BRIDGING DECISIONS AND ALIGNMENT REVIEW

NC 111 (Catherine Lake Road) Extension from US 258 (Richlands Highway) to SR 1308 (Gum Branch Road)

Onslow County

STIP Project U-5733

North Carolina Department of Transportation
Division 3

MERGER CONCURRENCE POINT NUMBER 2A

AUGUST 28, 2019

1. Introduction

The North Carolina Department of Transportation (NCDOT) proposes to extend NC 111 (Catherine Lake Road) from US 258 (Richlands Highway) to SR 1308 (Gum Branch Road) north of Jacksonville, in Onslow County (**Figure 1**). The project includes a potential new location crossing of the New River.

Because of the potential impacts to human and natural resources, State Transportation Improvement Program (STIP) Project U-5733 is following the Section 404/NEPA Merger Process. Coordination with the resource agencies have included:

- External Scoping Meeting on September 14, 2016
- Combined Concurrence Point 1 and 2 Merger Meeting on October 17, 2018

1.1. Project Background

The project is in the 2018-2027 NCDOT STIP that was approved by the NCDOT Board of Transportation on August 3, 2017 and most recently revised March 1, 2019. Though not currently programmed, NCDOT Division 3 anticipates State funding will be utilized for this project. Right-of-way (ROW) and Construction funding are scheduled for Fiscal Year (FY) 2023 and 2025, respectively. The current STIP cost estimate is presented in **Table 1**.

Table 1. 2018-2027 STIP U-5733 Cost Estimate

Phase	Cost Estimate
Right of Way	$2,107,000
Utilities	$500,000
Construction	$37,576,000
Total*	**$41,183,000**

*includes $1,000,000 in prior years costs.

Note: cost estimates are subject to change.

Note: This project is not funded for right of way or construction in the Draft 2020 – 2029 STIP. Existing funding remains to complete environmental planning through the Least Environmentally Damaging Practicable Alternative (LEDPA) selection (Concurrence Point 3).

1.2. Nearby STIP Projects & Local Transportation Plan

The 2018-2027 STIP lists four projects in the area of U-5733 (**Table 2**).

Table 2. Nearby STIP Projects

STIP	Route	Location/Description	Funding Schedule	
			ROW	Construction
2018-2027 STIP				
U-4906	SR 1308 (Gum Branch Road)	West of SR 1313 (Mills Field Road) to East of SR 1324 (Ramsey Road) in Jacksonville. Widening.	*In progress*	2019

Table 2. Nearby STIP Projects

STIP	Route	Location/Description	Funding Schedule	
			ROW	Construction
U-5319	SR 1308 (Gum Branch Road)	SR 1470 (Western Boulevard) in Jacksonville. Improve intersection.	*Complete*	2018
U-6081	NC 53 (Western Boulevard)	SR 1308 (Gum Branch Road) to US 17 (Marine Boulevard). Widening.	2025	2027
U-5791A	SR 2714 (Jacksonville Parkway Extension)	NC 53 (Western Boulevard) to SR 1324 (Ramsey Road). Widen to multi-lanes, part on new location.	2022	2024
U-5791B	SR 2714 (Jacksonville Parkway Extension)	SR 1324 (Ramsey Road) to US 17 (New Bern Highway). Widen to multi-lanes, part on new location.	Future (Unfunded)	Future (Unfunded)
DRAFT 2020-2029 STIP				
U-5793A	SR 1308 (Gum Branch Road)	SR 1324 (Ramsey Rd) to SR 1390 (Country Club Blvd). Upgrade to multi-lane reduced conflict intersection (RCI) design.	2027	2029
U-5793B	SR 1308 (Gum Branch Road)	SR 1322 (Summersill School Road) to SR 1324 (Ramsey Rd). Upgrade roadway to a RCI design.	2027	2029
U-5903	R 1336 (Henderson Drive)	SR 1308 (Gum Branch Road) to NC 53 (Western Boulevard). Upgrade to a multi-lane RCI design.	2027	2029
U-6200	SR 1308 (Gum Branch Road)	Williamsburg Parkway to Indian Drive. Upgrade 5-lane cross section to a multi-lane RCI design.	2027	2029
U-6148	US 258 (Richlands Highway)/NC 24	SR 1329 (Rhodestown Fire Department Road). Improve intersection.	2026	2028

2. Merger Concurrence Points 1 and 2

2.1 Concurrence Point 1

The Merger Team met and concurred on the project Purpose and Need and Study Area on October 17, 2018.

The purpose of the project is:

> The primary purpose of the proposed project is to improve the transportation network in the project study area to benefit mobility and connectivity. The project will achieve improved mobility by reducing overall vehicle hours traveled (VHT) in the transportation network. The project will achieve improved connectivity in central Onslow County by reducing travel times in the project vicinity and providing a roadway connection closer to activity centers in Jacksonville.

The need for the project is:

> The need to be addressed by the proposed project is to improve network mobility and connectivity between Gum Branch Road and US 258 in the project area.

The study area boundary is shown on **Figure 1** and is described as follows:

> The study area is roughly bounded by NC 111 and US 258 to the west, Rhodestown Road (SR 1316) to the north, Gum Branch Road (SR 1308) to the east and Ramsey Road (SR 1324) and NC 111 to the south. Each boundary is buffered 250 feet.

2.2 Concurrence Point 2

The Merger Team met and concurred on the Detailed Alternatives Carried Forward on October 17, 2018. The Detailed Alternatives include the No Build as well as the following Build Alternatives and are depicted on **Figure 2**.

- **Build Alternative 1A (Southern Alternative)** - realign NC 111 to a new intersection with US 258; construct new alignment roadway to cross the New River on new location to the existing Ramsey Road and Gum Branch Road intersection; purchase right of way for a future multi-lane roadway. (See attached figures.)
- **Build Alternative 1B (Southern Variant Alternative)** - realign NC 111 to a new intersection with US 258; construct new alignment roadway to cross the New River on new location to the existing Ramsey Road and Gum Branch Road intersection; purchase right of way for a future multi-lane roadway. (See attached figures.)
- **Build Alternative 2 (Middle Alternative)** - realign NC 111 to intersect Briarneck Road; improve Briarneck Road for approximately one mile; construct new alignment roadway to cross the New River on new location to a new Gum Branch Road intersection; purchase right of way for a future multi-lane roadway.

3. Water Resources

Jurisdictional streams and wetlands are located in the study area and are shown in the appended Natural Resource Technical Report figures (**Appendix A**). Seventy-seven streams were identified within the study area and included three named streams: New River, Half Moon Creek, and Bachelors Delight Swamp. The remainder are unnamed tributaries (UTs) to these streams. These streams are considered jurisdictional surface waters under Section 404 of the Clean Water Act. All jurisdictional streams have been designated as warm water streams for the purposes of mitigation. Stream and surface water information are found in **Table 3**.

Table 3. Characteristics of Jurisdictional Streams in the Study Area

Stream Name	Figure No.	Map ID	NCDWR Index Number	Best Usage Classification	Bank Height (ft)	Bankfull width (ft)	Depth (in)	Length (ft.)	Classification	Compensatory Mitigation Required	River Basin Buffer	SAM Rating
UT to New River	3C	SBC	19-(1)	C; NSW	4	3	6	1,993	Perennial	Yes	Not Subject	High
								451	Intermittent	Yes	Not Subject	High
New River	3C,3K	New River	19-(1)	C; NSW	10	50	36	7,820	Perennial	Yes	Not Subject	Low
UT to New River	3E	SC	19-(1)	C; NSW	3	3	2	224	Intermittent	Yes	Not Subject	High
UT to New River	3H	SE	19-(1)	C; NSW	3	3	8	2,802	Perennial	Yes	Not Subject	Low
								413	Intermittent	Yes	Not Subject	Medium
UT to New River	3A	SF	19-(1)	C; NSW	6	10	12	357	Perennial	Yes	Not Subject	High
UT to New River	3G	SK	19-(1)	C; NSW	3	3	6	1,547	Intermittent	Yes	Not Subject	High
UT to New River	3G	SL	19-(1)	C; NSW	2	3	6	455	Intermittent	Yes	Not Subject	High
UT to New River	3F,3G	SN	19-(1)	C; NSW	4	5	4	2,609	Intermittent	Yes	Not Subject	High
UT to New River	3F,3G,3H	SO	19-(1)	C; NSW	4	5	6	2,515	Intermittent	Yes	Not Subject	High
UT to New River	3H,3I	ST	19-(1)	C; NSW	10	6	24	5,343	Perennial	Yes	Not Subject	High
Half Moon Creek	3L	Half Moon Creek	19-6	C; NSW	6	30	48	380	Perennial	Yes	Not Subject	Medium
UT to New River	3F	SAA	19-(1)	C; NSW	0.5	2	0	75	Intermittent	Yes	Not Subject	Medium
UT to New River	3F	SAB	19-(1)	C; NSW	2	8	1	7,705	Perennial	Yes	Not Subject	High
UT to New River	3F	SAC	19-(1)	C; NSW	3	4	0	634	Intermittent	Yes	Not Subject	High
UT to New River	3D,3E	SAF	19-(1)	C; NSW	6	5	12	4,251	Perennial	Yes	Not Subject	High
UT to New River	3E	SAG	19-(1)	C; NSW	2	4	0	601	Intermittent	Yes	Not Subject	High
UT to New River	3E	SAH	19-(1)	C; NSW	3	6	0	821	Intermittent	Yes	Not Subject	Low
UT to Bachelors Delight Swamp	3L	SAI	19-5	C; NSW	3	8	2	2,591	Perennial	Yes	Not Subject	High
UT to Bachelors Delight Swamp	3L	SAJ	19-5	C; NSW	0.5	2	0	181	Intermittent	Yes	Not Subject	High
UT to Bachelors Delight Swamp	3L	SAK	19-5	C; NSW	2	4	0	283	Intermittent	Yes	Not Subject	Medium
UT to Bachelors Delight Swamp	3B	SBD	19-5	C; NSW	4	4	6	450	Perennial	Yes	Not Subject	Medium
UT to Bachelors Delight Swamp	3B	SBE	19-5	C; NSW	4	10	12	903	Intermittent	Yes	Not Subject	Medium
UT to New River	3B	SBF	19-(1)	C; NSW	2	5	4	234	Intermittent	Yes	Not Subject	High
UT to New River	3B,3C,3D	SBG	19-(1)	C; NSW	5	6	6	3,641	Perennial	Yes	Not Subject	High
								372	Intermittent	Yes	Not Subject	High
UT to New River	3B	SBI	19-(1)	C; NSW	3	3	3	64	Intermittent	Yes	Not Subject	High
UT to New River	3B,3C	SBJ	19-(1)	C; NSW	2	4	2	96	Intermittent	Yes	Not Subject	Low
UT to New River	3B	SBK/SCB	19-(1)	C; NSW	2	3	2	5,302	Perennial	Yes	Not Subject	High
UT to New River	3B	SBL	19-(1)	C; NSW	3	5	6	269	Intermittent	Yes	Not Subject	Medium
UT to New River	3D	SBN	19-(1)	C; NSW	2	3	0	249	Intermittent	Yes	Not Subject	Medium
UT to New River	3D	SBO	19-(1)	C; NSW	2	2	4	157	Intermittent	Yes	Not Subject	Medium
UT to New River	3D	SBP	19-(1)	C; NSW	3	2	3	22	Intermittent	Yes	Not Subject	High
UT to New River	3E	SBQ	19-(1)	C; NSW	3	3	2	253	Intermittent	Yes	Not Subject	Medium

Table 3. Characteristics of Jurisdictional Streams in the Study Area

Stream Name	Figure No.	Map ID	NCDWR Index Number	Best Usage Classification	Bank Height (ft)	Bankfull width (ft)	Depth (in)	Length (ft.)	Classification	Compensatory Mitigation Required	River Basin Buffer	SAM Rating
UT to Bachelors Delight Swamp	3L	SBR	19-5	C; NSW	1	2	0	278	Intermittent	Yes	Not Subject	High
UT to Bachelors Delight Swamp	3L	SBS	19-5	C; NSW	2	4	4	71	Intermittent	Yes	Not Subject	High
UT to Bachelors Delight Swamp	3B	SBT	19-5	C; NSW	1	3	3	95	Intermittent	Yes	Not Subject	Medium
UT to New River	3B	SCE	19-(1)	C; NSW	2	2	2	105	Intermittent	Yes	Not Subject	Medium
UT to New River	3H	SCG	19-(1)	C; NSW	1	3	0	120	Intermittent	Yes	Not Subject	High
UT to New River	3H	SCH	19-(1)	C; NSW	1	3	0	120	Intermittent	Yes	Not Subject	High
UT to New River	3H	SCI	19-(1)	C; NSW	2	4	2	251	Intermittent	Yes	Not Subject	High
UT to New River	3H	SCJ	19-(1)	C; NSW	1	3	0	127	Intermittent	Yes	Not Subject	High
UT to New River	3H	SCK	19-(1)	C; NSW	1	2	4	65	Intermittent	Yes	Not Subject	High
UT to New River	3H	SCL	19-(1)	C; NSW	3	5	6	1,410	Perennial	Yes	Not Subject	Medium
UT to New River	3H	SCM	19-(1)	C; NSW	3	2	4	665	Intermittent	Yes	Not Subject	Medium
UT to New River	3H	SCN	19-(1)	C; NSW	3	5	4	757	Intermittent	Yes	Not Subject	Medium
UT to New River	3H	SCO	19-(1)	C; NSW	2	4	6	259	Intermittent	Yes	Not Subject	Medium
UT to New River	3H	SCP	19-(1)	C; NSW	2	3	4	408	Intermittent	Yes	Not Subject	High
UT to New River	3H	SCQ	19-(1)	C; NSW	1	2	0	76	Intermittent	Yes	Not Subject	High
UT to New River	3H	SCR	19-(1)	C; NSW	1	3	0	22	Intermittent	Yes	Not Subject	High
UT to New River	3H	SCS	19-(1)	C; NSW	3	2	2	100	Intermittent	Yes	Not Subject	High
UT to New River	3I	SCT	19-(1)	C; NSW	3	2	0	297	Intermittent	Yes	Not Subject	High
UT to New River	3H,3I	SCU	19-(1)	C; NSW	4	3	2	1,588	Intermittent	Yes	Not Subject	High
UT to Half Moon Creek	3L	SCV	19-6	C; NSW	2	3	3	137	Intermittent	Yes	Not Subject	Medium
UT to Half Moon Creek	3L	SCW	19-6	C; NSW	0.5	2	2	73	Intermittent	Yes	Not Subject	High
UT to Half Moon Creek	3L	SCX	19-6	C; NSW	1	3	3	93	Intermittent	Yes	Not Subject	Medium
UT to Half Moon Creek	3L	SCY	19-6	C; NSW	1	3	0	90	Intermittent	Yes	Not Subject	High
UT to New River	3I	SDA	19-(1)	C; NSW	1	3	0	146	Intermittent	Yes	Not Subject	Medium
UT to New River	3I	SDB	19-(1)	C; NSW	2	4	4	2,657	Perennial	Yes	Not Subject	High
UT to New River	3I	SDC	19-(1)	C; NSW	2	4	0	297	Intermittent	Yes	Not Subject	Medium
UT to New River	3I	SDD	19-(1)	C; NSW	2	3	0	306	Intermittent	Yes	Not Subject	High
UT to New River	3I	SDE	19-(1)	C; NSW	2	4	0	446	Intermittent	Yes	Not Subject	High
UT to New River	3I	SDF	19-(1)	C; NSW	2	4	0	298	Intermittent	Yes	Not Subject	Medium
UT to New River	3I	SDG	19-(1)	C; NSW	4	3	3	1,068	Perennial	Yes	Not Subject	High
UT to Bachelors Delight Swamp	3L,3M	SDH	19-5	C; NSW	4	4	6	454	Intermittent	Yes	Not Subject	Medium
Bachelors Delight Swamp	3M, 3N	Bachelors Delight Swamp	19-5	C; NSW	6	30	24	528	Perennial	Yes	Not Subject	High
UT to Bachelors Delight Swamp	3N	SDL	19-5	C; NSW	3	4	6	28	Intermittent	Yes	Not Subject	Medium
UT to Bachelors Delight Swamp	3B	SDM	19-5	C; NSW	3	3	6	273	Intermittent	Yes	Not Subject	Medium
UT to New River	3F	SDO	19-(1)	C; NSW	2	2	4	641	Intermittent	Yes	Not Subject	Medium

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Stream Name	Figure No.	Map ID	NCDWR Index Number	Best Usage Classification	Bank Height (ft)	Bankfull width (ft)	Depth (in)	Length (ft.)	Classification	Compensatory Mitigation Required	River Basin Buffer	SAM Rating
UT to New River	3F,3H	SDP	19-(1)	C; NSW	1	4	4	387	Intermittent	Yes	Not Subject	High
UT to New River	3F	SDQ	19-(1)	C; NSW	2	4	6	314	Intermittent	Yes	Not Subject	High
UT to New River	3F,3H	SDR	19-(1)	C; NSW	2	3	5	459	Intermittent	Yes	Not Subject	Medium
UT to New River	3F	SDS	19-(1)	C; NSW	1	2	2	107	Intermittent	Yes	Not Subject	High
UT to New River	3F,3H,3I	SDT	19-(1)	C; NSW	2	4	6	292	Intermittent	Yes	Not Subject	Medium
UT to New River	3F	SDU	19-(1)	C; NSW	3	4	4	460	Intermittent	Yes	Not Subject	High
UT to New River	3F	SDV	19-(1)	C; NSW	1	2	2	187	Intermittent	Yes	Not Subject	Medium
UT to New River	3I,3J	SDX	19-(1)	C; NSW	5	3	3	79	Perennial	Yes	Not Subject	Medium
									Intermittent	Yes	Not Subject	Medium
UT to New River	3I,3J	SDY	19-(1)	C; NSW	3	3	4	295	Intermittent	Yes	Not Subject	Medium
UT to New River	3I,3J	SDZ	19-(1)	C; NSW	2	2	3	159	Intermittent	Yes	Not Subject	High
UT to New River	3F	SEB	19-(1)	C; NSW	3	2	3	251	Intermittent	Yes	Not Subject	High
UT to New River	3F	SEC	19-(1)	C; NSW	4	2	6	171	Intermittent	Yes	Not Subject	Medium
UT to New River	3F	SED	19-(1)	C; NSW	4	4	6	254	Intermittent	Yes	Not Subject	Medium
UT to New River	3F	SEE	19-(1)	C; NSW	2	2	3	328	Intermittent	Yes	Not Subject	Medium
UT to New River	3F	SEF	19-(1)	C; NSW	3	2	6	45	Intermittent	Yes	Not Subject	Medium
							TOTAL	75,563				

There are no designated High Quality Waters (HQW), Outstanding Resource Waters (ORW), or water supply watersheds (WS-I or WS-II) within or within 1.0 mile downstream of the study area. The North Carolina 2018 Final 303(d) list of impaired waters does not identify any impaired waters within the study area. There are no trout waters within the study area and Onslow County is not a designated trout county. The study area does not contain habitat identified as Primary Nursery Areas. The New River within the study area is designated as an inland Anadromous Fish Spawning Area (AFSA). An AFSA Construction Moratorium is anticipated and will be determined through coordination with the NC Wildlife Resources Commission (NCWRC).

