

Sewer Capacity

I & D Committee

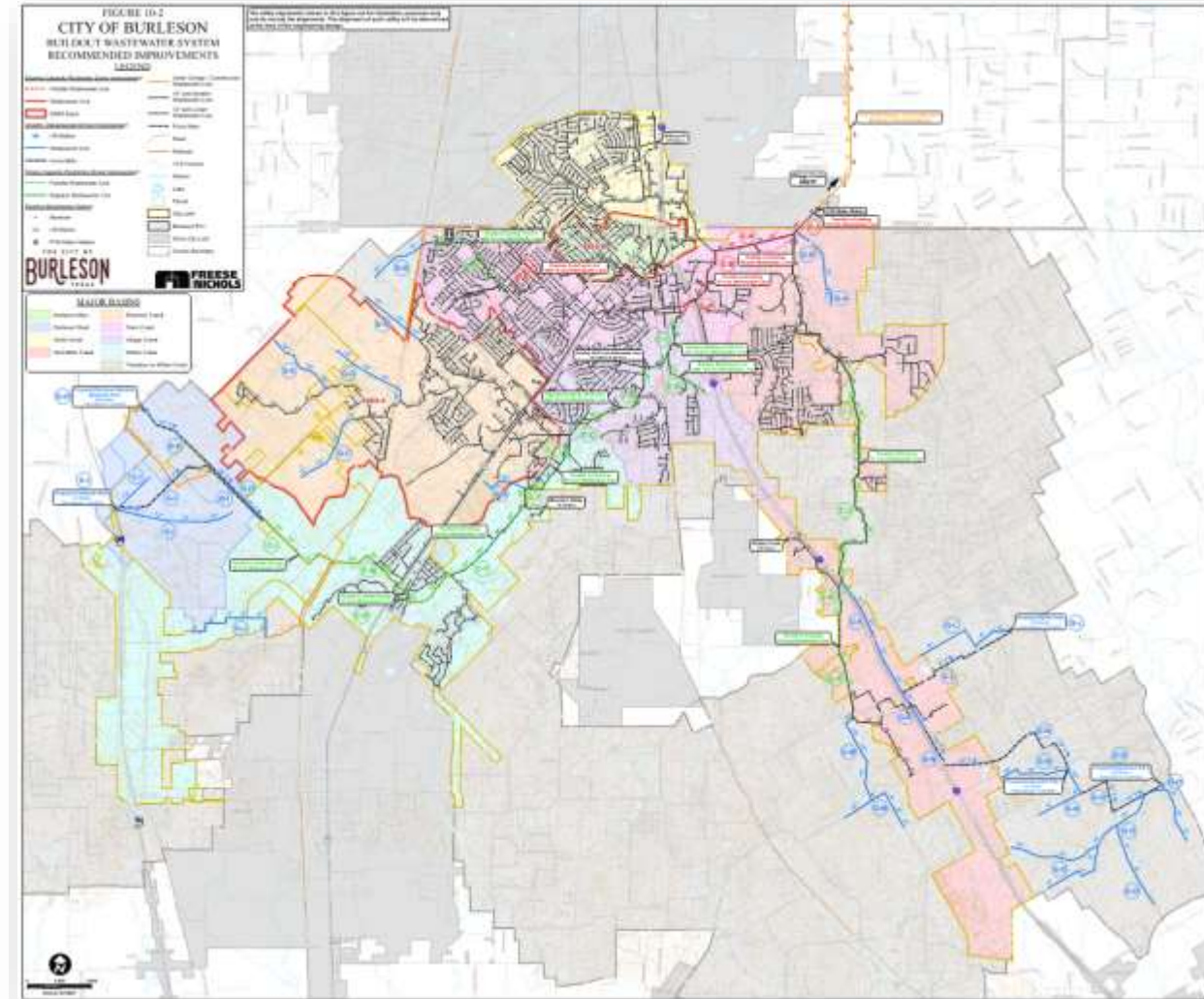
Fort Worth Wholesale Wastewater Contract

May 1987

Initial contract established all capacity improvements borne by FW and passed to customer cities as a system cost, no capacity amount stated

