

Hazen



Chatham County Comprehensive Water and Wastewater Master Plan

January 17, 2019

When and how much Water and Wastewater Capacity do we need?

Hazen

Presentation Agenda

- Project Overview
- Demand projections and proposed capacity expansions
- Wastewater treatment capacity overview
- Water treatment capacity overview
- Next steps/ recommendations

Scope of Work

- Water and Wastewater Near-term and Long-term Demands for all of Chatham County
 - Chatham County, Goldston, Pittsboro, & Siler City
 - 5-year Increments to build-out (assumed to be year 2070)
- Wastewater Treatment Alternatives
- Water Treatment Alternatives
- Preferred Alternative(s)
- Masterplan deliverable – Updateable Dashboard Data Management Tool

Slide 3

BC1

Belk, Christopher, 1/10/2019

Progress update

- Completed Work
 - Water and Wastewater Near-term and Long-term Demands
 - High level Wastewater Treatment Alternatives
 - High level Water Treatment Alternatives
- In Progress
 - Refinement of Water and Wastewater Alternatives
 - Planning level costs
 - Preferred Alternative(s)
 - Dashboard Tool
- Dashboard Demonstration

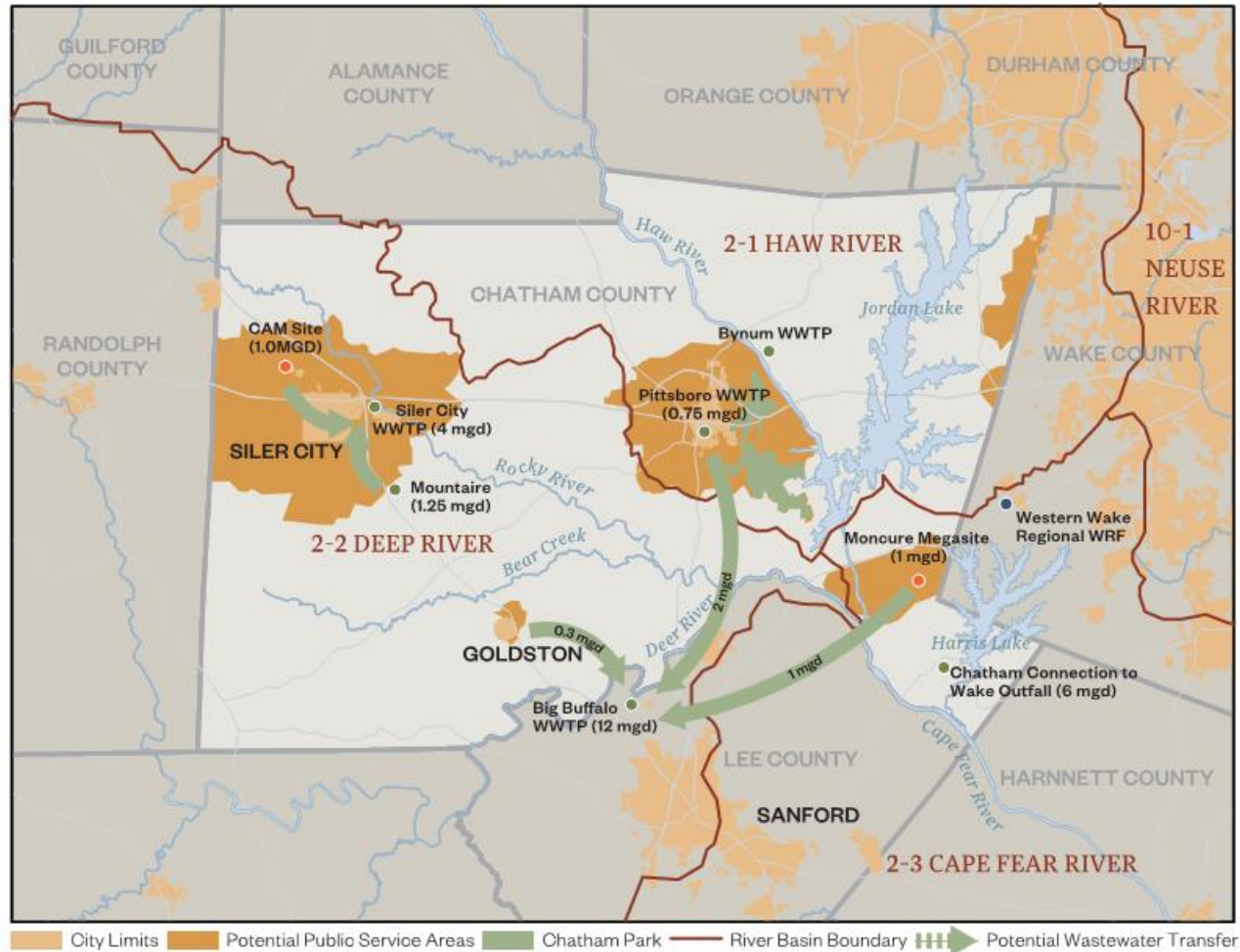
