

PURPOSE OF TODAY'S MEETING

The purpose of today's meeting is to obtain concurrence on the *Least Environmentally Damaging Practicable Alternative* (LEDPA) (Concurrence Point 3) and *Avoidance and Minimization* (Concurrence Point 4A).

PROJECT DESCRIPTION

The NC Department of Transportation is studying improvements from Robbinsville to Stecoah in Graham County as part of a proposed project to provide the transportation infrastructure necessary for the well-being of local residents and regional traffic. The State Transportation Improvement Program (STIP) identifies this portion of the proposed project as A-0009C (which includes the previously-designated 'B' portion from Robbinsville to Cheoah). The project location is shown in Figure 1.

This project is part of Corridor K of the Appalachian Development Highway System (ADHS) – a network of road corridors that Congress established in 1965 to provide a safe, efficient transportation system for the Appalachian Region. Corridor K extends from Dillsboro in Jackson County, NC to I-75 in Cleveland, Tennessee.

Two alternatives were carried forward for detailed study: Improve Existing Alternative (Alternative 1) and the No-Build Alternative.¹ Because the No-Build Alternative would not meet the project's purpose of addressing the mobility and reliability needs of Graham County residents, Alternative 1 was subsequently selected as NCDOT's Preferred Alternative.

The Preferred Alternative would improve the existing alignments of US 129, NC 143, and NC 28 between US 129 south of Robbinsville and the existing four-lane section of NC 28 in Stecoah. The Preferred Alternative would improve roadway shoulders and adding passing/climbing lanes for the length of the project. Passing/climbing lanes along with environmental features are shown in Figures 2.1 through 2.4.

In Robbinsville, proposed improvements include:

- Resurfacing some existing sections
- Dedicated eastbound right-turn lane from US 129 to NC 143,
- Dedicated left-turn lanes at Robbinsville High School and Five Point Road (SR1275)
- Sidewalks from Robbinsville High School's entrance on NC 143 to the intersection of US 129 and Five Point Road (SR 1275)

Traveling east out of Robbinsville, the Preferred Alternative includes:

- Passing or climbing lanes and eight-foot paved shoulders on NC 143
- Dedicated left-turn lanes at Mountain Creek Road, Tatham Road, and Sweeten Creek Road

Near the Appalachian Trail, the Preferred Alternative provides both eastbound and westbound climbing lanes and eight-foot paved shoulders on NC 143. A land bridge would provide a grade-separated crossing for both pedestrian users of the Appalachian Trail and wildlife.

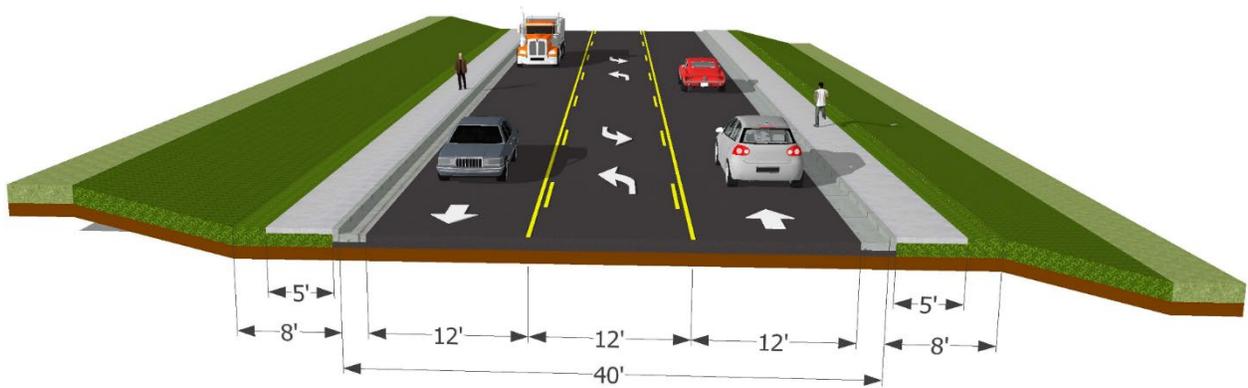
¹ Concurrence Point 2 Revisited – May 20, 2020.

Along existing NC 28 in Stecoah the Preferred Alternative would provide:

- Alternating passing/climbing lanes
- Multi-use path on the south side of NC 28 between Stecoah Road and Hyde Town Road
- Eight-foot paved shoulder
- Slight realignment of Bill Crisp Road to create a four-leg intersection with NC 28 and Stecoah Road

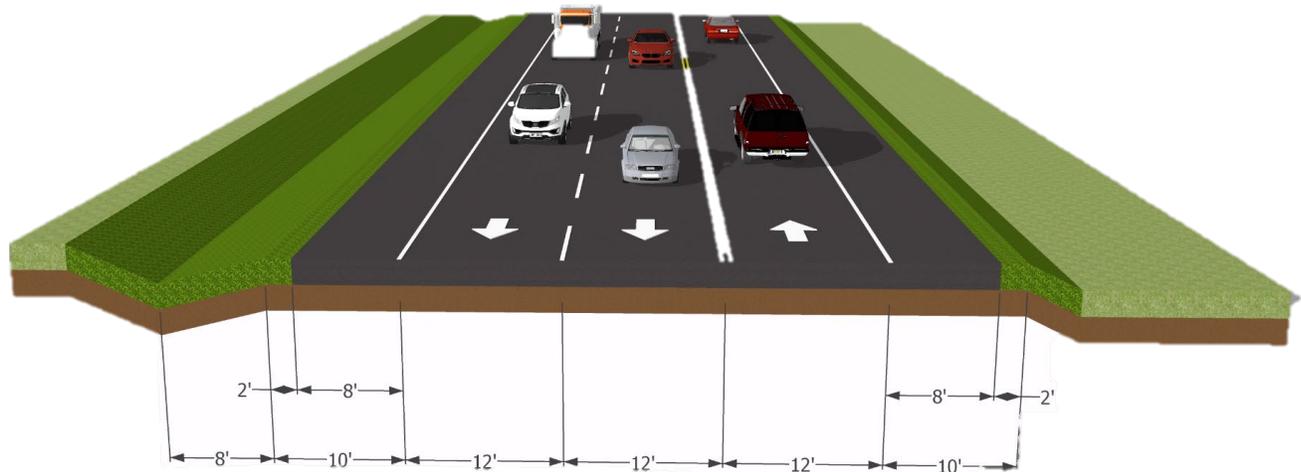
Typical Sections:

Along US 129 and NC 143 in Robbinsville, the proposed typical section is three lanes including a center turn lane or occasional left and right turning lanes, and 5-foot sidewalks. Sidewalks are proposed on NC 143 from the Robbinsville High School entrance to the US 129 and SR 1275 (Five Point Road) intersection. The typical section for much of the remainder of the project includes two 12-foot lanes with 10-foot shoulders, including 8 feet of pavement and 2 feet of grass, with passing and climbing lanes throughout.



*Center Turn Lane Typical Section
NC 143/US 129 in Robbinsville*

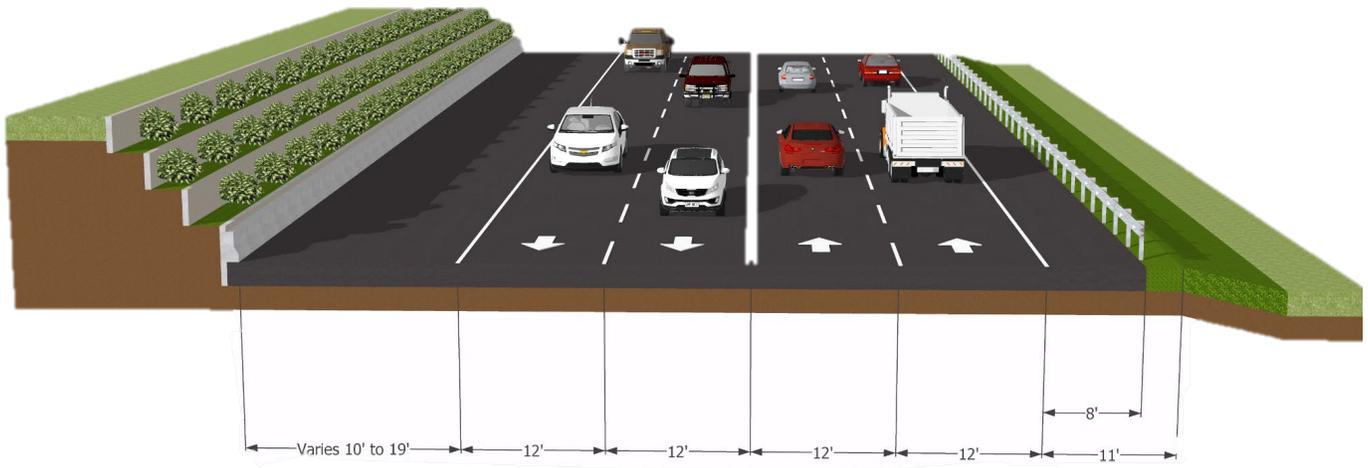
*shoulder typical may vary in final design



*Passing/Climbing Lane Typical Section
NC 143/NC 28*

*shoulder typical may vary in final design

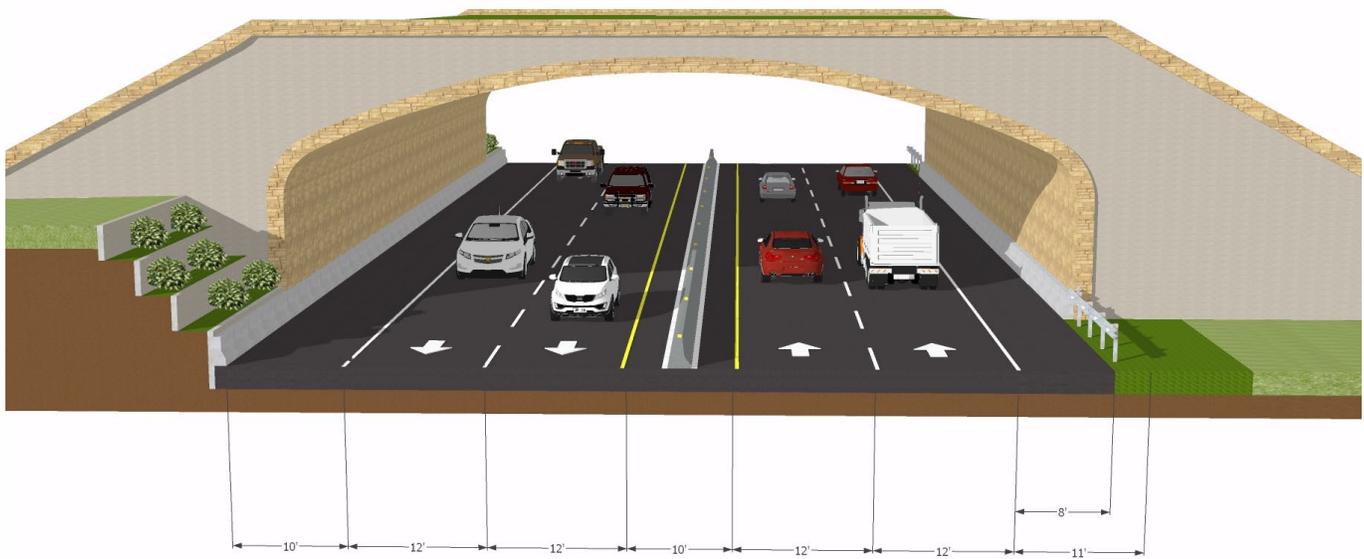
The typical section at the Appalachian Trail includes four 12-foot lanes with eight-foot paved shoulders, two-foot grass shoulders, and a tiered retaining wall.



Appalachian Trail Typical Section

*shoulder typical may vary in final design

A land bridge is proposed to facilitate the crossing of wildlife and pedestrians across NC 143, and would relocate the Appalachian Trail in the middle of the land bridge. The land bridge would be approximately 160 feet long, 220 feet wide, and 29-feet tall filled with earth material and planted.



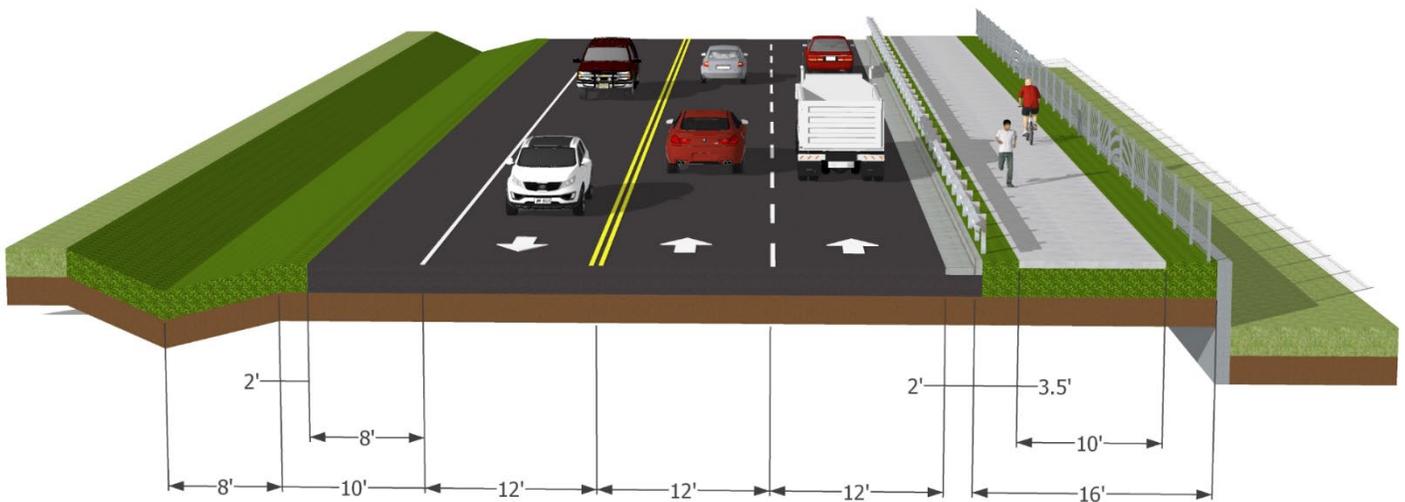
Land Bridge Typical Section

*shoulder typical may vary in final design



Conceptual Rendering of Land Bridge and Tiered, Benched Retaining Walls

A multi-use path is proposed along NC 28 from Hyde Town Road (SR 1230) from its western intersection with NC 28 to its eastern intersection with NC 28. The typical section here includes three 12-foot lanes with a 10-foot paved multi-use path.



*Multi-Use Path Typical Section
NC 28*

*shoulder typical may vary in final design

Table 1: Project Timeline

Milestone	Date*
Reinitiate studies with fresh approach	September 2015
Project team coordination	Ongoing
Public meetings	February 2019
Formal environmental studies	2019-2020
Environmental documentation	August 2020
Public hearing	October 2020
Finding of no significant impact	December 2020
Right-of-way acquisition	September 2021
Construction begins	August 2022

* Future dates subject to change

Table 2: Cost Estimates

	Estimated Cost*
Right-of-way acquisition	\$14,795,888
Utility relocation	\$6,611,000
Land bridge	\$5,000,000
Construction	\$104,200,000
Total	\$130,606,888

* Estimated costs subject to change.

PROJECT STATUS

Environmental Documentation – A federal Environmental Assessment (EA) was prepared in August 2020 and it is anticipated that a Finding of No Significant Impact (FONSI) will be prepared for the project in December 2020.

Merger Team Coordination – On October 9, 2019, the Merger Team reached agreement on Concurrence Point 1. The project purpose and need statement is as follows:

The project purpose is to provide the transportation infrastructure necessary for the well-being of local residents by improving mobility and reliability between the existing four-lane section on NC 28 at Stecoah and US 129 in Robbinsville.

Concurrence Point 2 was originally reached on October 9, 2019 then revisited on May 20, 2020 after additional studies into environmental impacts and costs associated with the build alternatives that included improvements to Five Point Road in Robbinsville and tunnels in the Stecoah Gap area were completed. As a result of the second meeting, the Improve Existing Alternative (Alternative 1) and the No-Build Alternative were identified as the alternatives to be carried forward for evaluation in the Environmental Assessment.

Concurrence was reached on CP 2A on November 20, 2019. (Bridging decisions resulting from this meeting are shown in Table 7.)

Other Project Coordination – Table 3 summarizes all coordination efforts for 2020, including meetings related to Section 106 concurrence and tribal coordination.

Table 3: 2020 Coordination Summary

Agency Meetings
1/7: Project Team Teleconference
1/22: Project Team Teleconference
1/29: Project Team Teleconference
1/29: USACE, NCDWR, NCWRC Teleconference
2/7: USFWS Coordination Teleconference
3/27: USFS Teleconference
4/8: Section 106 AT Pre-Effects Meeting
4/22: USACE Teleconference
5/20: Concurrence Point 2 Meeting (Revisit)
6/1: Section 106 Effects Meeting
6/11: USFWS Coordination Teleconference
8/10: FHWA, NCDOT, NCSHPO, Advisory Council on Historic Preservation Meeting
8/11: FHWA, USACE, NCDWR, & NCDOT Pre-CP 3/4A Meeting
8/13: USFS Environmental Assessment Comments Discussion
9/17: USFS Environmental Assessment Comments Discussion
Tribal Coordination
1/27: EBCI THPO Call
2/19: FHWA, NCDOT & EBCI Councilmember Work Session
3/13: Cultural Resources Teleconference
7/25: EBCI Attorney General's Office Teleconference
Appalachian Trail Stakeholders Meetings
3/6: AT Stakeholders Teleconference
4/16: AT Stakeholders Teleconference
4/30: AT Section 106 Effects Meeting
7/1: AT Stakeholders Teleconference
7/30: AT Stakeholders Teleconference
Environmental Stakeholders Meetings
5/5: Environmental Stakeholders Teleconference
6/17: WaysSouth Teleconference
7/1: Environmental Stakeholders Teleconference
Public Outreach
10/1: Virtual Local Official Meeting
10/1: Virtual Public Hearing

Public Outreach – Public meetings were held on February 12 and 14, 2019. Public comments received during the 2019 comment period included concerns related to residential relocations and environmental impacts, including habitat fragmentation and impacts to water resources. Given the large amount of public opposition to T-1 and support for improving existing roadways between Robbinsville and Andrews, it was determined that scenarios T-1 and T-4 would not be studied further as part of the A-0009C project.

A virtual Public Hearing was held on October 1, 2020. The Public Hearing comment period ended October 30, 2020.

A total of eighteen written and voicemail transcribed comments were received following the hearing. A number of the comments provided feedback on multiple aspects of the project with the majority of comments primarily focused on expressing support for the project; the proposed land bridge; multi-use path; and, property impacts. Other comments included questions about property impacts at specific locations, the project schedule, the Andrews to Robbinsville portion of the project, parking at the picnic area at the Appalachian Trail, and requests to be added to the project mailing list or other general comments/requests.

The US Army Corps of Engineers Section 404 Public Notice was posted on September 22, 2020. The comment period for the USACE Public Notice expired on October 22, 2020. A total of three written comments and one voicemail were received in response to the USACE Public Notice. Both the written comment and voicemail comment received from residents noted concerns over property impacts.

