

2016 LUP Update

Currituck County
Water/Wastewater/Stormwater
Utilities

Steering Group meeting 11-30-16

Currituck County Water and Wastewater Utilities

- **Water**

- Mainland Water System
- Southern Outer Banks Water System
- Ocean Sands Water and Sewer District
 - Purchase Water System

- **Wastewater**

- Ocean Sands Water and Sewer District
- Moyock Regional WWTP
- Maple Commerce Park WWTP
- Waterside Village WWTP

Enterprise Funds/Project Funding

- Water and wastewater utilities are Enterprise funds
- These funds are intended to be self-supporting
 - **Not subsidized by tax revenues.**
 - Enterprise Fund accounting helps measure full cost of providing the service.
- Project Funding Sources
 - Revenue bonds
 - Private banks
 - Grants

Mainland Water System (North and South Mainland)

Current peak demand (gallons per day)	1,352,000
Residential and Commercial Connections	5,690
Current utilization of plant as percentage of peak capacity	0.47
Plant Treatment Capacity (gallons per day)	2,900,000
Projected investment costs to add capacity (M\$/Mgal/day)	6.43/Mgal/day*
Total Plant Expansion at Existing Site (gallons per day)	4,400,000
*Based on \$6.43 per gallon for SOBWS 1 MG upgrade.	

Mainland Water Infrastructure

- (5) elevated water tanks
 - North Moyock 100k
 - High Cotton 500k
 - Currituck 300k
 - Grandy 100k
 - Industrial Park 300k



Mainland Water Infrastructure

- (2) Water storage reservoirs
 - Maple treatment plant
 - 1.4 & 0.5 million gallons



Mainland Water Infrastructure

- High service pumps (4)
 - (3) located in filter plant
 - 60 hp
 - 1,000 gpm (1.4 mgd)
 - (1) located in RO plant
 - 125 hp
 - 1,735 gpm (2.5 mgd)



Mainland Water Infrastructure

- Booster pump stations (3)
 - Sligo
 - Coinjock
 - Tulls Creek Road



Mainland Water System Capital Improvements Plan

COUNTY OF CURRITUCK									Department:	61818	
CURRITUCK, NORTH CAROLINA									Function:	Water Treatment	
Projected Capital Purchases through June 30, 2025											
Description	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	
Automatic Meter Reading Project	\$79,650	\$54,400	\$144,500	\$132,600	\$132,600	\$130,050	\$130,050				
RO Well #3 Generator		\$46,000									
Green Sand Media Replacement					\$45,000						
North Moyock Tank Painting			\$105,000								
Excavator				\$185,000							
Shallow Well Field Wiring				\$33,000							
RO Unit #1 Membranes		\$79,700									
RO Unit #2 Membranes		\$79,700									
Coinjock Canal Crossing					\$120,000						
Wedgewood Water Lines						\$208,000	\$208,000	\$208,000	\$208,000	\$208,000	
Walnut Island Water Lines											\$260,000
Totals by Year	\$79,650	\$259,800	\$249,500	\$350,600	\$297,600	\$338,050	\$338,050	\$208,000	\$208,000	\$468,000	

Southern Outer Banks Water System (Corolla)

Current peak demand (gallons per day)	2,914,000
Residential and Commercial Connections	4,170
Current utilization of plant as percentage of peak capacity	0.91
Plant Treatment Capacity (gallons per day)	3,200,000
Projected investment costs to add capacity (M\$/Mgal/day)	6.43/Mgal/day*
Total Plant Expansion at Existing Site (gallons per day)	5,200,000
*Based on \$6.43 per gallon for SOBWS 1 MG upgrade.	

