



CITY OF SAN MARCOS, TEXAS

WATER IMPACT FEE STUDY

March 2026

City Project No: 223-095

Plummer Project No: 0600-037-01



PLUMMER

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PLUMMER

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APPENDICES

- A. 2022 Capital Improvement Plan Update
- B. 2020 Water System Master Plan
- C. 2024 Addendum to the 2020 Water Master Plan
- D. Water Impact Fee Credit Analysis Report

LIST OF ABBREVIATIONS

ABBREVIATION	DESCRIPTION
CCN	Certificate of Convenience and Necessity
CIP	Capital Improvement Program
cfs	Cubic Feet Per Second
gpd	Gallons per Day
gpm	Gallons per Minute
LUE	Living Unit Equivalency
MG	Million Gallons
MGD	Million Gallons Per Day
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TLGC	Texas Local Government Code
TWDB	Texas Water Development Board
YR	Year

EXECUTIVE SUMMARY

Impact fees are a mechanism for funding the public infrastructure necessitated by new development. Impact fees are collected from developers prior to allowing new connections to a utility system to recover the incremental cost of new infrastructure attributable to the impact of each new unit of development. In the case of water impact fees, the infrastructure needs to include water supplies, treatment facilities, storage facilities, pumping facilities, and the distribution network itself.

The primary purpose of this 2026 Water Impact Fee Report for the City of San Marcos, Texas is to identify the allowable water impact fee per unit of new development necessary to fund water system improvements in accordance with governing legislation, Chapter 395 of the Texas Local Government Code (TLGC). The actual fee amount ultimately assessed is at the discretion of the City of San Marcos, so long as it does not exceed the maximum assessable allowed by law. The study is limited to a period of 10 years to project new growth and corresponding capacity needs, as required by state law. The study (and corresponding maximum fees) must be reevaluated at least every 5 years.

Chapter 395 of the TLGC establishes the maximum impact fee that may be assessed as the total eligible impact fee costs less the total impact fee rate credits divided by the growth in service units over the 10-year eligible period.

$$\text{Maximum Impact Fee} = \frac{\text{Total Eligible Capital Cost} - \text{Credits for Rate Contributions}}{\text{10 Year Projected Growth in Service Units}}$$

Table ES-1 summarizes the values derived utilizing the methodology discussed in this report. The maximum impact fee for the City of San Marcos was calculated to be \$14,519 per Living Unit Equivalent (LUE). The LUE is the City's designated service unit measurement and corresponds to one residential 5/8-inch water meter connection or 0.4 gallons per minute (gpm) peak hour flow for commercial or multi-family developments.

ES-1: Summary of Maximum Impact Fee

Total Eligible Impact Fee Costs	\$140,775,867
Total Impact Fee Rate Credits	\$5,878,851
Maximum Allowable Costs	\$134,897,016
Growth in Service Units (LUE) 2025-2035	9,291
Maximum Allowable Water Impact Fee	\$14,519

1 INTRODUCTION

The City of San Marcos (City) contracted with Plummer Associates Inc. (Plummer) to perform a 2025 impact fee update based on analysis of the City's water system and following recent updates to their Capital Improvement Plan (CIP), included as **Appendix A**. This report summarizes the methodology used in the development and calculation of water impact fees that are reasonable and allowable for the City. The methodology satisfies the requirements of the Texas Local Government Code (TLGC) Section 395.

1.1 SAN MARCOS WATER SYSTEM OVERVIEW

The City of San Marcos, Texas water service area is represented by the Certificate of Convenience and Necessity (CCN), which covers an area of approximately 50 square miles and roughly follows the City of San Marcos city boundaries¹. The current population served by the City of San Marcos is approximately 90,988. According to the United States Census Bureau, the City has experienced 4-year population growth rate of 9.6% between 2020 and July 2024¹. Assuming this growth rate continues for the following ten-year period (i.e., approximately annual growth rate of 2%), the population will increase by approximately 20,000 people by 2035 (see **Table 1** and **Figure 1**). The City's service area is illustrated in **Figure 2**.

