

## North Carolina Department of Transportation NEPA/SEPA Consultation Form

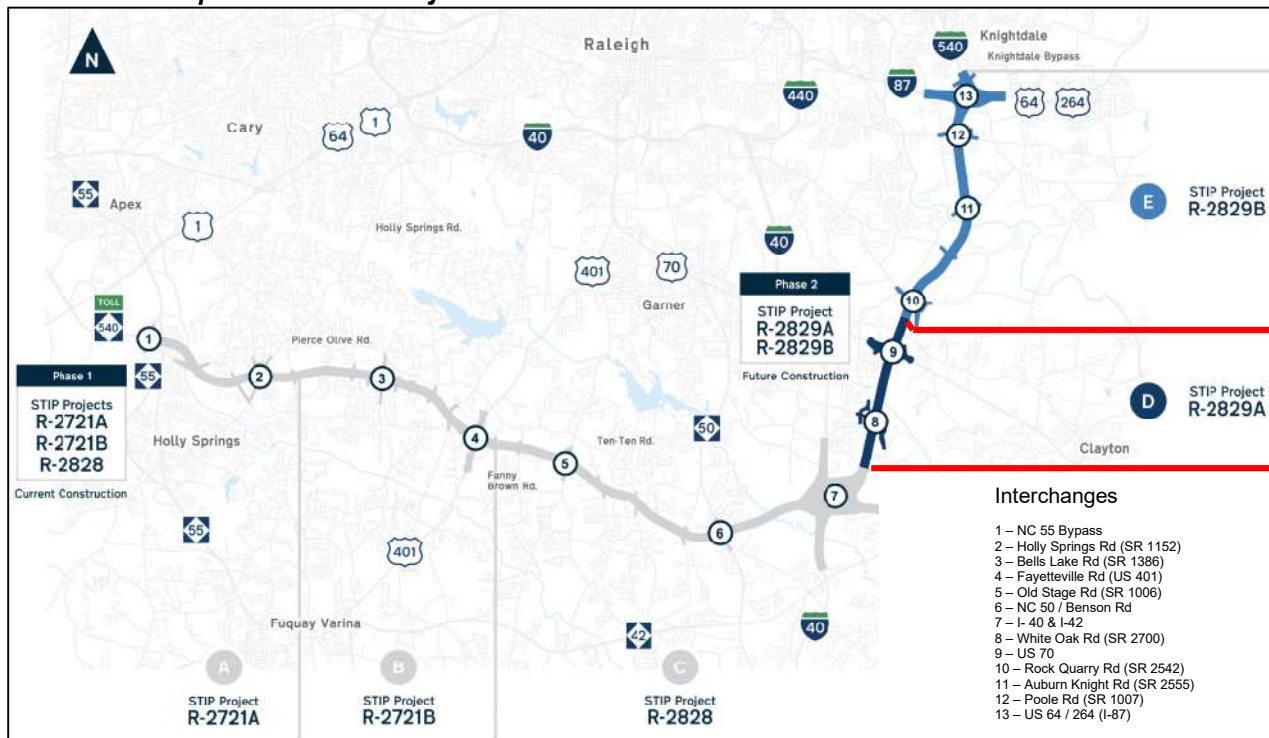
STIP Project No.	<b>R-2829A</b>
WBS Element	<b>35517.3.TA1, 35517.3.TAGV1</b>
Federal Aid Project No.	<b>0540047</b>

**A. Project Description, Location, and Purpose:**

This Consultation is prepared for North Carolina Department of Transportation (NCDOT) State Transportation Improvement Program (STIP) Project **R-2829A**, New Route (Future NC 540), in Wake and Johnston counties. (See Figure 1.) The project is a portion of the Complete 540/ Triangle Expressway Southeast Extension Project (Exhibit 1), which is programmed as five projects in the 2024-2033 STIP, to be completed in two phases through Design-Build contracts:

- R-2721A – from NC 55 Bypass to east of Holly Springs Road (Phase 1, under construction)
- R-2721B – from east of Holly Springs Road to east of US 401 (Phase 1, under construction)
- R-2828 – from east of US 401 to I-40 (Phase 1, under construction)
- **R-2829A – from I-40 to south of Rock Quarry Road (Phase 2), approximately 4.16 miles**
- R-2829B – from south of Rock Quarry Road to I-87/US 64/US 264 (Phase 2)

**Exhibit 1: Complete 540 STIP Projects**



The Complete 540 project proposes to complete the 540 Outer Loop around the greater Raleigh area, linking the towns of Apex, Cary, Holly Springs, Fuquay-Varina, Garner, Knightdale and Raleigh in Wake County, as well as Clayton in Johnston County. The

28.8-mile, new location roadway would extend from the NC 55 Bypass in Apex to I-87/US 64/US 264 in Knightdale, located primarily in Wake County (NCDOT Division 5), with a small section in Johnston County (NCDOT Division 4). Complete 540 is proposed as a six-lane, controlled-access toll facility with a 70-foot wide median and a posted speed limit of 70 mph. Tolls will be collected by an electronic toll collection system. Within the **R-2829A** project limits, the roadway would interchange with White Oak Road (SR 2700) and US 70.

The project was let on October 17, 2023 and construction started in the I-40 interchange area, where **R-2829A** ties to R-2828. Construction of the **R-2829A** mainline is expected to start in late 2024 upon receipt of permits.

Purpose and Need

The Complete 540 project is expected to address the following needs:

- Need #1 – Mobility for the Movement of People and Goods
- Need #2 – Limited Transportation Options to Provide Sufficient Capacity for Efficient, High Speed Local and Through Travel between Rapidly-Growing Communities South and East of Raleigh and Major Employment and Activity Centers along the NC 540 Outer Loop and Along Roadways Connecting to the Outer Loop, such I-40, NC 147, and US 1/64
- Need #3 – Existing and Projected Poor Levels of Service (LOS)

Based on the identified transportation needs, the purpose of the proposed action is to improve transportation mobility for trips within, or traveling through, the project study area during the peak travel period. A second purpose of the proposed action is to reduce forecast congestion on the existing roadway network within the project study area.

Based on state and local plans, a desirable outcome of the project will be to improve system linkage for the roadway network in the project study area. As included in state and local plans, the proposed action would be the final link in the 540 Outer Loop envisioned for more than 40 years, completing a controlled-access, high-speed circumferential facility around the outskirts of Raleigh. The facility would benefit not only the local commuters living south and east of Raleigh, but also longer distance motorists and trucks that are passing through the Triangle Region to and from points south and east.

B. Consultation Phase: (Check one)

- Right-of-Way
- Construction
- Other

C. NEPA/SEPA Class of Action Initially Approved as: (Check one)

- FHWA Class I (EIS/ROD) (R-2721, R-2828, R-2829) FHWA Draft EIS – November 2015  
FHWA Final EIS – December 2017  
FHWA ROD – June 2018

Additional Notes: A Consultation was completed for R-2721 and R-2828 in December 2019. A Consultation was completed for R-2829A and R-2829B in May 2023 and noted the proposed action and environmental consequences remain the same as documented in the June 2018 Record of Decision (ROD).

#### D. Changes in Proposed Action & Environmental Consequences:

##### **Changes in Proposed Action**

The project has advanced to final design and has been refined since the June 2018 Record of Decision and the May 2023 consultation (preliminary design). Substantial changes to the preliminary design are discussed below.

- I-40 Interchange – A turbine interchange design is proposed for this freeway-to-freeway interchange (R-2828). At the southern terminus of R-2829A, the preliminary design proposed four bridges to carry the mainline and ramps over Bushy Branch. The final design eliminates two of these bridges by tying Ramp E (I-40 westbound) into the mainline south of Bushy Branch and by beginning the I-40 flyover south of the proposed Bushy Branch southbound bridge. Condensing the Bushy Branch wetland crossing is estimated to reduce overall wetland fill by 0.12 acres.
- Alonzo Road – The culvert at stream SKR proposed by the preliminary design was increased to a two barrel 12' x 8' culvert (RCBC) in the final design to account for future development on upstream parcels and enhance resiliency to flooding. A cul-de-sac was added to the end of Alonzo Road and a t-type turnaround was added to the end of nearby Vitex Street.
- White Oak Road (SR 2700) vicinity – On the south side of White Oak Road, Tiffany Creek Drive was shifted to the east to avoid a community well and protection area and Sand Castle Drive was extended to connect with this realigned road. On the north side of White Oak Road, the preliminary design proposed a new location alignment of Raynor Road (SR 2555) from White Oak Road to south of Twain Drive. The final design shifts the proposed realignment of Raynor Road to avoid the Mount Herman Christian Church property, eliminating potential impacts to the church's septic repair area. The realigned roadway would intersect White Oak Road at realigned Tiffany Creek Drive, creating a four-legged signalized intersection. Existing Raynor Road would connect to realigned Raynor Road via a roundabout rather than the t-intersection design previously proposed. The existing section of Raynor Road would terminate in a cul-de-sac. In addition, on the east side of the mainline, a proposed service road was shifted closer to the mainline to reduce right of way acquisition and stream impacts.
- White Oak Creek bridge – The mainline bridge over White Oak Creek was extended 35 feet to accommodate the future White Oak Creek Greenway on the south side of the creek, changing the length from 320 feet to 355 feet. However, the Design-Build team was able to reduce the overall length of the bridge to 317 feet based on the final hydraulic design, while still accommodating the future greenway.
- US 70 Interchange – The NCDOT plans to develop the US 70 corridor into a reduced conflict corridor that eliminates most left-turns. The interchange proposed in the preliminary

design was revised from a partial cloverleaf to a tight diamond with reduced conflict intersections (RCI). The mainline bridges over US 70 were extended to allow for the reduced conflict design. The revised interchange design is estimated to reduce wetland impacts by 0.21 acres. Several proposed service roads were extended, and several service roads were added on the north side of US 70. Expressway gutter was incorporated along the Camping World property's US 70 frontage to reduce right of way impacts.

- East Garner Road (SR 1004) – The preliminary design proposed two separate mainline bridges over the NCR/Norfolk Southern Railroad and over East Garner Road, which also carried the US 70 ramps. The proximity of the two bridges presented constructability issues and the abutment walls on East Garner Road would be over 50 feet tall. The final design proposes to realign East Garner Road south towards the railroad tracks to eliminate separate mainline bridges and reduce the abutment height at relocated East Garner Road. A separate ramp structure was added on the west side of the mainline. Sections of East Garner Road would be retained on each side of the mainline to provide access to adjacent properties. The East Garner Road realignment would result in two stream crossings, requiring a major drainage structure (10'x9' reinforced concrete box culvert) at one of the crossings.

## **Environmental Consequences**

### **Expansion of Study Area**

Several of the design refinements resulted in minor expansions of the **R-2829A** project study area. The study area expansions are shown on Figure 2 and described below.

- White Oak Road area - The study area was extended along Raynor Road and west of Raynor Road to accommodate the new alignment of the roadway. These areas include disturbed areas along the existing roadway, a portion of the Mount Herman Christian Church and cemetery property (8925 White Oak Road), a wooded area of a vacant property (potential forestry use), and portions of residential properties (one structure - 5908 White Oak Road). Portions of the church structure and the residential property are in the original study area. The study area was also expanded south of White Oak Road to include a pond along the mainline corridor. (Figure 2-1.)
- North side of US 70 – The study area was expanded to accommodate service roads east and west of the mainline. The expanded areas include portions of an existing parking lot and an unimproved commercial driveway, as well as a portion of the 70 East RV and Mobile Home Park. (Figure 2-2.)
- East Garner Road – The study area was extended along East Garner Road to accommodate the roadway's realignment to the south at the project mainline. The expanded areas are primarily wooded and include a house on the south side of the road (2632 E. Garner Road). (Figure 2-3.)

Additional field surveys and coordination were conducted to ensure design modifications, including those in the expanded study areas, would not result in substantial changes to impacts described in previous environmental documents.

Natural Environment

Natural Resources Technical Report addenda for the expanded study areas were completed in April 2023, July 2023 (Michaux’s sumac survey) and September 2024. The April 2023 addendum and the July 2023 Michaux’s sumac survey covered expanded study areas for **R-2829A** and R-2829B, while the September 2024 addendum addressed expanded study areas for **R-2829A**.

Protected Species

Protected species surveys were conducted for the study area expansions and documented in the NRTR addenda. Based on review of the US Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) on September 1, 2024, the list of federally protected species for the **R-2829A** study area has changed since completion of the ROD. Four species have been added/uplisted: tricolored bat, Atlantic pigtoe, Neuse River waterdog, and green floater. Four species listed in the ROD are not applicable to the **R-2829A** study area: rough-leaved loosestrife, Cape Fear shiner, Tar River spiny mussel, and Atlantic Sturgeon under purview of the National Marine Fisheries Service.

FHWA and NCDOT updated the project’s 2017 Biological Assessment (BA) due to the proposed listing of the Atlantic pigtoe, Neuse River waterdog, and Carolina madtom, along with proposed Critical Habitat for the Atlantic pigtoe. After the BA was finalized in July 2019, the USFWS issued a Biological Opinion (BO)/Conference Opinion (CO) Revised in October 2019 which addressed the Complete 540/Triangle Expressway Southeast Extension Project (R-2721, R-2828, and R-2829). A summary of the findings relevant to **R-2829A** is provided in Table 1.

**Table 1. R-2829A ESA federally protected species (IPaC: September 25, 2024)**

Scientific Name	Common Name	Federal Status	Habitat Present	Biological Conclusion
<i>Perimyotis subflavus</i>	tricolored bat	PE	Yes	MA-LAA
<i>Picoides borealis</i>	red-cockaded woodpecker	E	Yes	No Effect
<i>Necturus lewisi</i>	Neuse River waterdog	T	Yes	MA-NLAA
<i>Fusconaia masoni</i>	Atlantic pigtoe	T	Yes	MA-LAA
<i>Alasmidonta heterodon</i>	dwarf wedgemussel	E	Yes	MA-LAA
<i>Lasmigona subviridis</i>	green floater	PT	Yes	MA-LAA
<i>Elliptio lanceolata</i>	yellow lance	T	Yes	MA-LAA
<i>Rhus michauxii</i>	Michaux's sumac	E	Yes	MA-NLAA

IPaC - Information for Planning and Consultation

E - Endangered; P- Proposed; T - Threatened

MA-LAA - May Affect, Likely to Adversely Affect; MA-NLAA - May Affect, Not Likely to Adversely Affect

Tricolored bat

The USFWS has issued a programmatic conference opinion (PCO) in conjunction with the Federal Highway Administration (FHWA), the USACE, and NCDOT for the tricolored bat (TCB) (*Perimyotis subflavus*) in eastern North Carolina. The PCO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. NCDOT, FHWA, and USACE have agreed to three conservation measures (listed in the PCO) which will avoid/minimize take to TCBs. These conservation measures apply to all counties in Divisions 1-8. The

programmatic determination for TCB for the NCDOT program is May Affect, Likely to Adversely Affect. Once the TCB is officially listed, the PCO will become the programmatic biological opinion (PBO) by formal request from FHWA and USACE. The PBO will ensure compliance with Section 7 of the Endangered Species Act for approximately five years (effective through December 31, 2028) for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Wake and Johnston Counties, where R-2829A is located.

Neuse River waterdog (Critical Habitat), Atlantic pigtoe (Critical Habitat), dwarf wedgemussel, green floater (Critical Habitat), yellow lance, and Michaux's sumac  
 Section 7 concurrence has been addressed for these species in the 2019 BO/CO Revised. A 2024 Conference Opinion request is currently in the review process with the USFWS for the proposed listing of the green floater.

Northern long-eared bat

The USFWS has issued a programmatic biological opinion (PBO) in conjunction with the FHWA, the USACE, and NCDOT for the northern long-eared bat (NLEB) (*Myotis septentrionalis*) in eastern North Carolina. The PBO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. Although the PBO covers Divisions 1-8, the USFWS only considers NLEBs to be known or potentially found in 30 counties within Divisions 1-8. NCDOT, FHWA, and USACE have agreed to two conservation measures which will avoid/minimize mortality of NLEBs. These conservation measures only apply to the 30 current known/potential counties shown on Figure 2 of the PBO at this time. The programmatic determination for NLEB for the NCDOT program is May Affect, Likely to Adversely Affect. The PBO will ensure compliance with Section 7 of the Endangered Species Act for ten years (effective through December 31, 2030) for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Wake and Johnston Counties, where R-2829A is located.

Bald Eagle and Golden Eagle Protection Act

The current proposed design will continue to be in compliance with the protections established in the Bald Eagle and Golden Eagle Protection Act of 1962 and the Bald Eagle will not be affected.

Water Resources

Water resources in or within the vicinity of the study areas are part of the Neuse River Basin (USGS Hydrologic Unit Code [HUC] 03020201). Four streams and one pond (PAD) were identified in the expanded study areas. Streams are listed in Table 2. (See Figure 2-3.)

**Table 2. Streams located in the Expanded Study Areas**

Map ID	NCDWR Index Number	Best Usage Classification	Bank Height (ft)	Bankfull width (ft)	Depth (in)
SAAL	27-43-11	C;NSW	1-3	3-6	3-8
SAAK	27-43-11	C;NSW	1-2	3-6	1-6
SGA*	27-43-11	C;NSW	5	12-15	2-8
SGD*	27-43-11	C;NSW	3-4	8	2-10

\*Extensions of previously delineated features (2014 NRTR)

There are no designated High Quality Waters (HQW), Water Supply Watersheds (WS-I or II), or Outstanding Resource Waters (ORW) present in, or located within 1.0 mile downstream of the expanded study areas.

