NEPA/404 MERGER CONCURRENCE POINT 4A

TIP PROJECT R-2566B
WBS 37512.1.5
FEDERAL AID NUMBER NHPP-0150(004)

NC 105 IMPROVEMENTS FROM CLARKS CREEK ROAD (SR 1136) TO NC 105 BYPASS (SR 1107) IN BOONE WATAUGA COUNTY

SUMMARY INFORMATION

Meeting Purpose

The purpose of this meeting is **CP 4A – To identify avoidance and minimization efforts**.

Project Description

The North Carolina Department of Transportation (NCDOT) proposes to improve a 5.5-mile section of NC 105 from Clarks Creek Road (SR 1136) to the NC 105 Bypass (SR 1107) in Boone, Watauga County. Project R-2566B is included in the draft 2017-2028 State Transportation Improvement Program (STIP).

- Project R-2566B: Right of Way acquisition is currently scheduled to begin in Fiscal Year (FY) 2023, and construction is scheduled to begin in FY 2025.
- Project R-2566BA: Right of Way acquisition is scheduled for FY 2018, and construction is scheduled to begin in FY 2019.

Merger History of Project

Concurrence Point 1

At a meeting in August 2014, the Merger team agreed on the logical termini and purpose and need for Project R-2566B:

- *Congestion:* A primary purpose of the project is to reduce congestion on NC 105 in order to achieve level of service (LOS) D or better in the design year (2040) during the average highest week day, and to achieve LOS E or better in the design year during the average highest weekend day.

  NC 105 is used heavily by commuters during the week, but also is used by tourists and locals visiting recreational sites on the weekends. The congestion goals for this project were chosen to address the needs of commuters (LOS D during the week), but also to try to ensure that the road didn't experience failure during the busy tourist times (LOS E on the weekends).
- *Safety:* Another primary purpose is to reduce rear-end and run-off-road crashes on NC 105. Alternatives were analyzed using Highway Safety Manual methodologies.
- *Bicycle Facilities:* A secondary purpose is to improve bicycle facilities on NC 105 in areas where capacity or safety improvements are proposed.

Concurrence Point 2

At a meeting in August 2014, the Merger team agreed to carry forward a "Best-Fit Build Alternative" for Project R-2566B, in addition to carrying forward the No Build Alternative.

Concurrence Point 2A

At a meeting in October 2015 (with final signatures in November 2015), the Merger team agreed to on the following major drainage structures:

- Site 1 – Remove and replace existing bridge over the Watauga River to 260' L X 90' W
- Site 2 – Remove and replace existing culvert carrying a UT to Laurel Fork to 1 @ 8'x6' RCBC
- Site 4 – Remove and replace existing culvert carrying a UT to Laurel Fork to 1 @ 8'x6' RCBC
- Site 6 – Remove and replace existing culvert carrying a UT to Laurel Fork to 2 @ 12'x7' RCBC
- Site 7a – On private property; more study recommended
- Site 7b – On private property; more study recommended

Concurrence Point 3

At a meeting in March 2017, the Merger team agreed to select the Best-Fit Build Alternative as the LEDPA for Project R-2566B.

Typical Section

The design presented at the public hearing and shown on the attached figures includes the following elements:

- No improvements are recommended for 1 mile along the project corridor from Clark's Creek Road to Old Shull's Mill Road because traffic is anticipated to operate at acceptable levels of service in the future design year (2040) on that section.
- Improvements are recommended for approximately 4.5 miles from Old Shull's Mill Road to NC 105 Bypass, based on future traffic operations and safety concerns.
    - The approximately 1.7-mile section between Old Shull's Mill Road and Broadstone Road will consist of three 12-foot lanes (two southbound, one northbound) with 6-foot wide paved shoulders on both sides.
    - The approximately 2.8-mile section between Broadstone Road and NC 105 Bypass will consist of four 12-foot lanes, a 23-foot wide raised median, and 6-foot wide paved shoulders on both sides.
    - The two intersections where Old Shull's Mill Road tees into NC 105 have safety concerns due to the horizontal skew and limited sight distance at the intersection. To address these issues, the southern intersection of Old Shull's Mill Road at NC 105 will be realigned, and the northern intersection of Old Shull's Mill Road at NC 105 will be closed.

Project Status/Schedule

Environmental Assessment	Signed September 2016
Public Hearing	November 7, 2016
Finding of No Significant Impact	Fall 2017

Concurrence Point 4A – Avoidance and Minimization

General Avoidance and Minimization Efforts

To minimize or avoid impacts, the following issues were evaluated:

- Horizontal and vertical alignment shifts
- Slopes and right of way
- Construction techniques
- Bridge design

The typical section varies along the project corridor, and was selected so that the project would meet the purpose and need of the project with the minimal footprint feasible. Of the 5.5-mile corridor studied, this resulted in 1.7 miles of 3-lane road, 2.8 miles of 4-lane divided road, and 1 mile with no improvements.

Specific Avoidance and Minimization Efforts

In addition, the following specific avoidance and minimization measures were included in the design and noted on the attached figures (those noted with an * are related to the section just south of Broadstone Road, which is an area of particular concern).

- Selected a best-fit alignment that minimizes impacts to Watauga River, Laurel Fork, and Big Branch. The design widens asymmetrically into the mountain in the following locations to avoid impacts to the streams:
    - Sta 245+00 to Sta 252+80*
    - Sta 256+40 to Sta 284+00
    - Sta 307+00 to Sta 311+00
- Added retaining walls and concrete barriers to further reduce impacts to streams. The design includes retaining walls in the following locations:
    - Sta 213+80 to Sta 214+87
    - Sta 224+70 to Sta 227+90
    - Sta 230+50 to Sta 234+10
    - Sta 239+00 to Sta 243+50*
    - Sta 251+70 to Sta 252+80*
    - Sta 352+20 to Sta 358+00
    - Sta 360+00 to Sta 365+00
- Used steeper slopes to minimize or avoid impacts to streams at the following locations:
    - Sta 243+50 to Sta 251+70 – Widened into the mountain using 0.75:1 cut slope*
    - Sta 309+00 – 1.5:1 cut slope
    - Sta 340+50 to Sta 341+50 – 1:1 cut slope

Individual stream and wetland impacts are shown on the attached figures and listed in Tables 1 and 2.

Avoidance and Minimization Commitments

Geotechnical survey and final designs are not yet available, and a work zone traffic control plan has not been developed. Therefore, specific avoidance and minimization measures will be addressed in CP 4B and 4C meeting. NCDOT proposes that the following commitments be included in the CP 4A agreement:

- Retaining walls will be built between NC 105 and the Watauga River, where feasible, from Station 239+00 to Station 252+80. If retaining walls are not feasible in this section, the Merger Team will revisit CP 4A.
- Permanent construction (retaining walls and pavement) and slope stakes will stay out of the 100-year floodplain, floodway, and Watauga River.
- Where feasible, machinery will be placed outside of the floodplain, floodway, and Watauga River between Station 239+00 and Station 252+80. The work zone traffic control plan will investigate potential to temporarily close lanes on NC 105 during this phase of construction.
- The USACE permit will include language restricting construction of Section BA until after the Merger Team has reached concurrence on CP 4B and 4C for Section B. (Note, Section BA is not anticipated to require CP 4B and 4C concurrence.)