May 2017

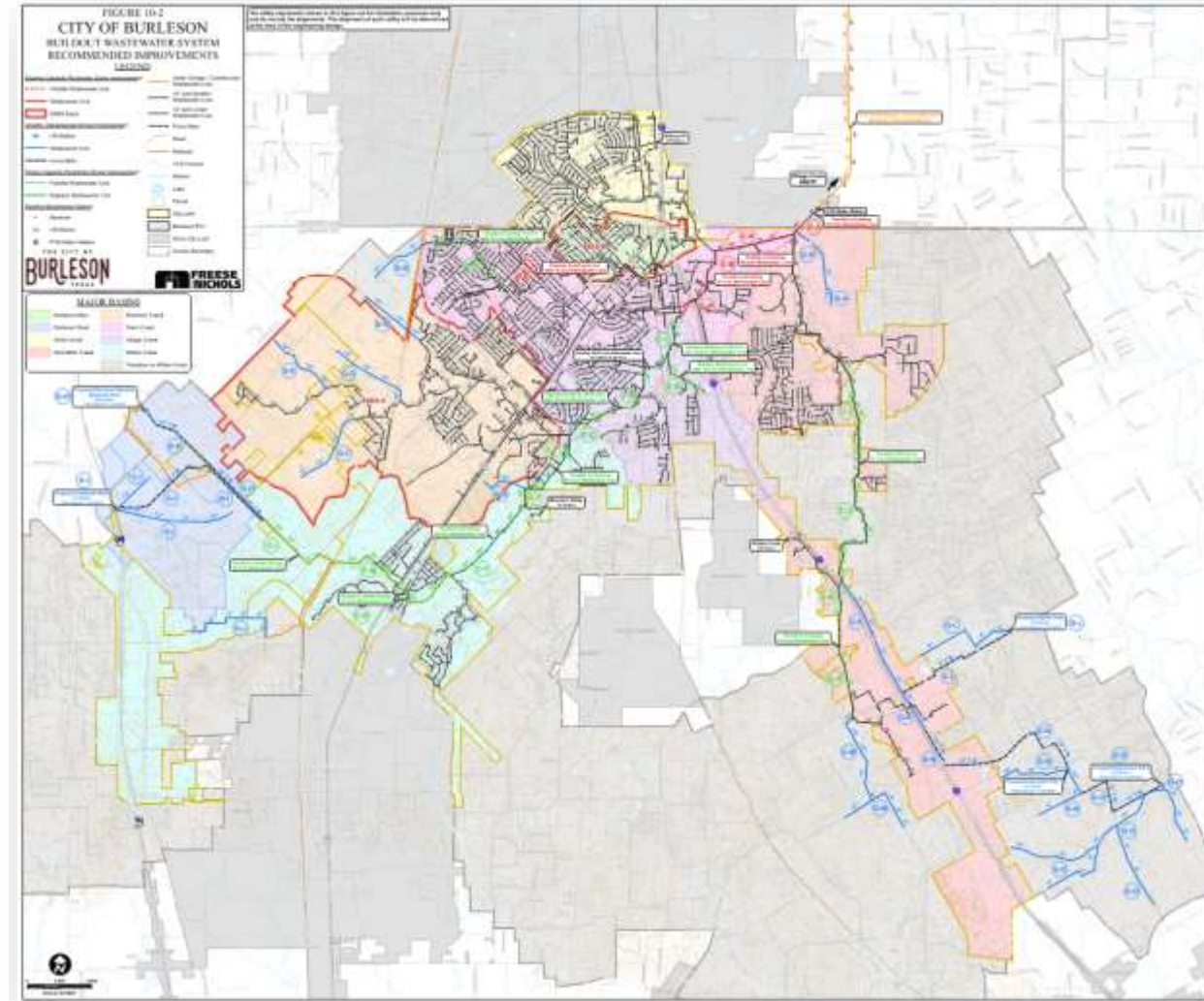
- 2010 Masterplan - 2030 projected flows were 21.5 MGD
- Established purchased capacity of **8.76 MGD**
- Improvements related to increased capacity borne by customer
- Peak flow remediation – requires study if peaking factor exceeds 4.0 in 12-month period
- Burleson must agree to reimbursement of \$97,370, which is FW's contribution to the City of Crowley's sewer line for the Hyder Tract upon service to the tract
- Burleson to negotiate future terms in good faith to allow service within the ETJ; FW maintains right to manage and protect its wastewater system
- Contract term changed from 20 to 30 years



Fort Worth Wholesale Wastewater Contract

August 2017 – Amendment 1

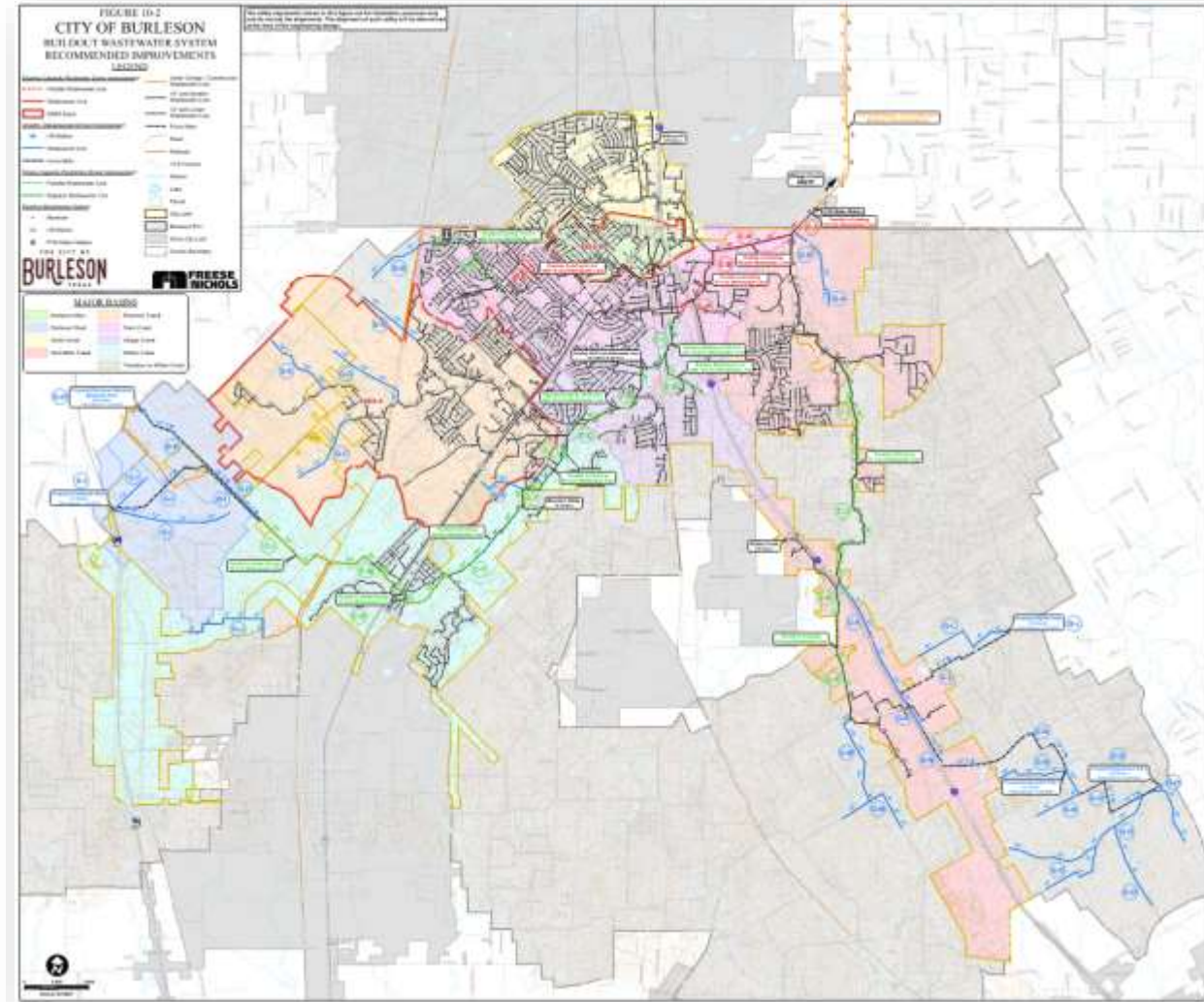
- 2015 Masterplan – 2035 projected flow was 29 MGD
 - Did not include ETJ or ultimate buildout scenario
- City requested additional 16.3 MGD, increasing total allowable capacity to **25 MGD**
- Cost to City \$14.3 million