The North Carolina 2022 Final 303(d) list of impaired waters does not identify any impaired waters present in, or located within 1.0 mile downstream, of the expanded study areas. The N.C. Wildlife Resources Commission has not identified any streams in the expanded study areas as anadromous fish spawning areas or inland primary nursery areas.

The streams detailed in Table 3 were identified in the expanded study areas.

**Table 3. Status of Streams in the Expanded Study Areas**

Map ID	Length (ft.) in Study Area	Classification	NCSAM Rating	River Basin Buffer
SAAL	206	Perennial	High	Subject
SAAK	140	Perennial	High	Not Subject
SGA*	375	Perennial	High	Subject
SGD*	255	Perennial	Medium	Subject
<b>Total</b>	<b>976</b>			

\*Extensions of previously delineated features

Open surface waters that have been identified in the expanded study areas are detailed in Table 4 below.

**Table 4. Open Surface Waters Located in the Expanded Study Areas.**

Surface Water	Map ID of Connection	Area (ac) in Study Area
PAD*	WAAE	0.37

\*Extension of previously delineated features

Five wetlands were identified within the expanded study areas (Table 5).

**Table 5. Characteristics of Wetlands in the Expanded Study Areas**

Map ID	NCWAM Classification	NCWAM Rating	Hydrologic Classification	Area (ac.) in Study Area
WAAE	Seep	Medium	Riparian	0.09
WAAF	Seep	High	Non-Riparian	0.10
WAAJ	Headwater Forest	Medium	Riparian	0.02
WAAK	Bottomland Hardwood Forest	Low	Riparian	0.22
WHD*	Headwater Forest	High	Riparian	0.22
			<b>Total</b>	<b>0.65</b>

\*Extension of a previously delineated feature (2014 NRTR)

Design revisions and the avoidance and minimization efforts incorporated into the final design resulted in reduction of 1.55 acres of permanent wetland impact, 822 linear feet of permanent stream impact, 185,117 sq ft of riparian buffer impact, and 0.79 acre of pond impact as detailed in Table 6 below.

**Table 6. Changes in R-2829A Jurisdictional Impacts**

Category	Preliminary Design*	Revised Design^	Change^^
Streams (lf)	10,148	9,326**	-822
Streams (number)	24	30	6
Buffer Zone 1 (ac)	714,081	639,219	-74,862
Buffer Zone 2 (ac)	510,386	400,131	-110,255
Wetlands (ac)	8.67	7.12	-1.55
Wetlands (number)	22	32	10
Ponds (ac)	4.28	3.49	-0.79
Ponds (number)	2	2	0

\*Preliminary impacts were calculated using proposed slope stakes plus 25 feet.

\*\*Includes bank and structure stabilization.

^Current proposed design includes impacts associated with all utilities which were not accounted for in preliminary design.

^^Features added with study area expansion at East Garner Road.

Cultural Resources

A historic architectural survey was completed for Complete 540 in November 2014 (*Historic Architectural Resources Survey Report, Complete 540/Triangle Expressway Southeast Extension*). The Area of Potential Effect (APE) encompassed a number of corridor alternatives which were selected for detailed evaluation in the DEIS. On December 10, 2014, the NC State Historic Preservation Office (NCHPO) concurred with NCDOT’s finding that two properties would be affected by the Preferred Alternative. These properties are not located within the **R-2829A** study area. In addition, there are no properties within the expanded study areas, that reached 50 or more years old after the previous historic architectural survey.

Prior to the FEIS, an archaeological survey was completed for the Complete 540 Preferred Alternative in September 2017 (*Intensive Archaeological Survey and Evaluation of the Preferred Alternative for Complete 540/Triangle Expressway Southeast Extension*). No sites located within **R-2829A** were recommended as eligible for the National Register of Historic Places (NRHP).

In response to the expansion of the study area, the NCHPO stated in a letter dated June 14, 2024, “we have determined that the project as proposed will not have an effect on any historic structures.” The letter also stated no additional archaeological survey or investigations are necessary and recommended impacts to the Mount Herman Christian Church cemetery be avoided. If avoidance is not possible, additional archaeological testing and mitigation of the cemetery under NCGS 65 may be necessary. As currently designed, the project would not impact the Mount Herman Christian Church cemetery.

In addition, NCDOT confirmed “cultural resources have been resolved” for study area expansion that occurred prior to Design-Build Team involvement, as those areas were covered by the APE (Deanna Riffey, June 2024). Therefore, the original Section 106 findings that were made as part of the NEPA analysis remain valid. The NCHPO letter is included in **Appendix A**.

GeoEnvironmental

A Phase I report (*GeoEnvironmental Phase I Investigation Report for Expansion Areas*, June 2024) addressed study area expansion that occurred after Design-Build Team involvement in the project. No additional sites of concern were identified. NCDOT confirmed “there are no GeoEnvironmental concerns within the expanded study areas” (Craig Haden, June 2024).



### Traffic Noise

An updated Traffic Noise Report (*Traffic Noise Report Addendum 2, June 2023*) was prepared to address changes associated with R-2829 since the ROD. These changes included revised preliminary design plans, updated traffic for a 2045 design year, updated truck percentages, an increase in the project design speed, and new development that was permitted prior to the June 2018 ROD (date of public knowledge). The 2023 Addendum noted 19 receptors impacted within the R-2829A project limits as compared with the prior analysis that identified 4 receptors impacted. The additional impacted receptors are dispersed in nine noise study areas. No likely noise walls were identified for **R-2829A** with either study. Six noise barriers were found to be feasible and reasonable in the 2023 Addendum, all located within the R-2829B project limits.

There are no known noise-sensitive developments permitted on or before the date of public knowledge that were not included in previous noise studies. A new noise sensitive development at 5901 Raynor Road was permitted after the date of public knowledge and is therefore not subject to traffic noise analysis.

A Design Noise Report (DNR) for **R-2829A**, using the 2016 NCDOT Traffic Noise Policy and 2016 NCDOT Traffic Noise Manual, is in development based on final design. The Design-Build Team will construct feasible and reasonable noise abatement measures if any are identified in the DNR, once approved.

### Community Resources

The revised design would reduce right of way impacts to the Mount Herman Christian Church property. Realigned Raynor Road was shifted to avoid impacts to the church's septic repair area and athletic field. Improvements to existing Raynor Road along the church property would not impact the church cemetery. Driveway access from White Oak Road would be severed due to the widening of White Oak Road. Access to the church will be from existing Raynor Road.

### Environmental Justice

Additional noise impacts were predicted at the 70 East RV and Mobile Home Park, which includes a potential environmental justice population. Traffic noise impacts were predicted for six of the 25 residential receptors studied (June 2023). The mobile home park includes approximately 107 RV or mobile home sites.

This impact would not change the ROD conclusion that "there are no environmental justice concerns associated with the Selected Alternative, nor will any concentrated minority or low-income populations receive disproportionate high and adverse effects as a result of the Selected Alternative."

### Other Environmental Factors

The **R-2829A** design revisions do not substantively change the previously documented effects of the Selected Alternative for other environmental factors addressed. This includes air quality, farmlands, land use and economics, neighborhoods, relocations, recreational resources, and indirect and cumulative effects.

### Agency Coordination

As noted in the ROD, the Complete 540 project followed the “6002”<sup>1</sup> process instead of the NCDOT’s merger<sup>2</sup> process. The main method for government representatives and regulatory and resource agencies to receive information and provide comments was through interagency meetings. An interagency coordination meeting to review preliminary hydraulic plans (similar to a Section 404/NEPA Merger 4B meeting) was held on April 17, 2024. An interagency coordination meeting to review draft permit drawings (similar to a Section 404/NEPA Merger 4C meeting) was held on June 20, 2024.

Meeting summaries are included in **Appendix A**.

### Public Involvement

The North Carolina Turnpike Authority hosted a neighborhood meeting on Tuesday, February 13, 2024, to discuss upcoming construction activities near East Garner Road. The meeting was held in the Fellowship Hall of Mount Moriah Baptist Church, 3000 East Garner Road from 5:30 pm to 7:00 pm. Project team members were available to provide information and answer questions related to the project and schedule. A handout with project information and a detailed map of the East Garner Road area design changes were provided. Based on the sign-in sheet, 23 people attended the meeting.

The NCDOT held the Raleigh Transportation Projects Open House meeting on Monday, May 6, 2019 at the McKimmon Center to provide the public information about transportation projects that are under development or construction in the Raleigh area. Complete 540 was one of the featured projects. Representatives from NCDOT, the City of Raleigh, GoRaleigh and the Capital Area Metropolitan Planning Organization were available during the open house to answer questions. The public also had the opportunity to submit written comments and questions.

### E. Conclusion:

The above NEPA documentation has been reevaluated (as required by 23 CFR 771). It has been determined that the current proposed action is essentially the same as the original proposed action. Proposed changes, if any, are noted in Section D. It has been determined that anticipated social, economic, and environmental impacts were accurately described in the above referenced document(s) unless noted otherwise herein. Therefore, the original Administration Action remains valid.

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<sup>1</sup> Section 6002 of MAP-21, the Moving Ahead for Progress in the 21<sup>st</sup> Century Act of 2012 (P.L. 112-141).  
<https://environment.transportation.org/education/practical-applications/project-delivery/project-delivery-overview/>

<sup>2</sup> The Section 404/NEPA Merger Process is the process used by NCDOT that merges the requirements of the Section 404 of the Clean Water Act and the National Environmental Policy Act.

**F. Coordination**

Appropriate personnel have discussed the current project parameters with qualified agency representatives and NCDOT/FHWA (where applicable). The NCTA Chief Engineer, Patrick Norman, hereby verifies the involvement of the following staff and the incorporation of their technical input:

Design Engineer:	Tony Houser, PE (RK&K)	8/27/2024
Environmental Specialist:	Chris Rivenbark (RK&K)	9/1/2024
GeoEnvironmental	Craig Haden (NCDOT-GeoTechnical)	6/19/2024
FHWA (if applicable):		

**G. Consultation Approval for Project R-2829A**

**Prepared By:**

10/17/2024

Date

Signed by:

*Robin Pugh*

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Robin Pugh, AICP, Project Delivery Leader  
RK&K

**Prepared For:**

DocuSigned by:

*Ron McCollum*

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Ron McCollum, PE, Eastern Deputy Chief Engineer  
NCDOT, North Carolina Turnpike Authority

**Reviewed By:**

10/22/2024

Date

DocuSigned by:

*John Jamison*

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John Jamison, Unit Head  
NCDOT Environmental Policy Unit

**Approved**

In adherence with 23 CFR 771 (NEPA) or NC General Statute Chapter 113A Article 1 (SEPA), NCDOT approves this Consultation.

or

**Certified**

NCDOT staff certifies if FHWA signature was previously required or where changes have resulted in FHWA signature being required.

10/22/2024

Date

DocuSigned by:

*Patrick Norman*

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Patrick Norman, PE, Chief Engineer  
NCDOT, North Carolina Turnpike Authority

**FHWA Approved:** FHWA signature required for Type I or II CE with Substantial Changes, Type III CE, FONSI or ROD.

10/23/2024

Date

Signed by:

*Donnie Brew*

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for Yolonda K. Jordan, Division Administrator  
Federal Highway Administration

H. Project Commitments (as of September 26, 2024)

**Complete 540 – Triangle Expressway Southeast Extension  
Wake and Johnston Counties, North Carolina**

STIP Project Nos. R-2721, R-2828, and R-2829  
 State Project Nos. 6.401078, 6.401079, and 6.401080  
 Federal Aid Project Nos. STP-0540(19), STP-0540(20), and STP-0540(21)  
 WBS Nos. 37673.1.TA1, 35516.1.TA1, and 35517.1.TA1

**COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN**

<b>Item</b>	<b>Responsible Party</b>	<b>Resource</b>	<b>Project Commitment</b>	<b>Project Stage / Status</b>	<b>Applicable STIP Project</b>
1	Environmental Analysis Unit, NCTA	Historic Architectural Resources	NCDOT will coordinate with the NC State Historic Preservation Office and the property owner(s) relative to potential retaining wall design to eliminate the need for permanent easement or right-of-way from the Panther Branch School.	Completed	R-2828
2	Environmental Analysis Unit, NCTA	Archaeological Resources	NCDOT will conduct an archaeological survey of the Preferred Alternative and will coordinate the results with the NC State Historic Preservation Office and the NC Office of State Archaeology.	Completed	R-2721, R-2828, and R-2829
3	Environmental Analysis Unit, NCTA	Archaeological Resources	NCDOT will establish a Memorandum of Agreement with the NC State Historic Preservation Office in order to take into account the project's effect on archaeological resources.	Completed	R-2828
4	Environmental Analysis Unit, NCTA	Archaeological Resources	NCDOT will coordinate with the NC Office of State Archaeology relative to data recovery of materials in the one site determined eligible for the National Register of Historic Places based on the information contained at the site.	Final Design and Construction	R-2828
5	NCTA	Community Resources & Section 4(f)	NCDOT will coordinate with the Town of Cary relative to a potential Section 4(f) de minimis use finding for the Middle Creek School Park.	Completed	R-2721
6	NCTA	Community Resources & Section 4(f)	NCDOT will coordinate with the City of Raleigh relative to a potential Section 4(f) de minimis use finding for the Neuse River Trail.	Completed	R-2829
7	Division 5, NCTA	Recreation Facility	During construction, NCDOT will accommodate trail users along the Neuse River Trail through the project construction zone.	Final Design and Construction	R-2829
8	Environmental Analysis Unit, NCTA	Noise	NCDOT will prepare Design Noise Reports for the Selected Alternative during final design. All feasible and reasonable noise abatement measures will be constructed.	Final Design and Construction	R-2721, R-2828, and R-2829

Item	Responsible Party	Resource	Project Commitment	Project Stage / Status	Applicable STIP Project
9	Hydraulics Unit, NCTA	Stormwater Management	NCDOT will utilize Design Standards in Sensitive Watersheds in the Swift Creek and <del>in the Lower</del> Middle Creek watersheds.	Construction and *Final Design	R-2721, R-2828, and R-2829*
10	Environmental Analysis Unit, NCTA	Migratory Birds	NCDOT will comply with requirements set forth in the Migratory Bird Treaty Act (MBTA) of 1918. <i>On December 22, 2017, after further analysis of the text, history, and purpose of the MBTA, the US Department of Interior issued Opinion M-37050. Opinion M-37050 permanently withdraws and replaces Opinion M-37041. Opinion 37050 concludes that the MBTA applies to only affirmative actions that have as their purpose to reduce migratory birds by taking or killing of migratory birds, their eggs, or their nest.</i>	Construction	R-2721, R-2828, and R-2829
11	Hydraulics Unit, NCTA	Major Drainage Structures	NCDOT will perform a more detailed hydrologic and hydraulic analysis for each major drainage crossing for the Selected Alternative.	Final Design	R-2721, R-2828, and R-2829
12	Utilities Unit, NCTA	Utilities	NCDOT will coordinate with the appropriate utility owners during design of the Selected Alternative for all utility conflicts, including means to avoid or minimize impacts to utilities.	Final Design	R-2721, R-2828, and R-2829
13	Environmental Analysis Unit, NCTA	Indirect Effects & Cumulative Impacts	NCDOT will prepare a quantitative assessment for indirect and cumulative effects and impacts for the Selected Alternative.	Completed	R-2721, R-2828, and R-2829
14	Environmental Analysis Unit, NCTA	Protected Species	NCDOT will carry out all activities for which it has been assigned responsibility in the <a href="#">Biological Assessment of Potential Impacts to Federally Listed Species</a> (December 2017) and the <a href="#">USFWS Biological Opinion</a> (April 2018) and as amended.	Construction and *Final Design	R-2721, R-2828, and R-2829*
15	Environmental Analysis Unit, NCTA	Protected Species	NCDOT will carry out all activities for which it has been assigned responsibility in the <a href="#">Biological Assessment for Atlantic Sturgeon Critical Habitat</a> (December 2017) and the <a href="#">NMFS concurrence letter</a> (May 2018) and as amended.	Final Design and Construction	R-2829
16	Environmental Analysis Unit, Division 5, NCTA	Protected Species	FHWA and NCDOT will update the 2017 Biological Assessment and coordinate with USFWS in accordance with ESA Section 7 for the Neuse River Waterdog, Carolina Madtom, Atlantic Pigtoe, and Atlantic Pigtoe Critical Habitats.	Completed	R-2721, R-2828, and R-2829
17	Environmental Analysis Unit, Division 5, NCTA	Protected Species	NCDOT will carry out all activities for which it has been assigned responsibility in the Revised Biological Assessment of Potential Impacts to Federally Listed Species (July 2019) and the USFWS Revised Biological/Conference Opinion (October 2019).	Construction and *Final Design	R-2721, R-2828, and R-2829*

