Section 404/NEPA Merger Project Team Meeting
Concurrence Point No. 2 and Concurrence Point No. 2A
June 6, 2018

Project Description:

Widen Sweeten Creek Road (US 25A) to a multilane roadway from Hendersonville Road (US 25) to Rock Hill Road (SR 3081) in Asheville, Buncombe County, North Carolina, State Transportation Improvement Project (STIP) No. U-2801A, Federal-Aid No. STP-025A(5), WBS No. 34859.1.FR3.

Purpose and Need of Project:

The Merger Team met and concurred with the project Purpose and Need on April 12, 2017 (Concurrence Point No. 1 [CP 1]).

The need for this study can be summarized as follows:

- *Traffic congestion exists along the existing facility and is expected to worsen in the future.*

  Based on the traffic forecast completed in September of 2016, Sweeten Creek Road (US 25A) currently carries between 21,100 and 13,700 vehicles per day (vpd) (2016 Annual Average Daily Traffic), with the larger volume occurring in the vicinity of the Rock Hill Road (SR 3081) intersection. These volumes are forecasted to increase to between approximately 26,000 and 17,100 vpd in 2040 without construction of the project.

  Sweeten Creek Road currently exhibits signs of congestion and poor operations during the morning and afternoon peak hours, indicating that the roadway is reaching its traffic carrying capacity. Currently, the roadway is experiencing substantial congestion and operational issues primarily as a result of the high traffic volumes, signalized intersections with considerable side street volume, the lack of opportunity for vehicles to pass slower vehicles, and numerous driveways and full access intersections located along the corridor.

  With the expected increase in traffic volumes along the corridor in 2040, further operational degradation is expected without improvements to the corridor.

The purpose for the proposed action is as follows:

- *Alleviate motorized vehicle congestion along Sweeten Creek Road (US 25A) from Hendersonville Road (US 25) to Rock Hill Road (SR 3081)*

  The measure of performance for evaluating this improvement will be level of service (LOS). The project is intended to bring the peak hour operations at the study area signalized intersections to an overall LOS D (or better), with an exception of LOS E at the following intersections:
  - Rock Hill Road/US 25A
  - Mills Gap Road/US 25A
  - Pensacola Road/Christ School Road/US 25A
  - US 25/US 25A

Purpose of this meeting:

The purpose of the Merger Team meeting is to discuss the preliminary study alternatives and determine which alternatives should be carried forward for detailed analysis and design (CP 2). Additionally, the results of the preliminary hydraulics study will be reviewed such that concurrence can be met for bridging decisions and alignment review (CP 2A). The meeting will be held in the Structures Conference Room at the Century Center Building in Raleigh, NC.

Information for Concurrence Point 2 – Detailed Study Alternatives Carried Forward

Typical Section:

The project team has developed two typical sections for use in this project. The base typical section, Typical Section No. 1, is a four-lane divided section with a 23-foot raised grass median with 1'-6" mountable curb and gutter along the inside lanes and 2'-6" standard curb and gutter along the outside lanes. The travel lanes consist of two 12-foot lanes in each direction, with 5-foot bike lanes and 10-foot planting strips behind the outside curb and gutter on each side that can accommodate sidewalk.

A variation of the base typical section, Typical Section No. 2, includes a 3-foot concrete jersey median barrier, two 11-foot travel lanes with 5-foot bike lanes in each direction, and 2-foot paved shoulders with jersey barrier along the outside to allow narrowing of the right-of-way in the area of the Blue Ridge Parkway Bridge to avoid widening and rebuilding the bridge. Sidewalks will be redirected to the space behind the existing bridge piers, and will be "benched" into the existing slope protection so that they are elevated to reduce the amount of material to be removed behind the bridge piers.

Figure 1 illustrates the typical sections; additionally, the design assumptions outlining the parameters for each typical section are shown in Table 1.

Table 1 – U-2801A Design Assumptions

ROUTE		US 25A	US 25A
LINE (survey)		**L**	**L (at the parkway)**
TRAFFIC DATA			
ADT LET YR =	**2016**	**27,400**	**24,900**
ADT DESIGN YR =	**2040**	**35,300**	**34,600**
TTST		**2%**	**2%**
DUALS		**6%**	**6%**
DHV		**8%**	**8%**
DIR		**60%**	**60%**
CLASSIFICATION		**Urban Arterial**	**Urban Arterial**
TERRAIN TYPE		**Mountainous**	**Mountainous**
DESIGN SPEED mph		**50**	**50**
POSTED SPEED mph		**45**	**45**
PROP. R/W WIDTH ft		**Var.**	**Var.**
CONTROL OF ACCESS		**N**	**N**
RUMBLE STRIPS (Y/N)		**N**	**N**
TYPICAL SECTION TYPE		**4 Lane Divided C&G**	**4 Lane Divided C&G**
LANE WIDTH ft		**12'**	**11'**
SIDEWALKS (Y/N)		**Y**	**Y**
BICYCLE LANES (Y/N)		**Y**	**Y**
MEDIAN WIDTH ft		**23'**	**11'**
MED. PROTECT. (GR/BARRIER)		**GR as Appropriate**	**Barrier and GR as Appropriate**
SHOULDER WIDTH (total)			
MEDIAN ft		**23' C&G**	**11' C&G**
OUTSIDE w/o GR ft		**10**	**10**
OUTSIDE w/ GR ft		**14**	**14**
PAVED SHOULDER			
OUTSIDE TOTAL/FDPS ft		**5' Bike Lane**	**5' Bike Lane**
MEDIAN TOTAL/FDPS ft		**-**	**-**
GRADE			
MAX.		**9.0%**	**9.0%**
MIN.		**0.3%**	**0.3%**
K VALUE			
SAG		**96**	**96**
CREST		**84**	**84**
HORIZ. ALIGN.			
MAX. SUPER.		**0.06**	**0.06**
MIN. RADIUS ft		**833**	**833**
SPIRAL (Y/N)		**N**	**N**
CROSS SLOPES			
PAVEMENT		**0.02**	**0.02**

PAVED SHOULDER	-	-
TURF SHOULDER	**0.02 Berm**	**0.02 Berm**
MEDIAN DITCH	-	-
DITCH TYPICAL (A,B)		
CLEAR ZONE ft	**28'**	**28'**
TYPICAL SECTION NO.	**1**	**2**

Identified Alternatives:

Multiple alignment alternatives have been identified and a preliminary evaluation completed. Due to the length of the proposed project (approximately 5.4 miles), the corridor was divided into 8 sections where possible widening transitions could be made to allow for the evaluation of manageable sized segments on an individual basis.

Environmental Features Along the Corridor

A wide array of impacts was evaluated within the study area. There are geo-environmental sites, primarily USTs, located throughout the study corridor and there are multiple major utility crossings. There is also potential for impacts to low income or minority populations meeting the criteria for Environmental Justice (EJ). EJ communities were observed along Rock Hill Road at the north end of the project in an area known as the Shiloh community; in the mobile home development on Casteel Lane, off Mills Gap Road; and at the south end of the DCIA east of Sweeten Creek Road (US 25A) along Pensacola Avenue and Sumter Street.

There is potential habitat present throughout the corridor for several federally protected species listed for Buncombe County, including the Appalachian elktoe, Carolina northern flying squirrel, Gray bat, Spotfin chub, and Tan riffleshell. Surveys will be conducted during the appropriate survey windows. There are two public parks (the Blue Ridge Parkway and Jake Rusher Park), and a planned greenway (Lake Julian Greenway) in the study area. There is also a short line railroad, the Blue Ridge Southern Railroad (BLU) freight rail line, which parallels the length of the project corridor and crosses underneath at the very southern end.

The corridor does not have any Section 6(f) properties; however, there are multiple potential Section 4(f) property impacts along the corridor. An initial historic architectural inventory survey was completed (March 2017) for the project study area, after which the North Carolina Historic Preservation Office (NC HPO) determined that 83 of the 94 identified resources were determined not worthy of further evaluation for the National Register of Historic Places (NRHP). An intensive survey and NRHP evaluation of 11 properties was conducted in late 2017. In that report, it was recommended that the Blake House (BN0562) and the Blue Ridge Parkway (NC0001) remain eligible for listing on the NRHP. In addition, four properties were evaluated and recommended to be eligible for listing in the NRHP, and five properties were evaluated and recommended not to be eligible for listing in the NRHP. SHPO concurred with these findings in a letter dated January 22, 2018.

The water resources found within the study area are part of the French Broad River basin. Twenty-nine jurisdictional streams were identified and their locations are shown in Figure 2. There are two ponds within the study area. Pond 1 is located on a residential property south of Sweeten Creek and east of Sweeten Creek Road. Pond 2 is associated with stream SK. There are no designated anadromous fish waters or Primary Nursery Areas (PNA) in the study area. There are no designated Outstanding Water Resources (OWR), High Quality Waters (HQW), or water supply watersheds (WS-I or WS-II) within 1.0 mile downstream of the study area. The North Carolina Wildlife Resources Commission (NCWRC) has identified no waters as trout waters within 1.0 mile of the study area. There are no streams listed for turbidity or sedimentation on the North Carolina 2014 Final 303(d) list of impaired waters within 1.0 mile downstream of the study area.

Buncombe County is one of the 25 designated trout watersheds of North Carolina within which construction activities in waters of the United States are prohibited during the period between October 15 and April 15 without prior written approval from the North Carolina Wildlife Resources Commission (NCWRC). The moratoria status for this project is currently undetermined until a letter from WRC is received and aquatic surveys are completed.

There is one benthic monitoring site within 1.0 mile downstream of the study area located at the crossing of US 25 with on an Unnamed Tributary (UT) to Dingle Creek; it was last sampled on February 10, 1987, and received a Biotic Index (BI) of 5.22. There are no sites monitored by NC Stream Fish Community Assessment Program or the NCDWR Ambient Monitoring System within 1.0 mile downstream of the study area.

Wetland delineations have determined there are 20 identified wetland areas within the study area totaling 3.0 acres. See Table 6 from the Natural Resources Technical Report (NRTR), included later in this document, for a listing of the individual wetland ratings. Figure 2 shows some of the important environmental features within the study area.

Widen East & Widen West

Because this project is planned to be primarily a widening effort along an existing roadway, two alternatives were initially established - one that widens the road only along the east side of the existing road and one that widens along the west side. Figure 3 shows the dividing lines used to separate the corridor into manageable sections and summarizes the notable impacts to resources within each section, showing the differences between those impacts to the east side versus the west side.

Best Fit

In addition to the options of widening to the east and widening to the west, a Best Fit Alternative was developed by combining the optimal widening solution per segment, based on environmental impacts as well as design concerns. The Best Fit alignment also took into account six properties that are eligible for, or listed on the National Register of

Historic Places (NRHP), as well as a wetland conservation easement within the project study area. The Best Fit Alternative avoids impacts to three of the eligible properties. Alternatives for avoiding or minimizing the impact on the three other properties and the conservation easement are were also developed and presented in Table 2 of this document. The avoidance alternative that avoids impacts to the NRHP in Section 2 is shown on Figure 3.

In some segments, the Best Fit alignment does not strictly follow the alignment of the Widen East or Widen West alternative. The Best Fit may switch between the two, or may be a symmetric widening effort through a section. If the latter is the case, it is indicated on the impact summary tables. Also, for areas where the alignment shifts from Widen East to Widen West, there is some distance of transition area associated with that shift. For these reasons, the total impacts associated with the Best Fit Alternative do not reflect a direct addition of those impacts presented in the Widen East and Widen West impact evaluations. Figure 3 shows the conceptual design for the Best Fit Alternative and the notable impacts associated with this alternative. Table 2 summarizes the impacts for each of the widening alternatives by section: Widen East, Widen West, Best Fit, and Eligible NRHP Avoidance and Table 2a shows the totals of selective resources for each of those alternatives.

Impact [a, b] / Alternative		Section No. 1 Rock Hill Rd. to north of Cimarron Dr.			2 north of Cimarron Dr. to south of the BRP			3 south of the BRP to north of Hollybrook Dr.			4 north of Hollybrook Dr. to south of Wesley Dr.			5 south of Wesley Dr. to south of Mills Gap Rd.			6 south of Mills Gap Rd. to south of Windsor Dr.			7 south of Windsor Dr. to south of Cedar Ln.			8 south of Cedar Ln. to bridge over BLU railroad		
		Widen East	*Widen West*	*Best Fit*	*Widen East*	*Widen West*	*Best Fit*	*Widen East*	*Widen West*	*Best Fit*	*Widen East*	*Widen West*	*Best Fit*	*Widen East*	*Widen West*	*Best Fit*	*Widen East*	*Widen West*	*Best Fit*	*Widen East*	*Widen West*	*Best Fit*	*Widen East*	*Widen West*	*Best Fit*
Hydrological Features	Perennial Streams (#/LF)	1/180	1/195	1/180	2/350	2/930	2/350	4/460	3/550	4/460	2/465	2/325	2/330	2/260	2/160	2/255	0/0	0/0	0/0	3/280	3/315	3/250	2/240	2/315	2/315
	Intermittent Streams (#/LF)	0/0	0/0	0/0	1/50	2/105	1/50	0/0	0/0	0/0	2/30	1/25	1/25	0/0	0/0	0/0	0/0	0/0	0/0	1/375	1/365	1/380	1/75	1/5	1/5
	Total Streams (#/LF)	1/180	1/195	1/180	3/360	4/1035	3/400	4/460	3/550	4/460	4/495	3/350	3/355	2/260	2/160	2/255	0/0	0/0	0/0	4/655	4/680	4/630	3/315	3/320	3/320
	Ponds (#/acres)	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
	Wetlands																								
	Directly Impacted (#/acres)	0/0	0/0	0/0	3/0.5	3/0.3	3/0.5	4/0.2	4/0.2	4/0.2	5/0.4	3/0.3	3/0.3	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
	Indirectly Impacted (#/acres)	0/0	0/0	0/0	2/0.1	1/0.1	2/0.1	3/0.2	3/0.2	3/0.2	3/0.4	2/0.3	2/0.3	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
	100-Year Floodplain (acres)	1.1	0.8	1.1	0	0	0	0	0	0	3.8	3.5	3.5	0	0	0	0	0	0	0	0	0	0	0	0
	Total Protected Riparian Buffer (acres)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Water Supply Critical Areas (Y/N)	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Relocations [c]	Single-Family Residences (# of structures)	0	0	1	3	1	4	0	0	0	3	1	1	0	1	0	3	3	2	19	19	18	0	0	0
	Multi-Family Residences (# of structures)	2	0	2	1	0	1	0	0	0	2	1	1	1	0	1	3	2	2	9	7	8	6	3	2
	Businesses (# of structures)	4	8	3	1	0	0	0	0	0	2	4	3	1	6	5	1	1	1	7	6	7	3	11	10
	Churches (# of structures)	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0
Terrestrial Communities (acres)	Maintained/ Disturbed [c]	10	8.9	10	4	3.7	4	4	6.7	4	10.2	10.2	10.2	11.5	14.3	12	8.2	7.8	8	27.3	27.4	27.3	12	13.6	14
	Acidic Cove Forest (Typic Subtype)	1.7	2	1.7	2.2	2.3	2.2	5.7	5.6	5.8	5.3	4.3	4.5	0.9	0.5	0.9	0.9	0.5	0.5	1.6	1.4	1.6	2.7	2.2	2.2
	Chestnut Oak Forest (Mesic Subtype)	0	0	0	4	4.3	4	2.5	2.5	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Chestnut Oak Forest (White Pine Subtype)	0	0	0	0	0	0	2.9	1.7	2.9	0	0	0	0	0	0	0	0	0	0	0	0	0.6	0.2	0.2
	Montane-Oak Hickory Forest (Acidic Subtype)	0	0	0	0	0	0	0	0	0	0	0	0	6.3	4.3	5.4	0.1	0.6	0.5	0	0	0	0	<0.1	<0.1
	Montane-Oak Hickory Forest (White Pine Subtype)	0	0	0	0	0	0	0	0	0	0	0	0	2.9	1.4	2.7	0.4	0.6	0.6	0.2	0.6	0.4	2.3	1.3	1.3
	Total	11.7	10.9	11.7	10.2	10.3	10.2	15.1	16.5	15.2	15.5	14.5	14.7	18.7	20.5	20.19	9.6	9.5	9.6	29.1	29.4	29.3	17.6	17.3	17.7
Cultural Resources	Historic Properties (# within section/# impacted)	0/0	0/0	0/0	2/1	2/1	2/1	0/0	0/0	0/0	0/0	0/0	0/0	1/1	1/1	1/1	0/0	0/0	0/0	1/0	1/0	1/0	1/0	1/0	1/0
	Known Archaeological Sites (#)	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Geoenvironmental Concerns (# of USTs/# of others)		0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	1/1	1/1	1/1	0/0	0/0	0/0	1/0	2/0	1/0	0/0	1/0	1/0
VADs (Y/N)		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Prime Farmlands (acres)		0	0	0	1.4	1.4	1.4	6.4	6.7	5.9	0.9	<0.1	0.2	2.4	0.6	2	0.7	0.7	0.8	1.6	1.5	1.6	5.2	4	4.1
Significant Natural Heritage Areas (Y/N)		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Potential Habitat of Threatened and Endangered Species (Y/N) [d]		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Section 6(f) Properties (Y/N)		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Wildlife Refuge or Gamelands (Y/N)		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Greenway Crossings (Y/N)		N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N
Known Section 4(f) impacts (Y/N)		N	N	N	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Federal Lands (Y/N)		N	N	N	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Schools (#)		0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Cemeteries (#)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Railroad Crossings (# of crossings/# of realignments)		0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/1	0/1	0/0	0/1	0/1	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	1/1
Major Utility Crossings (#)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0

