Recommendation was to change this priority from medium to high. While this crossing does not flood, the high priority is given as a result of the large damming effect it has on the Hardison Hills residents and the City of Jacksonville's Ellis Pump Station.
71	Holcomb Blvd	10.40	25yr	
72	Gum Branch Rd	10.20	100yr	
82	Sneads Ferry Rd	5.80	10yr	
83	Sneads Ferry Rd	5.60	10yr	



Medium Priority

Crossing ID	Location	Overtopping Elevation	Overtopping Frequency	Narrative
3	Haw Branch Rd	74.30	100yr	
6	Catherine Lake Rd	65.70	100yr	
8	State Hwy 53	55.60	50yr	
11	State Hwy 24	49.10	500yr	Crossing was changed from low to medium priority due to long duration of overtopping. The presence of water on the road is more due to the lateral roadway flooding rather than the stream crossing itself. The priority was elevated since the crossing is on NC 24 which does flood.
12	Murrill Brown Rd	49.00	100yr	
33	Richlands Hwy	28.50	500yr	
37	State Hwy 53	25.70	100yr	This crossing is a bridge which overtopped during Florence. The bridge remains closed, even if the water has receded, until NCDOT can conduct a bridge inspection resulting in the inability to use the road.
38	Gum Branch Rd	24.90	500yr	With the close proximity of this crossing to Crossing 39 (which is a high priority) and it being on a main corridor road, the crossing was changed from a low priority to a medium priority.
49	Gum Branch Rd	17.40	25yr	
51	NW Bridge Rd	16.60	25yr	
57	Rocky Run Rd	13.80	100yr	
63	State Hwy 172	12.60	50yr	
67	State Rd 1434	11.60	50yr	
70	Blue Creek Rd	10.40	100yr	Given the close proximity of this crossing and Crossing 60, the recommendation is to tie them together. The goal in this area should be to reduce the amount of flooding on the road and not the area around the road given the topography of this area.



Medium Priority - Continued

Crossing ID	Location	Overtopping Elevation	Overtopping Frequency	Narrative
74	Freedom Way	10.10	100yr	
76	State Rd 1434	9.70	100yr	
78	State Rd 1434	9.30	25yr	
79	State Rd 1434	8.60	25yr	
80	Piney Green Rd	8.20	100yr	
81	Holcomb Blvd	7.90	100yr	
84	Bear Creek Rd	33.60	N/A	
85	Kingsbridge Rd	33.80	N/A	Flooding due to a low lying stormwater pond.

N/A = Data not available (not a stream crossing)



Low Priority

Crossing ID	Location	Overtopping Elevation	Overtopping Frequency	Narrative
1	Haw Branch Rd	81.90	x	
2	Catherine Lake Rd	75.60	10yr	
4	State Hwy 53	68.30	500yr	
10	Richlands Hwy	49.30	x	
13	US Hwy 17	44.70	x	
15	State Rd 1212	44.40	x	
16	State Hwy 50	43.50	x	
17	Blue Creek Rd	42.40	500yr	This crossing is a bridge which overtopped during Florence. The bridge remains closed, even if the water has receded, until NCDOT can conduct a bridge inspection resulting in the inability to use the road.
18	State Hwy 50	42.00	500yr	
19	US Hwy 17	41.80	x	
20	State Hwy 50	40.90	500yr	
21	State Hwy 53	40.00	x	
22	Western Blvd	38.60	10yr	The criteria used to grade this crossing warranted it an initial medium priority. However, stakeholders do not recall this crossing flooding so the priority was changed to low.
23	State Hwy 50	37.40	x	
24	Ramsey Rd	35.20	500yr	
26	Dawson Cabin Rd	32.70	500yr	
27	Ramsey Rd	32.70	500yr	
28	US Hwy 17	32.60	x	
29	Freedom Way	32.40	x	
30	Richlands Hwy	30.80	x	

x = Crossing does not overtop at any of the 5 frequencies (10, 25, 50, 100, 500yr)



Low Priority - Continued

Crossing ID	Location	Overtopping Elevation	Overtopping Frequency	Narrative
31	US Hwy 17	30.50	x	
34	Henderson Dr	28.10	100yr	
35	US Hwy 17	27.80	500yr	
36	Rocky Run Rd	26.90	x	
40	Richlands Hwy	24.20	500yr	
41	Gum Branch Rd	23.90	100yr	
42	Bell Fork Rd	23.70	10yr	
43	State Hwy 24	23.00	x	
44	Bell Fork Rd	22.00	10yr	
45	US Hwy 17	21.40	500yr	
46	Gum Branch Rd	21.10	10yr	
47	US Hwy 17	19.30	x	
48	Ramsey Rd	17.60	500yr	The model results show that this crossing did not overtop. However, during Florence, this crossing was flooded for a period of approximately 24 hours during the heaviest rainfall resulting in washouts. The flooding was a result of overtopping off to the side and not at the crossing based on the model.
50	Old 30 Rd	17.00	500yr	
53	Gum Branch Rd	15.90	50yr	Model results show this crossing as a high priority; however, since this crossing is not known to overtop, the priority was changed to low.
54	State Hwy 24 Bus	15.70	10yr	
55	US Hwy 17	15.00	x	
58	US Hwy 17	13.50	500yr	

x = Crossing does not overtop at any of the 5 frequencies (10, 25, 50, 100, 500yr)