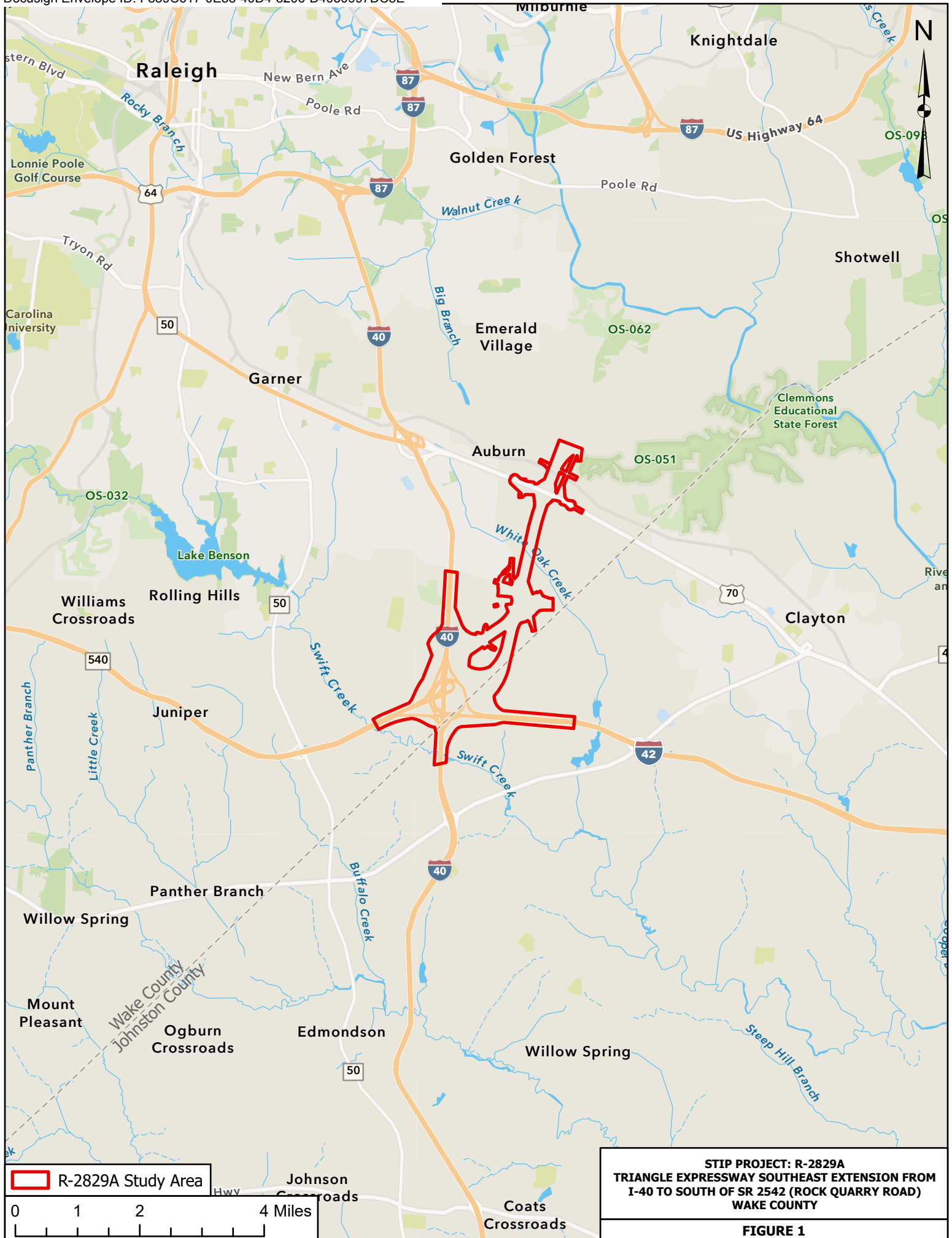
## COMMITMENTS FROM PERMITTING

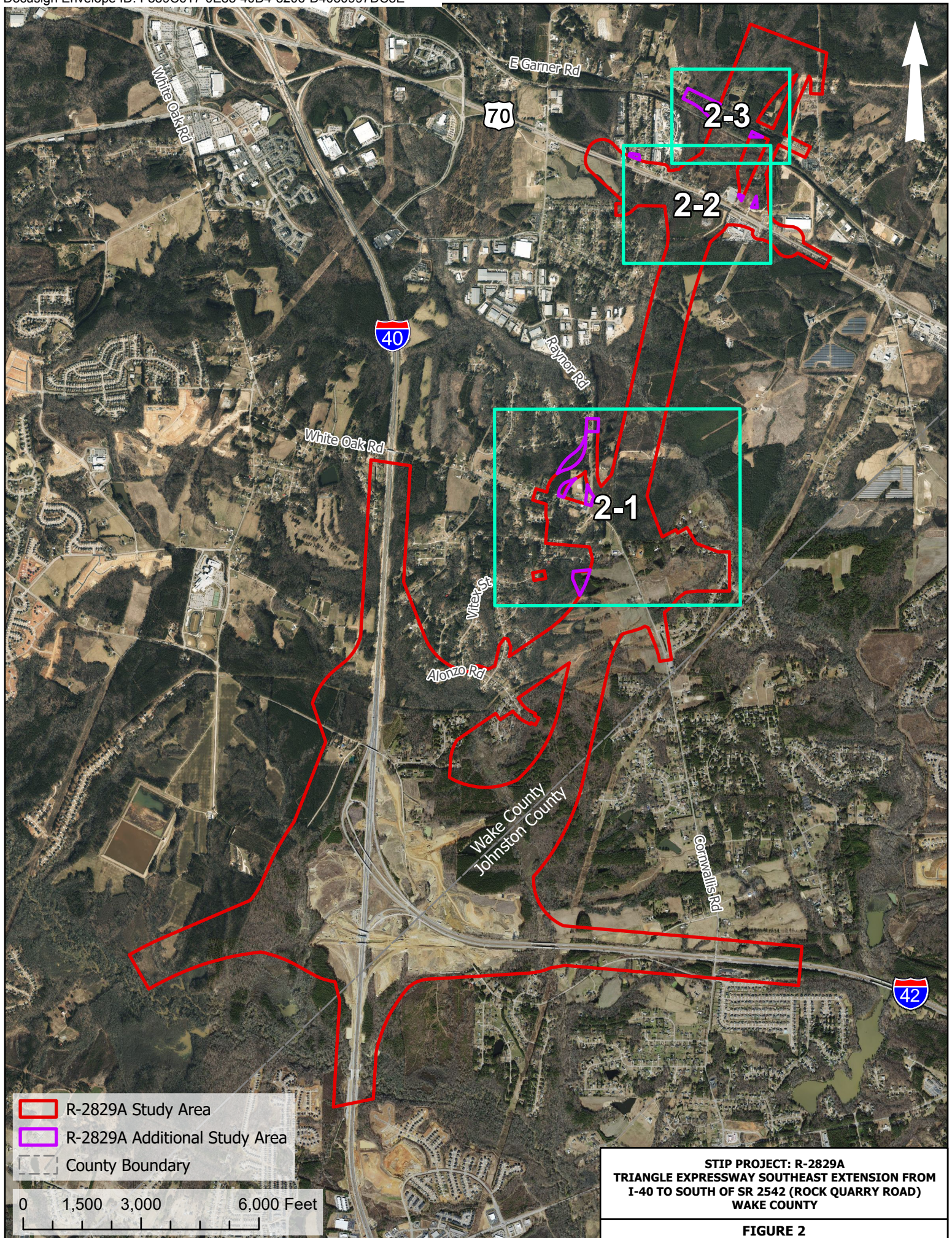
Item	Responsible Party	Commitment Source	Project Commitment	Project Stage / Status	Applicable STIP Project
18	Division 5, NCTA	Recreation Facility	During construction, NCDOT will accommodate trail users along the Woodcreek Trail through the project construction zone.	Construction	R-2721A
19	Division 5, NCTA	404 Permit Condition 2	NCDOT will protect the Atlantic Sturgeon by not blocking greater than 50% of the Neuse River below the ordinary high-water mark with temporary causeways or work bridges. All causeways and work bridges will be removed at the end of the project.	Construction	R-2829
20	Environmental Analysis Unit, Division 5, NCTA	404 Permit Condition 3	NCDOT will comply with the attached USFWS Biological Opinion-Revised (USFWS BO), dated October 15, 2019.	Construction and *Final Design	R-2721, R-2828, and R-2829*
21	Division 5, NCTA	404 Permit Condition 3 (Attachment: USFWS Biological Opinion (BO) Section 2.4)	NCDOT will invite representatives of the USFWS NCWRC, and other agency personnel to preconstruction meetings prior to incurring impacts in jurisdictional features, as well as to preconstruction meetings associated with installation of structures within 0.25 mile of the Swift Creek crossing.	Construction	R-2828
22	Division 5, NCTA	404 Permit Condition 3 (Attachment: USFWS BO Section 2.4)	NCDOT will not allow any part of the bridging structure for Swift Creek to be within 10 feet of the top of bank on either side of the channel. No permanent structures or temporary structures will be placed in Swift Creek. All permanent and temporary structures will be installed and designed to maintain stability of the stream banks of Swift Creek.	Construction	R-2828
23	Roadside Environmental Unit, Division 5, NCTA	404 Permit Condition 3 (Attachment: USFWS BO Section 2.4)	NCDOT will require construction of two permanent hazardous spill basins (HSBs) at the crossing of Swift Creek. Road runoff from approximately 1.3 miles of road facility will be directed to the HSBs prior to discharge into Swift Creek or Swift Creek tributaries. The HSBs will be designed to contain a spill from a typical tanker truck. NCDOT will implement their standard protocols for upkeep and use of these HSBs.	Construction	R-2828

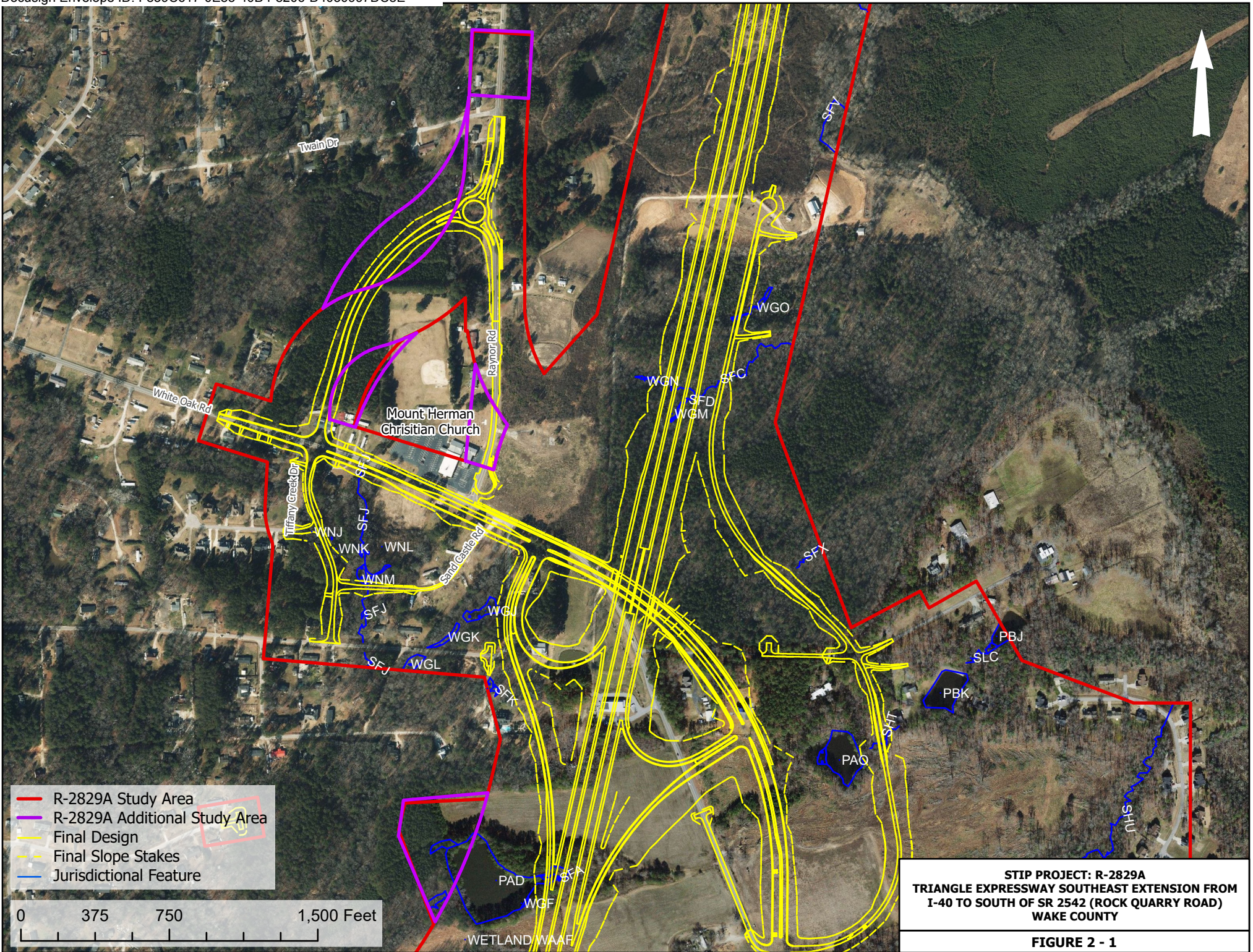
Item	Responsible Party	Commitment Source	Project Commitment	Project Stage / Status	Applicable STIP Project
24	Environmental Analysis Unit, Division 5, NCTA	404 Permit Condition 3 (Attachment: USFWS BO Sections: 2.4, 8.2 & 8.3)	NCDOT will conduct a preconstruction survey (just prior to construction) at the Swift Creek crossing and remove mussels from a defined salvage area and relocate them to appropriate habitat within Swift Creek outside of the salvage area (relocation site) or if deemed appropriate, after coordination with the USFWS and NCWRC, Dwarf Wedgemussel and Yellow Lance individuals may be taken into captivity to use as brood stock for propagation efforts. The preconstruction survey will be incorporated into a Mussel Relocation Plan, which will identify the salvage area and relocation site, and be developed in coordination with USFWS/NCWRC.	Construction	R-2828
25	Environmental Analysis Unit, Division 5, NCTA	404 Permit Condition 3 (Attachment: USFWS BO Sections: 2.4, 8.2 & 8.3)	NCDOT will provide funding to Wake County and NCWRC, after receiving the Section 404 Permit, to be utilized for the retrofit and upgrade of the existing research facility in the A.E. Finley Center, at the Historic Yates Mill County Park for the purpose of research and propagation of aquatic species.	Final Design	R-2721, R-2828, and R-2829
26	Division 5, NCTA	404 Permit Condition 3 (Attachment: USFWS BO Section 8.4)	NCDOT will monitor the Action area for evidence of sediment loss. The USFWS will be contacted if project related sedimentation is occurring beyond 400 meters from the Action area.	Construction	R-2828
27	Environmental Analysis Unit, Division 5, NCTA	404 Permit Condition 17	NCDOT will implement the Memorandum of Agreement (MOA) between the USACE and SHPO dated March 11, 2018 and adhere to the specific Stipulations provided in the MOA attachment.	Final Design and Construction	R-2721, R-2828, and R-2829
28	Roadside Environmental Unit, Division 5, NCTA	404 Permit Condition 23	NCDOT will segregate topsoil (6-12") in wetland areas where pipelines will be installed via trenching. The topsoil will be used to backfill the trench.	Construction	R-2828
29	Environmental Analysis Unit, Division 5, NCTA	404 Permit Condition 27	NCDOT will only complete construction activities on TIPs R-2721A and B under the Section 404 Permit dated October 24, 2019 and R-2828 dated February 3, 2020. No work will commence for TIP R-2829 without further USACE coordination.	Construction	R-2721, R-2828, and R-2829
30	Division 5, NCTA	National Marine Fisheries Service Consultation (Page 3)	NCDOT will stop in-water construction activities if a sturgeon is spotted within 50 feet of operations. (See Attached NMFS Consultation)	Construction	R-2829
31	Division 5, NCTA	National Marine Fisheries Service Consultation (Page 3)	NCDOT will observe an in-water work moratorium of February 15-October 31. This includes installation/removal of causeways and temporary bridges. This will cover the WRC moratorium of February 15-September 30.	Construction	R-2829

Item	Responsible Party	Commitment Source	Project Commitment	Project Stage / Status	Applicable STIP Project
32	Division 5, NCTA	National Marine Fisheries Service Consultation (Page 4)	NCDOT will not blast within 50 feet of the Neuse River.	Construction	R-2829
33	Division 5, NCTA	National Marine Fisheries Service Consultation (Page 4)	NCDOT will adhere to shoreline stabilization Project Design Criteria (PDCs) when installing new bridges and piers.	Construction	R-2829
34	Division 5, NCTA	National Marine Fisheries Service Consultation (Attachment 1)	NCDOT will follow the PDCs outlined in Attachment 1 of the NMFS Consultation	Construction	R-2829
35	Division 5	401 Modification Condition 1 (February 15, 2023)	All protective measures as described in the application received January 11, 2023 and additional information provided February 13, 2023, shall be required as a condition of this certification, including practices described in the bridge demolition plans. Measures stated included the use of geotextile fabric, straw bales and crane mats at the locations of jurisdictional impacts for the bridge demolitions, in order to prevent demolition materials from entering the stream. Once all non-native materials and demolition debris has been removed the sites will be matted, seeded, and revegetated as stated in the application. As stated in the application, in the event that too much demolition material accumulates on the mats and potential for rubble to spread into jurisdictional areas, the process will be paused to clear concrete from the mats.	Construction	R-2828