Slide 4

BC1

Belk, Christopher, 1/10/2019

Wastewater Treatment

Wastewater Treatment – Existing/Planned

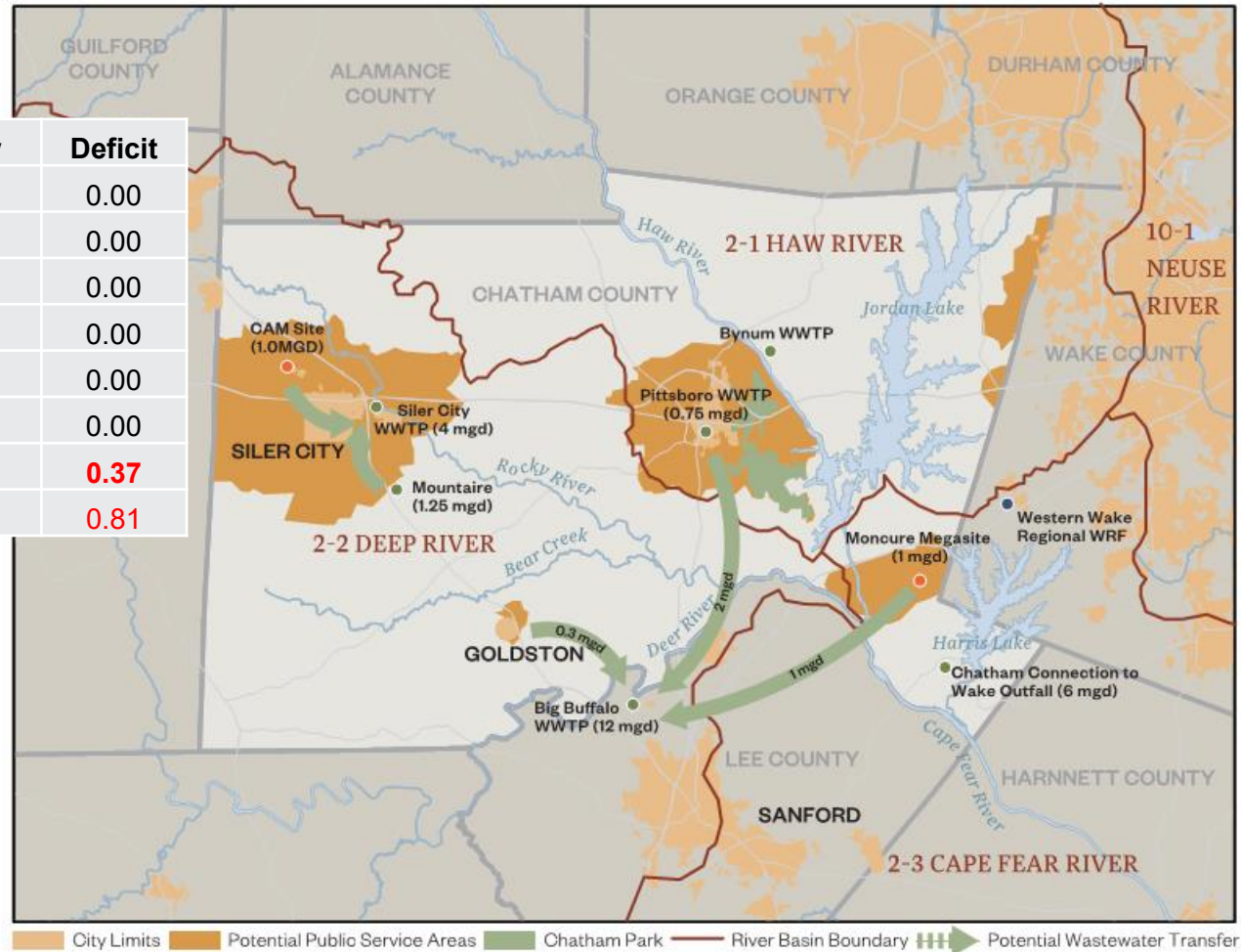


Wastewater Treatment Overview (Max Month in MGD)

Pittsboro	2017	2020	2025	2030	2040	2050	2060	2070
Flow	0.5	0.85	1.10	1.35	2.01	3.33	5.10	6.03
Treatment Capacity	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Deficit	0.00	0.00	0.00	0.00	0.00	1.33	3.10	4.03
Siler City	2017	2020	2025	2030	2040	2050	2060	2070
Flow	2.31	2.54	2.75	2.96	3.41	3.83	4.37	4.81
<i>w/Mountaire (1.25 mgd)</i>	3.56	3.79	4.00	4.21	4.66	5.08	5.62	6.06
<i>w/Mountaire & CAM (1.55 mgd)</i>	3.86	4.09	4.30	4.51	4.96	5.38	5.92	6.36
Treatment Capacity	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Deficit	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.81
<i>Deficit w/Mountaire</i>	0.00	0.00	0.00	0.21	0.66	1.08	1.62	2.06
<i>Deficit w/MountAire & CAM</i>	0.00	0.09	0.30	0.51	0.96	1.38	1.92	2.36

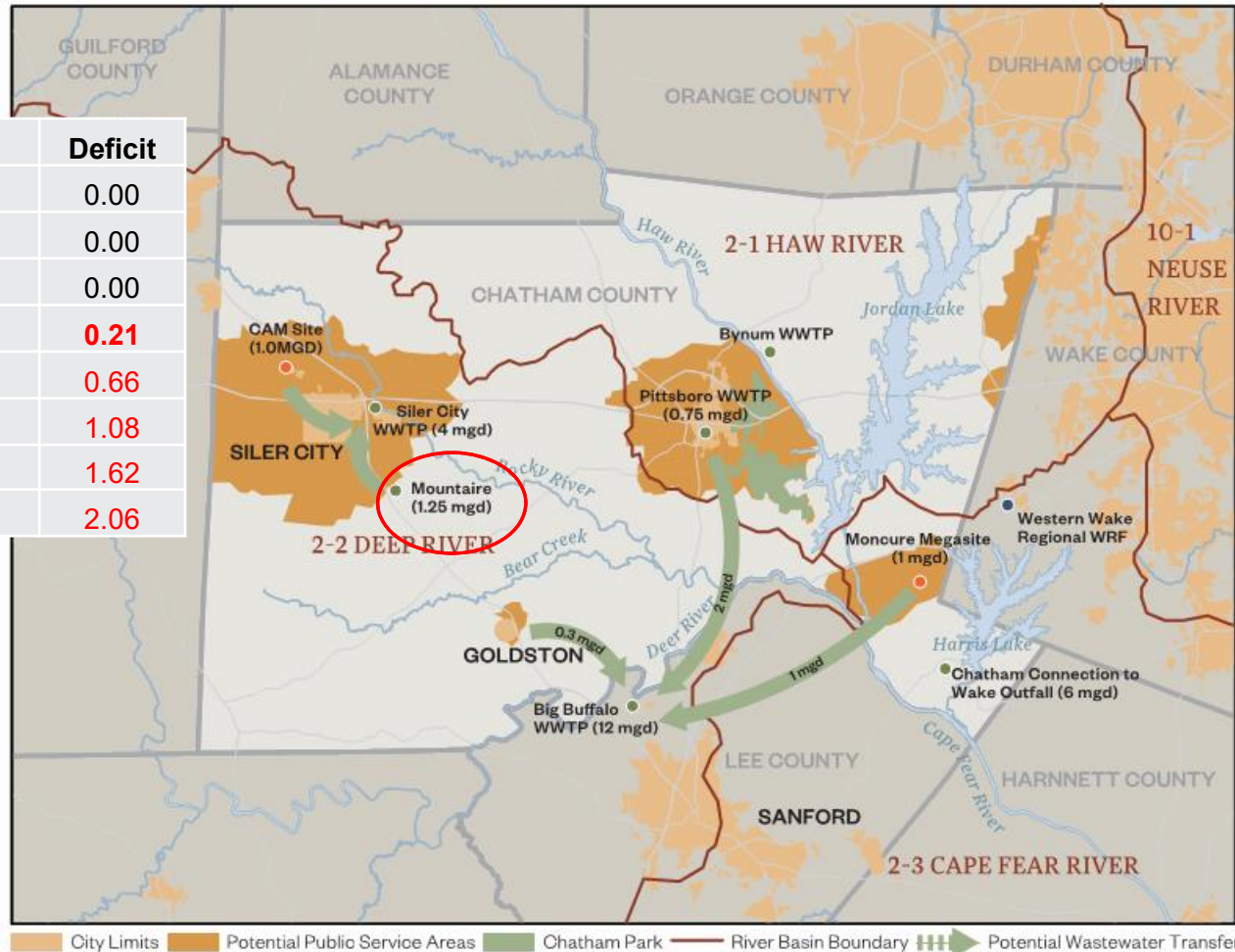
Wastewater Treatment – Siler City

Siler City	Flow	Deficit
2017	2.31	0.00
2020	2.54	0.00
2025	2.75	0.00
2030	2.96	0.00
2040	3.41	0.00
2050	3.83	0.00
2060	4.37	0.37
2070	4.81	0.81