Low Priority - Continued

Crossing ID	Location	Overtopping Elevation	Overtopping Frequency	Narrative
59	US Hwy 258	13.10	10yr	
60	Richlands Hwy	13.10	500yr	Given the close proximity of this crossing and Crossing 70, the recommendation is to tie them together. The goal in this area should be to reduce the amount of flooding on the road and not the area around the road given the topography of this area.
62	US Hwy 17 Bus	12.90	500yr	
64	Queens Creek	12.10	500yr	
65	State Hwy 172	12.00	x	
66	State Rd 1406	11.80	500yr	
68	US Hwy 17 Bus	10.90	500yr	
69	Henderson Dr	10.50	500yr	
73	US Hwy 17 Bus	10.20	100yr	
75	State Rd 1406	10.00	100yr	
77	State Hwy 24	9.60	500yr	

x = Crossing does not overtop at any of the 5 frequencies (10, 25, 50, 100, 500yr)



Data Collection Resources

The work documented in this report is based on the following data:

- Road
 - The latest TIGER road centerline shapefile for Onslow County
 - Road corridors prioritized by TRAC
- Historic gage information
 - USGS Hurricane Florence High Water Marks (45) and peak stage records (11)
 - USGS Hurricane Matthew High Water Marks (15) and peak stage records (5)
 - USGS stream discharge and stage data at Station: 02093000 NEW RIVER NEAR GUM BRANCH
 - USGS precipitation, stream discharge and stage data for Hurricane Florence at Rapid Deployment Gage at Old Bridge St
- Elevation data
 - North Carolina Department of Emergency Management QL2 LiDAR data
 - Post-processed roadway DEM file from ESP and Associates
- Stream models
 - Most recent FEMA GIS information and water surface elevation and depth rasters
 - HEC-RAS models including all 2016 “preliminary” models available for Onslow County
- Other Data
 - Hurricane Florence data provided by City of Jacksonville staff
 - Precipitation data from NC State Climate Office
 - Public tidal records
 - Coastal Emergency Risks Assessment (CERA) water surface elevation data

Previous Resiliency and Flood Modeling Study References

- Hurricane Matthew Resilient Redevelopment Plan for Onslow County (May 2017)
- Neuse River Basin Flood Analysis and Mitigation Strategies Study (May 2018)
- USGS Preliminary Peak Stage and Streamflow Data for Flooding Following Hurricane Florence (September 2018)
- Hurricane Florence Recovery Recommendations (October 2018)



Table 1 – Crossing ID (locations)

Crossing ID	Road Name	Stream Name (FEMA)
1	Haw Branch Rd	Back Swamp Tributary 9.227
2	Catherine Lake Rd	Back Swamp Tributary 3.229
3	Haw Branch Rd	Back Swamp Tributary 8.151
4	State Hwy 53	Moore's Creek Tributary 4.214
5	Nine Mile Rd	Ninemile Creek.160
6	Catherine Lake Rd	Back Swamp.238
7	Haw Branch Rd	New River Tributary.23
8	State Hwy 53	Moore's Creek Tributary 2.168
9	Haw Branch Rd	New River.48
10	Richlands Hwy	New River Tributary 4.54
11	State Hwy 24	Cowford Branch.14
12	Murrill Brown Rd	Southwest Creek.50
13	US Hwy 17	Starkys Creek.70
14	Beulaville Hwy	New River.48
15	State Rd 1212	Blue Creek.57
16	State Hwy 50	Juniper Swamp Tributary 1.124
17	Blue Creek Rd	Deep Run.197
18	State Hwy 50	Juniper Swamp.267
19	US Hwy 17	Scales Creek.26
20	State Hwy 50	Shelter Swamp Creek.262
21	State Hwy 53	Harris Creek Tributary 1.190
22	Western Blvd	Sandy Run Branch.25
23	State Hwy 50	Sandy Run Swamp.235
24	Ramsey Rd	Wolf Swamp.28
25	State Rd 1333	White Oak River.108
26	Dawson Cabin Rd	Haws Run Tributary 2.195
27	Ramsey Rd	Half Moon Creek.52
28	US Hwy 17	Starkys Creek.70
29	Freedom Way	Bell Swamp.37
30	Richlands Hwy	New River Tributary 2.51
31	US Hwy 17	Wolf Swamp.28
32	Blue Creek Rd	Southwest Creek.50
33	Richlands Hwy	New River.48
34	Henderson Dr	Mill Creek.56
35	US Hwy 17	Northeast Creek.59

The numbers associated with the stream name correspond to the model segment name from FEMA's data for HEC-RAS model centerlines (their existing 1D Models).