Ninety-seven jurisdictional wetlands were identified within the study area. The locations of these wetlands are shown in **Appendix A**. All wetlands in the study area are located within the White Oak River basin (USGS Hydrologic Unit 03020302). Wetland information is found in **Table 4**.

Table 4. Characteristics of Jurisdictional Wetlands in the Study Area

Map ID	Figure No.	NCWAM Classification	NCWAM Rating	Hydrologic Classification	Area (ac.) in Study Area
WC	3A	Pine Flat	Medium	Non-Riparian	0.18
WD	3A	Pine Flat	Medium	Non-Riparian	0.76
WE	3G	Riverine Swamp Forest	High	Riparian	1.35
WG	3G	Pine Flat	High	Non-Riparian	0.22
WI	3G	Headwater Forest	High	Riparian	0.05
WJ	3G	Headwater Forest	High	Riparian	1.1
WK	3G	Pine Flat	Medium	Non-Riparian	3.15
WL	3G	Pine Flat	Medium	Non-Riparian	0.81
WM	3C, 3D	Bottomland Hardwood Forest	Medium	Riparian	4.89
WN	3C,3D	Floodplain Pool	High	Riparian	0.2
WO	3C	Floodplain Pool	High	Riparian	0.03
WP	3C	Floodplain Pool	High	Riparian	0.13
WQ	3C	Floodplain Pool	High	Riparian	0.17
WR	3C	Bottomland Hardwood Forest	Medium	Riparian	1.65
WS	3F	Pine Flat	High	Non-Riparian	0.34
WT	3F,3G, 3H	Pine Flat	High	Non-Riparian	60.2
WU	3F,3H	Headwater Forest	High	Riparian	0.13
WV	3F	Headwater Forest	High	Riparian	0.23
WX	3H	Riverine Swamp Forest	High	Riparian	1.29
WAA	3F	Pine Flat	Medium	Non-Riparian	0.01
WAB	3F	Pine Flat	Medium	Non-Riparian	0.05
WAC	3F	Riverine Swamp Forest	High	Riparian	5.13
WAD	3F	Pine Flat	Medium	Non-Riparian	0.8
WAE	3E,3F	Pine Flat	Medium	Non-Riparian	0.27
WAF	3F	Pine Flat	Medium	Non-Riparian	0.56

Table 4. Characteristics of Jurisdictional Wetlands in the Study Area

Map ID	Figure No.	NCWAM Classification	NCWAM Rating	Hydrologic Classification	Area (ac.) in Study Area
WAG	3F	Pine Flat	Medium	Non-Riparian	0.53
WAH	3F	Pine Flat	Medium	Non-Riparian	2.19
WAI	3F	Pine Flat	Medium	Non-Riparian	2.66
WAJ	3F	Pine Flat	Medium	Non-Riparian	0.34
WAK	3E	Pine Flat	Medium	Non-Riparian	0.41
WAL	3E	Pine Flat	Medium	Non-Riparian	1.47
WAP	3K	Headwater Forest	High	Riparian	0.03
WAQ	3K	Riverine Swamp Forest	High	Riparian	0.99
WAR	3K	Riverine Swamp Forest	High	Riparian	2.86
WAS	3K	Headwater Forest	High	Riparian	0.06
WAT	3K	Headwater Forest	High	Riparian	0.27
WBA	3G	Pine Flat	Medium	Non-Riparian	0.54
WBB	3C	Bottomland Hardwood Forest	Medium	Riparian	1.91
WBC	3C	Bottomland Hardwood Forest	Medium	Riparian	0.74
WBD	3C	Bottomland Hardwood Forest	Medium	Riparian	0.03
WBE	3C	Bottomland Hardwood Forest	High	Riparian	17.46
WBF	3B	Headwater Forest	High	Riparian	0.24
WBG	3B	Headwater Forest	High	Riparian	0.02
WBH	3B	Headwater Forest	High	Riparian	0.17
WBI	3B	Headwater Forest	High	Riparian	0.06
WBJ	3B,3C	Headwater Forest	High	Riparian	0.77
WBK	3B	Headwater Forest	High	Riparian	0.05
WBL	3B,3C, 3D	Headwater Forest	High	Riparian	2.87
WBM	3D	Bottomland Hardwood Forest	High	Riparian	7.74
WBN	3D	Bottomland Hardwood Forest	High	Riparian	0.06
WBO	3D	Bottomland Hardwood Forest	High	Riparian	<0.01
WBP	3C	Bottomland Hardwood Forest	High	Riparian	0.57
WBQ	3D	Headwater Forest	High	Riparian	4.84
WBR	3D	Headwater Forest	High	Riparian	5.04
WBS	3D	Headwater Forest	High	Riparian	3.89
WBT	3D,3E	Headwater Forest	High	Riparian	11.15
WBU	3D,3E	Headwater Forest	High	Riparian	0.1
WBV	3E	Headwater Forest	High	Riparian	1.69
WBW	3G	Pine Flat	Medium	Non-Riparian	0.25
WCA/WCB	3H	Riverine Swamp Forest	High	Riparian	10.31
WCC	3H	Headwater Forest	High	Riparian	0.06

Table 4. Characteristics of Jurisdictional Wetlands in the Study Area

Map ID	Figure No.	NCWAM Classification	NCWAM Rating	Hydrologic Classification	Area (ac.) in Study Area
WCD	3H	Riverine Swamp Forest	High	Riparian	0.14
WCE	3I	Riverine Swamp Forest	High	Riparian	19.47
WCF	3H	Pine Flat	Medium	Non-Riparian	0.22
WCG	3K	Riverine Swamp Forest	High	Riparian	0.56
WCH	3E,3F	Pine Flat	Medium	Non-Riparian	2.2
WDA	3J,3K	Riverine Swamp Forest	High	Riparian	126.14
WDB	3J	Riverine Swamp Forest	High	Riparian	5.87
WDC	3I	Riverine Swamp Forest	High	Riparian	1.41
WDD	3H	Pine Flat	Medium	Non-Riparian	0.14
WDE	3M,3N	Bottomland Hardwood Forest	High	Riparian	0.43
WDF	3M,3N	Bottomland Hardwood Forest	High	Riparian	0.34
WDG	3N	Bottomland Hardwood Forest	High	Riparian	0.41
WDH	3M,3N	Bottomland Hardwood Forest	High	Riparian	0.64
WDI	3H	Headwater Forest	High	Riparian	0.03
WDJ	3H	Headwater Forest	High	Riparian	0.05
WDK	3F,3I	Headwater Forest	High	Riparian	0.05
WDL	3F,2I	Headwater Forest	High	Riparian	0.17
WDM	3H,3F	Bottomland Hardwood Forest	High	Riparian	0.4
WDN	3F	Bottomland Hardwood Forest	High	Riparian	0.05
WDO	3F	Bottomland Hardwood Forest	High	Riparian	0.09
WDP	3F	Bottomland Hardwood	High	Riparian	0.09
WDQ	3F	Bottomland Hardwood Forest	High	Riparian	0.03
WDR	3F	Bottomland Hardwood Forest	High	Riparian	0.1
WDS	3I,3J	Riverine Swamp Forest	High	Riparian	1.58
WDT	3I,3J	Riverine Swamp Forest	High	Riparian	0.74
WDU	3K	Riverine Swamp Forest	High	Riparian	1.19
WDV	3K	Riverine Swamp Forest	High	Riparian	0.09
WDW	3I,3J	Hardwood Flat	Medium	Non-Riparian	0.21
WDX	3I,3J	Riverine Swamp Forest	High	Riparian	0.17
WDY	3I,3J	Hardwood Flat	Medium	Non-Riparian	0.13
WDZ	3J	Hardwood Flat	Medium	Non-Riparian	0.59
WEA	3C	Bottomland Hardwood Forest	High	Riparian	1
WEB	3F,3J	Hardwood Flat	Medium	Non-Riparian	0.52
WEC	3I,3J	Hardwood Flat	Medium	Non-Riparian	5.22
WED	3I,3J	Hardwood Flat	Medium	Non-Riparian	0.88
WEE	3I,3J	Hardwood Flat	Medium	Non-Riparian	0.7

Table 4. Characteristics of Jurisdictional Wetlands in the Study Area

Map ID	Figure No.	NCWAM Classification	NCWAM Rating	Hydrologic Classification	Area (ac.) in Study Area
WEF	3J	Hardwood Flat	Medium	Non-Riparian	1.13
WEG	3F,3J	Headwater Forest	Medium	Non-Riparian	0.54
WEH	3F,3J	Headwater Forest	Medium	Non-Riparian	0.19
WEI	3F	Bottomland Hardwood Forest	Medium	Non-Riparian	0.07
WEJ	3F	Headwater Forest	Medium	Non-Riparian	0.11
WEK	3J	Hardwood Flag	Medium	Non-Riparian	1.96
				Total	342.12

Three Coastal Area Management Act (CAMA) Areas of Environmental Concern (AEC) are present in the study area. A Public Trust Water AEC are present on Half Moon Creek, Bachelors Delight Swamp, and the New River within the study area. There are no coastal wetlands present in the study area.

Total impacts by build alternative for streams and wetlands are shown in **Table 5**.

Table 5: Total Potential Impacts* to Streams and Wetlands by Build Alternative

Resource	Alternative 1A (Southern Alternative)	Alternative 1B (Southern Variant Alternative)	Alternative 2 (Middle Alternative)
Streams (ft)	1,672.6	1,822.1	3,796.1
Wetlands (ac)	5.5	5.9	13.6

*Impacts measured based on slope stake limits plus an additional 40 feet.

Jurisdictional areas identified during original field investigations were verified by Brad Shaver of the U.S. Army Corps of Engineers (USACE) and Joanne Steenhuis of the NC Division of Water Resources (NCDWR) on October 30-31, 2018 and March 28, 2019. The Preliminary Jurisdictional Determination (PJD) was approved by the USACE on May 9, 2019.

4. CP2A: Major Hydraulic Crossings

Major hydraulic crossings are those with a contributing drainage area requiring conveyance greater than a 72-inch pipe. A total of six potential major hydraulic crossings were identified for the proposed project. These structures are described in **Table 6** and additional information including the site map and individual site plan and photographs are included in **Appendix B**.

Table 6. Major Hydraulic Structures[1] Recommendations, Cost Estimate, and Potential Impacts by Alternative

SITE NO	ROUTE	STREAM NAME	NRTR MAP ID	NCDWR STREAM INDEX NUMBER	STREAM/ WETLAND SIZE (ft / ac)	STREAM CLASS	DRAINAGE AREA	EXISTING STRUCTURE	ALTERNATIVE 1A (Southern Alternative)			ALTERNATIVE 1B (Southern Variant Alternative)			ALTERNATIVE 2 (Middle Alternative)		
								Number, Size, Structure Type	Recommended Structure	Cost Estimate	Potential Stream/ Wetland Impact[2]	Recommended Structure	Cost Estimate	Potential Stream/ Wetland Impact[2]	Recommended Structure	Cost Estimate	Potential Stream/ Wetland Impact[2]
1	NC 111 Extension	UT to New River	SDB/ WCE	19-(1)	2,042 / 19.5	C; NSW	538 ac	None	1 @ 7' x 8' RCBC	$450,000	459 ft / 1.0 ac	See Note (3)					
2	NC 111 Extension	New River	New River (SB)/ WDA	19-(1)	7,820 / 126.1	C; NSW	111.2 sq mi	None	Bridge min length[4, 5] = 2,545' (2@100', 3@115', 20@100')	$14.9M	0 ft / 3.9 ac	Bridge min length[4, 5] = 2,545' (2@100', 3@115', 20@100')	$14.9M	0 ft / 4.0 ac			
3	NC 24	UT to New River	ST	19-(1)	3,072	C; NSW	2.17 sq mi	2 @ 8' x 9' RCBC									
4	NC 111 Extension	New River	New River (SB)/ WBR/ WBM	19-(1)	7,820/ (WBR) 5.0/ (WBM) 7.7	C; NSW	99.8 sq mi	None							Bridge min length = 1,100' (11@100')	$6.1M	0 ft / (WBR) 0.53 ac (WBM) 0.95 ac
5	SR 1308 (Gum Branch Rd)	UT to Bachelors Delight Swamp	SBE[6]/ WBH	19-5	903/ 0.2	C; NSW	388 ac	103" x 71" CSPA							1 @ 7' x 7' RCBC	$290,000	385 ft/ 0.15 ac
6	SR 1308 (Gum Branch Rd)	Bachelors Delight Swamp	Bachelor's Delight Swamp (SDK)	19-5	528	C; NSW	8.5 sq mi	3 @ 137" x 87" CMPA							3 @ 10' x 8' RCBC	$219,000	179.5 ft

NOTES:

(1) Major Hydraulic Structures - conveyance greater than 72-inch pipe

(2) Impacts based on slope stake limits plus 40 feet.

(3) Gray shading indicates that this Site is not crossed by the alternative.

(4) Minimum bridge length is the minimum length required to span the floodway and have a “no rise”. It is not the minimum length required for the hydraulic opening.

(5) To span both wetlands on either side of the proposed bridge, an additional approximately 1,000 ft of additional bridge length would be required.

(6) All streams except Stream SBE are perennial. Stream SBE is intermittent.

5. Project Schedule

Table 7 provides the tentative milestone schedule for this project (subject to change). The funding schedule is consistent with the 2018-2027 STIP. NCDOT is evaluating an accelerated delivery schedule.

Table 7. STIP Project U-5733 Schedule

Milestone	**Schedule***
Concurrence Point 2A	Summer 2019
Concurrence Point 3A	Winter 2019
Final Environmental Document+	Winter 2019/2020
Begin ROW Acquisition	FY 2023
Begin Construction	FY 2027

*tentative, subject to change; +anticipate StateEA/FONSI

Section 404/NEPA Merger Project Team Meeting Agreement

Concurrence Point No. 2A

Project Purpose and Need and Study Area Defined

Project Name/Description: US 258 (Richlands Highway) to SR 1308 (Gum Branch Road). Construct Extension of NC 111 on new location. **STIP Project: U-5733**

The Merger Team has concurred on this date of August 28, 2019, on the major hydraulics structures as shown in **Table 6** of the CP2A Merger Packet for STIP Project U-5733.