CONCURRENCE POINT 3

The selection of the Improve Existing Alternative (Alternative 1) as the NCDOT Preferred Alternative was based on early public input, interagency coordination, and meetings with local officials.

Alternative 1 was identified as the NCDOT preferred alternative for the following reasons:

- **Travel time reliability:** Alternative 1 would provide more reliable facilities with the addition of passing and climbing lanes and extending/adding shoulders. Travel times are expected to become more consistent and reliable for the segments through Robbinsville, along NC 143 to NC 28, and through Stecoah. From the Old Sweetwater Road intersection on NC 143 to the existing four-lane section on NC 28 (a length of roughly 7.8 miles), the proposed project would decrease travel time variability in both directions in both the AM and PM peak hours with the westbound PM peak experiencing the greatest reduction in variability at 7.25 minutes. As such, traffic operations and mobility within the project study area are expected to improve.
- **Mobility Improvements:** All locally-identified hot spots on the existing roads (locations of high vehicular crashes due to limited sight distance, dangerous curves and areas of geologic instability) will be addressed with Alternative 1 through the addition of climbing or passing lanes, improved shoulders, and dedicated turn lanes.
- **Environmental Impacts:** Based on agency and stakeholder coordination and input to date, coupled with environmental study and analysis, impacts associated with Alternative 1 have been avoided or minimized to the extent possible. Those impacts that are unavoidable do not reach a threshold of significant concern and they will be further addressed with mitigation measures that have been developed in coordination with resource and regulatory agencies.
- **Funding Constraints:** There is adequate amount of ADHS funding available to construct Alternative 1.
- **Local Support:** Graham County Commissioners unanimously voted in support of Alternative 1 at their April 7, 2020 Board Meeting.
- **Best Satisfies Project Purpose and Need:** By providing opportunities for passing slower moving vehicles and providing additional space to allow vehicles to pass crashes, landslides, farm equipment, and other obstructions, Alternative 1 satisfies the project's purpose to improve mobility and reliability in Graham County. The No-Build Alternative would not meet the project's purpose to address the mobility and reliability needs of area residents.

Table 4: Summary of Impacts Associated with the NCDOT Preferred Alternative (Alternative 1)

EVALUATION FACTORS ¹	Preferred Alternative
CONSTRUCTION FACTORS	
Length (miles)	12.2
Railroad Crossings	0
Major Utility Conflicts	No
SOCIOECONOMIC FACTORS	
Residential Relocations (#) ²	9
Business Relocations (#) ²	5
Churches/Cemeteries Displaced (#)	0
CULTURAL RESOURCE FACTORS	
Potential/Recorded Archaeological Sites (#) ³	None Anticipated
Historic Architecture Resources (#) ³	7 ("No Adverse Effect")
Tribal Resources (yes/no) ³	Yes
Section 4(f) (yes/no) ³	Yes ("De Minimis")
NATURAL RESOURCE FACTORS	
Protected Species Impacted (yes/no) ⁴	Yes
Major Stream Crossings (#)	14
Stream Impacts (linear feet)	11,743
Wetland/Aquatic Systems (acres)	0.963
NFS land (acres)	7.09
Consistency with current Forest Plan (yes/no)	Yes
AT impacts/visual (low/mod/high)	Low
Habitat fragmentation (low/mod/high)	Low
PHYSICAL FACTORS	
Floodplains (acres)	8.86
Farmland (acres)	20.08
Hazardous Materials Sites (#)	0

NOTES: Impacts are subject to change as the final design process progresses.

- All impacts were calculated based on slope stakes limits plus a 25-foot buffer, with the exception of NFS lands and farmlands, which were calculated based on new right-of-way.
- Per NCDOT Relocation Report dated 8/13/2020.
- Of the 20 historic architecture resources determined to be eligible for listing on the National Register of Historic Places (NRHP), four (4) resources were found to be located outside the Area of Potential Effect. The Preferred Alternative would have No Effect on nine (9) NRHP-eligible resources and No Adverse Effect on seven (7) NRHP-eligible resources. Coordination with the State Historic Preservation Office (SHPO), Tribal Historic Preservation Offices (THPOs), and the US Forest Service (USFS), is ongoing and will continue through project construction to address impacts to historic architecture and archaeological sites. NCDOT and Federal Highway Administration (FHWA) committed to enter into a project-level Section 106 Programmatic Agreement (PA). A PA is appropriate when it is difficult to fully determine how a particular undertaking may affect historic properties or the location of historic properties and their significance and character. The intent of the PA is to get a No Adverse Effect (NAE) call for the entire project for both historic and archaeology sites. The PA will be executed prior to the Finding of No Significant Impact (FONSI). The PA will outline procedures, roles and responsibilities, and continued consultation through final design, right of way and construction.
- Alternative 1 has the potential to effect the Northern long-eared bat and Indiana bat based on previous surveys, the potential for forest loss, known occurrences of NLEB in the project area, presumed presence of Indiana bat in the study area, and known Indiana bat maternity roosts. An informal Section 7 Consultation is underway for a May Affect – Not Likely to Adversely Affect biological conclusion for both bats. Additionally, although not yet listed by USFWS, the golden-winged warbler is present within Alternative 1. A conference opinion for the golden-winged warbler will be developed with USFWS to be included within permit commitments.

CONCURRENCE POINT 4A

Avoidance & Minimization Measures – Throughout the development of the proposed project, NCDOT has attempted to avoid and minimize impacts to streams and wetlands to the maximum extent practicable. Tables 5, 6, and 7 show **preliminary** impacts to streams and wetlands based on the slope stakes limits of the Preferred Alternative plus a 25-foot buffer and reflect avoidance and minimization measures incorporated into the design to date. **After final surveys and final geotechnical recommendations are available in the final design phase, additional measures to further reduce impacts will be evaluated.** There are a number of locations where valley streams parallel the roadway; it is anticipated that stream impacts in these areas can be further reduced in final design; however, actual reductions cannot be determined until the above-mentioned information is available in the final design phase.

Figures 3.1 through 3.20 include site-specific descriptions of avoidance and minimization measures currently incorporated in the Preferred Alternative design. These measures are listed in Table 8. In summary, the current NCDOT Preferred Alternative design includes the following avoidance and minimization measures:

- 2:1 fill slopes.
- 1.5:1 cut slopes where possible.
- Expressway gutter and shoulder berm gutter to reduce cross-section width.
- Alignment shifts to avoid relocations and avoid/minimize stream, wetland, and historic resource impacts.
- Alignment shifts and either symmetrical or asymmetrical widening to fit a best-fit alignment to avoid/minimize impacts and reduce earthwork.

In final design:

- All slopes in jurisdictional areas are anticipated to be the maximum allowable for standard grass lined slopes (2:1) to minimize jurisdictional impacts.
- Minimum applicable typical sections will be proposed throughout the project to minimize jurisdictional impacts.
- Final design will propose retaining and extending existing culverts where practicable to minimize in stream work.
- Effort will be made throughout the project in final design to make slight adjustments to the horizontal and vertical alignments where practicable to minimize jurisdictional, cultural and environmental impacts. Similarly, geotechnical design will evaluate steepening slopes in some areas if practicable.
- Consideration will be given to extending existing culvert headwalls vertically where practicable in a few locations to avoid stream loss (possible examples are Tulula Creek, downstream end of Sweetwater Creek at Slaybacon Rd and upstream end of Stecoah Creek).
- The design team will be prepared at CP 4B and/or 4C to discuss jurisdictional impacts as well as provide a more detailed explanation of minimization efforts made at a specific location, as needed.

Table 5: Stream Impacts

Map ID	Sheet #	Bank Height (ft)	Bankful Width (ft)	Water Depth (in)	Type	STREAM IMPACT (ft)
SE	1	1	4	5	Intermittent	54
Sweetwater Creek (at Hydraulic Site 3)	3	9	25	12	Perennial	484
SG	3	2	2	3	Intermittent	32
SI	3	2.5	5	6	Perennial	243
SJ	3	4	2	2	Intermittent	51
SL	4	4	4	1	Intermittent	8
Sweetwater Creek (near Hydraulic Site 5)	4	9	25	12	Perennial	94
Slay Bacon Branch	4	7	6	6	Perennial	90
Sweetwater Creek (at Hydraulic Site 6)	5	9	25	12	Perennial	167
SM	5	1.5	3	3	Perennial	22
SN	5	2	4	4	Intermittent	54
SO	5	2	4	4	Intermittent	6
Sweetwater Creek (west of Pigpen Branch)	5	9	25	12	Perennial	109
Pigpen Branch	5	3	6	2	Perennial	101
Harwood Branch	6	3	5	6	Perennial	89
SR	6	1	2	1	Perennial	58
SS	6	0.5	2	1	Intermittent	29
ST	6	2	4	6	Perennial	36
SU	6	3	8	6	Perennial	0
SV	6	3	4	4	Intermittent	44
Sweetwater Creek (near Sweeten Creek Road)	6	9	25	12	Perennial	282
SX	7	2	6	6	Perennial	37
Sweetwater Creek (near Hydraulic Site 8)	7	9	25	12	Perennial	279
Beech Creek	7	7	20	6	Perennial	121
SY	8	4	4	1.5	Perennial	34
Sweetwater Creek (near Wetland WAF)	8	9	25	12	Perennial	354
SZ	8	1	1.5	1	Perennial	79
SAA	8	1	1.5	0.5	Perennial	38
SAB	9	1	2	0.5	Perennial	30
Sweetwater Creek (near Wetland WAK)	9	9	25	12	Perennial	385
SAC	9	0.5	2	6	Intermittent	45
SAD	9	5	4	6	Perennial	50
SAE	9	0.5	1	3	Perennial	89
Sweetwater Creek (near Wetland WAM)	9	9	25	12	Perennial	787
SAF	10	0.5	3	3	Perennial	230
SAG	10	0.5	3	3	Perennial	63
Sweetwater Creek (at Hydraulic Site 10)	10	9	25	12	Perennial	103
SAH	10	1	2	0.6	Intermittent	66
SAJ	10	1	4	4	Perennial	484
SAK	10	1	4	4	Perennial	37
SAM	11	2	5	6	Perennial	137
Stillhouse Branch	11	2	3	6	Perennial	43
Sweetwater Creek (near Wetland WAY)	11	9	25	12	Perennial	28
SAT	11	2	3	6	Perennial	53
SAX	12	1	2	2	Perennial	113
SBA	12	1	1	1	Perennial	63
SAY	12	1	2	2	Perennial	77

Map ID	Sheet #	Bank Height (ft)	Bankful Width (ft)	Water Depth (in)	Type	STREAM IMPACT (ft)
SBB	14	0.5	1	1	Intermittent	114
SBC (at NC 143)	15	1	3	3	Perennial	0
SBG	16	0.5	1	0.5	Intermittent	166
SEV	16	0.25	2	3	Intermittent	370
Johnson's Gap Branch	16	1	3	6	Perennial	278
SEX	16	0.5	4	4	Intermittent	45
SEY	16	0.25	3	2	Intermittent	30
SEZ	16	0.5	4	3	Intermittent	114
SFA	16	1	3	2	Intermittent	25
SFB	16	0.5	4	3	Intermittent	0
Carver Branch (between NC 143 and NC 28)	16	5	10	3	Perennial	262
SBC (at NC 28)	16	1	3	3	Perennial	80
Carver Branch (at Hydraulic Sites 21 & 22)	17	5	10	3	Perennial	111
SBJ	17	4	2	2	Perennial	71
SBN	18	2	5	2	Perennial	183
SBO	18	1	1	0.25	Intermittent	206
Carver Branch (near Stream SBN)	18	5	10	3	Perennial	191
SBV (parallel to Bill Crisp Rd)	18	1	2	2	Perennial	152
Edwards Branch	18	2	4	8	Perennial	233
SBZ	18	1	3	1	Intermittent	48
Carver Branch (parallel NC 28)	18	5	10	3	Perennial	634
Edwards Branch (at Hydraulic Site 24)	18	2	4	8	Perennial	44
SBV (at Hydraulic Site 24)	18	1	2	2	Perennial	21
Carver Branch (at Hydraulic Site 24)	18	5	10	3	Perennial	189
SCB	19	0.5	2	3	Perennial	216
Stecoah Creek	19	2.5	12	8	Perennial	1,791
SCD	19	2	5	8	Perennial	213
SCG	19	3	8	1	Perennial	0
SCH	19	2	3	2	Perennial	0
SDT	20	5	3	5	Perennial	79
SDV	20	0.5	2	3	Perennial	0
Impact Total						11,743

NOTES: Slope stakes limits are based on available LIDAR data not final survey data. Impact quantities updated in October 2020 to reflect slope stakes limits plus a 25-foot buffer.

Table 6: Wetland Impacts

Map ID	Sheet #	NCWAM Classification	Hydrologic Classification	NCWAM Rating	WETLAND IMPACTS (ac)
WG	3	Headwater Forest	Riparian	Low	0.004
WN	5	Headwater Forest	Riparian	High	0.03
WO	5	Headwater Forest	Riparian	High	0.136
WP	5	Headwater Forest	Riparian	Low	0.027
WR	6	Headwater Forest	Riparian	High	0.086
WS	6	Non-Tidal Freshwater Marsh	Riparian	High	0.007
WV	6	Floodplain Pool	Riparian	High	0.002
WAB	7	Non-Tidal Freshwater Marsh	Riparian	Medium	0
WAC	7	Non-Tidal Freshwater Marsh	Riparian	Medium	0.002
WAD	7	Non-Tidal Freshwater Marsh	Riparian	High	0.238
WAE	7	Non-Tidal Freshwater Marsh	Riparian	Medium	0.015
WAI	8	Non-Tidal Freshwater Marsh	Riparian	Medium	0.001
WAJ	8	Non-Tidal Freshwater Marsh	Riparian	Medium	0.072
WAN	9	Seep	Non-Riparian	High	0.032
WAO	10	Non-Tidal Freshwater Marsh	Riparian	High	0.15
WAQ	10	Seep	Non-Riparian	High	0
WAX	11	Headwater Forest	Riparian	Low	0.011
WAY	11	Non-Tidal Freshwater Marsh	Riparian	Medium	0.039
WAZ	12	Non-Tidal Freshwater Marsh	Riparian	Medium	0.024
WBA	12	Non-Tidal Freshwater Marsh	Riparian	Medium	0
WBB	14	Headwater Forest	Riparian	Medium	0.007
WBV	16	Non-Tidal Freshwater Marsh	Riparian	Low	0.073
WBR	19	Headwater Forest	Riparian	Medium	0.007
Impact Total					0.963

NOTES: Slope stakes limits are based on available LIDAR data not final survey data. Impact quantities updated in October 2020 to reflect slope stakes limits plus a 25-foot buffer.

Table 7: Stream and Wetland Impacts at Major Crossings

MAP ID	ROUTE	LAT	LONG	STREAM NAME	FEMA STUDY TYPE	DRAINAGE AREA (MI ²)	DRAINAGE AREA (ac.)	EXISTING STRUCTURE (NUMBER, SIZE, STRUCTURE TYPE)	MIN. RECOMMENDED STRUCTURE (NUMBER, SIZE, STRUCTURE TYPE)	STREAM IMPACTS (ft.) w/ 25' Offset	STREAM CLASS	WETLAND IMPACTS (ac.)
3	NC 143	35.32366	-83.79101	Sweetwater Creek	Detailed	13.70	-	C-132 / 370132 3@12'x9' RCBC	Retain & Extend 3@12'x9' RCBC (@1.05)	484	WS-III	-
				SG	N/A	-	-	-	-	32	WS-III	-
4	NC 143	35.32286	-83.78753	SI	N/A	0.31	198	54" CSP w/ HW	1 @6'x6' RCBC (@1.05)	243	WS-III; Tr	-
5	NC 143	35.32740	-83.77253	Slay Bacon Branch	N/A	0.56	358	66" CSP w/ HW	1 @7'x7' RCBC (@1.01)	90	WS-III	-
				Sweetwater Creek	Detailed	-	-	-	-	94	WS-III	-
6	NC 143	35.32865	-83.77164	Sweetwater Creek	Detailed	10.70	-	C-133 / 370133 3@11'x9' RCBC	Retain & Extend 3@11'x9' RCBC (@0.99)	167	WS-III	-
7	NC 143	35.33232	-83.76239	Harwood Branch	N/A	0.39	250	54" CSP w/ HW	3@48" RCP (@1.26)	89	WS-III	-
8	NC 143	35.34053	-83.74950	Beech Creek	Limited Detail	4.39	-	3@72" CSP w/ Brick HW & EW	2@10'x7' RCBC (@1.18)	121	WS-III	0.18
9	NC 143	35.34837	-83.73446	SAD	N/A	0.23	147	48" CSP into 2GI U/S; 48"CSP under NC 143	3@48" RCP (@0.97)	50	WS-III; Tr	-
				SAE	N/A	-	-	-	-	89	WS-III; Tr	-
10	NC 143	35.35580	-83.73163	Sweetwater Creek	N/A	1.09	698	72" CSP w/ Brick HW & EW	1 @ 8X8' RCBC (@0.96)	103	WS-III	-
				SAH	N/A	-	-	-	-	66	WS-III; Tr	-
21	NC 28	35.37318	-83.70072	Carver Branch	N/A	0.62	397	1 @ 6' x 6' RCBC / Ex. Length 116'	1 @ 7' x 7' RCBC (@ 1.06)	111	C	-
22	NC 28	35.37313	-83.70033	SBJ	N/A	0.19	122	1 @ 48" CMP	1 @ 6' x 6' RCBC (@ 0.92)	71	C	-
24	NC 28	35.37088	-83.69058	Edwards Branch	N/A	0.32	205	1 @ 66" CMP / Ex. Length 50'	1 @ 6' x 6' RCBC	44	C	-
				SBV	N/A	-	-	-	-	113	C	-
				Carver Branch	Limited Detail	-	-	-	-	76	C	-
25	NC 28	35.37132	-83.68092	Stecoah Creek	Limited Detail	6.92	-	C-3 / 370003 3@10'x9' RCBC	Retain & Extend 3 @ 10'x9' RCBC (@0.98)	124	C; Tr	-
				SCH	N/A	-	-	-	-	0	C; Tr	-
26	NC 28	35.37281	-83.67727	SDT	N/A	0.15	96	1 @ 60" CMP / Ex. Length 161'	1 @ 66" RCP (@1.00)	79	C; Tr	-

NOTES: Alternatives containing Sites 1, 11 through 20, and 23 were dropped from further study at CP 2 on May 20, 2020. Impact quantities updated in October 2020 to reflect slope stakes limits plus a 25-foot buffer.