Table 1: City of San Marcos Population Projections

Year	Population
2025	90,988
2027	94,664
2029	98,488
2031	102,467
2033	106,607
2035	110,914

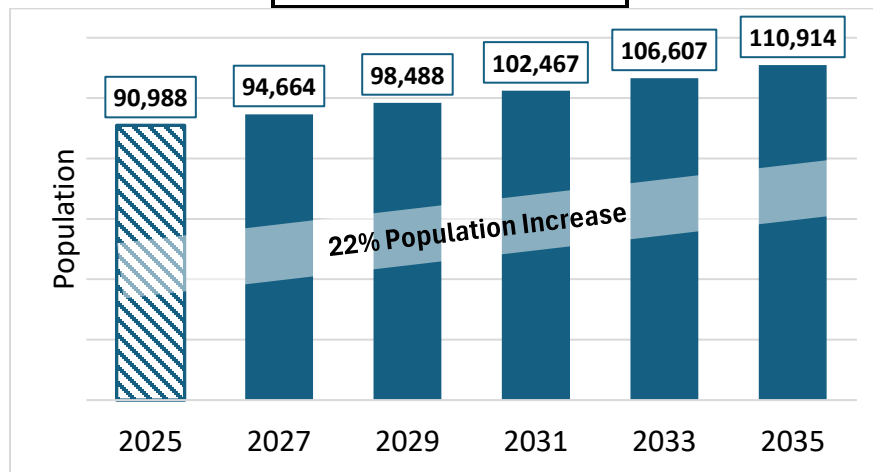


Figure 1: City of San Marcos Population Projections

¹ <https://www.census.gov/quickfacts/fact/table/sanmarcocitytexas/PST045223>

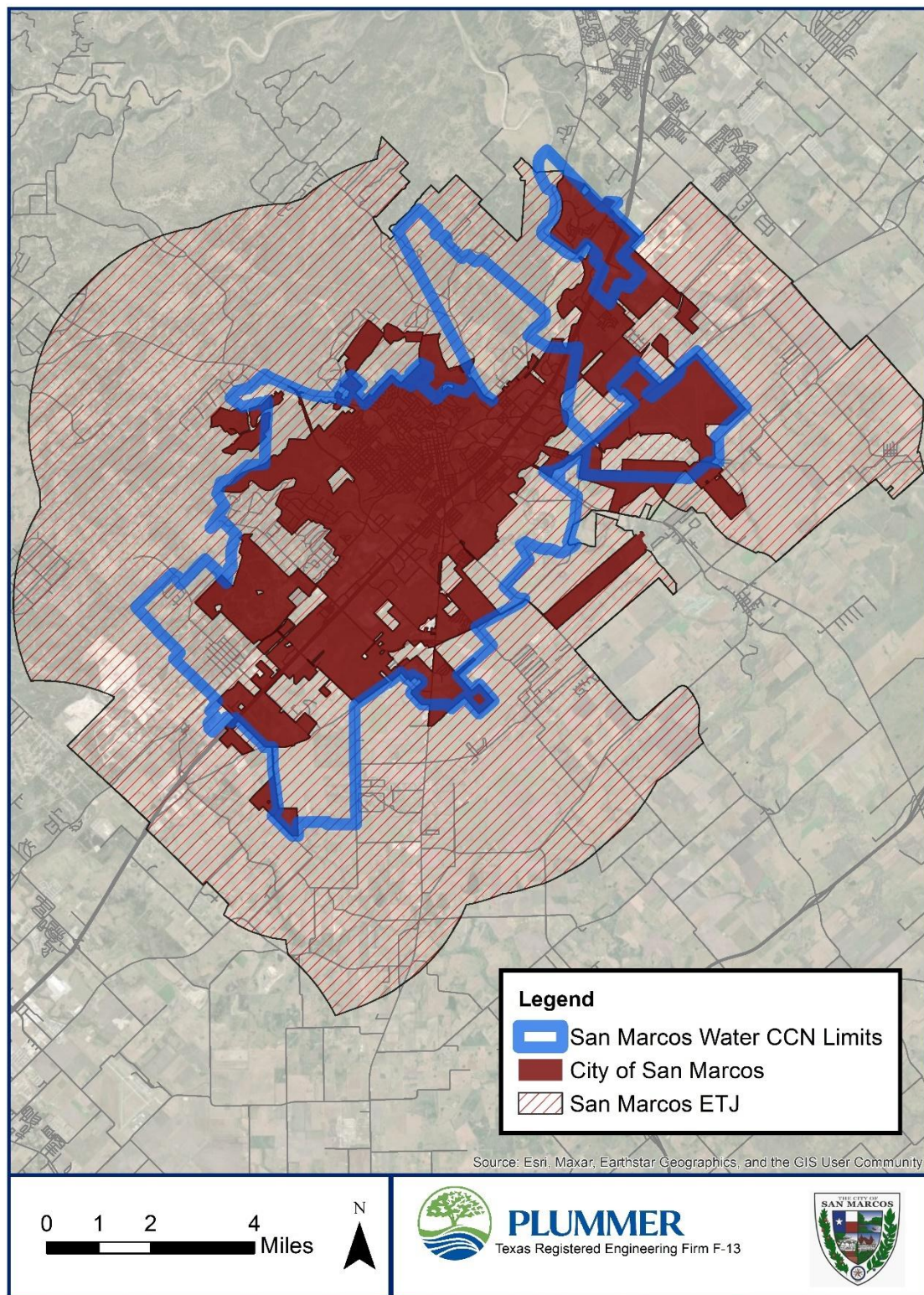


Figure 2: City of San Marcos, Texas CCN

1.2 REGULATION AND RIGHTS FOR IMPACT FEE ASSESSMENT

TLGC Chapter 395 requires analysis by a licensed professional engineer in the State of Texas to determine the level of impact fees permissible by law. Chapter 395 defines an impact fee as *“a charge or assessment imposed by a political subdivision against new development in order to generate revenue for funding or recouping the costs of capital improvements or facility expansions necessitated by and attributable to the new development.”*

In September 2001, Senate Bill 243 amended Chapter 395, creating the current procedure for the assessment of reasonable and allowable impact fees. Chapter 395 identifies the following items as impact fee eligible costs:

- Construction contract price,
- Surveying and engineering fees,
- Land acquisition costs, including land purchases, court awards and costs, attorney's fees, and expert witness fees; and
- Fees actually paid or contracted to be paid to an independent qualified engineer or financial consultant preparing or updating the capital improvements plan who is not an employee of the political subdivision.

In addition to these eligible costs, Chapter 395.012(B) allows projected interest charges and other finance costs to be included in the assessment of impact fees, provided they are used for the payment of principal and interest on bonds, notes, or other obligations issued by or on behalf of the political subdivision to finance the capital improvements or facility expansions identified in the CIP.

2 IMPACT FEE METHODOLOGY AND ANALYSIS