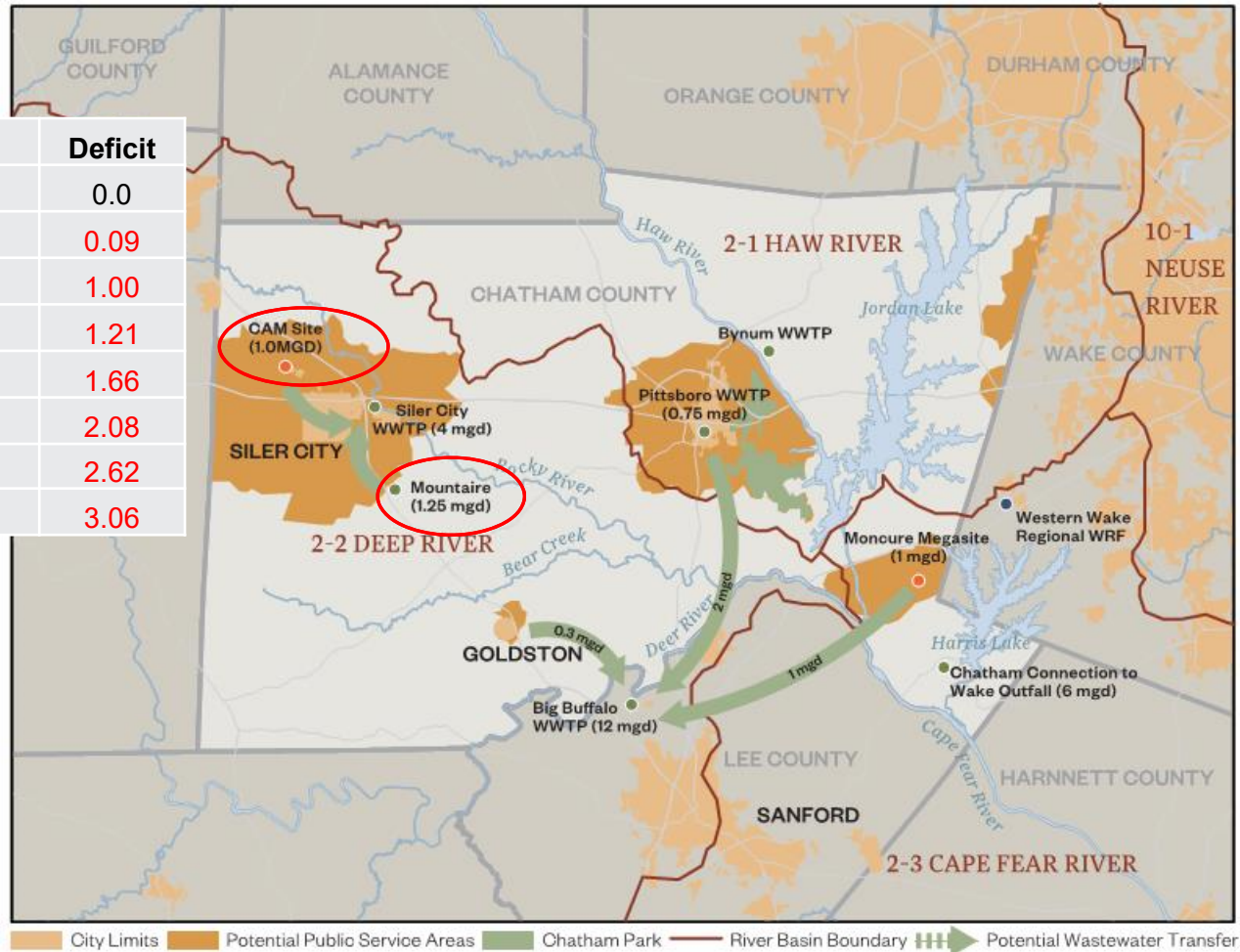
Wastewater Treatment – Siler City

Siler City	Flow	Deficit
2017	3.56	0.00
2020	3.79	0.00
2025	4.00	0.00
2030	4.21	0.21
2040	4.66	0.66
2050	5.08	1.08
2060	5.62	1.62
2070	6.06	2.06



Wastewater Treatment – Siler City

Siler City	Flow	Deficit
2017	3.56	0.0
2020	4.09	0.09
2025	4.30	1.00
2030	4.51	1.21
2040	4.96	1.66
2050	5.38	2.08
2060	5.92	2.62
2070	6.36	3.06



Wastewater Treatment – Recommendations

Siler City

2025 - Need ~ 1.5 mgd to 2.0 mgd

2040 - Need ~ 2.5 mgd

2060 – Need ~ 3.0 mgd to 3.5 mgd

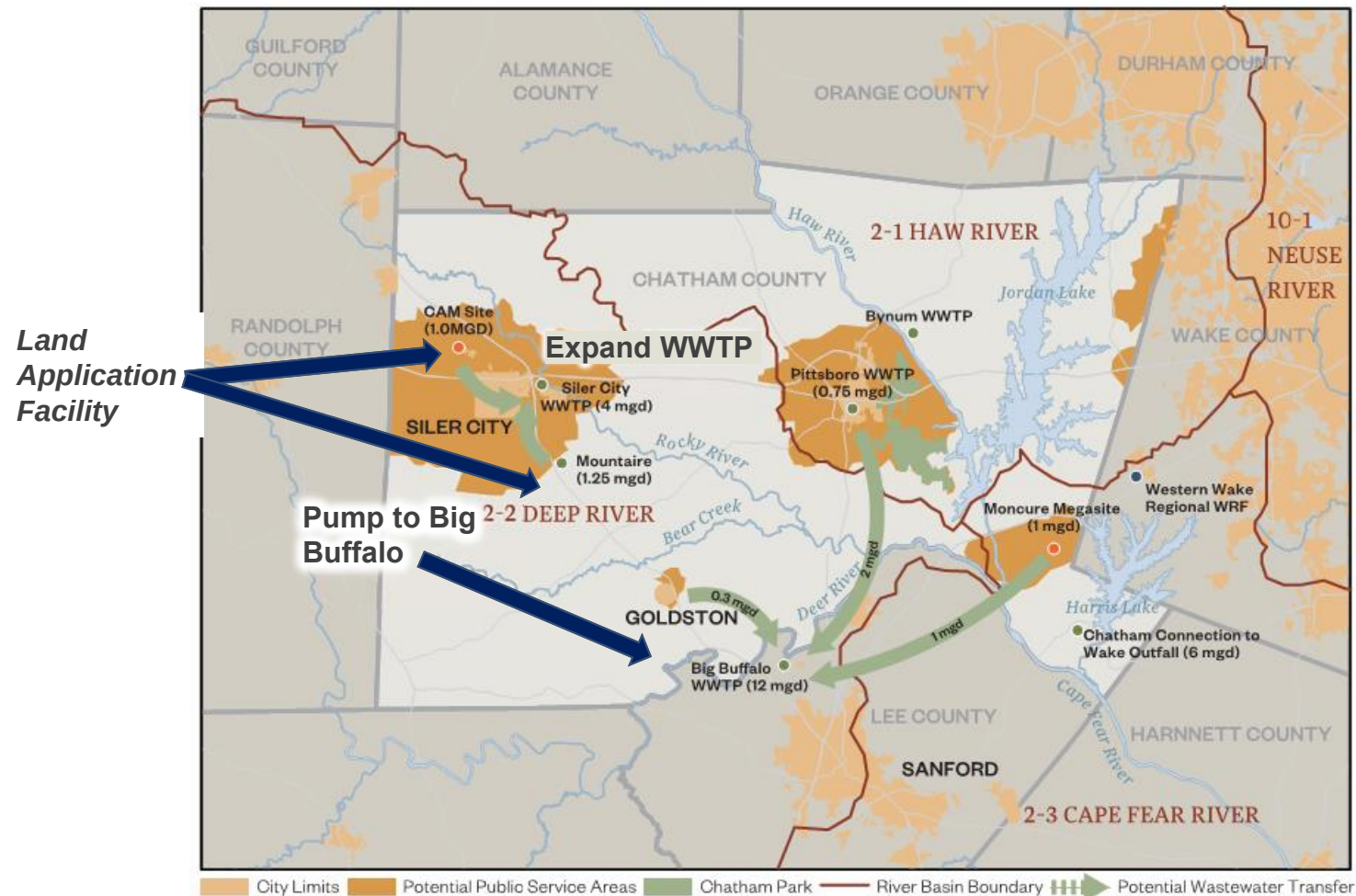
NOTE: Treatment capacity must exceed flow at all times.

