



Memo

Date: Friday, September 01, 2023

Project: Mulberry Fields Subdivision CAF (Capacity Acquisition Fee)

To: Otis Spriggs, Director of Development Services

From: Javier Vasquez, P.E., CFM

Subject: Water and Wastewater Capacity Acquisition Fee (41 ESUs)

The City of Angleton has coordinated with a Developer for Mulberry Fields subdivision, a proposed subdivision located on the west side of the City near the SH 288 and SH 35 (W. Mulberry St.) intersection. The proposed development of 41 single-family homes is generally bound by W. Live Oak Street to the north, W. Mulberry Street to the south, N. Walker Street to the east and Western Avenue to the west. Based on this information and using the planning criteria for water demand and sewer loading from the Utility Master Plan, below is the summary of the assumptions, analysis and model results. Capacity demand for this development was assessed based solely on the number of proposed residences and does not include loading from the proposed recreational center that is proposed for the subdivision.

Capacity Verification

- Water Demand
 - Average Daily Demand (ADD): 300 gallons per day per connection, $41 \times 300 = 12,300$ gpd or 8.54 gpm
 - Max Daily Demand (MDD): $1.7 \times \text{ADD} = 14.52$ gpm
 - Peak Hour Demand (PHD): $1.25 \times \text{MDD} = 18.15$ gpm
- Water Model Run
 - The Subdivision will be required to have two points of connection to the existing water system. The Subdivision will propose a connection point at the existing 6-inch water line along the east side of Walker Street and shall coordinate a connection to the existing 8-inch water line along the south side of W. Mulberry Street in order to create a looped system for the Subdivision.
 - **The existing water model was run for the above noted scenario. The model shows that there is sufficient pressure and fire flow when the system is looped as noted (See Exhibit #2).**
- Wastewater Flows
 - Average Daily Flow (ADF): 255 gallons per day per connection, $41 \times 255 = 10,455$ gpd or 7.26 gpm

- Peak Hour Wet Weather Flow (PWF): $4 \times \text{ADF} = 29.04 \text{ gpm}$
- Wastewater Model Run
 - The existing model was run for PWF scenario, which uses a peaking factor of 4.
 - It was assumed in the model that the wastewater for the subdivision will be collected and discharged at the manhole located on the west side of N. Walker Street. This manhole discharges into a 12" sewer line that runs south along N Walker Street towards W. Mulberry Street (SH 35). The line crosses W. Mulberry Street (SH 35) and continues as an 8-inch to 12-inch gravity main south along S. Walker Street, and discharges into Lift Station No. 3 (900 S Walker).
 - Wastewater is pumped from Lift Station No. 3 and collected into an existing 30-inch gravity sewer main along Munson Place. This existing 30-inch gravity main runs west along Munson Place and continues west towards and crossing SH 288 through easements along an existing drainage channel and discharges at the Oyster Creek WWTP along Sebesta Road.
 - Based on the model run, there is an existing section of 24-inch pipe within the WWTP that will require upsizing. This is an item identified in the utility master plan and is recommended to be upsized in the near future.

Capacity Acquisition Fee:

Please see Appendix "A" for the calculations for the Capacity Acquisition Fee.

- Water Service
 - The City has adopted a flat fee of \$536.70 per ESU for water service throughout the City.
- Wastewater Service
 - Total Capacity of 8" Sanitary Sewer set at TCEQ minimum slope is approximately 314 gpm
 - Percentage utilization of 8" sanitary sewer is 9.24% (peak flow)
 - Total Capacity of 12" Sanitary Sewer set at TCEQ minimum slope is approximately 715 gpm
 - Percentage utilization of 12" sanitary sewer is 4.06% (peak flow)
 - Total Capacity of 24" Sanitary Sewer set at TCEQ minimum slope is approximately 2,871 gpm
 - Percentage utilization of 30" sanitary sewer is 1.01% (peak flow)
 - Total Capacity of 30" Sanitary Sewer set at TCEQ minimum slope is approximately 4,508 gpm
 - Percentage utilization of 30" sanitary sewer is 0.64% (peak flow)
 - Total Capacity of 36" Sanitary Sewer set at TCEQ minimum slope is approximately 6,348 gpm

- Percentage utilization of 36" sanitary sewer is 0.46% (peak flow)
- Total Firm Capacity (taken from drawdown test) of Lift Station No. 3 is approximately 280 gpm.
- Based on the assumed capacity of the lift station, the percent utilization of LS No. 3 pumping capacity and 4" force main is 10.37% (peak flow).
- Fee for sewer service is \$861.58 per ESU.

Therefore, the combined cost per ESU (water and wastewater) will be approximately \$1,398.28. The total fee for the projected 41 homes for Mulberry Fields Subdivision is approximately \$57,329.48.