Fort Worth Wholesale Wastewater Contract

Amendment 2 – Under Review

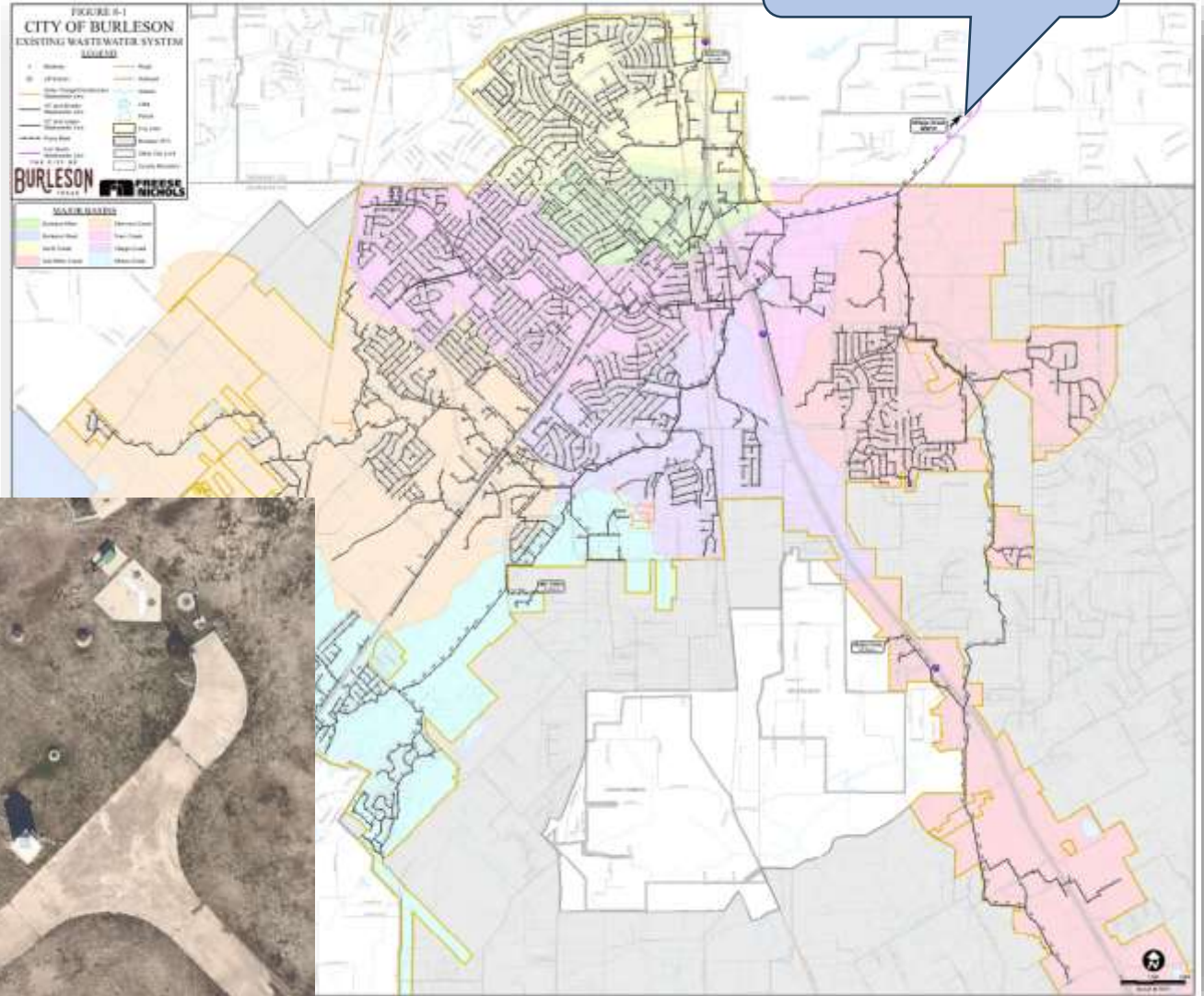
- 2023 Masterplan included buildout scenario – 41.3 MGD
- Select areas of the ETJ included
 - Hyder Ranch
 - Chisholm Summit
 - Hooper Business Park
 - Small area of Tall Grass located in ETJ
 - Potential Industrial along IH35
- Staff working with FW on terms to purchase additional 10 MGD of FW's capacity for a total allowable capacity of **35 MGD**
- Cost to City \$3.671 million
- 35 MGD will not be available until payment is made



Wastewater – Where Does it Go?

Burleson wastewater generally flows through the city towards Southern Oaks Golf Course through existing meter station