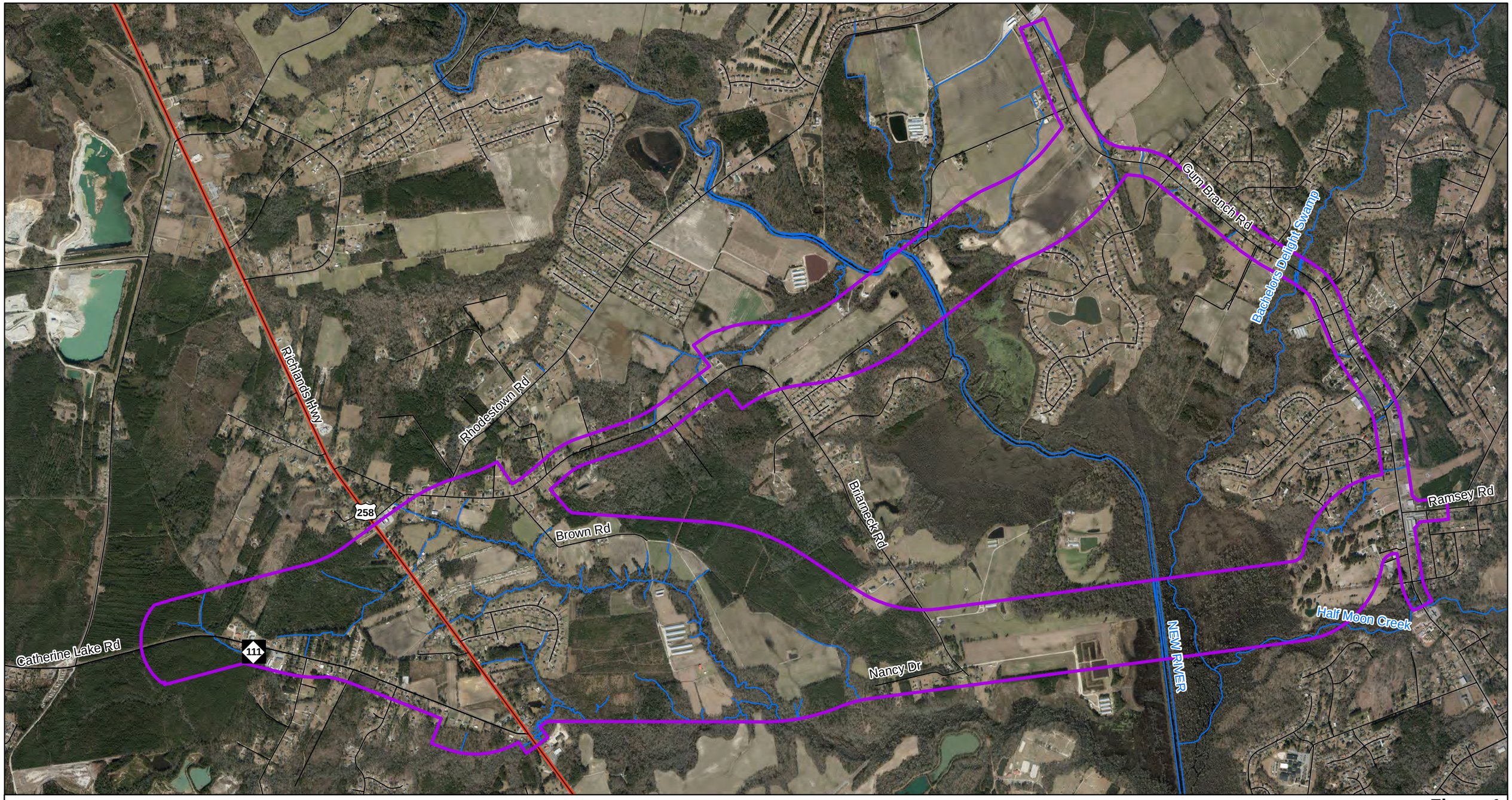
USACE _____ NCDCM _____

USEPA _____ FHWA _____

USFWS _____ NCDOT _____

NCDWR _____ NOAA Fisheries _____

NCWRC _____ JUMPO _____



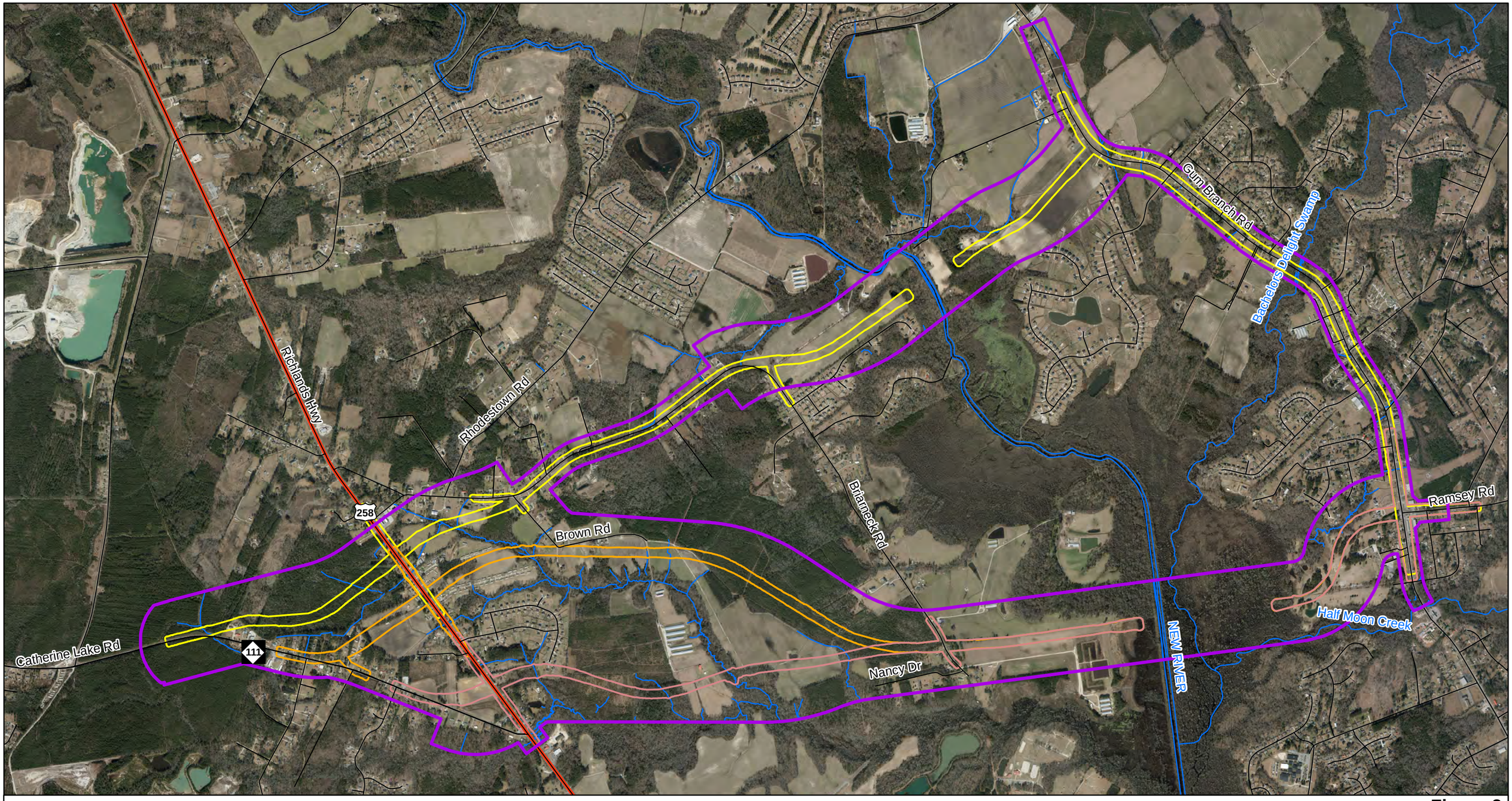
Legend

- Study Area
- US Route
- NC Highway
- Road
- Stream

N

0 0.25 0.5 0.75 1 Miles

Figure 1
Study Area
STIP Project No. U-5733
NC 111 (Catherine Lake Rd)
Extension from US 258
(Richlands Hwy) to SR 1308
(Gum Branch Road)
Onslow County



Legend

- Study Area
- Alternative 1A
- Alternative 1B
- Alternative 2
- US Route
- NC Highway
- Road
- Stream

N

0 0.25 0.5 0.75 1 Miles

Figure 2
Detailed Study Alternatives
STIP Project No. U-5733
NC 111 (Catherine Lake Rd)
Extension from US 258
(Richlands Hwy) to SR 1308
(Gum Branch Road)
Onslow County

Appendix A: Figures from the Natural Resources Technical Report (April 2019)

Project Study Area Expanded*
Detail Sheets (3A-3N)
Potential Non-Wetland Waters of the US (Surface Waters)
Potential Wetland Waters of the US
Potential Non-Wetland Waters of the US (Streams)
Potential Non-Wetland Waters of the US (Tributaries)

0 1,000 2,000
Feet

Source:High Resolution NC Statewide Orthoimagery, CGIA, 2010;
Project Study Area provided by NCDOT.

Disclaimer: The information depicted on this figure is for informational purposes only and was not prepared for, and is not suitable for legal or engineering purposes.

3A
3B
3C
3D
3E
3F
3G
3H
3I
3J
3K
3L
3M
3N

NC OneMap, NC Center for Geographic Information and Analysis, NC 811 Board

Project:	ER18004.00
Date:	Apr 2019
Drwn/Chkd:	CW/RT
Figure:	3

Jurisdictional Features Map
NC 111 Extension
Onslow County, North Carolina
TIP No. U-5733

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Project Study Area Expanded*
Project Study Area Original
Potential Wetland Waters of the US
Potential Non-Wetland Waters of the US (Surface Waters)
Potential Non-Wetland Waters of the US (Perennial)
Potential Non-Wetland Waters of the US (Tributaries)
Potential Non-Wetland Waters of the US (Intermittent)

0 200 400
Feet

Source:Latest High-Resolution NC Statewide Orthoimagery, NC OneMap Server;
Project Study Area provided by NCDOT.

Disclaimer: The information depicted on this figure is for informational purposes only and was not prepared for, and is not suitable for legal or engineering

Whaley Field Rd
Country Club Blvd
Lake Ln
Player Ct
Kane Ct
Joy Ct
Rock Creek Dr S
Birdie Ct
Kemberly Ct
Gum Branch Rd
Rhodestown Rd
SF
WD
WC
SA
SBC
SEA
SDW
Match with 3C
Match with 3A
Match with 3B

Project:	ER18004.00
Date:	Apr 2019
Drwn/Chkd:	CW/RT
Figure:	3A

Jurisdictional Features Map
NC 111 Extension
Onslow County, North Carolina
TIP No. U-5733

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Project Study Area Expanded*
Project Study Area Original
Potential Wetland Waters of the US
Potential Non-Wetland Waters of the US (Surface Waters)
Potential Non-Wetland Waters of the US (Perennial)
Potential Non-Wetland Waters of the US (Tributaries)
Potential Non-Wetland Waters of the US (Intermittent)
0
200
400
Feet
Source:Latest High-Resolution NC Statewide Orthoimagery, NC OneMap Server;
Project Study Area provided by NCDOT.
Disclaimer: The information depicted on this figure is for informational purposes only and was not prepared for, and is not suitable for legal or engineering
N
Match with 3C
Match with 3A
Match with 3N
Match with 3D
Match with 3B
SDW
SEA
SBD
SWCA
SCA
Gum Branch Rd
Howard Rd
Timothy Rd
Serena Dr
Maiden Ln
Byron Ln
Delight Dr
McArthur Dr
Batchelors Trl
Delight Ct
George Ln
SBG
WBJ
WBK
WBI
SBI
SBH
SBT
SBE
WBH
SX
WBG
WBF
SDM
SCB
SBJ
SBJ
SBC
SCE
SBF
WBL
SBL
SBK
WBM
SDN

Project:	ER18004.00
Date:	Apr 2019
Drwn/Chkd:	CW/RT
Figure:	3B

Jurisdictional Features Map

NC 111 Extension

Onslow County, North Carolina

TIP No. U-5733

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Project Study Area Expanded*
Project Study Area Original
Potential Wetland Waters of the US
Potential Non-Wetland Waters of the US (Surface Waters)
Potential Non-Wetland Waters of the US (Perennial)
Potential Non-Wetland Waters of the US (Tributaries)
Potential Non-Wetland Waters of the US (Intermittent)

0 200 400
Feet

Source:Latest High-Resolution NC Statewide Orthoimagery, NC OneMap Server;
Project Study Area provided by NCDOT.

Disclaimer: The information depicted on this figure is for informational purposes only and was not prepared for, and is not suitable for legal or engineering

Rock Creek Dr S
Cross Creek Dr
Rhodestown Rd
New River
Windy Branch Way
Magnolia Gardens Dr
George Ln
Howard Rd

Match with 3A
Match with 3B
Match with 3C
Match with 3D
Match with 3E

SA
SBC
SEA
WEA
WBE
SWG
WR
WBJ
WBK
SBI
SBG
WBI
WBB
WBD
WBC
WQ
WM
WBP
SBJ
SB
SWBC
SWBB
SWBA
WP
WO
SBB
WN
WBL
SBK

Project: ER18004.00
Date: Apr 2019
Drwn/Chkd: CW/RT
Figure: 3C

Jurisdictional Features Map
NC 111 Extension
Onslow County, North Carolina
TIP No. U-5733

NORTH CAROLINA • HOLLY SPRINGS • DEPARTMENT OF TRANSPORTATION

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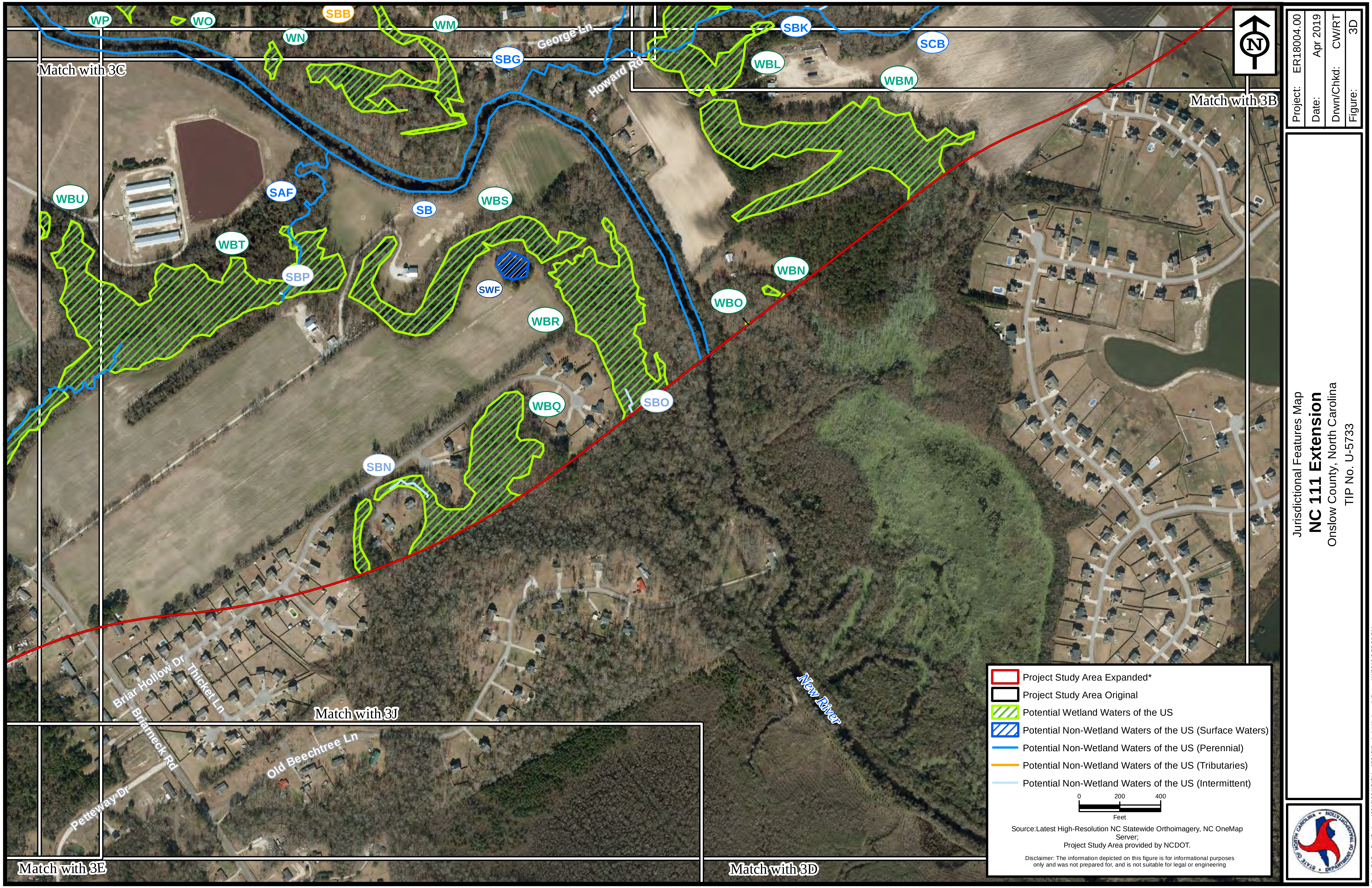
Match with 3C
Match with 3B
Match with 3J
Match with 3E
Match with 3D
WP
WO
SBB
WN
WM
SBG
George Ln
Howard Rd
SBK
SCB
WBL
WBM
WBU
SAF
SB
WBS
WBT
SBP
SWF
WBR
WBN
WBO
WBQ
SBO
SBN
Briar Hollow Dr
Thicket Ln
Briarneck Rd
Old Beechtree Ln
Petteway Dr
New River
Project Study Area Expanded*
Project Study Area Original
Potential Wetland Waters of the US
Potential Non-Wetland Waters of the US (Surface Waters)
Potential Non-Wetland Waters of the US (Perennial)
Potential Non-Wetland Waters of the US (Tributaries)
Potential Non-Wetland Waters of the US (Intermittent)
0 200 400
Feet
Source:Latest High-Resolution NC Statewide Orthoimagery, NC OneMap Server;
Project Study Area provided by NCDOT.
Disclaimer: The information depicted on this figure is for informational purposes only and was not prepared for, and is not suitable for legal or engineering
Project: ER18004.00
Date: Apr 2019
Drwn/Chkd: CW/RT
Figure: 3D
Jurisdictional Features Map
NC 111 Extension
Onslow County, North Carolina
TIP No. U-5733

Project Study Area Expanded*
Project Study Area Original
Potential Wetland Waters of the US
Potential Non-Wetland Waters of the US (Surface Waters)
Potential Non-Wetland Waters of the US (Perennial)
Potential Non-Wetland Waters of the US (Tributaries)
Potential Non-Wetland Waters of the US (Intermittent)

0 200 400
Feet

Source:Latest High-Resolution NC Statewide Orthoimagery, NC OneMap Server;
Project Study Area provided by NCDOT.

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Valley Ridge Ln
Magnolia Gardens Dr
Forest Bluff Dr
Kayla Ct
Hybrid Ct
Rainmaker Dr
Threshing Ct
Tillage Ct
Match with 3C
SB
SC
WBU
WBT
Big Branch Ln
Rhodestown Rd
Trudie Ln
SD
SAH
SAF
WBV
SAF
WAP
SBQ
SAG
Briarneck Rd
WAK
WAL
Match with 3F
Match with 3J
SAF
Odell Ln
WCH
Petteway Ln
Billy Hudson Rd
Toudle Ln
WAE
WAD
Petteway Dr
Match with 3E
Match with 3D

Project: ER18004.00
Date: Apr 2019
Drwn/Chkd: CW/RT
Figure: 3E

Jurisdictional Features Map
NC 111 Extension
Onslow County, North Carolina
TIP No. U-5733

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Project Study Area Expanded*
Project Study Area Original
Potential Wetland Waters of the US
Potential Non-Wetland Waters of the US (Surface Waters)
Potential Non-Wetland Waters of the US (Perennial)
Potential Non-Wetland Waters of the US (Tributaries)
Potential Non-Wetland Waters of the US (Intermittent)

0 200 400
Feet

Source:Latest High-Resolution NC Statewide Orthoimagery, NC OneMap Server;
Project Study Area provided by NCDOT.