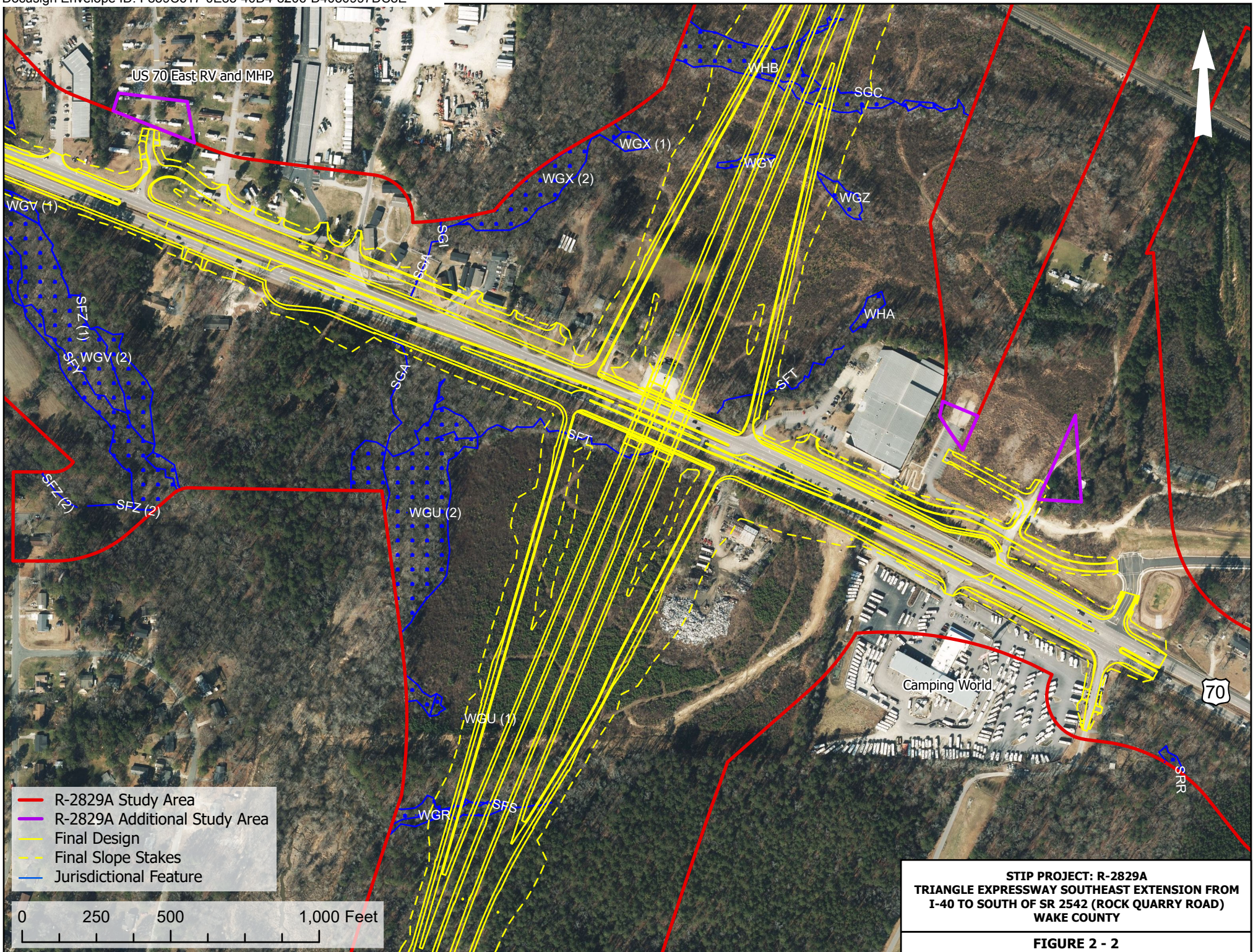


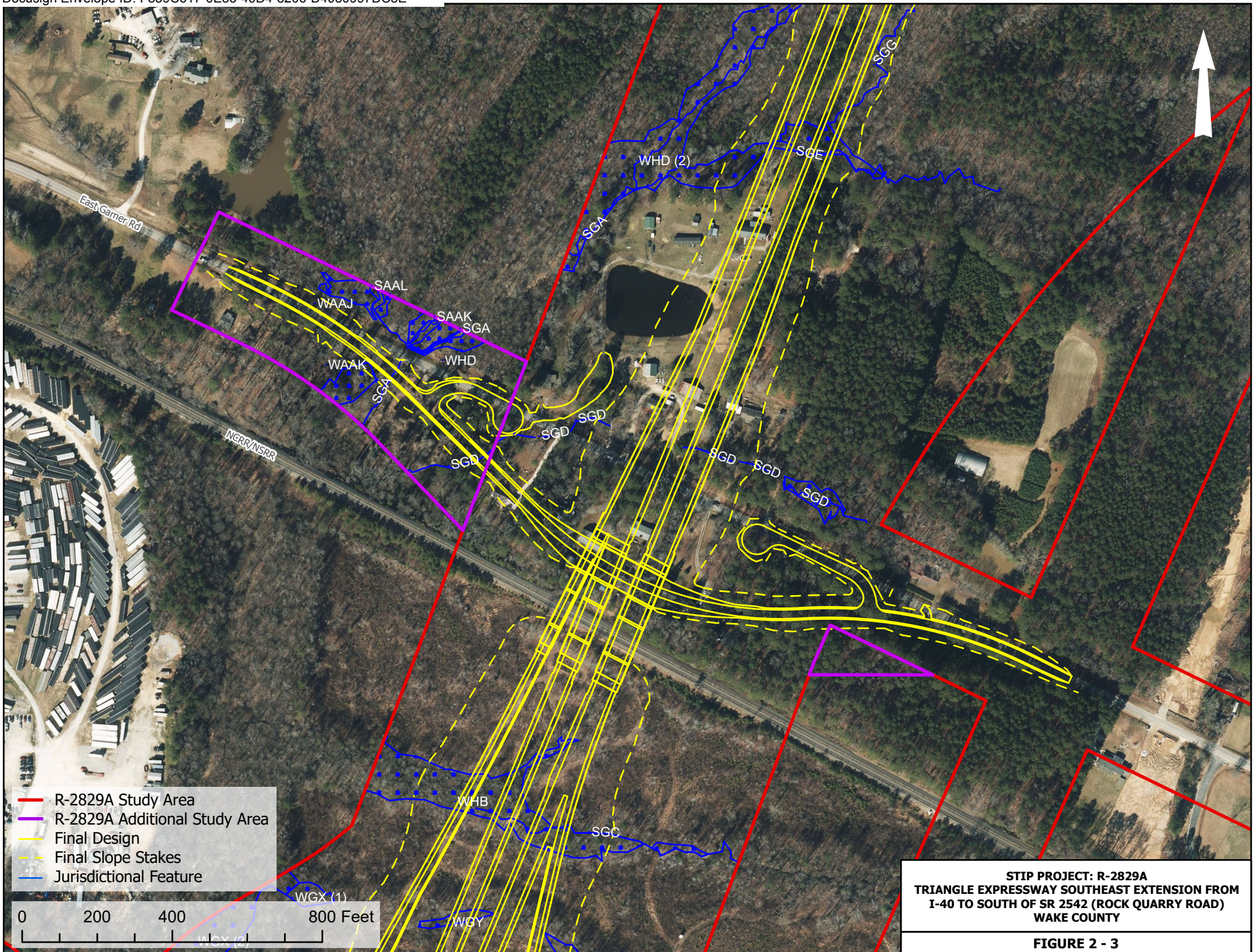
- R-2829A Study Area
- R-2829A Additional Study Area
- Final Design
- Final Slope Stakes
- Jurisdictional Feature

0 375 750 1,500 Feet

STIP PROJECT: R-2829A  
TRIANGLE EXPRESSWAY SOUTHEAST EXTENSION FROM  
I-40 TO SOUTH OF SR 2542 (ROCK QUARRY ROAD)  
WAKE COUNTY

FIGURE 2 - 1

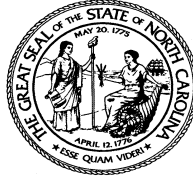




## **APPENDIX A**

### Section 106 Coordination

#### Interagency Coordination – 4B and 4C Meeting Summaries



**North Carolina Department of Natural and Cultural Resources  
State Historic Preservation Office**

Ramona M. Bartos, Administrator

Governor Roy Cooper  
Secretary D. Reid Wilson

Office of Archives and History  
Deputy Secretary, Darin J. Waters, Ph.D.

June 14, 2024

Robin Pugh  
RK&K  
8601 Six Forks Road  
Forum 1, Suite 700  
Raleigh, NC 27615

[rpugh@rkk.com](mailto:rpugh@rkk.com)

Re: Expanded study area for Southern Wake Freeway Corridor, Complete I-540, R-2829A, Raleigh, Wake County, CH 98-0457

Dear Ms. Pugh:

Thank you for your submission of May 9, 2024, regarding the above-referenced undertaking. We have reviewed the submittal and offer the following comments.

The four expanded study areas (1-4) at the northern end of the project area are considered to have a low archaeological potential and no additional survey is needed in these areas.

The two areas adjacent to Mount Herman Christian Church property are within the mapped boundaries of 31WA4 and near recorded sites 31WA2038 and 31WA2039. Study area 5 occupies a wooded and sloped area that has a moderate potential for precontact sites but given the area's topographic setting it has a low probability that any significant, intact sites would be adversely impacted. We do not recommend additional archaeological investigations in study areas 5 currently.

Expansion area 6 includes portions of the Mount Herman Christian Church cemetery. We recommend that the cemetery within study area 6 be avoided. If avoidance is not possible, additional archaeological testing and mitigation of the cemetery under NCGS 65 may be necessary.

Cemeteries are protected under North Carolina General Statutes Chapter 14-148 and 14-149, and are afforded consideration under Chapter 65. If unmarked human skeletal remains are encountered during construction, the provisions of North Carolina General Statute Chapter 70, Article 3 apply. Construction activities should immediately cease, and the county medical examiner should be contacted.

We have determined that the project as proposed will not have an effect on any historic structures.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-814-6579 or [environmental.review@dncr.nc.gov](mailto:environmental.review@dncr.nc.gov). In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,



*for* Ramona Bartos, Deputy  
State Historic Preservation Officer

cc: Ron McCollum, NCDOT

[remcollum@ncdot.gov](mailto:remcollum@ncdot.gov)



**R-2829A SAFETEA-LE Section 6002 Interagency Meeting  
(Concurrence Point 4B)**



Branch-S.T. Wooten Joint Venture

**Date:** April 17, 2024  
**Location:** CCA Technical Services Conference Room  
**Time:** 1:00PM  
**Attendees:** Jenny Fleming– NCTA (VHB)  
 Rob Ridings – NCDWR  
 Jennifer Harris – NCTA  
 Cameron Richards – NCDOT  
 Chris Martin – Branch Civil  
 Roy Bruce – NCTA  
 Alexis Burke – RK&K  
 Chris Rivenbark – RK&K  
 Paul Nishimoto – Branch Civil  
 Nikki Duprey – NCTA (Sage)  
 \*Monte Matthews – USACE  
 Aaron Harper – NCDOT REU  
 \*Jared Gray – NCDOT EAU  
 \*Marissa Cox – NCDOT EPU  
 \*Tim Ritacco- NCDOT ADU

Deanna Riffey – NCDOT EAU  
 Ron McCollum – NCTA  
 Dennis Jernigan – NCTA  
 Jonathan Bivens – ST Wooten  
 Alan Shapiro – NCTA  
 Matthew Cook – RK&K  
 Byron Holden – RK&K  
 Jason Kiser– Branch Civil  
 \*Christina Yokeley – Lochner  
 Abi Sheffey – NCTA (Sage)  
 Susan Locklear – NCDEQ  
 \*Wesley Chandler – NCDOT REU  
 \*Wesley Cartner – NCDOT PMU  
 \*Donnie Brew – FHWA

(\* virtual via Microsoft Teams)

The 30% Hydraulic Review was held in order to reach compliance on SAFETEA-LE Section 6002 (equivalent to concurrence point 4B and further know in the minutes as 4B) for R-2829A Complete 540 in Wake County. The following items were discussed and conclusions reached:

Jennifer Harris kicked off the 4B Meeting with introductions in Mike Sanderson's absence. In person and virtual attendees were noted and introduced. Ms. Harris turned the meeting over to Monte Matthews who was standing in for Eric Alsmeyer (USACE) and noted that he and Mr. Alsmeyer had previously gone through the plans together and had noted comments to discuss at those locations. Ms. Harris then turned the meeting over to the design build team.

Matthew Cook introduced the DB Team for the project which is a joint venture team of Branch Civil/ST Wooten (contractors) and RK&K (prime engineer). The project begins just southwest of I-40; the beginning of the R-2829A job consists of primarily pavement overlay inside the R-2828 turbine area and full construction of the mainline begins around -L- 965+50 (location was noted on the title sheet). The R-2829A portion of the project joins in to the R-2829B project just south of Rock Quarry Rd or north of East Garner Rd.

This project does currently have a preliminary permit in hand. The DB Team will be submitting a permit modification once the equivalent 4C meeting is held and the plans / impacts are completed. Construction will not occur inside any jurisdictional features until a new signed permit 401/404 has been issued. There is an early start package under review at this time at the beginning of the job bordering on the R-2828 turbine area. This early start package does not impact any jurisdictional features; however Chris Rivenbark will send an email to Deanna Riffey to send to the agencies stating the date construction in this area is set to begin.

**General Notes:**

- Permit is already in hand; however, it has differing permit and buffer site numbers. Per coordination with NCTA and agencies, the DB Team will renumber the buffer sites to match the wetland/stream site numbers. If an additional site is added to the job that was not part of the original permit, that site will be given a new number consecutively to the

last wetland/stream site number on the R-2829A job. R-2829B job will have its own permit numbers and not dictate R-2829A permit site numbering.

- There are two hydraulic bridges on the job (Bushy Branch & White Oak Creek) and 10 box culverts. Bushy Branch bridge is however not hydraulically controlled by flow, but the crossing is dictated by wetland impact commitments.
- Drainage design shown on the 4B plan set is what was submitted for the initial/first review of 100% drainage (on 4/3/24) to NCTA/VHB. 100% drainage comments will be received next week (anticipated 4/24/24). Both hydraulic bridges and all but 4 CSRs (C300, C400, C700, & C1000) have been reviewed once by NCTA/VHB prior to issuance of the 4B set.
- At this time, the 4C Meeting is anticipated to stay on the requested June 20<sup>th</sup>, 2024, date.
- Locations where streams start or stop their jurisdictional functionality will be revised to have a label of “JS Begins” or “JS Ends” added into the 4C plan set to avoid confusion of where the features/impacts change.
- There are locations where a wetland (or stream) will be a total take even though a portion of the feature is outside the right of way/easement. These will be noted in the permit impact summary table “notes” at the bottom and values in the table will show the maximum take. This area of the jurisdictional feature outside the ROW will not be hatched in plan view on the permit drawings to avoid any access/construction limits confusion. “Total Take” will not be used as an identifier on the plan sheets.
- Locations of wetlands where ¼ acre or more remains untouched will be looked at case by case to determine if the remaining wetland will be viable and not show as a ‘total take.’ As noted by Mr. Matthews, Rob Ridings, and Mr. Rivenbark, these locations will likely need to be monitored for functionality post construction to determine if impact values would need to be modified if the feature does not replenish.
- The DB Team held an internal preliminary constructability meeting on Monday (4/15/24) before the 4B meeting to aid with discussion of how these jurisdictional feature crossings will be constructed. Anticipated construction sequencing and permit impacts will be discussed per plan sheet at these sites.
- Mr. Cook discussed that the DB Team tried very hard to include buffer swale filtration throughout the project (Neuse River Basin utilizing 100’ swale filtration per acre draining to a buffered hydraulic crossing). While the DB Team is able to achieve this at some of the buffered crossings, it was unachievable at other locations primarily due to the steep contours in the area and the need to meet stable hydraulic ditch requirements. The DB Team has provided swales at other locations that do not drain to buffered crossings in a good faith effort to achieve as much as possible.
- During discussions of RCBCs, it was noted by Nikki Duprey that native material backfill was longer being required at RCBCs.
- Green sheet commitments were discussed and reviewed.

### **Section 1 Equivalent 4B Planset:**

Mr. Cook kicked off the review of the 4B plan sheets, starting with the ditch detail sheets. (Note: permit site numbers below correspond to the original permit site number in the preliminary permit.)

#### **Plan Sheet 4-5**

- These sheets are inside the R-2828 turbine area, and we do not anticipate any impacts to any R-2828 or I-5111 permit sites since the R-2829A DB team is primarily paving and staying at the top of the roadway surface away from jurisdictional features.

#### **Plan Sheet 6**

- Wetland WFK: no permit number (will be assigned next consecutive number on the job) at the bottom right of the plan sheet along -Y22RPE\_REV-.
  - Temporary impact anticipated to the wetland edge due to the need to drain all ponds on the R-2829A job and to breach the existing dam down to the wetland.
  - The pond under -Y22RPE\_REV- feeding wetland WFK is not jurisdictional and will be provided a “pond drainage plan”.
- Mr. Matthews and USACE questioned if the stream shown under -Y22RPAFLY\_REV- (60” RCP crossing conveyance) was jurisdictional. Mr. Cook responded that it was not a JS.