REFERENCED FOOTNOTES

[a] Impacts calculated based on slope stakes buffered by 25 feet, and rounded to the nearest tenth of an acre for wetlands or nearest 5-feet for streams

[b] In areas of retaining walls, 25' buffer is reduced to 10' buffer

[c] Relocations calculated based on slope stakes buffered by 15 feet

[d] Potential Habitat is based on NRTR

Table 2a – U-2801A Summary of Total Impacts by Alternative

Resource		East Side Widening	West Side Widening	Best Fit Widening
Streams (#/LF)		21/2,725	20/3,290	20/2,600
Wetlands (#/acres)		12/1.1	10/0.8	10/1.0
Historic Properties	**Eligible**	3	3	2
	Listed	0	0	0
Relocations (# of structures)	**Residential**	28	25	26
	Multi-Family	24	13	17
	Business	19	36	29
	Churches	0	2	0

City of Asheville Resolution

On April 10, 2018, the City of Asheville City Council passed a resolution stating that the city is revising the Asheville in Motion (AIM) Multimodal Transportation Plan to reflect a typical cross section for Sweeten Creek Road that includes a physically-separated multi-use path along one side of Sweeten Creek Road with sidewalks along the other side, and incorporates a planted median and 11-foot travel lanes (see Figure 4).

NCDOT is continuing to coordinate with the City of Asheville regarding this recent change in preferred typical cross section; however, for purposes of evaluating alternatives with the Merger Team, the initial, wider, typical cross section was used in calculating the impacts represented in this packet. NCDOT believes that these calculated impacts will be reduced once the new, narrower typical section is applied to which ever alignment alternative is selected by the Merger Team to carry forward into detailed designs.

Traffic Capacity Analysis

A traffic capacity analysis for the build alternatives was prepared and incorporates the proposed widening improvements along with additional spot improvements, such as turn lanes or new traffic signals as needed at specific intersections that require additional capacity beyond the proposed widening. With these improvements in place, all signalized intersections are projected to operate at Level of Service (LOS) D or better and most unsignalized intersections are projected to operate at LOS C or better. The additional through lanes, along with proposed new traffic signals and several modified accesses, help to process demand along the corridor and reduce delays for vehicles accessing Sweeten Creek Road from the side streets.

Information for Concurrence Point 2A – Bridging Decisions and Alignment Review

Preliminary Hydraulic Study for Environmental Impact Conclusions:

A Preliminary Hydraulics Study was completed for the proposed project on June 21, 2016. The report identified six (6) existing major stream crossing locations along Sweeten Creek Road, all located within the French Broad River Basin.

The report includes recommendations for the existing stream crossing structures, as summarized in Table 3. All stream crossings are jurisdictional streams; therefore, the culvert and pipe recommendations are oversized to account for the buried depth of the structures to maintain depth requirements for hydraulic performance.

Table 3 – Hydraulic Structure Recommendations

SITE NUMBER	ROUTE	LAT.	LONG.	STREAM ID	STREAM NAME	STREAM CLASS	FEMA STUDY TYPE	DRAINAGE AREA (Mi^2)	EXISTING STRUCTURE	MINIMUM RECOMMENDED STRUCTURE	Proposed Hw/d (50-Yr Design)	Debris Potential	Notes
									Number, Size, Structure Type	Number, Size, Structure Type			
1	US-25A	35.4691	-82.51432	SO	UT to Lake Julian	C	N/A	0.45	1 @ 8' x 5' RCBC	1 @ 10' x 9' RCBC	1.1	Moderate	Buried 1'; analyzed as 10' x 8'
2	US-25A	35.4977	-82.51824	DINGLE CREEK	Dingle Creek	C	N/A	0.32	1 @ 42" CMP	1 @ 42” RCP	1.1	Moderate	Downstream pipe controls
3	US-25A	35.5079	-82.51765	SX	UT to Dingle Creek	C	N/A	0.42	1 @ 42" CMP	1 @ 10' x 9' RCBC	1.1	Moderate	Buried 1'; analyzed as 10' x 8'
4	US-25A	35.5089	-82.51773	SY	UT to Dingle Creek	C	Limited	0.38	1 @ 42" CMP	1 @ 10' x 8 ' RCBC	1.1	Moderate	Buried 1'; analyzed as 10' x 7'
5	US-25A	35.5324	-82.51869	SWEETEN CREEK	Sweeten Creek	C	Limited	0.28	1 @ 42" CMP	1 @ 9' x 8' RCBC	1.0	Moderate	Buried 1'; analyzed as 9' x 7'
6	SR 3081	35.5353	-82.52009	SWEETEN CREEK	Sweeten Creek	C	Detailed	0.72	1 @ 84" CMP	1 @ 13' x 9' RCBC	1.0	Moderate	Buried 1'; analyzed as 13' x 8'

NOTES:
(1) Major Crossings - conveyance greater than 72" pipe (This table should be used for Merger CP2A concurrence.)

The following pages provide basic information about, and photographs of, each stream crossing in the report.

Site 1 (UT to Lake Julian) *No FEMA Study*

This stream crossing has a drainage area of 0.45 square miles. The current land use is primarily residential and wooded. The existing structure is an 8-foot span, bottomless reinforced concrete box culvert (RCBC) skewed 75 degrees to the roadway. The upstream opening is 8 feet by 5 feet, and the downstream opening is 8 feet by 4.5 feet. The structure is in fair condition, with some cracking and spalling of the concrete. The centerline of the roadway is approximately 18 feet above the creek bed, and the normal depth of flow is approximately 0.5 feet, with ordinary high water at approximately 2 feet above the stream bed. The stream has migrated to the right, causing a scour hole approximately 10 feet wide by 6 feet deep behind the upstream wing wall. Preliminary calculations suggest that the 100-year storm does not overtop the road.

Site 1 - Downstream Face

Site 1 - Downstream Channel

Site 1 - Upstream Face

Site 1 - Upstream Channel

Site 2 (UT to Dingle Creek) *No FEMA Study*

This stream crossing has a drainage area of 0.32 square miles. The current land use is primarily residential, with some commercial development along the roadway. The existing structure is a 42” corrugated metal pipe (CMP) with a concrete headwall. The structure is in fair condition. It ties to a system behind Goodwill off of Hendersonville Road and outfalls through a 42” CMP approximately 850 feet from US-25 Alt. The pipe is buried 6 inches at the outlet. Aggradation on the inlet side has caused the bed to rise 1.5

feet above the pipe invert. The centerline of the roadway is approximately 20 feet above the elevation of the creek bed. Normal water depth is 0.5 feet, and ordinary high water is 2.5 feet above the streambed. There is a 24" CMP outfall upstream of the crossing which has caused some scour; however, no scour was observed downstream. Banks are stable and vegetated up and downstream. Preliminary calculations suggest that the 100-year storm does not overtop the road.

Site 2 - Upstream Face

Site 2 - Upstream Channel

Site 2 - Downstream Outlet

Site 2 - Downstream Channel

Site 3 (UT to Dingle Creek) *No FEMA Study*

This stream crossing has a drainage area of 0.42 square miles. The current land use is primarily residential. The existing structure is a 42" corrugated metal pipe (CMP) with a concrete headwall skewed 135 degrees to the roadway. It ties into an existing system with Dingle Creek (Site 4) after passing under Sweeten Creek Road and outfalls to the West of the railroad through a 72" CMP approximately 110 feet downstream. Existing structure is in fair condition. The upstream banks are vegetated and stable, but the downstream left bank at the outfall has been undercut and is actively eroding. The centerline of the roadway is approximately 17 feet above the creek bed. Normal depth of flow is approximately 0.3 feet, and ordinary high water is about 2.5 feet above the streambed. Preliminary calculations suggest that the 100-year storm does not overtop the road.

Site 3 – Upstream Face

Site 3 – Upstream Channel

Site 3 – 72-inch outfall

Site 3 – Downstream Channel

Site 4 (Dingle Creek) *FEMA Limited Detail Study*

This stream crossing has a drainage area of 0.38 square miles. The current land use is primarily residential. The existing structure is a concrete pipe slip lined with a 42" corrugated metal pipe (CMP). The structure is in poor condition: there is a crack in the headwall downstream, the pipe is corroded, and the upstream pipe entrance is damaged. The centerline of the road is approximately 14 feet above the creek bed. The normal depth of flow is approximately 0.4 feet, and the ordinary high water is 1.5 feet above the streambed. The pipe is buried 6 inches. No scour was observed downstream. Banks on both the upstream and downstream side are vegetated and stable, and there are no structures in the floodplain. Downstream of this crossing the stream runs parallel to the roadway for approximately 200 feet. According to residents in the area and bridge maintenance staff, the roadway has not overtopped. The FEMA model shows overtopping at the 100-year discharge. There are multiple structures in the 100-year floodplain from 300-700 feet upstream of the culvert.

Site 4 – Upstream Face

Site 4 – Upstream Channel

Site 4 – Downstream Face

Downstream Channel

Site 5 (Sweeten Creek) *FEMA Limited Detail Study*

This stream crossing has a drainage area of 0.28 square miles. The current land use is primarily residential. The existing structure is a 48" reinforced concrete pipe (RCP) that has been partially slip lined upstream with a 42" corrugated metal pipe (CMP), skewed 135 degrees to the roadway. The structure is deteriorated and in poor condition. The centerline of the road is approximately 8 feet above the creek bed. The normal water depth is approximately 0.5 feet, with ordinary high water approximately 4 feet above the streambed. According to residents in the area and bridge maintenance staff, the roadway has not overtopped. The FEMA model shows overtopping at the 100-year discharge. There is a structure in the 100-year floodplain just upstream in the Northeast quadrant of the culvert crossing. This structure is the upstream structure for site 6.

Site 5 – Upstream Face

Site 5 – Upstream Channel

Site 5 – Downstream Face

Site 5 – Downstream Channel

Site 6 (Sweeten Creek) *FEMA Detailed Study*

This stream crossing has a drainage area of 0.72 square miles. The current land use is primarily residential, with some commercial development along the roadway. The existing structure is an 84" corrugated metal pipe (CMP) with a concrete headwall at a 90-degree skew to the roadway. The structure is in fair condition. The centerline of the road is approximately 10 feet above the creek bed. The normal water depth is 0.5 feet. Upstream and downstream banks are vegetated and stabilized with rip rap. There is an 8-inch sewer line across the channel upstream, as well as a 24-inch RCP outfall. The pipe is buried 6 inches at the outlet, and there are two additional CMP outfalls downstream that have been damaged. According to residents in the area and bridge maintenance staff, the roadway has not overtopped. The FEMA model shows overtopping at the 100-year discharge. There is a structure in the 100-year floodplain upstream in the southwest quadrant of the crossing. There are also multiple structures downstream on both sides of the creek, 200 feet downstream of the culvert. This structure is the downstream structure for site 5.

Site 6 – Upstream Face

Site 6 – Upstream Channel

Site 6 – Downstream Face

Site 6 – Downstream Channel

Buncombe County is a participant in the National Flood Insurance Program, administered by the Federal Emergency Management Agency (FEMA). Based on the most current information available from the NC Floodplain Mapping Program (FMP), three of the six sites listed in Table 3 are in designated flood hazard zones. Sites 4 and 5 are within limited detail flood study reaches of Dingle Creek and Sweeten Creek, respectively. Site 6 is within the detailed flood study reaches of Sweeten Creek. The NCDOT Hydraulics Unit will coordinate with the FMP, the delegated state agency for administering FEMA's National Flood Insurance Program, to determine the status of the project with regard to applicability of NCDOT'S Memorandum of Agreement with FMP, or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR). This project involves construction activities on or adjacent to a FEMA-regulated stream. Therefore, the Division shall submit sealed as-built construction plans to the Hydraulics Unit upon completion of project construction, certifying that the drainage structures and roadway embankment that are located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.

A Natural Resources Technical Report (NRTR) was prepared for the project and completed in November 2016. The field review meeting with representatives from the USACE, NCDENR, NCDOT, and Three Oaks will be held after the corresponding WAM forms are completed and closer to the Concurrence Point 3 meeting for the project.

To provide information on the water resources and their jurisdictional characteristics, Section 3.2 and 5.1 from the NRTR have been included as follows.

3.2 Water Resources (from NRTR)

Water resources in the study area are part of the French Broad River basin [U.S. Geological Survey (USGS) Hydrologic Unit 06010105]. Twenty-nine streams were identified in the study area (Table 4). The location of each water resource is shown in Figure 3. The physical characteristics of these streams are provided in Table 5.

