



**The Preserve at Jones Dairy
South
Rolesville, NC
Wake County**

**Aerial Sanitary Sewer
Q25 Calculations**

August 12, 2020

Prepared for:

***Preserve at Jones Dairy, LLC
10534 Arnold Palmer Lane
Raleigh, NC 27617***



Preserve at Jones Dairy - South

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Q25 Calculations

Wake County GIS Drainage Map



caaENGINEERS, Inc.
NC License number C-2151

1233 Heritage Links Drive, Wake Forest, NC 27587

919.625.6755

Preserve at Jones Dairy - South

Project Address: Jones Dairy Road
Rolesville, NC

Pins: 1759-88-8240, 1759.02-88-8240, 1759.02-78-6199

Latitude: N 35° 56' 31.32"

Longitude: W 78° 27' 36.44"

Developer: Preserve at Jones Dairy, LLC
10534 Arnold Palmer Lane
Raleigh, NC 27617

Telephone: (914) 422-1847

Site Description

The project consists of a single parcel approximately 54.01 acres located on Jones Dairy Road in Rolesville, NC. The parcels are vacant and the property is zoned R & PUD. The site is in the Neuse River Basin, and the Town of Rolesville, and subjected to those rules regarding stormwater nutrient management and post development runoff.

The parcel is located within an "Area of Minimal Flood Hazard" as noted per FEMA map 3720175900J, dated May 2, 2006.



SANITARY SEWER
JONES DAIRY PRESERVE
SOUTH

- 25 YEAR $Q_{25} = 6.01$
- 'C' = .55
- DRAINAGE AREA = 14 ACRES

$$Q = CIA$$
$$= (.55)(6.01)(14 \text{ AC})$$
$$= 46.37 \text{ CFS}$$

- GRADE AT CROSSING = EL 386
- DEPTH AT $Q_{25} = .53 + 386 = 386.53$
- COR REQUIREMENT 1 FT ABOVE Q_{25}
- REQUIRED = $386.53 + 1 = \underline{\underline{387.53}}$
- DESIGN = 388.03 OK

JONES DAIRY PRESERVE SOUTH - Q25

MANNING'S EQUATION for OPEN CHANNEL FLOW

Project: **J D P - South Sanitary Sewer**

Location: **Rolesville, NC**

By: **KPG**

Date: **8/11/20**

Chk By:

Date:

version 12-2004

Mannings Formula

$$Q = (1.486/n)AR_h^{2/3}S^{1/2}$$

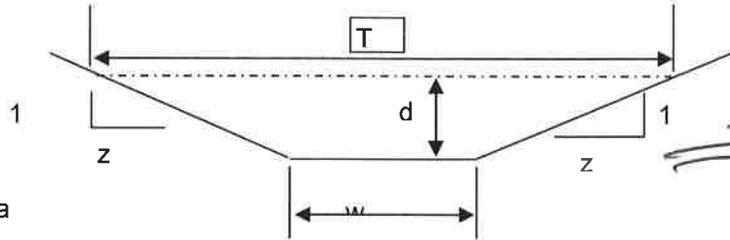
$$R = A/P$$

A = cross sectional area

P = wetted perimeter

S = slope of channel

n = Manning's roughness coefficient



$$V = (1.49/n)R_h^{2/3}S^{1/2}$$

$$Q = V \times A$$

INPUT

z (sideslope)= 8
 z (sideslope)= 8
 b (btm width, ft)= 4
 d (depth, ft)= 0.53
 S (slope, ft/ft) 0.035
 n low = 0.013
 n high = 0.013

Clear Data
Entry Cells

Depth, ft	Area, sf	Wetted Perimeter, ft	Hydraulic Radius, ft	Low N		High N		T =	Dm =
				Velocity, fps	Flow, cfs	Velocity, fps	Flow, cfs		
0.53	4.37	12.55	0.35	10.5818002	46.2128	10.5818	46.2128	12.48	0.350