ATTACHMENTS

Appendix "A" – Capacity Acquisition Fee Calculations

Exhibit 1 – Water System Map (Existing)

Exhibit 2 – Water Model Map (Proposed)

Exhibit 3 – Wastewater System Sewer Trace and Flow Capacity

APPENDIX A - PROPOSED COST PER CONNECTION

Water Plants								
Asset Name	Current Construction Cost Estimate	Year Constructed	ENR Value for Construction Year	Estimated Construction Cost in Year of Construction	Number of Assets	Total Estimated Construction Cost	Production (gpd)	Cost per ESU (1 ESU = 300 gpd)
Henderson Water Plant								
1 MG GST	\$ 2,000,000	1988	4519	\$ 825,992	1	\$ 825,992		
750 gpm pumps	\$ 51,250	2006	7751	\$ 36,304	2	\$ 72,608		
850 gpm pumps	\$ 51,250	2010	8802	\$ 41,227	3	\$ 123,680		
Total Henderson Water Plant						\$ 1,022,280	3,672,000	\$83.52
Chenango Water Plant								
1 MG GST	\$ 2,000,000	1953	600	\$ 109,669	1	\$ 109,669		
850 gpm pumps	\$ 51,250	2005	7446	\$ 34,875	3	\$ 104,626		
Total Chenango Water Plant						\$ 214,296	3,672,000	\$17.51
Jamison Water Plant								
450k GST	\$ 987,500	2009	8570	\$ 773,430	1	\$ 773,430		
850 gpm pumps	\$ 51,250	2015	10035	\$ 47,002	3	\$ 141,005		
10k Hydro Tanks	\$ 77,500	2009	8570	\$ 60,700	2	\$ 121,399		
Total Jamison Water Plant						\$ 1,035,835	3,672,000	\$84.63
Water Well #11	\$ 1,062,500	1985	4195	\$ 407,347	1	\$ 407,347	1,224,000	\$99.84
Asset Name	Current Construction Cost Estimate	Year Constructed	ENR Value for Construction Year	¹ Estimated Construction Cost in Year of Construction	Number of Assets	Total Estimated Construction Cost	Production (gpd)	Cost per ESU (1 ESU = 200 gpd)
Northside EST	\$ 2,000,000	1961	847	\$ 154,816	1	\$ 154,816	500,000	\$61.93
Southside EST	\$ 2,000,000	1977	2576	\$ 470,846	1	\$ 470,846	500,000	\$188.34
¹ Total Cost Per Connection for Water Purchased From Brazosport Water Authority (BWA)								\$0.94
² Total Estimated Cost Per Water Connection								\$536.70

Wastewater Plants

Asset Name	Current Construction Cost Estimate	Year Constructed	ENR Value for Construction Year	³ Estimated Construction Cost in Year of Construction	Number of Assets	Total Estimated Construction Cost	Production (gpd)	Cost per ESU (1 ESU = 255 gpd)
Oyster Creek Sanitary Sewer Treatment Plant	\$ 36,000,000	1980	3237	\$ 9,214,201	1	\$ 9,214,201	3,600,000	\$ 652.67