Table 4. Water resources in the study area

Stream Name	Map ID	NCDWR Index Number	Best Usage Classification
Sweeten Creek (Including Pond 1)	Sweeten Creek	6-78-24	C
Dingle Creek	Dingle Creek	6-71	C
Four Mile Branch	Four Mile Branch	6-72	C
UT to Sweeten Creek	SA	6-78-24	C
UT to Sweeten Creek	SB	6-78-24	C
UT to Sweeten Creek	SC	6-78-24	C
UT to Sweeten Creek	SD	6-78-24	C
UT to Sweeten Creek	SE	6-78-24	C
UT to Sweeten Creek	SF	6-78-24	C
UT to Four Mile Branch	SH	6-72	C
UT to Four Mile Branch	SI	6-72	C
UT to Four Mile Branch	SJ	6-72	C
UT to Dingle Creek (Including Pond 2)	SK	6-71	C
UT to Powell Creek (Lake Julian)	SL-I	6-62	C
UT to Powell Creek (Lake Julian)	SL-P	6-62	C
UT to Powell Creek (Lake Julian)	SM	6-62	C
UT to Powell Creek (Lake Julian)	SN	6-62	C
UT to Powell Creek (Lake Julian)	SO	6-62	C
UT to Powell Creek (Lake Julian)	SP	6-62	C
UT to Powell Creek (Lake Julian)	SQ	6-62	C
UT to Powell Creek (Lake Julian)	SR	6-62	C
UT to Powell Creek (Lake Julian)	SS	6-62	C
UT to Dingle Creek	ST	6-71	C
UT to Dingle Creek	SU	6-71	C
UT to Dingle Creek	SV	6-71	C
UT to Dingle Creek	SW	6-71	C
UT to Dingle Creek	SX	6-71	C
UT to Dingle Creek	SY	6-71	C
UT to Dingle Creek	SZ	6-71	C
UT to Dingle Creek	SBB	6-71	C

Table 5. Physical characteristics of water resources in the study area

Map ID	Bank Height (ft)	Bankful Width (ft)	Water Depth (in)	Channel Substrate	Velocity	Clarity
Sweeten Creek	5-8	8-10	2-16	Silt, Sand, Gravel, Cobble, Boulder	Moderate	Clear
Dingle Creek	0.5-3	3-5	6-20	Sand, Gravel, Cobble	Moderate	Clear
Four Mile Branch	2-5	4-7	1-12	Silt, Sand, Gravel, Cobble	Moderate	Clear
SA	1-4	5-8	2-12	Silt, Sand, Gravel, Cobble	Moderate	Clear
SB	2-4	4-5	2-6	Silt, Sand Gravel, Cobble	Slow	Clear
SC	1-2	2-4	0-8	Silt, Sand, Gravel, Cobble	Slow	Clear
SD	1	2	2	Silt, Sand	Slow	Clear
SE	1	2-3	2	Silt, Sand, Gravel	Moderate	Clear
SF	1	2-3	1-2	Sand, Gravel, Cobble	Slow	Clear
SH	2-4	2-4	2-6	Clay, Silt, Sand, Gravel, Cobble	Moderate	Clear
SI	2-4	2-4	0-6	Clay, Silt, Sand, Gravel, Cobble	Moderate	Clear
SJ	1-2	2-5	2-10	Silt, Sand, Gravel, Cobble	Moderate	Clear
SK	1-2	1-3	0-8	Silt, Sand, Gravel	Slow	Clear
SL-I*	0-2	1-2	0-3	Silt, Sand	NA	Clear
SL-P**	2-4	1-4	0-8	Sand, Gravel	Slow	Clear
SM	0.5-2	1-3	0	Sand, Gravel, Cobble	NA	NA
SN	1-4	2-4	0-5	Sand, Gravel	Slow	Clear
SO	2-5	3-6	4-40	Sand, Gravel, Cobble	Moderate	Clear
SP	2-4	3-6	6-30	Sand, Gravel, Cobble	Slow	Clear
SQ	1-3	1-2	2-10	Sand, Gravel, Cobble	Moderate	Clear
SR	0.5-1	3-5	4-8	Sand, Gravel, Cobble	Moderate	Clear
SS	1-2	2-3	2-10	Sand, Gravel, Cobble	Moderate	Clear
ST	0.5-2	2-3	6-12	Silt, Sand, Gravel	Slow	Clear
SU	2-4	2-3	10-20	Silt, Sand	Slow	Clear
SV	3-6	3-6	6-40	Silt, Sand, Gravel, Cobble	Moderate	Clear
SW	0.5-1.5	3-4	6-12	Sand, Gravel, Cobble	Slow	Clear
SX	1-4	4-6	6-36	Silt, Sand, Gravel, Cobble	Moderate	Clear
SY	2-3.5	3-5	6-20	Silt, Sand, Gravel	Moderate	Clear
SZ	0.5-1	1-2.5	2-8	Silt, Sand	Slow	Clear
SBB	3-5	3-4	6-12	Sand, Gravel, Cobble	Slow	Clear

* I: Intermittent portion

** P: Perennial portion

There are two ponds within the study area. Pond 1 is located on a residential property south of Sweeten Creek and east of Sweeten Creek Road (Figure 3-2). Pond 2 is associated with stream SK (Figure 3-6).

There are no designated anadromous fish waters or Primary Nursery Areas (PNA) in the study area. There are no designated Outstanding Water Resources (OWR), High Quality Waters (HQW), or water supply watersheds (WS-I or WS-II) within 1.0 mile downstream of the study area. The North Carolina Wildlife Resources Commission (NCWRC) has identified no waters as trout waters within 1.0 mile of the study area. There are no streams listed for turbidity or sedimentation on the North Carolina 2014 Final 303(d) list of impaired waters within 1.0 mile downstream of the study area.

There is one benthic monitoring site within 1.0 mile downstream of the study area located at the crossing of US 25 with on an Unnamed Tributary (UT) to Dingle Creek; it was last sampled on February 10, 1987, and received a Biotic Index (BI) of 5.22. There are no sites monitored by the NC Stream Fish Community Assessment Program or the NCDWR Ambient Monitoring System within 1.0 mile downstream of the study area.

5.1 Clean Water Act Waters of the U.S. (from NRTR)

Twenty-nine jurisdictional streams were identified in the study area (Table 6). The locations of these streams are shown on Figure 3. USACE and NCDWR stream forms are included in Appendix C. The physical characteristics and water quality designations of each jurisdictional stream are detailed in Section 3.2. Jurisdictional streams in the study area could be designated as cool water streams for the purposes of stream mitigation.

Table 6. Jurisdictional characteristics of water resources in the study area

Map ID	Length (ft.)	Classification	Compensatory Mitigation Required	River Basin Buffer
Sweeten Creek	2,462	Perennial	Yes	Not Subject
Dingle Creek	341	Perennial	Yes	Not Subject
Four Mile Branch	568	Perennial	Yes	Not Subject
SA	2,086	Perennial	Yes	Not Subject
SB	103	Perennial	Yes	Not Subject
SC	527	Perennial	Yes	Not Subject
SD	52	Intermittent	Undetermined	Not Subject
SE	52	Intermittent	Undetermined	Not Subject
SF	377	Perennial	Yes	Not Subject
SH	584	Perennial	Yes	Not Subject
SI	441	Perennial	Yes	Not Subject
SJ	223	Perennial	Yes	Not Subject
SK	105	Intermittent	Undetermined	Not Subject
SL-I*	265	Intermittent	Undetermined	Not Subject
SL-P**	521	Perennial	Yes	Not Subject
SM	104	Intermittent	Undetermined	Not Subject
SN	75	Intermittent	Undetermined	Not Subject
SO	579	Perennial	Yes	Not Subject
SP	608	Perennial	Yes	Not Subject
SQ	959	Intermittent	Undetermined	Not Subject

Table 6. Jurisdictional characteristics of water resources in the study area

Map ID	Length (ft.)	Classification	Compensatory Mitigation Required	River Basin Buffer
SR	322	Perennial	Yes	Not Subject
SS	187	Perennial	Yes	Not Subject
ST	146	Intermittent	Undetermined	Not Subject
SU	115	Intermittent	Undetermined	Not Subject
SV	257	Perennial	Yes	Not Subject
SW	158	Intermittent	Undetermined	No Subject
SX	563	Perennial	Yes	Not Subject
SY	760	Perennial	Yes	Not Subject
SZ	89	Intermittent	Undetermined	Not Subject
SBB	168	Intermittent	Undetermined	Not Subject
Total	13,797			

* I: Intermittent portion

** P: Perennial portion

Twenty jurisdictional wetlands were identified within the study area (Figure 3). Wetland classification and quality rating data are presented in Table 7. All wetlands are within the French Broad River basin (USGS Hydrologic Unit 06010105). USACE wetland delineation forms and NCDWR wetland rating forms for each site are included in Appendix C. Descriptions of the terrestrial communities at each wetland site are presented in Section 4.1. Wetlands WA, WB, WC, WD, WF, WG, WH, WI, WJ, WK, WL, WM, WP, WQ, WR, WS, and WT are included within the Acidic Cove Forest (Typic Subtype) community. Wetlands WE, WN, and WO are included in the Maintained/Disturbed community.

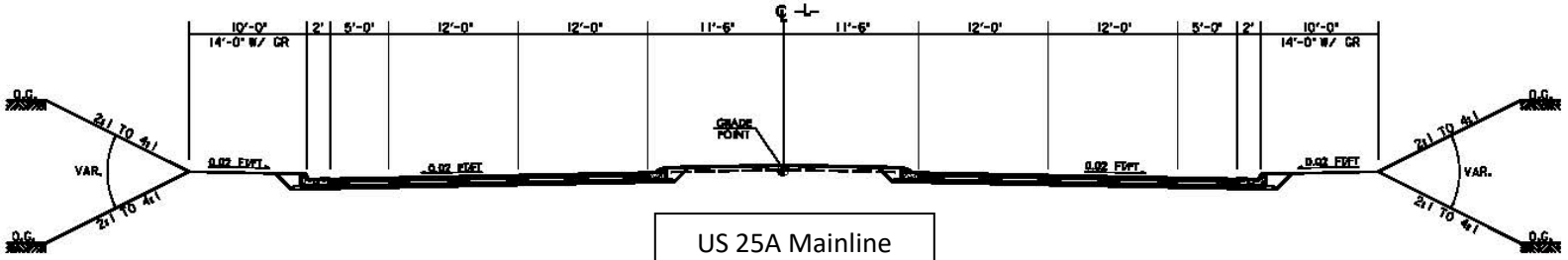
Table 7. Jurisdictional characteristics of wetlands in the study area (c

Map ID	NCWAM Classification	Hydrologic Classification	NCDWQ Wetland Rating	Area (ac.)
WA	Bottomland Hardwood Forest	Riparian	54	0.2
WB	Bottomland Hardwood Forest	Riparian	51	0.1
WC	Bottomland Hardwood Forest	Riparian	43	0.01
WD	Bottomland Hardwood Forest	Riparian	49	1.1
WE	Headwater Forest	Riparian	23	0.04
WF	Headwater Forest	Riparian	34	0.03
WG	Bottomland Hardwood Forest	Riparian	47	0.4
WH	Headwater Forest	Riparian	42	0.1
WI	Headwater Forest	Riparian	35	0.1
WJ	Headwater Forest	Riparian	39	0.1
WK	Headwater Forest	Riparian	56	0.1
WL	Headwater Forest	Riparian	24	0.04
WM	Headwater Forest	Riparian	45	0.02
WN	Headwater Forest	Riparian	52	0.1
WO	Headwater Forest	Riparian	26	0.01

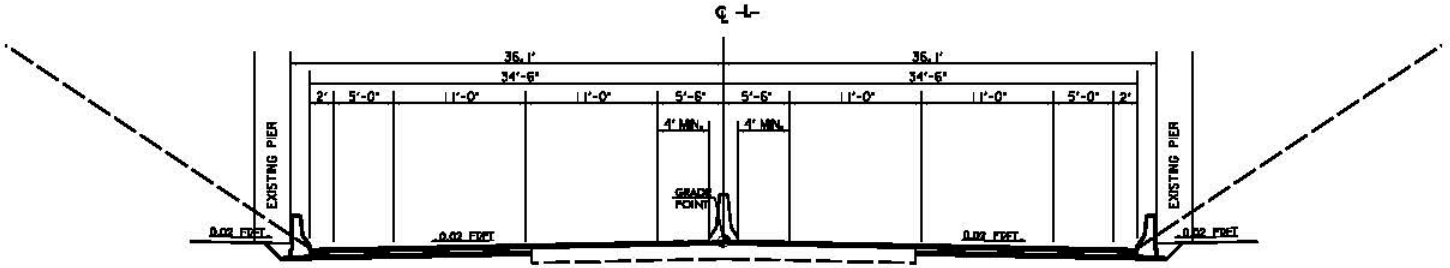
Table 7. Jurisdictional characteristics of wetlands in the study area (continued)

Map ID	NCWAM Classification	Hydrologic Classification	NCDWQ Wetland Rating	Area (ac.)
WP	Headwater Forest	Riparian	79	0.2
WQ	Headwater Forest	Riparian	67	0.1
WR	Headwater Forest	Riparian	19	0.1
WS	Headwater Forest	Riparian	35	0.01
WT	Headwater Forest	Riparian	49	0.3
			Total	3.0