Proposed Climbing Lane

NCDOT proposes extending the southbound climbing lane south of Broadstone Road for a distance of approximately 5,000 feet. The existing southbound climbing lane is from station 180+00 to station 202+00 (2,200 feet). The proposed climbing lane is from station 178+00 to station 250+00 (7,200 feet).

NCDOT proposes this climbing lane to address a safety need. In addition, it helps bring the road up to current design standards. These are summarized below, and additional supporting information is on pages 8-10 of this packet:

Existing and Future Conditions:

- Southbound NC 105 from Broadstone Road to Old Shull's Mill Road has a 4% upgrade with one lane in each direction and no opportunities to add a passing zone. Due to the grade and truck percentages, vehicles often must drive at below-posted speeds behind slower trucks. The resulting degradation in traffic operations on the southbound section is a concern to NCDOT.
- As traffic volumes increase, this situation is expected to worsen.

Safety Need:

- NCDOT feels that a climbing lane in this section would improve safety by reducing the speed differential between trucks and passenger vehicles. Climbing lanes have been shown to improve safety on this type of facility.
- NCDOT also is concerned that narrowing from four lanes to two lanes at Broadstone Road without providing a climbing lane for southbound traffic will result in vehicles making unsafe maneuvers to try to avoid being behind large trucks on the 4% upgrade, which may translate into accidents.
- The climbing lane could prevent congestion caused by accidents that may occur without it in place. It also is anticipated to reduce delays for southbound vehicles by increasing the average speed.

Design Standards:

- A southbound climbing lane is warranted based on AASHTO guidelines.
- When improving a road, it is NCDOT's standard practice to bring the road up to current design standards to the extent practicable.

Table 1. Anticipated Stream Impacts

Stream Name	Map ID	Impacts* (linear ft)	Minimization/ Avoidance Measure	Figure No.
Watauga River	Watauga River	0**	Asymmetrical Widening and Retaining Walls	1B, 1C
UT to Watauga River	SFU	37		1A
UT to Watauga River	SFV	277		1A
UT to Watauga River	SFW	92		1A
UT to Watauga River	SGD	150		1B
UT to Watauga River	SGE	42	Retaining Wall	1B
UT to Watauga River	SGG	38		1B
UT to Watauga River	SGH	107		1B
UT to Watauga River	SGI	25		1B
UT to Watauga River	SGJ	42	Retaining Wall	1B
UT to Watauga River	SGO	51		1B
UT to Watauga River	SGP	104		1B
UT to Watauga River	SGS	71		1C
Laurel Fork	Laurel Fork	179	Asymmetrical Widening and Retaining Walls	1C, 1D, 1E, 1F
UT to Laurel Fork	SGT	76		1C
UT to Laurel Fork	SGU	54		1C
UT to Laurel Fork	SGX	11		1C
UT to Laurel Fork	SGZ	145		1C
UT to Laurel Fork	SHB	114		1D
UT to Laurel Fork	SHC	22		1D
UT to Laurel Fork	SHK	142		1E
UT to Laurel Fork	SHO	9		1E
UT to Laurel Fork	SHW	209		1E
UT to Laurel Fork	SHZ	36		1E
UT to Laurel Fork	SIC	72		1E
UT to Laurel Fork	SID	5		1E
UT to Laurel Fork	SIF	13	Retaining Wall	1E
UT to Laurel Fork	SIG	258		1F
UT to Laurel Fork	SIJ	18		1F
Total		**2,400**		

* Impacts based on a 25-foot buffer around the preliminary design slope stakes

** No impacts; included in table as part of the list of minimization and avoidance measures

Table 2. Anticipated Wetland Impacts

Map ID	Impacts* (acres)	Figure No.	Minimization/ Avoidance Measure
WBZ	0.06	1A	
WCE	0.02	1B	
WCF	0.02	1B	
WCG	0.03	1B	
WCI	0.06	1B	
WCK	0.05	1B	
WCQ	0.03	1D	
WCU	0.01	1E	
WCV	0.01	1E	
WCX	0.02	1E	
WDA	< 0.01	1E	Retaining Wall
WDB	< 0.01	1F	
WDC	< 0.01	1F	
Total	**0.31**		

* Impacts based on a 25-foot buffer around the preliminary design slope stakes

Section 404/NEPA Interagency Agreement

Concurrence Point 4A
Avoidance and Minimization Measures

Project Title: NC 105 Improvement from Clarks Creek Road to NC 105 Bypass
TIP Project No.: R-2566B
WBS No.: 37512.1.1

The Project Team has concurred on this date to use the following measures to minimize or avoid impacts. The typical section varies along the project corridor, and was selected so that the project would meet the purpose and need of the project with the minimal footprint feasible. Of the 5.5-mile corridor studied, this resulted in 1.7 miles of 3-lane road, 2.8 miles of 4-lane divided road, and 1 mile with no improvements. In addition, the following avoidance and minimization measures were included in the design:

- Selected a best-fit alignment that minimizes impacts to Watauga River, Laurel Fork, and Big Branch, including widening asymmetrically in several locations.
- Added several retaining walls and concrete barriers to further reduce impacts to streams.
- Used steeper slopes to minimize or avoid impacts in several locations.

The following commitments have been made, and will be discussed again at the CP 4B and 4C meetings:

- Retaining walls will be built between NC 105 and the Watauga River, where feasible, from Station 239+00 to Station 252+80. If retaining walls are not feasible in this section, the Merger Team will revisit CP 4A.
- Permanent construction (retaining walls and pavement) and slope stakes will stay out of the 100-year floodplain, floodway, and Watauga River.
- Where feasible, machinery will be placed outside of the floodplain, floodway, and Watauga River between Station 239+00 and Station 252+80. The work zone traffic control plan will investigate potential to temporarily close lanes on NC 105 during this phase of construction.
- The USACE permit will include language restricting construction of Section B until after the Merger Team has reached concurrence on CP 4B and 4C. (Note, Section BA is not anticipated to require CP 4B and 4C concurrence.)

Name	Agency	Date
	FHWA	
	USEPA	
	USACE	
	USFWS	
	NCDOT	
	NCWRC	
	NCDWR	
	NCSHPO	
	RPO	

Discussion of Need for the Proposed Climbing Lane

WHAT: NCDOT proposes extending the southbound climbing lane south of Broadstone Road for a distance of approximately 5,000 feet. The existing southbound climbing lane is from station 180+00 to station 202+00 (2,200 feet). The proposed climbing lane is from station 178+00 to station 250+00 (7,200 feet).

WHY (Needs and Benefits): NCDOT proposes this climbing lane to address a safety need. In addition, it helps bring the road up to current design standards.

Existing and Future Conditions:

- Southbound NC 105 from Broadstone Road to Old Shull's Mill Road has a 4% upgrade with one lane in each direction and no opportunities to add a passing zone. Due to the grade and truck percentages, vehicles often must drive at below-posted speeds behind slower trucks. The resulting degradation in traffic operations on the southbound section is a concern to NCDOT.
- As traffic volumes increase, this situation is expected to worsen.