Table 8: Avoidance and Minimization Measures for the NCDOT Preferred Alternative (Alternative 1)

SHEET #	AVOIDANCE/MINIMIZATION MEASURES
1	<ul style="list-style-type: none"> • 2:1 fill slope
2	<ul style="list-style-type: none"> • 2:1 fill slope • Will avoid Site 2 culvert extension (permanent impacts) here by extending both headwalls vertically. May have some temporary impacts with construction
3	<ul style="list-style-type: none"> • Sweetwater Creek at NC 143/Old Sweetwater Road: 2:1 fill slope; symmetrical widening to minimize overall stream impacts due to stream geometry • Stream SI on NC 143/Milt Williams Road: 2:1 fill slope; symmetric widening to minimize overall stream impacts due to stream geometry • Stream SJ at NC 143/Tatham Road: 2:1 fill slope
4	<ul style="list-style-type: none"> • 2:1 fill slope • Asymmetric widening to the north at Sweetwater Creek/Slay Bacon Branch to avoid need for culvert extension on south side of NC 143 and avoid parallel impacts to Sweetwater Creek
5	<ul style="list-style-type: none"> • 2:1 fill slope • Anticipate avoiding parallel loss of Sweetwater Creek and will attempt to avoid parallel loss of SO & SN • Anticipate extending downstream headwall vertically to limit Site 6 permanent impacts to upstream side. May have some temporary impacts with construction
6	<ul style="list-style-type: none"> • 2:1 fill slope • Anticipate avoiding parallel loss of Sweetwater Creek • Anticipate slight alignment adjustments to minimize impacts to Cody House properties and jurisdictional features in the vicinity
7	<ul style="list-style-type: none"> • 2: 1 fill slope and symmetrical widening minimizes impacts to Stream SX and John A. Cody House • Anticipate avoiding parallel loss of Sweetwater Creek
8	<ul style="list-style-type: none"> • 2:1 fill slope • Anticipate avoiding parallel loss at Sweetwater Creek
9	<ul style="list-style-type: none"> • 2:1 fill slope • Anticipate avoiding parallel loss at Sweetwater Creek
10	<ul style="list-style-type: none"> • 2:1 slope • Symmetric widening to minimize impacts to Stream SAF and Wetland WAO and potentially avoid relocation on south side of NC 143 • Anticipate avoiding parallel loss of Sweetwater Creek • Possible mitigation to be considered as the design moves forward: Final design will evaluate if shifting the alignment slightly north is feasible with the goal of a net reduction in impacts (would reduce parallel loss of SAJ but increase in SAH and WAQ impacts and may require residential take)
11	<ul style="list-style-type: none"> • 2:1 fill slope • Retaining wall on south side of NC 143 to avoid impacts to Nathan Garland Road
12	<ul style="list-style-type: none"> • Retaining walls to reduce earthwork • Alignment shifted into mountain to reduce cut slopes and avoid impacts to Streams SFF and SAV
13	<ul style="list-style-type: none"> • 2:1 fill slope; retaining walls • Land bridge to avoid habitat fragmentation effects and visual impacts for Appalachian Trail users • Tiered, benched retaining walls with aesthetic treatment to minimize visual impacts at Appalachian Trail • Relocation of Appalachian Trail across proposed land bridge • Minimized widening at picnic area parking lot
14	<ul style="list-style-type: none"> • 2:1 fill slope • Retaining walls
15	<ul style="list-style-type: none"> • 2:1 fill slope • Retaining walls
16	<ul style="list-style-type: none"> • 2:1 fill slope • Retaining walls • Possible mitigation to be considered as the design moves forward: evaluate fill wall, steepening cut slopes, and/or shifting into cut slope on NC 143 in final design to hold shoulder point on south side of NC 143; coordinate with NCDOT • Geotech in final design after rock sampling is complete; evaluate 6-ft total shoulder on NC 28 north of NC 143 intersection to reduce Stream SEV impacts
17	<ul style="list-style-type: none"> • Alignment shifted south to minimize impacts to Stecoah Heights neighborhood • 2:1 fill slope • Anticipate avoiding parallel loss of Carver Branch. • Possible mitigation to be considered as the design moves forward: both crossings are roughly perpendicular to existing NC 28, limiting options for additional mitigation that could be evaluated during final design
18	<ul style="list-style-type: none"> • 2:1 fill slope • Anticipate avoiding parallel loss of Stecoah Creek. • Possible mitigation to be considered as the design moves forward: Evaluate shifting NC 28 slightly north to reduce parallel loss of Carver Branch, SBN and SBO.
19	<ul style="list-style-type: none"> • 2:1 fill slope • Anticipate shifting alignment to the north in final design in hopes of avoiding parallel loss of Stecoah Creek (will increase impacts to northside properties and features including Surface Water PH but overall net reduction.)
20	<ul style="list-style-type: none"> • 2:1 fill slope • Channelization at Wolf Creek grocery store to minimize impacts to parking lot

NEPA/404 MERGER TEAM MEETING AGREEMENT DRAFT

Concurrence Point No. 3: Least Environmentally Damaging and Practicable Alternative

PROJECT NO./TIP NO./ NAME/DESCRIPTION:

WBS Element: 32572.1.FS10

FA No. APD-0074(178)

STIP Project Number: A-0009C

STIP Description: Corridor K Improvements along US 129, NC 143, and NC 28 from Robbinsville to Stecoah.

___ **No-Build Alternative**

___ **Alternative 1:** This alternative would improve existing roadway shoulders and adding passing/climbing lanes between US 129 south of Robbinsville and the existing four-lane section of NC 28 in Stecoah. In Robbinsville, proposed improvements include: resurfacing, a dedicated eastbound right-turn lane from US 129 to NC 143, dedicated left-turn lanes at Robbinsville High School and Five Point Road (SR1275), and sidewalks from Robbinsville High School's entrance on NC 143 to the intersection of US 129 and Five Point Road (SR 1275). East of Robbinsville, the Preferred Alternative includes: passing or climbing lanes, eight-foot paved shoulders, and dedicated left-turn lanes at Mountain Creek Road, Tatham Road, and Sweeten Creek Road. At the Appalachian Trail, this alternative provides both eastbound and westbound climbing lanes and eight-foot paved shoulders. A land bridge would provide a grade-separated crossing for the Appalachian Trail at NC 143. In Stecoah, this alternative would provide: eight-foot paved shoulders, alternating passing/climbing lanes, a multi-use path on the south side of NC 28 between Stecoah Road and Hyde Town Road, and a slight realignment of Bill Crisp Road to create a four-leg intersection with NC 28 and Stecoah Road.

The Merger Team has concurred on November 12, 2020, with the selection of the Least Environmentally Damaging and Practicable Alternative as shown above.

USACE	_____	Crystal Amschler	_____	Date	NCDWR	_____	Kevin Mitchell	_____	Date
USFWS	_____	Janet Mizzi	_____	Date	NCWRC	_____	Marla Chambers	_____	Date
USFS	_____	Amy Mathis	_____	Date	SHPO	_____	Renee Gledhill-Earley	_____	Date
RPO	_____	Rose Bauguess	_____	Date	USEPA	_____	Amanetta Somerville	_____	Date
FHWA	_____	Aaron Williams	_____	Date	NCDOT	_____	Wanda Austin	_____	Date

NEPA/404 MERGER TEAM MEETING AGREEMENT DRAFT

Concurrence Point No. 4A: Avoidance and Minimization

PROJECT NO./TIP NO./ NAME/DESCRIPTION:

WBS Element: 32572.1.FS10

FA No. APD-0074(178)

STIP Project Number: A-0009C

STIP Description: Corridor K Improvements along US 129, NC 143, and NC 28 from Robbinsville to Stecoah.

The project team conducted avoidance and minimization efforts throughout the preliminary design and planning phase. Below is a summary of avoidance and minimization efforts implemented during the development of the LEDPA (Alternative 4A).

Avoidance and Minimization of Jurisdictional Resources

Avoidance and minimization measures currently incorporated in the Preferred Alternative design include the following:

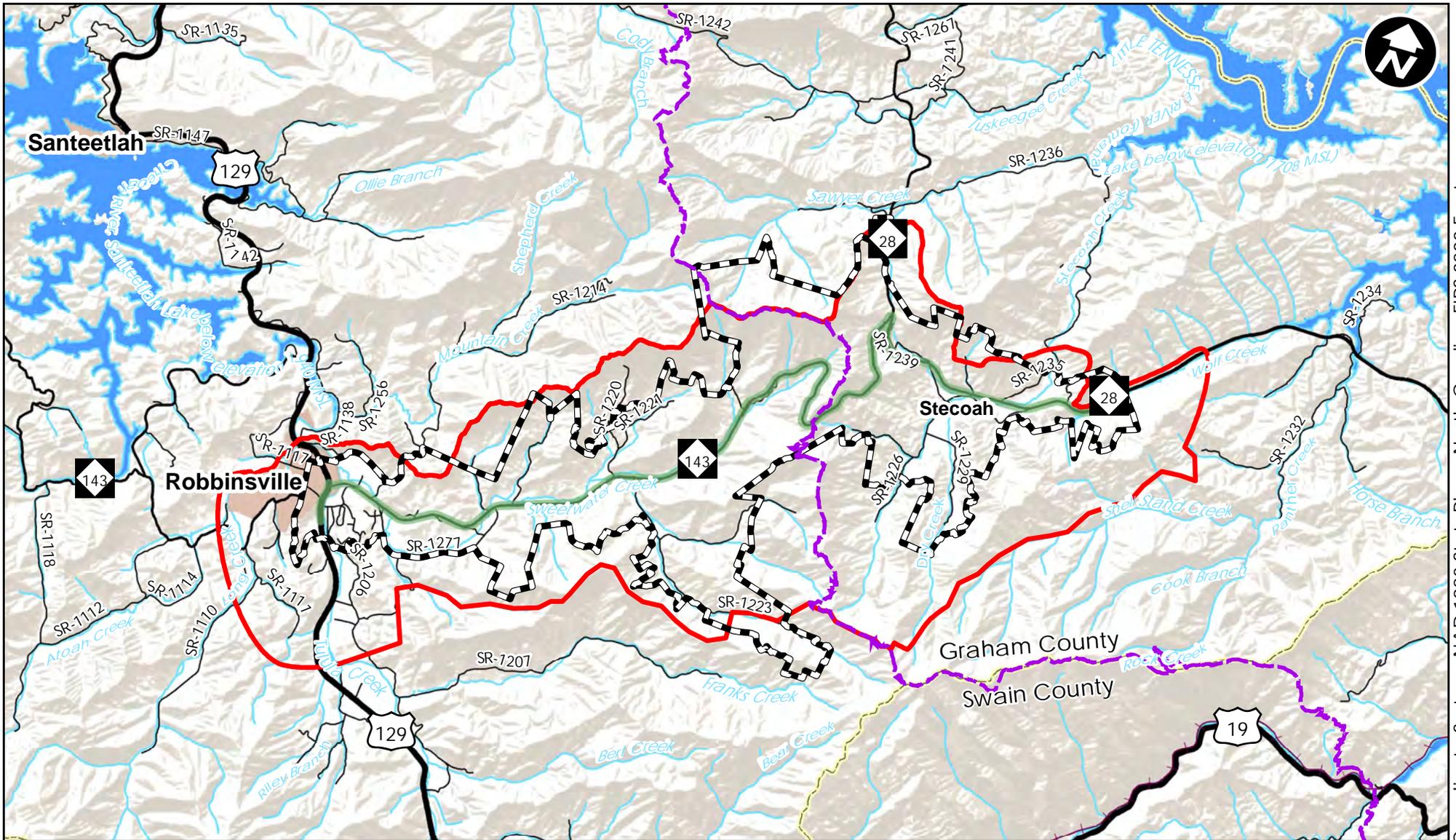
- 2:1 fill slopes.
- 1.5:1 cut slopes where possible.
- Expressway gutter and shoulder berm gutter to reduce cross-section width.
- Alignment shifts to avoid relocations and avoid/minimize stream, wetland, and historic resource impacts.
- Alignment shifts and either symmetrical or asymmetrical widening to fit a best-fit alignment to avoid/minimize impacts and reduce earthwork.

In final design:

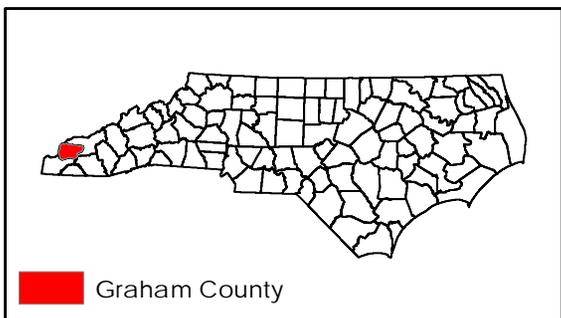
- All slopes in jurisdictional areas are anticipated to be the maximum allowable for standard grass lined slopes (2:1) to minimize jurisdictional impacts.
- Minimum applicable typical sections will be proposed throughout the project to minimize jurisdictional impacts.
- Final design will propose retaining and extending existing culverts where practicable to minimize in stream work.
- Effort will be made throughout the project in final design to make slight adjustments to the horizontal and vertical alignments where practicable to minimize jurisdictional, cultural and environmental impacts. Similarly, geotechnical design will evaluate steepening slopes in some areas if practicable.
- Consideration will be given to extending existing culvert headwalls vertically where practicable in a few locations to avoid stream loss (possible examples are Tulula Creek, downstream end of Sweetwater Creek at Slaybacon Rd and upstream end of Stecoah Creek).
- The design team will be prepared at CP 4B and/or 4C to discuss jurisdictional impacts as well as provide a more detailed explanation of minimization efforts made at a specific location, as needed.

The Merger Team has concurred on this date of **November 12, 2020**, the avoidance and minimization efforts as stated above.

USACE	_____	_____	NCDWR	_____	_____
	Crystal Amschler	Date		Kevin Barnett	Date
USFWS	_____	_____	NCWRC	_____	_____
	Janet Mizzi	Date		Marla Chambers	Date
USFS	_____	_____	SHPO	_____	_____
	Amy Mathis	Date		Renee Gledhill-Earley	Date
RPO	_____	_____	USEPA	_____	_____
	Rose Bauguess	Date		Amanetta Somerville	Date
FHWA	_____	_____	NCDOT	_____	_____
	Aaron Williams	Date		Wanda Austin	Date



Coordinate System: NAD 1983 StatePlane North Carolina FIPS 3200 Feet



Legend

- Alternative 1
- Project Study Area
- Direct Community Impact Area
- County Boundary
- Municipal Boundaries
- USGS Streams
- Appalachian Trail
- Railroad
- US Highway
- NC Highway
- Secondary Roads



NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DIVISION 14

Project Location

Graham County, NC

Prepared by ALK on 2019-10-24
Revised on 2020-08-04

Client/Project

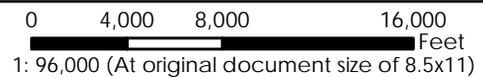
NCDOT - Division 14
Corridor K Improvements
STIP Project No. A-0009C

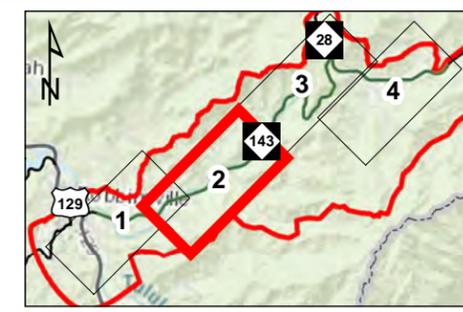
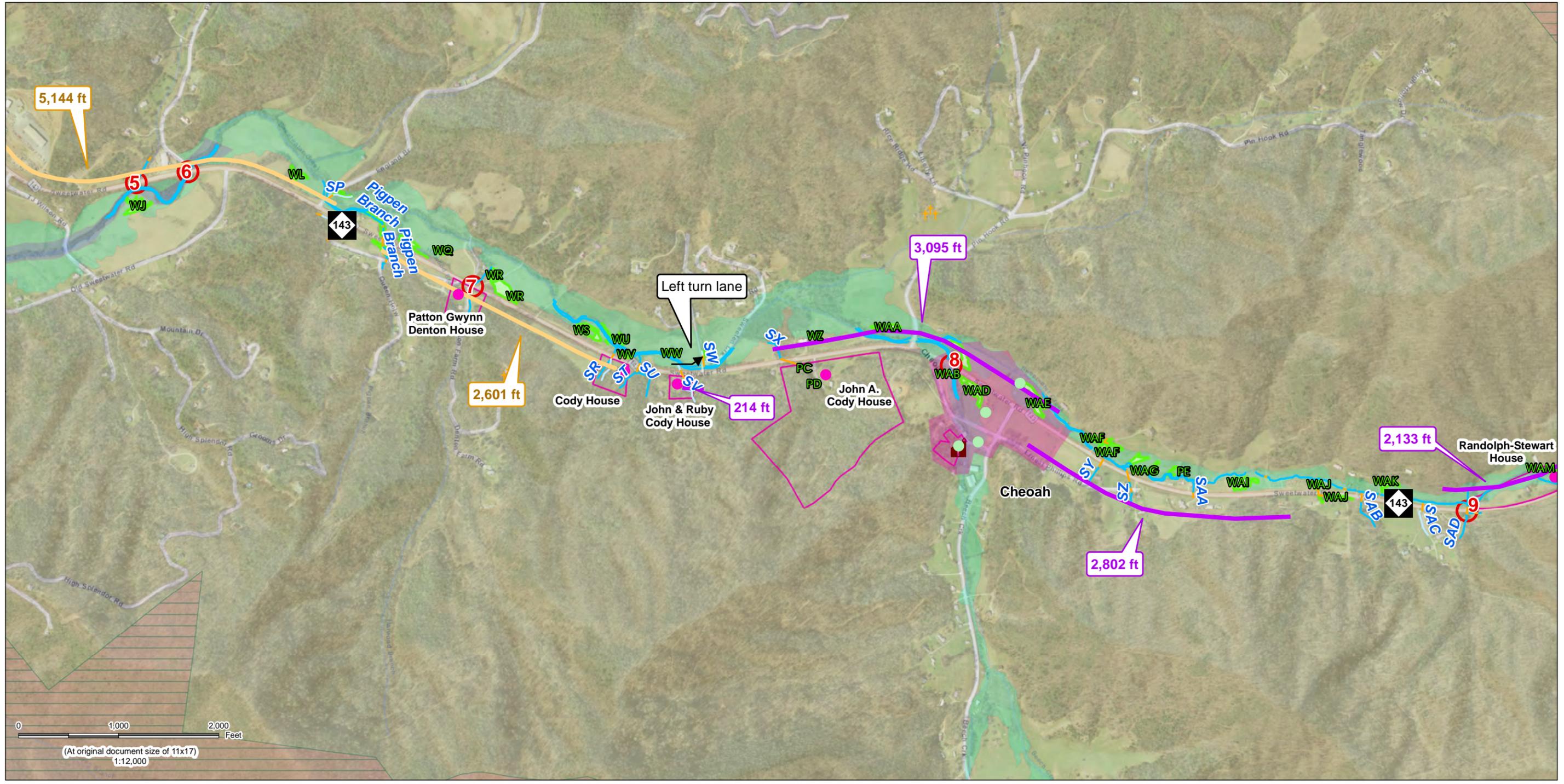
Figure No.