Approximate location of existing meter station

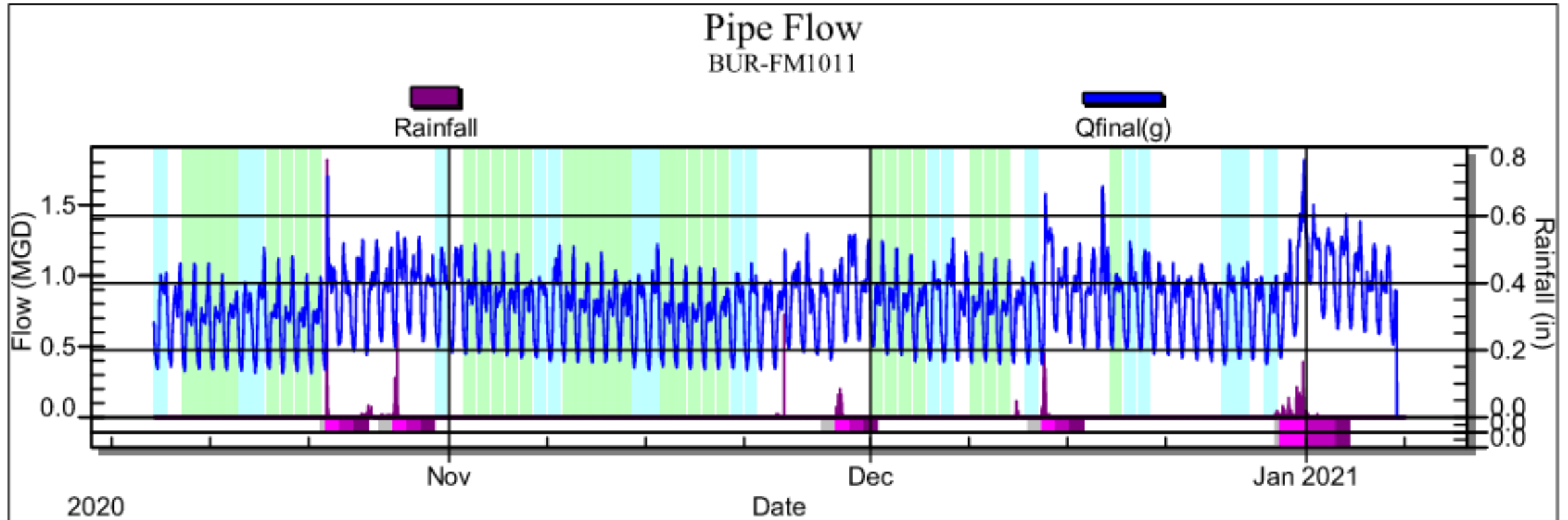


Wastewater Flows Explained

Wastewater flows

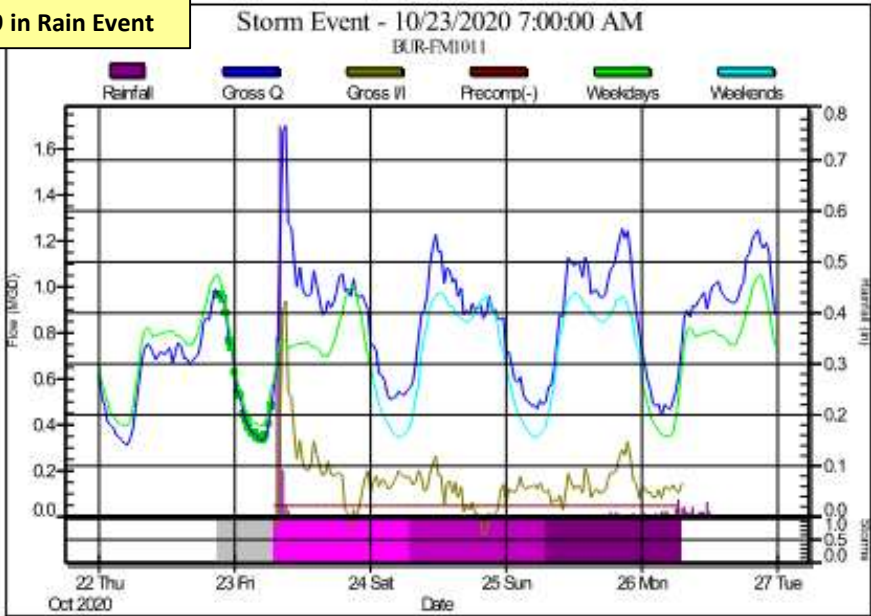
- Average Daily Flow – average of the 24-hour volume over a 12-month period and represents the typical daily inflow to a wastewater collection system
- Inflow/Infiltration – “clear” water that enters the system from storm water or groundwater
 - Inflow – point sources include roof drains, open manholes storm drain cross connections, yard drains, open pipes in creeks
 - Infiltration – occurs when groundwater tables are high and include cracks in pipes, separated joints, gravel drains channeling water towards damaged pipes or manholes
- Peak Flow – maximum flow rate of wastewater that occurs during a specific rain event
 - TCEQ requires wastewater systems be designed utilizing peak flow rates
 - May be calculated for specific developments but typically for masterplans, industry standard of 3.4 is utilized