Siler City	Flow	Deficit
2017	3.56	0.0
2020	4.09	0.09
2025	4.30	1.00
2030	4.51	1.21
2040	4.96	1.66
2050	5.38	2.08
2060	5.92	2.62
2070	6.36	3.06

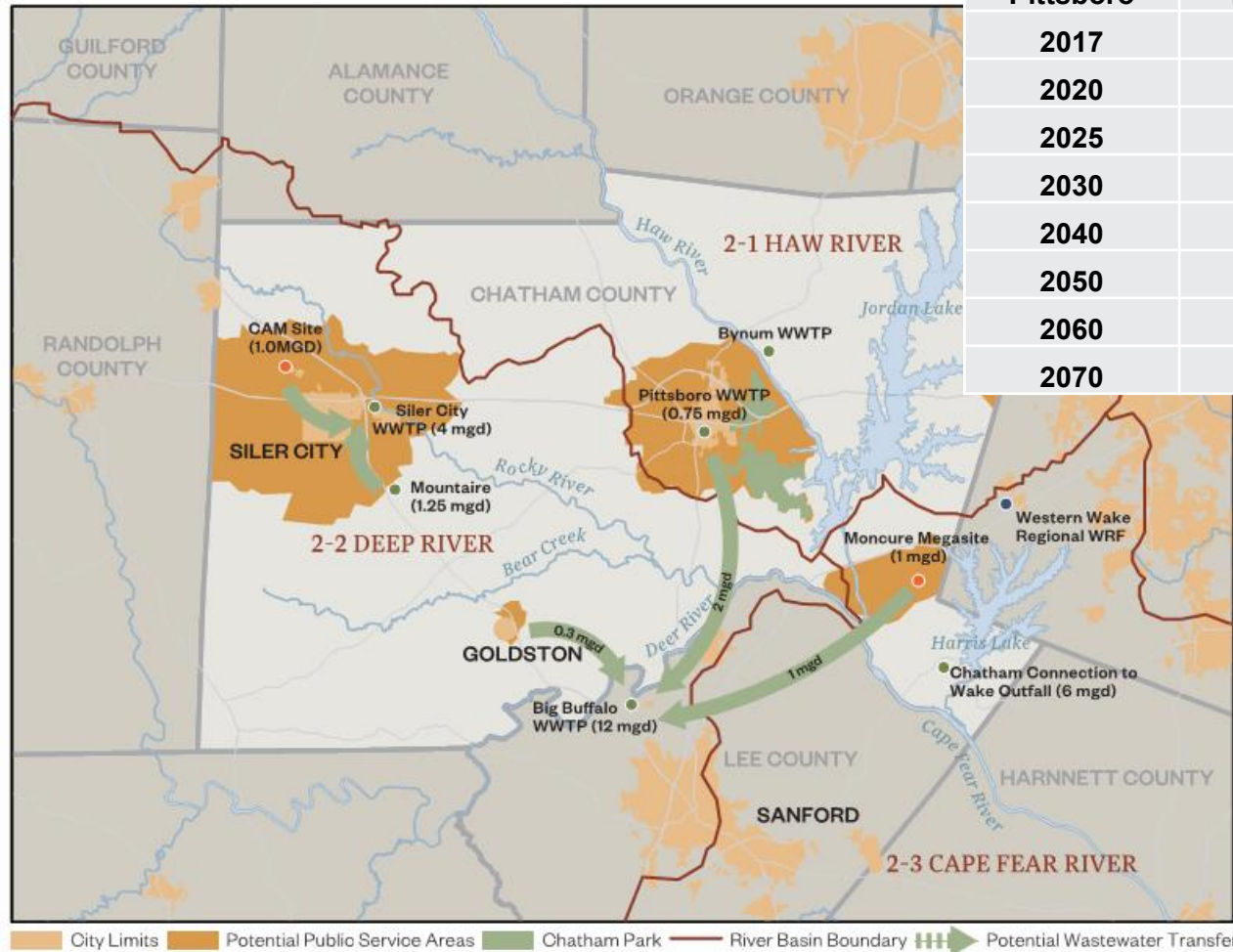
ALTERNATIVES

- Land Application Facility near Mountaire or CAM site
- Expand/improve existing WWTP
- Purchase Capacity at Sanford's Big Buffalo WWTP (IBT if the flow is not offset with water purchase)

Wastewater Treatment – Siler City



Wastewater Treatment - Pittsboro



Pittsboro	Flow	Deficit
2017	0.50	0.00
2020	0.85	0.00
2025	1.10	0.00
2030	1.35	0.00
2040	2.01	0.01
2050	3.33	1.33
2060	5.10	3.10
2070	6.03	4.03