1

Title

Project Vicinity Map





Legend

- Passing Lanes
- Climbing Lanes
- Hydraulic Site
- Cemetery
- Religious Facility
- Historic Architecture**
- Recommended Eligible
- Contributing
- Recommended Eligible District
- NRHP Boundaries
- Potential Jurisdictional Perennial Stream
- Potential Jurisdictional Intermittent Stream
- Select Culverts/Pipes/Bridges
- Potential Jurisdictional Wetland
- Floodplain
- Floodway
- National Forest System Lands
- Game Lands

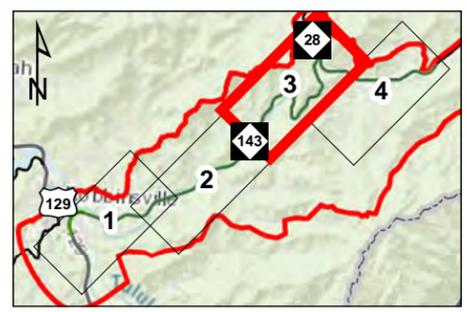
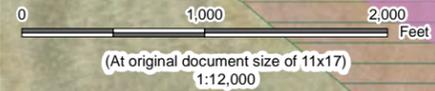
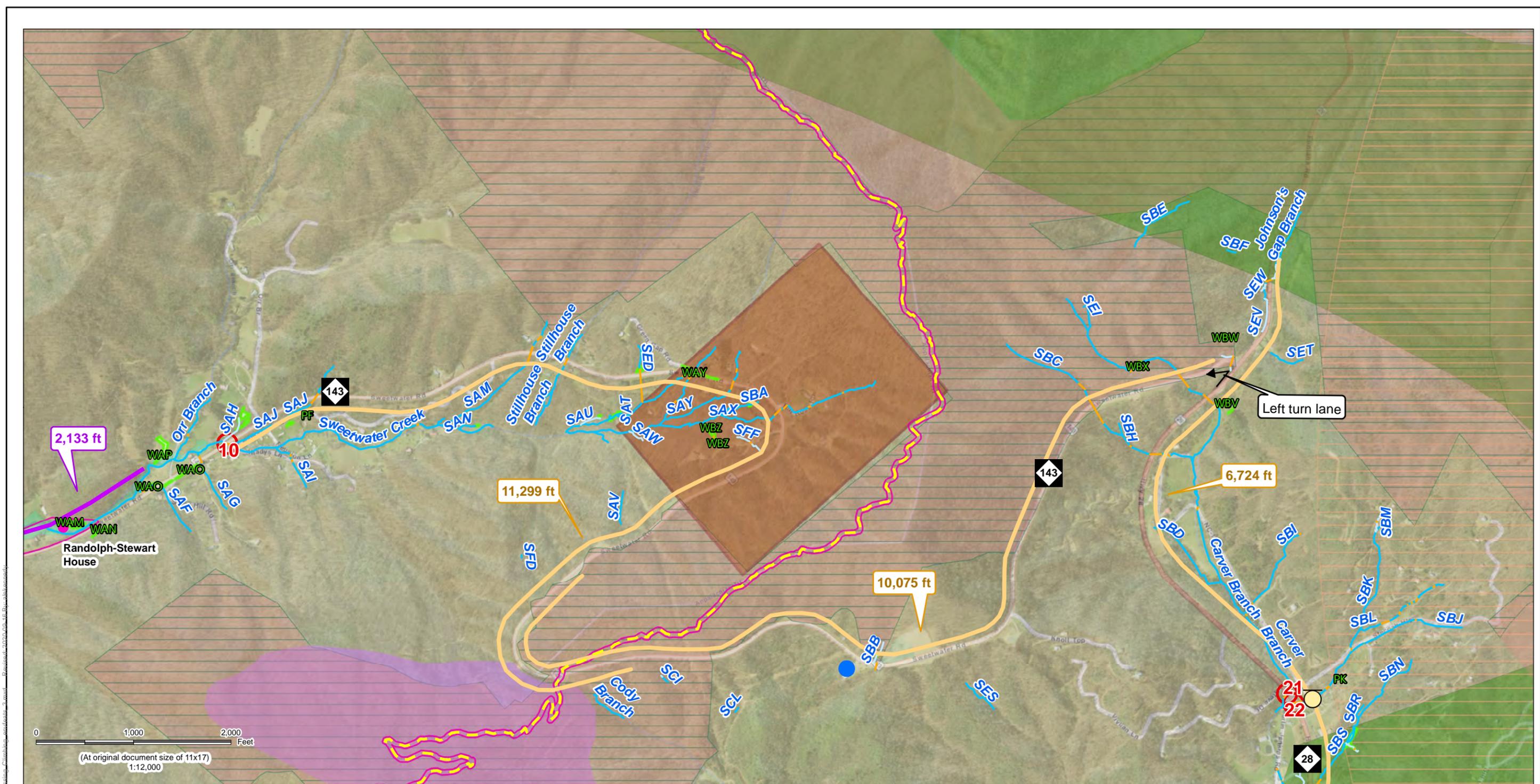
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DIVISION 14

Project Location: Graham County, NC
Prepared by ECL on 2020-01-21
Revised by ALK on 2020-03-31

Client/Project: NCDOT - Division 14
Corridor K Improvements
STIP Project No. A-0009C

Figure No. **2.2**
Title **Environmental Features**





- Legend**
- Passing Lanes
 - Climbing Lanes
 - Hydraulic Site
 - Water Supply Intakes
 - Regional Underground Storage Tanks
 - Historic Architecture**
 - Recommended Eligible
 - NRHP Boundaries
 - Appalachian Trail
 - Potential Jurisdictional Perennial Stream
 - Potential Jurisdictional Intermittent Stream
 - Select Culverts/Pipes/Bridges
 - Potential Jurisdictional Wetland
 - Floodplain
 - Indiana Bat Potential Habitat
 - National Forest System Lands
 - Geologic Map Unit Zwe
 - Tribal Land
 - Natural Heritage Program Areas
 - Game Lands



NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DIVISION 14

Project Location
Graham County, NC

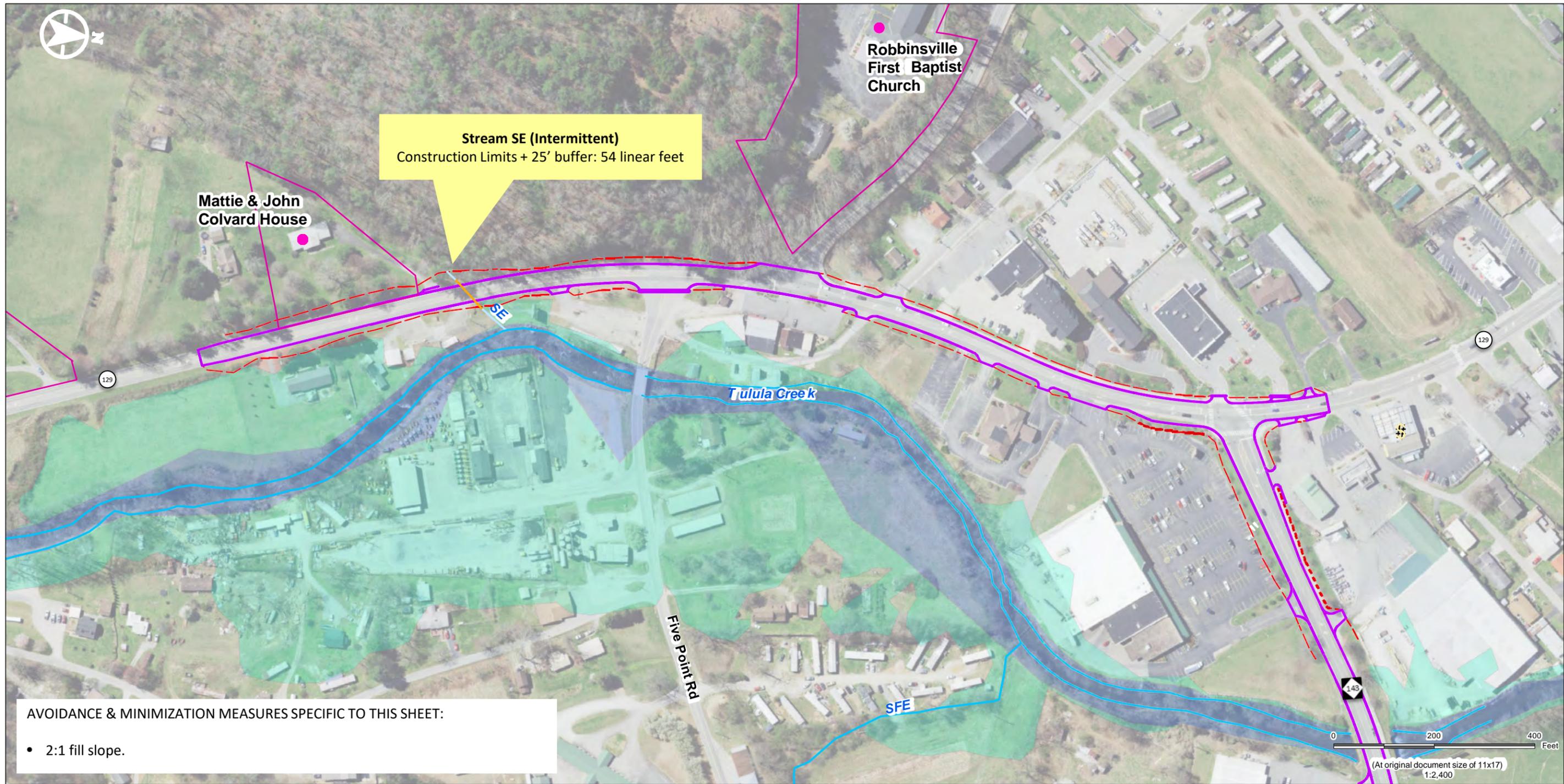
Client/Project
NCDOT - Division 14
Corridor K Improvements
STIP Project No. A-0009C

Figure No.
2.3

Title
Environmental Features

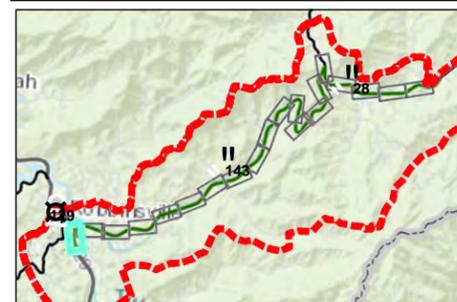
Prepared by ECL on 2020-01-21
Revised by ALK on 2020-03-31

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AVOIDANCE & MINIMIZATION MEASURES SPECIFIC TO THIS SHEET:

- 2:1 fill slope.



Legend

- Proposed Edge of Travel
- Proposed Retaining Wall
- Proposed Slope Fill
- Potential Jurisdictional Perennial Stream
- Potential Jurisdictional Intermittent Stream
- Select Culverts/Pipes/Bridges
- Floodplain
- Floodway
- Regional Underground Storage Tanks
- Religious Facility
- Historic Architecture**
- Recommended Eligible
- NRHP Boundaries



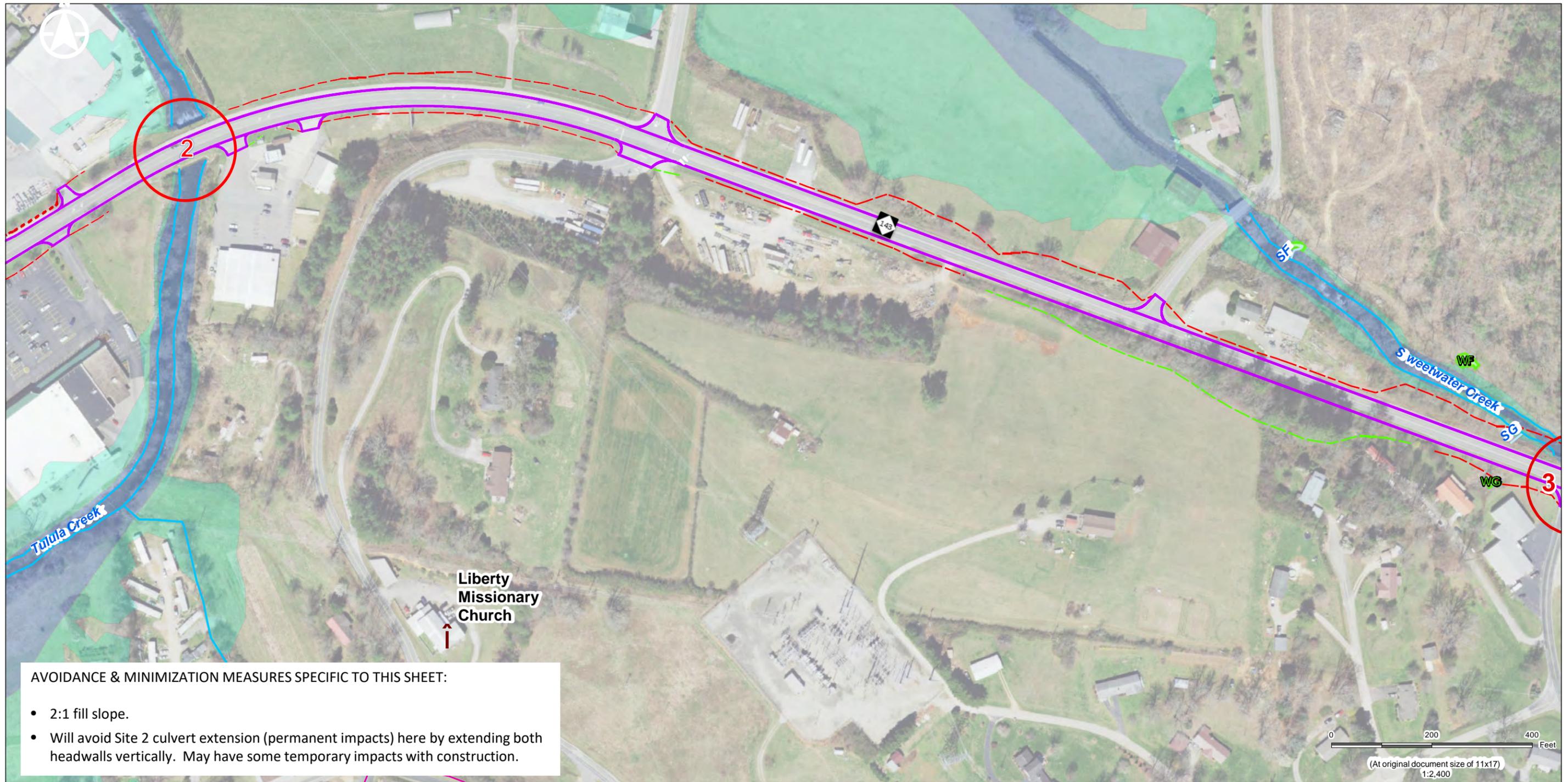
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DIVISION 14

Project Location: Graham County, NC
Prepared by ALK on 2020-07-23
Reviewed by ECL on 2020-07-23

Client/Project: NCDOT - Division 14
Corridor K Improvements
STIP Project No. A-0009C

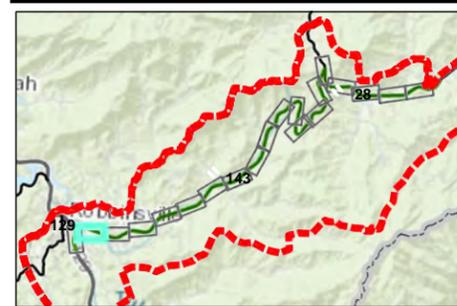
Figure No.: 3.1

Title: Annotated Stream/Wetland Impacts



AVOIDANCE & MINIMIZATION MEASURES SPECIFIC TO THIS SHEET:

- 2:1 fill slope.
- Will avoid Site 2 culvert extension (permanent impacts) here by extending both headwalls vertically. May have some temporary impacts with construction.



- Legend**
- Proposed Edge of Travel
 - Proposed Retaining Wall
 - Proposed Slope Cut
 - Proposed Slope Fill
 - Hydraulic Site
 - Potential Jurisdictional Perennial Stream
 - Potential Jurisdictional Intermittent Stream
 - Potential Jurisdictional Wetland
 - Floodplain
 - Floodway
 - Religious Facility
 - NRHP Boundaries


NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DIVISION 14

Project Location: Graham County, NC
 Client/Project: NCDOT - Division 14
 Corridor K Improvements
 STIP Project No. A-0009C

Prepared by ALK on 2020-07-23
 Reviewed by ECL on 2020-07-23

Figure No. **3.2**
 Title **Annotated Stream/Wetland Impacts**



Sweetwater Creek: Perennial
Construction Limits + 25' buffer: 484 linear feet

Stream SG: Intermittent
Construction Limits + 25' buffer: 32 linear feet

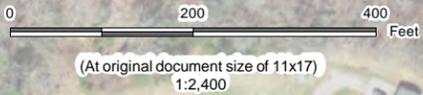
Wetland WG: NCWAM Low
Construction Limits + 25' buffer: 0.004-acre

Stream SI (Perennial)
Construction Limits + 25' buffer: 243 linear feet

Stream SJ: Intermittent
Construction Limits + 25' buffer: 51 linear feet

AVOIDANCE & MINIMIZATION MEASURES SPECIFIC TO THIS SHEET:

- Sweetwater Creek at NC 143/Old Sweetwater Road: 2:1 fill slope; symmetrical widening to minimize overall stream impacts due to stream geometry.
- Stream SI on NC 143/Milt Williams Road: 2:1 fill slope; symmetric widening to minimize overall stream impacts due to stream geometry.
- Stream SJ at NC 143/Tatham Road: 2:1 fill slope.