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N

Project: ER18004.00
Date: Apr 2019
Drwn/Chkd: CW/RT
Figure: 3F

Jurisdictional Features Map
NC 111 Extension
Onslow County, North Carolina
TIP No. U-5733

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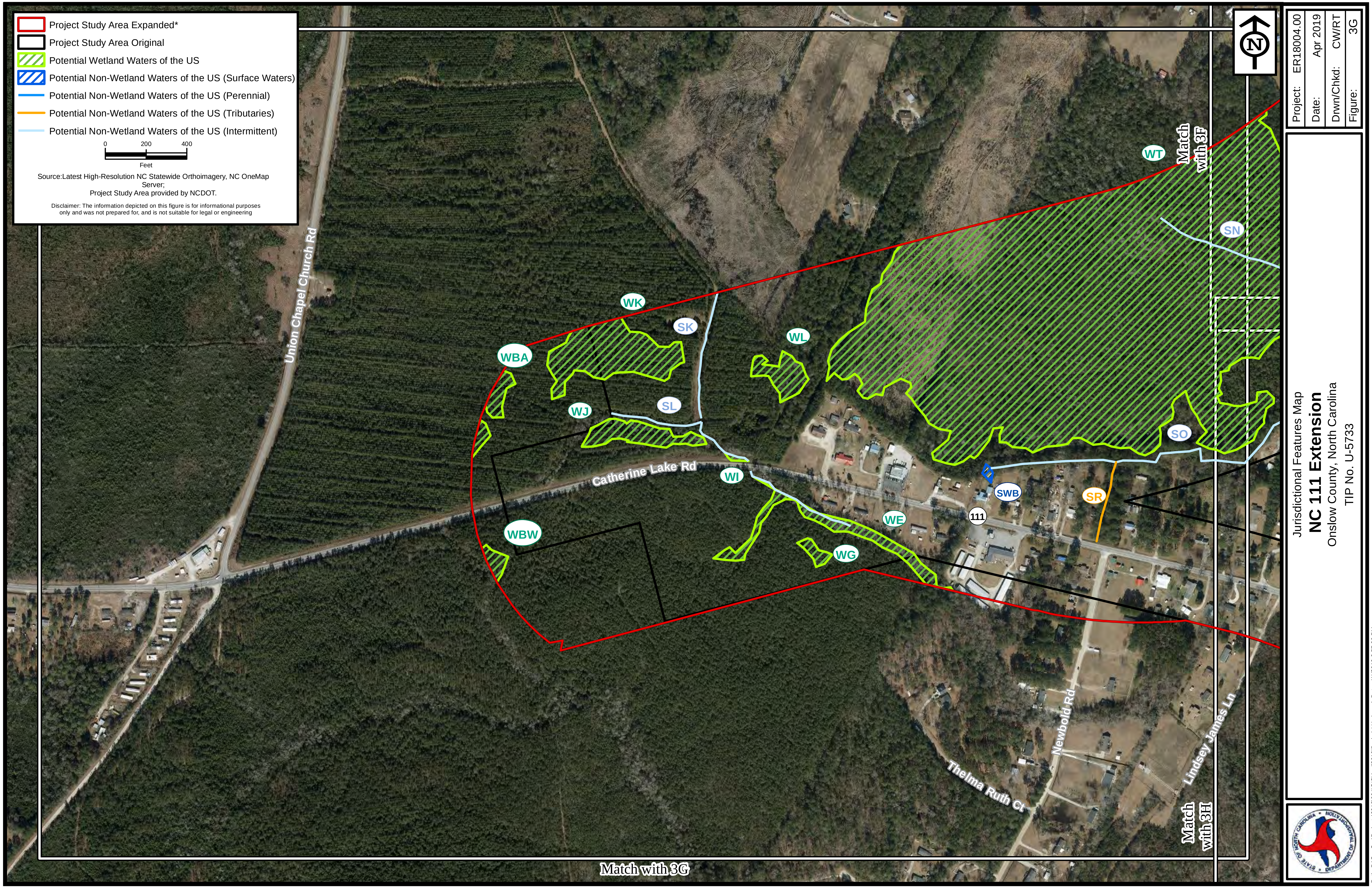
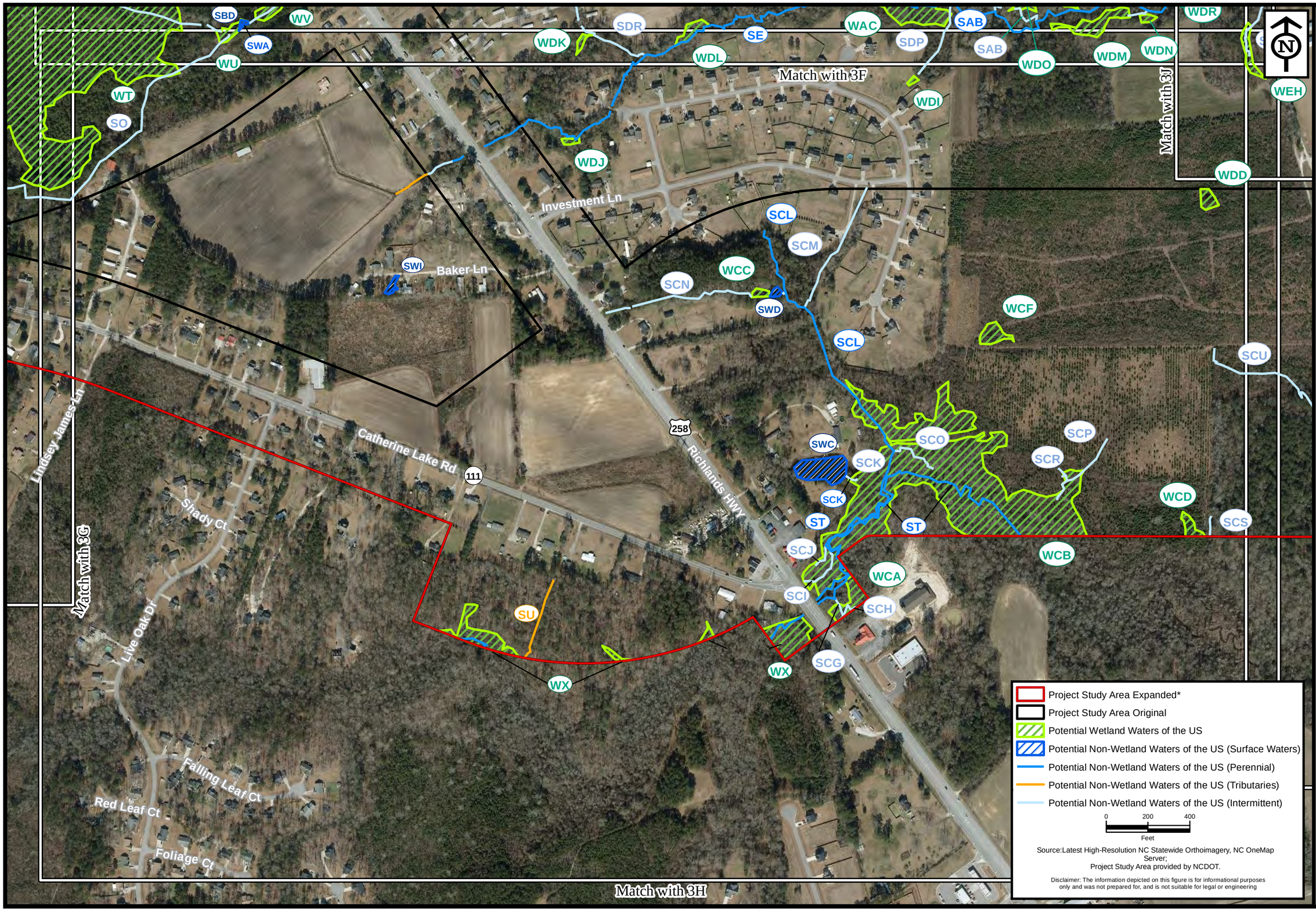

Project Study Area Expanded*
Project Study Area Original
Potential Wetland Waters of the US
Potential Non-Wetland Waters of the US (Surface Waters)
Potential Non-Wetland Waters of the US (Perennial)
Potential Non-Wetland Waters of the US (Tributaries)
Potential Non-Wetland Waters of the US (Intermittent)
0 200 400
Feet
Source:Latest High-Resolution NC Statewide Orthoimagery, NC OneMap Server;
Project Study Area provided by NCDOT.
Disclaimer: The information depicted on this figure is for informational purposes only and was not prepared for, and is not suitable for legal or engineering
Union Chapel Church Rd
Catherine Lake Rd
Newbold Rd
Thelma Ruth Ct
Lindsey James Ln
111
WBA
WK
SK
WL
WJ
SL
WI
WE
WG
WBW
WT
SN
SO
SWB
SR
Match with 3F
Match with 3H
Match with 3G
N
Project: ER18004.00
Date: Apr 2019
Drwn/Chkd: CW/RT
Figure: 3G
Jurisdictional Features Map
NC 111 Extension
Onslow County, North Carolina
TIP No. U-5733



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Date: Apr 2019
Drwn/Chkd: CW/RT
Figure: 3H

Jurisdictional Features Map

NC 111 Extension

Onslow County, North Carolina

TIP No. U-5733

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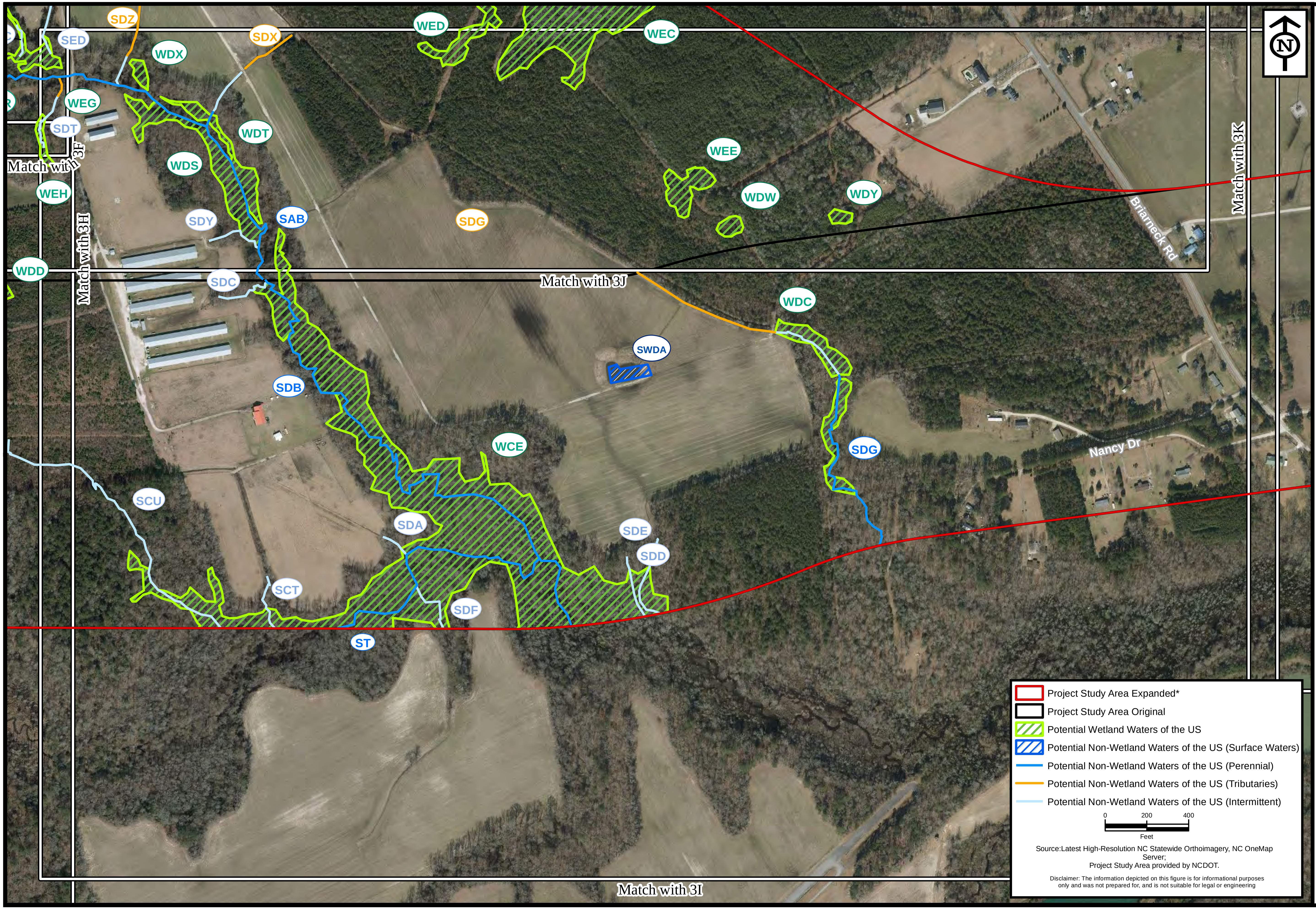

SDZ
SDX
WED
WEC
SED
WDX
WEG
SDT
WDT
WEE
Match with 3F
WDS
WEH
WDW
WDY
SDY
SAB
SDG
Briarneck Rd
Match with 3K
Match with 3H
WDD
SDC
Match with 3J
WDC
SWDA
SDB
SDG
Nancy Dr
WCE
SCU
SDA
SDE
SDD
SCT
SDF
ST
Match with 3I
Project Study Area Expanded*
Project Study Area Original
Potential Wetland Waters of the US
Potential Non-Wetland Waters of the US (Surface Waters)
Potential Non-Wetland Waters of the US (Perennial)
Potential Non-Wetland Waters of the US (Tributaries)
Potential Non-Wetland Waters of the US (Intermittent)
0 200 400
Feet
Source:Latest High-Resolution NC Statewide Orthoimagery, NC OneMap Server;
Project Study Area provided by NCDOT.
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Project: ER18004.00
Date: Apr 2019
Drwn/Chkd: CW/RT
Figure: 3I

Jurisdictional Features Map
NC 111 Extension
Onslow County, North Carolina
TIP No. U-5733

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Project Study Area Expanded*
Project Study Area Original
Potential Wetland Waters of the US
Potential Non-Wetland Waters of the US (Surface Waters)
Potential Non-Wetland Waters of the US (Perennial)
Potential Non-Wetland Waters of the US (Tributaries)
Potential Non-Wetland Waters of the US (Intermittent)

0 200 400
Feet

Source:Latest High-Resolution NC Statewide Orthoimagery, NC OneMap Server;
Project Study Area provided by NCDOT.

Disclaimer: The information depicted on this figure is for informational purposes only and was not prepared for, and is not suitable for legal or engineering

N

Project:	ER18004.00
Date:	Apr 2019
Drwn/Chkd:	CW/RT
Figure:	3J

Jurisdictional Features Map

NC 111 Extension

Onslow County, North Carolina

TIP No. U-5733

STATE OF NORTH CAROLINA • NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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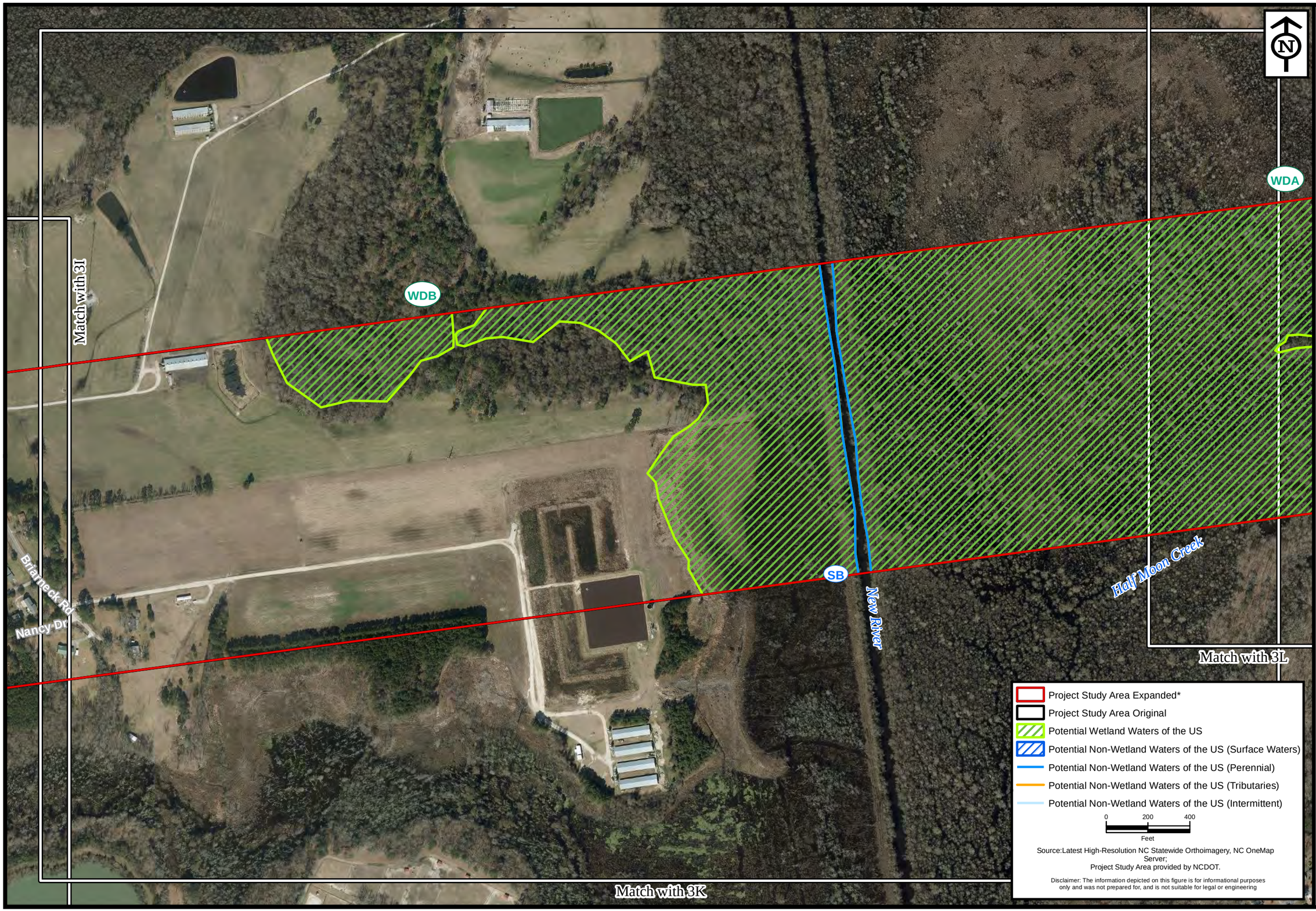

