



NE CHATHAM COUNTY WASTEWATER STUDY COMMISSION

PHASE I FINAL REPORT TO CHATHAM COUNTY BOARD OF COMMISSIONERS
SEPTEMBER 19, 2022

CO-CHAIRS: PERRY JAMES, SCOTT PECK, LIZ ROLISON

Agenda

- ▶ Purpose of the Wastewater Study
- ▶ Problem Statement
- ▶ Current Status of Study Area
- ▶ Evaluation of Options
- ▶ Recommendations / Next Steps
- ▶ Potential Funding Options
- ▶ Closing Thoughts

Purpose of NE Chatham County Wastewater Study Commission

The proposal for the Wastewater Study Commission approved by the CCBOC in Sept 2021, describes our purpose as:

- Define the “problem” and hopes for the outcomes from the study
- Identify a list of options to explore.
- Identify additional information needed or desired.
- Reach consensus on information to be included in a Phase 1 final report that will capture the viable options to inform work on Phase 2.
- Development of final report and recommendations.

Problem Statement

Problem Statement

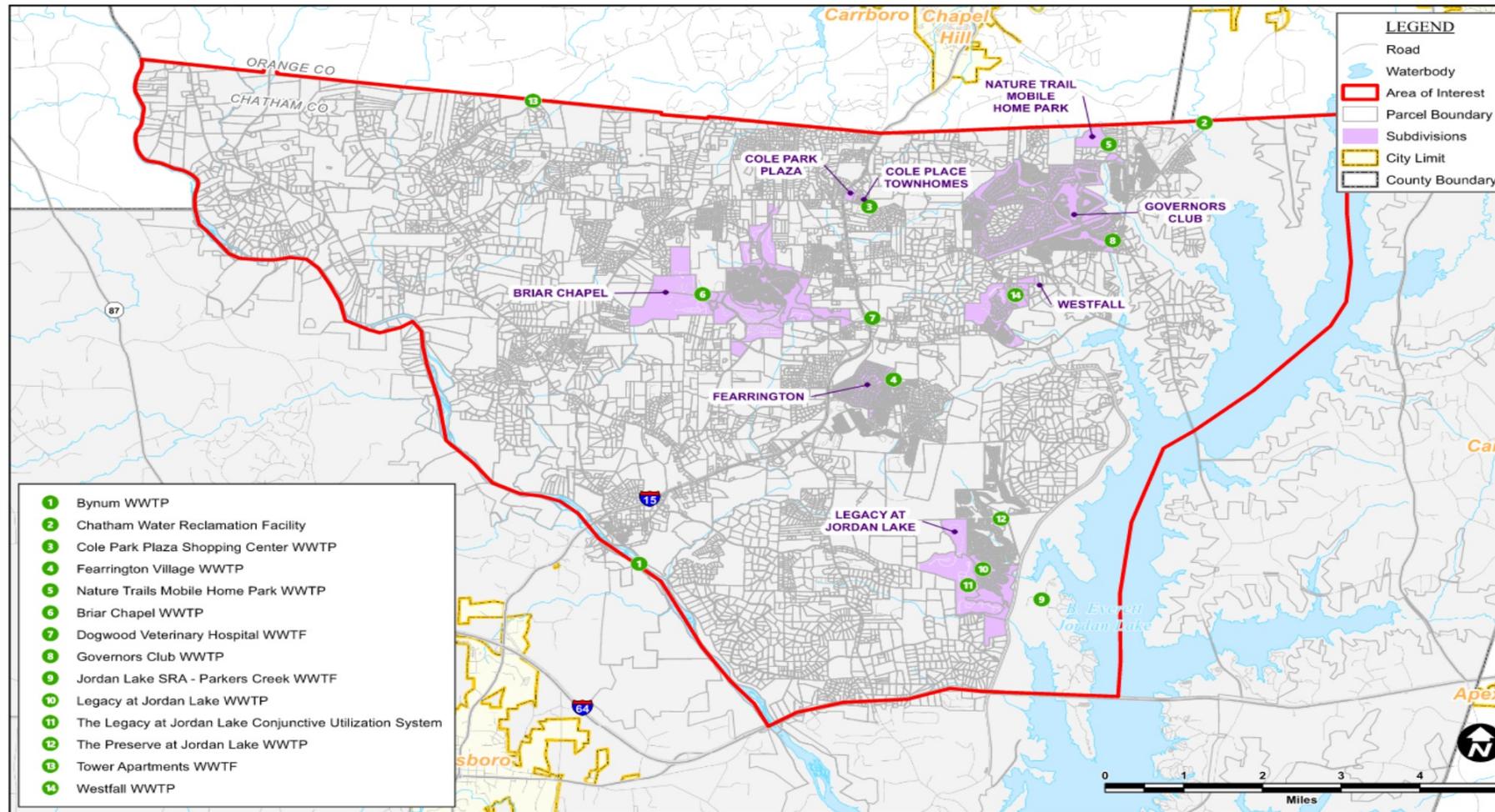
The growth in NE Chatham County is undeniable and Chatham County's current strategy for managing wastewater in this area is not sustainable long-term. To date, wastewater services have been provided either through privately owned package plants with limited treatment capacity that service the larger housing and commercial developments or by individual, often aging, residential onsite systems. The current approach has well documented problems and is not considered an adequate solution for the future. The NE Chatham County Wastewater Study Commission supports continued review of all options based upon smart growth principles, properly balanced residential and commercial property components, sound business practices and environmental sensitivity.