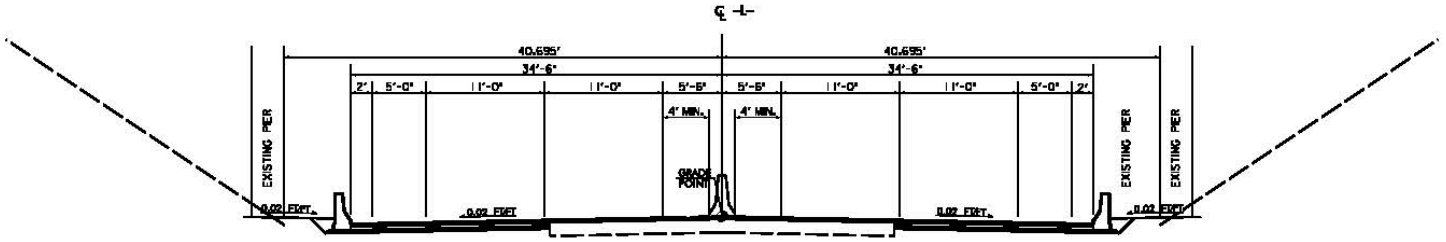
Figure 1 - U-2801A Typical Sections



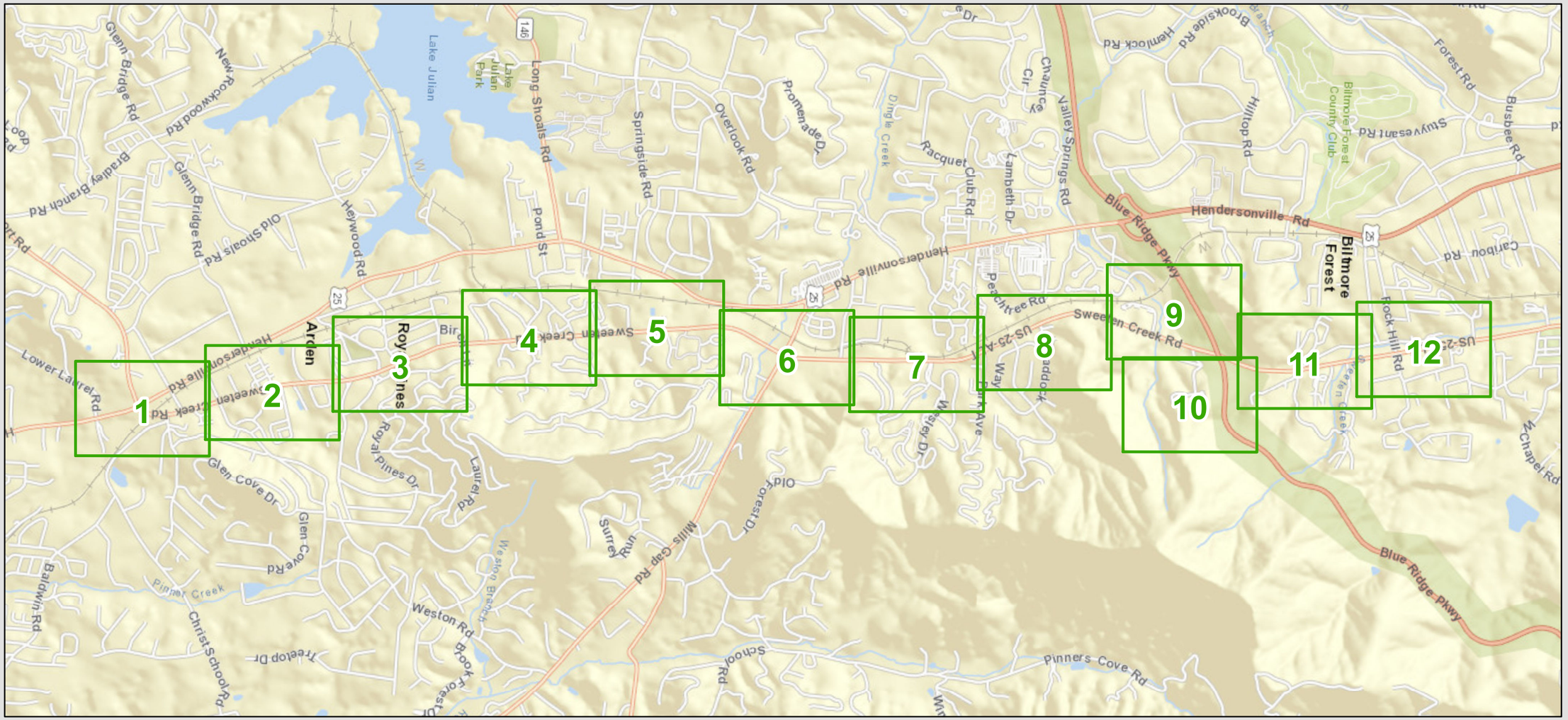
US 25A Mainline



Bridge on Existing CL



Bridge Skewed to Max the Span



Legend

- Project Study Area
- Section Breaks
- Streams (WEX File)
- Wetlands (WEX File)
- Body of Water (WEX File)
- Notable Features
- NCDOT Bridge Locations
- Blue Ridge Parkway
- Railroads
- Flood Hazard - FEMA
- NCHPO Boundary
- NR Listed
- NR Eligible

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS UNIT

ENVIRONMENTAL FEATURES MAP
WIDEN SWEETEN CREEK RD
FROM HENDERSONVILLE RD (US 25)
TO SR 3801 (ROCK HILL HD)

BUNCOMBE COUNTY
STIP PROJECT U-2801A

N

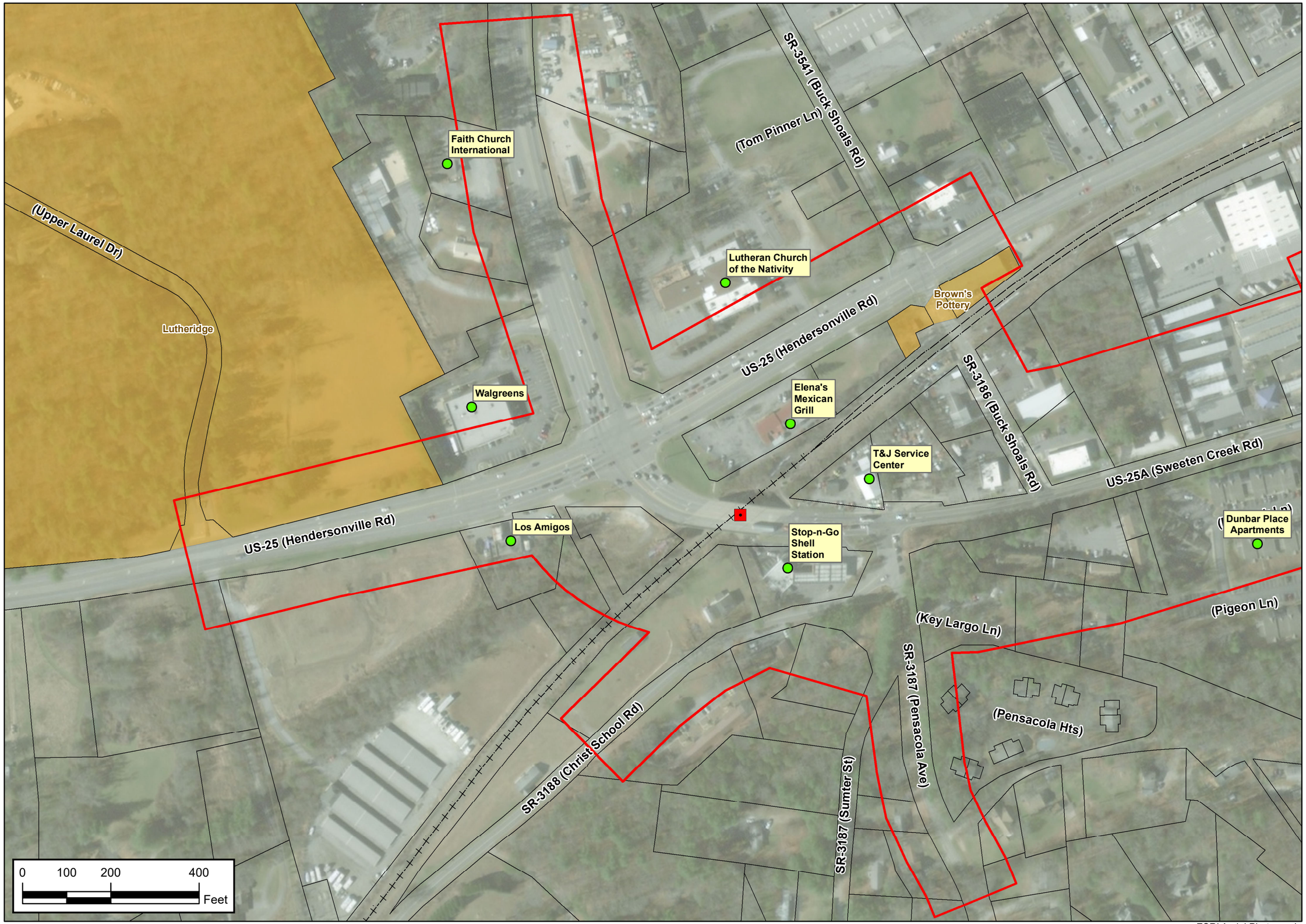
By: C ROWELLS

County: BUNCOMBE

Div: 13 | STIP# U-2801A

Date: MAY 2018

Figure 2 Index



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DIVISION OF HIGHWAYS
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C ROWELLS