#### **Plan Sheet 7**

- Wetland WFJ: Permit site #2, total take under the -L- LT fill slope.

- Bushy Branch, Wetland WFN(1): permit site #3, bridge structure B5 is designed with 54" FIBs, 4 spans, a Q100 of roughly 2100 cfs, and is not a FEMA crossing (or hydraulically controlled).
  - Bushy Branch Bridge is anticipated to be constructed with a causeway and not mats. It should be noted that during the proposal stage DB Team noted there would not be hauling across Bushy Branch. Mr. Cook discussed the anticipated location of the temporary causeway via sketch on the screen. The intent is to leave an opening to provide flow through this crossing (opening near -L- 974+00). The intent is to only need a causeway on the right side of Bushy Branch with the utilization of cranes by only needing to come in on one side. Since this is a wetland system, high normal water surface levels nor a tall temporary causeway are anticipated. Contractor was requesting the use of class A rock to aid with drivability for regular delivery trucks along this causeway and lower 100year water surface level.
    - Discussion was had about class A being acceptable if a construction entrance was formed at the top of the temporary causeway. Contractor agreed to this installation method.
  - Mr. Matthews asked what kind of impact is anticipated with the bridge?
    - Mr. Cook explained that he didn't have final impact numbers however he was anticipating hand clearing impacts for the entire limits of the wetland WFN(1) under the bridge footprint + 15' additional along the bridges. The temporary causeway limits will be a temporary wetland impact. Permanent impacts due to the bridge bents will be noted on the impact summary table at the bottom. Mechanized clearing impacts will be included along the end bents.
  - Mr. Matthews expressed concerns with the larger riprap of the temporary causeway and issues with removal. Would there be a restoration plan for this area?
    - Jonathan Bivens explained that the DB team would be taking all the rock out since it would be reused in later work areas. He also explained that they have not had issues with this rock removal, but it is noted that other jobs in the area have. Mr. Bivens also explained that they usually include strong geotextile underneath to aid in the removal process.
    - Mr. Rivenbark explained that in conclusion to this temporary causeway rock discussion that the DB Team will show this as a temporary wetland impact and include a small write up in the permit modification noting this construction technique. Mr. Matthews agreed that this would be acceptable as long as the DB Team will just monitor the wetland after removal for appropriate restoration to function.
  - Discussion was held concerning wetland seed mix for this area once the temporary causeway is removed to aid with replanting. Wetland tree planting was also discussed but with this wetland being located under the bridge not considered a viable option and usage of a wetland seed mix was determined appropriate. Mr. Ridings noted that he and Mr. Alsmeyer had been conducting field visits in very similar areas and know what to look for from a revegetation standpoint to aid with mitigation/compensation values at a later date.
- Stream SEW & wetland WFN(1): Permit site #3, impacts due to channel change along -L- LT
  - Upland wetland WFN(1) finger will be considered a total take. See the general note above. This location was discussed to possibly be a 1/4ac viable wetland to remain however discussion felt taking the total wetland piece would be the best action. This finger of the WFN(1) wetland was shown fully impacted in the original permit takes as well. This wetland feeding stream SEW is outside the ROW and will not show impacts hatched in plan view outside easements. Stream SEW will be a total take.
- Stream SEY: Permit site #3: temporary and permanent stream impacts anticipated due to channel change along -L- RT and bridge approach construction.
  - Stream SEY will be given a "JS Ends" label close to the right bridge approach per general comments.

### Plan Sheet 8

- Wetland WFN: Permit Site #4, impacts due to 48" RCP (Not Buried)
  - Mr. Matthews and USACE had questions about the riprap inlet/outlet protection detail for the 48" crossing. He noted that detail AL for this countersunk riprap pad appears to show an existing channel bed to be rock lined. He requested that since this is a wetland system and does not have defined base/channel flow, that a different detail be shown for this type of location.
  - DB Team agreed per Jenny Fleming guidance to add an additional detail (similar to detail AL) for wetland system inlet/outlet countersunk riprap pads without a base channel.
- Additional general discussion was held concerning the class of rock utilized for these wetland system countersunk riprap pads. Class II rock is shown per RFP guidelines that >48" pipes utilize this size. However, agreement was made

that Class I should be utilized at this 48" WFY wetland system crossing (inlet and outlet), as the larger rock is not anticipated to be needed with no defined channel flow.

- Mr. Cook asked if the inlet RT wetland finger of WFY be a 'total take' due to viability after ditch ties to the edge of this wetland piece to bring it into the 48" crossing. Mr. Ridings stated this finger should not be a 'total take'.
- Mr. Cook then discussed the general comment noted above that buffer swale filtration was designed with a good faith effort to be before buffered streams, however was difficult to reach required lengths due to topography. At locations such as this 48" wetland system crossing, it was noted that DB team showed proposed buffer swales down to the wetland even though it is not a buffered stream.
  - Mr. Ridings agreed to keep these additional filtration locations to show effort to provide filtration along the job since these locations do likely feed a buffered area off site.
  - Ms. Duprey asked if these non-buffered stream swales will be placed inside the SMP document to count toward treatment. Mr. Cook responded no, only the required filtration locations would be shown in this table however we would keep these other locations per NCDWR guidance on a case-by-case basis to continue showing effort.

### Plan Sheet 9

- Stream SFH: Permit site #5, perennial stream with a 2' base channel at the entrance and a 2' base channel at the exit. Conveying this channel is culvert C100 which is currently sized as a 9'x8', Buried 1.0'. Drainage area is 40 acres with a Q100 of 130 cfs.
  - Mr. Cook asked if baffles would be necessary to convey this 2' stream through the 9' wide culvert barrel to avoid over-widening the channel which is a permit commitment. Ms. Fleming asked the slope of the proposed culvert which was found to 2.13%.
    - Discussion was had for the merits of placing baffles throughout the culvert vs a modified sill at the entrance and exit to include a baffle on top of the 1' sill.
      - ✓ Modified 1' sill with a 4' baffle only at the entrance and exit of C100 was decided.
    - Countersunk riprap dissipator pads at inlets and outlets were clarified for Mr. Matthews.
  - Construction sequence of C100 preliminarily discussed as a temporary channel change along the left side of SFH stream, and only using temporary pump arounds for the final culvert ties to the main channel.
- Stream SFF: Permit Site #6, conveys C200 which is currently sized as a 12'x8' RCBC, Buried 1.0 with a Q100 of 190cfs. There is additionally a channel change that conveys stream SFE on the bottom right into Stream SFF.
  - Baffles: a modified sill with a 6' baffle only at the entrance and exit will be added to C200 (2.2% slope of culvert)
  - Construction sequence of C200 discussed as a temporary channel change along the right at the downstream end of stream SFF only.
- Stream SFG will not be impacted.
- Stream SFE: Permit site #7, downstream end of C200 and impacts due to lateral base swale along -L- LT & channel change along -L- RT.
- Mr. Cook noted that Cardinal Pipeline was relocating a gas line from -L- 1010+50 to -L- 1012+50 crossing the entire project. Cardinal has noted existing rock in the ground which will require blasting.
  - Everyone agreed to address on a case-by-case basis if additional riprap in the channel beds of these culverts is necessary if existing bedrock is encountered during construction.
  - Additionally discussed removing need for "backfill with native material" from the culvert survey reports and plan to allow for the RCBC bottoms to naturally fill in. The only exception is for placement of rock "turtle ramps" within the high flow barrel of 2-cell RCBCs to allow for passage of wildlife, as shown on plansheet 16.
- Wetland WFZ: permit site #7 will be a total take due to mainline fill and channel change conveying to entrance of C200.

### Plan Sheet 10

- Wetland WFZ and stream SFE: see notes on plan sheet 9. No impacts to wetland WGA.
- Stream SFB, wetland WGB (total take), Wetland WGC (total take), & Wetland WGD: Permit Site #8, conveyed by a 42" RCP (not buried) due to no jurisdictional flow entering the inlet of the pipe.
  - "JS Begins" label will be added near the centerline of road for stream SFB
  - Wetland WGD will have an impact due to the roadway fill, ditch and crossing however it will maintain its functionality and not be a total take like the others at this site.

- Wetland WGE: No impacts, PDE will be pulled back and ditch ties down to the existing topography before the edge of the wetland.
- Existing Pond at -L- 1031+00 LT is not jurisdictional, however it will be drained according to a 'pond drainage plan'.

**Plan Sheet 11**

- Pond PAD: Permit site #9, will be completely drained according to the 'pond drainage plan'.
- Wetlands WAAF & WAAE: were added via a supplemental survey conducted by Kimley Horn after the initial permit and were included as part of a supplemental NRTR. These will need to be provided with a new permit # for their impacts.
  - WAAE will be a total take per discussions due to this wetland being the overflow of the pond that is being drained and the wetland no longer viable. The permit # for the impacts will be part of site #9.
  - WAAF discussed to be a temporary impact to remove the dam on the existing pond, however it will not be a total take since water will still be received.
- Stream SFA: Permit site #9, 48" RCP (Not buried) due to no jurisdictional call at upstream end. Stream SFA is a total take.
- Wetland WGF: Permit site #9, total take; borders on edge of drained pond PAD (was not part of the original permit package impacts).
- Wetland WGG: Permit site #9, total take under roadway fill.
- Mr. Cook noted that in the original permit, there is an open area with no jurisdictional functionality between pond PAD and wetland WGG. Also, originally stream SFA tied into the pond. A new file provided by NCTA stops the stream short of the pond. Mr. Cook asked if the pond should continue up to wetland WGG. It was agreed that it should.
- Mr. Cook noted that the DB team has preliminarily shown a stormwater detention pond inside the limits of the drainage pond PAD due to a velocity concern of the post Q leaving the construction site. The proposed pond would likely be built with a berm across the middle of the existing pond PAD to limit excavation needs and maintain the existing footprint.
  - Ms. Duprey had concerns about constructing a new pond within the limits of an existing drained pond due to EPA requirements.
  - Mr. Ridings & Mr. Matthews noted that the EPA standard in question is at locations where a jurisdictional resource is used as an inline system because it potentially takes everything downstream out of jurisdiction. This site is completely removing pond PAD's jurisdictionally with no jurisdictional features upstream; however, wetland WAFF and other off-site jurisdictional features may remain downstream. Mr. Matthews stated that he would check into this and report back during the 4C meeting.
  - Additional concerns about the area between the outlet of the 48" and the new limits of the constructed stormwater pond with how the right of way stands. Mr. Cook noted that we would coordinate with NCTA and Ms. Fleming on how this area shall be shown if rock/earthen dam/berm be required per RFP requirements of ponds in the ROW.
- Wetland WGJ: Permit site #10, impact due to ditch tie.
- Stream SFK: buffer impact anticipated due to energy dissipator basin & driveway. New consecutive site # will be added.
- Susan Locklear asked if the 24" storm drainage along loop B could be outletted sooner into the loop ditch and cut down on pipe to provide more open flow?
  - Alexis Burke noted this was attempted during 100% drainage design but due to the elevations of the systems and the sag location on loop B, was not possible.
- Wetland WGI: no impact
- Wetland WGM: Permit site #12, total take. Located on the matchline between PSH 11 and 12 under roadway fill.

**Plan Sheet 12:**

- Wetland WGM: see notes on plan sheet 11.
- Stream SFC: permit site #13, 48" RCP (Not Buried), as the jurisdictional stream begins just below the headwall of the pipe – "JS Begins" label will be added at this location.
  - Due to wetland on inlet and stream on outlet end; inlet end of pipe will have class I riprap countersunk riprap pad and outlet end will keep class II as shown.
- Wetland WGN: permit site #13, 48" RCP (Not Buried). Impact due to the countersunk riprap pad. This wetland will not be a total take.



- Stream SFD: permit site #12, total take
- Wetland WGO: Permit site #14, impact due to roadway fill and toe protection.
  - Ms. Fleming noted that a spring box may be necessary around -Y23DR- 49+00 to continue feeding the wetland WGO. Mr. Bivens noted that if they were to encounter a spring during construction, they would have to install a spring box regardless to avoid a failure of the roadbed. Mr. Cook stated that a potential spring box note will be added to the plans in this area.
  - Discussion was held concerning the viability of the wetland given the overland flow changing in the area due to the roadway facility. Mr. Cook pointed out the majority of the -L- and -Y23DR- drainage was designed to continue to feed the wetland.

**Plan Sheet 13:**

- White Oak Creek, stream SFV: buffer site #11, will need to reassign a new permit # (next consecutive number) and revise buffer site # to match.
  - White Oak Creek has a drainage area of 6.2 sq. miles, Q100 is 3160 cfs, bridge uses 3 spans with 54" FIBs with no anticipated causeways (will be constructed with cranes from either side). Only impacts to Stream SFV are from the swales entering the creek from the drainage design.
- Ms. Locklear asked if the DB team was comfortable with the 4' base ditch entering the 36" pipe under the greenway. Mr. Cook explained that the standard minimum base width for ditches was 4' wide and not typically dictated by the size of pipe it enters.
- Ms. Fleming confirmed that the designed swales are tying into White Oak Creek at the base of flow elevation. Mr. Cook responded that they were tying down and not utilizing a 'riprap at embankment' detail for these locations.
  - Ms. Fleming & Ms. Duprey expressed concerns with the back flow of White Oak Creek continuing up these swales and asked to add some rock at these tie points to aid with this water level/stabilization. Mr. Cook confirmed that Class I riprap a distance of 20' up the swales will be added with a detail in the drainage plans.
- Paul Nishimoto noted that we will likely be hauling across White Oak Creek. DB Team stated that a temporary bridge may be necessary at this location, however additional impacts are not anticipated to stream SFV.

**Section 2 4B Planset:**

Ms. Burke took over going through the 4B plan sheets after a brief break.

**Plan Sheet 14:**

- Stream SFR & wetland WGR: Permit site #15, C300 has not been submitted for review at this time and size/data is still from proposal design. Initially sized as an 8'x8' RCBC, Buried 1.0'.
- Ms. Burke asked if baffles/sills would be needed for this site as stream SFR has a 6' wide base and feeds a wetland system.
  - Mr. Ridings & Mr. Matthews confirmed that they only bury if it is a jurisdictional stream in/jurisdictional stream out.
  - In conclusion, C300 will not be buried, remove the sill and baffles, and become an 8'x7' RCBC.
- Construction sequence anticipated to be a temporary channel change along the right side of the culvert along the edge of the wetland.
  - Ms. Burke asked how the outlet of this temporary channel change should come into the wetland; tie to the culvert exit area or straight down to the wetland/fill slope edge. Ms. Duprey & Ms. Fleming agreed that dissipation of this channel away from the culvert would cut down on temporary wetland impacts and be the preferred construction method along with Class I riprap. Class II riprap will still be used at the inlet.
  - Ms. Burke asked how the wetland WGR at the entrance of C300 be handled for impacts with drainage swale tie and temporary channel change. Ms. Riffey & Ms. Duprey confirmed that viability would likely be loss during construction phasing and would like to show it as a total take of this inlet finger of Wetland WGR. However, hatching of the wetland outside the ROW will not be shown in plan view but noted per general comment above. Hatching inside the construction zone will be broken out per excavation in wetlands due to temporary ditch and mechanized clearing (with separate shapes per type of impact).
    - Lateral ditch will be extended through wetland WGR at -L- RT to the entrance of C300 to aid with stabilization (riprap lined).



### Plan Sheet 15

- Wetland WGR: permit site #15 impacted by roadway fill and toe protection.
- Stream SFN & wetland WGR: permit site #16, outlet of C400 (to be discussed on next plan sheet).
  - Original permit showed impacts of fill slope to buffers of stream SFN and called this location only buffer site #13. Confirmed to remove differing buffer number and label all of C400 impacts as permit site #16.
- Wetland WGS: permit site #17, temporary impact anticipated for swale tie and toe protection along fill slope.
  - Discussed viability of this WGS finger due to upstream site still feeding wetland. Confirmed to not have this finger be a total take.

### Plan Sheet 16

- Stream SFN, stream SFQ: permit site #16, C400 CSR has not been submitted at this time. Initially sized as (2)11'x9', buried 1.0', Q100 is 474cfs.
  - Channel change designed to pick up stream SFQ (coming out of Pond PAF) and combining with SFN to cross inside the RCBC.
  - Due to primarily relocated channel and wetland on the exit end, confirmed to remove sill (not bury) on the low flow cell with no baffles, culvert will likely be resized to (2)11'x8' RCBC, not buried. The high flow cell will have a 1' sill. Keep class II riprap on entrance and exit due to high volume of water. Add small rock pile ("turtle ramp") behind high flow barrel sill to aid with critter escape.
  - The remainder of stream SFQ that is not impacted that adjoins pond PAF will not be a total take.
- Construction sequence of C400 was discussed as two shorter pieces of a temporary channel change to the left of the culvert near the entrance and another channel close to the outlet (PSH 15) that does not tie back down to the culvert outlet but dissipates at the fill slope location to avoid additional wetland impacts to WGR.
- Pond PAF: no impact, not draining.
- Wetland WGT: permit site #18, fed by water existing pond PAF. Ms. Burke noted that stream SFN will be given a "JS Begins" label near the entrance of C400 and that the 4B drawings incorrectly showed the JS line style through wetland WGT (will be revised).
- Wetland WGS: permit site #17 wetland finger to left of C400 entrance will only be shown as temporary impacts.
  - Ms. Fleming noted to shift the outlet of the 15" pipe and ditch start 10-15' further to the right to avoid drawing down the existing wetland quickly into the channel that enters C400. By shifting this, the hope is this wetland finger will retain its viability and not be a total take. It will need to be monitored for potential loss of function.
- Stream SFS, wetland WGR: permit site #19, 60" RCP (Not Buried), due to jurisdictional stream beginning under fill slope.
  - Mr. Matthews noted that a detail for the countersunk riprap pad at this 60" crossing was not called out and should be added. Ms. Burke noted that the detail would become AL.