Wastewater Flows Explained

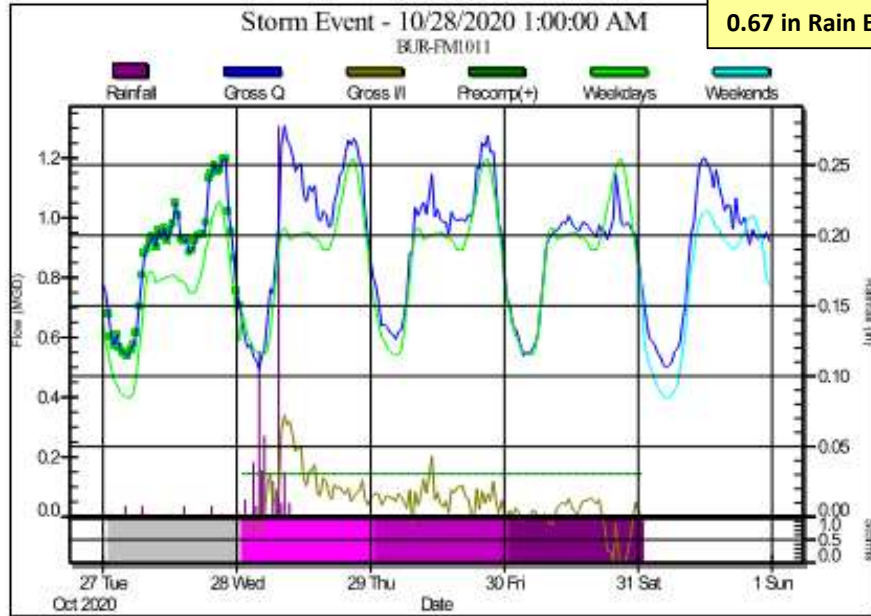


Wastewater Flow Hydrograph

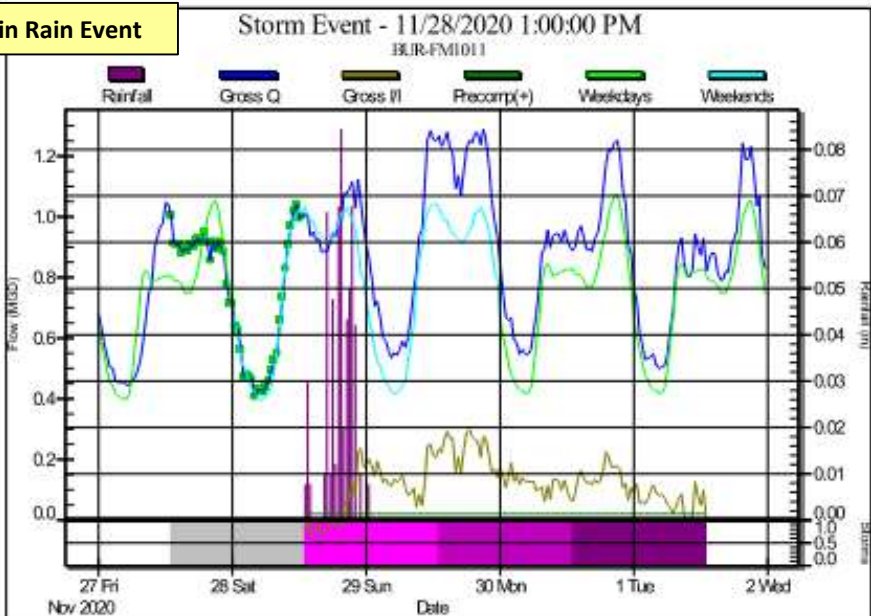
1.39 in Rain Event



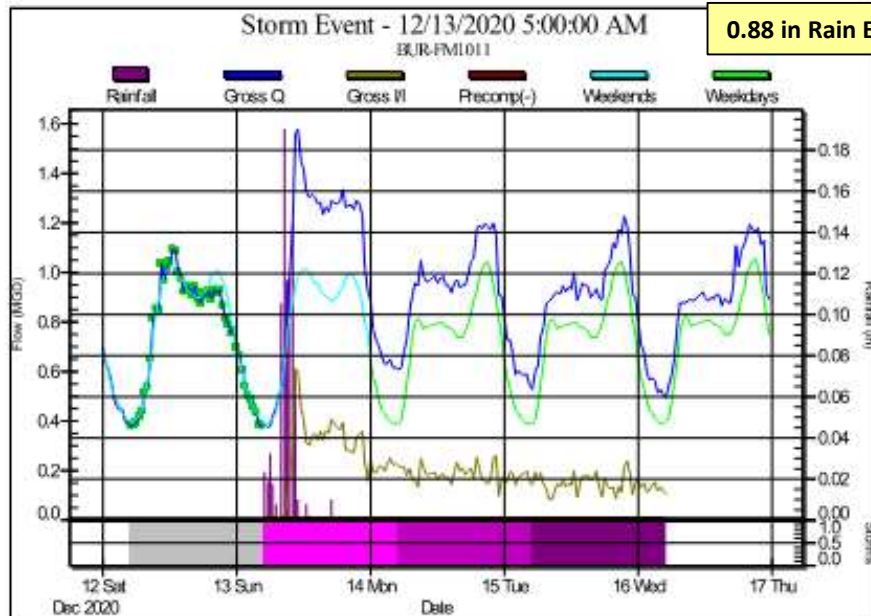
0.67 in Rain Event



0.58 in Rain Event



0.88 in Rain Event

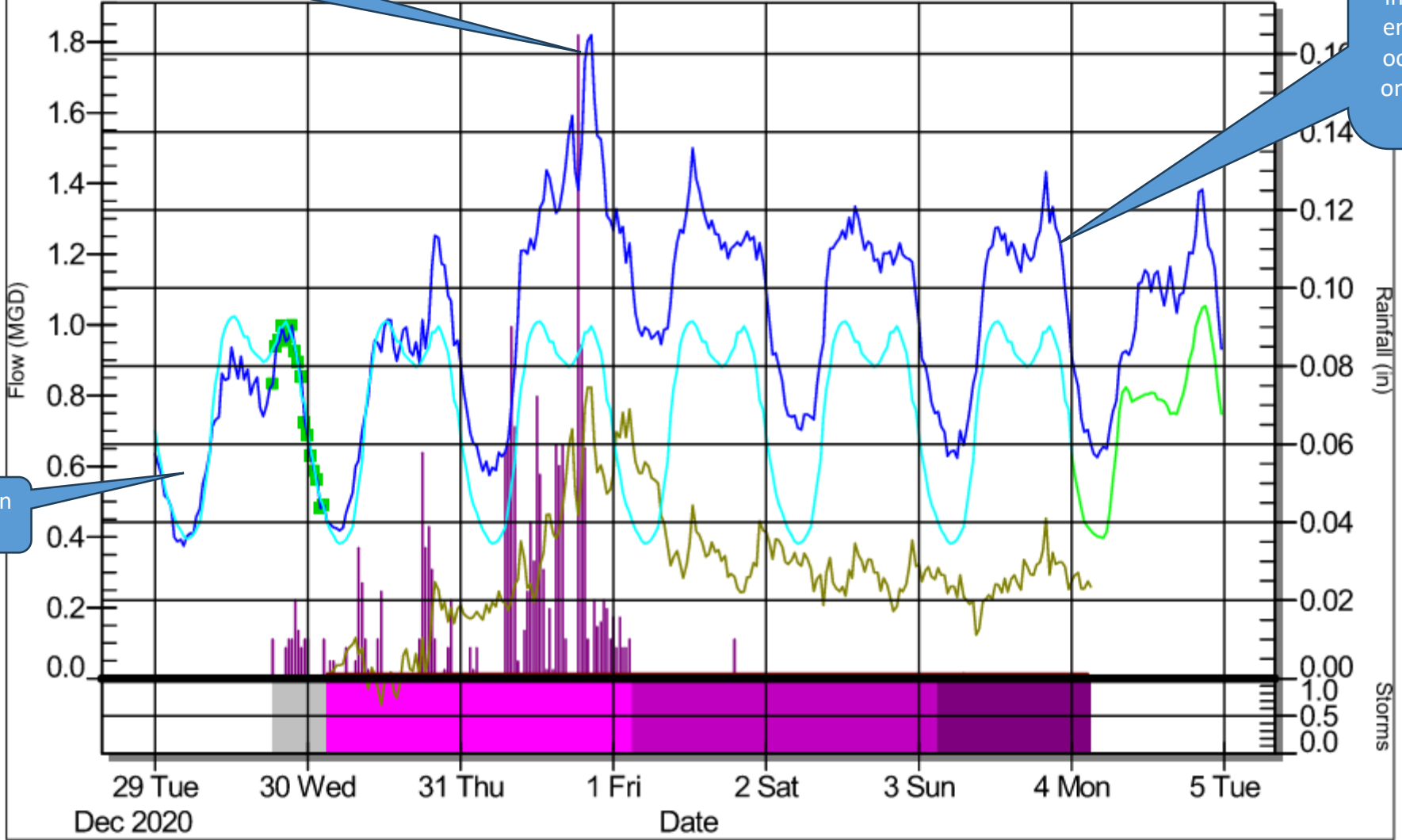


Storm Event - 12/30/2020 3:00:00 AM

1.57 in Rain Event

BUR-FM1011

Rainfall Gross Q Gross I/I Precomp(-) Weekends Weekdays



Wastewater flow increases due to inflow during rain event

Flow remains elevated 24 hours after storm event indicating infiltration still entering system. This can occur for days depending on height of groundwater and defects in system

Average flow before rain event

Peak Flow