Project:	ER18004.00
Date:	Apr 2019
Drwn/Chkd:	CW/RT
Figure:	3K

Jurisdictional Features Map

NC 111 Extension

Onslow County, North Carolina

TIP No. U-5733

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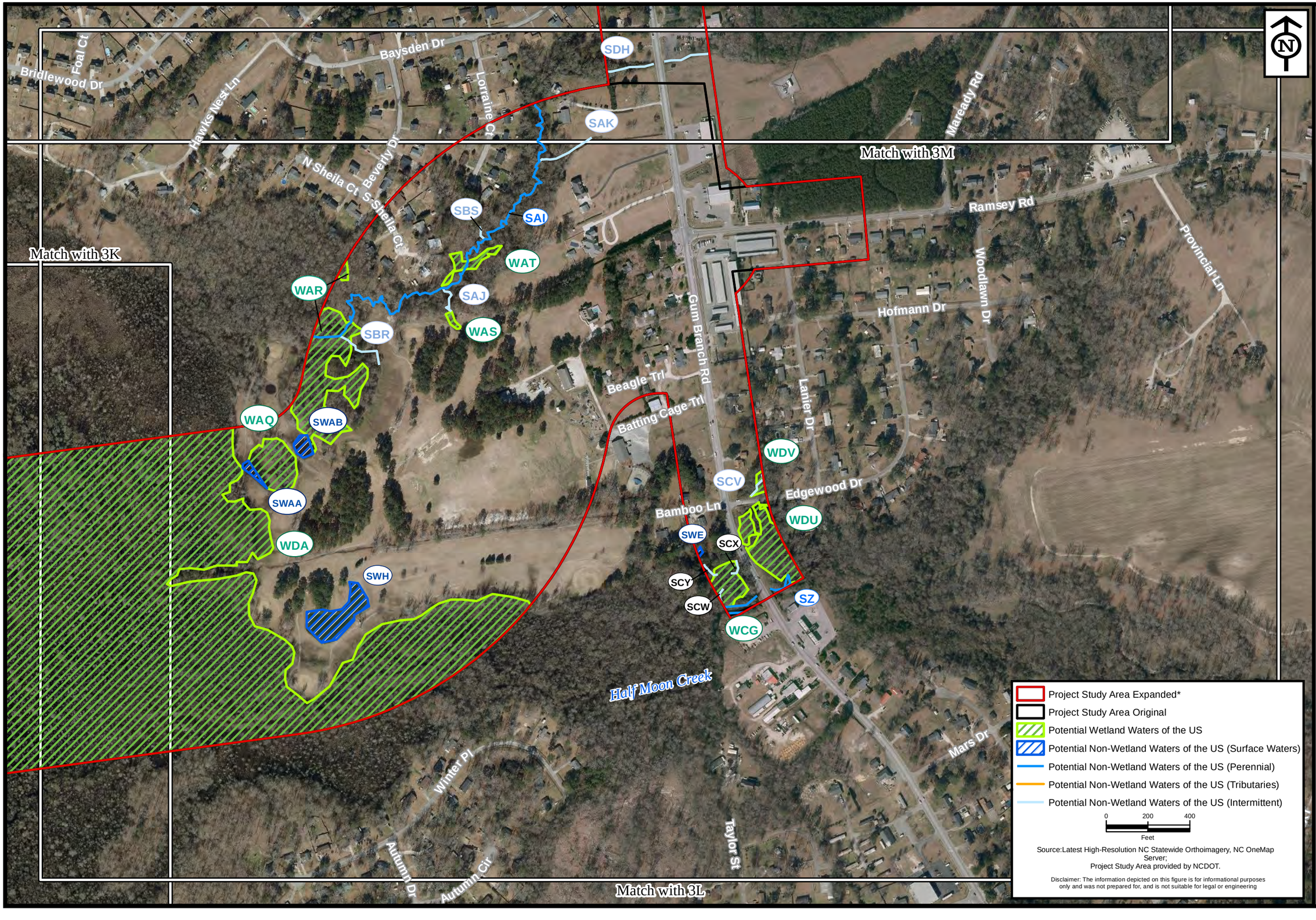

Project:	ER18004.00
Date:	Apr 2019
Drwn/Chkd:	CW/RT
Figure:	3L

Jurisdictional Features Map

NC 111 Extension

Onslow County, North Carolina

TIP No. U-5733

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WDH
SDL
WDF
WDE
Bachelors Delight Swamp
SDJ
SDI
SDI
SDH
SAK
Match with 3N
Match with 3L
Match with 3M
Erica Ln
Kinsey Ln
Mendover Dr
Mill Pond Rd
Christine Thompson Ct
Meadow Trl
N Bryan Rd
Brothers Ln
Spanish Trl
Pony Express Trl
Linsey Paige Ln
Sara Kay Ln
Cougar Ln
Half Moon Church Rd
Len Dr S
Memory Ln
Diplomat Ln
Redman Rd
Gum Branch Rd
Pommel Ct
Yearling Lp
Bridlewood Dr
Emily Lp
Foal Ct
Hawks Nest Ln
Baysden Dr
Beverly Dr
Lorraine Ct

N

Project:	ER18004.00
Date:	Apr 2019
Drwn/Chkd:	CW/RT
Figure:	3M

Jurisdictional Features Map

NC 111 Extension

Onslow County, North Carolina

TIP No. U-5733

Project Study Area Expanded*
Project Study Area Original
Potential Wetland Waters of the US
Potential Non-Wetland Waters of the US (Surface Waters)
Potential Non-Wetland Waters of the US (Perennial)
Potential Non-Wetland Waters of the US (Tributaries)
Potential Non-Wetland Waters of the US (Intermittent)

0 200 400
Feet

Source:Latest High-Resolution NC Statewide Orthoimagery, NC OneMap Server;
Project Study Area provided by NCDOT.

Disclaimer: The information depicted on this figure is for informational purposes only and was not prepared for, and is not suitable for legal or engineering

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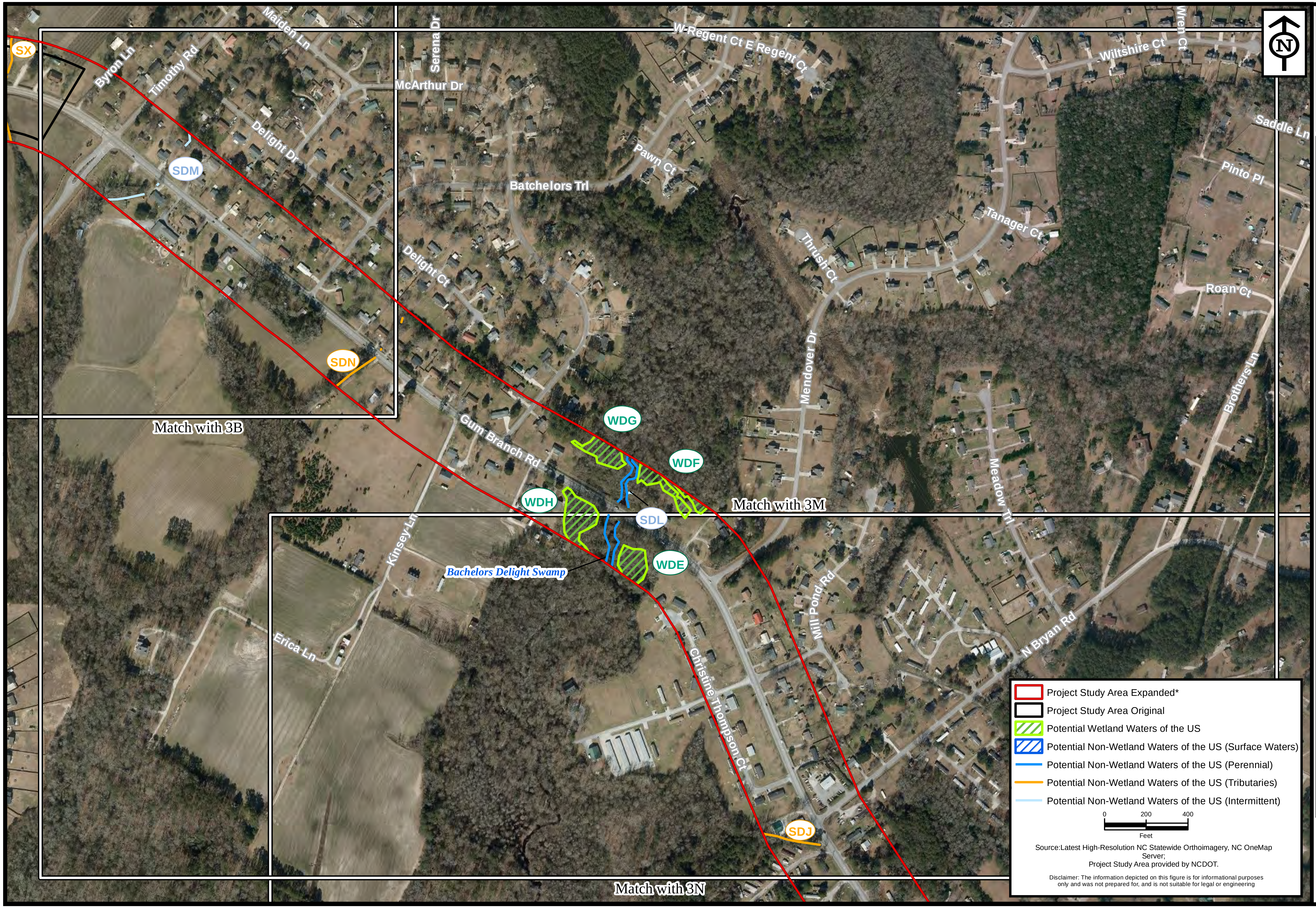
SX
Byron Ln
Timothy Rd
Maiden Ln
Serena Dr
McArthur Dr
W Regent Ct
E Regent Ct
Wiltshire Ct
Wren Ct
Saddle Ln
Delight Dr
SDM
Pawn Ct
Batchelors Trl
Pinto Pl
Tanager Ct
Thrush Ct
Delight Ct
Roan Ct
SDN
Mendover Dr
Brothers Ln
Match with 3B
WDG
Gum Branch Rd
WDF
Meadow Trl
WDH
SDL
Match with 3M
Kinsey Ln
WDE
Bachelors Delight Swamp
Mill Pond Rd
N Bryan Rd
Erica Ln
Christine Thompson Ct
SDJ
Match with 3N
Project Study Area Expanded*
Project Study Area Original
Potential Wetland Waters of the US
Potential Non-Wetland Waters of the US (Surface Waters)
Potential Non-Wetland Waters of the US (Perennial)
Potential Non-Wetland Waters of the US (Tributaries)
Potential Non-Wetland Waters of the US (Intermittent)
0 200 400
Feet
Source:Latest High-Resolution NC Statewide Orthoimagery, NC OneMap Server;
Project Study Area provided by NCDOT.
Disclaimer: The information depicted on this figure is for informational purposes only and was not prepared for, and is not suitable for legal or engineering

Project: ER18004.00
Date: Apr 2019
Drwn/Chkd: CW/RT
Figure: 3N

Jurisdictional Features Map

NC 111 Extension

Onslow County, North Carolina

TIP No. U-5733

Path: P:\GeoGra\Projects\2018\004\GIS\April2019\fig_jurisV4_1.mxd Date: 4/4/2019 2:57:06 PM

Appendix B: Site Map and Site Information from Hydraulic Planning Report (May 2019)

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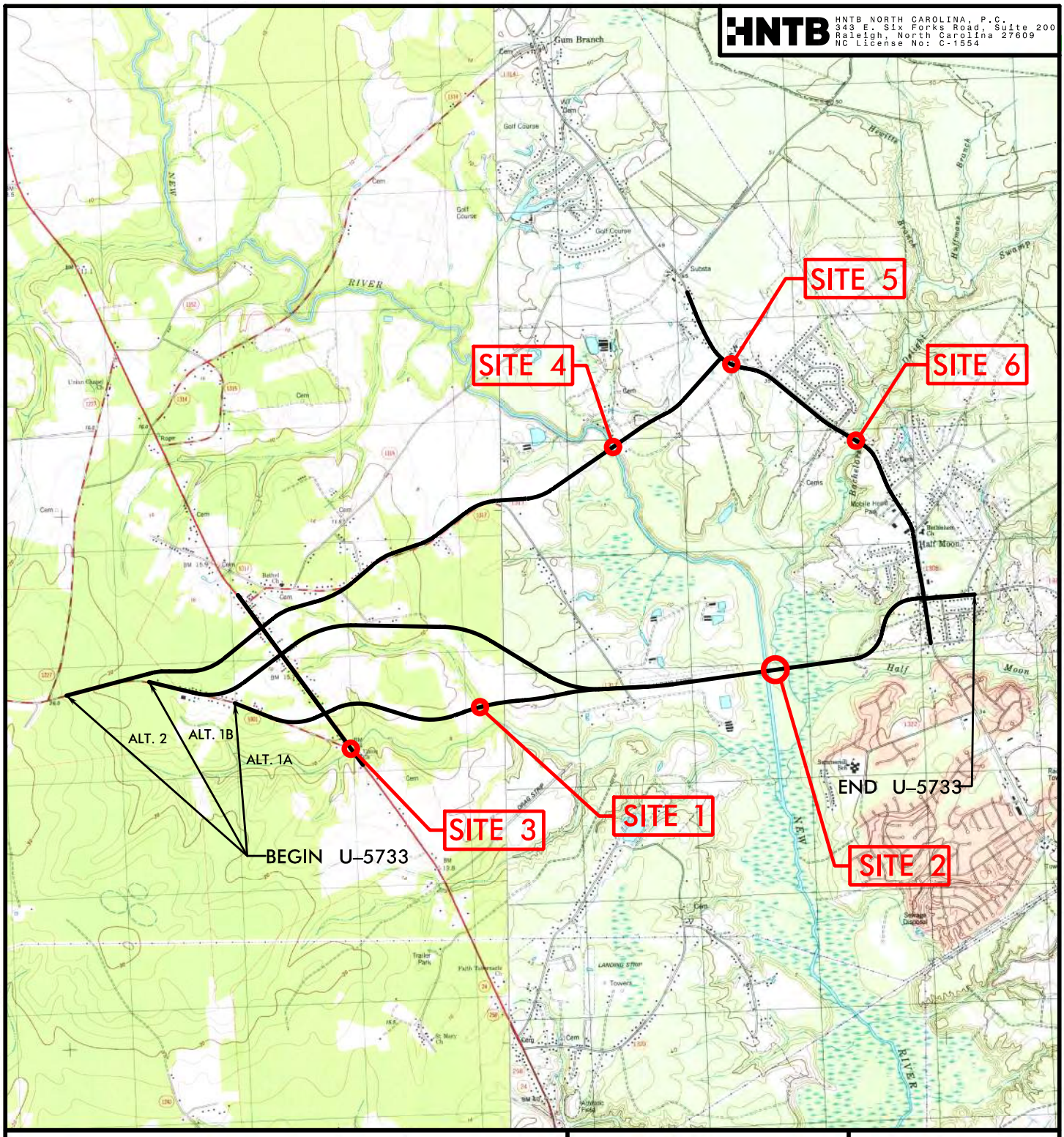
Raleigh, North Carolina 27609
NC License No: C-1554



QUAD MAP WITH SITE LOCATIONS

TIP NO. U–5733
NC 111 (CATHERINE LAKE RD) EXTENSION
FROM US 258 (RICHLANDS HWY)
TO SR 1308 (GUM BRANCH RD)
ONSLOW COUNTY

2000 0 2000 4000
SCALE:

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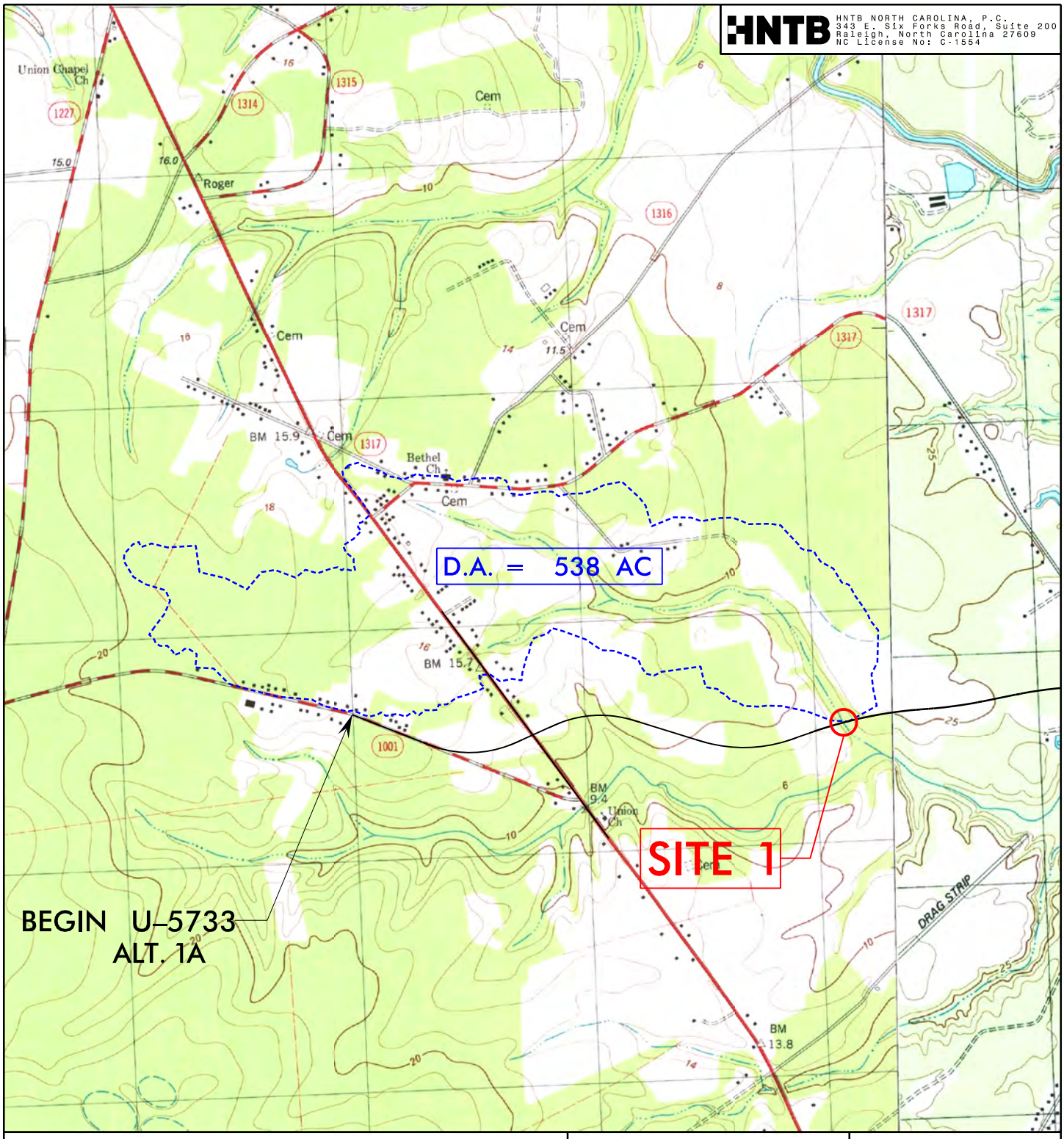
NC License No: C-1554