Safety Need:

- NCDOT feels that a climbing lane in this section would improve safety by reducing the speed differential between trucks and passenger vehicles. Climbing lanes have been shown to improve safety on this type of facility.
- NCDOT also is concerned that narrowing from four lanes to two lanes at Broadstone Road without providing a climbing lane for southbound traffic will result in vehicles making unsafe maneuvers to try to avoid being behind large trucks on the 4% upgrade, which may translate into accidents.
- The climbing lane could prevent congestion caused by accidents that may occur without it in place. It also is anticipated to reduce delays for southbound vehicles by increasing the average speed.

Design Standards:

- A southbound climbing lane is warranted based on AASHTO guidelines.
- When improving a road, it is NCDOT's standard practice to bring the road up to current design standards to the extent practicable.

Safety Need

NCDOT recommends a climbing lane to improve safety on NC 105.

A. Research on the safety benefits of climbing lanes:

The Highway Safety Manual (based on researched sponsored by FHWA) recommends a crash modification factor of 0.75 (or a 25% reduction) for total crashes in both directions of travel throughout the extent of the climbing lane where climbing lanes are warranted. Additional research sponsored by Michigan DOT reports a crash reduction of 33%.

B. Reasons for the safety benefits of climbing lanes:

In areas where a passing zone is not feasible due to sight distance limitations, a climbing lane helps reduce the speed differential between slow-moving trucks and other vehicles. It also helps limit the percent time vehicles spend following other vehicles. These two factors – the speed differential and the percent time spent following – both can contribute to rear-end crashes.

C. If the climbing lane is extended but not all the way to Broadstone Road, it will create a relatively small gap between the 4-lane section and the climbing lane. Having this gap may be counter to driver expectations, resulting in increased safety concerns.

- This gap would require slower moving vehicles to make additional lane shifts which creates additional conflicts.
- Leaving a gap may create a new safety situation which currently does not exist.
- If the project is built to include a gap between the Broadstone Road intersection and the climbing lane, and if this design creates safety problems as anticipated, it would be difficult to retrofit a "fix" at a future time.
- Current congestion during peak periods constrains speeds and increases speed differentials between vehicles. As congestion is reduced (by adding two more lanes north of Broadstone Road) and speeds increase correspondingly, the differential of vehicle speeds between slow-moving trucks and other traffic is likely to also increase. As a result, the likelihood of accidents increases.

D. Crash data for this corridor:

- Traffic volumes from 2003-2008 were similar to projected 2040 traffic volumes. Traffic volumes decreased in the 2008-2014 period.
    - There were 43% more crashes and only 20% more vehicles during the 2003-2008 period compared to the 2009-2014 period. If traffic volumes increase in future years, as projected, it is reasonable to expect that crashes would increase by a similar rate as experienced in the past. The relationship between traffic volumes and traffic crashes is often not linear, particularly as a roadway approaches capacity.
    - During the 2003-2008 period, the total crash rate, non-fatal injury crash rate, and wet crash rate exceeded the critical crash rate.
- Several specific deficiencies on NC 105 contribute to crashes:
    - The paved shoulder is narrow (1-2 feet). Improving the clear zones would give vehicles who depart the road an opportunity to recover or stop without crashing, and may reduce the number of rear end crashes by providing space to maneuver if drivers encounter a stopped vehicle unexpectedly.
    - There are some horizontal and vertical curves that limit sight distance, both along NC 105 and at some intersections. This is particularly dangerous in areas with a high number of rear end crashes that involve vehicles stopped in the through lanes waiting to turn left.
    - Scattered development and driveway frequency contributes to the pattern of rear end crashes. Along NC 105, many businesses have pull-in parking, multiple driveways, or open frontage that allows vehicles to enter into the parking lot along the entire property length.
- The majority of crashes were in the southbound direction (updated data, 2/1/11 – 1/31/16).
    - 66% of the crashes from just south of the NC 105/Broadstone Road intersection to the approximate end of the current climbing lane occurred in the southbound direction.
    - Discounting animal crashes, the percentage is 75%.

Operation and Design Standards for Adding a Climbing Lane

NCDOT proposes a climbing lane to address three operational and design concerns.

A. The climbing lane is warranted based on AASHTO guidelines. NCDOT follows AASHTO recommendations to the extent practicable. It is warranted based on the following three criteria (listed on page 3-127 of the AASHTO Green Book):

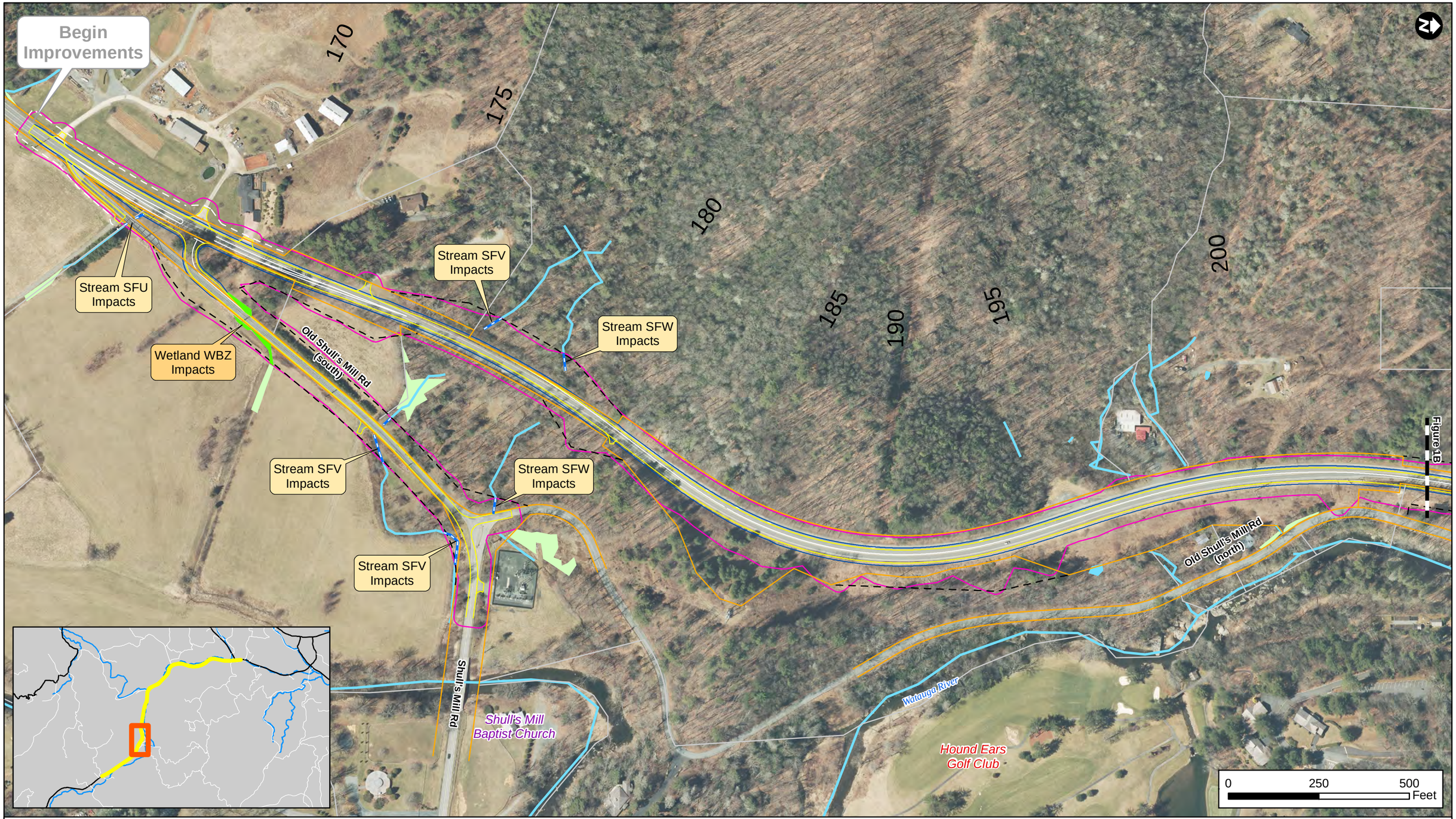
1. Overall volume criteria:
    - *Threshold:* Warranted if there are a total of 200 vehicles per hour (vph) up-grade.
    - *Project:* The traffic forecast projects 740 vph in the 2040 Build scenario.
2. Truck volume criteria:
    - *Threshold:* Warranted if there is an up-grade truck flow rate of 20 trucks per hour.
    - *Project:* The traffic forecast projects 6% trucks (4% duals + 2% TTSTs), for a total of 45 trucks in the 2040 Build scenario (15 TTST + 30 duals). Major sources of trucks along the corridor include the quarry, concrete plant, and asphalt plant.
3. Speed or level of service (LOS) reduction criteria:
    - *Threshold:* Warranted if there is either (a) 10 mph reduction in speed for heavy trucks, or (b) LOS E or F on the grade, or (c) reduction of LOS by two or more levels.
    - *Project:* The average upgrade from Broadstone to Old Schull's is 4% for 5400 feet. Per AASHTO (Figure 3-28) this shows an anticipated reduction in speed approaching 25 mph.