The process for updating impact fees includes determining the projected growth of service units, development of land use assumptions, and comparing these to associated capital improvement costs. Chapter 395 of the TLGC states that the maximum allowable impact fee may not exceed the total cost of capital improvements required to serve new development less credits (to account for water rate revenues funding capital improvement plans) divided by the total number of service units attributed to new development during a 10-year impact fee eligibility period (See **Equation 1** Below). Land use assumptions are used to spatially distribute the projected growth in service units and confirm the projected growth is feasible given the amount of developable land that may be served by the water system.

Equation 1: Calculation of Maximum Allowable Impact Fee

$$\text{Maximum Impact Fee} = \frac{\text{Total Eligible Capital Cost} - \text{Credits for Rate Contributions}}{10 \text{ Year Projected Growth in Service Units}}$$

2.1 LAND USE ASSUMPTIONS

The City has produced information on its planned growth by land use in the *Vision SMTX Comprehensive Plan*⁴, last updated October 15th, 2024. The *Vision SMTX Comprehensive Plan* is a vision and policy document intended to guide the growth and evolution of the City for the next 20-30 years. **Figure 3** demonstrates the *Vision SMTX Comprehensive Plan* preferred alternative by land use. **Table 2** summarizes the projected growth by land area in the *Vision SMTX Comprehensive Plan* which coincides with the City's Water CCN.

In addition, information on land use by parcel was collected from nearby counties. **Figure 4** presents the City's water CCN by property type according to data published by Hays Central Appraisal District (HCAD)⁵, Guadalupe County Appraisal District (GCAD)⁶, and Comal County Appraisal District (CCAD)⁷. **Table 3** summarizes the land type by area for the intersecting region within the City's Water CCN. Together, the information from the *Vision SMTX Comprehensive Plan* and the county appraisal district information were used to determine the spatial distribution of projected growth. This spatial distribution ensures projected growth coincides with vacant area available and likelihood of new development types.

