

) Pilot reviewed the FEMA FIRM (Drawing 4) for the site. The FEMA FIRM identifies the evaluation area as Zone X, an area outside the 100 and 500 year floodplains.

Field Determination

Pilot conducted the site visit on May 10, 2018. The evaluation area contains wooded land. We did not observe ponds within the evaluation area.

Two streams are located within the evaluation area. The streams have defined beds and banks, evidence of an ordinary high-water mark, meanders, substrate sorting and riffle pool complexes. The southern stream contained crayfish, salamanders and flowing water at the time of our site visit and appeared to be perennial. The northern stream contained no flow with only standing water in pools and appeared to be intermittent. Drawing 5 shows the approximate locations of the streams on the site including our designations.

A wetland pocket is located between the two streams. The wetland is separated from surrounding uplands by topographic, vegetation and/or soil breaks. Drawing 5 shows the approximate location of the wetland.

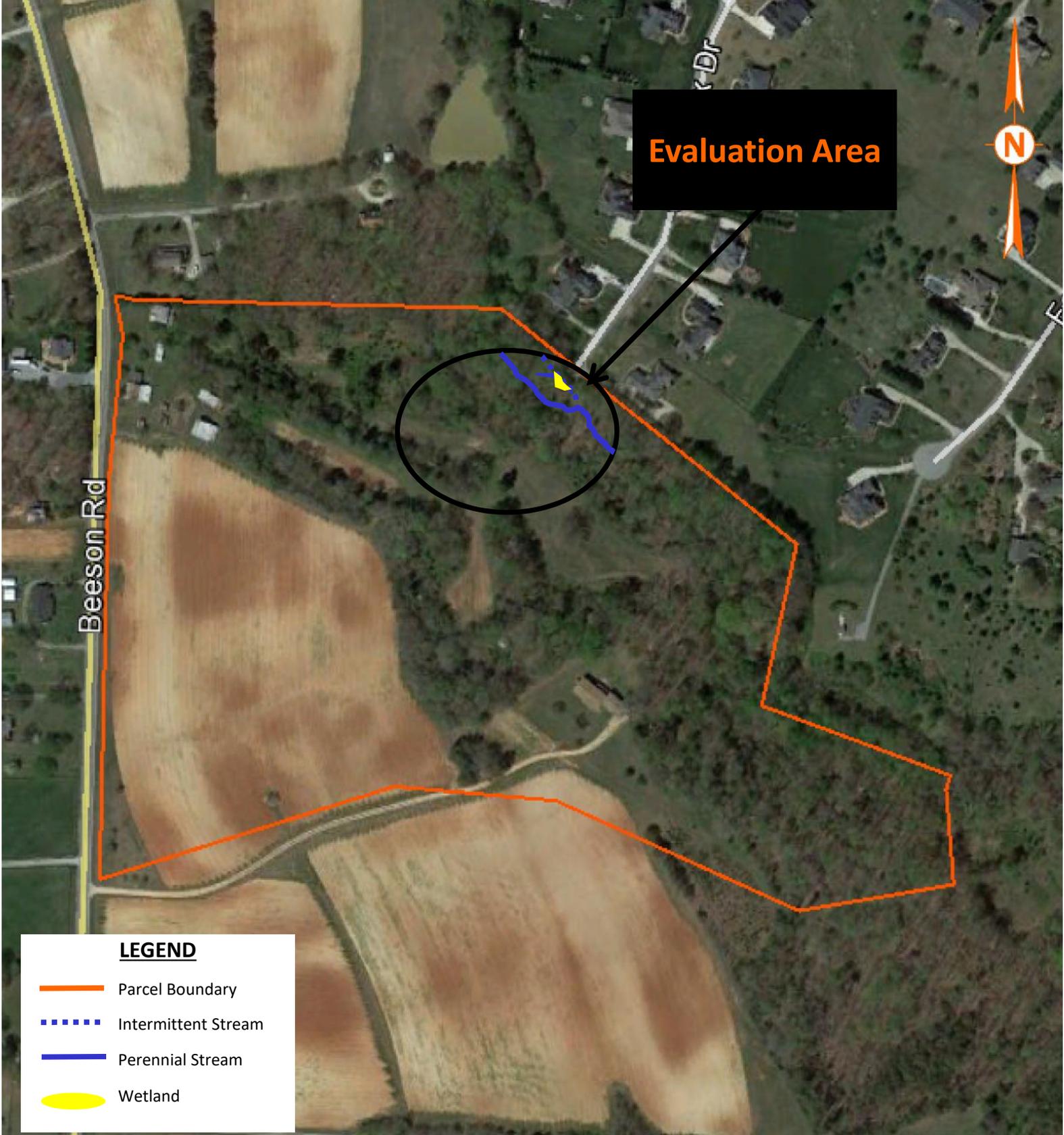
Watershed Classification

According to the NCDEQ-DWR, the site is located in the Cape Fear River Basin. Unnamed tributaries to Beaver Creek cross the site. The NCDEQ-DWR has classified Beaver Creek, the receiving waters, as WS-III; nutrient sensitive waters (NSW).