QUAD MAP – SITE 1

TIP NO. U-5733
NC 111 (CATHERINE LAKE RD) EXTENSION
FROM US 258 (RICHLANDS HWY)
TO SR 1308 (GUM BRANCH RD)
ONSLOW COUNTY

1000 0 1000 2000
SCALE:

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-5733	

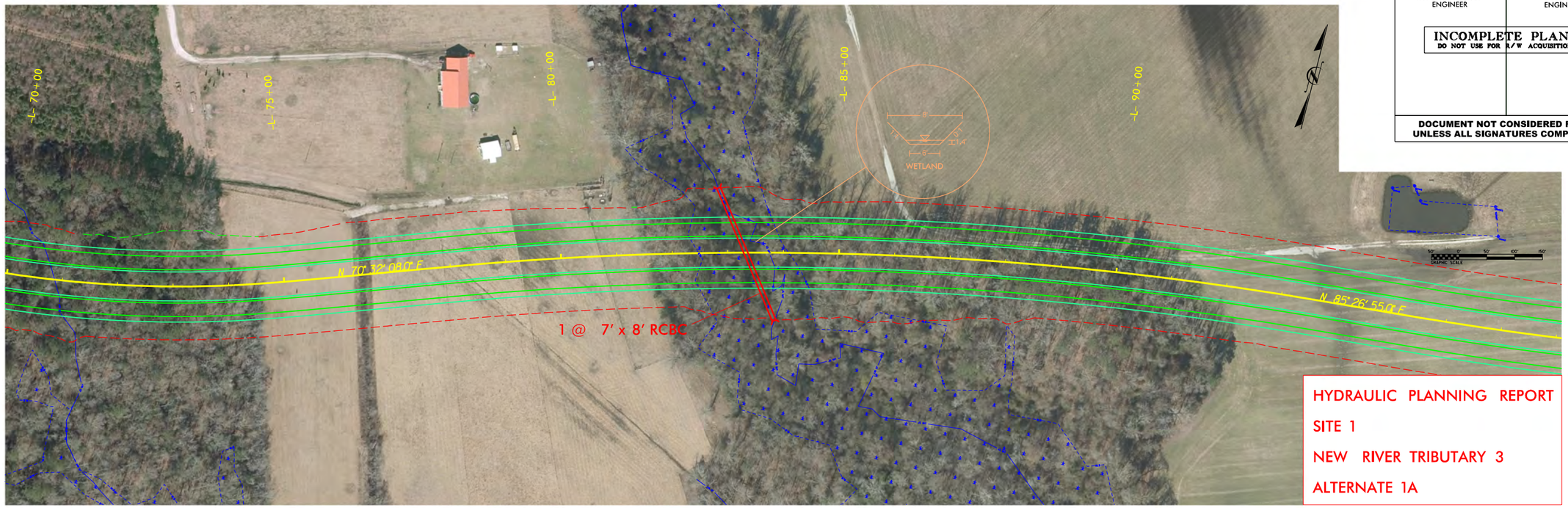
R/W SHEET NO.

ROADWAY DESIGN ENGINEER

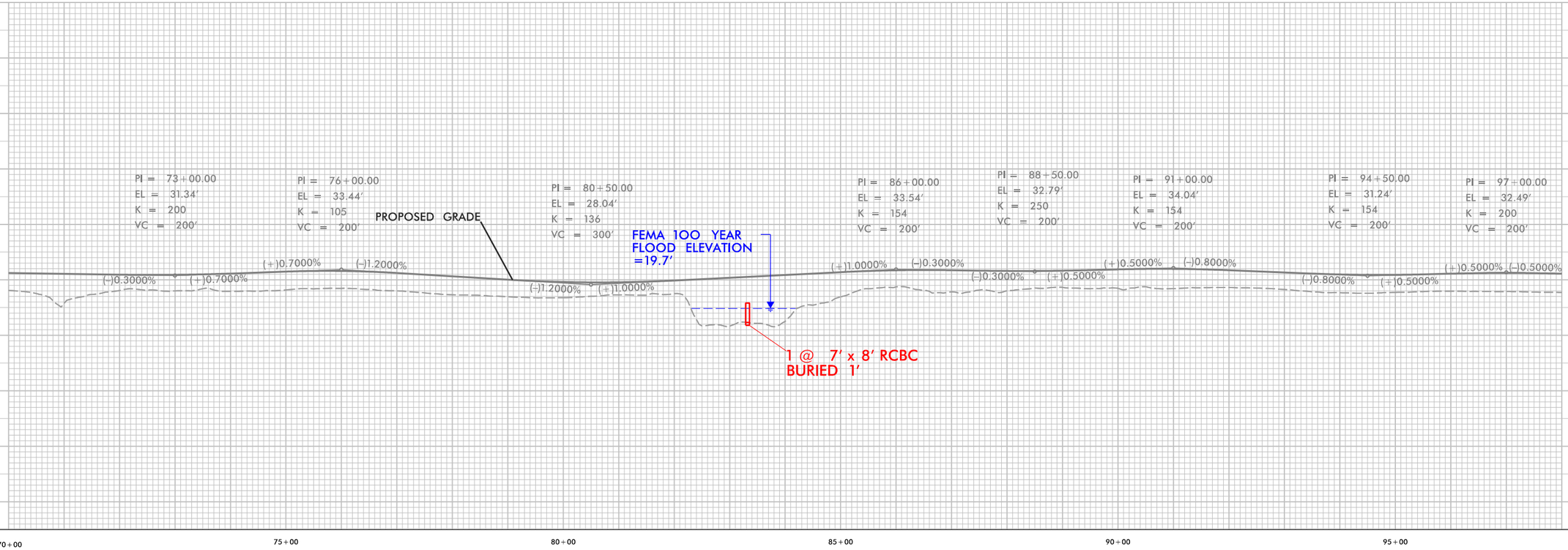
HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



HYDRAULIC PLANNING REPORT
SITE 1
NEW RIVER TRIBUTARY 3
ALTERNATE 1A



$$$$$$SYSTIME$$$$$$
$$$$$$DGN$$$$$$
$$$$$$USERNAME$$$$$$

Looking Upstream

Looking Downstream

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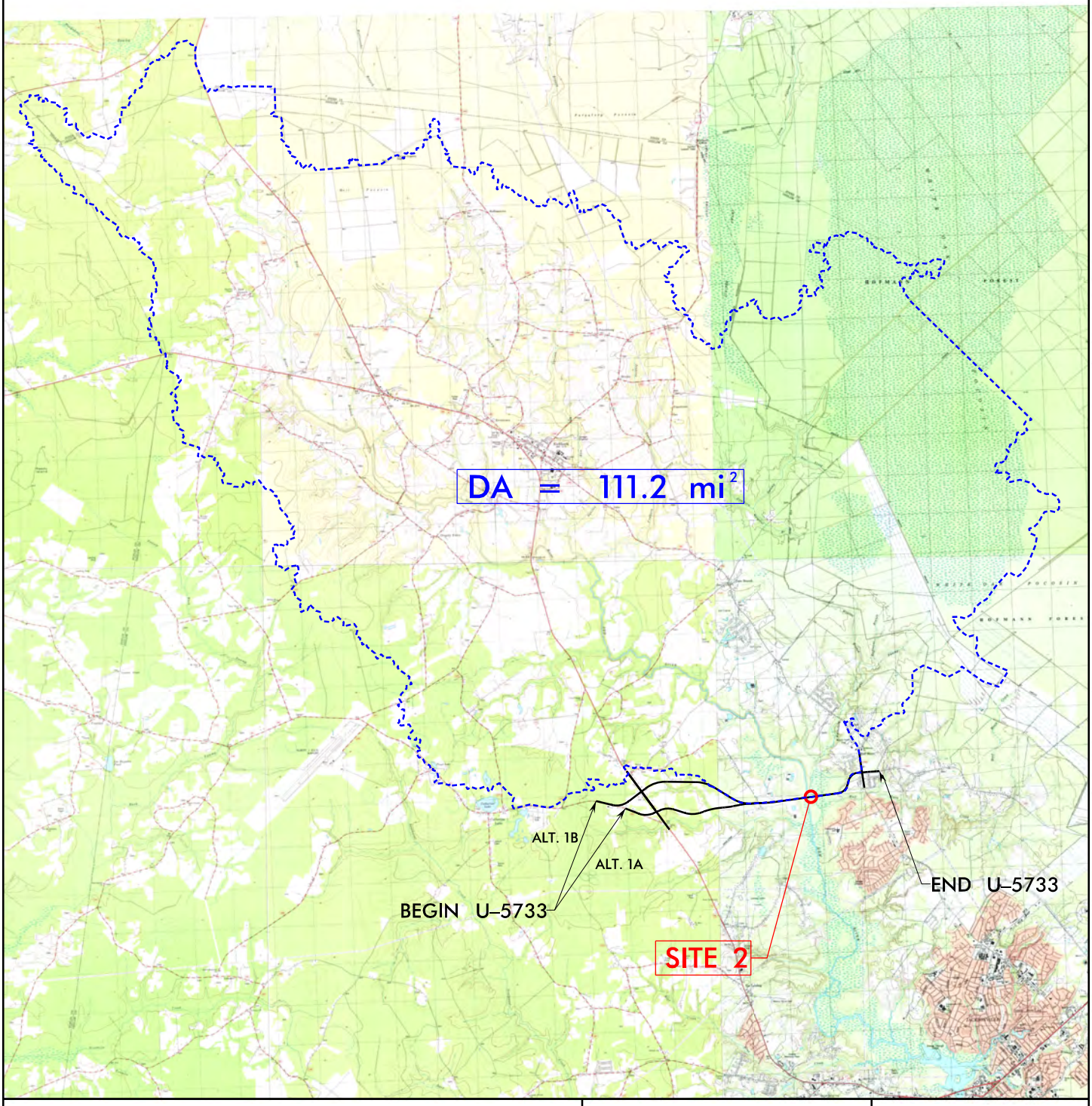
NC License No: C-1554



QUAD MAP – SITE 2

TIP NO. U–5733
NC 111 (CATHERINE LAKE RD) EXTENSION
FROM US 258 (RICHLANDS HWY)
TO SR 1308 (GUM BRANCH RD)
ONSLOW COUNTY

6000 0 6000 12000
SCALE:

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-5733	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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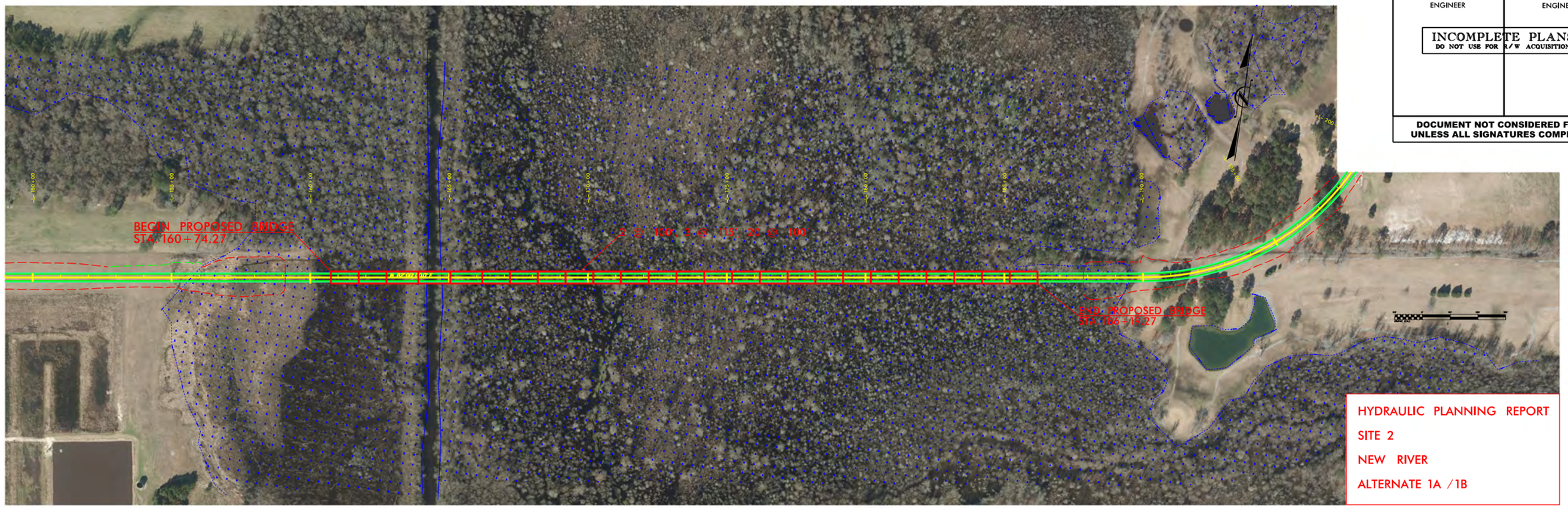
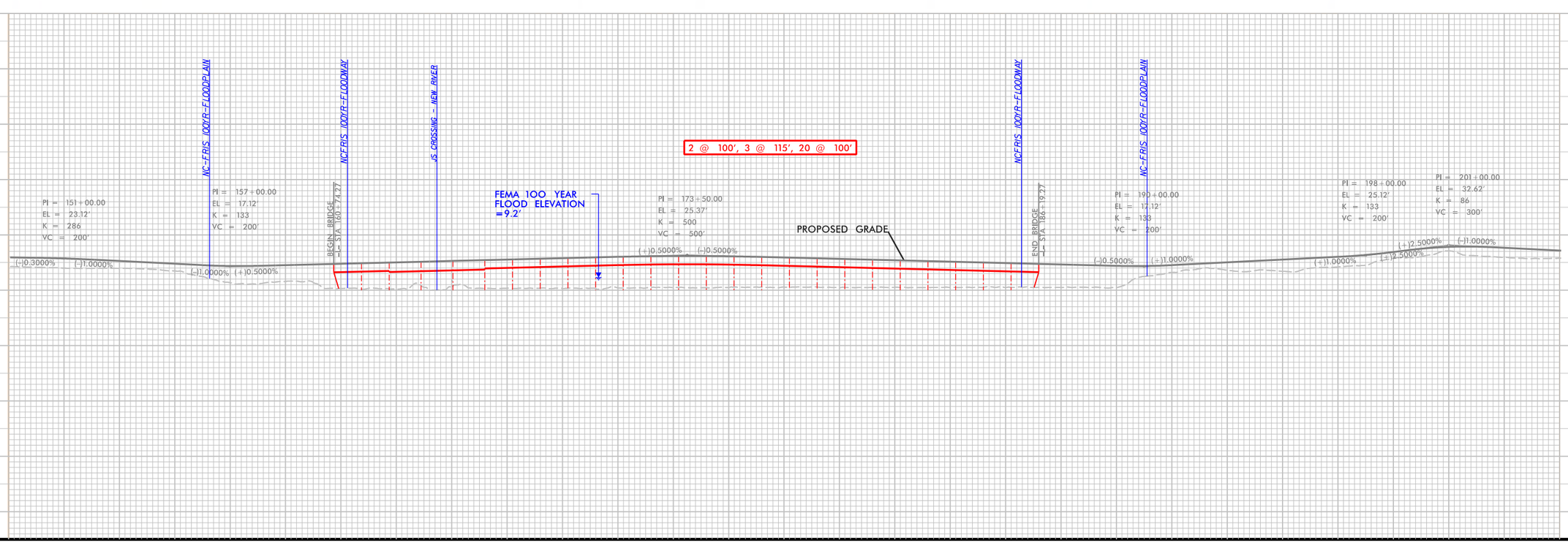
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