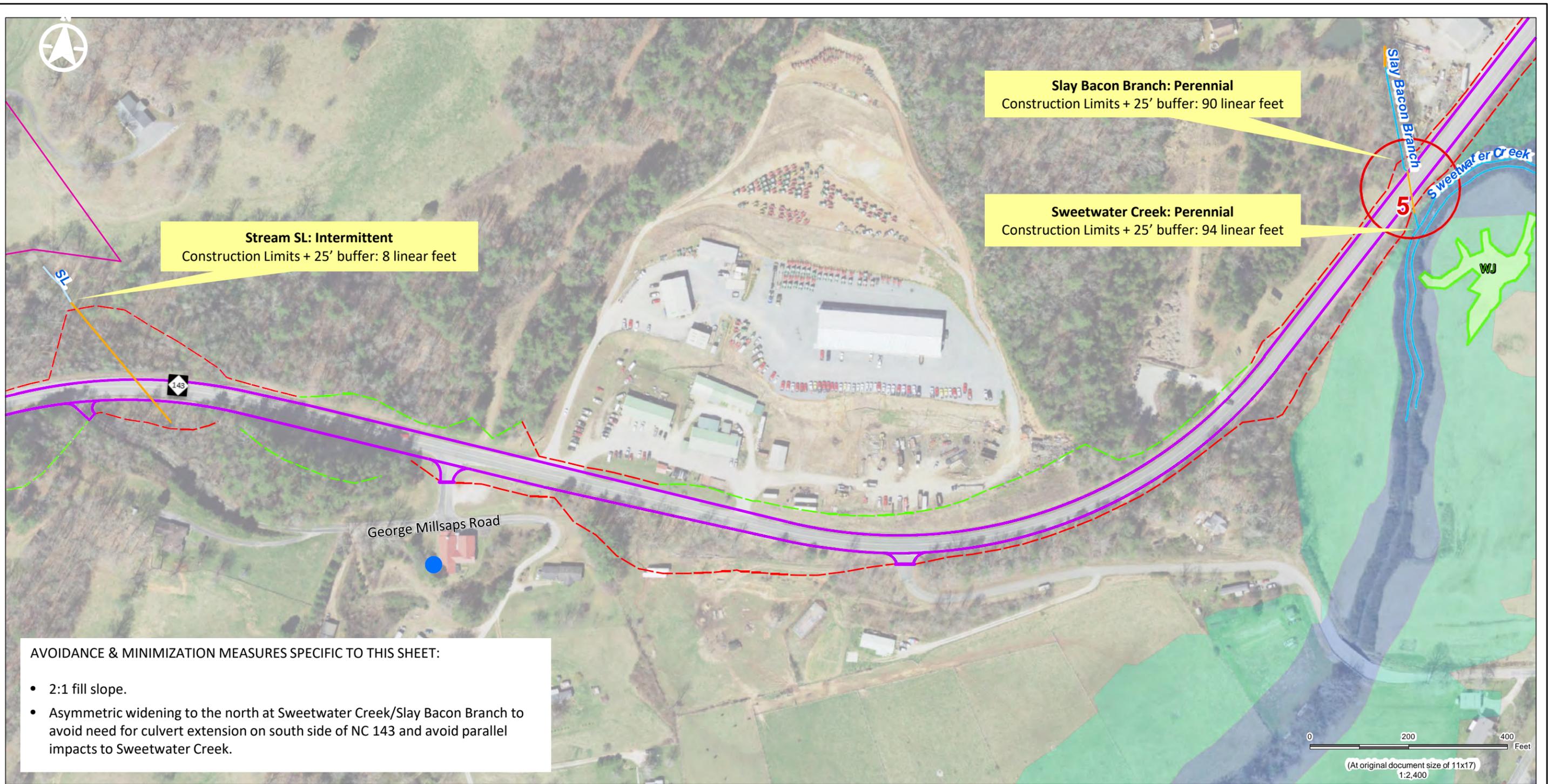
- Legend**
- Proposed Edge of Travel
 - Proposed Slope Cut
 - Proposed Slope Fill
 - Hydraulic Site
 - Potential Jurisdictional Perennial Stream
 - Potential Jurisdictional Intermittent Stream
 - Select Culverts/Pipes/Bridges
 - Potential Jurisdictional Wetland
 - Floodplain
 - Floodway
 - NRHP Boundaries

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DIVISION 14

Project Location: Graham County, NC
Client/Project: NCDOT - Division 14 Corridor K Improvements STIP Project No. A-0009C
Prepared by ALK on 2020-07-23
Reviewed by ECL on 2020-07-23

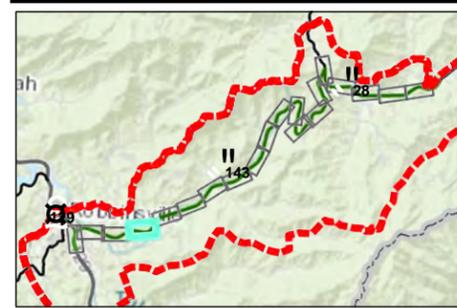
Figure No. 3.3
Title: Annotated Stream/Wetland Impacts

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AVOIDANCE & MINIMIZATION MEASURES SPECIFIC TO THIS SHEET:

- 2:1 fill slope.
- Asymmetric widening to the north at Sweetwater Creek/Slay Bacon Branch to avoid need for culvert extension on south side of NC 143 and avoid parallel impacts to Sweetwater Creek.



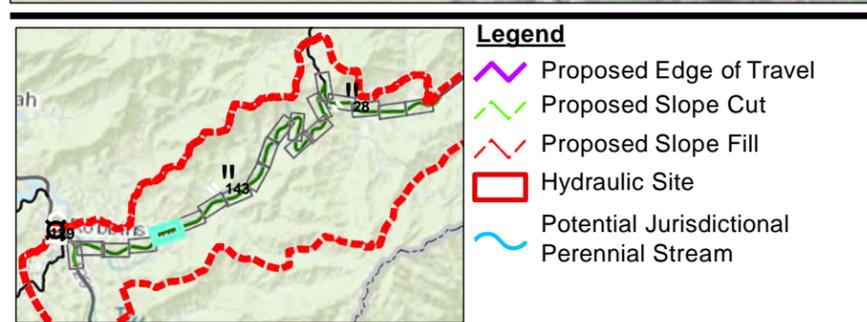
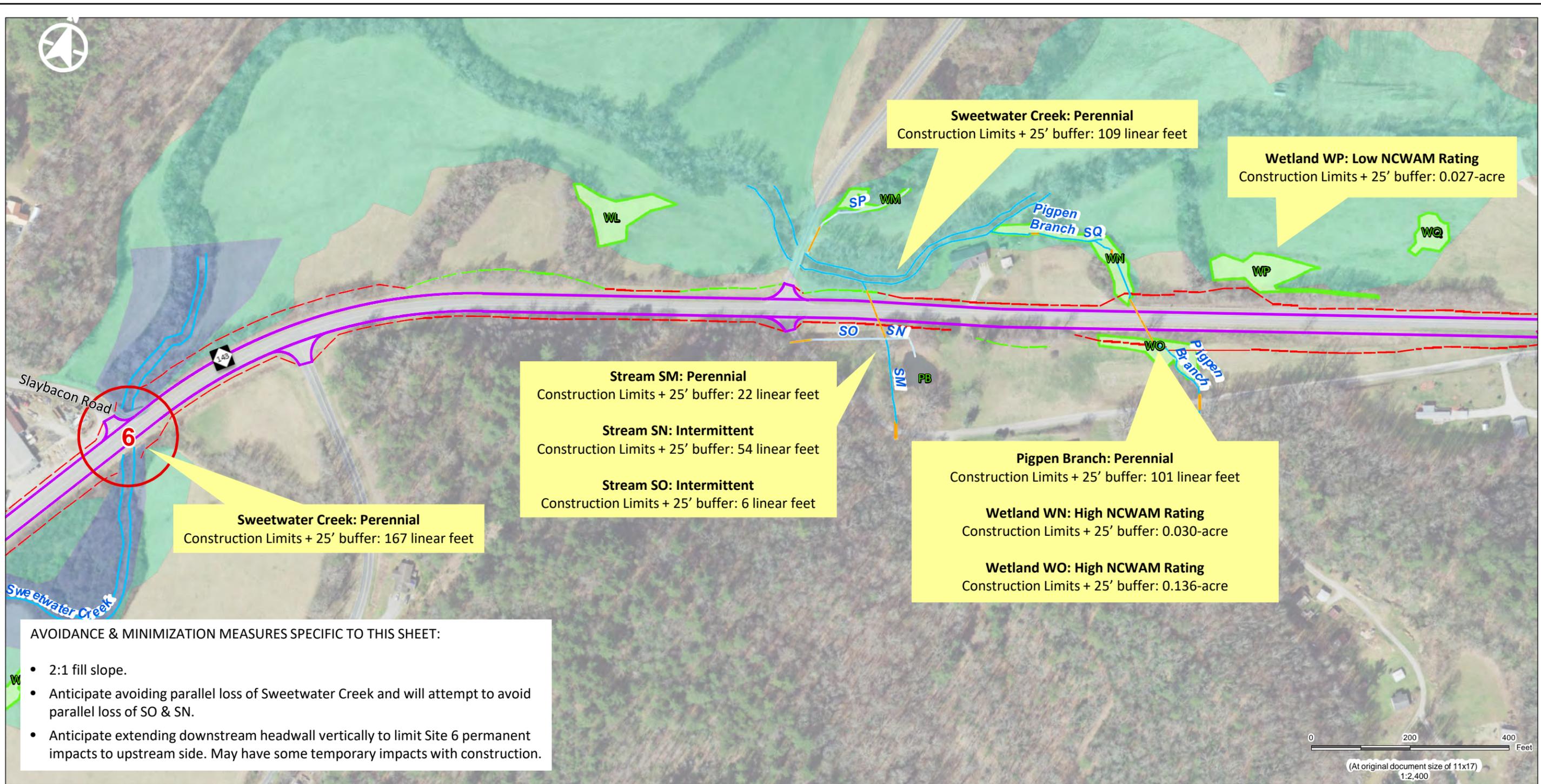
Proposed Edge of Travel	Potential Jurisdictional Intermittent Stream	Floodway
Proposed Slope Cut	Select Culverts/Pipes/Bridges	Water Supply Intakes
Proposed Slope Fill	Potential Jurisdictional Wetland	NRHP Boundaries
Hydraulic Site	Floodplain	
Potential Jurisdictional Perennial Stream		

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DIVISION 14

Project Location Graham County, NC *Prepared by* ALK on 2020-07-23
Client/Project NCDOT - Division 14 Corridor K Improvements STIP Project No. A-0009C *Reviewed by* ECL on 2020-07-23

Figure No. 3.4
Title Annotated Stream/Wetland Impacts

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Legend

- Proposed Edge of Travel
- Proposed Slope Cut
- Proposed Slope Fill
- Hydraulic Site
- Potential Jurisdictional Perennial Stream
- Potential Jurisdictional Intermittent Stream
- Select Culverts/Pipes/Bridges
- Potential Jurisdictional Wetland
- Floodplain
- Floodway
- NRHP Boundaries



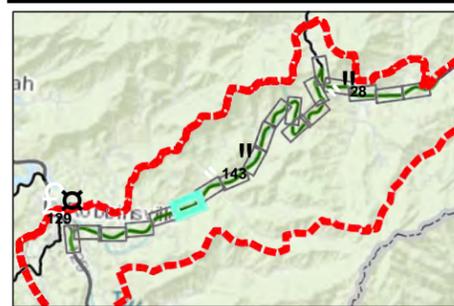
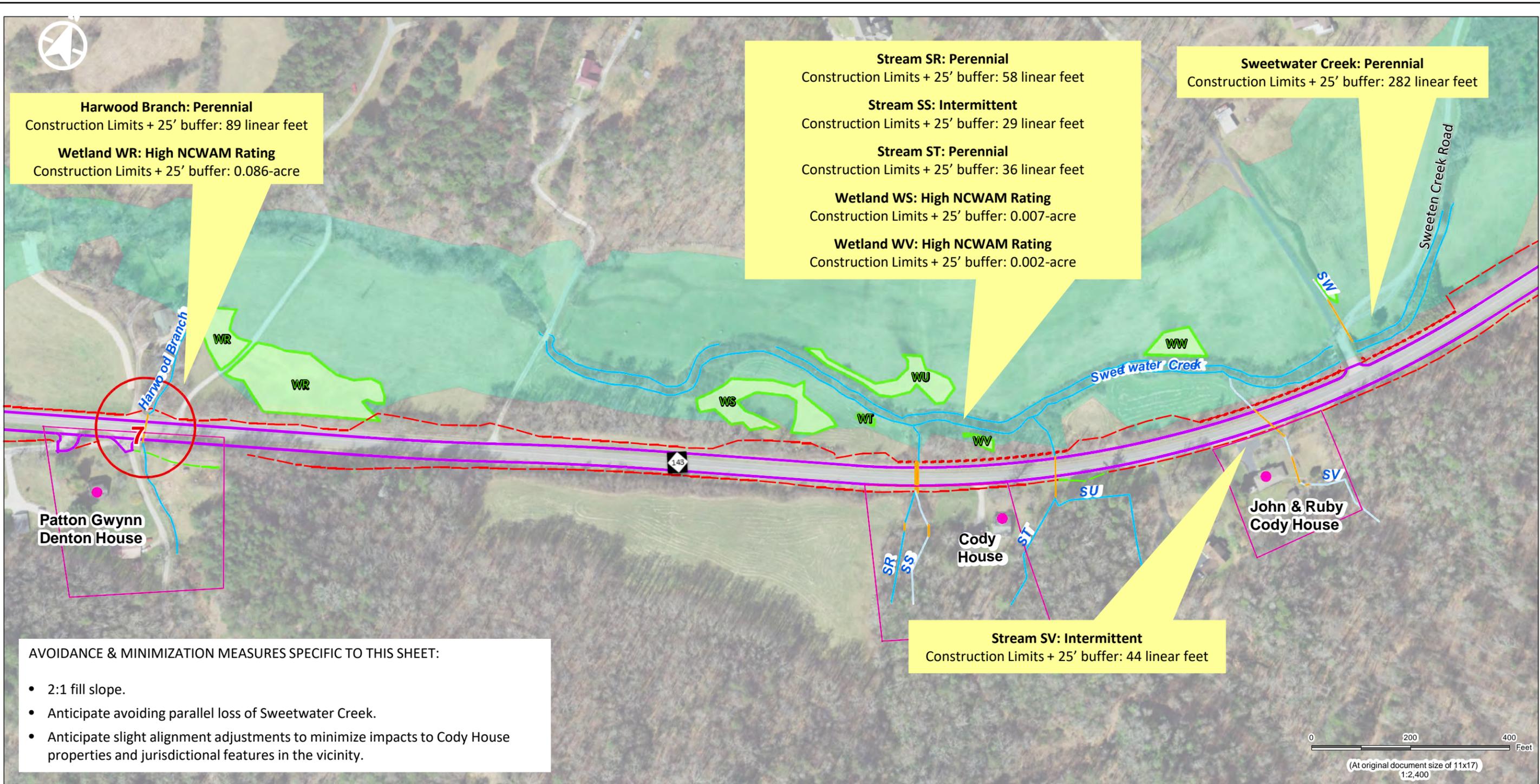
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DIVISION 14

Project Location: Graham County, NC
Prepared by ALK on 2020-07-23
Reviewed by ECL on 2020-07-23

Client/Project: NCDOT - Division 14
Corridor K Improvements
STIP Project No. A-0009C

Figure No. 3.5

Title: Annotated Stream/Wetland Impacts



Legend

- Proposed Edge of Travel
- Proposed Retaining Wall
- Proposed Slope Cut
- Proposed Slope Fill
- Hydraulic Site
- Potential Jurisdictional Perennial Stream

- Potential Jurisdictional Intermittent Stream
- Select Culverts/Pipes/Bridges
- Potential Jurisdictional Wetland
- Floodplain

- Cemetery
- Historic Architecture**
- Recommended Eligible
- NRHP Boundaries



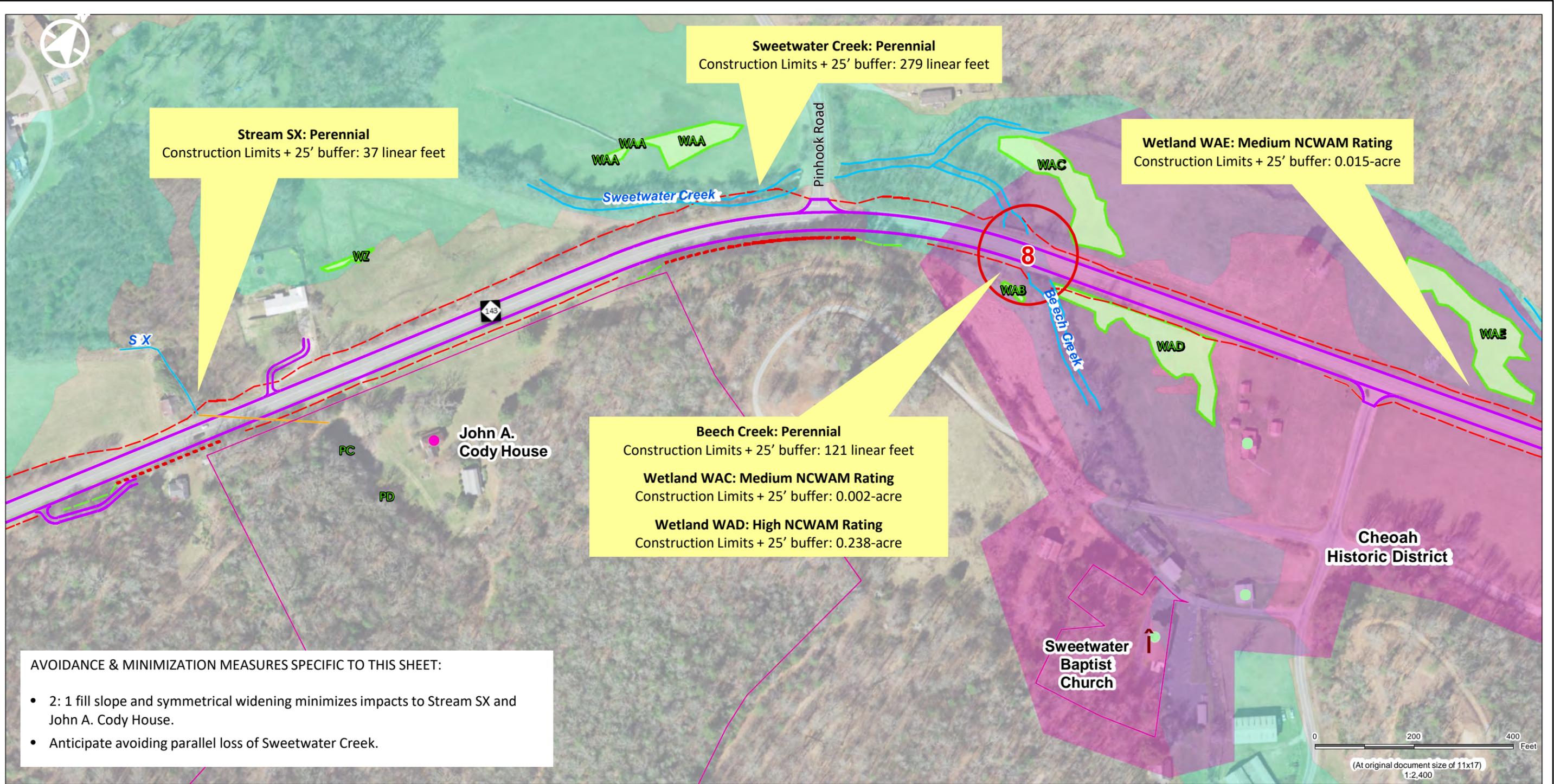
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DIVISION 14

Project Location: _____ Prepared by ALK on 2020-07-23
Reviewed by ECL on 2020-07-23

Client/Project: _____
Graham County, NC
NCDOT - Division 14
Corridor K Improvements
STIP Project No. A-0009C

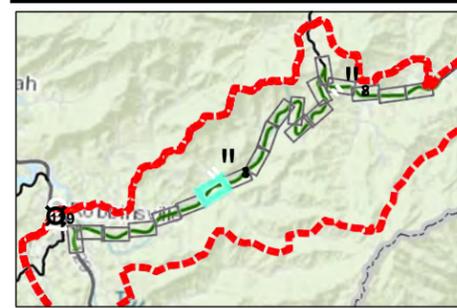
Figure No. _____
3.6

Title
Annotated Stream/Wetland Impacts



AVOIDANCE & MINIMIZATION MEASURES SPECIFIC TO THIS SHEET:

- 2: 1 fill slope and symmetrical widening minimizes impacts to Stream SX and John A. Cody House.
- Anticipate avoiding parallel loss of Sweetwater Creek.