Table 2: Vision SMTX Comprehensive Plan Total Projected Land Use Within Water CCN

<i>SMTX Vision</i> Designation	Acres	Sq. Miles	Total Area %
Low Intensity	15,003	23.4	47.4%
Medium Intensity	3,497	5.5	11.0%
High Intensity	732	1.1	2.3%
Employment Area	4,250	6.6	13.4%
Existing Neighborhood	3,952	6.2	12.5%
Open Space	4,238	6.6	13.4%
Total	31,672	49.4	100.0%

Table 3: Existing Land Use Type for Parcels Within Water CCN

Land Use Type	Acres	Sq. Miles	Total Area %
Single Family Residential	10,401	16.3	32.8%
Commercial/Industrial	1,015.0	1.6	3.2%
Multi-Family	691	1.1	2.2%
Rural/Pasture/Cropland	2,981	4.7	9.4%
Undeveloped	14,098	22.0	44.5%
Vacant Platted	2,143	3.2	6.8%
Utility/Roadway/Wildlife/Other Exempt	343	0.5	1.1%
Total	31,672	49.4	100.0%

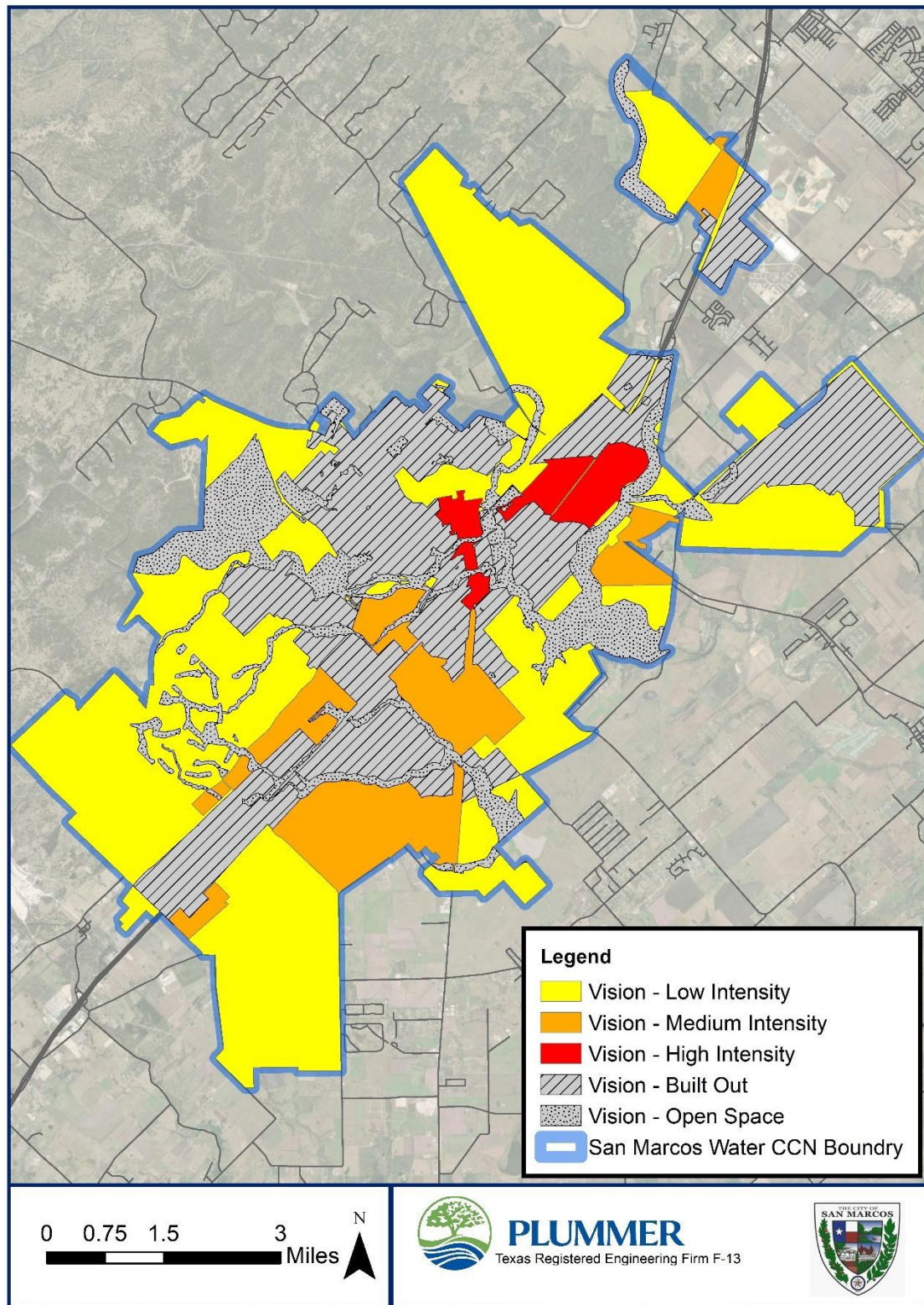


Figure 3: SMTX Vision Land Use

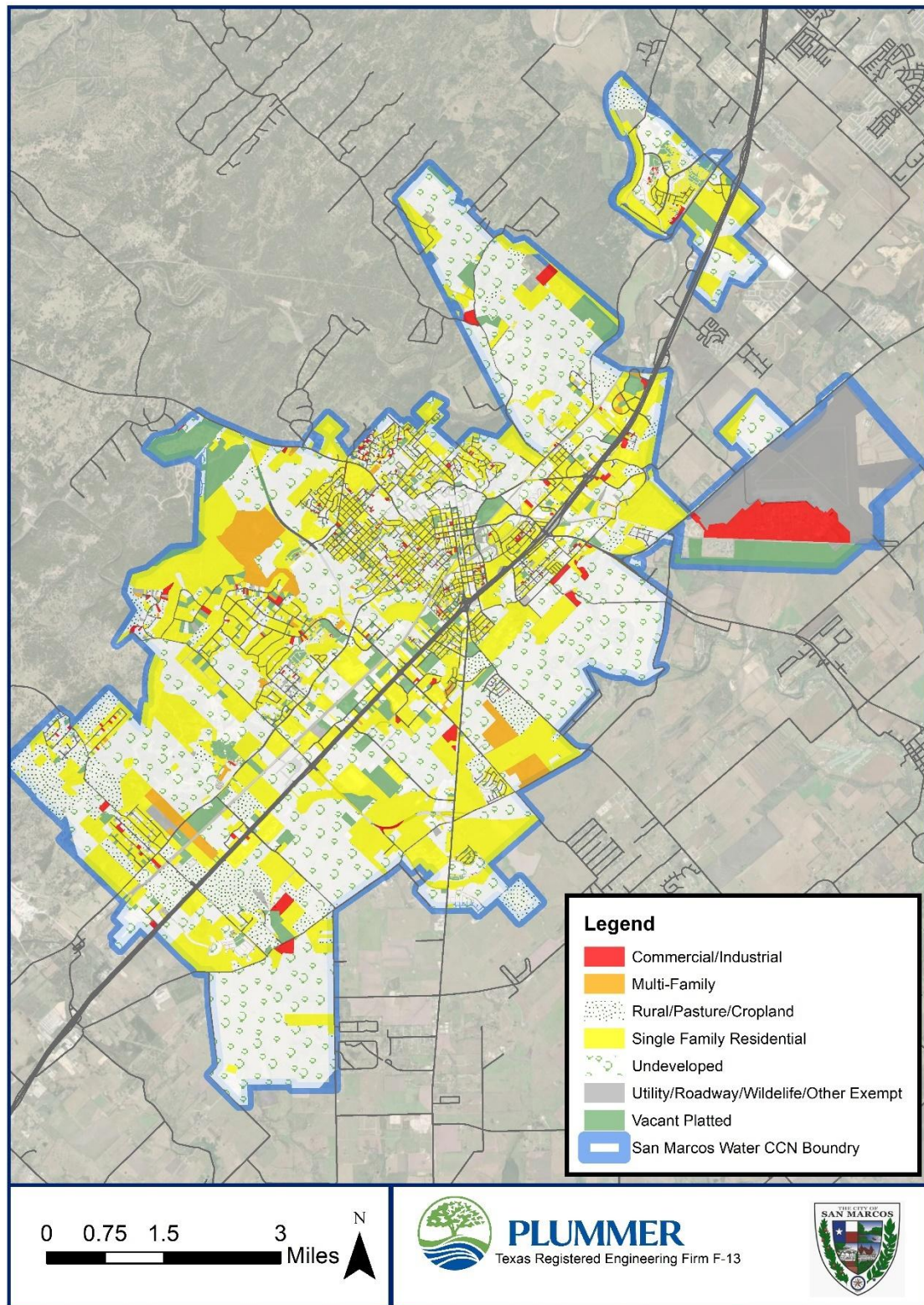


Figure 4: County Land Use

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The *Vision SMTX Comprehensive Plan* designations of “Employment Area”, “Existing Neighborhood”, and “Open Space” were considered areas where no growth would occur as these areas are presumed built-out or preserved green space. A summary of growth and non-growth area per *Vision SMTX Comprehensive Plan* is shown in **Table 4**. County parcels were considered eligible for growth if they were of land use types “Undeveloped”, “Vacant Platted”, or “Rural Land/Pasture/Cropland”. The 2023 population of the City was used to calculate a population density (acres per 100 persons). Those population densities for each land type eligible for growth were then multiplied by 2035 population of 110,914 people, which was projected utilizing 2% annual growth rate published by the U.S. Census Bureau discussed in Section 1.1. The current and projected areas by land use type are shown in **Table 5**.