HYDRAULIC PLANNING REPORT
SITE 2
NEW RIVER
ALTERNATE 1A / 1B



$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DESIGN$$$$

Looking Downstream

Looking Upstream

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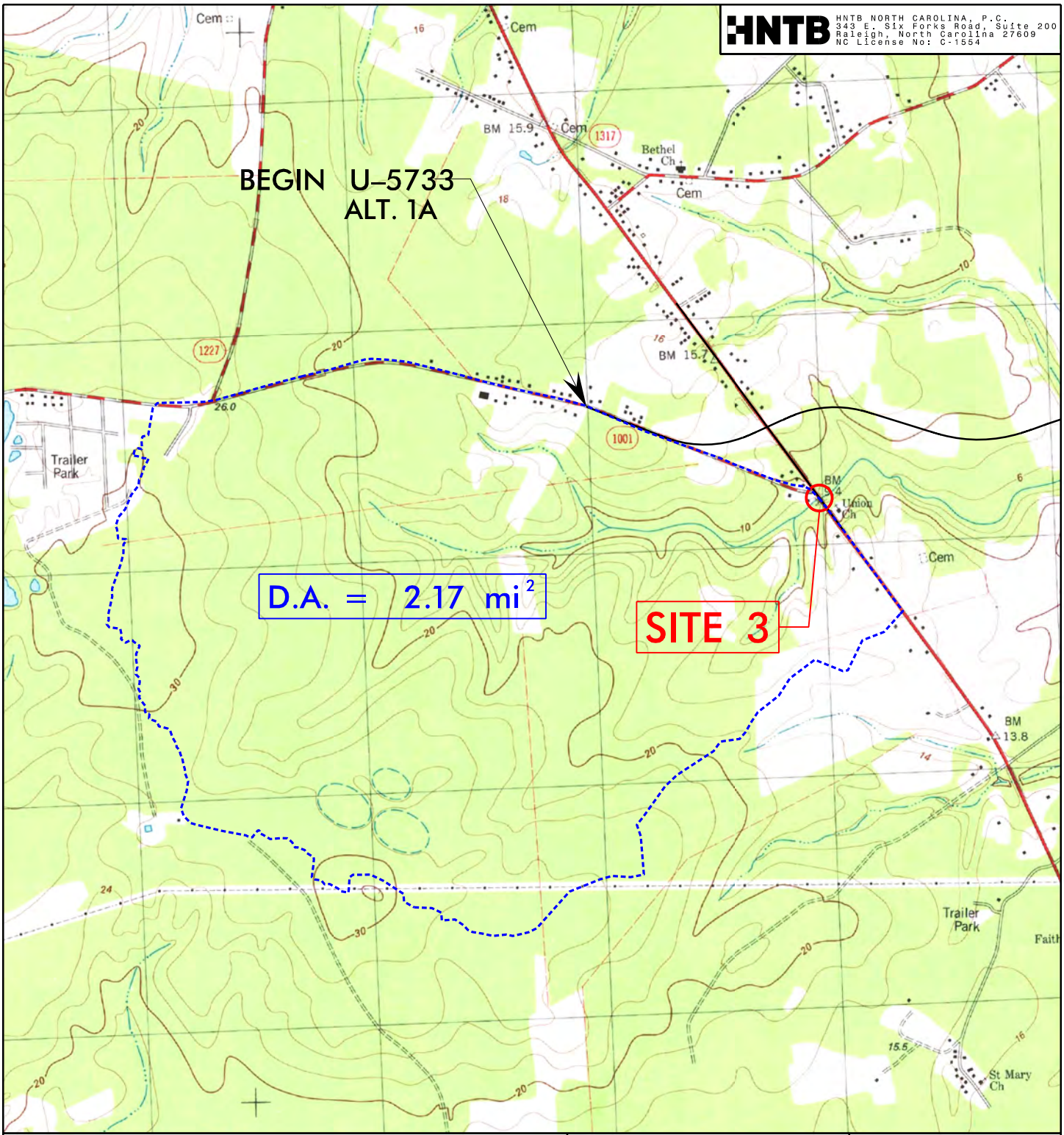
NC License No: C-1554



QUAD MAP – SITE 3

TIP NO. U–5733
NC 111 (CATHERINE LAKE RD) EXTENSION
FROM US 258 (RICHLANDS HWY)
TO SR 1308 (GUM BRANCH RD)
ONSLOW COUNTY

1000 0 1000 2000
SCALE:

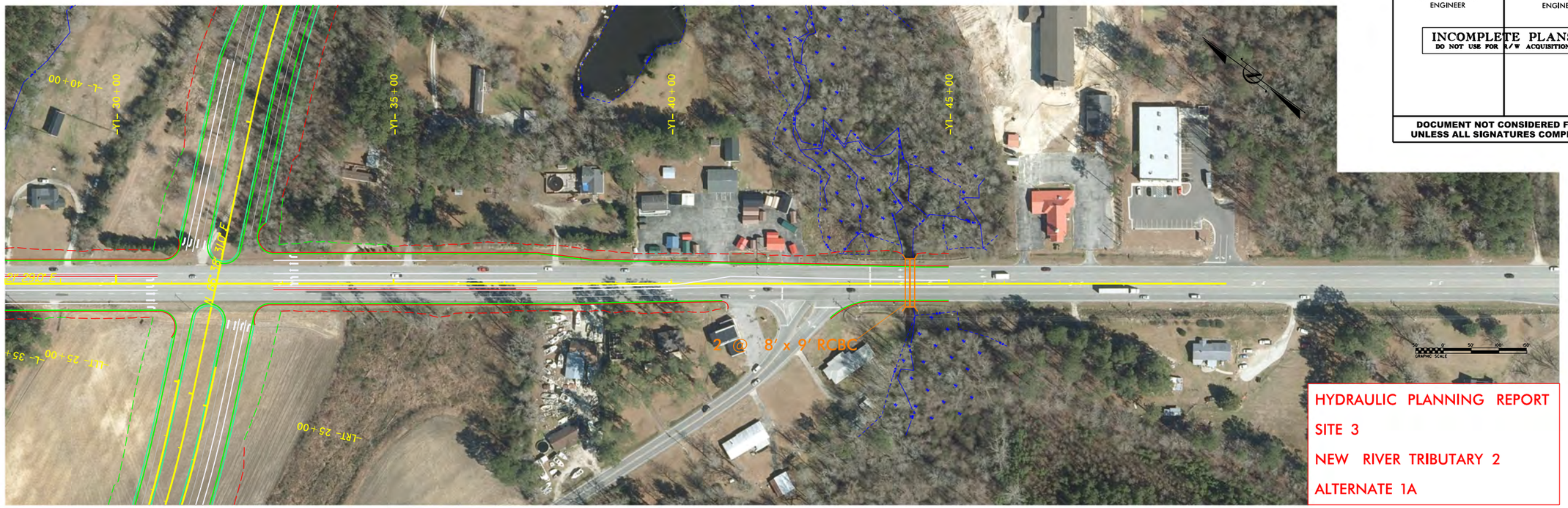
8/17/99

REVISIONS

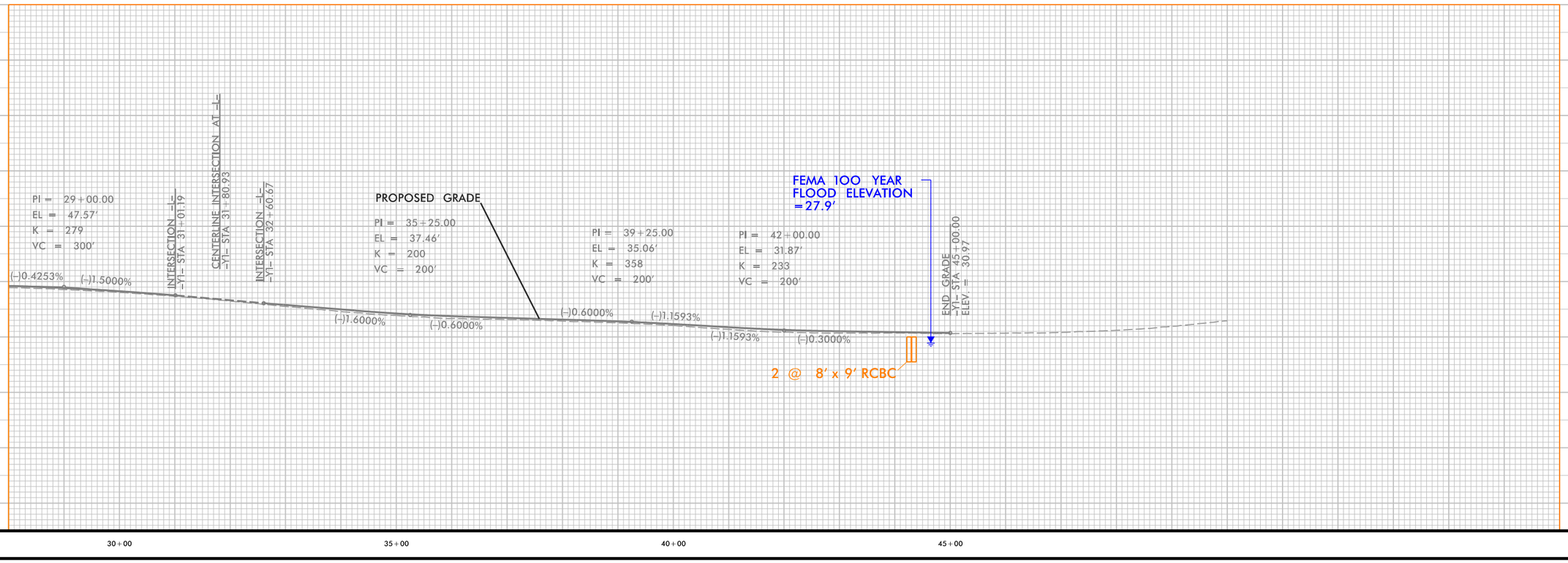
PROJECT REFERENCE NO.	SHEET NO.
U-5733	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



HYDRAULIC PLANNING REPORT
SITE 3
NEW RIVER TRIBUTARY 2
ALTERNATE 1A



$$$$SYSTIME$$$$
$$$$DESIGN$$$$
$$$$USERNAME$$$$

Looking Southeast along US 258 (Richlands Hwy.)
Upstream – Left / Downstream – Right

Looking Northwest along US 258 (Richlands Hwy.)
Downstream – Left / Upstream – Right

Upstream Face

Looking Upstream

Downstream Face

Looking Downstream

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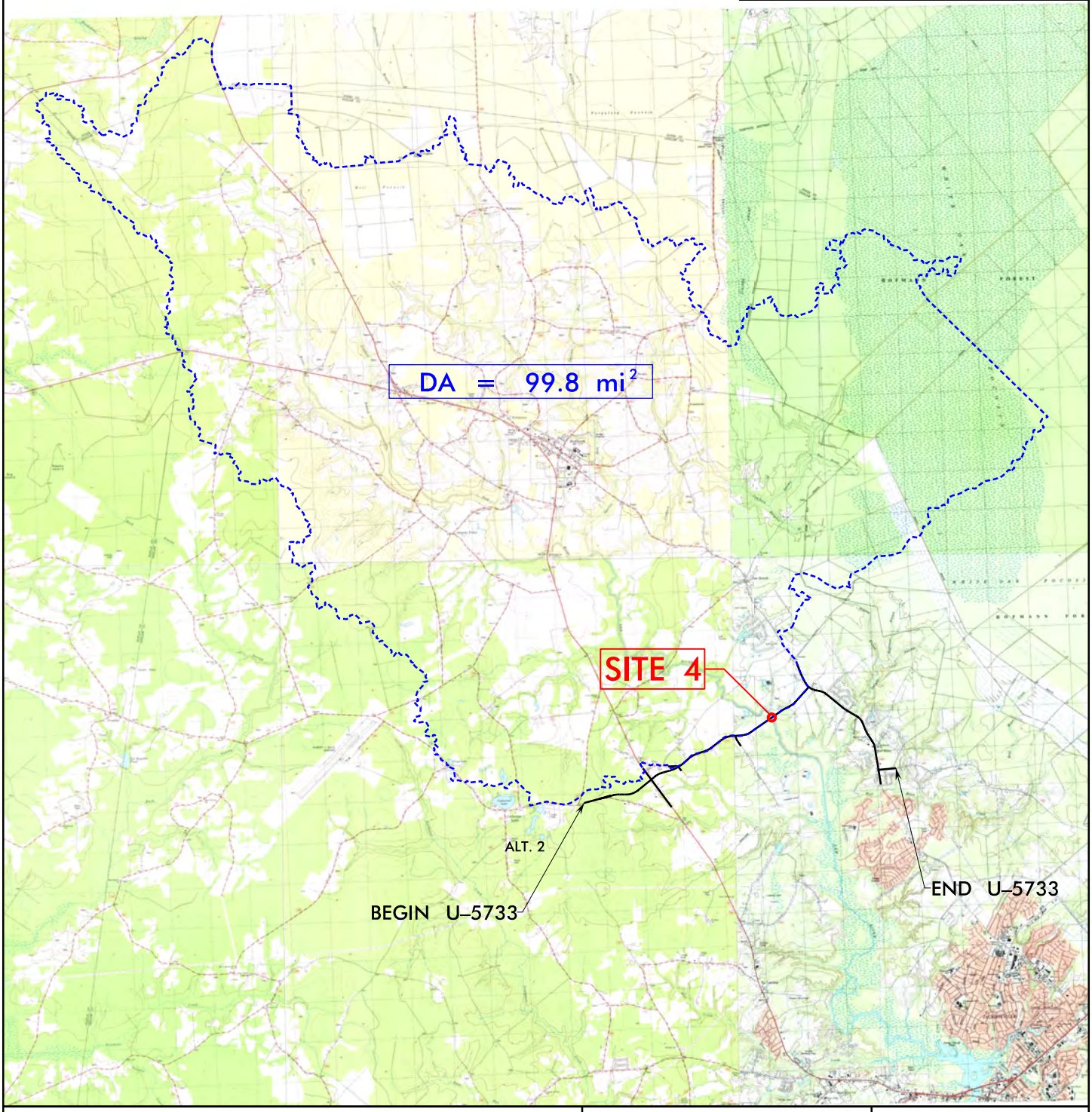
Raleigh, North Carolina 27609
NC License No: C-1554



QUAD MAP – SITE 4

TIP NO. U–5733
NC 111 (CATHERINE LAKE RD) EXTENSION
FROM US 258 (RICHLANDS HWY)
TO SR 1308 (GUM BRANCH RD)
ONSLOW COUNTY

6000 0 6000 12000
SCALE:

8/17/99

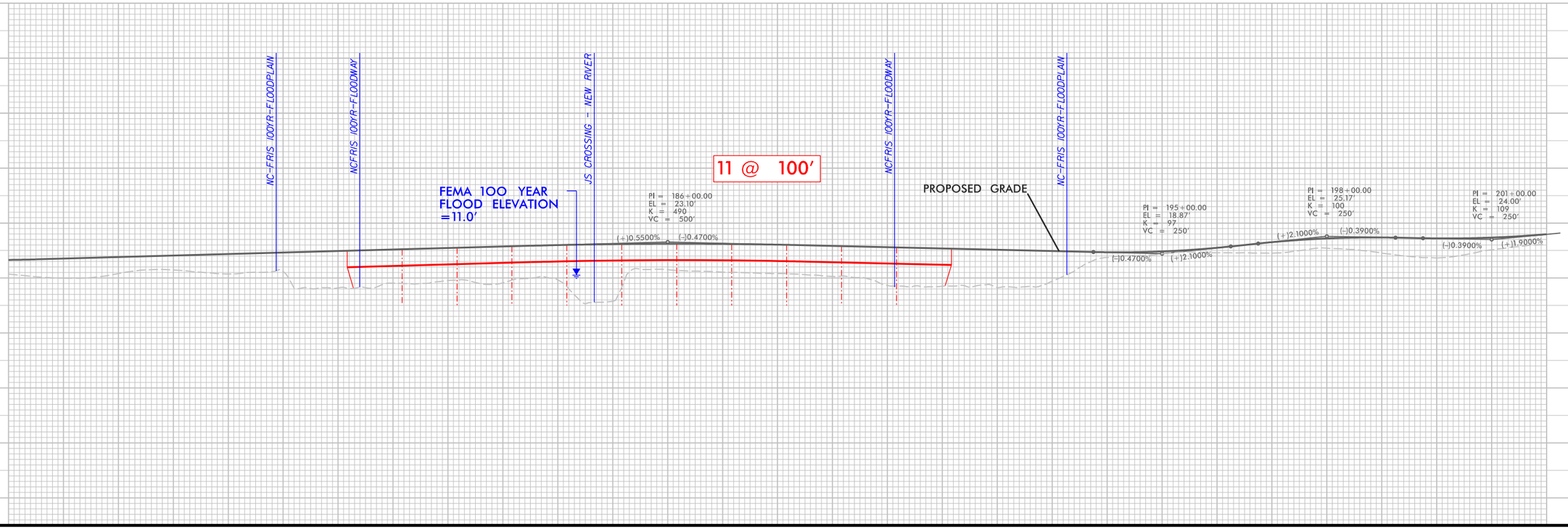
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-5733	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HYDRAULIC PLANNING REPORT
SITE 4
NEW RIVER
ALTERNATE 2



$$$$$$$$SYSTEM$$$$$$$$
$$$$$$$$SECTION$$$$$$$$
$$$$$$$$FRAME$$$$$$$$

Looking Downstream

Looking Upstream

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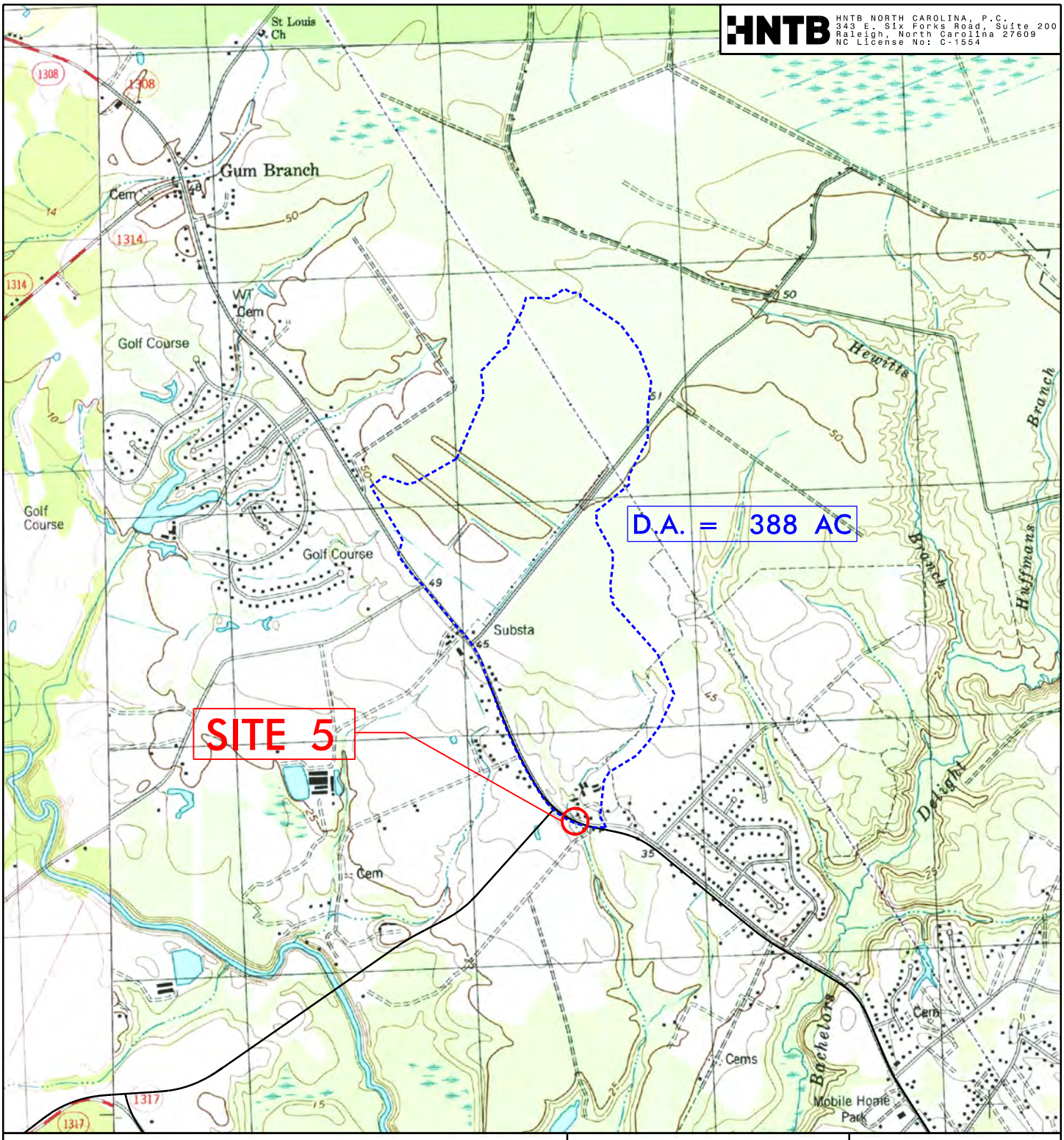
NC License No: C-1554