Wastewater Treatment – Recommendations

Pittsboro

2040 - Need ~ 0.5 mgd to 1.0 mgd

2050 - Need ~ 2.0 mgd to 2.5 mgd

2060 – Need ~ 3.5 mgd to 4.0 mgd

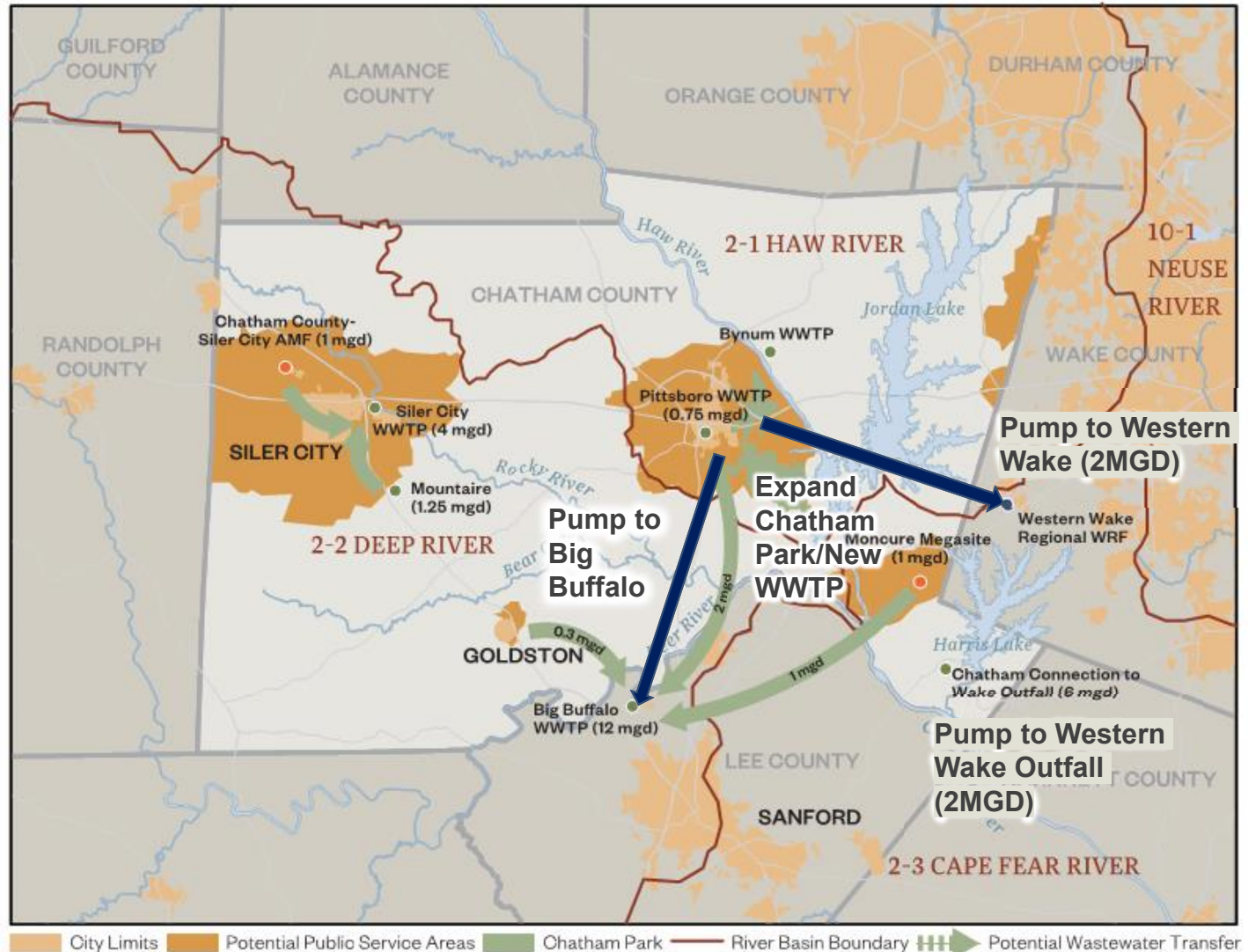
NOTE: Treatment capacity must exceed flow at all times.

Pittsboro	Flow	Deficit
2017	0.50	0.00
2020	0.85	0.00
2025	1.10	0.00
2030	1.35	0.00
2040	2.01	0.01
2050	3.33	1.33
2060	5.10	3.10
2070	6.03	4.03

ALTERNATIVES

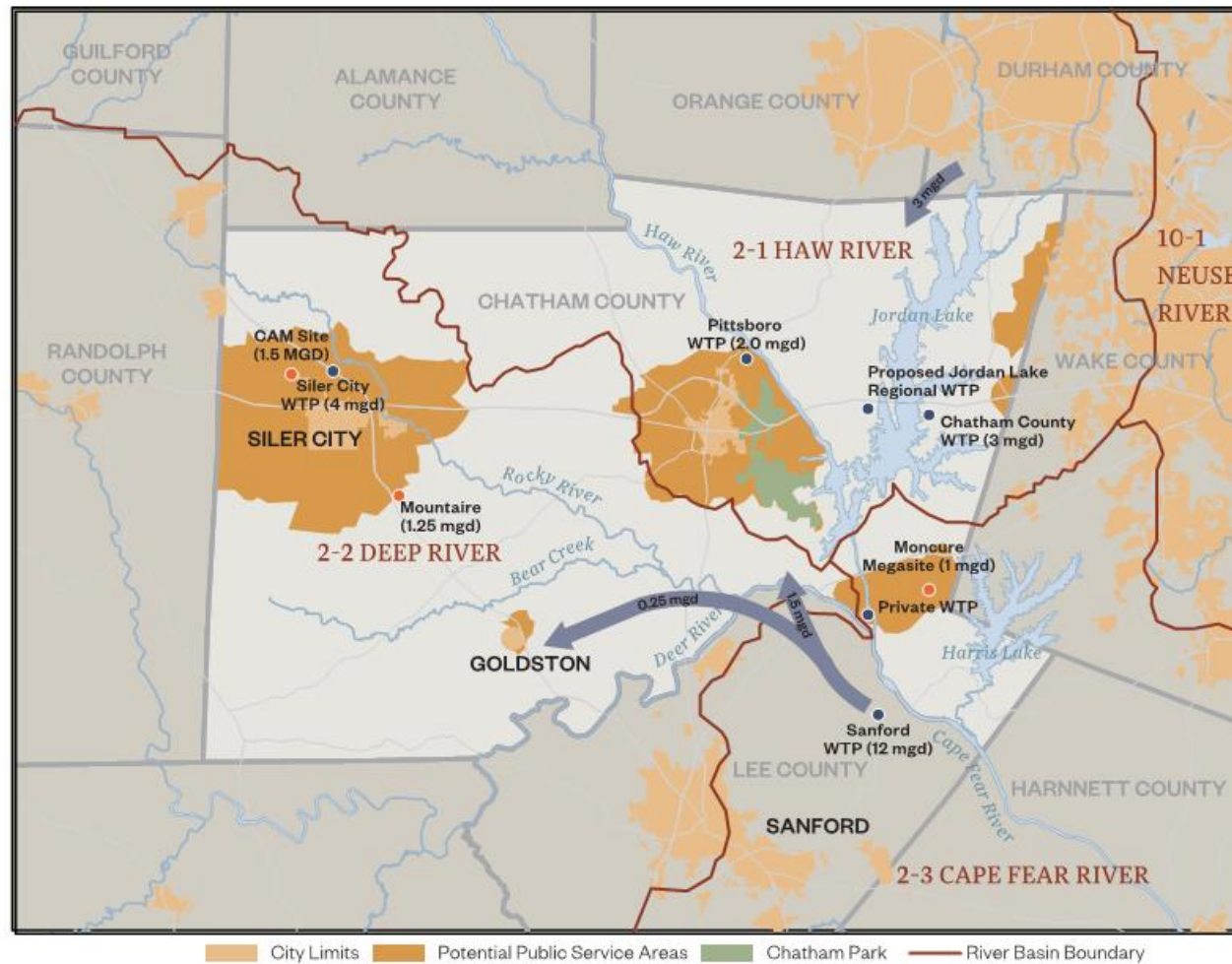
- Chatham Park WWTP (assume max capacity of 0.5 mgd)
- New WWTP
- Purchase Additional Capacity at Sanford's Big Buffalo WWTP (IBT if the flow is not offset with water purchase)