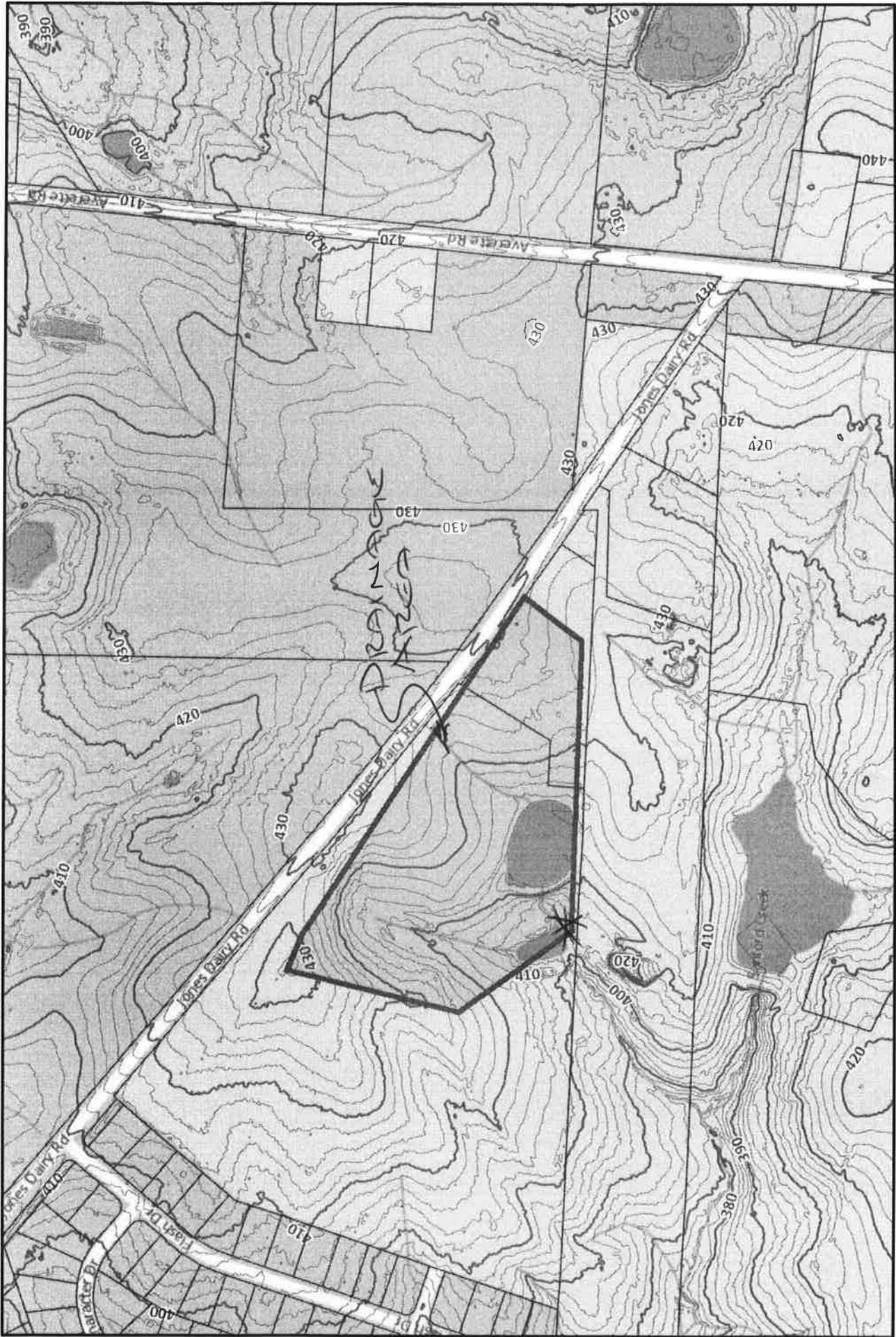
Sc low = 0.0035 Sc high = 0.0035

.7 Sc	1.3 Sc	.7 Sc	1.3 Sc
0.0025	0.0046	0.0025	0.0046

s_c = critical slope ft / ft

T = top width of the stream

d_m = a/T = mean depth of flow



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JONES DAIRY PRESERVE - SOUTH
 DRAINAGE AREA = 14 ACRES