Key Points

- Statement identifies characteristics that we envision for a long term solution:
 - Reliable wastewater services that meet the needs of a balanced residential/commercial area as envisioned by the County Land Use planning efforts.
 - Comprehensive wastewater management practices to ensure quality management/oversight.
 - Potentially partnering with other jurisdictions, if feasible
 - Environmentally sensitive
 - Financially sound with costs spread over an adequate customer base to ensure financial stability.
- Key is identifying viable solutions that provide a long-term, sustainable strategy for NE Chatham County

Status of Study Area

NE Chatham County Study Area



Current Wastewater Plant Usage in Study Area

	Facility	Owner	Permit Type	Permitted Operational Capacity (MGD)	Average Daily Flow (MGD)	Enforcement Violations NOVs
1	Bynum	Chatham Cty	Discharge	0.025	0.006	
2	Chatham Water Reclamation	Aqua NC	Discharge	0.350	0.103	15
3	Cole Park Plaza	Aqua NC	Discharge	0.050	0.050	18
4	Fearrington Village	Fearrington Utilities	Discharge	0.270	0.149	34
5	Nature Trails Mobile Home Pk	Nature Trails	Discharge	0.040	0.033	26
6	Briar Chapel	ONSWC	Non-Discharge	0.250	0.234	25
7	Dogwood Veterinary Hospital	Sandy Pond Enterprises	Non-Discharge	0.0008	0.0006	
8	Governors Club	Aqua NC	Non-Discharge	0.220	0.107	1
9	Jordan Lake SRA - Parkers Crk	State of NC	Non-Discharge	0.029	0.004	
10	Legacy at Jordan Lake	Aqua NC	Non-Discharge	0.095	0.047	0
11	Legacy at Jordan Lake - Conjunctive Utilization System	Aqua NC	Non-Discharge			
12	The Preserve at Jordan Lake	Aqua NC	Non-Discharge	0.190	0.072	1
13	Tower Apartments		Non-Discharge	0.0011	0.0003	
14	Westfall	Aqua NC	Non-Discharge	0.066	0.211	1
			Total	1.587	1.016	121

Sources: Freese & Nichols with updates for Discharge - EPA ECHO DB and Non-Discharge - NCDEQ Online Document Library
 MGD - Million gallons per day