Table 1 – Crossing ID (locations) - Continued

Crossing ID	Road Name	Stream Name (FEMA)
36	Rocky Run Rd	Horse Swamp.193
37	State Hwy 53	Southwest Creek.49
38	Gum Branch Rd	Mill Swamp.20
39	Gum Branch Rd	Jenkins Swamp.17
40	Richlands Hwy	New River Tributary 5.55
41	Gum Branch Rd	Mill Creek North Tributary.29
42	Bell Fork Rd	Scales Creek.26
43	State Hwy 24	Brinson Creek.11
44	Bell Fork Rd	Sandy Run Branch.25
45	US Hwy 17	White Oak River.117
46	Gum Branch Rd	Dotey's Branch.15
47	US Hwy 17	Hicks Run.46
48	Ramsey Rd	Half Moon Creek Tributary.16
49	Gum Branch Rd	Mill Creek.56
50	Old 30 Rd	Little Northeast Creek.58
51	NW Bridge Rd	New River.48
52	Sneads Ferry Rd	Cogdels Creek.63
53	Gum Branch Rd	Bachelor's Delight Swamp.53
54	State Hwy 24 Bus	BurntHouse.12
55	US Hwy 17	New River.48
56	Rhodes town Rd	New River.48
57	Rocky Run Rd	Rocky Run.24
58	US Hwy 17	Southwest Creek.49
59	US Hwy 258	Brick Kiln Branch.10
60	Richlands Hwy	Blue Creek.57
61	Lejeune Blvd	Scales Creek.26
62	US Hwy 17 Bus	Brinson Creek.11
63	State Hwy 172	Bear Creek.35
64	Queens Creek Rd	Parrot Swamp.64
65	State Hwy 172	New River.22
66	State Rd 1406	Northeast Creek.59
67	State Rd 1434	Starkys Creek.91
68	US Hwy 17 Bus	New River.48
69	Henderson Dr	Mill Creek.56
70	Blue Creek Rd	Blue Creek.57

The numbers associated with the stream name correspond to the model segment name from FEMA's data for HEC-RAS model centerlines (their existing 1D Models).



Table 1 – Crossing ID (locations) - Continued

Crossing ID	Road Name	Stream Name (FEMA)
71	Holcomb Blvd	Bearhead Creek.3
72	Gum Branch Rd	Half Moon Creek.52
73	US Hwy 17 Bus	Chaney Creek.13
74	Freedom Way	Queen Creek.32
75	State Rd 1406	Poplar Creek.61
76	State Rd 1434	Grants Creek.78
77	State Hwy 24	Northeast Creek.60
78	State Rd 1434	Webb Creek.33
79	State Rd 1434	Holland Mill Creek.67
80	Piney Green Rd	Little Northeast Creek.58
81	Holcomb Blvd	Wallace Creek.68
82	Sneads Ferry Rd	Jumping Run.36
83	Sneads Ferry Rd	Cowhead Creeks.38
84	Bear Creek Rd	Not a stream crossing
85	Kingsbridge Rd	Not a stream crossing; Pond, low spot

The numbers associated with the stream name correspond to the model segment name from FEMA's data for HEC-RAS model centerlines (their existing 1D Models).



Table 2 – Detour Lengths (miles)

Crossing ID	10yr	25yr	50yr	100yr	500yr
1	0.0	0.0	0.0	0.0	0.0
2	7.9	7.9	7.9	7.9	7.9
3	0.0	0.0	0.0	10.1	10.1
4	0.0	0.0	0.0	0.0	7.3
5	0.0	0.0	0.0	5.4	5.4
6	0.0	0.0	0.0	24.1	24.1
7	3.0	3.0	3.0	16.0	16.0
8	0.0	0.0	100.0	100.0	100.0
9	0.0	0.0	8.8	12.1	12.1
10	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	100.0
12	0.0	0.0	0.0	100.0	100.0
13	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	17.6	100.0
15	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	100.0
18	0.0	0.0	0.0	0.0	100.0
19	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	100.0
21	0.0	0.0	0.0	0.0	0.0
22	1.5	3.2	3.2	3.2	3.2
23	0.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	4.4
25	0.0	0.0	100.0	100.0	100.0
26	0.0	0.0	0.0	0.0	100.0
27	0.0	0.0	0.0	0.0	100.0
28	0.0	0.0	0.0	0.0	0.0
29	0.0	0.0	0.0	0.0	0.0
30	0.0	0.0	0.0	0.0	0.0
31	0.0	0.0	0.0	0.0	0.0
32	0.0	0.0	9.0	100.0	100.0
33	0.0	0.0	0.0	0.0	38.9