- Legend**
- Proposed Edge of Travel
 - Proposed Retaining Wall
 - Proposed Slope Cut
 - Proposed Slope Fill
 - Hydraulic Site
 - Potential Jurisdictional Perennial Stream
 - Select Culverts/Pipes/Bridges
 - Potential Jurisdictional Wetland
 - Floodplain
 - Religious Facility
 - Historic Architecture
 - Recommended Eligible
 - Contributing
 - Recommended Eligible District
 - NRHP Boundaries

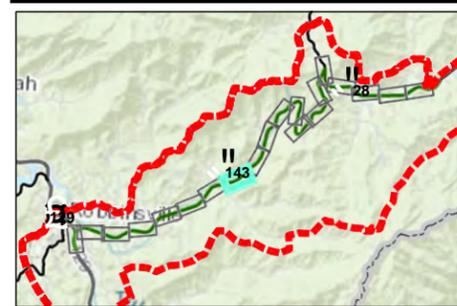
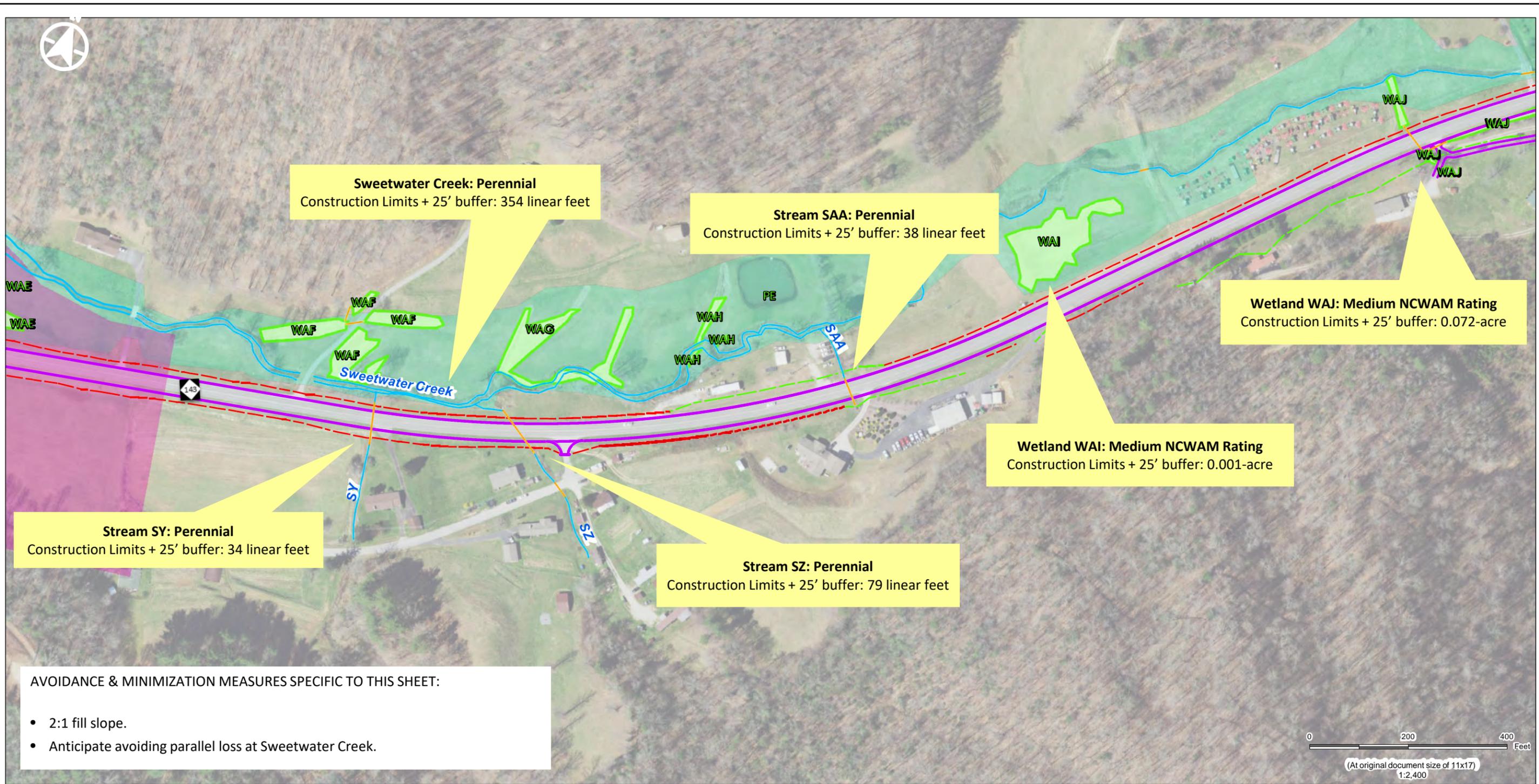
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DIVISION 14

Project Location _____ *Prepared by* ALK on 2020-07-23
Reviewed by ECL on 2020-07-23

Client/Project
Graham County, NC
NCDOT - Division 14
Corridor K Improvements
STIP Project No. A-0009C

Figure No.
3.7

Title
Annotated Stream/Wetland Impacts



Legend

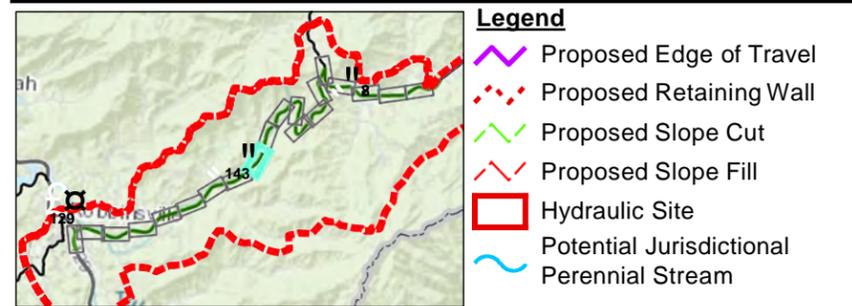
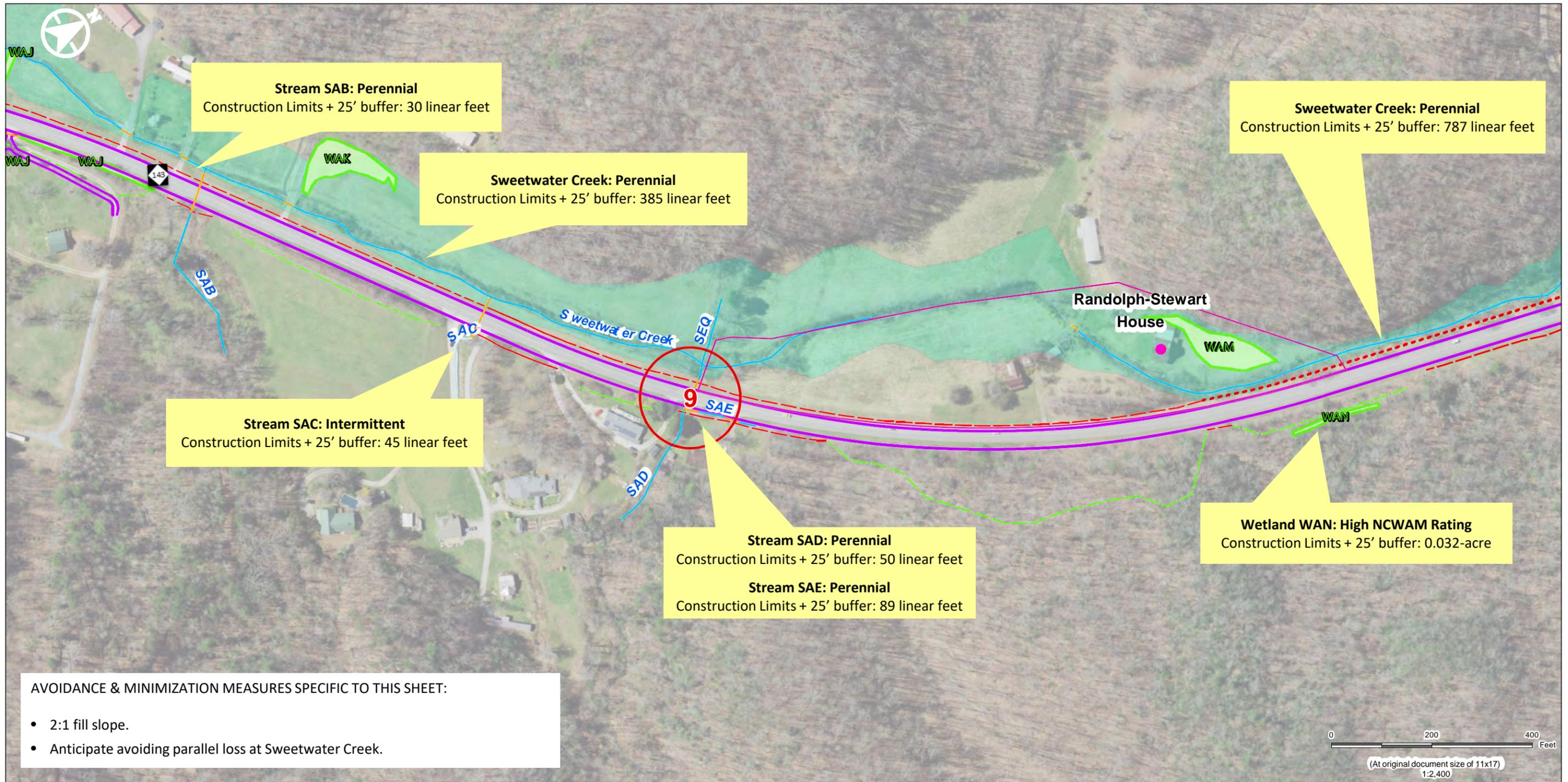
	Proposed Edge of Travel		Select Culverts/Pipes/Bridges
	Proposed Retaining Wall		Potential Jurisdictional Wetland
	Proposed Slope Cut		Floodplain
	Proposed Slope Fill		Recommended Eligible District
	Potential Jurisdictional Perennial Stream		

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DIVISION 14

Project Location: _____ Prepared by ALK on 2020-07-23
Reviewed by ECL on 2020-07-23

Client/Project: _____
Graham County, NC
NCDOT - Division 14
Corridor K Improvements
STIP Project No. A-0009C

Figure No. **3.8**
Title **Annotated Stream/Wetland Impacts**



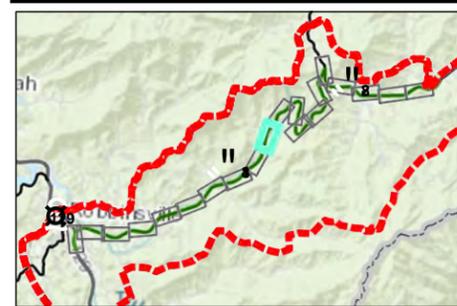
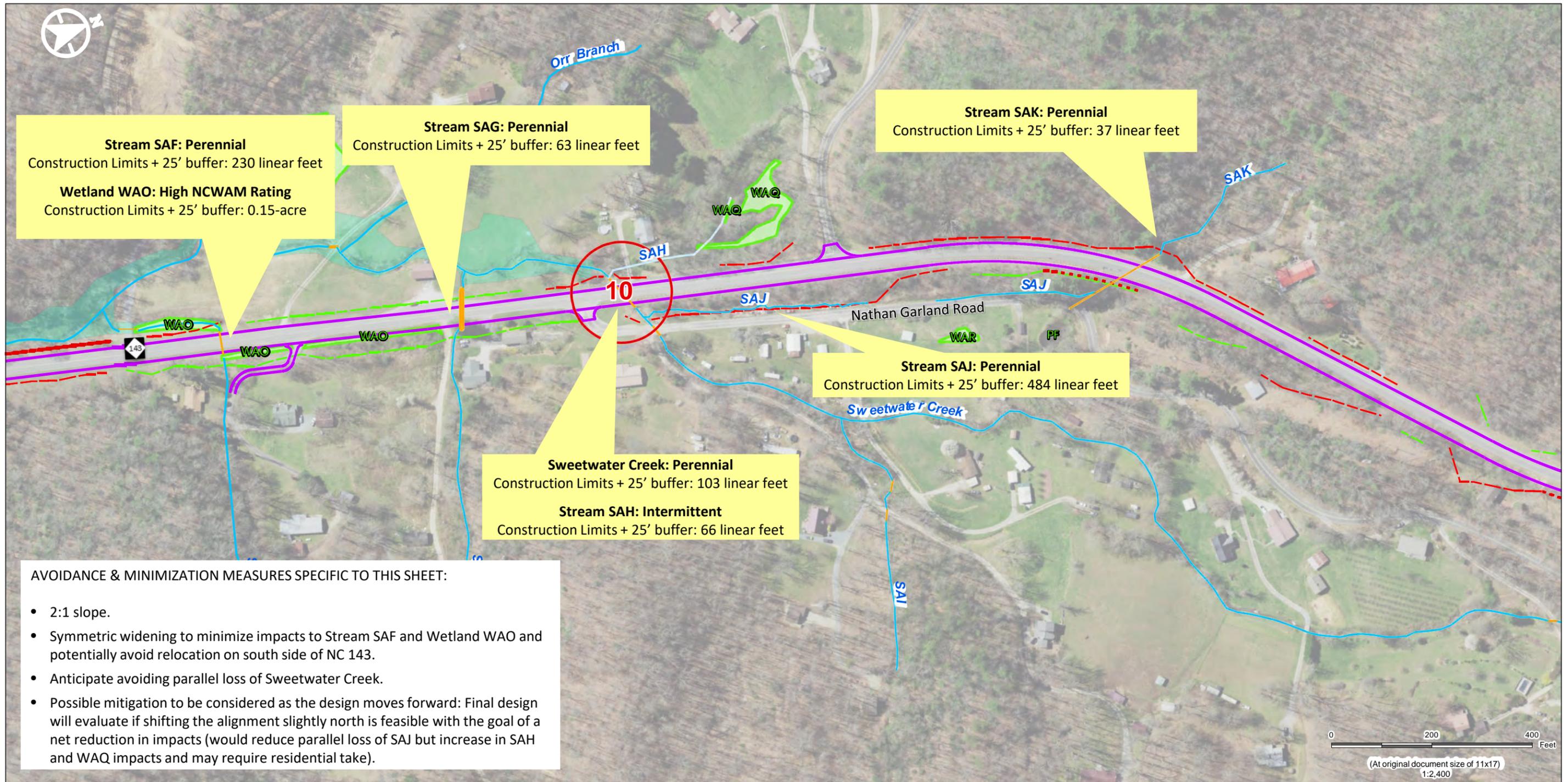
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DIVISION 14

Project Location: _____ Prepared by ALK on 2020-07-23
Reviewed by ECL on 2020-07-23

Client/Project: _____
Graham County, NC
NCDOT - Division 14
Corridor K Improvements
STIP Project No. A-0009C

Figure No. **3.9**
Title **Annotated Stream/Wetland Impacts**

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Legend			
	Proposed Edge of Travel		Potential Jurisdictional Intermittent Stream
	Proposed Retaining Wall		Select Culverts/Pipes/Bridges
	Proposed Slope Cut		Potential Jurisdictional Wetland
	Proposed Slope Fill		Floodplain
	Hydraulic Site		
	Potential Jurisdictional Perennial Stream		

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DIVISION OF HIGHWAYS
DIVISION 14

Project Location: Graham County, NC
Client/Project: NCDOT - Division 14
Corridor K Improvements
STIP Project No. A-0009C

Prepared by ALK on 2020-07-23
Reviewed by ECL on 2020-07-23

Figure No. **3.10**
Title **Annotated Stream/Wetland Impacts**



Stillhouse Branch: Perennial
Construction Limits + 25' buffer: 43 linear feet

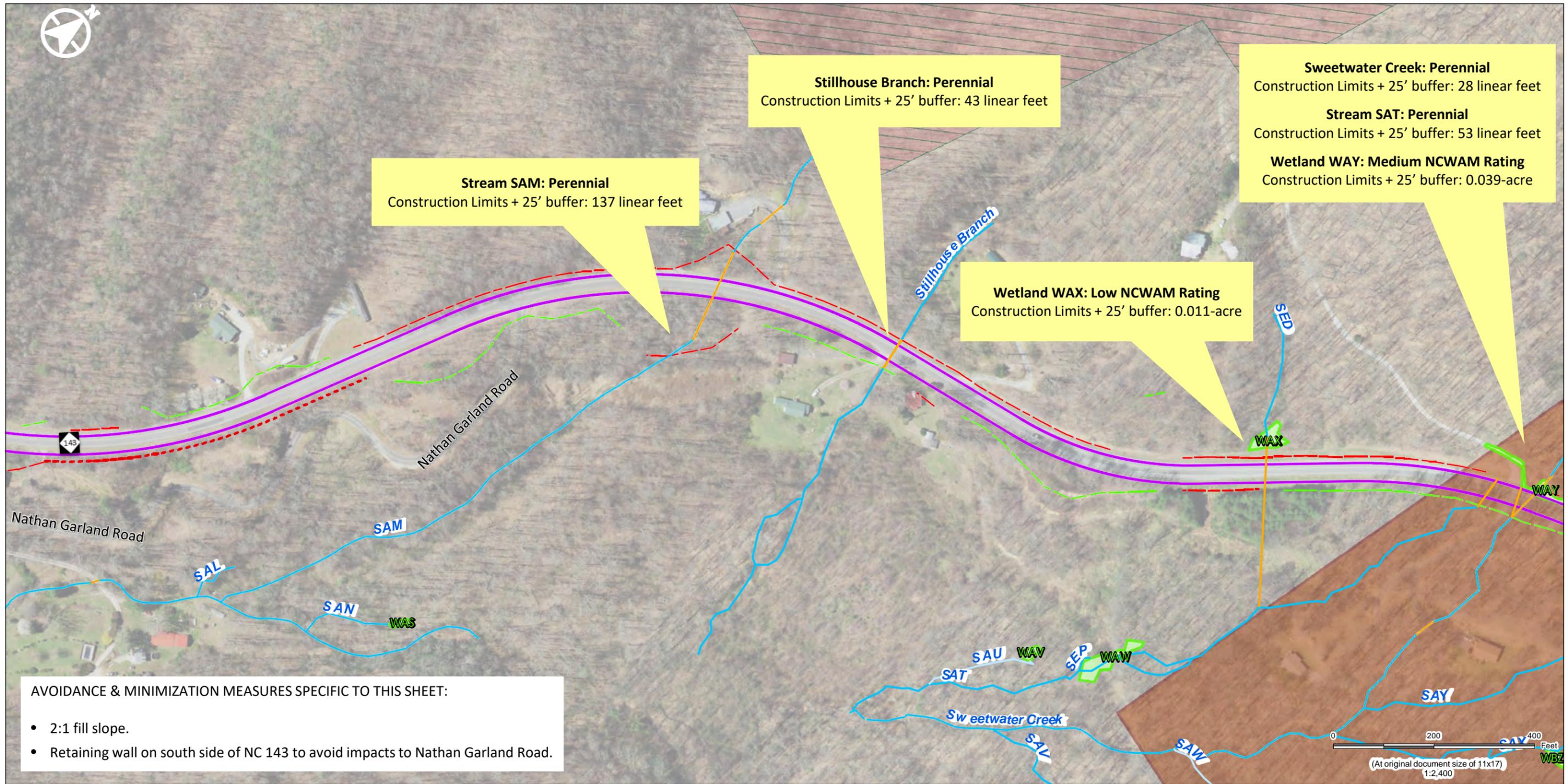
Stream SAM: Perennial
Construction Limits + 25' buffer: 137 linear feet

Wetland WAX: Low NCWAM Rating
Construction Limits + 25' buffer: 0.011-acre

Sweetwater Creek: Perennial
Construction Limits + 25' buffer: 28 linear feet

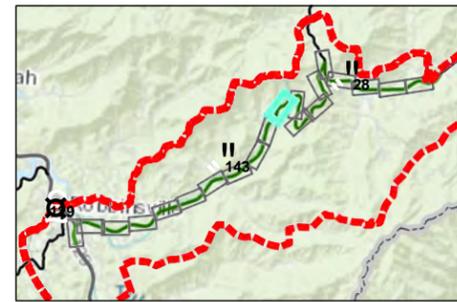
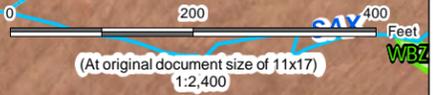
Stream SAT: Perennial
Construction Limits + 25' buffer: 53 linear feet

Wetland WAY: Medium NCWAM Rating
Construction Limits + 25' buffer: 0.039-acre



AVOIDANCE & MINIMIZATION MEASURES SPECIFIC TO THIS SHEET:

- 2:1 fill slope.
- Retaining wall on south side of NC 143 to avoid impacts to Nathan Garland Road.



