

MEMORANDUM

To: Mr. Scott Moore, City Manager

From: Frank T. Phelan, P.E.

Date: January 29, 2024

Subject: Wilbarger Creek Wastewater Treatment Plant Expansion Option Memo

1. Wilbarger Wastewater Treatment Plant (Plant) and Service Area

The City of Manor owns and operates the Wilbarger Creek Wastewater Treatment Plant located at 547 Llano Street permitted by the Texas Commission on Environmental Quality. The Plant serves the western area of the City of Manor, including the Gilleland Creek Basin, Wilbarger Creek Basin and limited portions of the Cottonwood Creek Basin. The majority (approx. 95%) of the City of Manor's population is served by the Plant.

2. Plant Phasing and Capacity

Presently the Plant is operating under an interim phase capacity of 1.33 Million Gallons per Day (MGD.) The Plant design and current permit allow for expansion of the facility to an ultimate capacity of 2.0 MGD. The major elements of the existing plant and the expansion are shown on Figure 1.0. Current wastewater flows at the Plant are around 1.05 MGD or 79% of the permitted phase capacity. The TCEQ Chapter 217 Rules require that plant expansion design commence at 75% of permitted phase capacity and construction start at 90% of permitted phase capacity.

These percentages worked well as project milestone triggers prior to the pandemic. During and subsequent to the pandemic however, labor shortages and ongoing supply chain issues have increased project delivery times to the point where conventional plant expansion timing may not provide sufficient time for design, permitting, contracting, equipment manufacturing, construction and commissioning. As a result, commencing design and construction at the 75/90 thresholds may result in exceedances in permitted capacities or increased contractor's bids as a hedge against short performance periods given contractor labor shortages and the long supply-chain issues.

In anticipation of the need for additional wastewater treatment system capacity, the City of Manor has recently sold bonds to fund expansion of the Wilbarger Creek Wastewater Treatment Plant. It is therefore recommended that the City of Manor commence with design of the Plant expansion immediately to provide as much time as possible for design and construction to provide sufficient capacity for continuous growth within the service area.

3. Recent Legislative Effects on Planning and Utility Service

The recent Texas legislative changes (SB 2038) that became effective in September of last year have significantly affected municipal planning by now allowing landowners to de-annex from municipal Extra-Territorial Jurisdictions (ETJs.) A recent result of this new legislation is the desire of several property owners located outside of Manor's jurisdiction to de-annex from City of Austin's ETJ, annex into the City of Manor and receive wastewater service from Manor. See Figure 2.0 for currently identified potential areas. These areas total approximately 430 acres that are outside of the City of Manor ETJ and have not been included in any prior planning efforts.

Several of these tracts could be served by the Wilbarger Plant but have not been included in any capacity planning because the areas were in Austin's ETJ and Certificated Area of Convenience and Necessity (CCN.) To accommodate these additional tracts (and potentially others that are now in Austin's ETJ) the Plant capacity will need to be increased beyond the permitted 2.0 MGD capacity. The additional capacity requirement is yet to be determined given the unknowns regarding the amount of land and types of land uses that may request annexation and wastewater service.

4. Projected Capacity Utilization

The existing Wilbarger WWTP was placed into service in October of 2020 and serviced a flow of approximately 0.6 MGD at the time of commissioning. Over the intervening 3.25 years, the flows at the facility have increased to an average flow over 1.0 MGD (See Chart 1.0.) The rate of increase has averaged about 0.139 MGD per year for the period. Assumption of similar growth within the current service area over next few years indicates the plant will reach capacity in the next 17 to 33 months. Addition of new tracts into the service area may result in faster utilization of available capacity, shortening the timeframe for Plant expansion.