Wastewater Treatment - Pittsboro



Water Treatment

Water Treatment



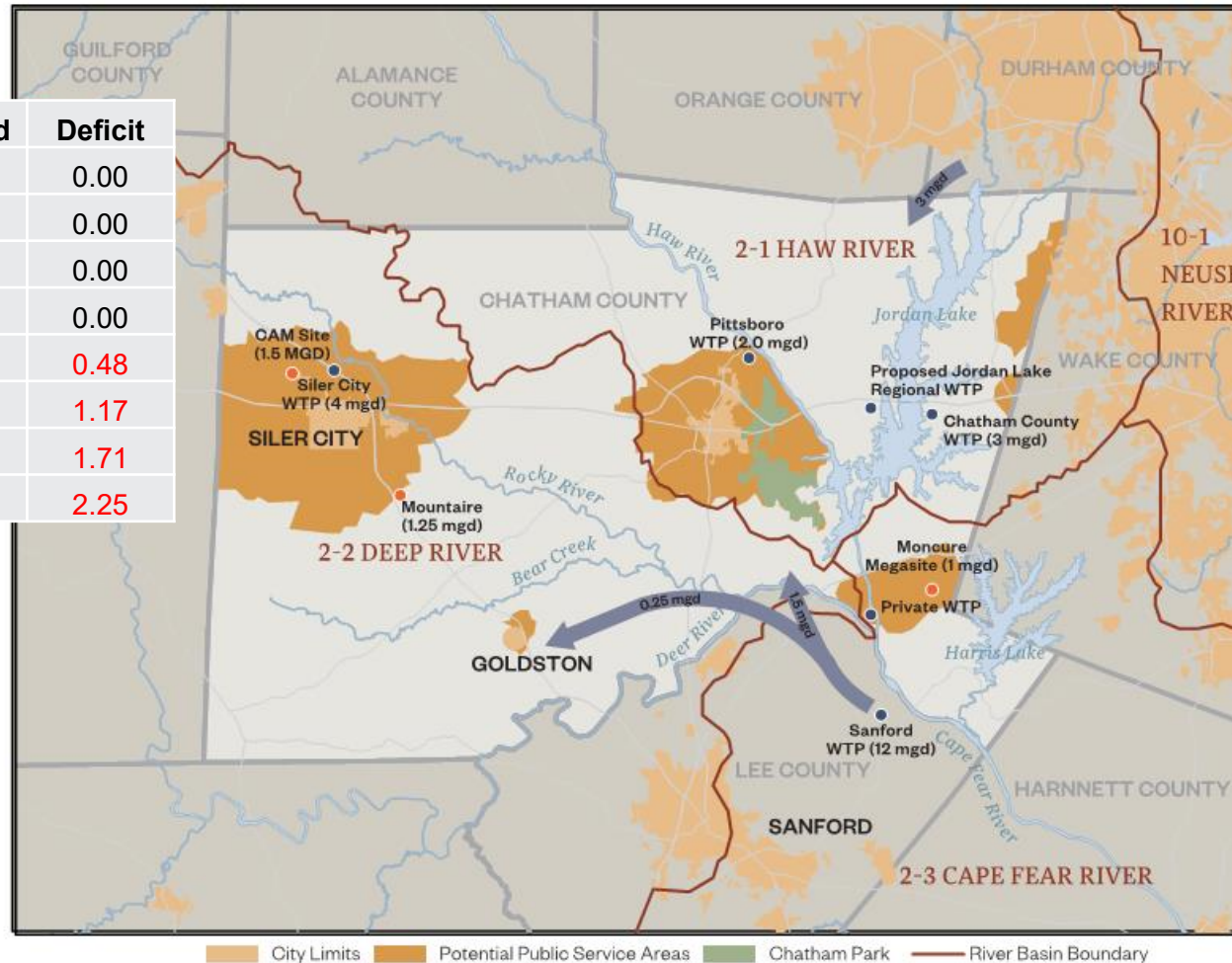
Water Treatment Overview

(Max Day in MGD)

Chatham County - North	2017	2020	2025	2030	2040	2050	2060	2070
Demand/w Moncure	4.31	4.37	4.45	4.57	4.76	4.96	5.16	5.36
Supply	6.00	6.00	6.00	6.00	3.00	3.00	3.00	3.00
Deficit/w Moncure	0.00	0.00	0.00	0.00	1.76	1.96	2.16	2.36
Pittsboro	2017	2020	2025	2030	2040	2050	2060	2070
Demand	1.06	1.71	2.22	2.78	4.10	5.84	8.94	10.58
Supply	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Deficit	0.00	0.00	0.22	0.78	2.10	3.84	6.94	8.58
Siler City	2017	2020	2025	2030	2040	2050	2060	2070
Demand	3.04	3.19	3.44	3.69	4.48	5.17	5.71	6.25
Supply	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Deficit	0.00	0.00	0.00	0.00	0.48	1.17	1.71	2.25