* = Detour routes include roads on Camp Lejeune property



Table 2 – Detour Lengths (miles) Continued

Crossing ID	10yr	25yr	50yr	100yr	500yr
34	0.0	0.0	0.0	4.0	4.0
35	0.0	0.0	0.0	0.0	4.0
36	0.0	0.0	0.0	0.0	0.0
37	0.0	0.0	0.0	100.0	100.0
38	0.0	0.0	0.0	0.0	100.0
39	0.0	0.0	12.2	100.0	100.0
40	0.0	0.0	0.0	0.0	8.9
41	0.0	0.0	0.0	1.5	100.0
42	1.7	1.7	1.7	1.7	1.7
43	0.0	0.0	0.0	0.0	0.0
44	2.9	2.9	2.9	2.9	2.9
45	0.0	0.0	0.0	0.0	100.0
46	2.4	100.0	100.0	100.0	100.0
47	0.0	0.0	0.0	0.0	0.0
48	0.0	0.0	0.0	0.0	100.0
49	0.0	3.1	3.1	5.0	5.0
50	0.0	0.0	0.0	0.0	19.2
51	0.0	10.5	50.0	100.0	100.0
52	0.0	0.0	0.0	100.0	100.0
53	0.0	0.0	37.8	100.0	100.0
54	5.1	5.1	5.1	10.3	100.0
55	0.0	0.0	0.0	0.0	0.0
56	0.0	0.0	14.2	100.0	100.0
57	0.0	0.0	0.0	17.6	17.6
58	0.0	0.0	0.0	0.0	100.0
59	1.5	1.5	1.5	1.5	1.5
60	0.0	0.0	0.0	0.0	8.9
61	0.0	5.2	5.2	5.2	5.2
62	0.0	0.0	0.0	0.0	11.2
63	0.0	0.0	53.4*	100.0	100.0
64	0.0	0.0	0.0	0.0	6.9
65	0.0	0.0	0.0	0.0	0.0
66	0.0	0.0	0.0	0.0	9.8
67	0.0	0.0	10.9	10.9	10.9
68	0.0	0.0	0.0	0.0	100.0

* = Detour routes include roads on Camp Lejeune property



Table 2 – Detour Lengths (miles) Continued

Crossing ID	10yr	25yr	50yr	100yr	500yr
69	0.0	0.0	0.0	0.0	8.0
70	0.0	0.0	0.0	7.0	7.0
71	0.0	20.4*	100.0	100.0	100.0
72	0.0	0.0	0.0	7.7	100.0
73	0.0	0.0	0.0	10.7	100.0
74	0.0	0.0	0.0	14.4	100.0
75	0.0	0.0	0.0	6.1	100.0
76	0.0	0.0	0.0	8.4	8.4
77	0.0	0.0	0.0	0.0	33.1
78	0.0	100.0	100.0	100.0	100.0
79	0.0	100.0	100.0	100.0	100.0
80	0.0	0.0	0.0	17.6	100.0
81	0.0	0.0	0.0	100.0	100.0
82	15.8*	15.8*	100.0	100.0	100.0
83	15.8*	15.8*	100.0	100.0	100.0
84	N/A	N/A	N/A	N/A	N/A
85	N/A	N/A	N/A	N/A	N/A

* = Detour routes include roads on Camp Lejeune property



Table 3 – Duration of Overtopping (hr) – New River Crossings

Total run time was 84 hours

Crossing ID	Florence	Sept 2010
7	25.3	22.4
9	44.1	29.1
10	0	0
11	59.5	34.3
14	14.2	14.5
15	0	0
19	0	0
22	0	0
27	0	0
30	0.9	0.5
33	17.4	0
34	0.8	0.1
38	23.5	16.6
39	33.4	32.8
40	10.4	0
41	1.8	1.2
42	0	0
44	61.8	65.8
46	11.7	31.3
48	0	0
49	61.8	49.6
51	46.1	72.1
53	5.7	0
54	9.5	5.7
56	43.2	49.2
59	0	0
60	0	0
61	0	0
68	0	0
69	0	0
70	14.8	11.8
72	39.3	34.4
73	0	0



Table 4 – Duration of Overtopping (hr) – Southwest Creek Crossings

Total run time was 84 hours

Crossing ID	Florence	Sept 2010
12	0	2
17	0	0
21	0	0
26	0	2.4
32	13.6	36.6
37	0	0
47	0	0