Legend	
	Proposed Edge of Travel
	Proposed Retaining Wall
	Proposed Slope Cut
	Proposed Slope Fill
	Potential Jurisdictional Perennial Stream
	Potential Jurisdictional Intermittent Stream
	Select Culverts/Pipes/Bridges
	Potential Jurisdictional Wetland
	National Forest System Lands
	Game Lands
	Tribal Land

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DIVISION 14

Project Location: Graham County, NC
Client/Project: NCDOT - Division 14 Corridor K Improvements STIP Project No. A-0009C
Prepared by ALK on 2020-07-23
Reviewed by ECL on 2020-07-23

Figure No. **3.11**
Title **Annotated Stream/Wetland Impacts**



Stream SAX: Perennial
Construction Limits + 25' buffer: 113 linear feet

Stream SBA: Perennial
Construction Limits + 25' buffer: 63 linear feet

Stream SAY: Perennial
Construction Limits + 25' buffer: 77 linear feet

Wetland WAZ: Medium NCWAM Rating
Construction Limits + 25' buffer: 0.024-acre

AVOIDANCE & MINIMIZATION MEASURES SPECIFIC TO THIS SHEET:

- Retaining walls to reduce earthwork.
- Alignment shifted into mountain to reduce cut slopes and avoid impacts to Streams SFF and SAV.



Legend

- Proposed Edge of Travel
- Proposed Retaining Wall
- Proposed Slope Cut
- Proposed Slope Fill
- Potential Jurisdictional Perennial Stream

- Potential Jurisdictional Intermittent Stream
- Select Culverts/Pipes/Bridges
- Potential Jurisdictional Wetland

- Appalachian Trail Conceptual Realignment (50-ft Study Corridor)
- National Forest System Lands
- Game Lands
- Tribal Land



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Project Location

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Reviewed by ECL on 2020-07-23

Graham County, NC

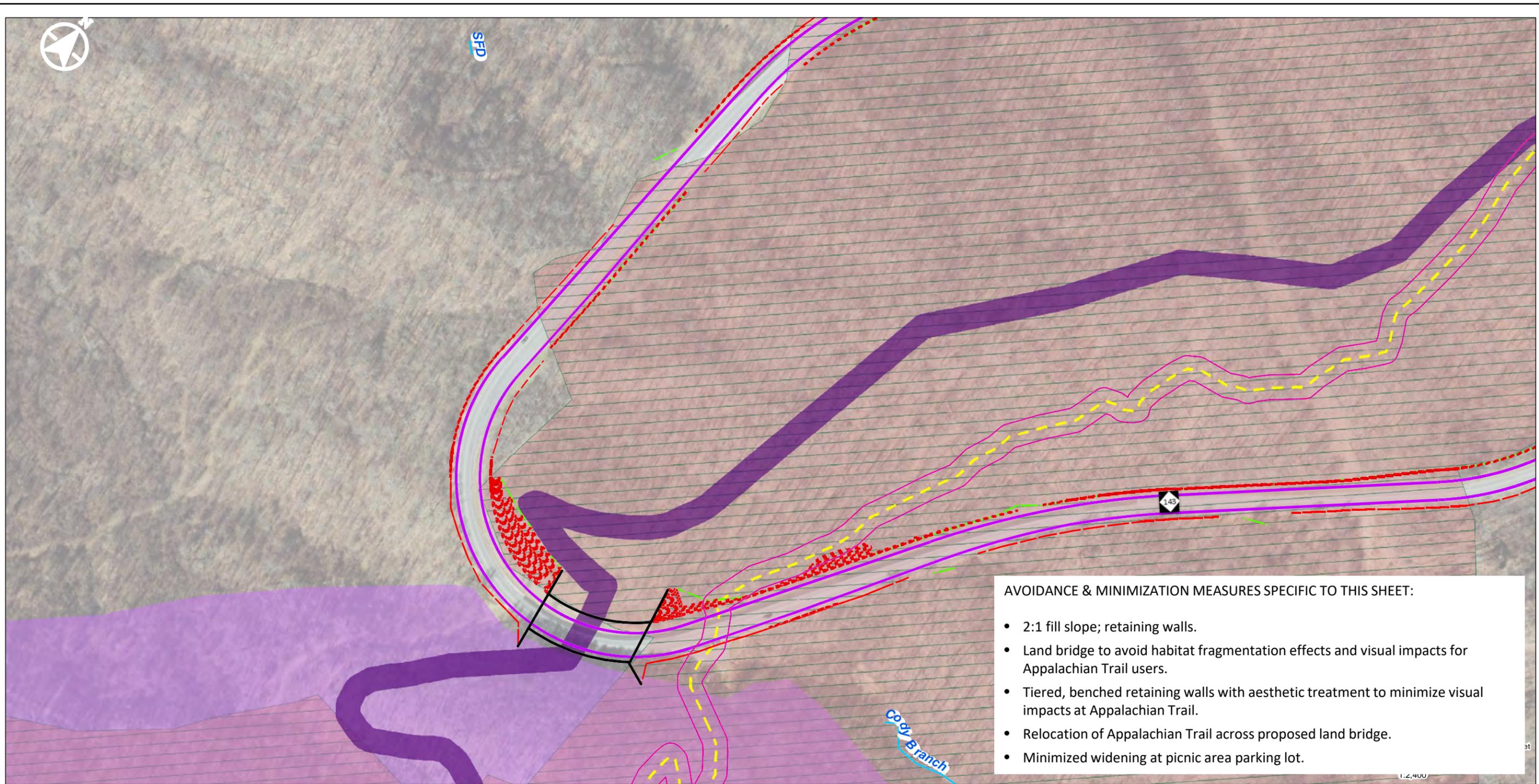
Client/Project
NCDOT - Division 14
Corridor K Improvements
STIP Project No. A-0009C

Figure No.

3.12

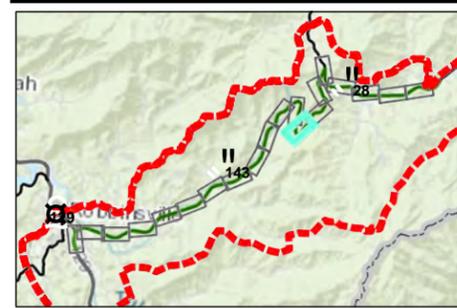
Title

Annotated Stream/Wetland Impacts



AVOIDANCE & MINIMIZATION MEASURES SPECIFIC TO THIS SHEET:

- 2:1 fill slope; retaining walls.
- Land bridge to avoid habitat fragmentation effects and visual impacts for Appalachian Trail users.
- Tiered, benched retaining walls with aesthetic treatment to minimize visual impacts at Appalachian Trail.
- Relocation of Appalachian Trail across proposed land bridge.
- Minimized widening at picnic area parking lot.



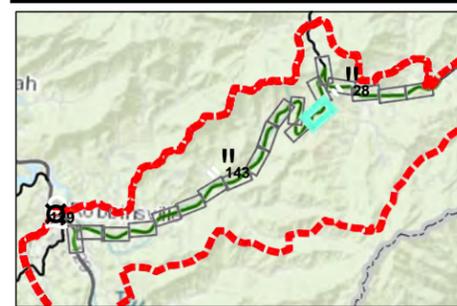
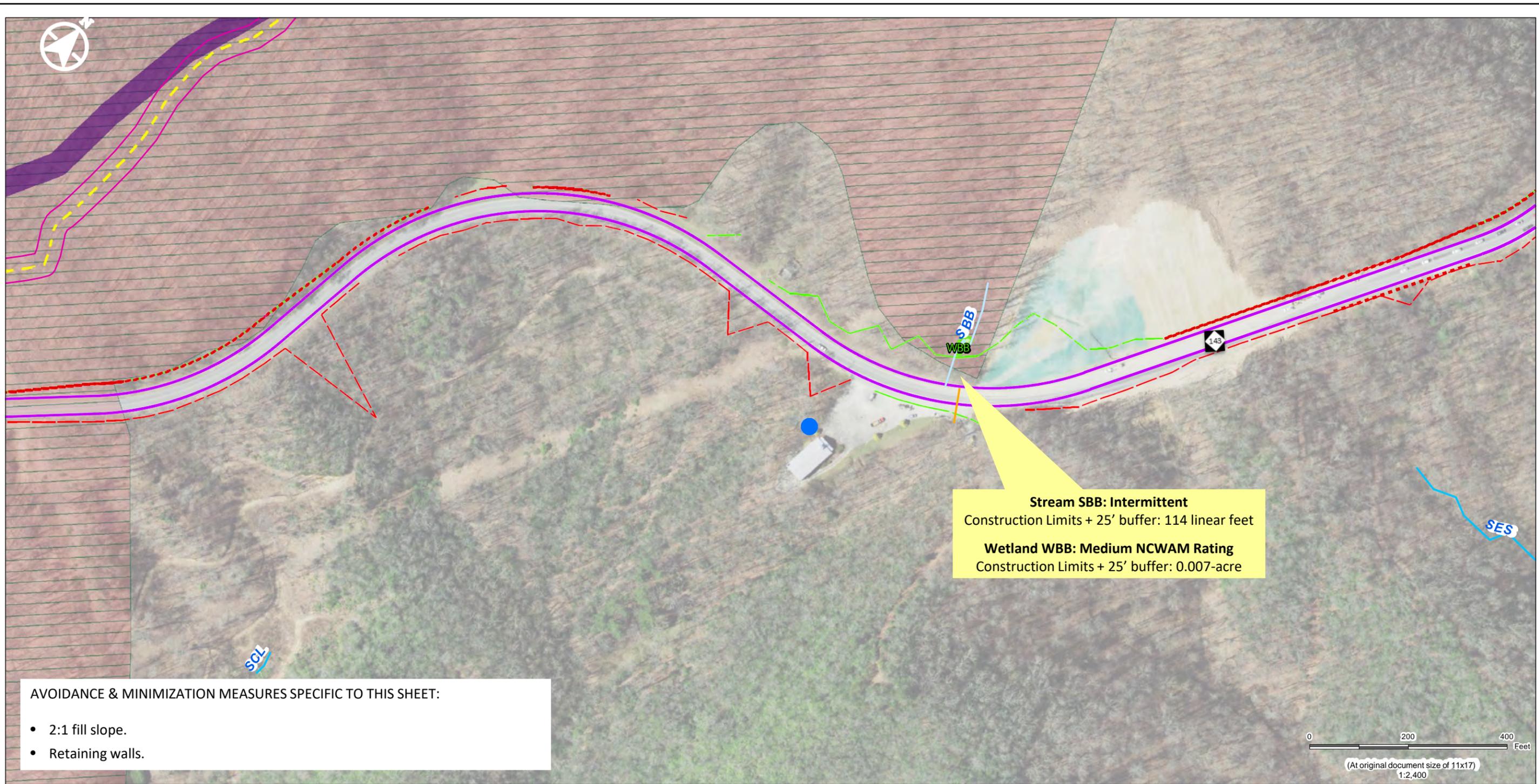
Legend

- Proposed Edge of Travel
- Proposed Retaining Wall
- Proposed Land Bridge
- Proposed Slope Cut
- Proposed Slope Fill
- Potential Jurisdictional Perennial Stream
- Potential Jurisdictional Intermittent Stream
- Appalachian Trail
- Conceptual Realignment (50-ft Study Corridor)
- National Forest System Lands
- Natural Heritage Program Areas
- Game Lands
- NRHP Boundaries

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Project Location: Graham County, NC
Client/Project: NCDOT - Division 14
Corridor K Improvements
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Figure No. **3.13**
Title **Annotated Stream/Wetland Impacts**



Legend

- Proposed Edge of Travel
- Proposed Retaining Wall
- Proposed Slope Cut
- Proposed Slope Fill
- Potential Jurisdictional Perennial Stream
- Potential Jurisdictional Intermittent Stream
- Select Culverts/Pipes/Bridges
- Potential Jurisdictional Wetland
- Appalachian Trail
- Appalachian Trail Conceptual Realignment (50-ft Study Corridor)
- National Forest System Lands
- Game Lands
- Water Supply Intakes
- NRHP Boundaries

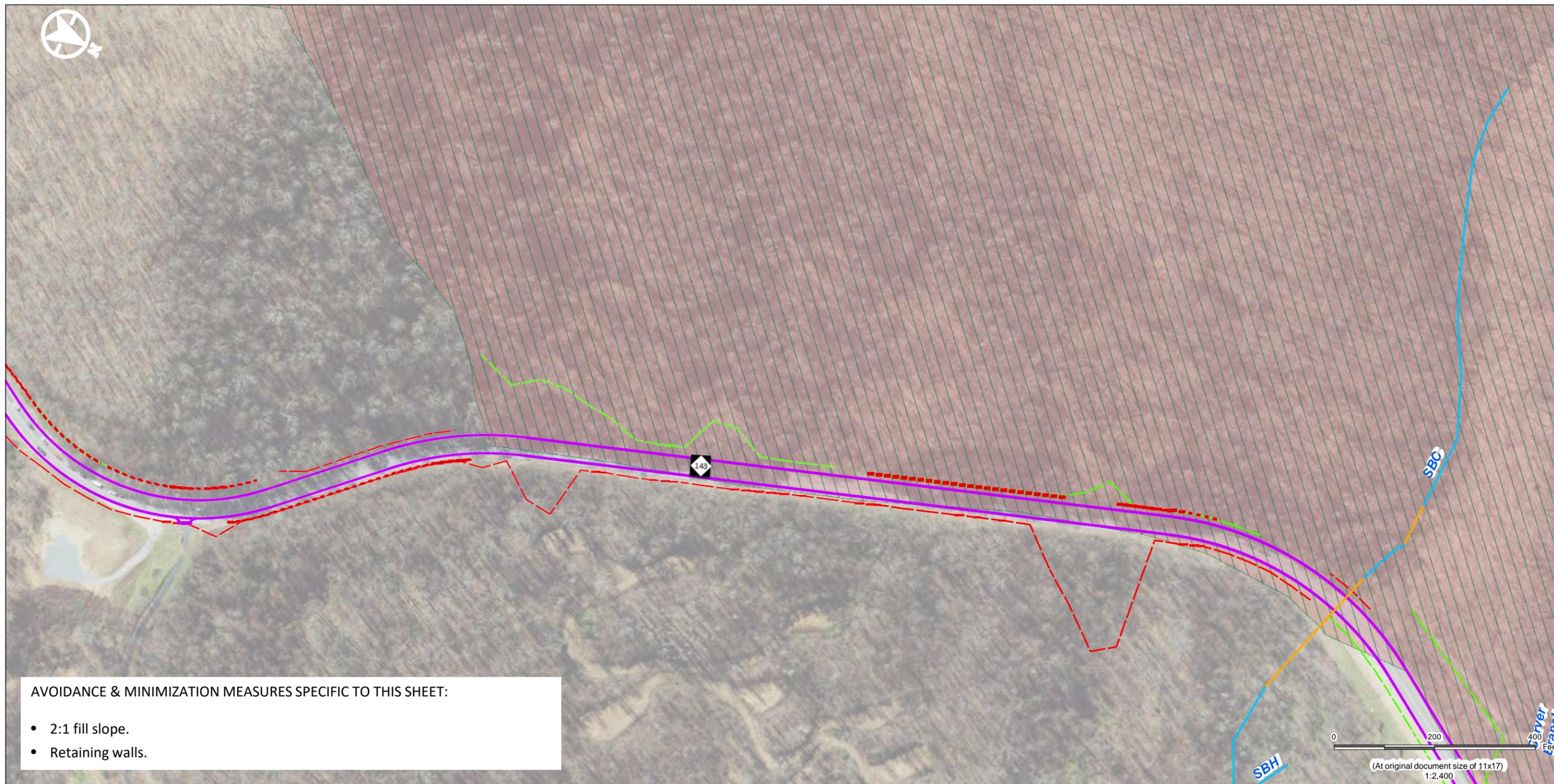
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Reviewed by ECL on 2020-07-23

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Corridor K Improvements
STIP Project No. A-0009C

Figure No.
3.14

Title
Annotated Stream/Wetland Impacts



AVOIDANCE & MINIMIZATION MEASURES SPECIFIC TO THIS SHEET:

- 2:1 fill slope.
- Retaining walls.