5. Addition Capacity Requirements

Recognizing that the additional areas presently outside the City of Manor represent new growth for the City in both developable land as tax base and utility service potential, investigating expansion of the Plant beyond the current ultimate capacity of 2.0 MGD is appropriate. The areas that have been identified as potential ETJ transfer are 268.79 acres (to the northwest) and 161.27 acres (to the southeast.) Combined, at a density of 4.0 LUEs per acre, wastewater flows on the order of 350,000 gallons per day could be expected, assuming 200 gallons per day per LUE. The following considerations discuss the various factors that need to be considered in an evaluation of capacity expansion beyond the 2.0 MGD capacity:

6. Capital Costs and Economies of Scale

Presently, funds for plant expansion to the 2.0 MGD have been issued in the 2023 Certificates of Obligation in the amount of \$16.9M. It is not anticipated that the funds are sufficient for any significant capacity expansion beyond the 2.0 MGD plant capacity. Developer participation in expansion costs could be negotiated as part of a development agreement for the tracts that are currently outside of the City.

Generally, economies of scale can be better realized with larger treatment works. In the case of Wilbarger Creek WWTP, the current design of multiple ancillary systems (outside of treatment equipment) provides for economical expansion to the 2.0 MGD capacity. Examples of ancillary systems are on-site lift station, chemical feed systems, yard and outfall piping, electrical service, etc. Expansion beyond the 2.0 MGD capacity will require these systems be increased in capacity beyond designed provisions for expansion (See Figure 3.0.) This may mean duplicate systems or wholesale replacement of existing equipment with larger capacity equipment, thus reducing or negating economies of scale.

7. Plant Expansion Options

Several plant expansion options can be considered. These include additional treatment works, potential rerating enhancements and flow equalization. Preliminary engineering will need to be conducted to determine the most cost effective and timely options.

8. Permitting Implications of Additional Expansion

Permitting of any expanded facility will need to be evaluated against project timing and capacity needs. Increasing the permitted capacity beyond the current 2.0 MGD will require a major permit amendment through the TCEQ. The permit amendment process takes a minimum of a year typically and can extend up to three years if the application is protested and a case referred to the State Office of Administrative Hearings.

Another consideration will be the permitted effluent parameter set. The receiving waters for the plant outfall (Wilbarger Creek) have been modeled by the TCEQ Staff to determine assimilative capacity for specific nutrients, total dissolved solids, and bacteria concentrations. It is possible that expansion of the plant beyond the 2.0 MGD may result in more restrictive effluent parameters which may require additional treatment equipment or processes, increasing construction and operations costs.

Recently, polyfluoroalkyl substances (PFAs) are an emerging concern that may lead to increased monitoring requirements and wastewater treatment effluent limitations. Considerations for plant design beyond the 2.0 MGD capacity should include appropriate provisions for any advanced treatment required to address PFA contaminant levels, should the TCEQ adopt rules that set Maximum Contaminant Levels (MCLs) this class of chemicals. The Texas Water Development Board (TWDB) has increased funding for wastewater and drinking water projects that reduce exposure to PFAS and other emerging contaminants that may be able to be leveraged should PFA limits be established.

Given that the Plant site design did not contemplate an expansion of treatment works beyond the 2.0 MGD capacity, additional property may be required to accommodate a larger facility. Relocation of the pole barn on the site will most likely be necessary. Expansion of the minimum 150' Buffer Zone Easement may also be required on adjacent properties. An alternative to expansion of the Buffer Zone Easement would be property acquisition on the east side of Llano Street.

9. Budgeting

Presently no budgets have been determined for Plant expansion beyond the 2.0 MDG as the capacity amounts for further expansion have not been developed, nor are the required technologies been defined to achieve compliance with potentially tighter effluent limits. Additionally, unknowns regarding how many ancillary systems would need to be oversized or paralleled at the plant will have a significant impact on unit costs for treatment expansion. The aforementioned factors of buffer zone easement, property acquisition and permitting could also significantly impact costs.

10. Next Steps

a. Existing planned expansion.

It is recommended that the currently planned expansion design work commence immediately to provide interim capacity for current and any expanded service areas in the near term. The design of the plant for the expansion to 2.0 MDG will result in the cost-effective provision of additional wastewater service in the basin and prevent potential building moratoriums for the next few years.