Table 4: SMTX Vision Growth Areas

	Acres
Total Water CCN Acreage	31,672
Non-growth Areas (Built-out/Greenspace)	12,440
Growth Areas	19,232

**Methodology: Non-growth areas determined by the Vision SMTX Comprehensive Plan*

Table 5: Current and Projected Developed Areas Within Water CCN

		2023 Area (acres)	2023 Density (acres per 100 persons)	Projected 2035 Area (acres)
	Developed			
Single Family Residential	Yes	10,401	10.9	12,085
Multi-Family	Yes	691	0.7	803
Commercial/Industrial	Yes	1,015	1.1	1,179
Utility/Roadway/Wildlife/Other Exempt	Yes	343	0.4	399
Rural/Pasture/Cropland, Vacant, Undeveloped	No	19,222		17,206
Total Developed Area (in Water CCN)		12,450		14,466
Percent Developed Area (in Water CCN)		39%		46%

**Methodology: Acres per 100 persons from Existing Land Use tables and 2023 population
(Projected population 2035)/100*(acres per 100 persons) = Projected 2035 Area
Developed Percent = Developed Area Intersecting Water CCN / Total Area Intersecting Water CCN*

This land use analysis estimates that the developed area reasonably served by the existing water CCN will grow from 12,450 acres to 14,466 acres between 2023 and 2035. It is assumed that this growth in development will follow the current distribution patterns in acres per 100 persons. The projected total amount of developed land in 2035 utilizing this methodology is 14,466 acres or 46% of the total land area of the City’s current water CCN. This estimate falls within the limits of the *Vision SMTX Comprehensive Plan* which designates approximately 19,232 acres as growth areas in the water service area for this period.