Violations - Study Area vs Municipal Wastewater Systems

Study Area Wastewater Systems - Privately Owned Package Plants					Municipal Wastewater Systems in the Surrounding Area				
Facility	Permitted Operation Capacity (MGD)	Average Daily Flow (MGD)	Enforcement Violations NOVs	Fines / Penalties	Facility	Permitted Operation Capacity (MGD)	Average Daily Flow (MGD)	Enforcement Violations NOVs	Fines / Penalties
1 Bynum	0.025	0.006			Town of Pittsboro WWTP	0.750	0.447	8	\$ 4,268
2 Chatham Water Reclamation	0.35	0.103	15	\$ 19,482	Siler City WWTP	4.000	3.339	48	\$ 119,971
3 Cole Park Plaza	0.05	0.05	18	\$ 86,297	Big Buffalo (Sanford) WWTP	12.000	4.161	2	\$ -
4 Fearrington Village	0.27	0.149	34	\$ 25,598	OWASA Mason Farm WWTP	14.500	5.200	1	\$ -
5 Nature Trails Mobile Home Pk	0.04	0.033	26	\$ 1,868	South Durham WWTF	20.000	10.637	4	\$ 538
6 Briar Chapel	0.25	0.234	25	\$ 11,917	Triangle (Durham Cty) WWTP	12.000	4.750	1	\$ -
7 Dogwood Veterinary Hospital	0.0008	0.0006							
8 Governors Club	0.22	0.107	1	\$ -	Totals	63.250	28.534	64	\$ 124,777
9 Jordan Lake SRA - Parkers Crk	0.029	0.004							
10 Legacy at Jordan Lake	0.095	0.047	0						
11 Legacy at Jordan Lake - Conjunctive Utilization System									
12 The Preserve at Jordan Lake	0.19	0.072	1	\$ -					
13 Tower Apartments	0.0011	0.0003							
14 Westfall	0.066	0.211	1	\$ -					
Totals	1.587	1.016	121	\$ 145,162					

Privately owned WWTPs have almost twice as many violations yet they treat less than 4% of the volume of wastewater

Source: Discharge WWTPs - EPA ECHO DB and Non-Discharge WWTPs - NCDEQ Online Document Library

Comparison of Monthly Sewer Rates

	Facility	Permitted Operation Capacity (MGD)	Average Daily Flow (MGD)	Residential Rates	Commercial Rates	Facility	Permitted Operation Capacity (MGD)	Average Daily Flow (MGD)	Service Population	REU (3,000 gals) Rates
1	Bynum	0.025	0.006			Town of Pittsboro WWTP	0.750	0.447	4,401	\$ 49.33
2	Chatham Water Reclamation	0.35	0.103	\$ 65.21	\$ 91.29	Siler City WWTP	4.000	3.339	8,501	\$ 32.75
3	Cole Park Plaza	0.05	0.05	\$ 65.21	\$ 91.29	Big Buffalo (Sanford) WWT	12.000	4.161	41,831	\$ 30.09
4	Fearrington Village	0.27	0.149	\$ 23.14		OWASA Mason Farm WWT	14.500	5.200	83,300	\$ 40.61
5	Nature Trails Mobile Home Pk	0.04	0.033	\$ 26.00		South Durham WWTF	20.000	10.637		\$ 32.12
6	Briar Chapel	0.25	0.234	\$ 42.30		Triangle (Durham Cty) WW	12.000	4.750		\$ 31.27
7	Dogwood Veterinary Hospital	0.0008	0.0006							
8	Governors Club	0.22	0.107	\$ 65.21	\$ 91.29	Totals	63.250	28.533		
9	Jordan Lake SRA - Parkers Crk	0.029	0.004							
10	Legacy at Jordan Lake	0.095	0.047	\$ 65.21	\$ 91.29					
11	Legacy at Jordan Lake - Conjunctive Utilization System									
12	The Preserve at Jordan Lake	0.19	0.072	\$ 65.21	\$ 91.29					
13	Tower Apartments	0.0011	0.0003							
14	Westfall	0.066	0.211	\$ 65.21	\$ 91.29					
	Totals	1.587	1.016							

Privately owned WWTPs on average charge 49% more for their monthly residential sewer rates.