Southern Outer Banks Water Infrastructure

- (3) elevated water tanks
 - Pine Island 150k
 - Ocean Sands 150k
 - Corolla Light 150k



Southern Outer Banks Water System Infrastructure

- Water storage reservoirs
3 million gallons
 - SOBWS treatment
plant
 - (2) 1.5 million
gallon tanks



Southern Outer Banks Water System Infrastructure

- High service pumps (3)
 - located in SOBWS plant
 - (1) 40 hp
 - 600 gpm (0.864 mgd)
 - (1) 100 hp
 - 1,400 gpm (2 mgd)
 - (1) 100 hp
 - 2,100 gpm (3 mgd)



Southern Outer Banks Water System Capital Improvements Plan

COUNTY OF CURRITUCK							Department:	66868		
CURRITUCK, NORTH CAROLINA							Function:	Water Treatment		
Projected Capital Purchases through June 30, 2025										
Description	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	
Increase DRW Line Size		\$405,000								
Install South Corolla Light Well	\$312,500									
Upgrade Controls at Pine Island		\$150,000								
Ocean Sands Shallow Well Field			\$660,000							
Test Well and Deep Well at Sailfish St.				\$388,000						
.5 MGD RO Unit					\$450,000					
.5 MG Elevated Storage Tank						\$1,745,000				
Currituck Club Deep Well							\$901,500			
Replace RO Membranes								\$207,900		
.750 MGD RO Skid										\$660,000
Water Line Interconnect w/ Dare										\$333,700
Totals by Year	\$312,500	\$555,000	\$660,000	\$388,000	\$450,000	\$1,745,000	\$901,500	\$207,900		\$993,700

Water System

Initiatives, Programs, and Policies

- Do not subsidize developers of commercial areas with incentives using infrastructure cost reductions paid by the existing utility customers.
- Edit the UDO to state that all development regardless of location in the County will be connected to the water system and funded by the developer.
- Create a water line interconnection with Dare County between Duck and Pine Island.
- Update the water line interconnection contract with Camden County.
- Place funding for fire hydrants in each individual Fire Department Budget.
- Water system growth plan for the Mainland Water system.

Water System

Initiatives, Programs, and Policies

- Create a paid County wide Fire Department and make them responsible for all fire hydrant maintenance and ISO ratings.
- Connect water and sewer infrastructure between the Mainland and Corolla across the Mid-County Bridge.
- Build a separate water treatment facility if dictated by growth south of Grandy. In lieu of a water treatment facility consider water storage reservoir south of Grandy fed by a water transmission main. A transmission water main is not connected to any other sources except the original water source and a water tank.
- Create a separate water transmission main north of the existing water treatment facility from Maple to Moyock. The transmission main will be design with fire flow capabilities for expanding commercial areas in Moyock.
- Water main extension policy.

Wastewater Facilities and Capacities

- Moyock Commons
 - 40,000 gpd
- Moyock Regional
 - 99,000 gpd
- Maple Commerce Park
 - 40,000 gpd
- Waterside Villages / Walnut Island
 - 80,000 gpd
- Ocean Sands Water and Sewer District
 - 600,000 gpd



Moyock Regional/Moyock Commons Wastewater Facilities (Northern Mainland)

Current peak demand (gallons per day)	38,088
Residential and Commercial Connections	52
Current utilization of plant as percentage of peak capacity	0.27
Plant Treatment Capacity (gallons per day)	139,000
Projected investment costs to add capacity (M\$/Mgal/day)	21.5/Mgal/day*
Total Plant Expansion at Existing Site (gallons per day)	640,000
*Based on \$21.50 per gallon for Ocean Sands WWTP 0.2 MGD upgrade.	

Moyock Regional/Moyock Commons Wastewater Facilities Capital Improvements Plan

COUNTY OF CURRITUCK									Department:	67878	
CURRITUCK, NORTH CAROLINA									Function:	Sewage Treatment	
Projected Capital Purchases through June 30, 2025											
Description	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	
Spray Field Drainage	\$50,000										
Blower Replacement (one of two)		\$35,000									
Blower Replacement (two of two)			\$35,000								
VFD Replacement and Timer Programing				\$30,000							
Bypass septic tanks at Newtown Road					\$375,000						
Filter media replacement						\$20,000					
Gravel for plant access road							\$25,000				
Spray field wind break								\$15,000			
Convert plant back to UV system									\$60,000		
Filter Media Replacement										\$20,000	
Totals by Year	\$50,000	\$35,000	\$35,000	\$30,000	\$375,000	\$20,000	\$25,000	\$15,000	\$60,000	\$20,000	

Maple Commerce Park Wastewater Facility (Northern Mainland)

Current peak demand (gallons per day)	10,290
Residential and Commercial Connections	9
Current utilization of plant as percentage of peak capacity	0.26
Plant Treatment Capacity (gallons per day)	40,000
Projected investment costs to add capacity (M\$/Mgal/day)	21.5/Mgal/day*
Total Plant Expansion at Existing Site (gallons per day)	160,000
*Based on \$21.50 per gallon for Ocean Sands WWTP 0.2 MGD upgrade.	