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Date:
MAY 2018

Figure

2-1

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Figure

2-2

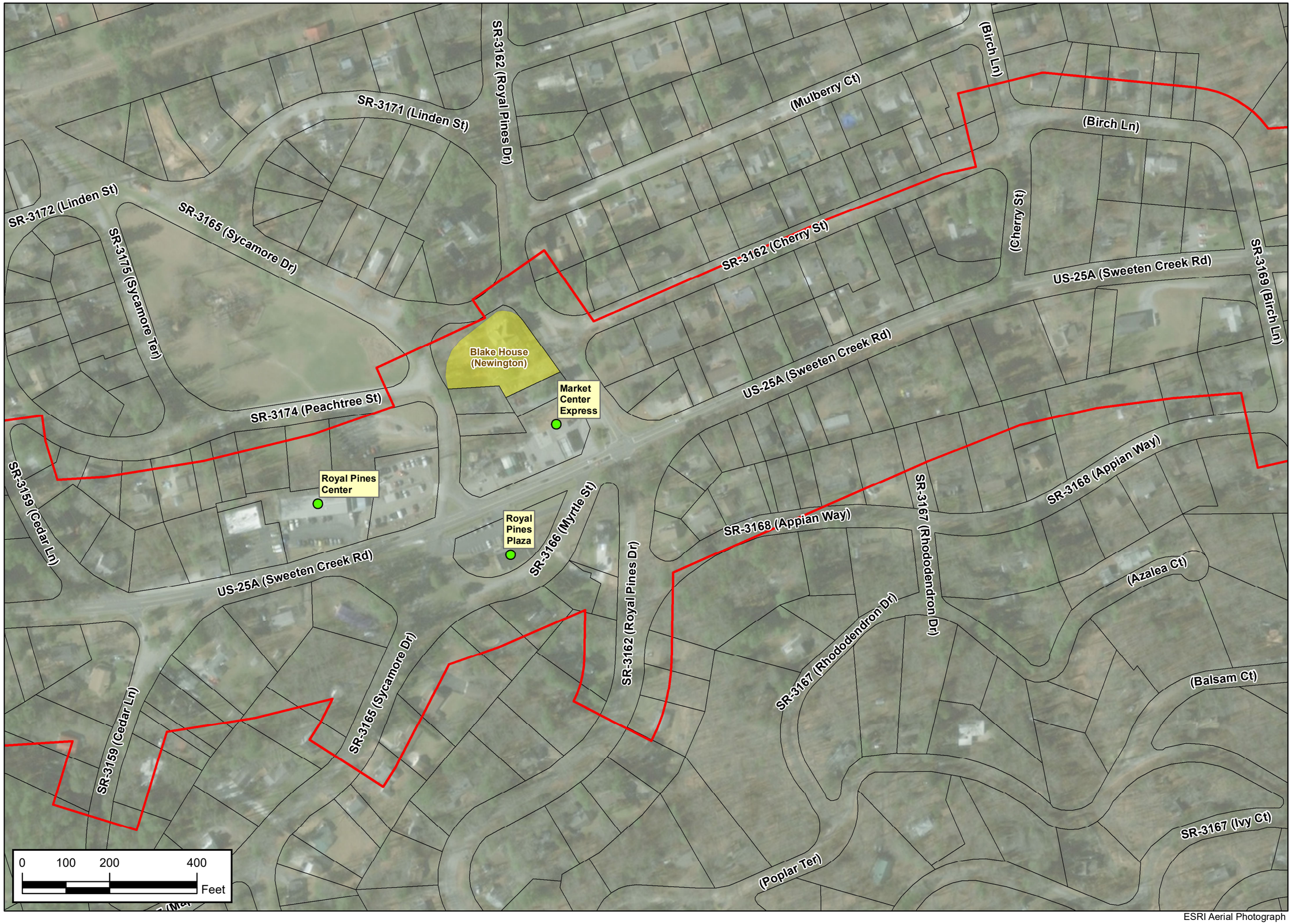

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Figure

2-3

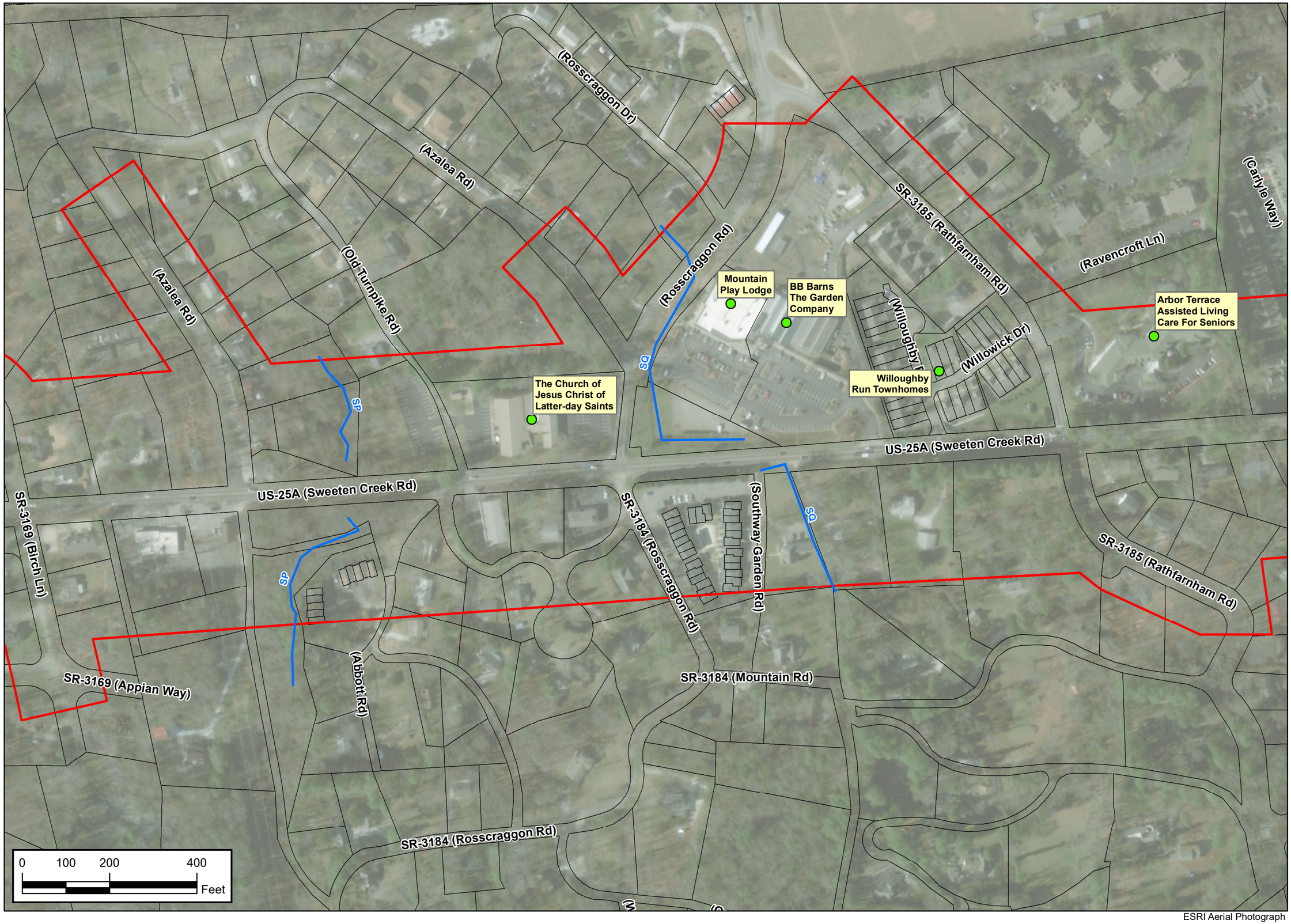

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Figure

2-4

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Figure

2-5

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13	U-2801A

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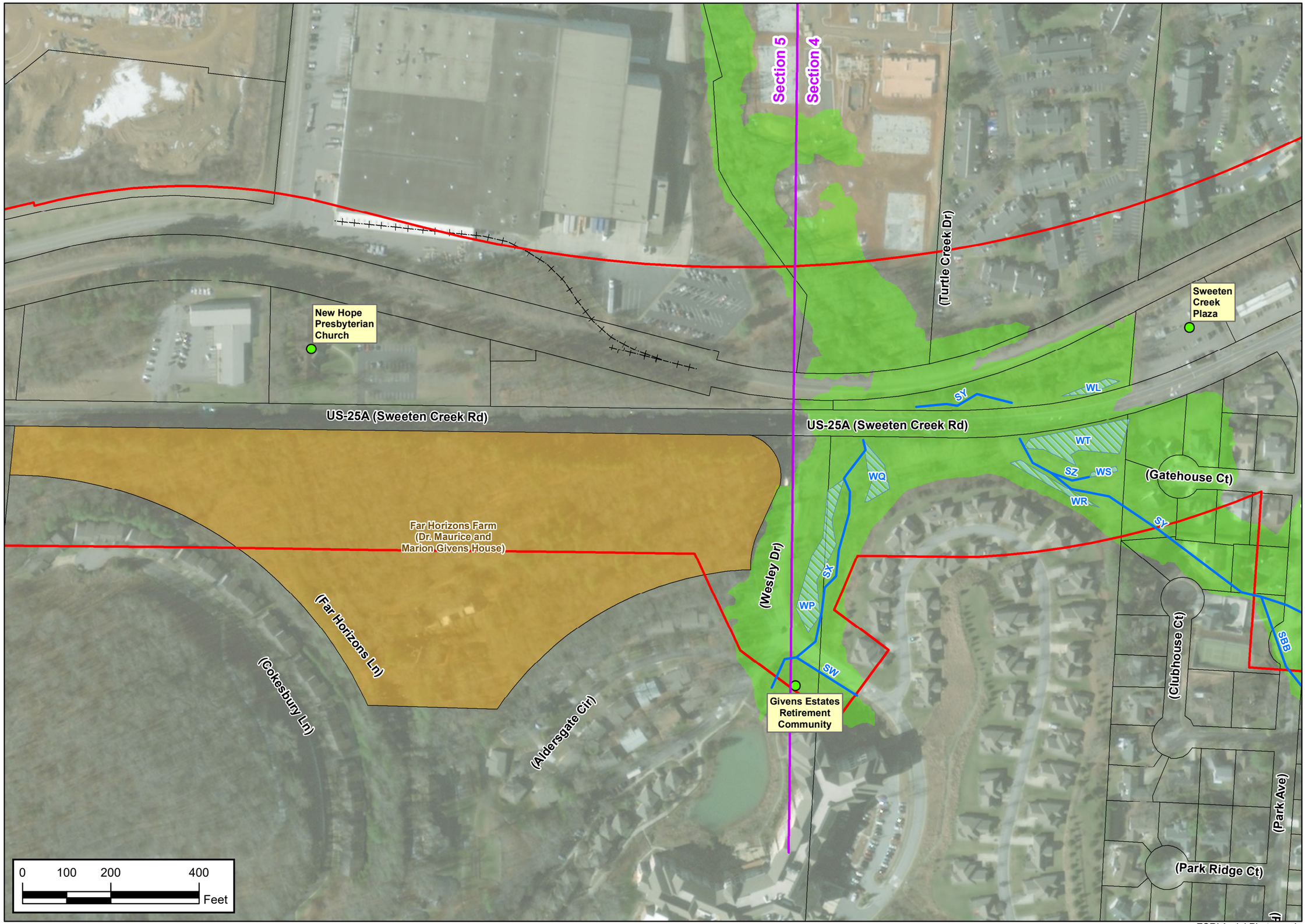
Figure

2-6



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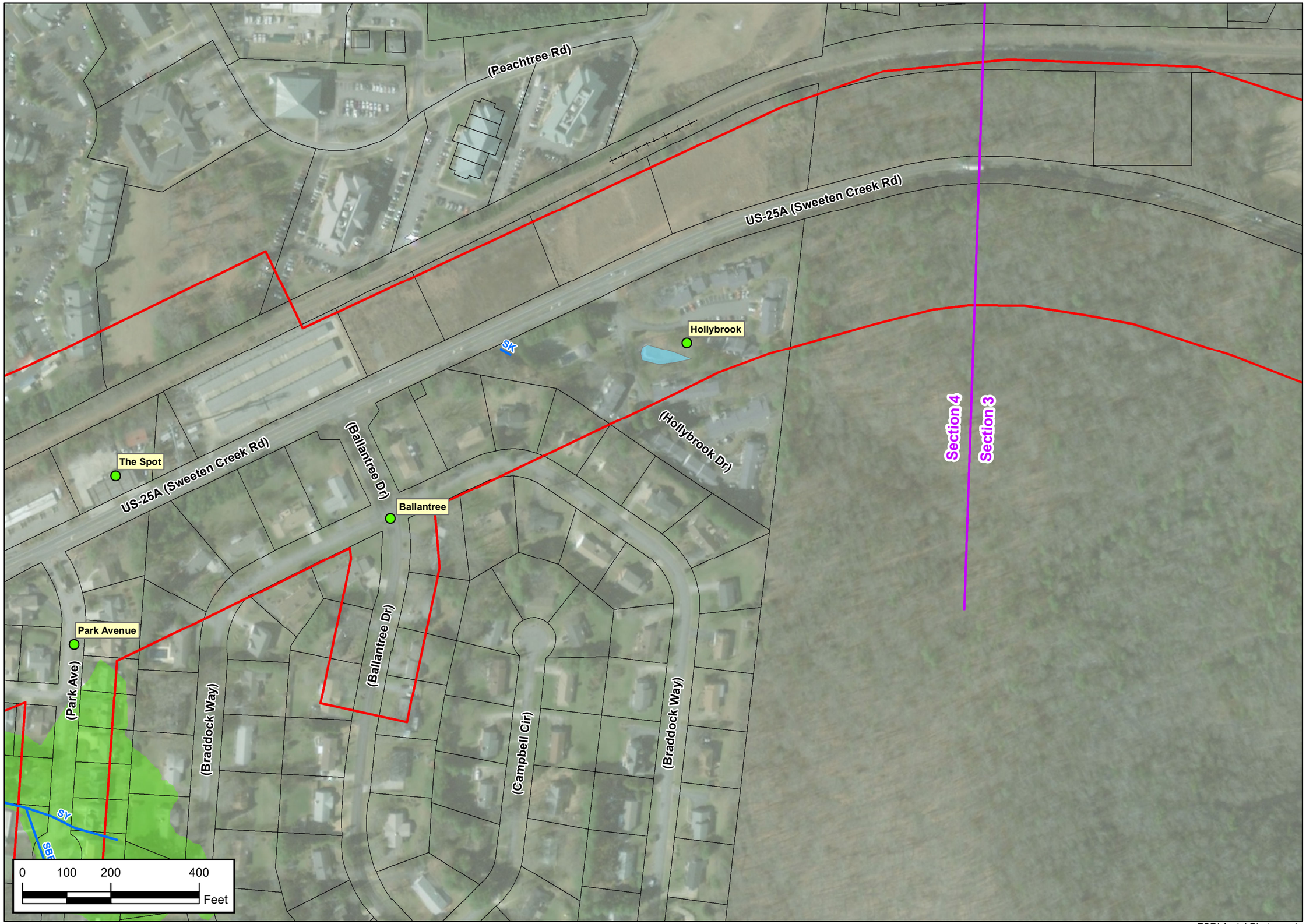
Date: MAY 2018

Figure

2-7



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County: BUNCOMBE	
Div: 13	STIP# U-2801A
Date: MAY 2018	

Figure

2-8

(Bideford Row)

(Bideford Row)

(Tiverton Ln)

Carolina Day School Athletic Complex

(Blue Ridge Pkwy)

Blue Ridge Parkway

SG

Section 3

Section 2

Four Mile Branch

SH

WG

SI

US-25A (Sweeten Creek Rd)

WH

SJ

WI

Four Mile Branch

SH

SI

WJ

WK

US-25A (Sweeten Creek Rd)

(Charlyn Dr)

0 100 200 400 Feet

ESRI Aerial Photograph

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Div: 13

STIP# U-2801A

Date: MAY 2018

Figure

2-9

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County:
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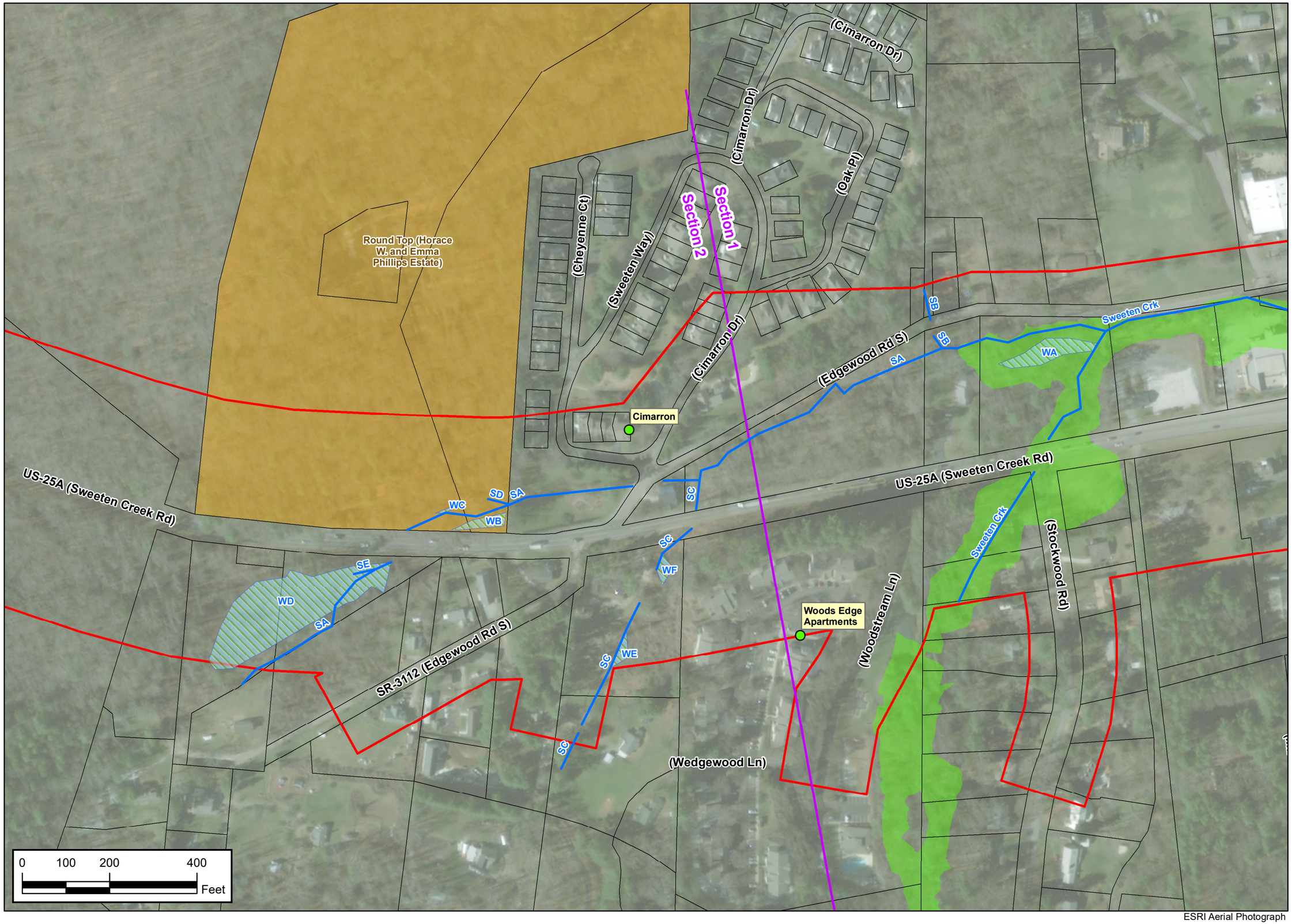
Div:	STIP#
13	U-2801A

Date:
MAY 2018

Figure

2-10



ESRI Aerial Photograph

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS UNIT

ENVIRONMENTAL FEATURES MAP
WIDEN SWEETEN CREEK RD
FROM HENDERSONVILLE RD (US 25)
TO SR 3801 (ROCK HILL HD)
BUNCOMBE COUNTY
STIP PROJECT U-2801A