B. The climbing lane will aid in climbing sight distance for southbound traffic.

- Stopping Sight Distance requirements have been met through the climbing lane section. The minimum stopping sight distance for horizontal and vertical curves is 495' for posted speed of 55 mph and 570' for design speed of 60 mph.
    - The horizontal alignment through this section meets a 60 mph design speed except from station 185+17 to 191+77, where it meets the 55 mph posted speed requirements. This radius was not flattened to minimize impacts and higher cost due to associated extensive cut into the mountainside.
    - The vertical alignment through this section meets a 60 mph design speed except from station 185+20 to 194+25, where it meets the 55 mph posted speed requirements. The grade was not changed the additional 1 ½ feet necessary to minimize impacts and higher project costs due to associated fills and right of way impacts.
- Passing Sight Distance is not met. The passing lane will aide traffic safety in the southbound direction.

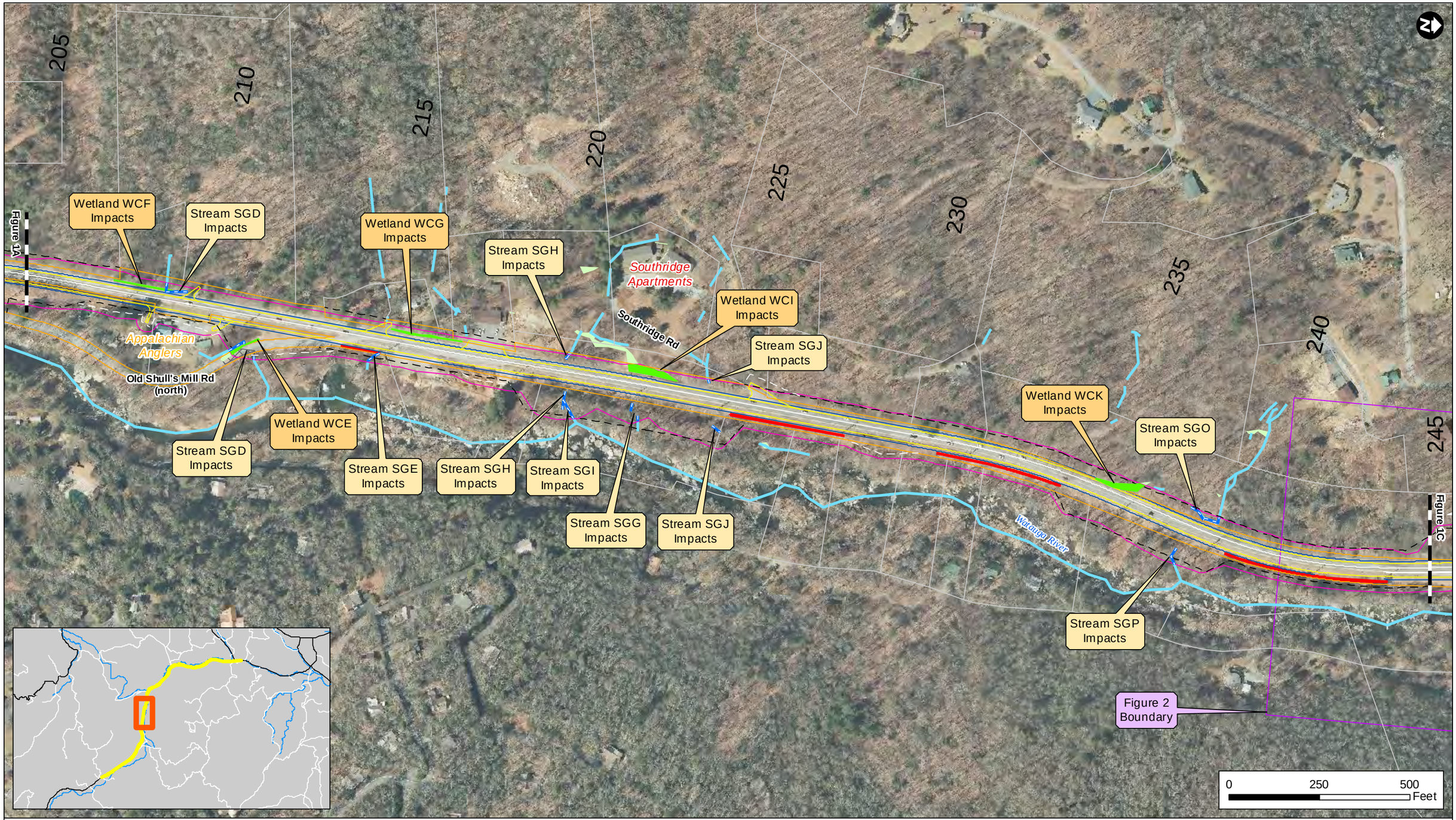
C. The existing climbing lane may be underutilized.