Maple Commerce Park Wastewater Facility Capital Improvements Plan

COUNTY OF CURRITUCK									Department:	64848	
CURRITUCK, NORTH CAROLINA									Function:	Sewage Treatment	
Projected Capital Purchases through June 30, 2025											
Description	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	
Spare lift station pumps	\$10,000										
Mobile Pumping Station (Godwin Pump)		\$50,000									
Lawn Mower Replacement			\$12,000								
Replacement of entrance road gravel				\$15,000							
Blower Replacement (one of two)					\$40,000						
Blower Replacement (two of two)						\$40,000					
Spray field piping replacement							\$15,000				
Install reuse piping in throughout Maple park								\$550,000			
Acquisition and land development for growth									\$500,000		
Phase two plant expansion											\$2,950,000
Totals by Year	\$10,000	\$50,000	\$12,000	\$15,000	\$40,000	\$40,000	\$15,000	\$550,000	\$500,000		\$2,950,000

Waterside Village/Walnut Island Wastewater Facilities (Southern Mainland)

Current peak demand (gallons per day)	26,170
Residential and Commercial Connections	253
Current utilization of plant as percentage of peak capacity	0.33
Plant Treatment Capacity (gallons per day)	80,000
Projected investment costs to add capacity (M\$/Mgal/day)	21.5/Mgal/day*
Total Plant Expansion at Existing Site (gallons per day)	120,000
*Based on \$21.50 per gallon for Ocean Sands WWTP 0.2 MGD upgrade.	

Waterside Village/Walnut Island Wastewater Facilities Capital Improvements Plan

COUNTY OF CURRITUCK								Department:	68888	
CURRITUCK, NORTH CAROLINA								Function:	Sewage Treatment	
Projected Capital Purchases through June 30, 2025										
Description	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Process Piping Replacement	\$20,000									
Replace fence around the Treatment Facility		\$80,000								
Generators			\$80,000							
Manhole pans for whole subdivision				\$20,000						
Piping for plant expansion					\$40,000					
Blower Replacement (one of three)						\$30,000				
Blower Replacement (two of three)							\$30,000			
Blower Replacement (three of three)								\$30,000		
Facility Building Addition									\$60,000	
Field Piping Replacement										\$50,000
Totals by Year	\$20,000	\$80,000	\$80,000	\$20,000	\$40,000	\$30,000	\$30,000	\$30,000	\$60,000	\$50,000

Ocean Sands Water and Sewer District Wastewater Facility

Current peak capacity (gallons per day)	505,967
Residential and Commercial Connections	1,002
Current utilization of plant as percentage of peak capacity	0.84
Plant Treatment Capacity (gallons per day)	600,000
Projected investment costs to add capacity (M\$/Mgal/day)	21.5/Mgal/day*
Total Plant Expansion at Existing Site (gallons per day)	1,200,000
*Based on \$21.50 per gallon for Ocean Sands WWTP 0.2 MGD upgrade.	