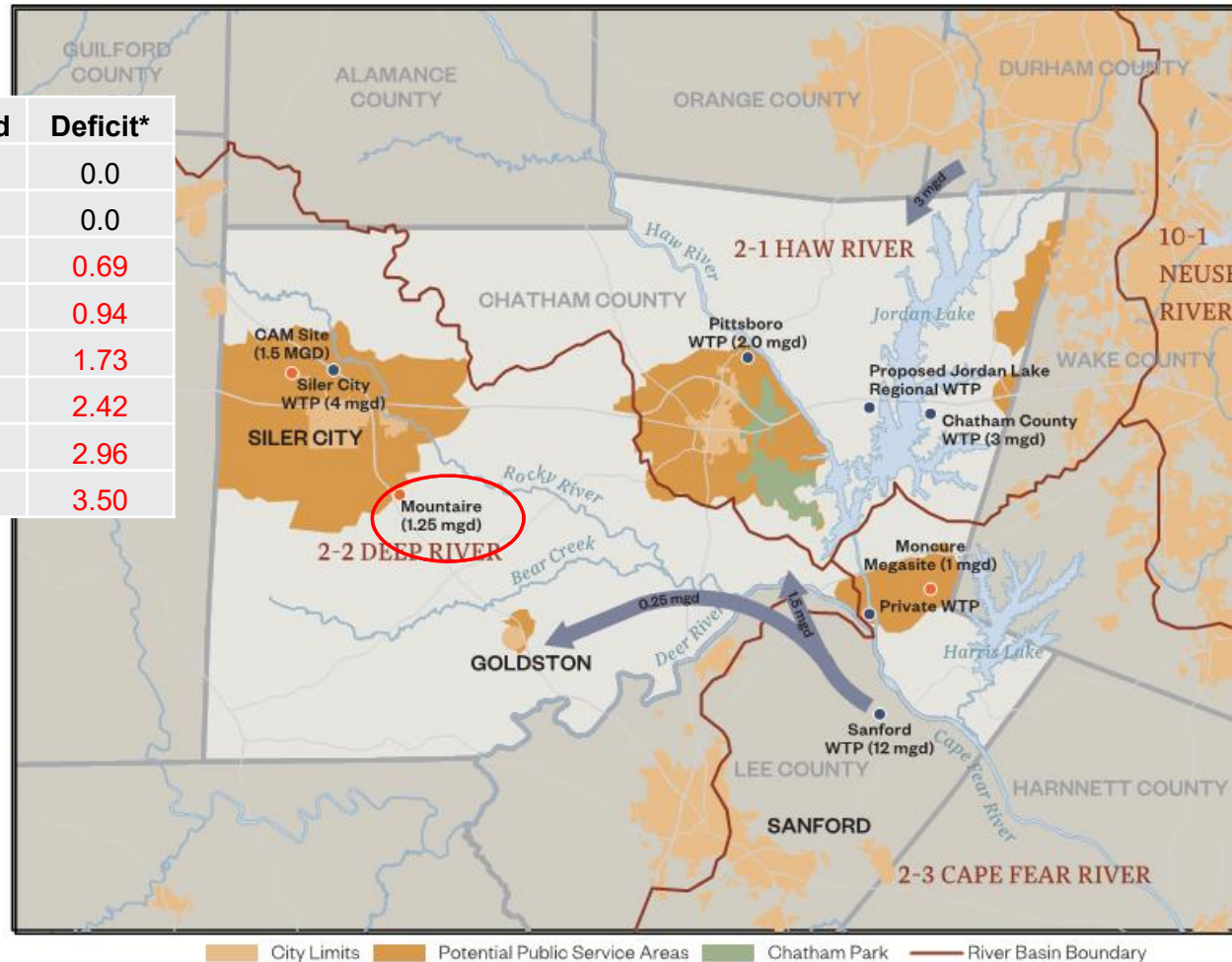
Water Treatment – Siler City

Siler City	Demand	Deficit
2017	3.04	0.00
2020	3.19	0.00
2025	3.44	0.00
2030	3.69	0.00
2040	4.48	0.48
2050	5.17	1.17
2060	5.71	1.71
2070	6.25	2.25



Water Treatment – Siler City w/ Mountaire

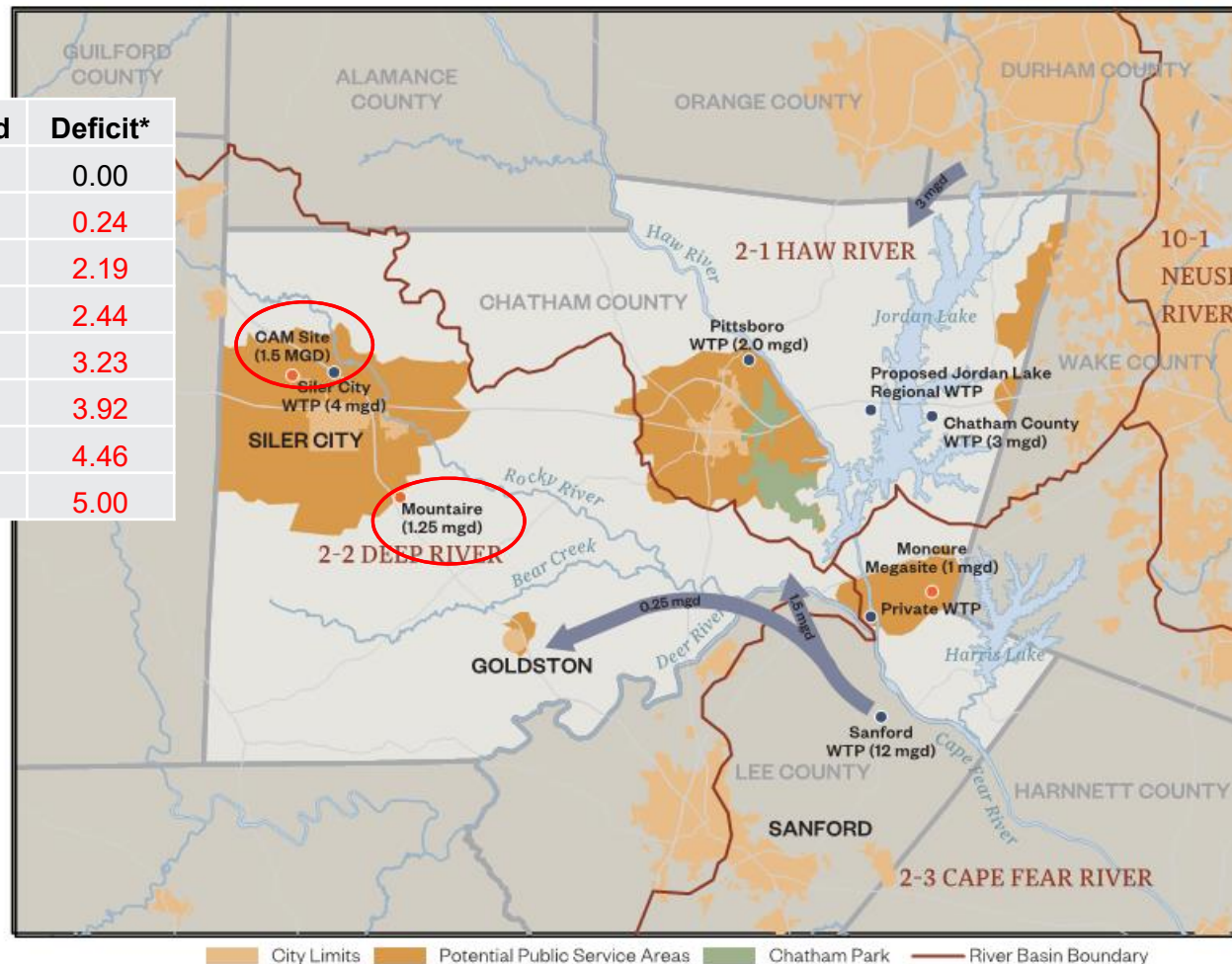
Siler City	Demand	Deficit*
2017	4.29	0.0
2020	4.44	0.0
2025	4.69	0.69
2030	4.94	0.94
2040	5.73	1.73
2050	6.42	2.42
2060	6.96	2.96
2070	7.50	3.50



*Note: Assumes planned 0.5 mgd transfer from Chatham County – SW needs to be replaced with another alternative by 2025.