Legend

- Proposed Edge of Travel
- Proposed Retaining Wall
- Proposed Slope Cut
- Proposed Slope Fill
- Potential Jurisdictional Perennial Stream

- Select Culverts/Pipes/Bridges
- National Forest System Lands
- Game Lands



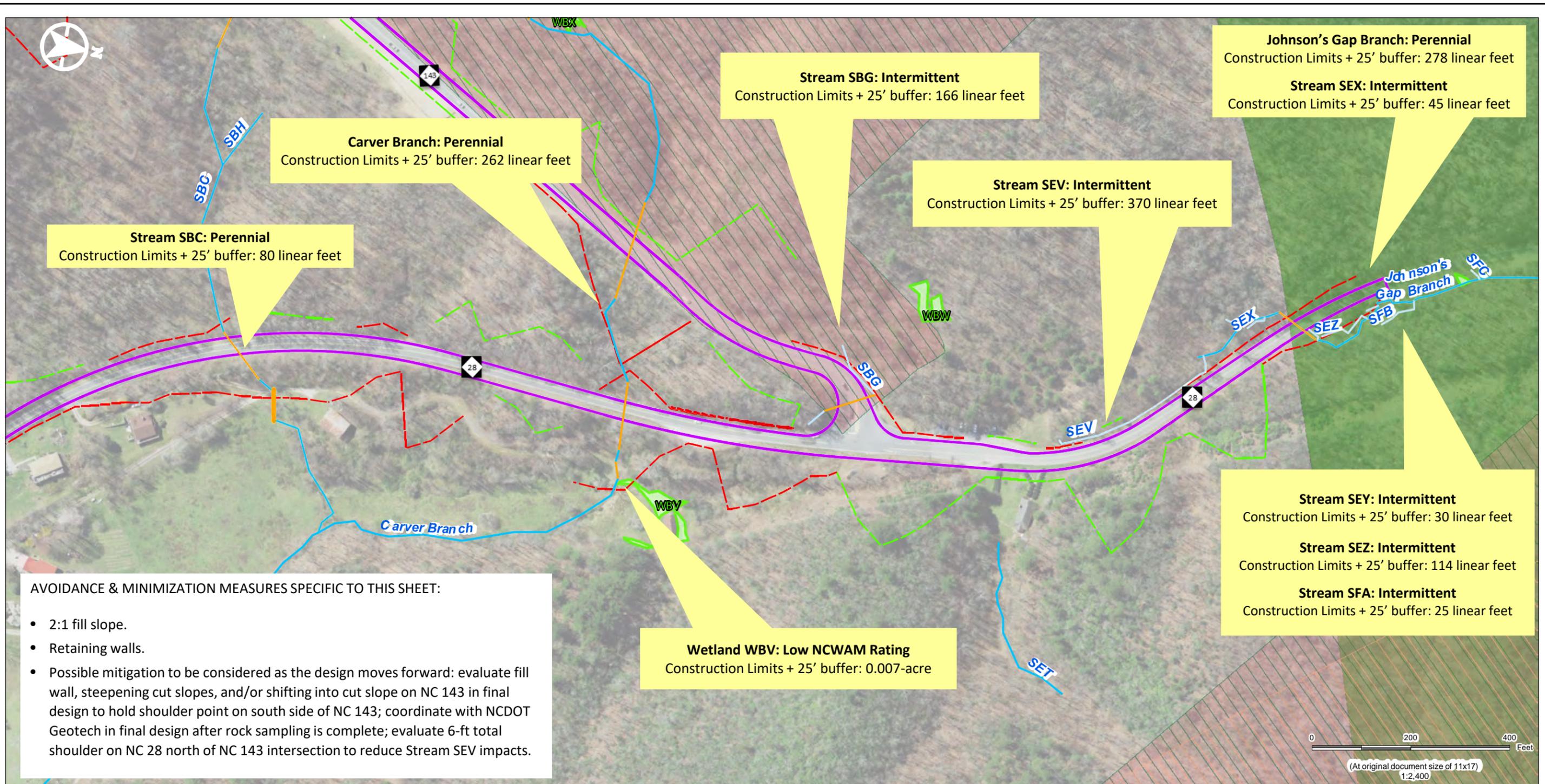
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Project Location: Graham County, NC
Prepared by ALK on 2020-07-23
Reviewed by ECL on 2020-07-23

Client/Project: NCDOT - Division 14
Corridor K Improvements
STIP Project No. A-0009C

Figure No. **3.15**

Title: **Annotated Stream/Wetland Impacts**



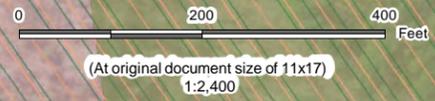
AVOIDANCE & MINIMIZATION MEASURES SPECIFIC TO THIS SHEET:

- 2:1 fill slope.
- Retaining walls.
- Possible mitigation to be considered as the design moves forward: evaluate fill wall, steepening cut slopes, and/or shifting into cut slope on NC 143 in final design to hold shoulder point on south side of NC 143; coordinate with NCDOT Geotech in final design after rock sampling is complete; evaluate 6-ft total shoulder on NC 28 north of NC 143 intersection to reduce Stream SEV impacts.

Wetland WBV: Low NCWAM Rating
Construction Limits + 25' buffer: 0.007-acre



- Legend**
- Proposed Edge of Travel
 - Proposed Retaining Wall
 - Proposed Slope Cut
 - Proposed Slope Fill
 - Potential Jurisdictional Perennial Stream
 - Potential Jurisdictional Intermittent Stream
 - Select Culverts/Pipes/Bridges
 - Potential Jurisdictional Wetland
 - National Forest System Lands
 - Indiana Bat Potential Habitat
 - Game Lands
 - Geologic Map Unit Zwe

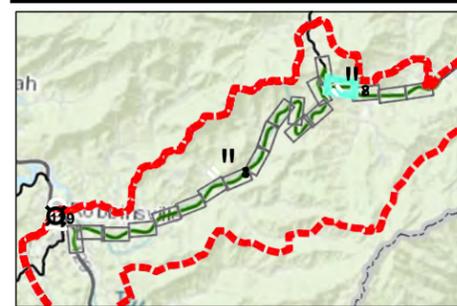
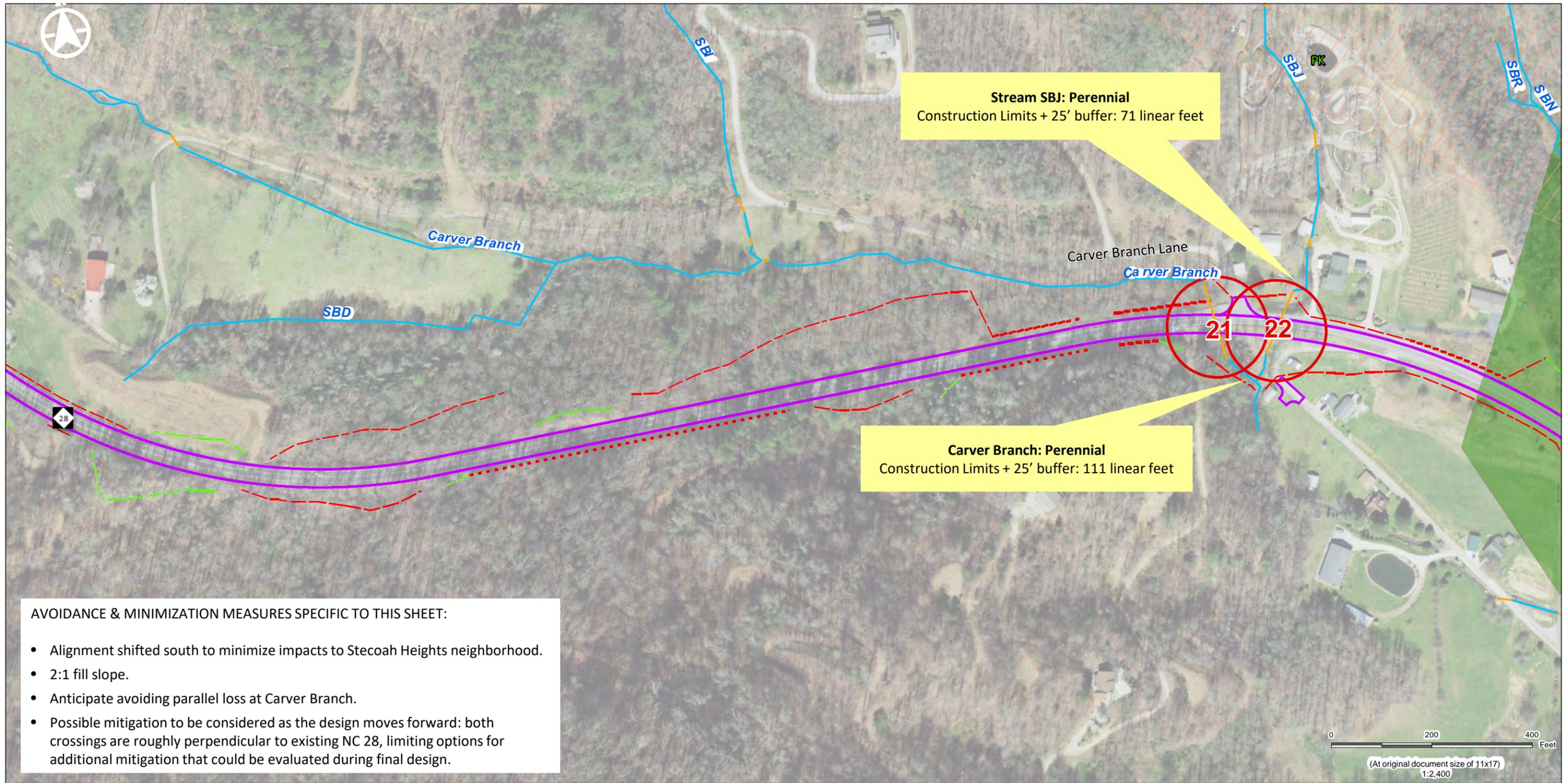


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Project Location: Graham County, NC
Client/Project: NCDOT - Division 14 Corridor K Improvements STIP Project No. A-0009C
Prepared by ALK on 2020-07-23
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Figure No. **3.16**
Title **Annotated Stream/Wetland Impacts**

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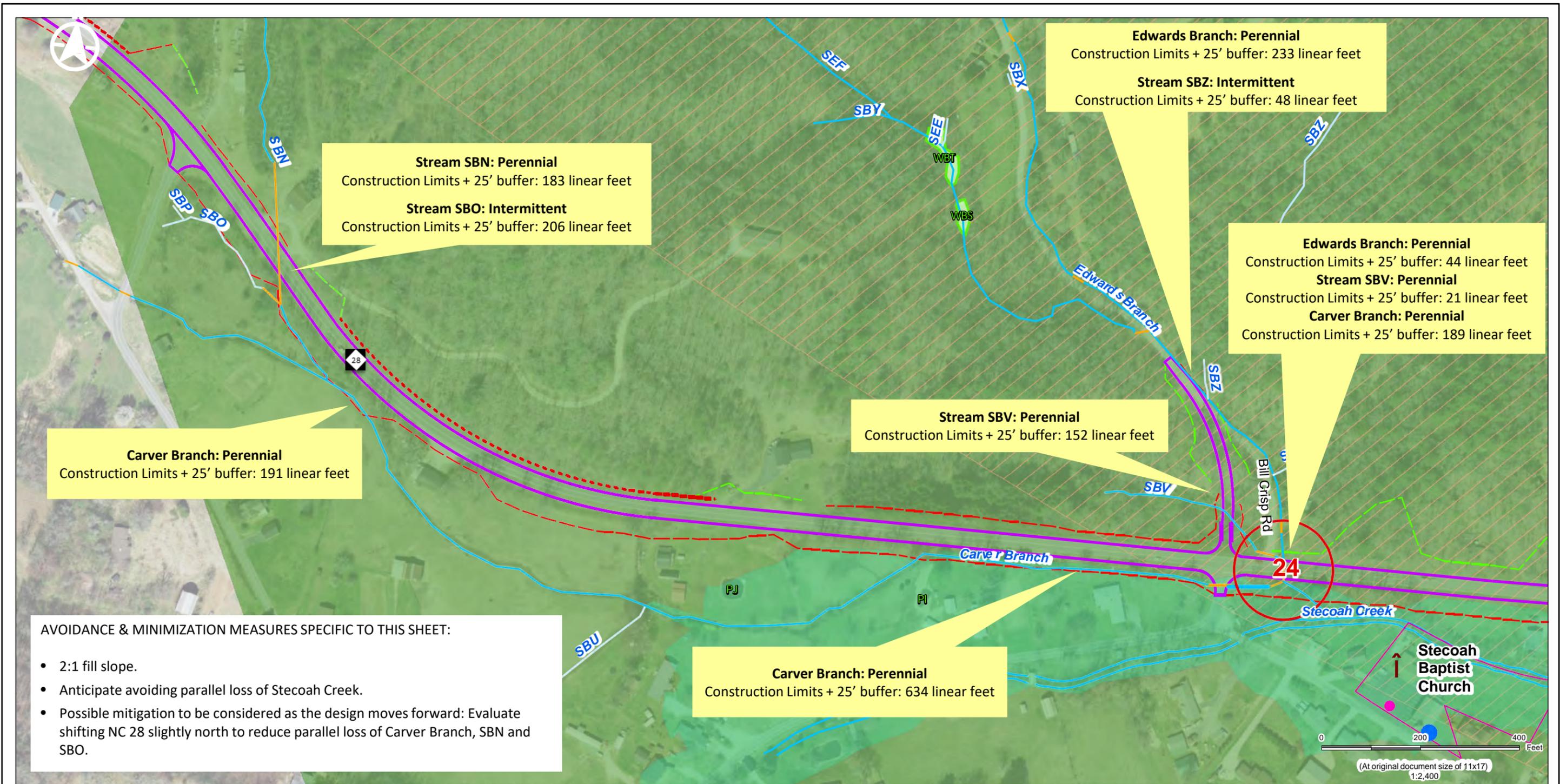
Legend			
	Proposed Edge of Travel		Select Culverts/Pipes/Bridges
	Proposed Retaining Wall		Indiana Bat Potential Habitat
	Proposed Slope Cut		Geologic Map Unit Zwe
	Proposed Slope Fill		Regional Underground Storage Tanks
	Hydraulic Site		
	Potential Jurisdictional Perennial Stream		

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Project Location: Graham County, NC
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STIP Project No. A-0009C

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Figure No. **3.17**
Title **Annotated Stream/Wetland Impacts**





Stream SCB: Perennial
Construction Limits + 25' buffer: 216 linear feet

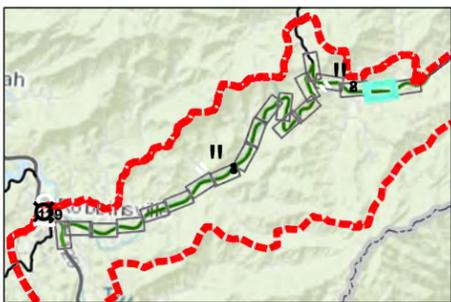
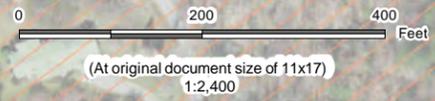
Wetland WBR: Medium NCWAM Rating
Construction Limits + 25' buffer: 0.073-acre

Stream SCD: Perennial
Construction Limits + 25' buffer: 213 linear feet

Stecoah Creek: Perennial
Construction Limits + 25' buffer: 1,791 linear feet

AVOIDANCE & MINIMIZATION MEASURES SPECIFIC TO THIS SHEET:

- 2:1 fill slope.
- Anticipate shifting alignment to the north in final design in hopes of avoiding parallel loss of Stecoah Creek (will increase impacts to northside properties and features including Surface Water PH but overall net reduction).



- Legend**
- Proposed Edge of Travel
 - Proposed Retaining Wall
 - Proposed Slope Cut
 - Proposed Slope Fill
 - Hydraulic Site
 - Potential Jurisdictional Perennial Stream
 - Select Culverts/Pipes/Bridges
 - Potential Jurisdictional Wetland
 - Floodplain
 - Indiana Bat Potential Habitat
 - Geologic Map Unit Zwc
 - Water Supply Intakes
 - Cemetery
 - NRHP Boundaries

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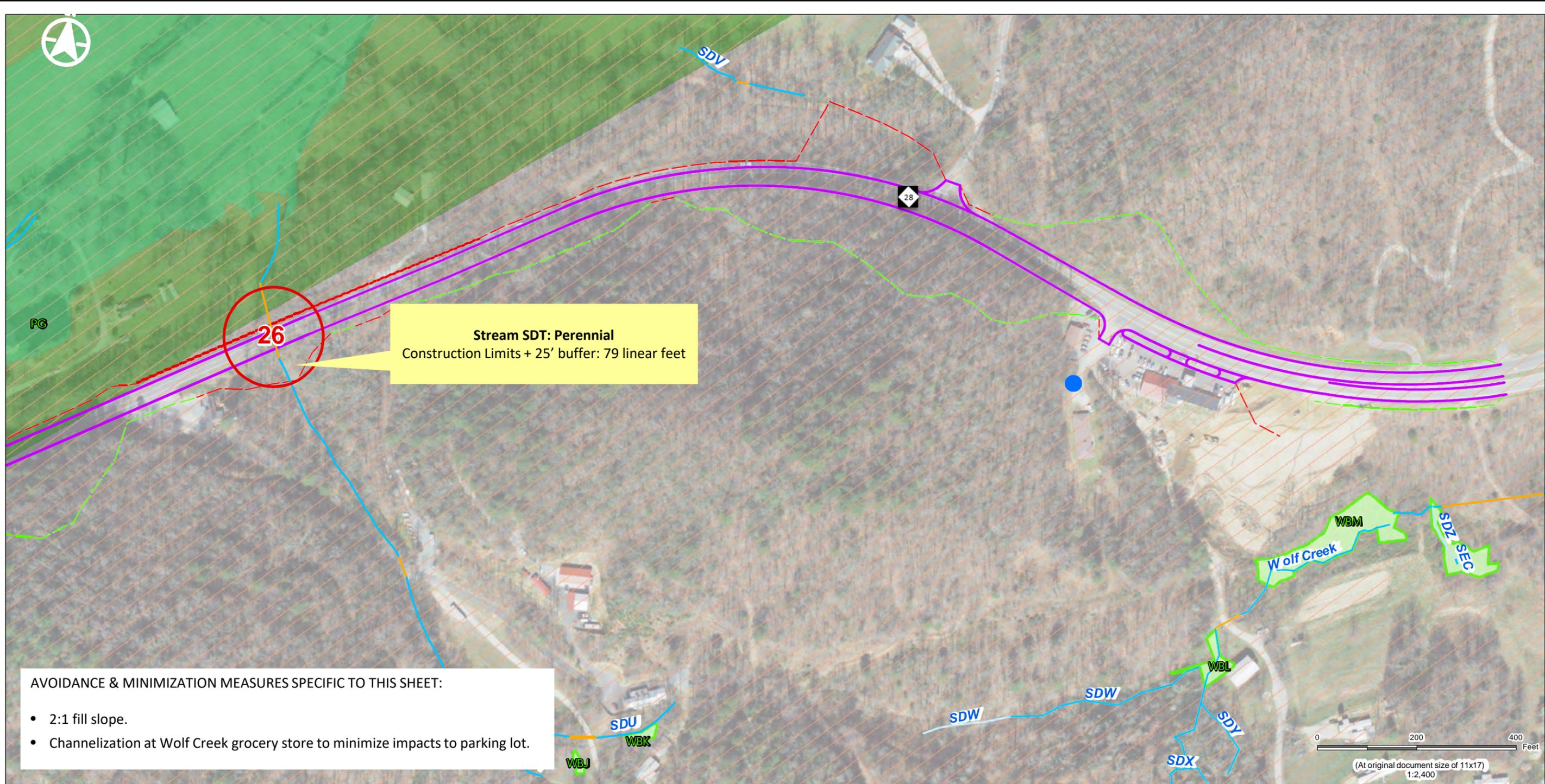
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STIP Project No. A-0009C

Figure No. **3.19**

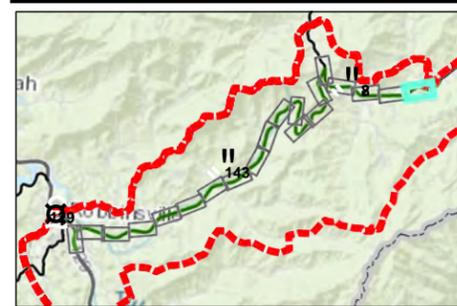
Title: **Annotated Stream/Wetland Impacts**

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AVOIDANCE & MINIMIZATION MEASURES SPECIFIC TO THIS SHEET:

- 2:1 fill slope.
- Channelization at Wolf Creek grocery store to minimize impacts to parking lot.



- Legend**
- Proposed Edge of Travel
 - Proposed Retaining Wall
 - Proposed Slope Cut
 - Proposed Slope Fill
 - Hydraulic Site
 - Potential Jurisdictional Perennial Stream
 - Potential Jurisdictional Intermittent Stream
 - Select Culverts/Pipes/Bridges
 - Potential Jurisdictional Wetland
 - Floodplain
 - Indiana Bat Potential Habitat
 - Geologic Map Unit Zwe
 - Water Supply Intakes


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Project Location: Graham County, NC
 Client/Project: NCDOT - Division 14 Corridor K Improvements STIP Project No. A-0009C
 Figure No.: **3.20**
 Title: **Annotated Stream/Wetland Impacts**

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