Additionally, the site is located in the Randleman Lake Watershed. State Regulated Riparian Buffers are required adjacent to intermittent and perennial streams on the site. A buffer determination is required by the local municipality (if NCDEQ-DWR delegated) and/or NCDEQ-DWR to determine buffer requirements for the site.

Summary

Pilot has completed a wetland determination on the site. Pilot recommends that the site be delineated and verified by the USACE. Additionally, the local municipality and/or the NCDEQ-DWR should be contacted to determine stream buffer requirements for the site. The determination is based on our field observations and is subject to change following verification by the regulatory agencies.



LEGEND

- Parcel Boundary
- ⋯ Intermittent Stream
- Perennial Stream
- Wetland

THE LOCATIONS OF FEATURES SHOWN ON THIS MAP ARE PRELIMINARY AND APPROXIMATE. THEY HAVE NOT BEEN DELINEATED OR VERIFIED BY THE USACE AND/OR THE NCDEQ-DWR. THEY HAVE NOT BEEN SURVEYED OR GEOLOCATED.

Drawing 5
 2017 Aerial Imagery from Google Earth
 and Pilot Field Notes
 Scale: 1" = 250'
 Date: 05.10.18



Wetland Map
 Cape Fox Drive
 Oak Ridge, Guilford County, NC
 Pilot Project 3709

Additional Considerations

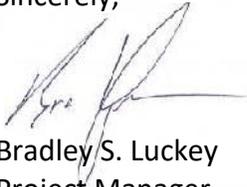
It is our understanding that Cape Fox Drive may extend across the streams and wetland on the site. Based on the current location of the termini point of Cape Fox Drive, it will be necessary to cross two streams and fill the wetland. It will be necessary to obtain a Nationwide Permit from the U.S. Army Corps of Engineers and a 401 Water Quality Certification from the North Carolina Department of Environmental Quality – Division of Water Resources. If impacts exceed 300 linear feet and one-half acre of wetlands, an individual permit will be required.

Based on our observations, it is likely that stream impacts will be greater than 150 linear feet and wetland impacts may exceed one-tenth of an acre. Because these thresholds will be exceeded, mitigation will be required. The site is located in the 03030002 hydrologic unit code (HUC), a high fee HUC. The current statewide stream and wetland rates through the NC Division of Mitigation Services within the site HUC are \$394.00/linear foot (stream) and \$71,772.00/acre (wetland). Because there are wooded buffers and other stream characteristics, impacts to the streams on the site will likely require 2:1 mitigation. Therefore, the rates listed above will likely be double the above listed fees.

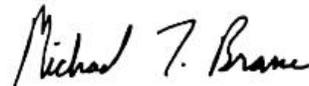
Closing

We appreciate the opportunity to provide our services to you. Please contact us at (336) 310-4527 if you have questions or require additional information.