N

By:
C ROWELLS

County:
BUNCOMBE

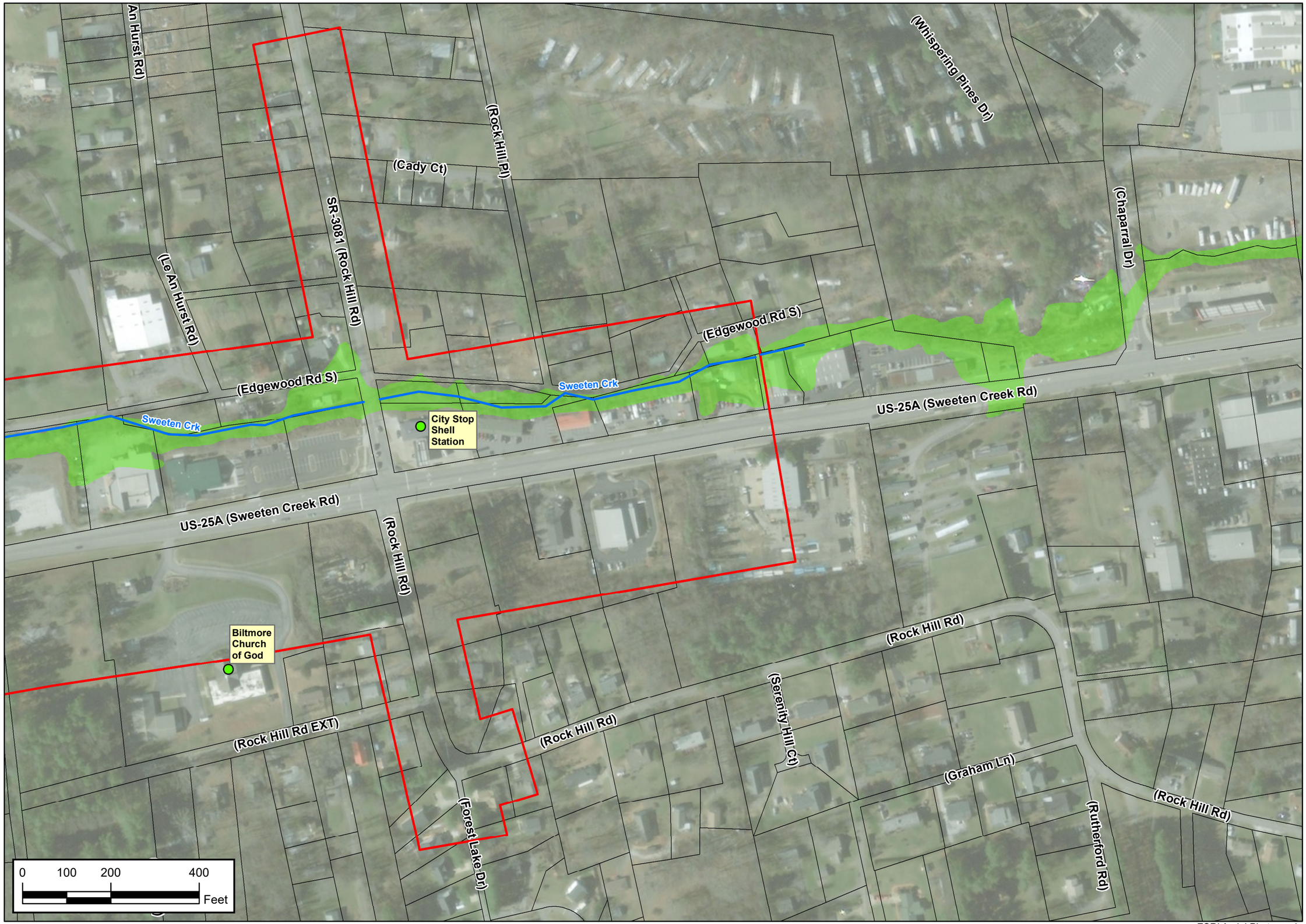
Div:
13

STIP#
U-2801A

Date:
MAY 2018

Figure

2-11



ESRI Aerial Photograph

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OF TRANSPORTATION
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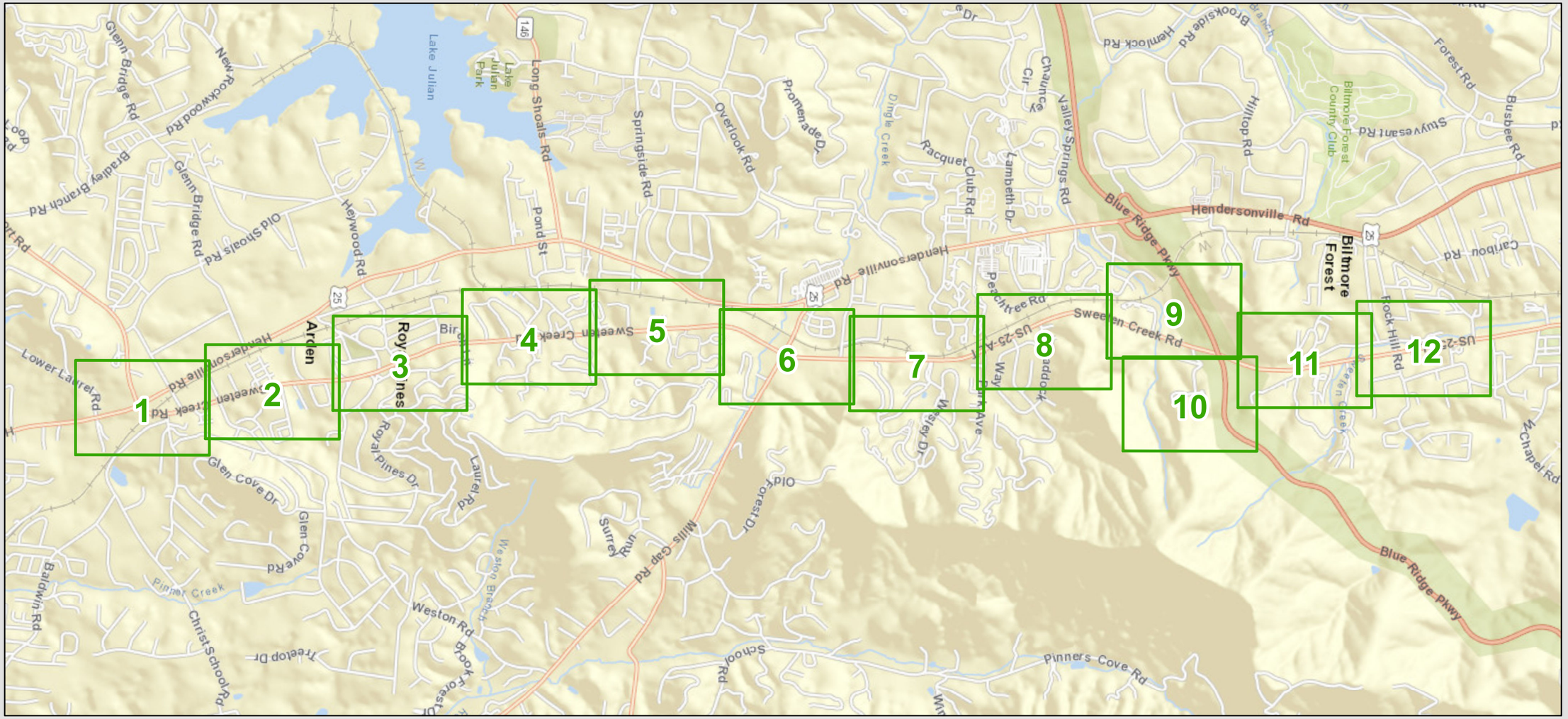
Div:	STIP#
13	U-2801A

Date:
MAY 2018

Figure

2-12



Legend

- Project Study Area
- East Alternative (25' SS Buffer)
- West Alternative (25' SS Buffer)
- Best Fit Alternative (25' SS Buffer)
- Section Break
- Notable Features
- Perennial Streams (WEX File)
- Intermittent Streams (WEX File)
- Wetlands (WEX File)
- Ponds (WEX File)
- Lake Julian Greenway (Planned)
- NC Historic Property
- NCDOT Bridge Locations
- Railroads
- School Property
- Federal Lands
- Regional Underground Storage Tanks
- GeoEnvironmental Hazard Site
- Flood Hazard - FEMA
- Parcel Boundary

Prime Farmland Soils

- All ares are Prime Farmland
- Farmland of Local Importance
- Farmland of Statewide Importance
- Prime Farmland if Drained

NCHPO Boundary

- NR Listed
- NR Eligible

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
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ALTERNATIVES IMPACT MAP
WIDEN SWEETEN CREEK RD FROM HENDERSONVILLE RD (US 25) TO SR 3801 (ROCK HILL HD)
BUNCOMBE COUNTY
STIP PROJECT U-2801A

N

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County: BUNCOMBE

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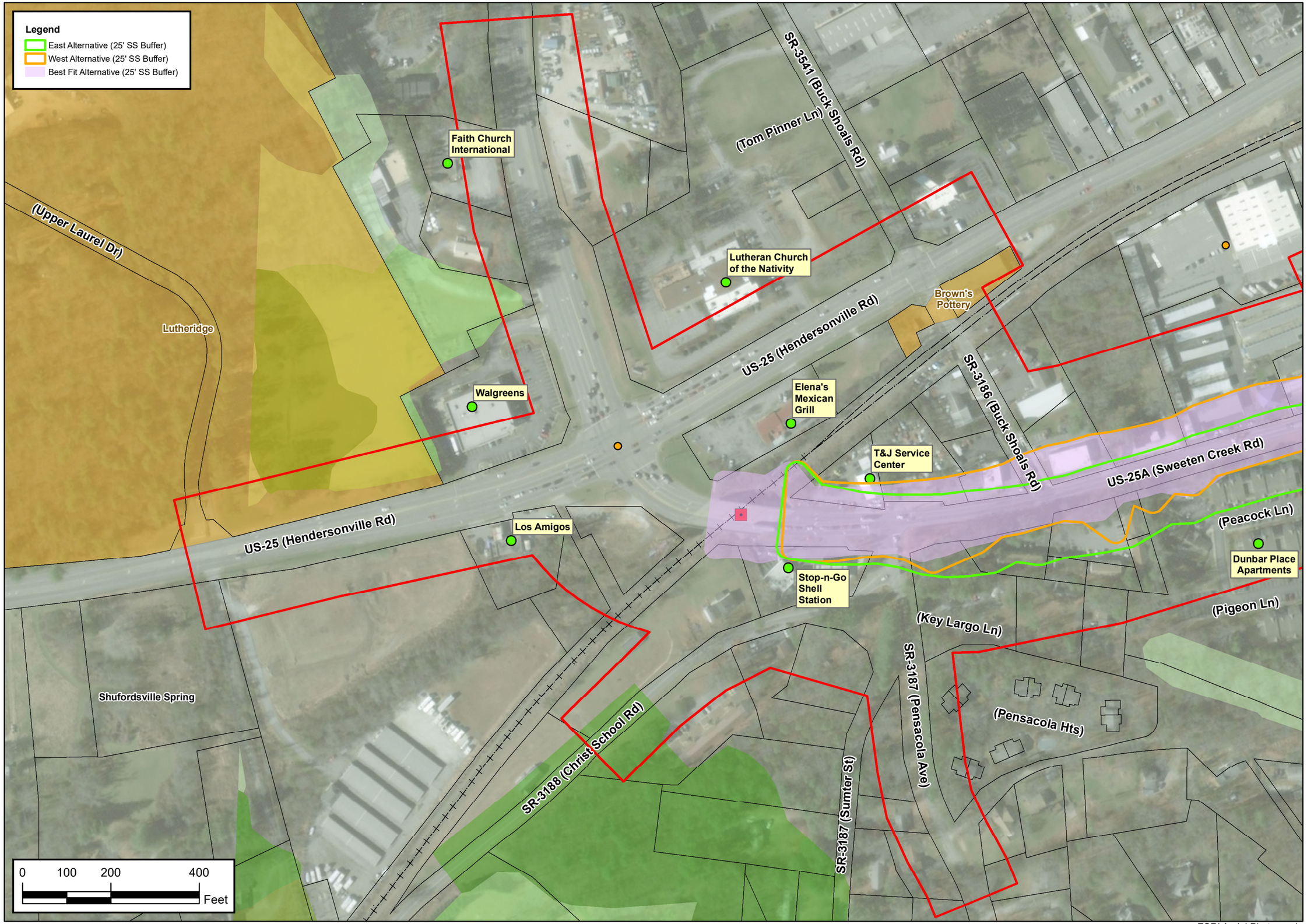
Figure 3 Index



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DIVISION OF HIGHWAYS
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ALTERNATIVES IMPACT MAP
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BUNCOMBE COUNTY
STIP PROJECT U-2801A

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Figure

3-1

Legend

- East Alternative (25' SS Buffer)
- West Alternative (25' SS Buffer)
- Best Fit Alternative (25' SS Buffer)

US-25 (Hendersonville Rd)

Avalon at Sweeten Creek

(Holiday Dr)

Royal Pines Village

Arden First Baptist Church

SR-3159 (Cedar Ln)

SO

US-25A (Sweeten Creek Rd)

SM

(Winner Cir)

SR-3217 (Weston Rd EXT)

SL

SO

The Colony

(Colony Dr)

WM

(Colony Cir)

SW

SR-3217 (Weston Rd)

ST

The Oaks at Sweeten Creek

(Carrington Pl)

Carrington Place

Section 8

Section 7

SR-3316 (Quail Hollow Dr)

(Glenwood Cir)

0 100 200 400 Feet

N

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DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS UNIT

ALTERNATIVES IMPACTS MAP
WIDEN SWEETEN CREEK RD
FROM HENDERSONVILLE RD (US 25)
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BUNCOMBE COUNTY
STIP PROJECT U-2801A

By: C ROWELLS

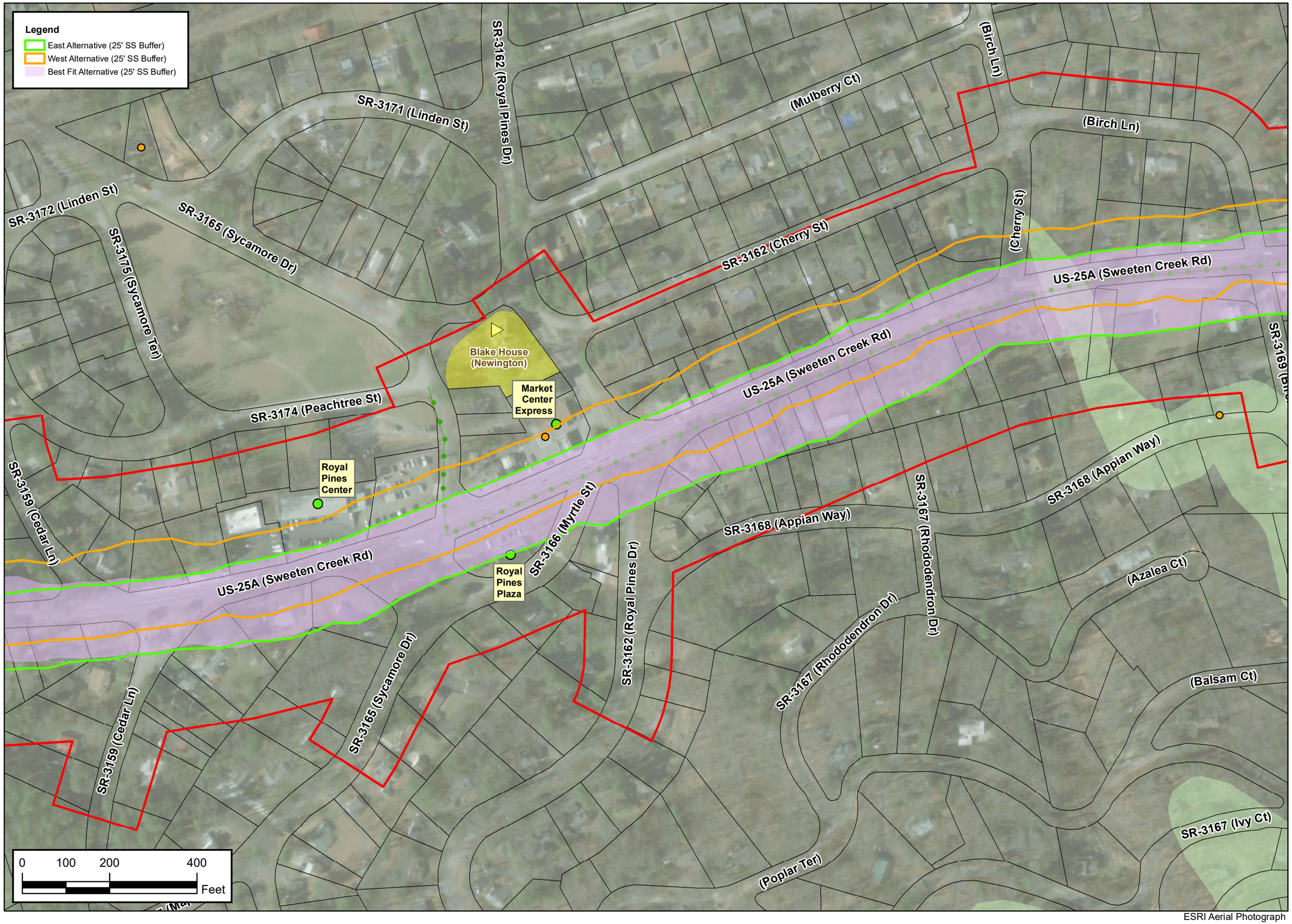
County: BUNCOMBE

Div: 13 | STIP# U-2801A

Date: MAY 2018

Figure

3-2



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PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS UNIT