2.2 LIVING UNIT EQUIVALENCY (LUE) PROJECTIONS

The living unit equivalency (LUE) is the City's designated service unit measurement and corresponds to one residential 5/8-inch water meter connection. As discussed in Section 2.1, growth in the area, assuming the current distribution of development type, is reasonable given the amount of land available for development and the anticipated growth presented in the *Vision SMTX Comprehensive Plan*. It is also reasonable to assume that the current distribution of meters size will follow the land use distribution. An LUE multiplier was applied to the count of each meter size based upon the intermediate flow rates relative to a 5/8" meter (equivalent to 1 LUE) as published in AWWA Manual M6. The meter count by size, LUE multipliers, and resulting number of LUEs are shown in **Table 6** below.

Table 6: 2025 Water Meters and LUE

<i>Meter Size</i>	<i>Meter Count</i>	<i>LUE/Meter</i>	<i>LUE</i>
5/8"	16,002	1	16,002
3/4"	232	1.5	348
1"	533	2.5	1,333
1.5"	238	5	1,190
2"	502	8	4,016
3"	138	17.5	2,415
4"	43	30	1,290
6"	27	67.5	1,823
8"	54	240	12,960
10"	3	350	1,050
Total	17,772	-	42,426

Therefore, in order to estimate the future growth in LUEs over the impact fee eligible 10-year period, the approximately 2% growth rate per year published by the U.S. Census Bureau was applied to the current number of LUEs. The resulting LUE projections are shown below in **Table 7**. It is estimated, utilizing the methodology discussed above, that the City will experience a service unit growth of 9,291 LUEs between 2025 and 2035.

