

Mebane City Beat: Future flow demands

BY KELLY HUNTER
SPECIAL TO THE NEWS OF ORANGE

Planning for a municipality’s successful growth includes ensuring that all infrastructure can support not just the existing population but also the addition of more homes, businesses, and residents. In 2016, the Mebane City Council adopted a Long Range Utility Plan (LRUP) that reviewed existing water and wastewater facilities to determine their capability to meet the City’s population and projected future needs. Every 5-10 years, the City of Mebane’s Long Range Utility Plan gets reviewed to ensure the plan is prepared for future growth while improving the existing fire flows and water quality. “The Long Range Utility Plan lays the groundwork for future utility connections and assists the City with capital planning for water and sewer needs,” claimed Public Utilities Director Kyle Smith. During the July 1, 2024, Mebane City Council meeting, an updated 2024 LRUP was presented to the Council and unanimously approved. The LRUP focused on a few crucial infrastructure areas, but for this article, we will focus on the City’s water distribution and collection system.

The City of Mebane receives water from the Graham-Mebane Water Treatment Plant located on the Graham-Mebane Lake. The plant is co-owned with the City of Graham; however, Graham operates the plant. Back in 1973, the Cities of Graham and Mebane entered into an agreement to build the plant. The plant began operations in 1976 and was upgraded and expanded in 2003. The Graham-Mebane Water Treatment Plant has a treatment capacity of 12 million gallons per day, and the Cities of Graham and Mebane jointly own the lake and plant. Mebane originally owned a third of the plant, but as of 2014, Mebane has ownership of 50% of the plant and reservoir capacity. In addition to providing water for the Cities of Graham and Mebane, the Towns of Green Level and Swepsonville are also served by the Graham-Mebane Water Treatment Plant.

The plant distributes roughly 4.5 million gallons daily, and Mebane uses approximately 2 million of those gallons per day. Water produced at the plant goes into a three-million-gallon clearwell, known as a ground storage tank, used to store filtered



COURTESY OF THE CITY OF MEBANE

water after it has been disinfected. From there, the water is pumped to the City of Mebane distribution system, which consists of approximately 137 miles of water mains and a 300,000-gallon elevated storage tank on South 11th Street. The City is building a new one-million-gallon elevated water storage tank on 1420 South Third Street. The new elevated water storage tank is expected to be operational in 2025 and will provide fire flows at a rate of 3,000 gallons per minute for three hours.

Since 2016, the City of Mebane has grown rapidly, becoming the fastest-growing city in the Piedmont Triad. According to the U.S. Census Bureau, Mebane has grown by over 10% since 2020. In an ongoing effort to continue to improve the quality of life for Mebane residents, City staff worked together with engineers from Hazen and Sawyer, as well as Alley, Williams, Carmen, and King, Inc., to develop a plan that considers the existing water demand, future demands, and future growth areas for 2024 to 2050. City staff were responsible for providing future water demand projections and needs for the water system. Staff calculated the water demand by looking at the current demand versus the demand type and population. They also had to consider historical population growth and

projected future population growth. Growth percentages and proposed projects are factored into our current demand and projected out to the future population growth. The projected demand for 2050 is estimated to be roughly 4 million gallons per day on average, with a maximum peak of 5.56 million gallons. Once the new one-million-gallon storage tank is online and in operation, Mebane’s total water storage capacity will be 4.3 million gallons. This total storage will exceed the North Carolina Department of Environmental Quality’s (NCDEQ) requirement for Public Water Supply to be at least half a day’s supply of the average annual daily demand. It will also meet the expected future demand requirements beyond 2050.

Hazen and Sawyers’ engineers were responsible for reviewing the Graham-Mebane water supply and providing water modeling services. Their model of the City’s water supply determined that plant expansion planning should begin in 2026, bringing a new water capacity online in 2036. However, reducing peaking factors through conservation in drought years, such as irrigating lawns on alternating days, could defer expansion planning of the plant to 2036 and new online capacity to 2049.

Alley, Williams, Carmen & King, Inc. studied the water needs of the City of Mebane and developed the plan presented to the Mebane Council, considering future growth and modeling predictions. They determined that to meet the City’s future needs, expansions of the water treatment plant and reservoir would need to be conducted. In addition, the Cities of Mebane and Graham have discussed purchasing water from a neighboring municipality in the future, as regional providers can defer expansions for years.

Overall, the 2024 Long Range Utility Plan calls for a future plant expansion to increase water capacity in conjunction with water conservation practices to reduce future peak demands. The updated LRUP recommends constructing additional water mains and extensions to improve the water system’s reliability and extend our service area to undeveloped areas. Alley, Williams, Carmen & King, Inc. also recommends a new boosted pressure zone around the Buckhorn area to ensure consistent water pressure. Franz Holt, the City Engineer, stated, “The updated LRUP builds upon previous studies and actions that today provide Mebane with good drinking water and fire protection that will continue well into our future.”



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