### Plan Sheet 17

- WGU(1): no impact.
- Stream SFT: permit site #20, 54" RCP/WSP under -Y24RPDR-, -Y24R- (US 70), -L-, and -Y24RPBR-.
  - Ms. Burke explained that multiple designs were considered for this SFT crossing during the proposal stage. Preliminary design had shown a box culvert diagonal under the US 70 bridges which the DB team found difficult to safely stage and difficult for NCTA to maintain.
  - Construction sequencing of the 54" pipe design consists of channel changes and utilization of the existing 36" pipe under US70. Discussion was had to shift the last 2GI near ramp B further to the left away from the existing stream bed to shorten that temporary channel change.
  - A 'JS Begins' label will be added to Stream SFT at the inlet entrance near the outlet of wetland WHA (no impact).
- Wetland WGU(2): No permit site number in preliminary permit, per discussion will become permit site #20 due to a ditch impact.
- Ms. Locklear asked if there was any way to outlet some of the systems along US70 into the proposed roadside ditches as opposed to closed storm drainage systems, specifically noting changes in 2 locations.
  - Outlet 24" crossing at -Y24R- 47+50 into roadside ditch/send to 42" crossing. Ms. Burke noted that this might increase the size of the 42" RCP, but it can be considered.
  - Shorten ditch to be outside buffer zone, -Y24R- 40+00 RT.

- Wetland WGY: Permit site #22, total take under roadway fill.
- Wetland WGZ: permit site #23, viability still considered with design shown – not a total take. Impacts are due to ditch tie-ins.
- Stream SGC and wetland WHB: Permit site #24, C500 currently sized as 6'x8', buried 1.0', Q100 is 170cfs.
  - Narrow (1.5' width) stream entering inlet of RCBC. Use a modified sill at entrance/exit with a 3' wide baffle.
  - Construction sequence of C500 anticipates temporary pipe at entrance end to avoid additional construction impacts to Wetland WHB and a channel change along the left side of C500.
  - Stream SGC will remain; therefore it is not anticipated that the remaining portions of wetland WHB will lose function and will not be considered a total take.

**Plan Sheet 18**

- Wetland WHB: see notes on plan sheet 17; the portion of the wetland on this plansheet will be under fill.
- Stream SGD: permit site #25, 60" CAAP crossing is currently buried 1.0'.
  - Discussion to remove burial of this pipe due to overall length (450') for fish passage. Pipe will be unburied and decrease in size to a 54" CAAP.
  - Ms. Duprey brought up the discussion of lining the portion of the SGD stream downstream of the existing 4'x4' RCBC to aid with stabilization downstream of all the construction/realigned channels which have riprap lining. Group decided to line 'on banks only' this portion of the untouched downstream SGD stream and to show as a 'bank stabilization' impact in the summary table.
    - Mr. McCollum requested the DB team revise PDE/ROW around this newly lined SGD stream.
- Wetland WHC: no impacts for drainage (upstream of stream SGD), PUE shown inside this wetland limits however and utility permit drawings/impacts will be coordinated for 4C.
- The non-jurisdictional pond off of Aggravation Lane will be drained for the project and will have a pond drainage plan.

**Plan Sheet 19**

- Stream SGE: permit site #26, C600 currently sized as 11'x8' RCBC, buried 1.0', Q100 is 230cfs.
  - Discussed placing a 6' baffle on entrance and exit to provide modified sill to the narrow stream traveling through this RCBC.
  - Mr. Cook asked if the agencies preferred a particular side for the baffles to be placed – if it should differ from inlet/outlet? Ms. Fleming requested that alternating the side the baffle was on was more of a case-by-case basis as to which direction the flow would likely be coming in to mimic closer to the existing condition the stream wants to take.
- Wetland WHD(1): permit site #26, at entrance of C600 also.
  - Labeled as "WHD" in original permit and 4B drawings, however NRTR indicates WHD(1), which label is correct? Ms. Riffey indicated WHD(1) was correct.
  - Discussed if the portion of the wetland WHD(1) outside the limits of the channel change would be a "total take." Mr. Ridings & Ms. Duprey agreed that the stream SGE would continue providing Wetland WHD(1) viability and shall remain.
- Wetland WHD(2): Permit site #26, impacts at outlet end of C600 and roadway fill.
- Wetland WHF: no impacts from drainage, will determine any utility impacts for 4C.
- Stream SGF & Wetland WHD(2): Permit site #27, impacts due to channel change and roadway fill.
  - Ms. Duprey asked that channel blocks be provided along the stretches of stream SGF near the fill slope. The DB Team agreed to add these blocks into the plan and add to detail BK.
  - Mr. Cook asked if stream impacts were required to be shown inside the entire limits of the PDE along the channel change (-L1- 1179+00 LT) even if the DB Team does not anticipate impacting/constructing inside a portion of the stream. Ms. Duprey noted that permanent impacts were not necessary due to the Nationwide 3 permit that NCDOT utilizes will allow for maintenance of this area without impacts.
- Stream SGG: permit site #28, conveyed in a channel change to culvert C600 with stream SGE.
  - Discussed removing the 2GI and 15" system near the toll gantry which outlets into buffer zones of SGG to avoid additional impacts. The DB Team agreed to research the amount of water traveling out of this cut ditch and possibly place a flared riprap pad to outlet at the cut/fill transition to avoid construction inside the buffer zones.





**Plan Sheet 20**

- No impacts.
- There is a proposed stormwater detention pond shown on this sheet that will be designed by the R-2829A team, however it is on the R-2829B project. This requires coordination between the two DB Teams. Project breakpoint from R-2829A to R-2829B is -L1- 1185+19.
  - Ms. Burke explained that this is not a water quality basin but is designed to detain the increase in Post 100 year peak flowrate to the railroad right of way per the RFP requirement. (The railroad crossing is at -Y26R-19+00 RT, E. Garner Rd.)

**Plan Sheet 21**

- Wetland WFG: permit site #1, total take under roadway fill.
  - Ms. Burke noted that the existing ponds shown will be provided with 'pond drainage plans' and much of the roadway work of -Y22RPAFLY\_REV- will be constructed in the previously mentioned early start package but will not impact wetland WFG before the permit is in hand.

**Plan Sheet 22**

- No impacts.

**Plan Sheet 23**

- Stream SKR: was not a permit site in the original permit (outside study area). The site will be numbered as the next consecutive new number on the R-2829A project. C700 has not been submitted for review at this time, however proposal design showed a (2)12'x9' RCBC, buried 1.0' to convey the Q100=832 cfs.
  - Ms. Burke noted that multiple crossing types were discussed during the proposal stage (including a possible bridge) and the size is subject to change due to the hydro pre-design meeting which requires the sizing of dual barrel culverts within HECRAS (original size completed in HY-8).
  - Average width of stream is around 10' base, decided to bury box culvert (1' sill) but not place any baffles in the low flow barrel and utilize a 2' sill in the other barrel to restrict flow to the low flow barrel in low flow conditions.
  - A rock "turtle ramp" will placed at the 2' sill within the high flow barrel at the inlet and outlet of the 2-cell RCBC to allow for passage of wildlife.
  - Ms. Burke stated she would look into adjusting the RCBC to avoid hitting any hard angles with the inlet or outlet.

**Plan Sheet 24**

- No impacts.

**Plan Sheet 25**

- Pond PAO & wetland WGH: permit site #61, fed by 36" RCP (not buried). Pond to be drained and provided with a 'pond drainage plan.' Additional impacts to pond seen on plan sheet 28.

**Plan Sheet 26**

- Stream SFJ: permit site #62, 36" RCP (not buried) impacts and roadway fill.

**Plan Sheet 27**

- No impacts.

**Plan Sheet 28**

- Pond PAO, stream SHT, & wetland WGH: permit site #61, pond to be drained (via 'pond drainage plan') and water conveyed downstream via 48" RCP (buried 1.0').
  - Discussed since upstream pond will be removed that stream SHT will no longer be jurisdictional and pipe crossing can be unburied. Pipe will be revised to 42" RCP (not buried).
  - Concerns with angle of the crosspipe entering the existing 24" HDPE and surrounding property buildings. Discussed revising the angle of the proposed crossing to better align closer to the existing downstream pipe. Stream SHT will become a total take due to construction limits.

- Wetland WGH discussed as not being a total take since once pond PAO is drained, will likely regenerate as a larger wetland. Mr. Ridings & Ms. Riffey agreed to leave the wetland unhatched and unimpacted in the permit drawings inside the limits of pond PAO. Mr. Ridings confirmed that buffer impacts should be included. Ms. Duprey requested that orange fence be placed along the fill slope line of -Y23DR- to limit construction activity inside the drained pond and protect the wetland to remain.

**Plan Sheet 29**

- Stream SFX: permit site #11, buffer impacts anticipated due to 42" RCP (Not buried) but not anticipating any stream impacts.
  - "JS Begins" label to be added near current DUE line outside limits of the riprap pad of the 42" RCP.
  - Mr. Matthews noted that the limits of stream SFX differed from the original permit. Ms. Burke & Ms. Riffey confirmed this as correct per the updated wetland file provided by NCTA.

**Plan Sheet 30**

- No impacts.

**Plan Sheet 31**

- Stream SFJ & wetland WNM: no permit number in original permit. Since this impact is downstream of permit site #62 along White Oak Road (PSH 26), it will become permit site #62A. Impacts by 54" RCP (buried 1.0') and roadway fill.
  - Ms. Locklear asked if the stability of the outlet channels of the 42" RCP (under Y23AR) and 54" RCP (under Y23FR) had been evaluated. Mr. Cook responded that the outlet ditch was stable with riprap per hydraulic calcs but non-erosive velocities had not been checked for entering the JS and would be provided later.
  - The DB Team will consider use of a temporary pipe instead of a temporary diversion channel during construction in order to not draw down the wetland.
  - The swales adjacent to wetland WNM will end at the wetland instead of the pipe headwall.

**Plan Sheet 32**

- No impacts. The DB team noted that a new alignment of Raynor Road on this plan sheet is being studied to stay away from the septic field and septic repair field at the Mount Herman Christian Church property. RK&K natural resources group is anticipating surveying this area (which is outside the R-2829 study area) to determine if any jurisdictional features are present.
- Future Raynor Road site development is currently under construction and shown shaded back on this plan sheet. Site development includes stormwater detention ponds which eventually do drain down to White Oak Creek.

**Plan Sheet 33**

- No impacts. Raynor Road site development (currently under construction) is also on this plan sheet.

**Plan Sheet 34**

- Wetland WGW, stream SFY, wetland WGV(1), and stream SFZ(1): permit site #63, crossing is C800 which is an extension of the existing 5'x6' RCBC with a supplemental 72" WSP (via trenchless installation) placed 2' above the flow line adjacent to the RCBC. This is a FEMA crossing and the Q100 FEMA posted value controlled at 660cfs.
  - Note that the stream is not jurisdictional at the entrance of the RCBC, only wetland WGW. Ms. Fleming requested the top of banks removed from this entrance channel to avoid confusion on jurisdiction.
  - "JS Begins" label will be added to Stream SFY near the exit of the culvert extension.
  - Ms. Burke noted that the NRTR indicated stream SFZ(1) is not subject to buffers, however stream SFY is subject to buffers. The buffered streams shown on current drawing match the buffering call outs on the original permit (which shows buffers on the opposite streams). Ms. Riffey confirmed that the buffers were drawn on the incorrect stream and plan view would need to be revised to match the NRTR; SFZ(1) not buffered, SFY is buffered. (Ms. Riffey also confirmed that we can include NRTR jurisdictional feature names in the summary sheet to help distinguish impacts in close proximity to each other.)
  - Construction sequence of C800 is anticipated to utilize impervious dikes around the culvert extension sections, trenchless installation bore/receiving pit of the supplemental 72" pipe. Ms. Burke noted that the supplemental pipe invert would be installed 2' above the RCBC invert, however the necessary pooling of

water in the area to rise up to this higher elevation was not anticipated to be an issue (no nearby structures at risk of flooding).

### Plan Sheet 35

- Stream SGA: Permit site #64, crossing is C900 which is an extension of a 6'x8' (entrance) and 6'x9' (outlet) RCBC with a supplemental 72" WSP (via trenchless installation) placed 2' above the flow line adjacent to the RCBC. This is a FEMA crossing and the calculated Q100 is higher than the posted FEMA Q at 850 cfs.
  - Construction sequence of C900 matches C800 with the utilization of impervious dikes to send temporary flow through the higher supplemental trenchless installation pipe.
  - Additional stabilization can possibly be used at the outlet of the RCBC as a potential solution to design concerns of stability. This will be addressed during the 100% Hydraulic Design review.
  - There are no impacts to stream SGI.

### Plan Sheet 36

- No impacts.

### Plan Sheet 36A

- Stream SGA, stream SAAK, stream SAAL, wetland WHD, wetland WAAK: permit site #65, crossing is C1000 and has not been submitted at this time; preliminarily sized as a 10'x9' RCBC (Buried 1.0') with RFP requirement a minimum conveyance opening of 77sqft. Q100 is 599cfs and baffles are anticipated (5' wide).
  - RK&K (Hal Bain, Josh Tutt, & Gordon Marsh) delineated the additional streams and wetlands shown on the sheet (SAAL, SAAK, WAAJ, WAAK) that were outside the study area along E. Garner Rd. and coordinated via email with Ms. Riffey & Ms. Duprey (dated 3/22/24) on the naming conventions and buffering status. The draft PJD package for these additional features was submitted on 3/29/24 and was under review during the 4B meeting.
  - With the additional streams coming into C1000, it is anticipated to be angled more to what is considered the main entrance stream of SGA. Ms. Fleming requested that the entrance channel change be revised to clearly show how stream SAAL and stream SAAK will be brought into the RCBC.
  - Construction sequence is anticipated to utilize the existing 4'x4' RCBC under E. Garner Rd. and construct a temporary channel around the outlet end to stay out of the C1000 construction zone.
  - Wetland WHD upon further NRTR review and 4B discussion shall be renamed to WHD(2).
- Wetland WAAJ: no impacts anticipated.
- Stream SGD: permit site #25, crossing is a 60" RCP (buried 1.0') and is fed by additional SGD crossings shown on plan sheet 18.
  - Construction sequencing of the 60" is anticipated to be a temporary channel change around the left side of the work zone.
- Ms. Burke noted that the downstream structures of these two crossings (C1000 RCBC & 60" RCP) are the existing dual 60" RCPs under the railroad. This railroad right of way is the location where the RFP dictated no increase to the peak Q100 flowrate, requiring a designed stormwater pond for attenuation (shown on plan sheet 20).

### Plan Sheet 36B

- No Impacts.

The meeting adjourned.

**R-2829A SAFETEA-LU Section 6002 Interagency Meeting  
(Concurrence Point 4C)**



**Date:** June 20, 2024  
**Location:** CCA Structures Conference Room  
**Time:** 1:00PM  
**Attendees:** Jenny Fleming– NCTA (VHB)  
 Rob Ridings – NCDWR  
 Jennifer Harris – NCTA  
 Cameron Richards – NCDOT  
 Chris Martin – Branch Civil  
 Roy Bruce – NCTA  
 Alexis Burke – RK&K  
 Chris Rivenbark – RK&K  
 Paul Nishimoto – Branch Civil  
 Nikki Duprey – NCTA (Sage)  
 Aaron Harper – NCDOT REU  
 Jared Gray – NCDOT EAU  
 \*Tony Houser – RK&K  
 \*Adam Freeman – STV

Deanna Riffey – NCDOT EAU  
 Ron McCollum – NCTA  
 Eric Alsmeyer - USACE  
 Jonathan Bivens – ST Wooten  
 \*Alan Shapiro – NCTA  
 Matthew Cook – RK&K  
 Byron Holden – RK&K  
 Jason Kiser– Branch Civil  
 Andy Barry – ST Wooten  
 Abi Sheffey – NCTA (Sage)  
 \*Wesley Chandler – NCDOT REU  
 \*Marissa Cox – NCDOT EPU  
 Elizabeth Harvey – NCDOT EAU

(\* virtual via Microsoft Teams)

An interagency meeting was held to review the permit drawings in order to reach compliance on SAFETEA-LU Section 6002 (equivalent to Interagency Concurrence Point 4C and here forth in the minutes as 4C) for R-2829A Complete 540 in Wake County. The following items were discussed and conclusions reached:

Jennifer Harris kicked off the 4C meeting with introductions; in person and virtual attendees were noted and introduced. Ms. Harris turned the meeting over to Eric Alsmeyer (USACE) who had no opening remarks and then turned the meeting over to the design build (DB) team.

