

# **Preliminary Sewer Capacity Study**

for

## **Wait Avenue Residential**

Rolesville, North Carolina

**Prepared By**



December 23, 2020

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for

**Wait Avenue Residential  
Rolesville, North Carolina**

**Prepared for:**

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***FOR REVIEW ONLY***

**Stewart Project No. C19003**

**December 23, 2020**

## **Table of Contents**

- 1. Executive Summary**
- 2. Proposed Peak Flow Calculation**
- 3. Existing Peak Flow Calculations**
- 4. Sewer Capacity Study Results**

**Vicinity Map**

**APPENDIX A - SANITARY SEWER CAPACITY STUDY AREA EXHIBIT**

**APPENDIX B - Sanitary Sewer Study Pipe Network Exhibit**

**APPENDIX C - Sanitary Sewer Flow Input Table**

**APPENDIX D - Sanitary Sewer Analysis Results Table**

**APPENDIX E - Sanitary Sewer Analysis – Alternative Results Table**

# PRELIMINARY STORMWATER ANALYSIS

## WAIT AVENUE RESIDENTIAL

### ROLESVILLE, NORTH CAROLINA

#### 1. Executive Summary

A Preliminary Sewer Capacity Study was completed for the proposed Wait Avenue Residential project located in the Town of Rolesville. In accordance with City of Raleigh’s Public Utility Handbook, the existing and proposed sewer capacities of the downstream pipe network were analyzed to determine if improvements were required. The City of Raleigh provided sizes of the existing pipe network and peak flows for the existing development. Peak flows for the proposed development were calculated multiplying the number of Residential Dwelling Units contributing to the sewer outfall by 250 gallons per day and applying a 2.5 peaking factor. The results of the Study determined that several existing pipe segments will require a fee-in-lieu payment or replacement.

#### 2. Proposed Peak Flow Calculation

Peak flows for the proposed Wait Avenue Residential project were determined based on the NCAC 15A.02H Section 200 Table for wastewater flow for the proposed land uses.

$$315 \text{ Residential Dwelling Units} = 315 \times 250 \text{ gpd} = 78,750 \text{ gpd}$$

$$\text{Peaking Factor of 2.5} = 196,875 \text{ gpd equivalent to } 136.72 \text{ gpm}$$

#### 3. Existing Peak Flow Calculations

Existing and proposed peak flows contributing to the existing sewer outfall were calculated based on flow data provided by the City of Raleigh flow data and multiplying the number of Planned Residential Dwelling Units by 250 gallons per day. The Sanitary Sewer Capacity Study Area Exhibit in Appendix A shows the existing and proposed flows from adjacent properties to the existing pipe network. Refer to the Sanitary Sewer Study Pipe Network Exhibit in Appendix B.

Existing or Proposed	Manhole	Contributing Sewr Flows	Quantity	Unit	avg. gpd/unit	Flow (gpd)	Flow (gpd)	Comments
Existing	1	Base Sewer Flow					17.36	Based on COR Flow Data
Existing	3	Austin Creek	337	Lots	250	210,625	146.27	
Proposed	3	Planned Thales Academy	2,100	Students	15	78,750	54.69	
Proposed	8	Future Commercial	15	Acres	2,500	93,750	65.10	Based on COR Public Utility Handbook
Existing	8	Austin Creek	9	Lots	250	5,625	3.91	Peak Flow 4.82 gpm from COR
Proposed	13	Elizabeth Heights (Plat Pending)	102	Condos	250	63,750	44.27	Peak Flow 51,500 gpd from COR
Proposed	13	Elizabeth Heights (Plat Pending)	100	Lots	250	62,500	43.40	including Amenity Center with Pool
Proposed	13	Future Austin Creek	67	Lots	250	41,875	29.08	
Existing	19	Jones Dairy Farm - East	276		250	172,500	119.79	Peak Flow 76.2 gpm from COR
Existing	19	Jones Dairy Elementary School	757		15	28,388	19.71	Based on WCPSS website
Existing	19	North Hampton	33		250	20,625	14.32	
Existing	19	Daycare	100		15	3,750	2.60	Assumed # of Students
Existing	22	Jones Dairy Farm - Central	27		250	16,875	11.72	Peak Flow 4.82 gpm from COR
Existing	25	Jones Dairy Farm - West	79		250	49,375	34.29	Peak Flow 15.71 gpm from COR
Existing	28	Austin Creek	277		250	173,125	120.23	

## 4. Results

The Preliminary Sewer Capacity Study determine that there are several existing pipe segments require a fee-in-lieu payment for more than 50% capacity or replacement for more than 67% capacity. Refer to the Sanitary Sewer Analysis Results Table in Appendix D for the sewer outfall capacity with the additional sewer flow from the proposed Wait Avenue Residential project.

As an alternative to replacing the identified pipes downstream, an alternative design solution for construction of a parallel 8-inch sewer outfall within the existing City of Raleigh public utility easement warrants further evaluation to minimize impacts to the existing pipe network. Refer to the Sanitary Sewer Analysis – Alternative Results Table in Appendix E.

## Vicinity Map



# **Appendix A**

## **Sanitary Sewer Capacity Study Area Exhibit**

# **Appendix B**

## **Sanitary Sewer Study Pipe Network Exhibit**

# **Appendix C**

## **Sanitary Sewer Flow Input Table**



# **Appendix D**

## **Sanitary Sewer Analysis Results Table**

**Appendix E**  
**Sanitary Sewer Analysis**  
**Alternative Results Table**