Sources: Discharge WWTPs - EPA ECHO DB, Non-Discharge WWTPs - NCDEQ Online Document Library, Study area rates - NCUC Online Rate Orders, Municipal rates - Freese and Nichols

2017 Plan Chatham

- ▶ Future Land Use and Conservation Plan Map - map to guide future land use which significantly increased the area designated for compact residential in NE Chatham County making this area more desirable for developers.
- ▶ Utilities and Public Services
 - “Well planned utilities and public services to support the desired development pattern.”*
- ▶ Infrastructure - Utility Needs
 - “It is likely that distributed private and public systems will be needed to meet the environmental and economic goals.”*
- ▶ Goal # 7 of Plan Chatham
 - “Provide infrastructure to support desired development and support economic and environmental objectives.”*
- ▶ Future Land Use Descriptions - Compact Residential
 - “Wastewater service (private or proposed public)”*

Quotes are sourced from 2017 Plan Chatham

2017 Plan Chatham

► Chatham County Tax Base

“Chatham County’s total tax base is approximately 84% residential, 8% agricultural/forestry land, and 8% commercial or industrial. By comparison adjacent counties Lee, Durham, and Wake have commercial and industrial segments of the tax base in the range of 20% to 40%.”

“Research studies across the nation have shown that while residential properties cost more for governments to serve than the tax revenue those properties generate; commercial and industrial properties tend to bring in more tax revenue than the government’s cost to provide services to those properties.”

“According to a 2007 study by NC State it was estimated that commercial and industrial land uses contribute \$3.01 in revenues for each dollar of public services they receive. In contrast, residential development contributes only \$0.87 for every dollar of services received.”

Quotes are sourced from 2017 Plan Chatham

- As of 2022, Chatham County tax base is 82% residential, 8% agricultural/forestry, and 10% commercial/industrial (Jen Williams, Chatham County Tax Office).

Key Observations and Conclusions

- ▶ Study area currently has 14 privately owned WWTP with a combined capacity of 1.587 MGD, average daily flow of 1.016 MGD and 121 violations over the last 5 years.
- ▶ Projected wastewater demand in our study area by 2050 ranges between 3-4 MGD:
 - ▶ Based on Population Growth - 2.884 MGD (3% growth) - 4.069 MGD (4% growth)
 - ▶ Based on Land Availability - 3.041 MGD
- ▶ Municipal wastewater systems in the surrounding area are underutilized and well managed (e.g., Triangle, South Durham, Sanford, and OWASA WWTPs) presenting an opportunity for extension of service into NE Chatham County.
- ▶ The privately owned package plants in the study area have significantly more enforcement violations than the surrounding municipal systems.
- ▶ Monthly residential sewer rates average 49% higher for the privately owned package plants than the surrounding municipal systems.

Key Observations and Conclusions

- ▶ Public sewer is a recommended option in the 2017 Plan Chatham.
- ▶ Lack of an adequate wastewater service is a key factor in Chatham County's inability to achieve a more favorable balance between their commercial and residential tax base.
- ▶ Providing sustainable wastewater services will help attract the needed commercial base which in turn will help fund these improvements.

Evaluation of Options

Potential Solutions List

Current Situation

- Maintain Status Quo - Private package plants and septic systems

Interim Measures to Consider while LT Solution is Pursued

- Managed Decentralized systems - Responsible mgmt. entity (RME) oversees package systems
- Agricultural Use of Reclaimed Water - Partial solution to reduce discharge into creeks

Long-Term Solutions

- Expanded Town of Pittsboro system
- Extended Town of Sanford system
- Expanded Siler City system
- Extended OWASA system
- Extended South Durham system
- Extended Triangle (Durham County) system
- NE Chatham County Regional WW system