Wastewater Infrastructure

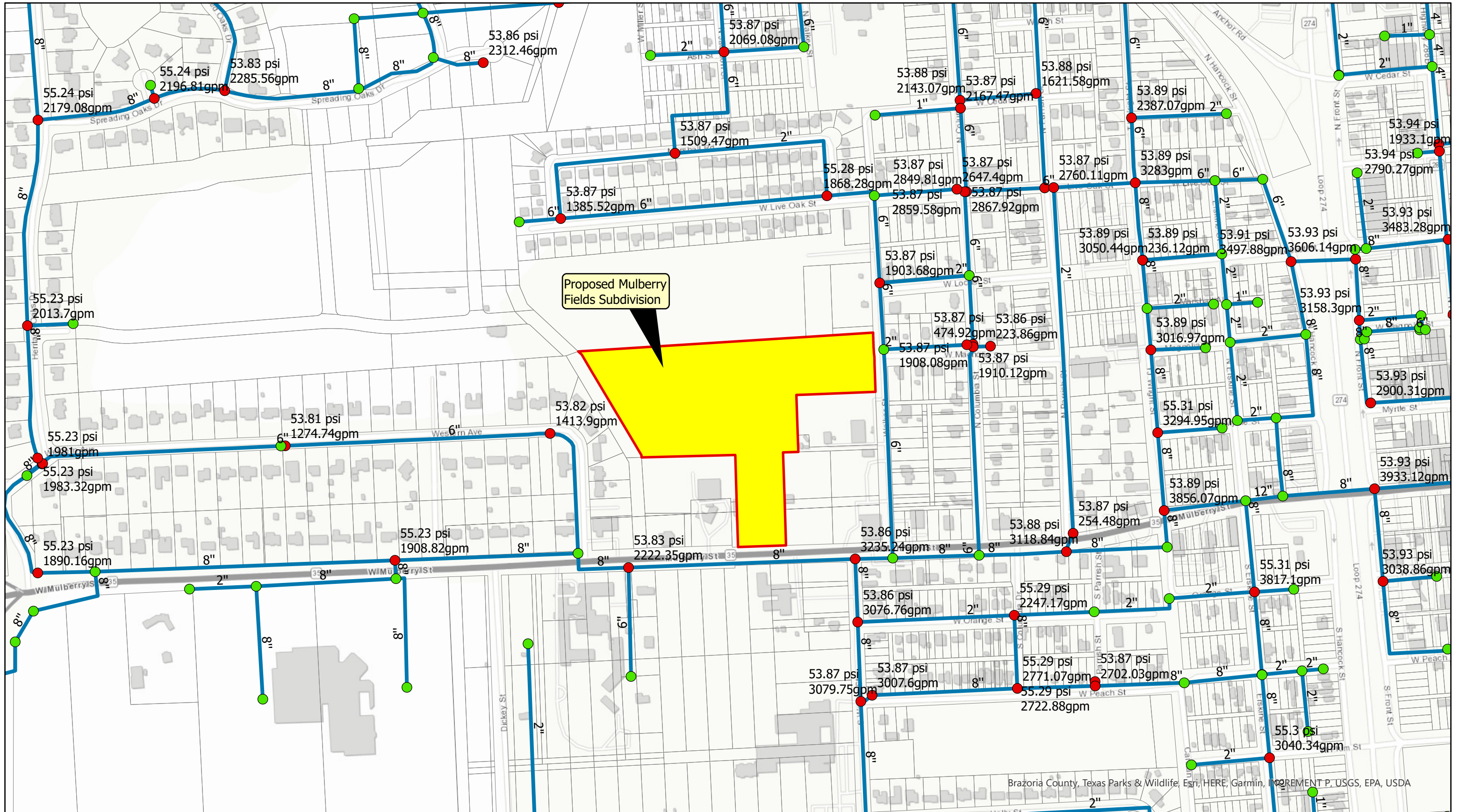
Asset Name	Current Construction Cost Estimate	Est. Year Constructed	ENR Value for Construction Year	³ Estimated Construction Cost in Year of Construction	% of Capacity	Total Estimated Construction Cost	Development ESU's	Cost per ESU (1 ESU = 255 gpd)	
Gravity Sewer									
8" Main (2,610 feet)	\$ 195,750	1970	1381	\$ 21,375	9.24%	\$ 1,976	41	\$ 48.19	
12" Main (1,055 feet)	\$ 131,875	1970	1381	\$ 14,400	4.06%	\$ 585		\$ 14.27	
24" Main (560 feet)	\$ 155,000	1970	1381	\$ 16,925	1.01%	\$ 171		\$ 4.18	
30" Main (5,870 feet)	\$ 2,233,150	1970	1381	\$ 243,851	0.64%	\$ 1,571		\$ 38.32	
36" Main (20 feet)	\$ 7,000	1970	1381	\$ 764	0.46%	\$ 3		\$ 0.09	
Total Gravity Sewer						\$ 4,307		\$ 105.04	
Force Main									
4" Force Main (11 feet)	\$ 1,000	1970	1381	\$ 109	10.37%	\$ 11		\$ 0.28	
Total Force Main						\$ 11		\$ 0.28	
Lift Station									
No. 3	\$ 375,000	1970	1381	\$ 40,948	10.37%	\$ 4,247	\$ 103.59		
Total Lift Station						\$ 4,247	\$ 103.59		
Total Wastewater Infrastructure						\$ 8,565	\$ 208.91		

Total Estimated Cost Per Wastewater Connection	\$861.58
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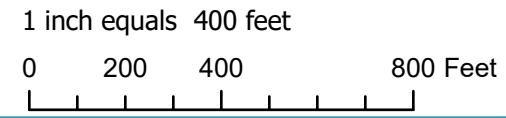
¹ The City purchases approximately 1.8 MGD from BWA which is provided at a rate of \$3.12 per 1,000 gallons. Therefore, one (1) ESU or 300 gallons, is approximately \$0.94.