Matthew Cook introduced the DB Team for the project which is a joint venture team of Branch Civil/ST Wooten (contractors) and RK&K (prime engineer). The project begins just southwest of I-40; the beginning of the R-2829A job consists of primarily pavement overlay inside the R-2828 / I-5111 turbine area, and full construction of the mainline begins around -L- 965+50. The R-2829A portion of the project joins the R-2829B project just south of Rock Quarry Rd or north of East Garner Rd.

This project does currently have a preliminary permit in hand. The DB Team will be submitting a permit modification request to NCTA once the minutes of this equivalent 4C meeting are approved and the plans / impacts are completed. Per the RFP, NCTA will review the package for approximately 20 days starting around mid-July. The DB Team will work with NCTA during the review process before submitting the permit modification request to the agencies likely in mid-August. The agencies’ review is anticipated to take up to 120 days (per the RFP) to review the permit modification request with hopes for an approved permit modification in order to begin construction in early December 2024.

Construction will not occur inside any jurisdictional features until a new signed permit modification has been issued. As discussed in the 4B meeting, there is an early start work package which already has issued RFC Plans in the area of construction near the R-2828 turbine area. There will be no jurisdictional features impacted with this early work construction and the erosion control plans have also been coordinated with Aaron Harper and his REU group to make sure the DB team stays away from these jurisdictional features in the area. Per Mr. Bivens, construction on this early work is anticipated to begin after the fourth of July holiday. The agencies will be receiving official notification from the DB Team (via NCTA) prior to construction.



Eric Alsmeyer added that a few items related to the time frame of the permit. An issue will need to go out for public notice once the agencies have the permit mod request and the final drawings are complete. However, Mr. Alsmeyer did not indicate that the agencies would have issues meeting the proposed approval date. Also, agencies have given concurrence on the additional PJD area off East Garner Road, and the jurisdictional areas should be correct on the plans shown today. Chris Rivenbark asked about the possibility of an abbreviated notice, i.e. a 15-day notice, since the DB Team anticipates impacts to be lower than what the corridor permit indicated. Mr. Alsmeyer said that will likely be possible if requested by the DB Team.

The expiration date of the current permit will also need to be extended for the construction of the R-2829 jobs. Mr. Rivenbark noted that the DB Team would work with NCTA to determine if R-2829A or R-2829B would be turned in first and who would need to request that extension. Discussion was had on the status of the current permit modification which is agreed to be valid through December 31, 2026. Construction of R-2829A will continue through year 2028, and our DB Team will request the permit modification extension to allow for that timeline.

Mr. Cook reviewed the current status of the R-2829A design, the DB Team is currently at the right of way plan stage. The hydraulic plans have been approved, noting there are 12 major hydraulic structures on the job; (10) box culverts and (2) hydraulic bridges – Bushy Branch & White Oak Creek. Seven of these major structures have been ‘comments as noted’ and the remaining five should receive approval well before the permit modification goes to the agencies. There are a few stormwater detention ponds on the project that are currently being designed, however they should not have any permit impacts as they are not on any jurisdictional features that have not already been affected by the roadway facility.

Mr. Cook then reviewed the utilization of the Arc-GIS Online (AGOL) tool, which has been under development with NCDOT for years to provide a more digital permit process. The AGOL is accessed via a website managed by RK&K. The AGOL utilizes different backgrounds (aerial photos was used for this example with USGS among others available) with the roadway facility, existing features (NCTA planimetric file), and permit impacts overlaid in the tool. Mr. Cook also explained that this tool can indicate your exact location inside those permit impact limits and can be utilized as a tool in the field via phone or iPad to aid with the official pdf permit drawings. Safeguards will be put in place to make sure the agencies can be assured the permit impacts shown are only the ones approved. The web address for the AGOL is the following:

<https://experience.arcgis.com/experience/810887e3636442ccb71d5d223ace82a4/>

#### General Notes:

- Due to multiple packages to review (stream and wetland, buffers, utility stream and wetland, utility buffers), Mr. Cook described the review process they would use during the meeting. Each individual site would be evaluated for all potential impacts instead of moving completely through one package and then needing to go back through all the sites again due to a different package. For instance, the same site would be reviewed for all stream and wetland impacts, then buffer impacts, then any impacts due to utilities.
- Throughout the permit drawing review, discussions were held involving the impacts due to the utility work. Currently, the utility designs are in flux. The DB Team is diligently working through our utility coordinator and utility designer to incorporate up to date utility relocations, and our hydraulics and environmental personnel coordinate daily with them. There are several locations where NCTA purchased easements during the preliminary design in anticipation of utilities needing them. There are also some sites where the DB Team, based on the information we currently have from the utilities, where we are fairly certain what utility will use the easement and how much jurisdictional impact will be required. However, there are a couple sites where we are still working through what is needed. After discussions during the meeting and reductions in proposed impacts, Mr. Alsmeyer and Rob Ridings agreed to move forward with the jurisdictional impacts, known or anticipated, in the permit package. They will be updated as we receive more information, even potentially during the permit modification review process, and this should not hinder or hold up the review process.
- Site numbers generally match those from the preliminary permit. However, buffer sites have been renumbered to match the stream and wetland sites. Any new sites were given a number sequential after the initial set of site numbers.



**Section 1 Equivalent 4C Permit Drawings:**

Mr. Cook kicked off the review of the 4C permit drawings, starting with the ditch detail sheets and the buffer swale information. He noted that full buffer filtration treatment length was not achieved at all locations but as discussed in the 4B meeting, additional filtration areas were provided to non-buffered areas to try to offset the limitations of the project.

**Permit Drawing 8 of 103**

- **Site 36:** Wetland WFK. Mechanized clearing impact at the wetland edge due to the need to drain all ponds on the R-2829A job and to breach the existing dam with a standard riprap lined ditch down to the wetland.
  - The pond under -Y22RPE\_REV- feeding wetland WFK is not jurisdictional.

**Permit Drawing 10 of 103, Buffer Drawing 10 of 36**

- **Site 2:** Wetland WFJ, total take due to roadway fill and ditch.
- **Site 3:** Bushy Branch, Wetland WFN(1). Bridge structure B5 is designed with 54" FIBs, (4) 115' spans, a Q100 of roughly 2100 cfs, and is not a FEMA crossing (or hydraulically controlled).
  - Bridge is anticipated to be constructed with a causeway with no anticipated hauling across Bushy Branch. The temporary work pad detail can be seen on permit drawing 13 of 103. Per 4B, class A rock will be utilized along the top to aid with drivability for regular delivery trucks along this causeway.
    - Impacts: Temporary wetland impacts under the causeway, mechanized clearing impacts will be included along the end bents, and hand clearing impacts for the remainder of the wetland under the bridge +15' along the edges. Permanent impacts due to the bridge bents will be noted on the impact summary table at the bottom.
- **Site 3:** Stream SEW (buffered) & wetland WFN(1): impacts due to ditch along -L- LT
  - Upland wetland WFN(1) finger will be considered a total take; plan view hatching limits are only what is necessary for construction.
  - Stream SEW (buffered) will be a total take; plan view hatching limits are only what is necessary for construction. Remainder of impact take not shown will be noted in the impact summary tables.
    - Mr. Ridings noted that all buffer impacts associated with stream SEW shall be shown as mitigable. The impacts would have been allowable due to the bridge if stream SEW was to remain. Also requested that all associated buffer impact to SEW be shown on a single line in the impact summary table.
  - Designed swales have provided 400' of additional filtration that will be extra on the project due to stream SEW being a total take and no longer buffered. These locations of additional filtration were discussed during the 4B meeting to remain, especially in areas where full limits necessary for filtration were not met.
- **Site 3:** Stream SEY (buffered), temporary and permanent stream impacts anticipated due to channel change along -L- RT and bridge approach construction & access needs.
  - Temporary impacts for construction access are just to drive around the bridge bent. Mr. Alsmeyer asked how long this temporary impact to stream SEW was and asked how they will protect the existing stream contours? Mr. Cook explained they could pipe it if they must but that the contractor will return this piece of the stream to the original condition. Mr. Bivens noted that this is not the main access for construction. The causeway is the main access, and this temporary stream impact is just to driving around the end bent for final dressing.

**Permit Drawing 18 of 103**

- **Site 4:** Wetland WFY, permanent fill impacts are due to 48" RCP (not buried) and the roadway facility. The mechanized clearing impacts are temporary and for construction/access.
  - This is not a jurisdictional stream and therefore was not a buried pipe. An additional 280' of buffer swale was designed to this outfall as extra filtration.
  - Neither wetland fingers at the entrance of the pipe crossing are considered total take and were discussed at 4B to both continue being viable and not further impacted.

**Permit Drawing 21 of 103, Buffer Drawing 11 of 36**

- **Site 5:** Stream SFH (buffered), permanent and temporary stream impacts due to culvert C100, which is a 9'x8', buried 1.0' with a 4' wide baffle. Drainage area is 40 acres with a Q100 of 130 cfs.

- Riprap at the entrance and exit channels of C100 are per the RFP. Note that all crossings were updated based on the Class I vs Class II discussion during the 4B meeting.
- Temporary stream impacts and mitigable buffer impacts do include the necessary temporary construction channel (currently design along the left side of the culvert) as discussed for the C100 construction sequence.
- **Site 6:** Stream SFF (buffered), permanent and temporary stream impacts (mitigable buffer impacts) due to culvert C200 which is a 12'x8' RCBC, buried 1.0 with a 6' wide baffle (Q100=190cfs). There is additionally a channel change that conveys stream SFE (Site 7) on the bottom right into Stream SFF (Site 6).
- **Site 7:** Stream SFE (buffered): permanent and temporary stream impacts (mitigable buffer impacts) due to channel changes conveying stream to C200.
  - Temporary stream impacts (mitigable buffer only within the buffer closest to roadway facility {east side}) near the outlet of C200 are due to the small piece of temporary channel relocation around right side of the C200 outlet per the construction sequence.
- Mr. Bivens noted that Cardinal Pipeline has already relocated their gas line from -L- 1010+50 to -L- 1012+50 (work completed about 2-3 weeks ago). Cardinal has noted existing rock in the ground which required blasting and indicated R-2829A project may encounter more rock in the C100 & C200 construction. Discussed during 4B to only place rock back in the culverts if rock not already present on a case-by-case basis.
- Site 7: Wetland WFZ, total take due to mainline fill and channel change conveying to entrance of C200.
- Note that there is a datum on this plan sheet around plan sheet 1007+00 and the roadway facility is intentionally shown at different offsets here.

**Permit Drawing 27 of 103, Buffer Drawing 12 of 36**

- **Site 7:** Wetland WFZ and stream SFE (buffered): see impacts on previous permit drawings.
- **Site 8:** Stream SFB (buffered), permanent and temporary stream impacts (mitigable buffer impacts) due to 42" RCP (not buried) and roadway facility.
  - Designed swales have provided 432' of buffer filtration (525' was desired).
  - Nikki Duprey requested that the riprap pad on the 42" include/extend through to where the swale ditch tie down to the wetland to provide additional stabilization. DB Team agreed that during construction, that riprap would be field adjusted to tie through to the swale edge as needed.
- Site 8: Wetland WGB & Wetland WGC are both total takes due to the roadway facility.
- Site 8: Wetland WGD, permanent fill and mechanized clearing impacts due to the outlet of 42" RCP

**Permit Drawing 31 of 103, Buffer Drawing 13 of 36**

- **Site 9:** Pond PAD (buffered), will be completely drained according to the 'pond drainage plan' and a total take (mitigable buffer impacts)
- Site 9: Wetland WAAE, WAAF, WGF: these wetlands border on the Pond PAD
  - WAAE will be a total take per discussions due to this wetland being the overflow of the pond that is being drained and the wetland viability removed.
  - WAAF shown as temporary wetland impact to remove the dam on the existing pond.
    - Abi Sheffey asked if this temporary impact was temporary fill or mechanized clearing. DB Team confirmed that temporary fill in the wetland was shown since the impact is just to breach the dam and the expectation is to have the wetland restored to its previous condition post construction.
- Site 9: Stream SFA (buffered) & Wetland WGG, total take due to 48" RCP (not buried) and roadway facility.
- Site 9: Wetland WGF is a total take; borders on edge of drained pond PAD (was not part of the original permit package impacts).
- **Site 10:** Wetland WGJ, permanent fill and mechanized clearing impact due to ditch tie & roadway fill.
- **Site 39:** Stream SFK (buffered): allowable buffer impact only (no surface water impacts) due to energy dissipator basin.
- **Site 11:** Wetland WGM, total take. Located on the matchline between PSH 11 and 12 under roadway fill.
- (3) stormwater detention ponds will be designed on plan sheet 11 (-L1- 1036+00 LT, -L1- 1046+00 LT/ramp B, & Loop B quadrant). No additional jurisdictional features will be impacted with these future detention ponds, however data will be reported on the SMP.
  - Mr. Alsmeyer confirmed that constructing a stormwater detention pond was allowable in an existing jurisdictional ponds footprint due to the pond being completely drained and accounted for as a total take for the permit impacts and no additional jurisdictional features upstream.

- All designed buffer swales from the PSH 10/11 matchline up to proposed White Oak Rd are additional and not “required” due to the removal of the downstream buffered pond PAD. Per 4B discussions, this additional filtration will remain in the proposed design due to limitations on filtration in other areas.

**Permit Drawing 35 of 103, Buffer Drawing 14 of 36**

- **Site 11:** Wetland WGM: see notes on permit drawing 31 of 103.
- Site 11: Stream SFD (buffered), total take due to roadway facility.
  - Buffer impacts to be revised to allowable impacts instead of mitigable.
- **Site 12:** Stream SFC (buffered) & Wetland WGN, permanent and temporary impacts with structure stabilization stream impacts at the outlet end of the 48” RCP/54” RCP (not buried).
  - Wetland WGN will not be a total take per 4B discussions.
  - Buffer impacts to SFC will be considered mitigable and only to the limits necessary for drainage construction downstream.
- **Site 13:** Wetland WGO, impact due to roadway fill, toe protection and access to construct tail ditch.
  - Spring box note was added into the plans at the top of this wetland to field verify if needed.

**Utility Permit Drawing 2 of 11, Utility Buffer Drawing 2 of 11**

- Site 12: Stream SFC (buffered), temporary stream impacts shown currently to the edge of the DUE limits (allowable buffer impacts to edge of DUE limits)
  - Easements shown are all early acquisition parcels and NCTA has requested these stay as is.
  - Agencies discussed due to the utility being an overhead power line and no construction access issues, that the impacts to the stream and buffers be limited to 15’ offset from the overhead line and not to the edge of the DUE. Buffer impacts will be on both sides of the JS, however temporary stream impacts will only be an approximate 30’ wide swath (15’ offset on either side of where the OH line will go over the stream) and not tie to the remainder of the JS impact on stream SFC.
  - Ms. Duprey requested that the toe protection along the driveway be pulled back outside of the buffer zones near this DUE/utility line which the DB team agreed to.

**Permit Drawing 40 of 103, Buffer Drawing 15 of 36**

- **Site 14:** White Oak Creek, Stream SFV (buffered), White Oak Creek bridge; 3 span (86’, 117’ 112’)- 54” FIBs, Q100 is 3160 cfs (FEMA).
  - No anticipated causeways (will be constructed with cranes from either side), temporary and permanent stream impacts are only due to swale/riprap tie downs to White Oak Creek.
  - Allowable buffer impacts under the entire limits of the bridge due to bridge construction and ditches.
- Ms. Duprey asked who was constructing the greenway under the White Oak Creek Bridge. DB team confirmed the piece shown in solid lines would be built under R-2829A and tied to by the town of Garner in the future.

**Section 2 Equivalent 4C Permit Drawings:**

Ms. Burke began review of the second half of the 4C permit drawings after a brief break.

**Permit Drawing 44 of 103, Buffer Drawing 16 of 36**

- **Site 15:** Stream SFR (buffered) & wetland WGR, permanent and temporary impacts (mitigable buffer impact) due to C300, which is an 8’x7’ RCBC (not buried, no baffles), Q100 is 166 cfs.
  - Upland portion of wetland WGR is a total take, however hatching only shows inside the ROW and the remainder of the impact is noted on the summary table.
  - Designed buffer swales provide 180’ of treatment (91’ desired) LT of RCBC entrance and 133’ of treatment (202’ desired) RT of the RCBC entrance.

**Permit Drawing 48 of 103, Buffer Drawing 17 of 36**

- **Site 15:** Wetland WGR, Fill in wetland and mechanized clearing impacts due to roadway fill and toe protection.
- **Site 16:** Stream SFN (buffered) & wetland WGR, outlet of C400 (to be discussed on next plan sheet).
- **Site 38 (buffer only):** Stream SFN (buffered), allowable impacts due to roadway fill.





- Ms. Riffey requested that Site 38 be removed and grouped in with Site 16 since this is the same buffered stream and only a few hundred feet away. Impact will also need to be revised to mitigable to match other impact.
- **Site 17:** Wetland WGS, fill in wetland and mechanized clearing due to roadway facility/toe protection and swale tie.
  - Discussed viability of this WGS upland finger during 4B to not be a total take.