- It is likely that the existing climbing lane may be underutilized because drivers of slow-moving vehicles have difficulty merging back into faster traffic that has accumulated behind. Due to the short length of the climbing lane, accumulated traffic may not have had sufficient distance to pass the slow-moving vehicles when the climbing lane ends.



Existing Property Line
Existing Right-of-Way
Proposed Right-of-Way
Proposed Construction Easement
Proposed Bridge
Proposed Edge of Travel
Proposed Striping
Proposed Paved Shoulder
Proposed Retaining Wall
Proposed Drainage Structure to be Replaced
Proposed Removal of Asphalt Pavement
Proposed Median
Delineated Pond
Delineated Stream
Delineated Wetland
25-ft Slope Stakes Buffer
Stream Impact
Wetland Impact

Figure 1A
Stream and Wetland Impacts
TIP Project No. R-2566B
NC 105 Improvements
Watauga County



Existing Property Line
Existing Right-of-Way
Proposed Right-of-Way
Proposed Construction Easement
Proposed Bridge
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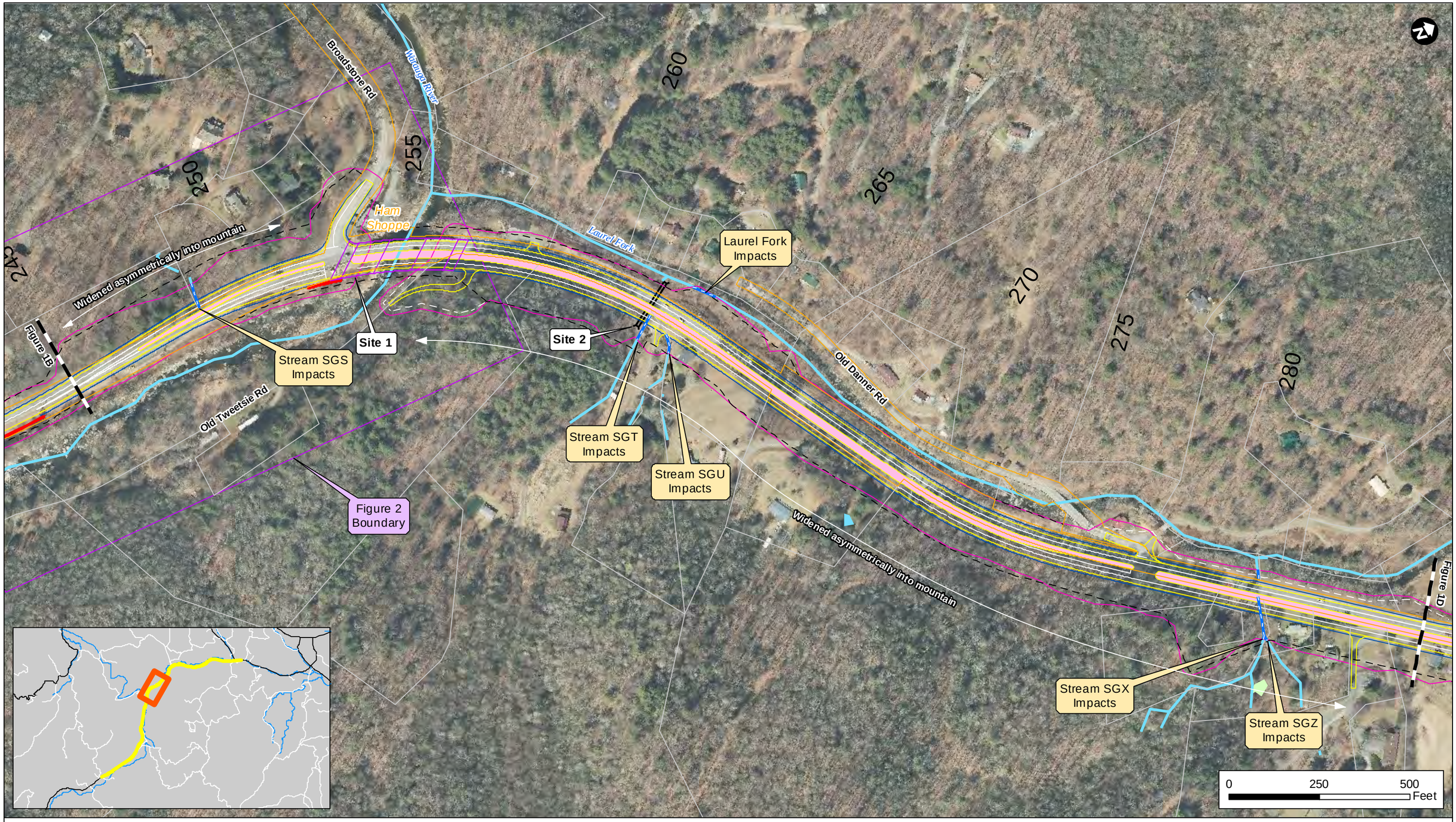
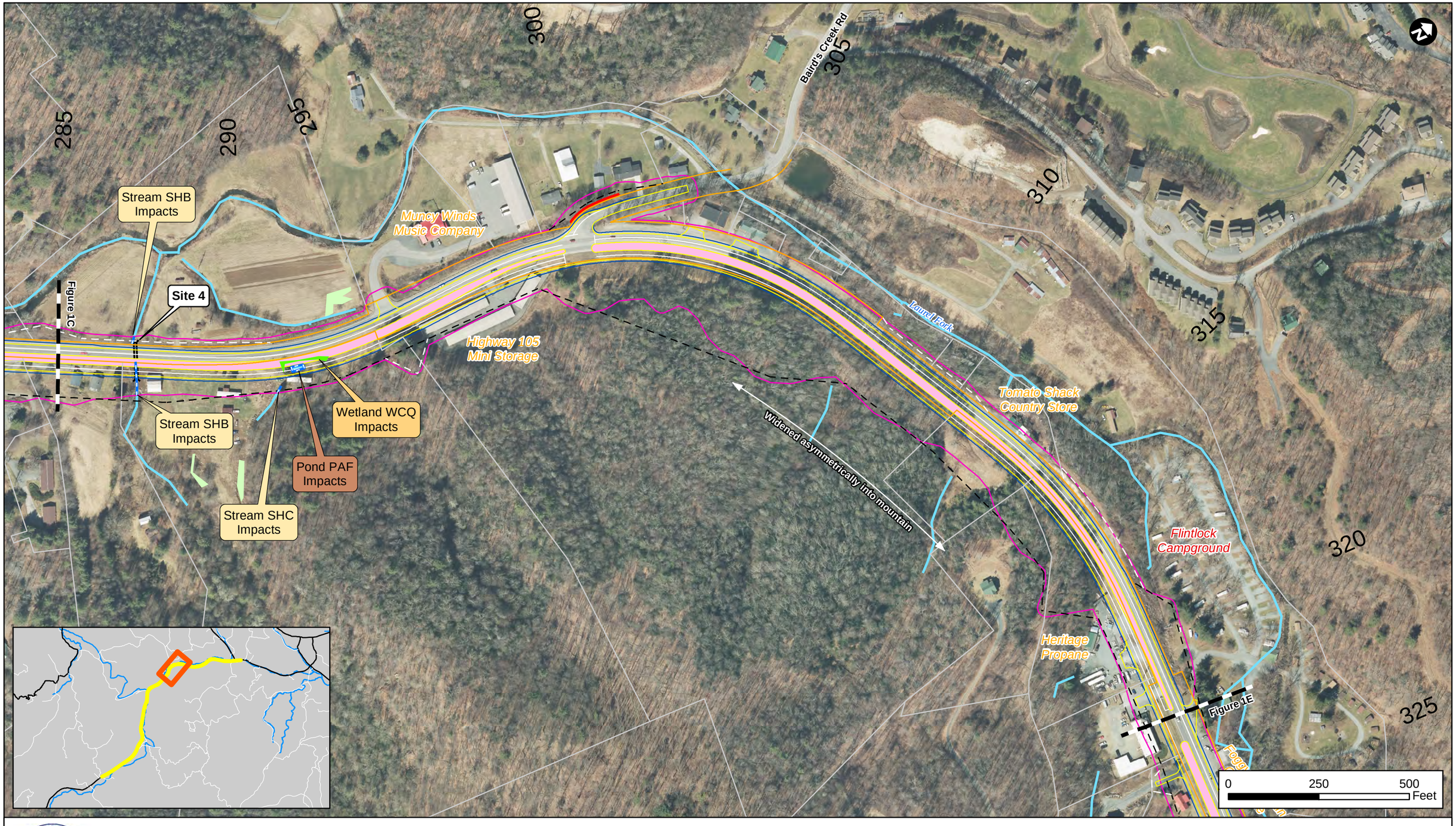
Proposed Striping
Proposed Paved Shoulder
Proposed Retaining Wall
Proposed Drainage Structure to be Replaced
Proposed Removal of Asphalt Pavement
Proposed Median
Delineated Pond
Delineated Stream
Delineated Wetland
25-ft Slope Stakes Buffer
Stream Impact
Wetland Impact