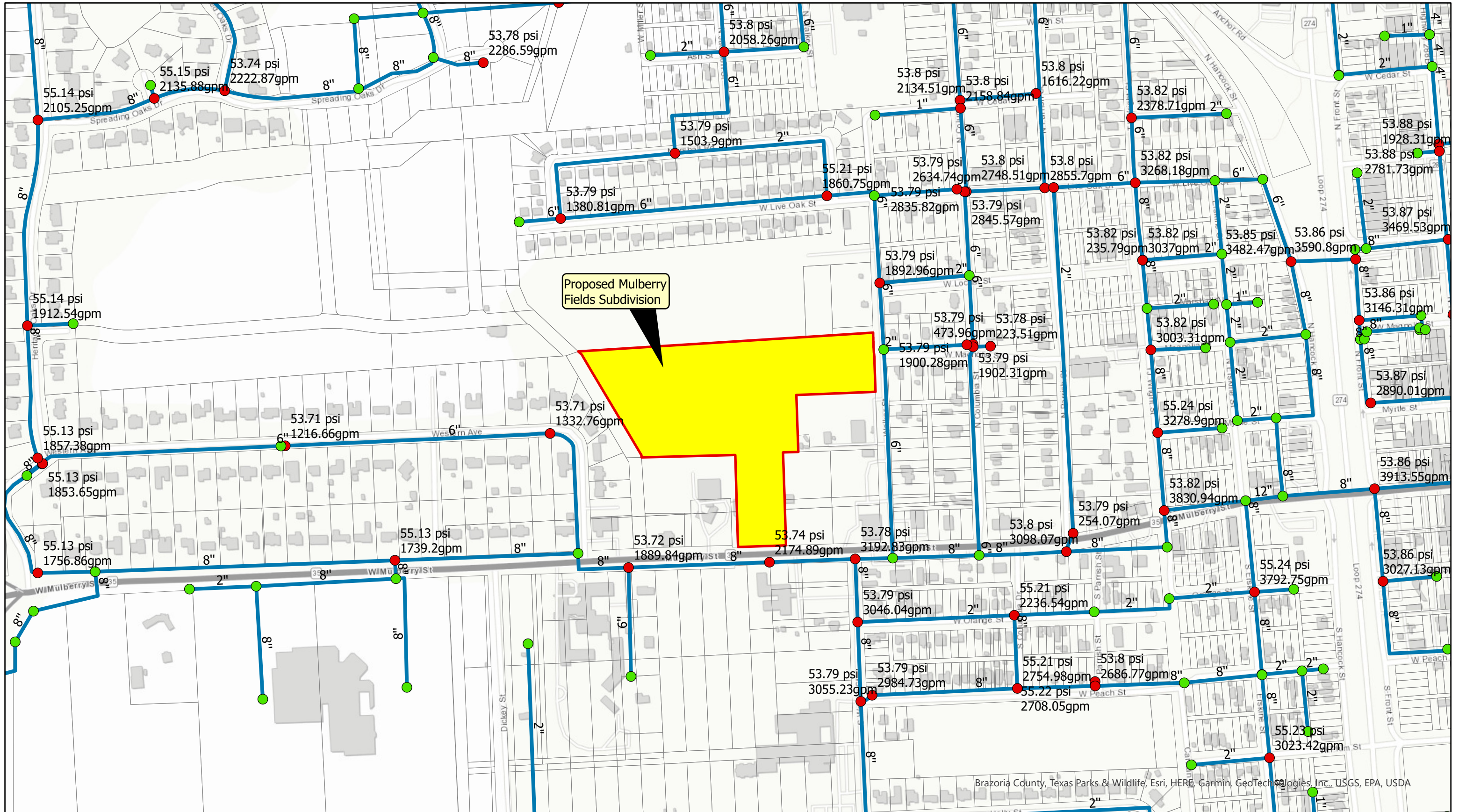
² The cost shown is the adopted flat fee per ESU for water service.

³ The cost shown is taken by dividing the current construction cost estimate by the Nov 2021 ENR Value of 12647.

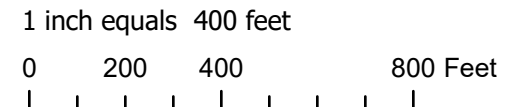


City of Angleton, Texas - Water System Modeling
 Mulberry Fields Subdivision - Existing System Model
 System Pressure and Available Fire Flow





City of Angleton, Texas - Water System Modeling
 Mulberry Fields Subdivision - Post Development System Model
 System Pressure and Available Fire Flow



Brazoria County, Texas Parks & Wildlife, Esri, HERE, Garmin, GeoTechnologies, Inc., USGS, EPA, USDA

- Legend**
- Manhole**
TYPE
 ● Active
 ○ Trace
 ● Inactive
- Wetwell**
TYPE
 Active
 Trace
 Inactive
- Gravity Main**
TYPE
 → Active
 → Trace
 → Inactive
- Forcemain**
TYPE
 — Active
 — Trace
 — Inactive
- D_OVER_D**
- 0.14% - 0.2%
 - 0.21% - 0.3%
 - 0.31% - 0.4%
 - 0.41% - 0.5%
 - 0.51% - 0.6%
 - 0.61% - 0.7%
 - 0.71% - 0.8%
 - 0.81% - 0.9%
 - 0.91% - 1%
 - 1.01% - 1.1%
- City Limits
 Parcels
 Service Areas
 Point Loading
 Mulberry