Ocean Sands Water and Sewer District Wastewater Facility Capital Improvement Plan

COUNTY OF CURRITUCK								Department:	60808	
CURRITUCK, NORTH CAROLINA								Function:	Sewage Treatment	
Projected Capital Purchases through June 30, 2025										
Description	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Construction of Waste treatment Facility	\$4,298,000									
Construction of Phase two and three		\$7,128,000								
Generators for the four remaining stations			\$120,000							
Mobile pumping station				\$50,000						
Rain pans for all of Ocean Sands Develop					\$50,000					
Operator Truck						\$42,000				
Monitoring well replacement							\$15,000			
Vac truck								\$200,000		
Lift Station Control Panel replacement									\$60,000	
Blower replacement										\$55,000
Totals by Year	\$4,298,000	\$7,128,000	\$120,000	\$50,000	\$50,000	\$42,000	\$15,000	\$200,000	\$60,000	\$55,000

Potential Expansions

5 to 10 years

- Water
 - SOBWS
 - Ocean Sands Sections G & T
- Wastewater
 - Ocean Sands
 - Sections G & T
 - Moyock Regional
 - Moyock residential growth
 - Mega site

Wastewater Initiatives, Programs, and Policies

- Create a separate Wastewater Department.
- Acquisition of privately owned sewer systems including VOH, Carolina Water systems on the Outer Banks, and Eagle Creek.

Mainland County Growth Exercise

Water Supply

- 4,100 new dwelling units with 11,000 people in the next 20 years, 60% in the northern Mainland.
 - 11,000 * 60 gallons per day per person
 - 660,000 gpd in Mainland Currituck County.
 - 396,000 gpd north of the intercoastal waterway.
 - 264,000 south of the intercoastal waterway.
- Current Mainland plant peak daily usage is 1,352,000 gallons per day. Add the projected usage of 660,000 to create a new total usage in 20 years of 2,012,000.
- The Mainland Plant current treatment capacity of 2,900,000 gallons per day and can handle the 20 year projected increase.

Mainland County Growth Exercise

Wastewater Supply

- 4,100 new dwelling units with 11,000 people in the next 20 years, 60% in the northern Mainland.
 - 11,000 * 60 gallons per day per person
 - 660,000 gpd in Mainland Currituck County.
 - 396,000 gpd north of the intercoastal waterway.
 - 264,000 south of the intercoastal waterway.
- The Moyock Regional Wastewater Treatment Plant current treatment capacity of 139,000 gallons per day would have to be expanded. The system can grow to 640,000 gallons per day at the current site.
- Any wastewater treatment south of Moyock would be a combination of central and decentralized treatment and would have to be developed with the projected growth.

Corolla Growth Exercise

Water Supply

- Corolla will add 6,466 bedrooms in the next 25 years.
 - $6,466 * 120$ gallons per day per bedroom
 - 775,920 gpd increase for the Southern Outer Banks Water Treatment Plant.
- Current SOBWS plant peak daily usage is 2,914,000 gallons per day. Add the projected usage of 775,920 to create a new total usage in 25 years of 3,690,000.
- The SOBWS current treatment capacity is 3,200,000 gallons per day and will have to be upgraded to 3,700,000 by adding a 0.5 reverse osmosis train in the existing plant in an area that has been reserved for future Ocean Sands expansion if the majority of these bedrooms are from developing Ocean Sands Section G & T.
- If the majority of the new bedrooms is from other than Ocean Sands then a 0.75 MG reverse osmosis unit will be added to the rear building to increase the plant's capacity to 3,950,000. The building has space and piping for a total expansion of 1.5 MG.

Stormwater in Currituck County

- Overview
 - Requirements for Development
 - Challenges for the County
 - Stormwater Service Districts

Requirements for Development

- Residential
 - 10 year storm post development shall be released no faster than a 2 year storm pre development
 - >5 lots
 - 4" rain
 - Increase lot coverage
 - Fill higher than neighbor
- Commercial
 - 5 year storm post development shall be released no faster than a 2 year storm pre development
 - >5000sf impervious
 - >10% impervious