Sincerely,



Bradley S. Luckey
Project Manager

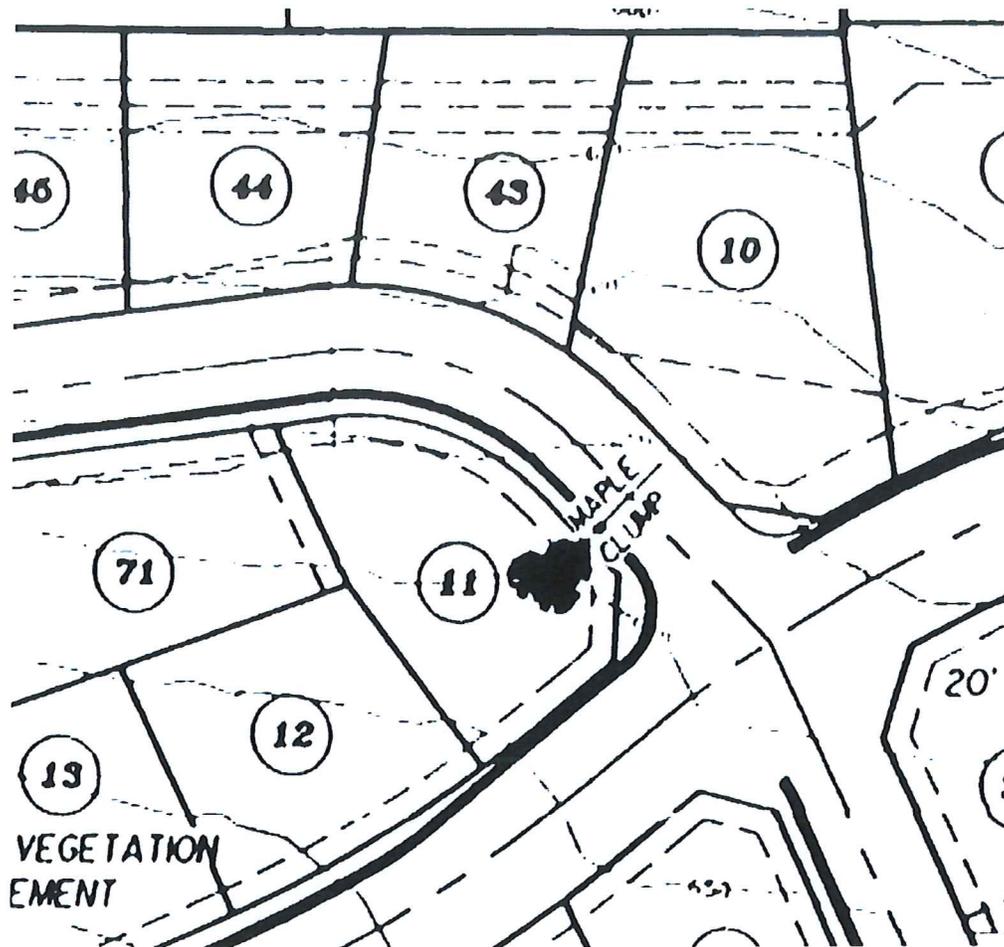


Michael T. Brame, PWS
Principal

Attachments: Drawing 1 – USGS Topographic Map
Drawing 2 – USDA Web Soil Map
Drawing 2A – USDA Published Soil Map
Drawing 3 – NWI Map
Drawing 4 – FEMA FIRM
Drawing 5 – Wetland Map



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MINIMUM CONSTRUCTION STANDARDS



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JANUARY 2010
(Revised May 2016)

2. Residential Collector Roads include:

- a. Dead End Roads - More than 2500 feet in length
- b. Connecting roads between the local residential subdivision roads and the thoroughfare system
- c. Loop Roads - More than one (1) mile in length
- d. Other roads having a "collector" type function in the thoroughfare system

<u>TERRAIN CLASSIFICATION</u>	<u>LEVEL</u>	<u>ROLLING</u>	<u>MOUNTAINOUS</u>
Terrain Classification Definition			
	<u>Level</u> - Natural slope range of 0% to 8%		
	<u>Rolling</u> - Natural slope range of 8.1% to 15%		
	<u>Mountainous</u> - Natural slope over 15%		
Right of Way Width			
Curb and Gutter Section	50'	50'	50'
Shoulder Section	50'	50'	50'
Pavement Width			
Curb and Gutter Section	34' F-F	34' F-F	34' F-F
Shoulder Section	20'	20'	20'
F-F refers to face to face of standard curb and gutter section. Other types will be reviewed by the Division Engineer with the F-F limits applicable.			
Minimum Shoulder Width			
Shoulder Section	6'	6'	6'
Maximum Cut and Fill Slopes			
	2:1	2:1	1 1/2:1
Design Speed			
	35 mph	30 mph	25 mph
Minimum Sight Distance on Vertical Curves			
	250'	200'	150'
Minimum Centerline Radius			
	310'	230'	150'
Minimum Superelevation Rate for Minimum Radius **			
	.08 ft/ft	.06 ft/ft	.04 ft/ft
Maximum Grade			
	6%	9%	12%

Grades for 100' each way from intersection exceeding 5 percent (%) may be reviewed by District Engineers for consideration. Grades less than 0.5 percent should not be used unless reviewed individually by the District Engineer to determine potential maintenance problems.