QUAD MAP – SITE 5

TIP NO. U-5733
NC 111 (CATHERINE LAKE RD) EXTENSION
FROM US 258 (RICHLANDS HWY)
TO SR 1308 (GUM BRANCH RD)
ONSLOW COUNTY

1000 0 1000 2000
SCALE:

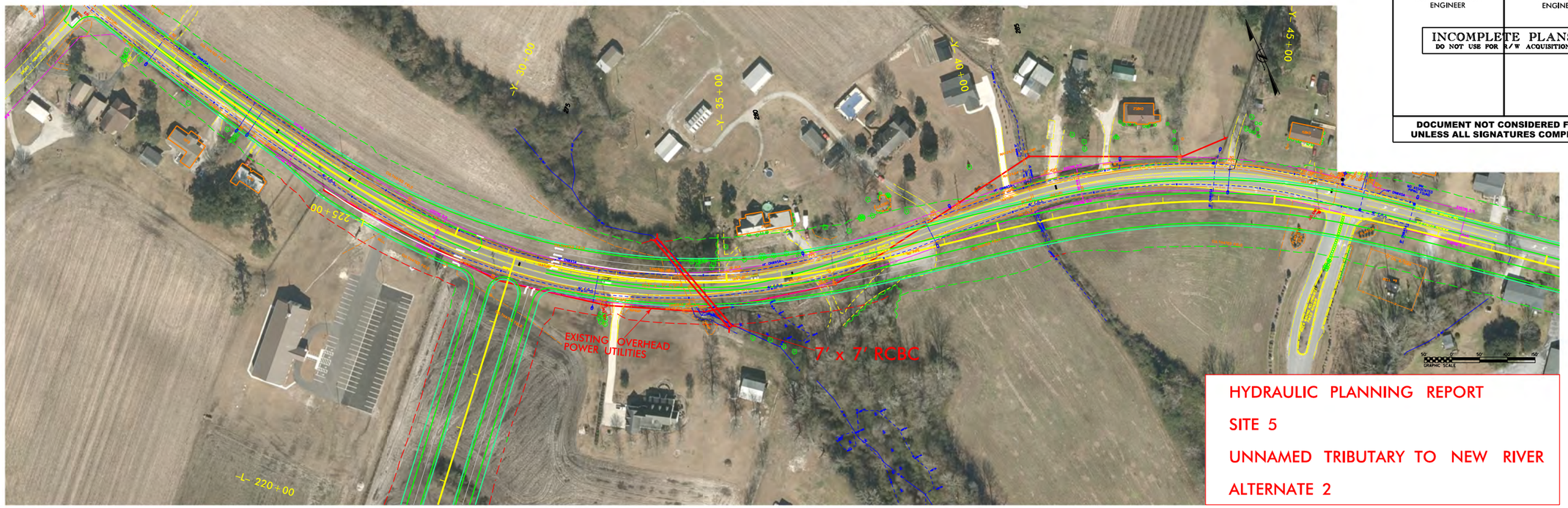
PROJECT REFERENCE NO.	SHEET NO.
U-5733	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99

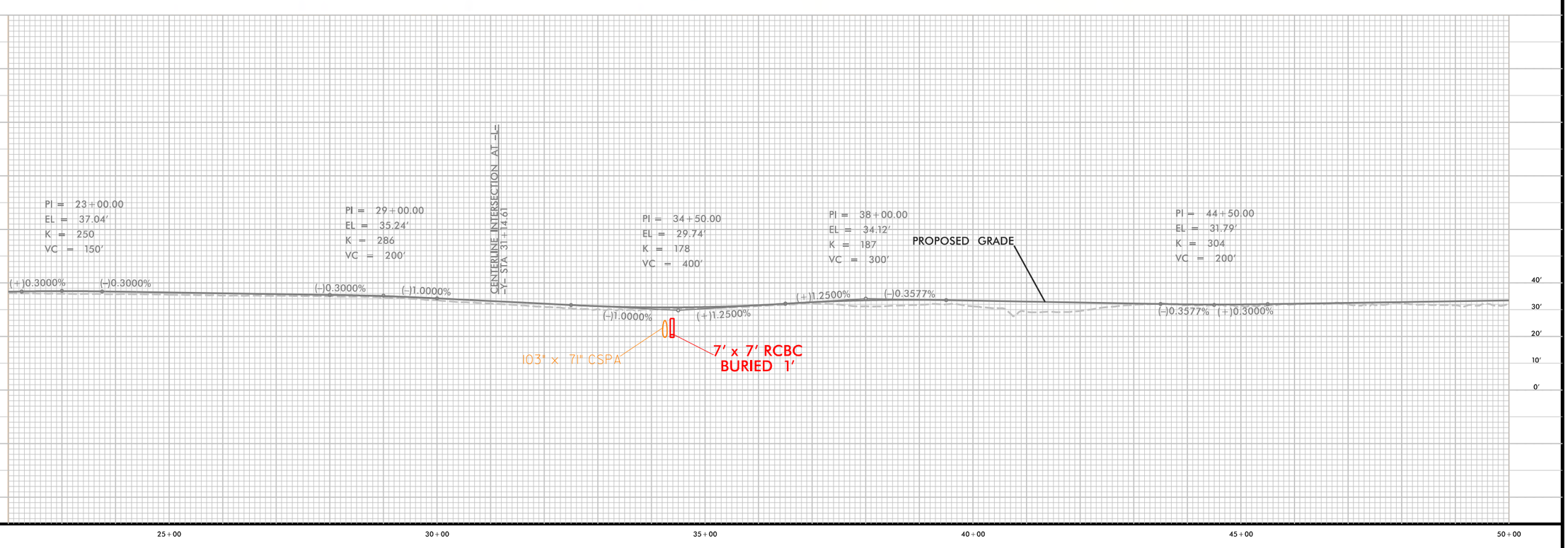


HYDRAULIC PLANNING REPORT

SITE 5

UNNAMED TRIBUTARY TO NEW RIVER

ALTERNATE 2



$$SYSTIME$$
$$USERNAME$$

Looking Northwest along SR 1308 (Gum Branch Rd.)
Upstream – Left / Downstream – Right

Looking Southeast along SR 1308 (Gum Branch Rd.)
Downstream – Left / Upstream – Right

Upstream Face

Looking Upstream

Downstream Face

Looking Downstream

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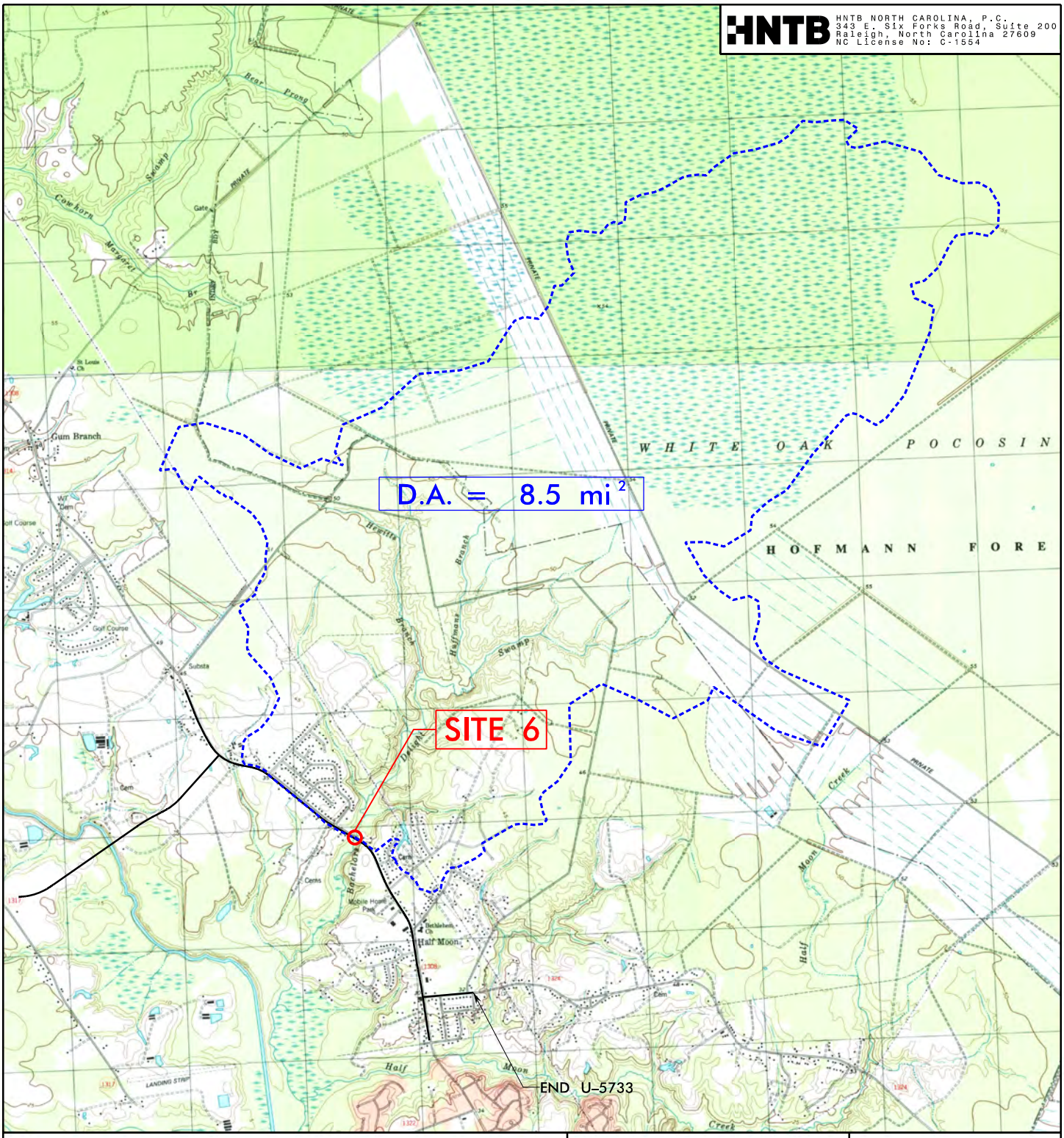

QUAD MAP – SITE 6

TIP NO. U-5733
NC 111 (CATHERINE LAKE RD) EXTENSION
FROM US 258 (RICHLANDS HWY)
TO SR 1308 (GUM BRANCH RD)
ONSLOW COUNTY

2000 0 2000 4000
SCALE:

PROJECT REFERENCE NO.	SHEET NO.
U-5733	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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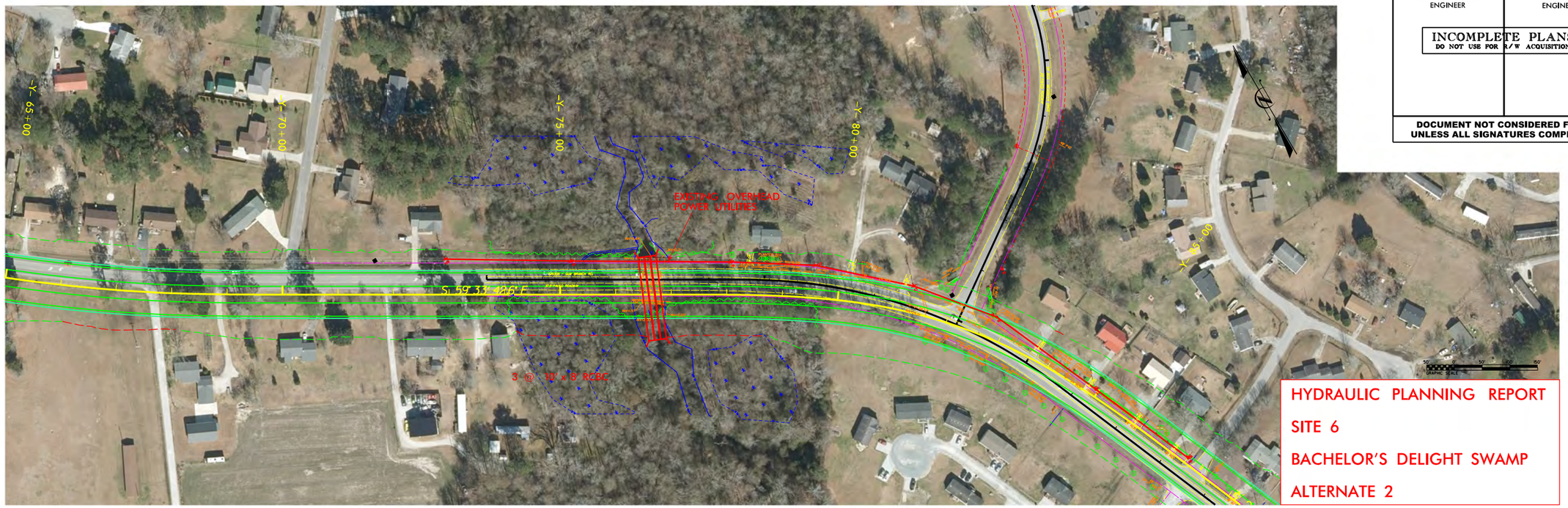
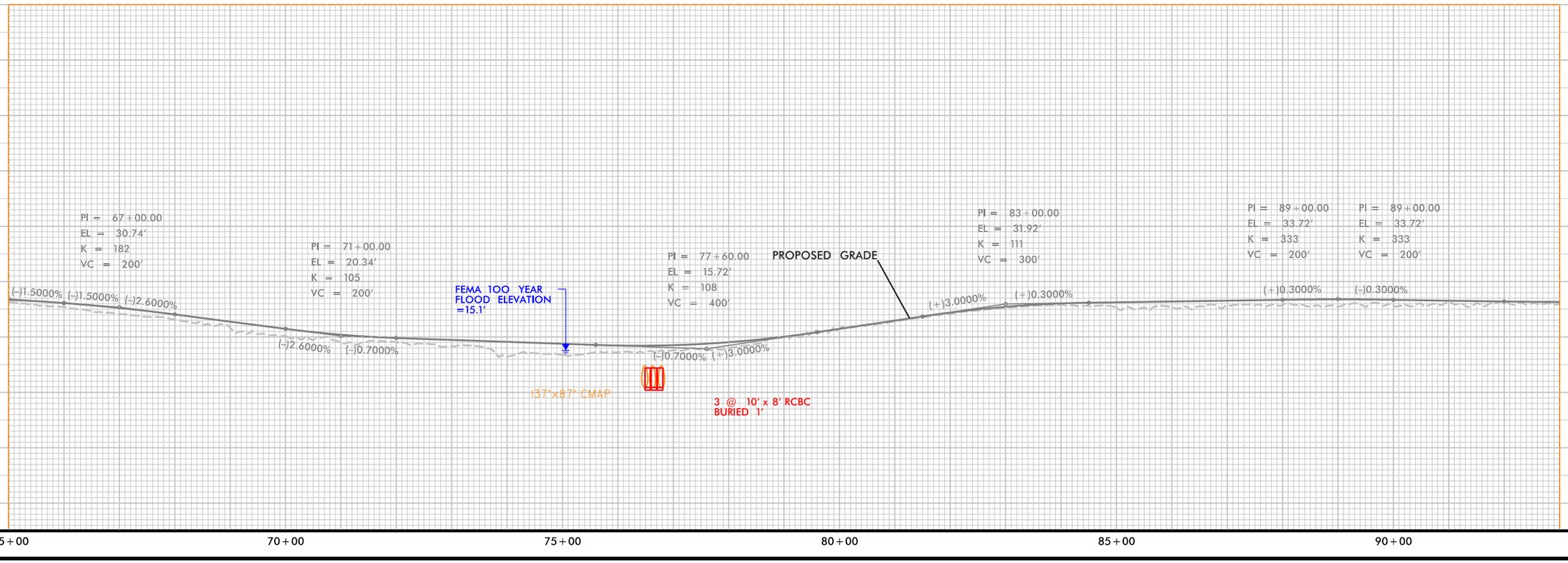
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

8/17/99

REVISIONS



HYDRAULIC PLANNING REPORT
SITE 6
BACHELOR'S DELIGHT SWAMP
ALTERNATE 2



$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$USERNAME$$$$

Upstream Face

Looking Upstream

Downstream Face

Looking Downstream