Table 7: 10-Year LUE Projections

<i>Year</i>	<i>LUE</i>
2025	42,426
2027	44,140
2029	45,923
2031	47,779
2033	49,709
2035	51,717

2.3 IMPACT FEE ELIGIBLE CAPITAL EXPENDITURES

Given the projected growth in water demands, existing capacity, and the modeling of infrastructure needs, various capital improvement projects have been identified to meet the needs for the next 10 years. These projects are informed by the City's 2020 Water System Master Plan (Appendix B) and the 2024 Addendum to the 2020 Water Master Plan (Appendix C). **Table 8** summarizes the capital improvement costs required to meet the projected population increase over the next 10 years. In the case of improvements or expansion to an existing facility, only the percentage of the project which will serve new customers by 2035 is included. Additionally, **Table 9** summarizes the capital improvement projects that are recently completed with remaining capacity to support future development growth.

The largest single capital project is the Alliance Regional Water Supply Phase I. The Alliance Regional Water Supply Phase I is a collection of projects which will supply water from a new water source to multiple utilities in Central Texas. Only the City of San Marcos portion of the cost sharing anticipated for the 10-year impact fee eligible period was included.

As shown in **Table 10**, the total amount of impact fee eligible costs for 2025 through 2035 is estimated to be \$140,775,867.

Table 8: Impact Fee Eligible Capital Improvements

WMP CIP No.	CIP Name	Project Cost	2025 Use	2035 Use	IF Use	Total Capacity	Unit	% Capacity Utilization of New LUE	% of Project Paid for by City	% Eligible	Eligible Cost
Pumping Capacity		\$3,750,000									\$1,950,000
1	Expand Comanche Pumps	\$3,750,000	1,800	3,750	1,950	3,750	gpm	52.00%	100.00%	52.00%	\$1,950,000
Storage		\$10,410,000									\$10,410,000
14	Blanco Vista EST	\$10,410,000	0	1	1	1	MG	100.00%	100.00%	100.00%	\$10,410,000
Supply		\$147,491,113									\$69,184,628
N/A	Alliance Regional Water Authority (ARWA)	\$147,491,113	0	9,291	9,291	19,807	LUE	46.91%	100.00%	46.91%	\$69,184,628 ^A
Transmission / Distribution^B		\$38,934,000									\$31,522,532
4	Southwest 810' Plane Loop	\$1,420,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$1,420,000
6	Rattler Road Loop	\$715,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$715,000
7	South Hunter Rd Loop	\$989,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$989,000
8	Patricia and Sunset Acres	\$1,074,000	49	1,763	1,714	1,763	gpm	97.22%	100.00%	97.22%	\$1,044,150
9	Leah Ave Extension	\$676,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$676,000
10	Upgrade IH-35 Crossings	\$1,333,000	1,763	3,134	1,371	3,134	gpm	43.75%	100.00%	43.75%	\$583,188 ^C
11	Railroad Crossing and Upgrades	\$989,000	1,224	1,763	539	1,763	gpm	30.56%	100.00%	30.56%	\$302,194 ^D
12	Centerpoint - Millbrook Connection	\$1,038,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$1,038,000
22	Kissing Tree - Kingswood Line	\$1,606,000	0	1,763	1,763	1,763	gpm	100.00%	50.00%	50.00%	\$803,000 ^E
23	Kissing Tree - Deerwood Line	\$1,097,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$1,097,000
24	Kissing Tree - McCarty Line	\$1,002,000	0	3,134	3,134	3,134	gpm	100.00%	100.00%	100.00%	\$1,002,000 ^F
25	Airport Loop	\$2,615,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$2,615,000
26	Parallel Comanche Outlet Main	\$1,851,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$1,851,000
	Kissing Tree - La Cima Loop - Connect to										
27	Estates of San Marcos	\$215,000	0	783	783	783	gpm	100.00%	100.00%	100.00%	\$215,000
28	Kissing Tree - La Cima Loop - Primary	\$5,251,000	0	3,134	3,134	3,134	gpm	100.00%	100.00%	100.00%	\$5,251,000
29	McCarty Tank Fill/Drain Line	\$2,233,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$2,233,000
30	US 80 Loop	\$2,998,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$2,998,000
31	PGM of Texas Extension	\$872,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$872,000
32	Trace Dev. Connection	\$303,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$303,000
33	Old Bastrop Extension 1	\$1,283,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$1,283,000
	North Side Connection for ARWA BV EST										
34	Water	\$2,116,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$2,116,000
	Trace Dev. and Old Bastrop Extension to										
37.1	Francis Harris (8")	\$490,000	0	783	783	783	gpm	100.00%	100.00%	100.00%	\$490,000
	Trace Dev. and Old Bastrop Extension to										
37.1	Francis Harris (12")	\$245,000	0	783	783	783	gpm	100.00%	100.00%	100.00%	\$245,000
37.2	Francis Harris Extension	\$1,381,000	0	783	783	783	gpm	100.00%	100.00%	100.00%	\$1,381,000
45.A	Centerpointe South Segment A (North)	\$1,469,000	0	1,763	1,763	1,763	gpm	100.00%	0.00%	0.00%	\$0