A proposal was submitted to for the design of the facility in April of last year, assuming that three years would be available for the design and construction activities at that time. We recommend that a revised proposal be submitted that factors in the current projections for the need to have expanded capacity in less than three years to reduce project timelines and minimize the period of permit limit exceedances.

b. Study/Plan for ETJ Release

We recommend a study be conducted concurrently with the plant expansion design process to determine the amounts and types of additional plant capacity that will be required to service potentially annexed areas. The study and resultant plan will also consider timing and costs of a permit amendment and property acquisitions/Buffer Zone Easements.

Chart 1.0

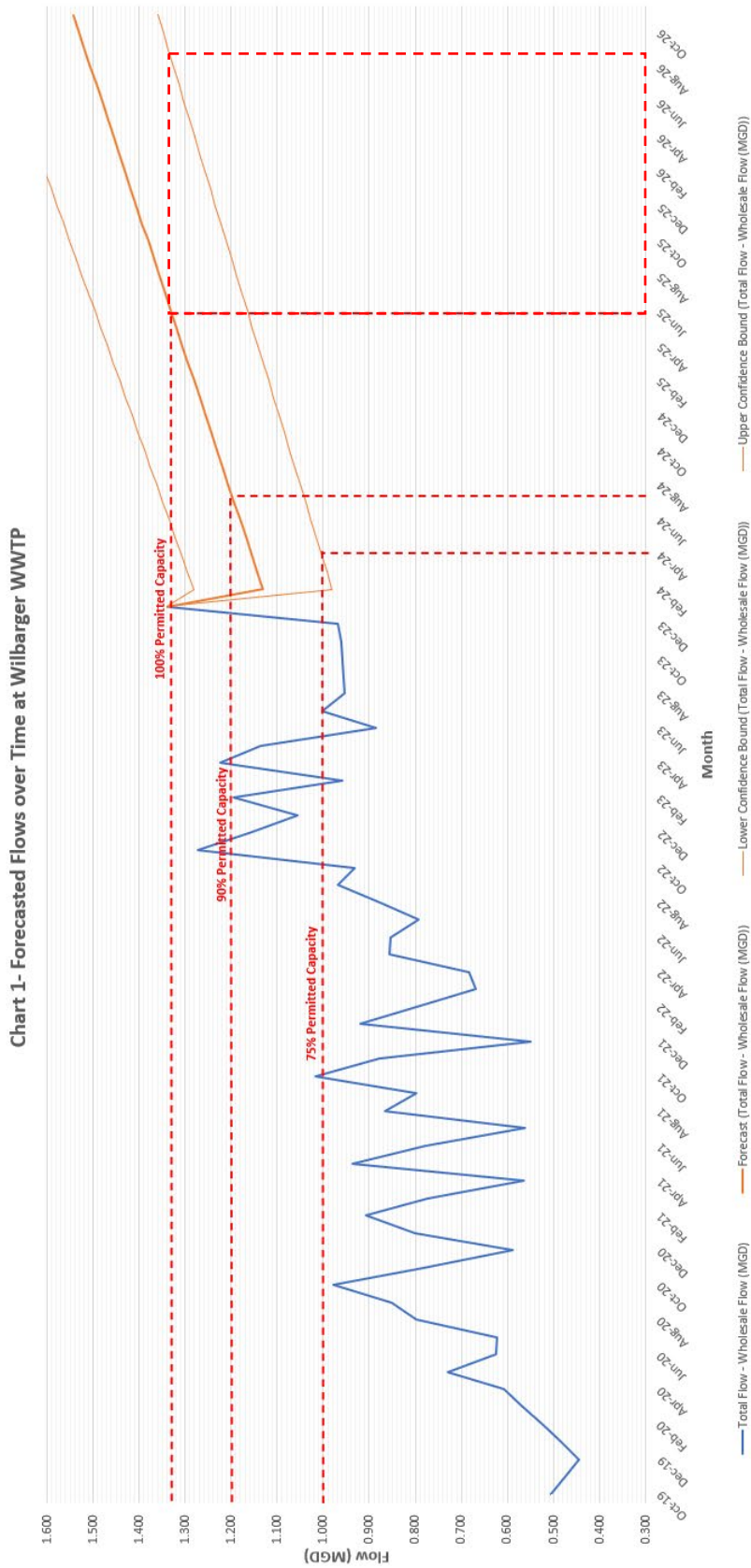


Figure 1.0

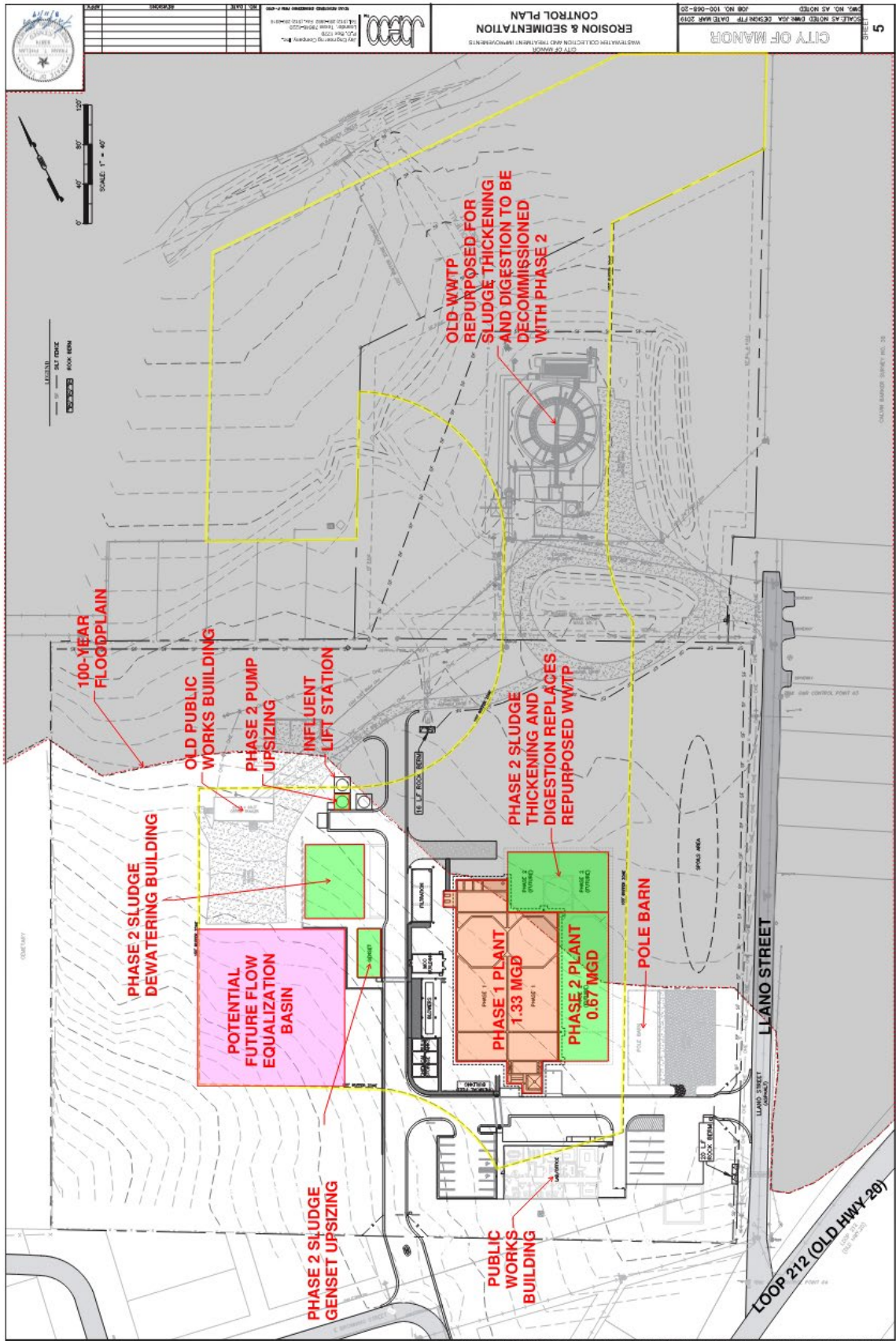


Figure 2.0

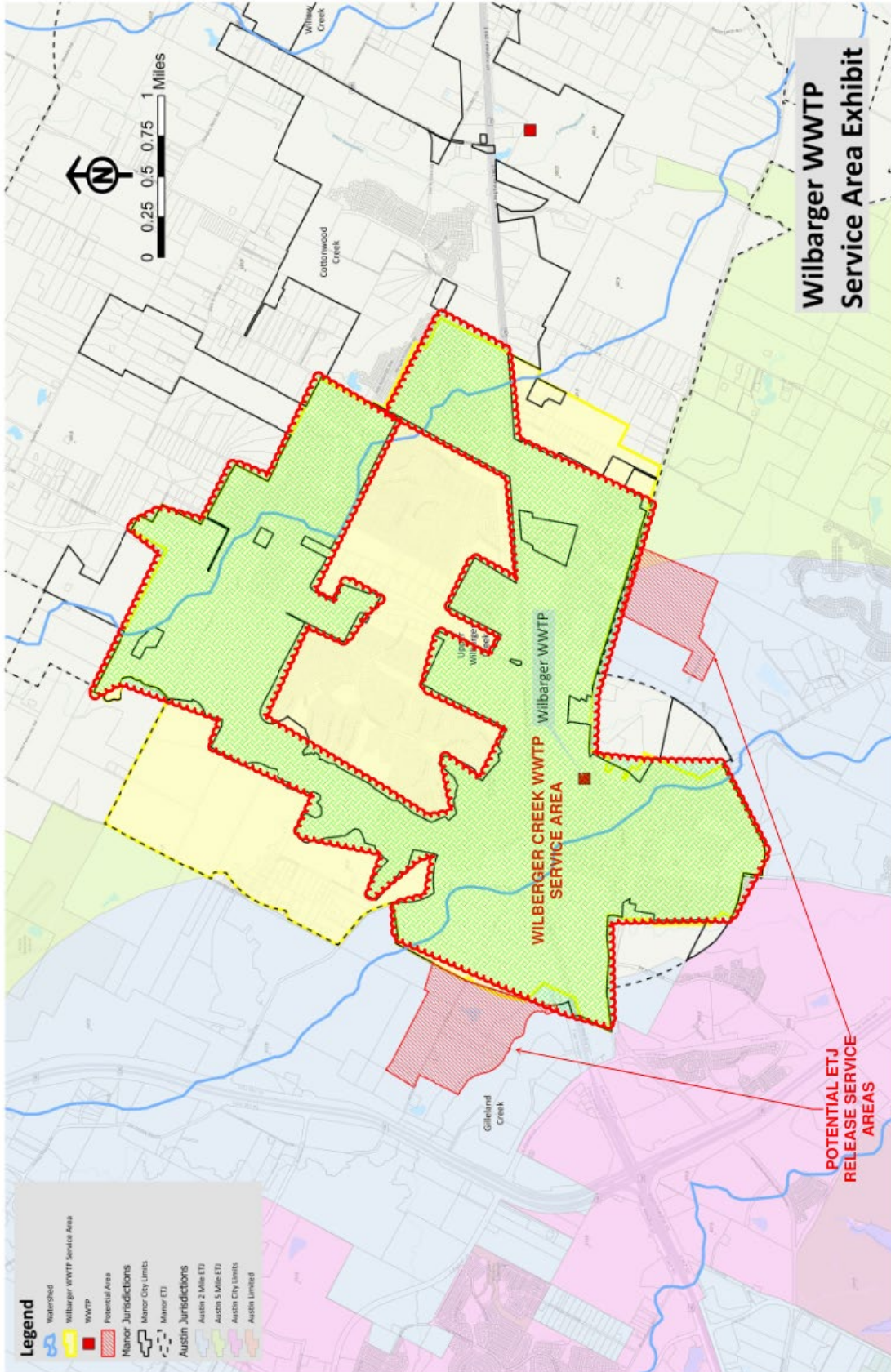


Figure 3.0