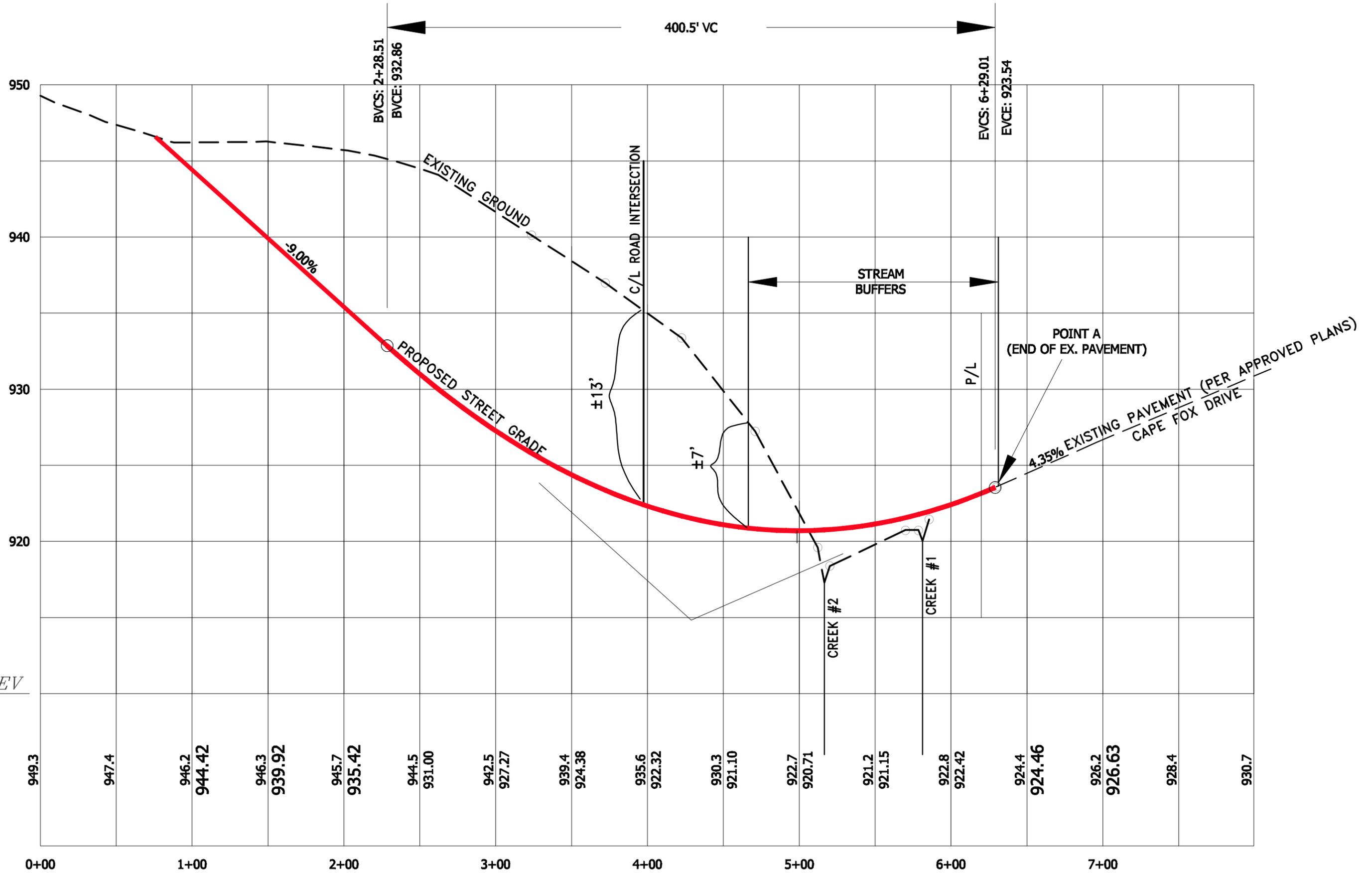
K = Rate of Vertical Curvature for minimum sight distance

	LEVEL	ROLLING	MOUNTAINOUS
CREST	45	30	20
SAG	45	30	20
STOP	20	14	9

Formula for determination of length of vertical curve required to provide minimum sight distance.

[L = KA]
 L = Length of vertical curve in feet
 K = Rate of vertical curvature in feet per percent of A
 A = Algebraic difference in grades in percent

LOW POINT ELEV = 920.71
 LOW POINT STA = 4+98.51
 PVI STA = 4+28.76
 PVI ELEV = 914.83
 A.D. = 13.35
 K = 30.00



ATUM ELEV
 910.00

Guilford County, NC



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Map Scale
1 inch = 400 feet
5/16/2018