**Permit Drawing 52 of 103, Buffer Drawing 18 of 36**

- **Site 16:** Stream SFN (buffered) & Wetland WGR, total take of stream SFN upstream of wetland WGR (Mitigable buffer impacts are a total take), Conveyed in C400, which is a 7'x7' RCBC (not buried, no baffles), Q100 is 430cfs.
  - Upstream piece of buffer impacts not hatched outside of right of way, however noted in the impact summary table.
- Site 16: Wetland WGT, fed by water exiting pond PAF. Permanent and mechanized clearing wetland impacts due to C400 entrance & ditch ties.
- **Site 17:** Wetland WGS, permanent fill in wetland and mechanized clearing due to toe protection and roadway facility
  - Shifted outlet of 15" system and ditch "begin" farther away from wetland WGS to avoid drawing the wetland down per 4B request by NCTA. WGS is not a total take.
- **Site 18:** Stream SFQ (buffered), also fed by water exiting pond PAF. SFQ is not a total take, portion exiting pond is not impacted. Permanent and temporary stream impacts due to channel change conveyed to entrance of C400 culvert.
  - Mitigable buffer impacts only to limits necessary for L1 RT ditch construction (not to edge of PDE). Buffer hatching not shown to edge of ROW intentionally for portion of SFQ along L1 LT, however this piece is a total take and noted in the impact summary table.
  - Designed buffer swales provide 290' of treatment to SFQ (98' desired).
- **Site 19:** Stream SFS (buffered) & wetland WGR. Permanent and temporary stream impacts, permanent & mechanized clearing wetland impacts due to 60" RCP (not buried) and roadway facility.
  - Mitigable buffer impacts to stream SFS only inside the limits necessary for construction (not to PDE).

**Permit Drawing 59 of 103, Buffer Drawing 19 of 36**

- **Site 20:** Stream SFT (buffered), 54" RCP/WSP/CAAP (buried 1.0') under -Y24RPDR-, -Y24R- (US 70), -L-, and -Y24RPBR-.
  - Permanent and temporary stream impacts to Stream SFT with structure stabilization impacts at the entrance & exit of the pipe.
  - Ms. Burke noted the drainage system running down US 70 was revised to outlet earlier into the riprap lined ditch per DWRs request at 4B (-Y24R- 50+00 RT)
  - Shifted 24" CSP outlet/ditch to start outside of the buffer zone for SFT (near outlet of 54" crossing, Y24R 39+00 RT) per 4B.
  - Designed buffer swales provide 250' of treatment (325' desired).
- **Site 20A:** Wetland WGU(2), mechanized clearing in wetland due to ditch outfall tie construction.
  - Noted that hatching is shown outside of right of way, request to revise impact to construction limits.
  - Ms. Duprey requested an additional inset (or leader lines) for clarity on Site 20A.
- **Site 21:** Wetland WGY, total take under roadway facility.
- **Site 22:** Wetland WGZ, permanent fill and mechanized clearing due to roadway fill, toe protection and ditch ties. Discussed viability of wetland at 4B and wetland to remain outside of roadway footprint and not be a total take.
- **Site 23:** Stream SGC (buffered) and wetland WHB, conveyed in C500 a 6'x8' (buried 1.0') with 3' wide baffles, Q100 is 170cfs.
  - Permanent and temporary stream impacts due to roadway facility and C500. Mitigable buffer impacts shown under the roadway facility.
  - Stream SGC will remain; therefore, it is not anticipated that the remaining portions of wetland WHB will lose function and will not be considered a total take; permanent fill in wetland and mechanized clearing impacts.
    - Ms. Duprey requested additional mechanized clearing pattern "star" hatching to clarify impact type inside wetland shape.

**Utility Permit Drawing 3 of 11, Utility Buffer Drawing 3 of 11**

- **Site 20:** Stream SFT (buffered), temporary stream and mitigable buffer impacts currently shown for entire limits of DUE/PUE for overhead power line and 12" directional drill gas line (parallel with US70).

- Discussions that utilities in this area are currently under design and easements shown are what was provided for the early acquisition by NCTA.
- Mr. Rivenbark noted that RK&K utility coordinators are being provided daily updates on these US 70 utility designs. DB Team noted that the current location of the OH line pole will likely shift up and away from the R-2829A designed ditch which would realign the OH utility angle.
- Mr. Alsmeyer recommended revising the permit impacts to only show hatching (temporary stream & buffer) up to the DUE line and remove impacts shown in the PUE triangle. DB Team agreed to revise and coordinate further with the utility owners as designs finalize.
- Discussions on if the buffer impact shall remain mitigable or revise to allowable due to angle/type of utility construction utilized in the area. Agencies agreed to leave impact as mitigable for now since it is the most conservative. Directional drill labels and type of buffer impact to possibly change if utility owners determine to jack & bore the steel utility pipe.
- Inset A on utility permit drawing 3 of 11 needs to clip out wetland WGU(2) shapes due to overlap.

**Permit Drawing 64 of 103, Buffer Drawing 20 of 36**

- **Site 23:** Wetland WHB: see notes on plan sheet 17, the portion of the wetland on this plansheet will be under roadway fill and a total take.
- **Site 24:** Stream SGD (buffered), temporary and permanent stream (mitigable buffer) impacts due to 54" CAAP (not buried)
  - Discussed during 4B to remove burial on this pipe crossing due to overall length being too long for aquatic passage (this reduced the pipe size also).
  - Per 4B, the portion of the existing SGD stream downstream of 54" CAAP has been revised to show bank stabilization riprap lining with a corresponding detail for installation. Permit impacts show "bank stabilization" surface water impacts to SGD for this riprap and mitigable buffer impacts (around the existing transportation facility of the driveways in the area).

**Utility Permit Drawing 4 of 11, Utility Buffer Permit Drawing 4 of 11**

- **Site 24:** Stream SGD (buffered) & Wetland WHC, temporary stream impacts and hand clearing shown inside the PUE due to the overhead power utility line in the easement.
  - Buffer impacts to the utility line will be allowable.

**Permit Drawing 67 of 103, Buffer Drawing 21 of 36**

- **Site 25:** Stream SGE (buffered), temporary and permanent stream (mitigable buffer) impacts and structure stabilization impacts due to C600; an 11'x8' RCBC (buried 1.0) with 5.5' wide baffles. Q100 is 230cfs.
  - Additional temporary stream (and mechanized clearing) impacts shown up to the PDE at C600 inlet & outlet due to construction sequence which includes (2) small pieces of temporary channel change for culvert construction.
- **Site 25:** Wetland WHD(1), permanent and mechanized clearing impacts due to C600 and roadway facility.
  - Per 4B, the portion of the wetland WHD(1) outside the limits of the channel change would still be considered viable due to stream SGE in the area and not be a total take.
- **Site 25:** Wetland WHD(2), permanent and mechanized clearing impacts due to outlet of C600 and roadway fill.
- **Site 26:** Stream SGG (buffered), permanent and temporary stream (mitigable buffer) impacts due to channel change conveying to C600 entrance and roadway facility.
  - Per 4B, removed drainage system near toll gantry (-L1- 1180+00 RT) to avoid additional impact to SGG buffer. Revised design includes a swale with riprap dissipation at the end. This swale is now outside the buffer limits with no additional permit impacts to stream SGG (swale provides 240' of buffer filtration, 200' desired).
- **Site 27:** Stream SGF (buffered) & Wetland WHD(2), permanent and temporary stream (mitigable buffer) impacts due to channel change and roadway fill. Permanent fill and mechanized clearing wetland impacts due to same design.
- Location of stormwater detention pond due to no net increase to the railroad right of way (PSH 36A, Permit Drawing 93 of 103 at -Y26R- 19+00 250' RT) was noted to be on the next plansheet (PSH 20, not included due to no jurisdictional feature impacts). The detention pond will be located on the R-2829B job and is currently being coordinated between the DB teams and NCTA.

**Permit Drawing 73 of 103**

- **Site 1:** Wetland WFG, total take under roadway facility.
  - This permit site is downstream of the Early Start Package discussed at the beginning of the meeting. Early construction works will not impact wetland WFG before the final permit modification is in hand.

**Permit Drawing 76 of 103, Buffer Drawing 22 of 36**

- **Site 28:** Stream SKR (buffered), permanent and temporary stream (mitigable buffer) impacts due to C700, (2) 12'x8' RCBC (buried 1.0), no baffles with a 2' sill in the high flow cell. Q100 is 830 cfs.
  - Temporary stream (mitigable buffer) impacts go all the way to the PDE edges due to construction sequence of C700 with a temporary channel around the left side of the culvert.

**Buffer Drawing 23 of 36**

- **Site 30:** Pond PAO (buffered). Total take mitigable buffer impacts only on plan sheet 25. Pond PAO jurisdictional surface water limits are on the plan sheet 28 below.
  - Wetland WGH (inside buffer limits of Pond PAO) was discussed during 4B to remain unimpacted since it will likely stay viable during the drainage of the pond.
  - DB Team to check the limits of the pond versus the buffer zone lines to ensure correct impact numbers.

**Permit Drawing 79 of 103, Buffer Drawing 24 of 36**

- **Site 29:** Stream SFJ (buffered), permanent and temporary stream (allowable buffer) impact due to 36" RCP (not buried) and roadway widening. Structure stabilization stream impacts due to outlet riprap pad.
  - Designed swales provide 195' of buffer filtration, 355' desired.
  - Roadway and drainage design change anticipated along -Y23R- 55+00 - 61+00 RT due to newly installed curb by developer and Mount Herman Church access.

**Utility Drawing 6 of 11, Utility Buffer Permit Drawing 5 of 11**

- **Site 29:** Stream SFJ (buffered), temporary stream impacts (allowable buffer) impacts due to overhead utility power line. Permit impacts currently shown in full limits of PUE/DUE up to impacts required for 36" RCP.
  - Mr. Alsmeyer requested that the temporary stream impacts be removed from stream SFJ for the OH utility. DB Team confirmed that access can be provided from each side and impacts to the stream are not necessary to construct. Buffer impacts to remain as shown for necessary clearing.
    - Removal of stream impacts will remove Utility Drawing Sheet 6 of 11 from the set.

**Permit Drawing 81 of 103, Buffer Drawing 25 of 36**

- **Site 30:** Pond PAO (buffered), permanent pond surface water (mitigable buffer) impacts due to draining existing pond in right of way. Note Wetland WGH above Pond PAO is to remain unimpacted.
- **Site 30:** Stream SHT (buffered), total take of stream due to 42" RCP (not buried) and roadway facility.
  - Per 4B, pipe crossing was unburied and angle revised to provide better water passage into the downstream 24" HDPE and limit surrounding property concerns.
  - Ms. Duprey requested a channel block/filling of the existing abandoned channel near -Y23DR- 25+00 RT. DB team agreed to revise plans to account for this.
  - Mitigable impacts (total take) for Stream SHT to be revised to not show hatching outside the easements and to provide a note in the impact summary table.

**Buffer Drawing 26 of 36**

- **Site 37:** Stream SFX (buffered), allowable buffer impacts only at this site due to 42" RCP (not buried) and roadway facility.
  - Designed swales provide 650' of buffer filtration, 195' desired.

**Utility Buffer Drawing 6 of 11**

- **Site 37:** Stream SFX (buffered), allowable buffer impacts up to DUE limits due to proposed overhead utility line. Allowable utility buffer impacts tie to buffer impacts necessary for 42" pipe crossing.

**Permit Drawing 83 of 103, Buffer Drawing 27 of 36**



- **Site 29A:** Stream SFJ (buffered) & wetland WNM: permanent and temporary stream (allowable buffer) impacts with structure stabilization due to 54" RCP (buried 1.0') and roadway facility. Permanent fill and mechanized clearing impacts for Wetland WNM.
  - Designed swales provide 437' total of buffer filtration to Stream SFJ, 437' total desired.

**Permit Drawing 86 of 103, Buffer Drawing 28 of 36**

- **Site 31:** Wetland WGW, permanent and mechanized clearing wetland impacts at the entrance of C800. Culvert is an existing 5'x6' RCBC extension and also a supplemental 72" WSP (via trenchless installation) placed 2' above the flow line adjacent to the RCBC. This is a FEMA crossing and the Q100 FEMA posted value controlled at 660cfs.
- **Site 31:** Stream SFY (buffered), Wetland WGW, Wetland WGV(1), permanent and temporary (allowable buffer) impacts at upstream and downstream end of C800. Permanent and mechanized clearing wetland impacts due to roadway fill and toe protection.
  - Note that the "stream" is not jurisdictional at the entrance of the RCBC, only wetland WGW.
  - SFZ(1) stream is not subject to buffers nor impacted by C800 or the roadway facility.
  - Designed swales provide 228' total buffer filtration, 928' total desired.

**Utility Permit Drawing 7 of 11, Utility Buffer Permit Drawing 7 of 11**

- **Site 31:** Wetland WGW, hand clearing wetland impact due to 16" water line which will be directionally drilled.
- **Site 31:** Wetland WGV(1), Stream SFY (buffered), Stream SFZ(1), Temporary stream impacts (allowable buffer) and hand clearing wetland impact due to future utility line inside the DUE/PUE at the downstream end of C800.
  - Impacts for the -Y24R- RT utility lines (anticipate 4 fiber lines & gas) are set as conservatively as possible until utility design in the area is confirmed (see general note above).
  - Discussions about City of Raleigh requirement for clearing all easements for water lines, therefore -Y24R- LT impact is to remain hand clearing inside the full PUE limits (as currently shown) to avoid any delay on the project.
  - Ms. Sheffey requested that a "JS Begins" label be added at the outlet of RCBC to indicate where the buffered stream begins.

**Permit Drawing 90 of 103, Buffer Drawing 29 of 36**

- **Site 32:** Stream SGA (buffered), permanent and temporary stream (mitigable buffer) impacts due to crossing C900. Culvert is an extension of an existing 6'x8' (entrance) and 6'x9' (outlet) RCBC with a supplemental 72" WSP (via trenchless installation) placed 2' above the flow line adjacent to the RCBC. This is a FEMA crossing and the calculated Q100 is higher than the posted FEMA Q at 850 cfs.
  - Structure stabilization stream impacts are shown at the entrance end of C900.
  - Designed swales provide 317' total buffer filtration, 424' desired.

**Utility Buffer Drawing 8 of 11**

- **Site 32:** Stream SGA (buffered), allowable buffer impacts due to 16" water line (-Y24R- LT) and fiber and gas utility lines (-Y24R- RT).

**Permit Drawing 93 of 103, Buffer Drawing 30 of 36**

- **Site 33:** Stream SGA (buffered), permanent and temporary stream impacts (allowable buffer impacts) due to C1000, 10'x9' RCBC (buried 1.0') with 5' wide baffles. RFP required a minimum conveyance opening of 77sqft, Q100 is 600 cfs.
  - Structure stabilization type impacts at the outlet end of C1000.
  - Ms. Flemming requested that the C1000 entrance show the bench necessary up to the baffle in plan view.
- **Site 34:** Stream SAAK, permanent and temporary stream impacts due to channel change at the entrance of C1000.
  - Requested to show channel block/fill in stream of the abandoned channels at the entrance of C1000.
- **Site 35:** Stream SAAL (buffered), permanent and temporary stream impacts due to channel change at the entrance of C1000 and the removal of the existing 4'x4' RCBC under E. Garner Road. No buffer impacts anticipated on Stream SAAL, only shown on the main stem SGA.
- **Site 33:** Wetland WHD(2), permanent and mechanized clearing wetland impact due to the channel work at the entrance of C1000.
- **Site 33:** Wetland WAAK, permanent and mechanized clearing wetland impact due the roadway facility, toe protection and temporary channel change necessary for the construction sequence of C1000.

- Temporary channel for the construction sequence starts at the exit of the existing 4'x4' RCBC and travels around the left side of C1000 back to Stream SGA. Mechanized clearing is shown in wetland WAAK where this temporary channel borders on the wetland.
- The PJD Package for the additional features (SAAK, SAAL, WAAJ & WAAK) delineated by RK&K in March 2024 and recently approved.
- **Site 24:** Stream SGD (buffered), permanent and temporary stream impacts (mitigable buffer) impacts due to 60' RCP (buried 1.0') on the matchline with plan sheet 18.

**Utility Drawing 9 of 11, Utility Buffer Drawing 9 of 11**

- **Site 33:** Stream SGA (buffered), Wetland WHD(2), Temporary stream impacts (allowable buffer) and hand clearing wetland impact due to the anticipated utility line which was set to the full limits of the early acquisition easements for the utility owners along E. Garner Road.
- **Site 34:** Stream SAAK, temporary stream impacts inside full limits of the utility easement.
- **Site 35:** Wetland WAAJ, hand clearing impact shown inside the full limits of the utility easement.
- Discussed how the proposed utility relocations for E. Garner Road are currently under design. With the DB teams Alternative Technical Concept (approved during procurement), E. Garner Road was shifted away from the existing alignment. Current discussions with the utility owners indicate they will not be placing the utility lines inside this early acquisition easement due to the new alignment of E. Garner Road.
  - Mr. Alsmeyer requested all permit impacts (including buffer) in this area be removed from the permit package due to no construction anticipated in these areas anymore.

Mr. Cook asked if a post 4B or 4C field visit would be necessary. Agencies agreed no field visit was necessary and the meeting was adjourned.

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