High-Level Assessment of Long-Term Options

- Commission members researched publicly available information on each option (e.g., NCDEQ, NCUC, EPA and other public sources).
- WWSC worked with County Manager to further assess each of the long-term solutions, including meetings with:
 - Durham County (Triangle WWTP)
 - Currently permitted for 12 MGD, but plant has potential capacity to treat up to 18-24 MGD.
 - High quality treatment process
 - Seeking partnership that would support them in a case to NCDEQ/EPA to expand their current discharge permit
 - Conclusion: win/win

High-Level Assessment of Long-Term Options

- City of Durham (South Durham WWTP)
 - Currently permitted for 20 MGD with average flow about half that capacity, but do not believe they will increase their NPDES permit in the future.
 - Conclusion: Possible, but doesn't fit their long-term plans
- City of Sanford (Big Buffalo WWTP)
 - Interested in partnerships that include water and wastewater
 - Timeline needed by Town of Pittsboro would not allow delay in permitting a larger pipeline
 - Conclusion: Not likely
- In our final meeting, Scott Peck (co-chair) took us through a high-level assessment process for each of the options. Results included in the Final Report.

Recommendations

Recommendations

For Phase 2, WWSC recommends the following three long-term solutions for further investigation (listed in order of preference):

1. Extension to Durham County (Triangle WWTP)
2. Extension to City of Durham (South Durham WWTP)
3. NE Chatham County Regional Wastewater System

Next Steps for Phase 2

- ▶ Engineering Demand study to confirm projected wastewater demand for the study area in the next 30-50 years
- ▶ Meet with private wastewater owners to explore their willingness to transition their service areas to a long-term solution
- ▶ Further discussion with Durham County / City of Durham to work out potential partnership arrangements
- ▶ Determine if there is adequate demand to make a case for a new regional plant economically feasible
- ▶ Hydraulic study to assess feasibility / cost of moving wastewater from the study area to the long-term solution

Next Steps for Phase 2

Full implementation of the long-term options could take 8-10 years. While work is progressing on the long term option, the WWSC recommends:

- ▶ Establishing a NE Chatham County Sewer District to aid in linking eventual project costs with the related customer base
- ▶ Improvements to current private system operations and management oversight , where feasible
- ▶ Developing ideas on agricultural uses for biosolids and discharge

Funding Opportunities

- ▶ Merger and Regionalization Feasibility (MRF) Study grants are available from the State of North Carolina Reserve
 - ▶ Grants are limited to \$50,000
- ▶ Other available allocations from existing or new State or Federal grant programs

Closing Thoughts

Key DEQ Recommendations to Local Governments on Water and Wastewater System Needs

- ▶ Think 20, 30+ years on. What is best for the community then?
- ▶ Consider long-term viability of the utility
- ▶ Regionalization (interconnections, mergers, etc.)
- ▶ Resilience
- ▶ Resolve/replace failing infrastructure

The Time to Act is Now

- ▶ WWSC's findings confirmed our concerns voiced in the Problem Statement
 - ▶ Significant operational compliance problems exist
 - ▶ These problems have created risks for the county: quality of service risks, environmental risks, economic constraints/risks and even tax burden from unbalanced commercial and residential tax base
- ▶ Plan Chatham provides useful guidelines/actions for Chatham County
 - ▶ Land Use Map significantly expanded the area for compact residential in NE Chatham County
 - ▶ Plan calls for “well planned utilities and public services to support the desired development pattern”
 - ▶ Current wastewater infrastructure in NE Chatham County has not addressed the need for regionalization of wastewater infrastructure to support this denser development and balanced commercial and residential development

The Time to Act is Now

- ▶ WWSC recommends three long term solutions for further investigation in Phase 2 and urges the CCBOC to commit to moving forward with Phase 2:
 - ▶ Potential public partnerships with Durham County or City of Durham to utilize their existing WWTPs
 - ▶ Regional WWTP for NE Chatham County - dependent on confirming there is adequate demand to make this option economically feasible

Chatham County's investment in a sustainable wastewater solution for NE Chatham County will impact the quality of life for its residents for years to come ... the time to act is now

Questions?