Figure 1B
Stream and Wetland Impacts
TIP Project No. R-2566B
NC 105 Improvements
Watauga County



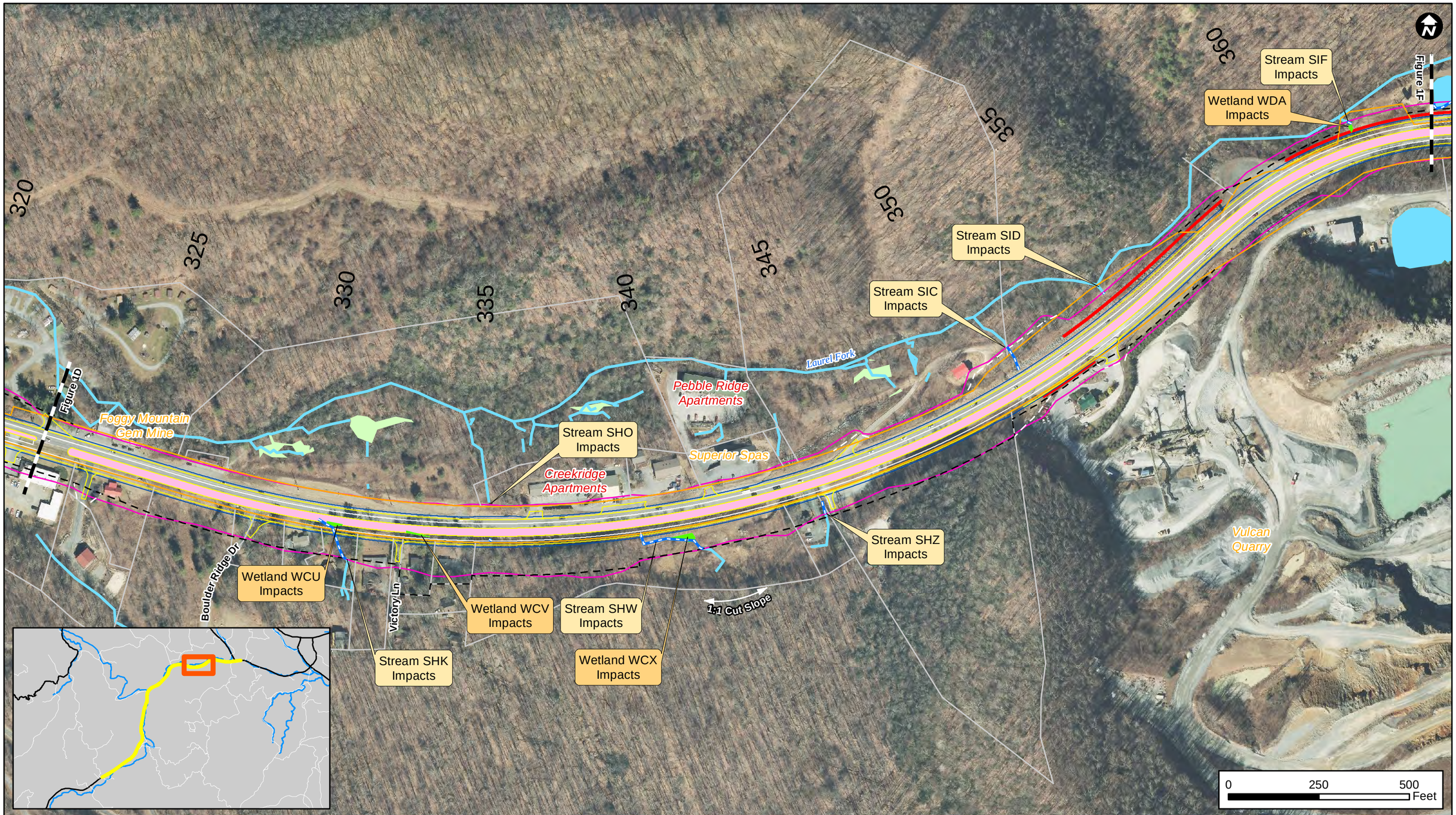
Existing Property Line
Existing Right-of-Way
Proposed Right-of-Way
Proposed Construction Easement
Proposed Bridge
Proposed Edge of Travel
Proposed Striping
Proposed Paved Shoulder
Proposed Retaining Wall
Proposed Drainage Structure to be Replaced
Proposed Removal of Asphalt Pavement
Proposed Median
Delineated Pond
Delineated Stream
Delineated Wetland
25-ft Slope Stakes Buffer
Stream Impact
Wetland Impact

Figure 1C
Stream and Wetland Impacts
TIP Project No. R-2566B
NC 105 Improvements
Watauga County



Existing Property Line
Existing Right-of-Way
Proposed Right-of-Way
Proposed Construction Easement
Proposed Bridge
Proposed Edge of Travel
Proposed Striping
Proposed Paved Shoulder
Proposed Retaining Wall
Proposed Drainage Structure to be Replaced
Proposed Removal of Asphalt Pavement
Proposed Median
Delineated Pond
Delineated Stream
Delineated Wetland
25-ft Slope Stakes Buffer
Stream Impact
Wetland Impact

Figure 1D
Stream and Wetland Impacts
TIP Project No. R-2566B
NC 105 Improvements
Watauga County