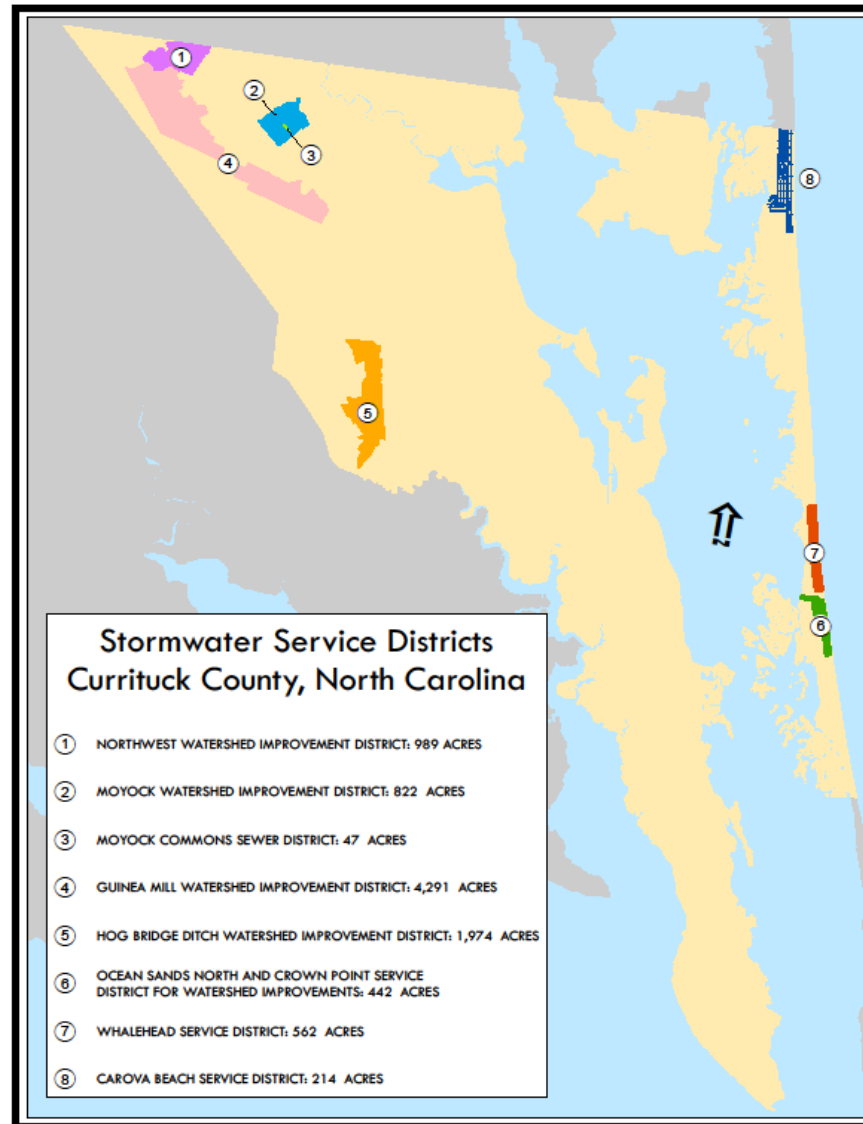
Challenges for the County

- No staff
 - Physical Labor - County does not have the staff to maintain infrastructure
 - Proactive Inspections – the County is Complaint driven with regards to stormwater
 - Currently the Staff takes drainage complaints and helps citizens figure out the responsible party and ideas of how to solve issues
 - Ordinance Violation, Civil issue, DOT issue, property owner issue
 - Maintenance - county requires inspection reports to be kept on file for development since the New Stormwater Manual was adopted
 - Inspection at Certificate of Occupancy for Building Permit - Drainage features during construction getting filled in
- No funding
 - County policy is to not use general funds to help isolated areas with stormwater management or ditch cleaning - instead create Service District and tax for the special area

Stormwater Service Districts

- Northwest Watershed Improvement Service District
- Guinea Mill Canal Watershed Improvement Service District
- Moyock Watershed Improvement Service District
- Hog Bridge Ditch Watershed Improvement Service District
- Whalehead Watershed Improvement Service District
- Ocean Sands and Crown Point Watershed Improvement Service District

Stormwater Service Districts



Stormwater Service Districts

- Typical projects within a service district:
 - Drainage study
 - Clear and snag ditch
 - Clean sediment from ditch
 - Widen ditch
 - Install groundwater lowering system (Whalehead and Ocean Sands)

Stormwater Initiatives, Programs, and Policies

- Continue to improve the Stormwater Manual.
- Development of additional stormwater districts such as Moyock, Ocean Sands, Carova.