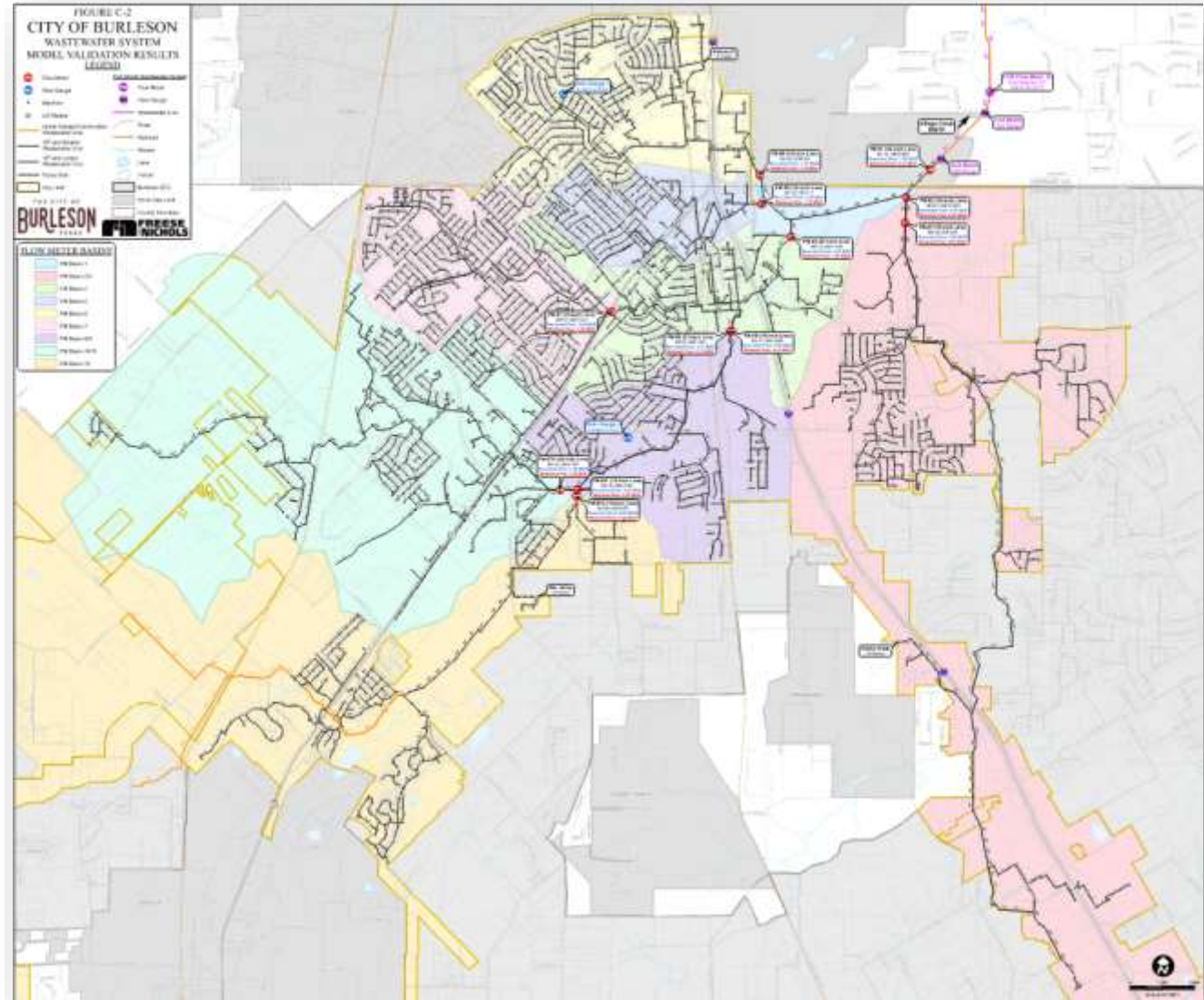
Peaking factors are calculated by dividing the wet weather flows by the average dry weather flows

Historical average peaking factor last 12 years – 3.0

- Based on 12 years of data collected at existing FW meter station
- Peaking factor ranged from 2.0 to 7.12
- Peaking factor correlates directly with amount of rainfall, typically the higher rainfall for the year, the higher the peaking factor

2023 Masterplan updated utilized 12 flow meters to record flow during dry and wet weather events

Peaking factor was calculated to be an average 2.72



Sewer Capacity

Existing meter station maximum flow – 14.5 MGD

- Existing peak wet weather flow – 14.1 MGD
- FW requires meter to be upgraded to avoid bypass flows