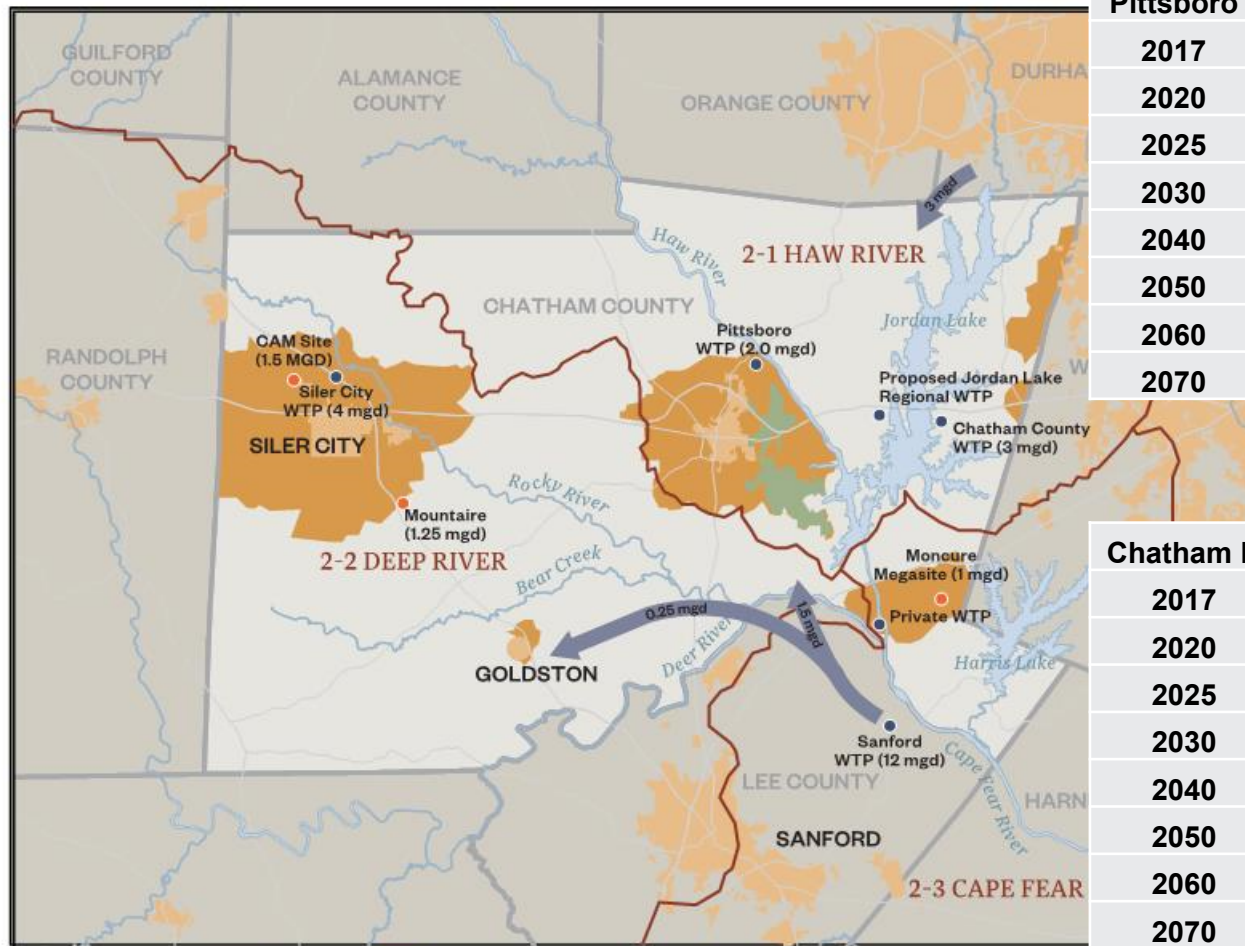
Water Treatment – Siler City w/ Mountaire & CAM

Siler City	Demand	Deficit*
2017	4.29	0.00
2020	4.74	0.24
2025	6.19	2.19
2030	6.44	2.44
2040	7.23	3.23
2050	7.92	3.92
2060	8.46	4.46
2070	9.00	5.00



*Note: Assumes planned 0.5 mgd transfer from Chatham County – SW needs to be replaced with another alternative by 2025.

Water Treatment – Chatham N. & Pittsboro



City Limits Potential Public Service Areas Chatham Park River Basin Boundary

Pittsboro	Demand	Deficit
2017	1.06	0.00
2020	1.71	0.00
2025	2.22	0.22
2030	2.78	0.78
2040	4.10	2.10
2050	5.84	3.84
2060	8.94	6.94
2070	10.58	8.58

Chatham N	Demand	Deficit
2017	4.31	0.00
2020	4.37	0.00
2025	4.45	0.00
2030	4.57	0.00
2040	4.76	1.76
2050	4.96	1.96
2060	5.16	2.16
2070	5.36	2.36

Water Treatment – Recommendations

Siler City

2020 - Need ~ 0.5 mgd to 1.0 mgd

2025 - Need ~ 2.0 mgd to 3.0 mgd

2040 – Need ~4.0 mgd to 5.0 mgd

2060 – Need ~ 5.0 mgd

Siler City	Demand	Deficit*
2017	4.29	0.00
2020	4.74	0.24
2025	6.19	2.19
2030	6.44	2.44
2040	7.23	3.23
2050	7.92	3.92
2060	8.46	4.46
2070	9.00	5.00

NOTE: Treatment capacity should exceed demand.

Actual need will vary based on real demands at CAM site and Mountaire. Currently assumes 1.25 mgd for Mountaire and 1.5 mgd for CAM.

ALTERNATIVES

- Transfer from Chatham County SW (0.5 mgd currently planned)
- Purchase capacity from Sanford's WTP
- Expand existing WTP

Water Treatment – Recommendations

Pittsboro

2020 - Need ~ 0.5 mgd to 2.0 mgd

2040 - Need ~ 4.0 mgd to 7.0 mgd

2060 – Need ~ 9.0 mgd

NOTE: Treatment capacity should exceed demand.

Pittsboro	Demand	Deficit
2017	1.06	0.00
2020	1.71	0.00
2025	2.22	0.22
2030	2.78	0.78
2040	4.10	2.10
2050	5.84	3.84
2060	8.94	6.94
2070	10.58	8.58

ALTERNATIVES

- Expand Existing WTP
- Purchase Capacity from Sanford's WTP
- New WTP on Jordan Lake (Western Intake)

Water Treatment – Recommendations

Chatham County North

2040 - Need ~ 2.0 mgd to 3.0 mgd

2060 – Need ~ 3.0 mgd

NOTE: Treatment capacity should exceed demand.

Chatham N	Demand	Deficit
2017	4.31	0.00
2020	4.37	0.00
2025	4.45	0.00
2030	4.57	0.00
2040	4.76	1.76
2050	4.96	1.96
2060	5.16	2.16
2070	5.36	2.36

ALTERNATIVES

- Expand Existing Jordan WTP
- Purchase Capacity from Sanford's WTP
- New WTP on Jordan Lake (Western Intake)
- Purchase Capacity from Cary/Apex WTP

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