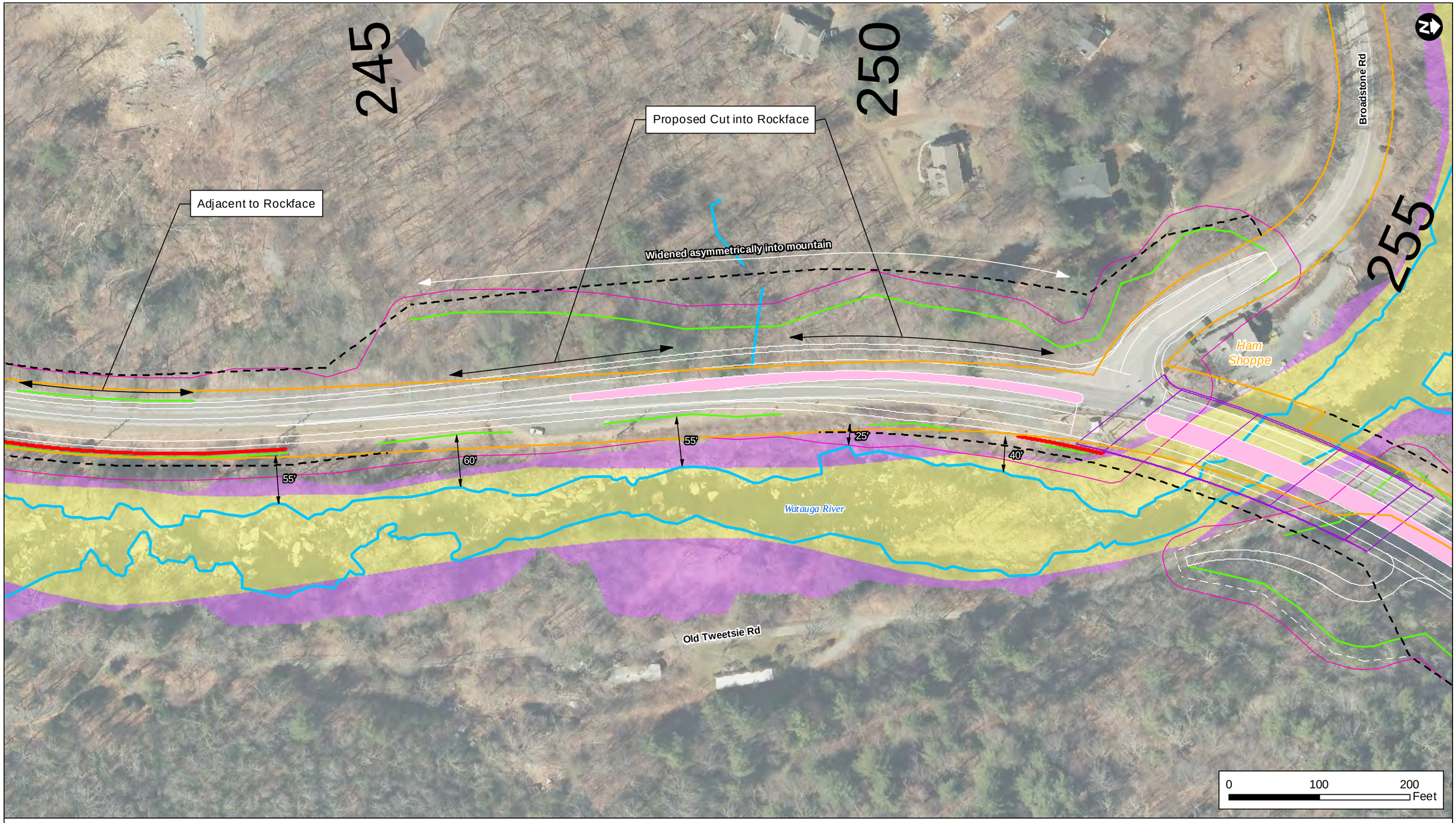


Existing Property Line
Existing Right-of-Way
Proposed Right-of-Way
Proposed Construction Easement
Proposed Bridge
Proposed Edge of Travel
Proposed Striping
Proposed Paved Shoulder
Proposed Retaining Wall
Proposed Drainage Structure to be Replaced
Proposed Removal of Asphalt Pavement
Proposed Median
Delineated Pond
Delineated Stream
Delineated Wetland
25-ft Slope Stakes Buffer
Stream Impact
Wetland Impact

Figure 1E
Stream and Wetland Impacts
TIP Project No. R-2566B
NC 105 Improvements
Watauga County

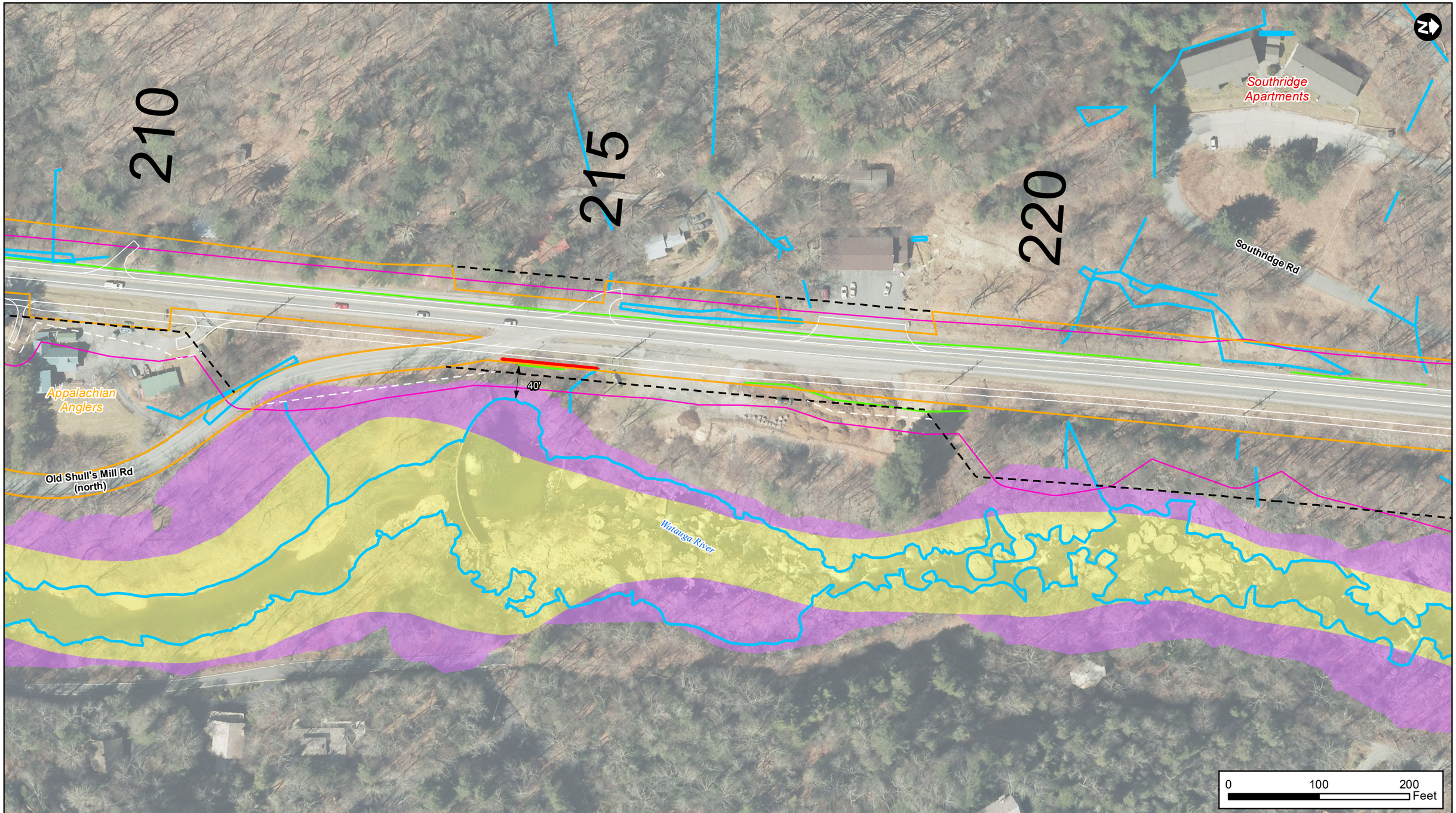
Existing Property Line
Existing Right-of-Way
Proposed Right-of-Way
Proposed Construction Easement
Proposed Bridge
Proposed Edge of Travel
Proposed Striping
Proposed Paved Shoulder
Proposed Retaining Wall
Proposed Drainage Structure to be Replaced
Proposed Removal of Asphalt Pavement
Proposed Median
Delineated Pond
Delineated Stream
Delineated Wetland
25-ft Slope Stakes Buffer
Stream Impact
Wetland Impact