Town Creek interceptor project includes parallel line and meter station improvements

- Once completed, new meter will be capable of measuring flow up to 35 MGD, future improvements required
- 35 MGD will not be available until city purchases additional 10 MGD – only 25 MGD available today per contract
- Existing and parallel line will support project build out flows

Table 7-5 Wastewater Service Area Projected Wastewater Flows

| Planning Period | Population | Non-Residential Acreage (Acres) | Residential Average Day Flow (MGD) | Non-Residential Average Day Flow (MGD) | Total Average Day Flow (MGD) | Peak Wet Weather Flow (MGD) |
|-----------------|------------|---------------------------------|------------------------------------|--|------------------------------|-----------------------------|
| Existing | 49,760 | 1,795 | 4.00 | 0.84 | 4.84 | 14.10 |
| 5-Year | 62,548 | 2,383 | 4.99 | 1.30 | 6.29 | 19.17 |
| 10-Year | 76,822 | 2,730 | 6.15 | 1.43 | 7.57 | 23.56 |
| 20-Year | 103,799 | 4,397 | 8.29 | 2.19 | 10.48 | 33.44 |
| Buildout | 120,821 | 6,523 | 9.66 | 3.14 | 12.80 | 41.33 |

Includes approximately 3,000 acres of ETJ

Masterplan buildout flow – 41.33 MGD

Exceeds future allowable 35 MGD capacity through Fort Worth at buildout

Sewer Capacity – Known Developments

Known developments with flows included in masterplan flows

- Hooper Business Park
- Chicken Express
- Chisholm Summit
- Hulen/Alsbery – Kalterra Development
- Hyder Ranch
- Lakes of Burleson
- Bear Ridge
- Panchasarp Farms
- Shannon Creek (Reverie/Apartments)

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Includes approximately 3,000 acres of ETJ

Tall Grass

- Tall Grass (Only 200 acres located in ETJ at time of report included)
- Additional 3.6 MGD per development agreement **not** included in masterplan

Sewer Capacity – Tall Grass

Years 2028 - 2033

680 Single family homes

Years 2034 – 2039

- 300 Multifamily
- 350 Single family homes
- 140,000 sf commercial

Buildout

- 1,200 Multi-family
- 973 Single Family homes

| Year | Masterplan Projected Peak Flows (MGD) | Tall Grass Projected Peak Flows (MGD) | Total (MGD) |
|-------------|---------------------------------------|---------------------------------------|-------------|
| 2028 - 2033 | 23.56 | 0.65 | 24.21 |
| 2034 - 2039 | 33.44 | 1.69 | 35.13 |
| Buildout | 41.33 | 3.62 | 44.92 |

Between 2034 and 2039 peak flows will exceed future allowable capacity of 35 MGD through the existing FW meter station if development occurs as projected or if more dense development is allowed

Current Initiatives

Amend current Wholesale Wastewater Contract to include the additional 10 MGD for \$3.671 million.

Additional Wastewater Capacity Analysis

Staff is currently reviewing proposal – 4 potential options to consider

- Additional Capacity in Fort Worth's system
 - Two different routes to include improvements to FW's wastewater system
- Partnering with JCSUD to expand their existing wastewater treatment plant
- Feasibility of City owned wastewater treatment plant

Proposed Wastewater Service Area

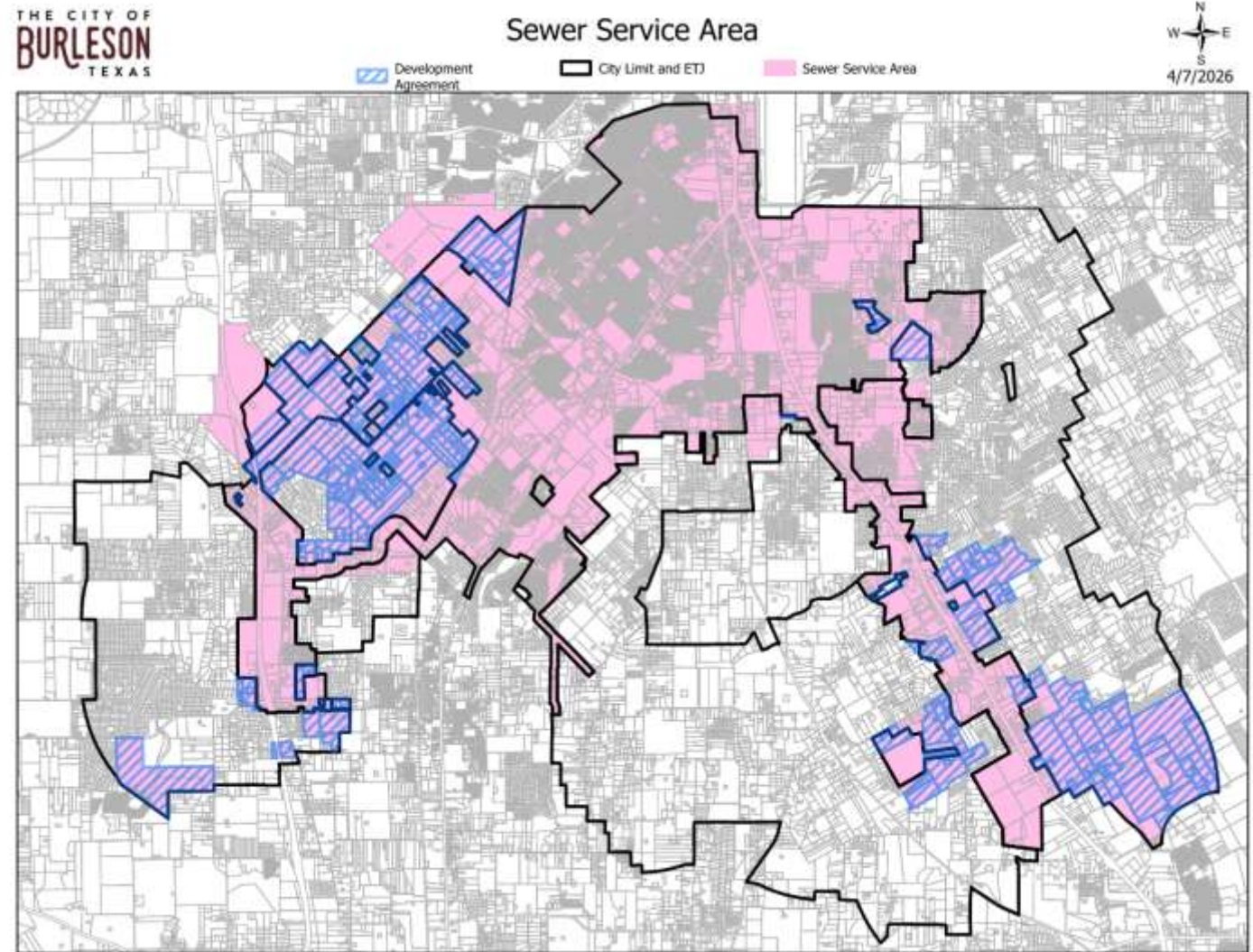
FW Wholesale Wastewater Contract Amendment