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BUNCOMBE COUNTY
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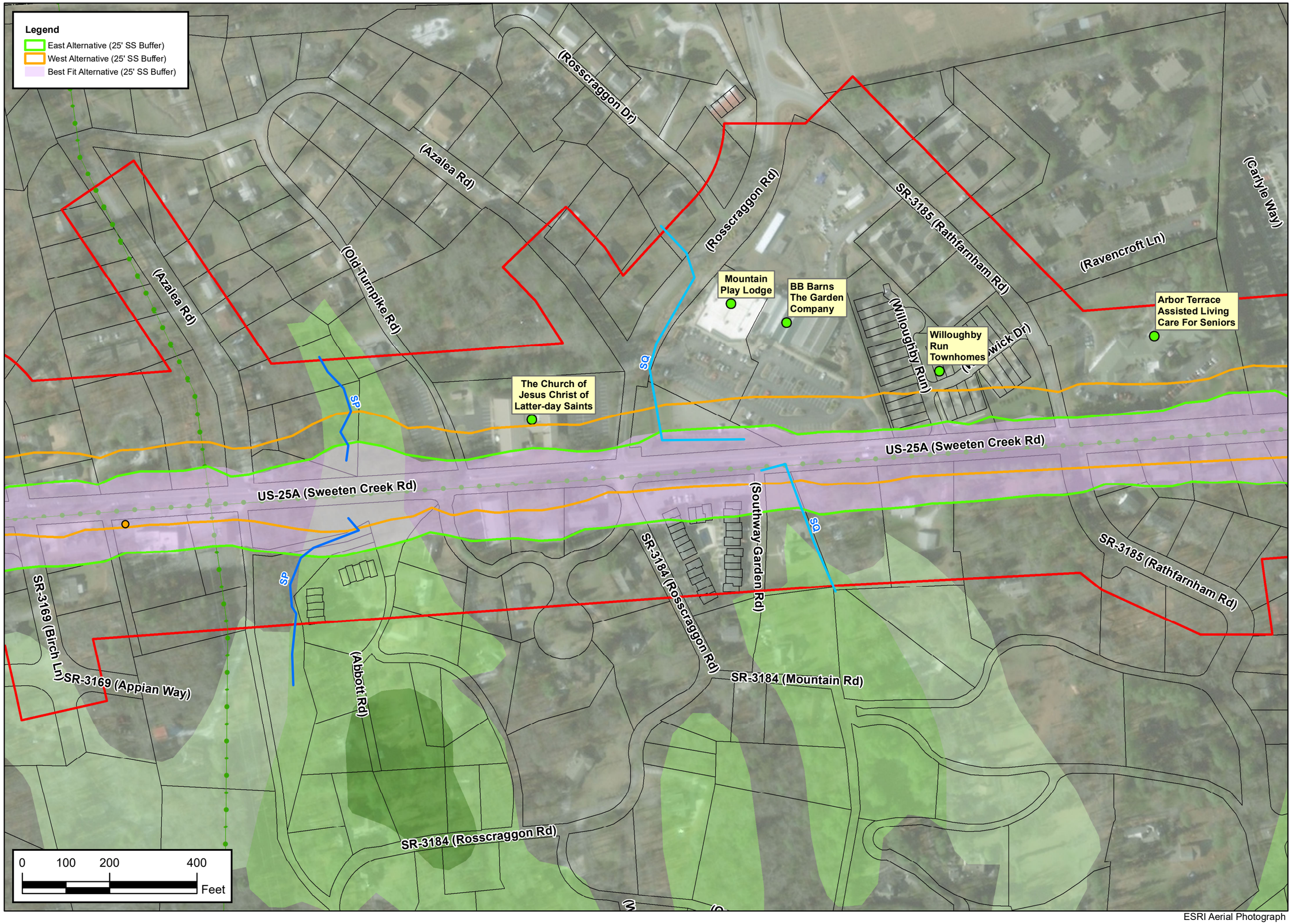
Figure

3-3



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County: BUNCOMBE	
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Figure

3-4

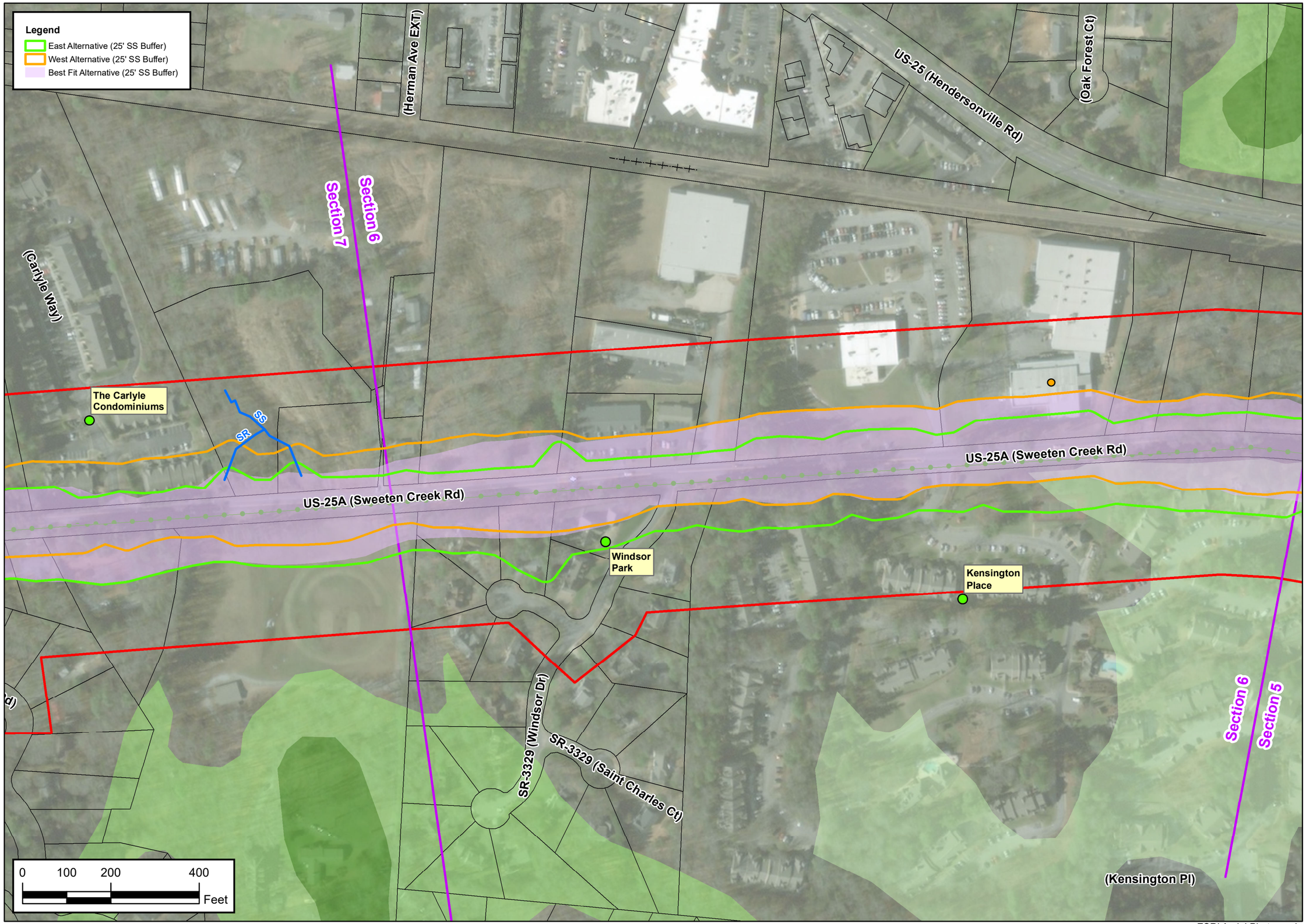

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Figure

3-5

Legend

- East Alternative (25' SS Buffer)
- West Alternative (25' SS Buffer)
- Best Fit Alternative (25' SS Buffer)

US-25A (Sweeten Creek Rd)

SR-3116 (Mills Gap Rd)

(Gerber Rd)

Market Center

Sweeten Creek Centre

Stop and Go Exxon

Dingle Crk

SV

(Casteel Ln)

ST

SNN

WO

WN

0 100 200 400 Feet

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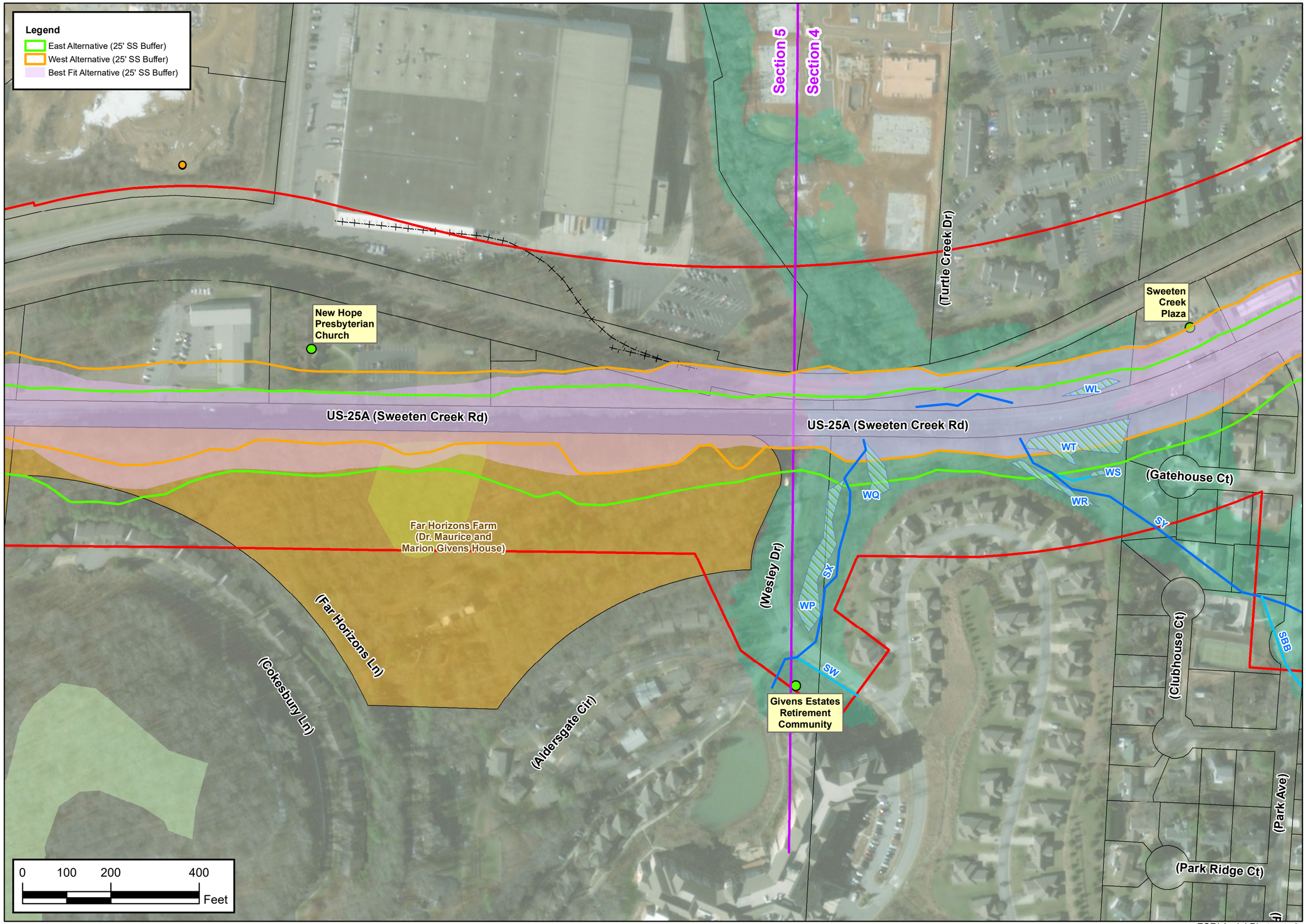
Figure