Figure 1F
Stream and Wetland Impacts
TIP Project No. R-2566B
NC 105 Improvements
Watauga County



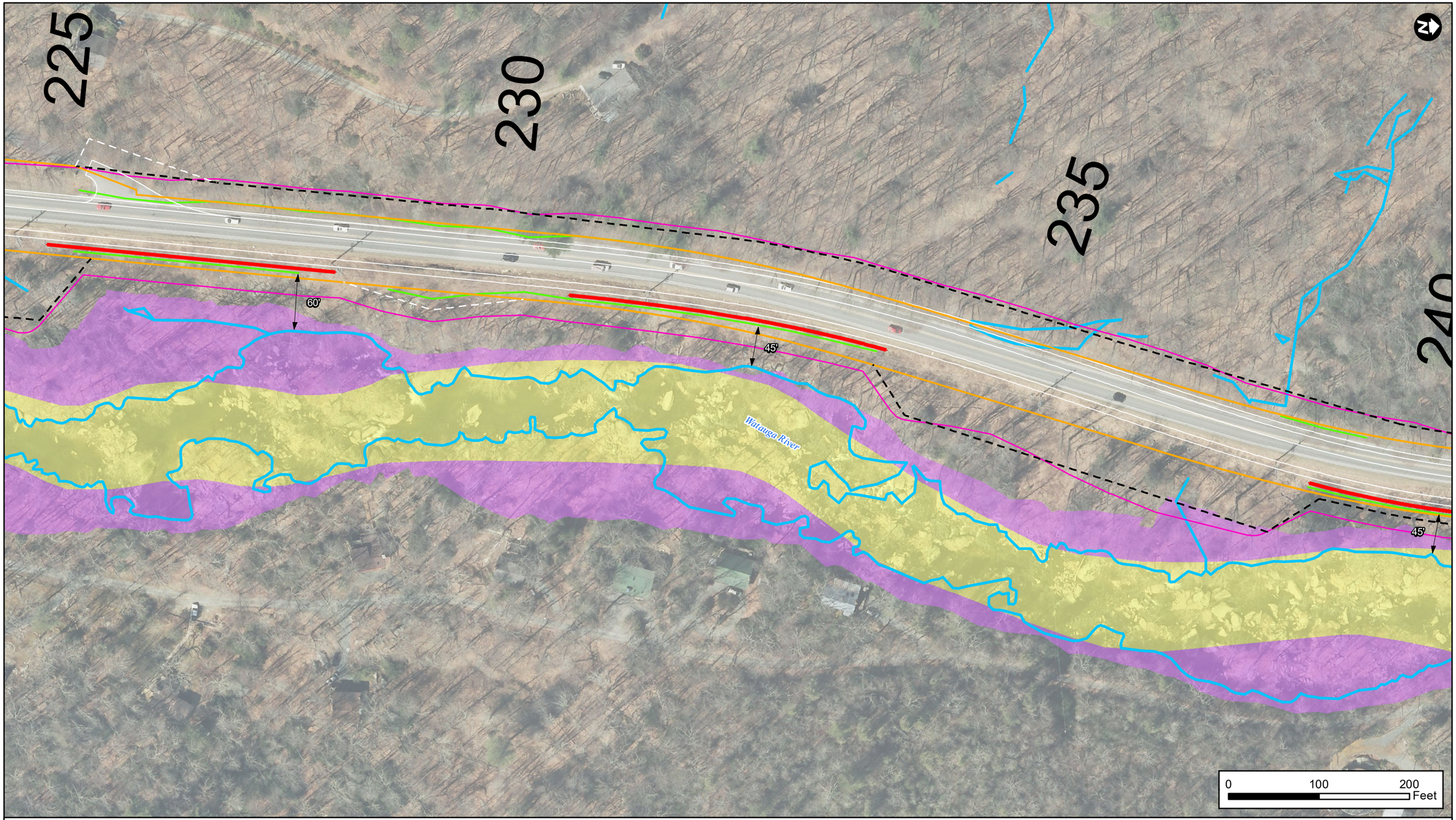
Proposed Construction Easement
Proposed Right-of-Way
Existing Right-of-Way
Proposed Roadway Design
Proposed Bridge
Proposed Retaining Wall
Proposed Cut Line
Proposed Median
25-ft Slope Stakes Buffer
Top of Bank
Floodway
100-Year Floodplain

Figure 2
Climbing Lane Area of Concern
TIP Project No. R-2566B
NC 105 Improvements
Watauga County



Proposed Construction Easement
Proposed Right-of-Way
Existing Right-of-Way
Proposed Roadway Design
Proposed Bridge
Proposed Retaining Wall
Proposed Cut Line
Proposed Median
25-ft Slope Stakes Buffer
Top of Bank
Floodway
100-Year Floodplain

Support Figure A
Climbing Lane Area of Concern
TIP Project No. R-2566B
NC 105 Improvements
Watauga County



Proposed Construction Easement
Proposed Right-of-Way
Existing Right-of-Way
Proposed Roadway Design
Proposed Bridge
Proposed Retaining Wall
Proposed Cut Line
Proposed Median
25-ft Slope Stakes Buffer
Top of Bank
Floodway
100-Year Floodplain

Support Figure B
Climbing Lane Area of Concern
TIP Project No. R-2566B
NC 105 Improvements
Watauga County