FW has shared concerns with city's CCN boundary and their ability to provide capacity in the future for the entire boundary

- Current Model Wastewater flow – 41.3 MGD
- Future Anticipated Model Flow – 44.9 - 46 MGD based on map to the right

Includes the following

- Silo Mills
- Tall Grass
- Development Agreements (potential future development in city)

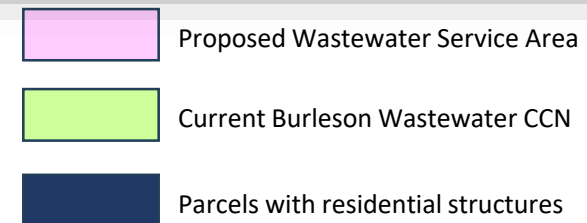
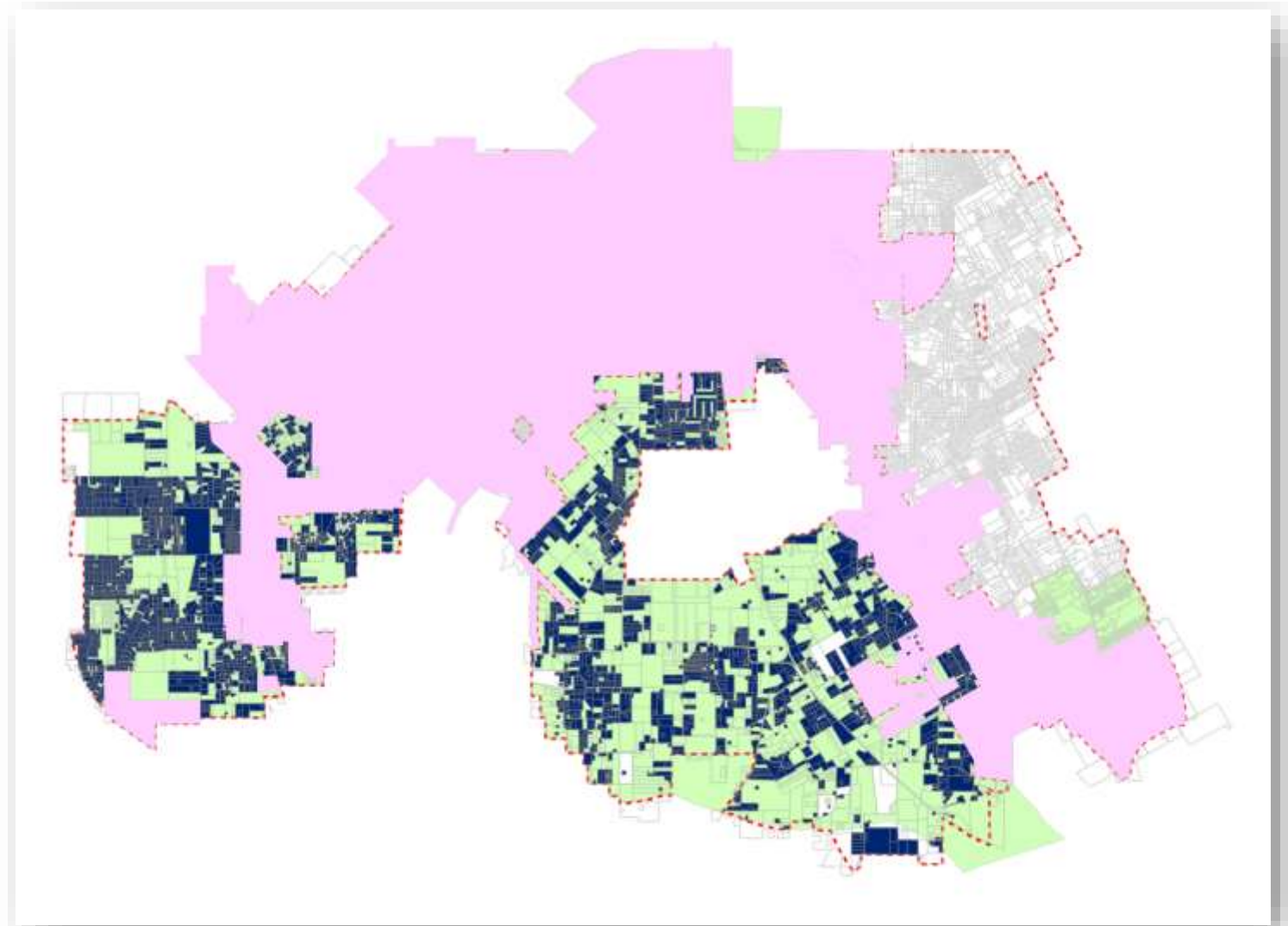


Discussion

Consideration of decertification of CCN in selected areas of the ETJ

- Land within the city limits is considered in the masterplan with the intent to serve upon request
- City has an obligation to serve if within CCN, however, if a request is received for service in the ETJ not considered in the masterplan and capacity is not available, the city may deny service
- ETJ property owner would have the opportunity to request decertification

Develop funding plan for additional wastewater capacity based on analysis



Questions

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