3-6



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County: BUNCOMBE

Div: 13 | STIP# U-2801A

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Figure

3-7

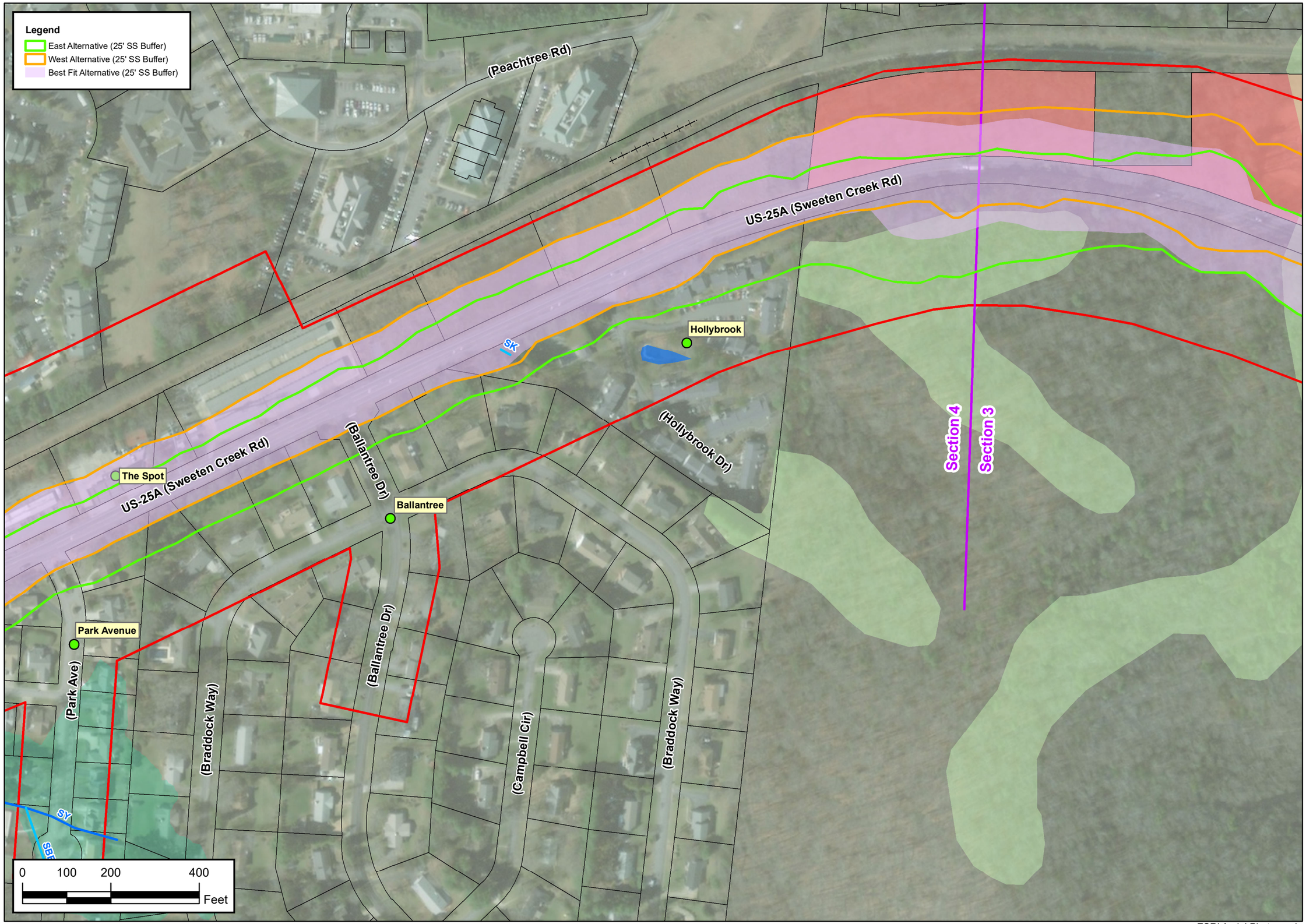

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Figure

3-8

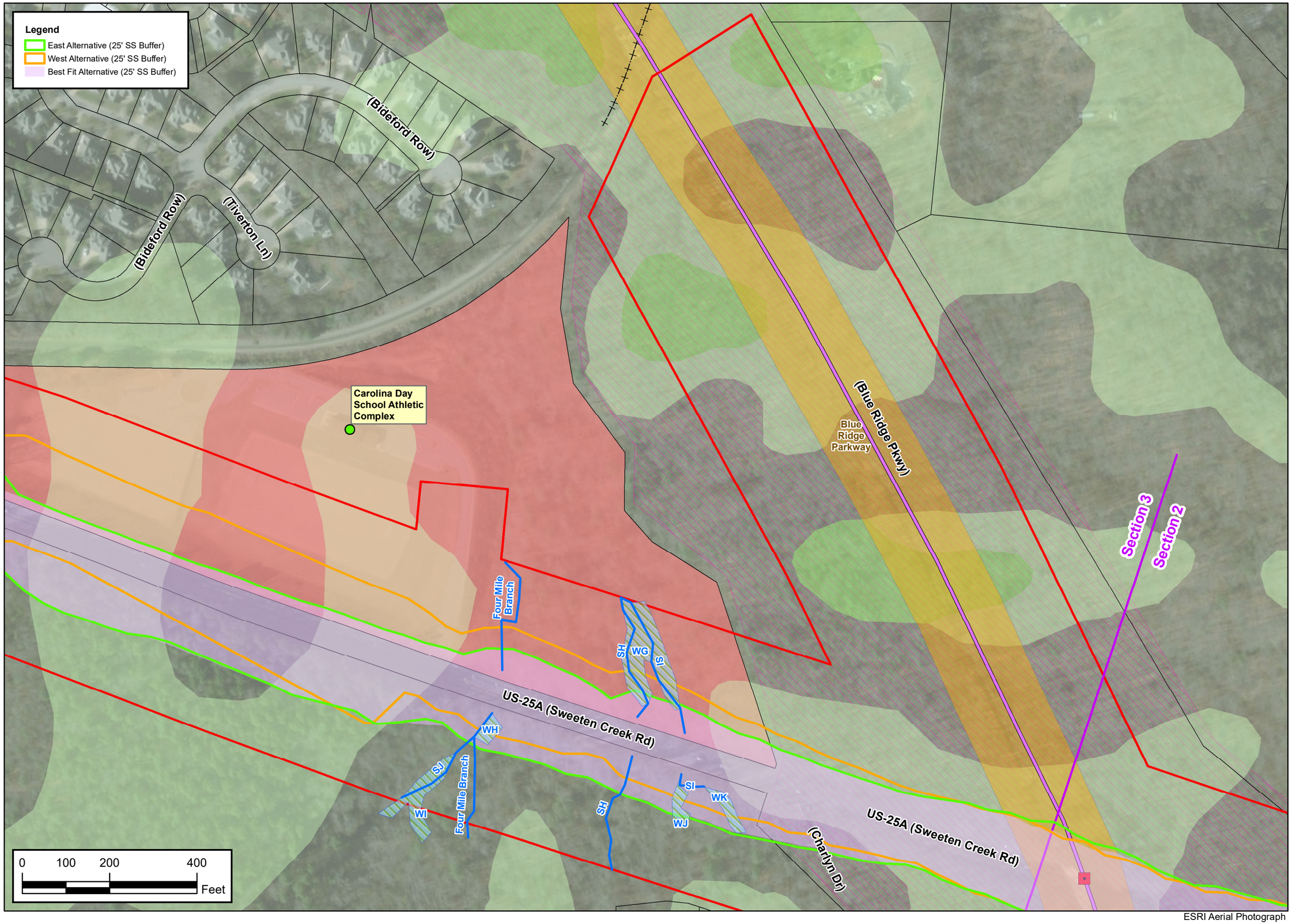

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Figure

3-9

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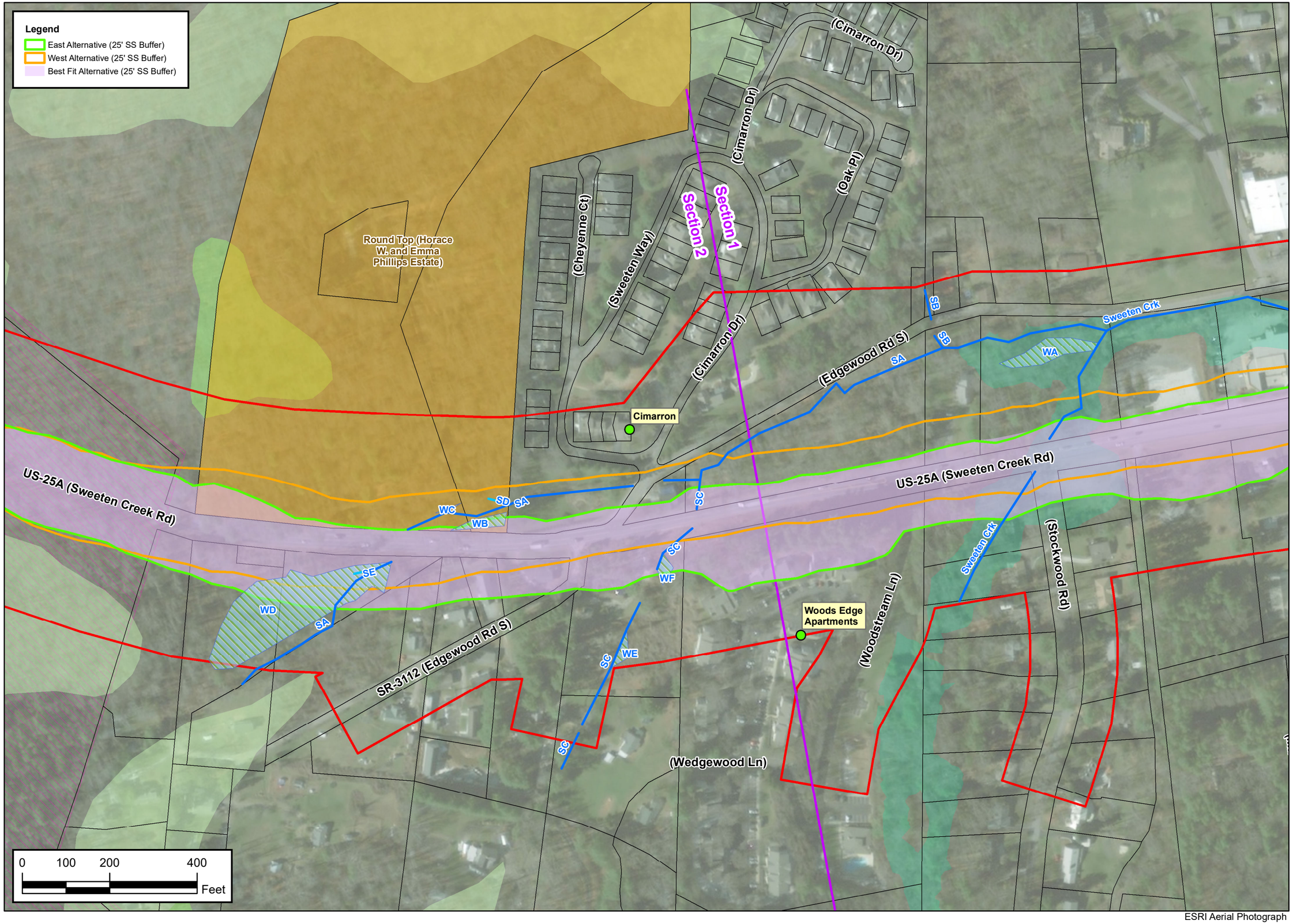
Figure

3-10



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Div: 13

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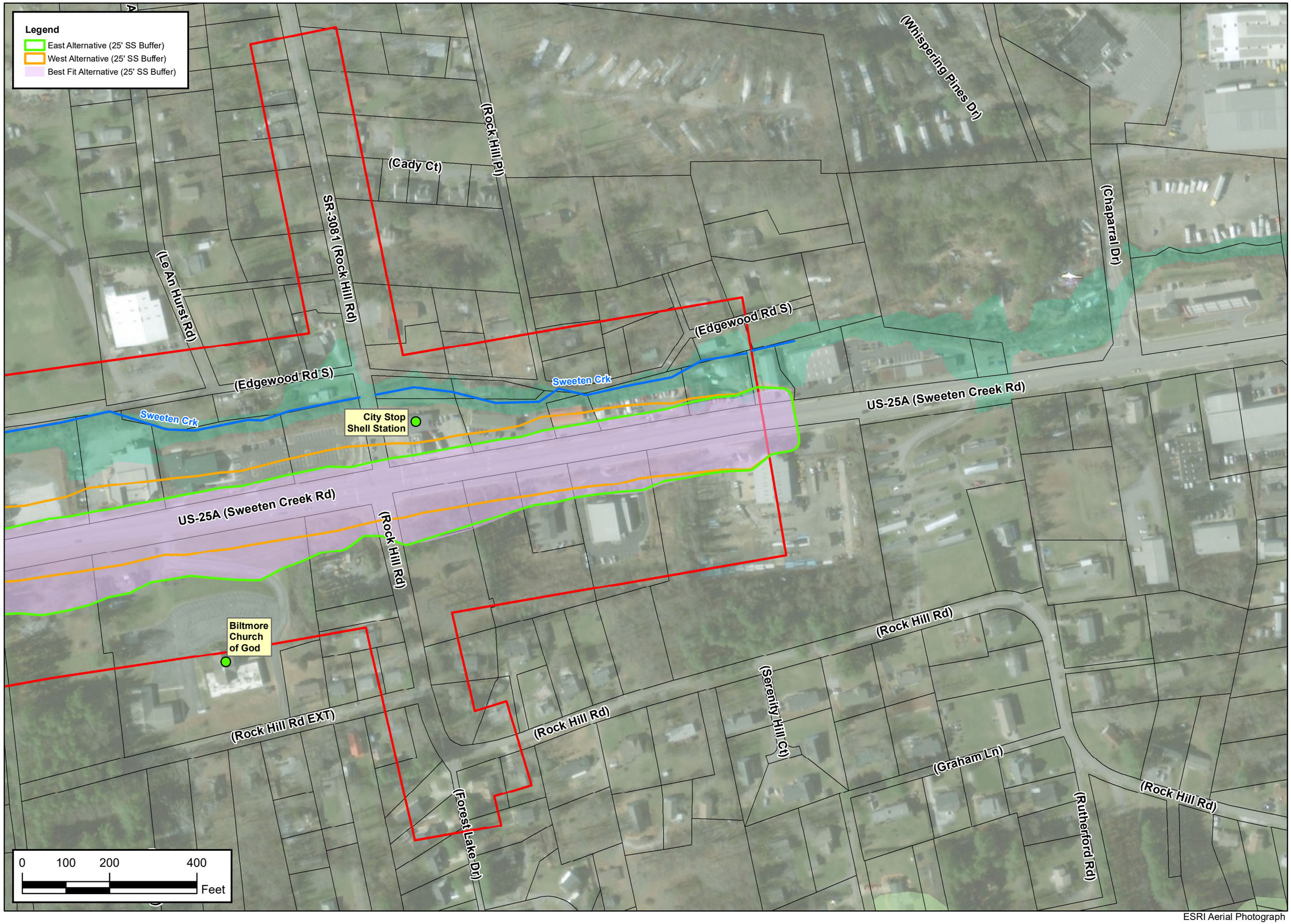
Date: MAY 2018

Figure

3-11



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STIP PROJECT U-2801A

N

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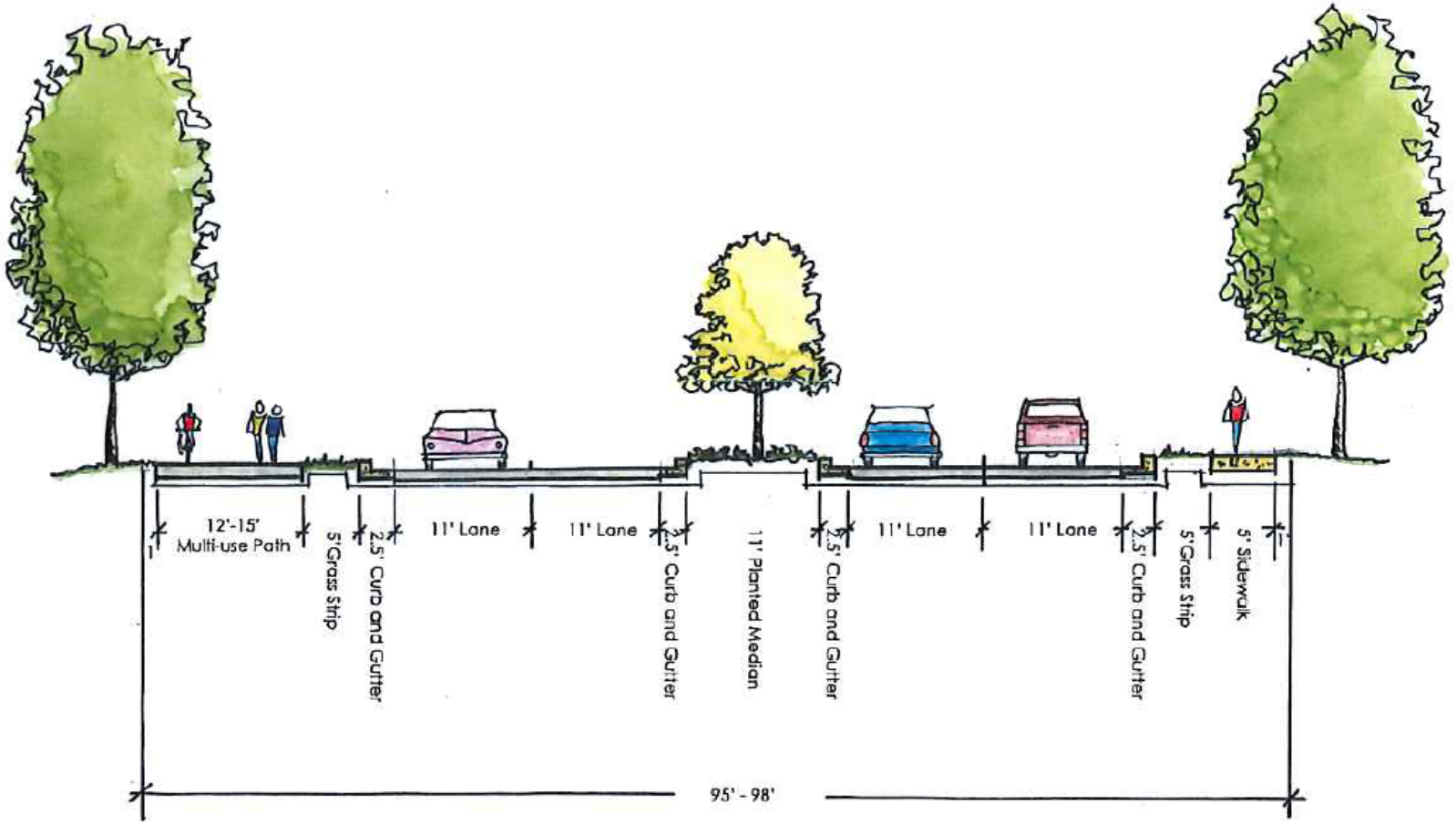
County: BUNCOMBE	
Div: 13	STIP# U-2801A
Date: MAY 2018	

Figure

3-12

Figure 4

City of Asheville – Resolution 18-79
Recommended Typical Section – Sweeten Creek Road



SWEETEN CREEK ROAD
CONCEPT A SCALE 1"=10'