WMP CIP No.	CIP Name	Project Cost	2025 Use	2035 Use	IF Use	Total Capacity	Unit	% Capacity Utilization of New LUE	% of Project Paid for by City	% Eligible	Eligible Cost
45.B	Center Point South - Segment B (Middle)	\$1,714,000	0	1,763	1,763	1,763	gpm	100.00%	0.00%	0.00%	\$0
45.C	Center Point South - Segment C (South)	\$1,959,000	0	1,763	1,763	1,763	gpm	100.00%	0.00%	0.00%	\$0
Design		\$650,000									\$0
N/A	Update to Master Plan & InfoWater Model Re-Calibration	\$650,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00%	\$0
Total		\$201,235,113									\$113,067,160
Notes											
* gpm calculations tied to pipe diameter and a flow rate of 5 ft/sec*											
A The project cost reflects the City of San Marcos’s obligation to ARWA project costs through debt service.											
B All costs under the Project Cost column for the Transmission/Distribution section reflect the project's pre-debt cost estimated through the latest Water System Master Plan Update.											
C 2025 use value represents the capacity of the existing 12" pipe. Calculated 2035 use represents the capacity of the new 16" pipe minus the current capacity.											
D 2025 use value represents the capacity of the existing 10" pipe. Calculated 2035 use represents the capacity of the new 12" pipe minus the current capacity.											
E Developer-funded project with 50% of cost associated with the City.											
F Project cost calculated based on a cost per linear foot of \$200.											

Table 9: Impact Fee Newly Completed Capital Improvements

WMP CIP No.	CIP Name	Project Cost	2025 Use*	2035 Use*	IF Use	Total Capacity	Unit	New LUE Served	% Capacity Utilization of New LUE	% of Project Paid for by City	% Eligible	Eligible Cost
Pumping Capacity		\$1,430,000										\$0
2	Replace Soyars Pumps	\$1,430,000	1,020	1,200	180	1,200	gpm	3,000	15.00%	0.00%	0.00%	
Storage		\$5,992,529										\$5,992,529
A2	Surface Water Treatment Plant IMPR	\$5,992,529	0	1,561	1,561	1,561	gpm	3,903	100.00%	100.00%	100.00%	\$5,992,529 ^A
Supply		\$0										\$0
Transmission / Distribution		\$5,653,390										\$3,888,737
3	Willow Creek Connections to McCarty Pressure Plane	\$117,000	392	783	392	783	gpm	979	50.00%	100.00%	50.00%	\$58,500 ^B
13	Airport Extension	\$1,648,775	10	1,763	1,753	1,763	gpm	4,382	99.43%	100.00%	99.43%	\$1,639,422 ^C
A3	Blanco Vista Waterline Improvements	\$494,017	0	7,051	7,051	7,051	gpm	17,627	100.00%	100.00%	100.00%	\$494,017 ^D
A1	Comanche 24" Water Trans Main	\$3,393,598	3,525	7,051	3,525	7,051	gpm	8,813	50.00%	100.00%	50.00%	\$1,696,799 ^E
Design		\$0										\$0
Total		\$13,075,919										\$9,881,266
Notes												
gpm calculations tied to pipe diameter and a flow rate of 5 ft/sec												
^A 2025 & 2035 values based on ARWA phase 1 delivery volumes for base flow to San Marcos 1 delivery point. 2025 capacity increase was zero because it wasn't driven by regulatory requirements.												
^B Currently, this facility serves as emergency interconnection. By 2035, it will serve the entire 936 pressure plane.												
^C Only four meters. One meter had avg annual demand in 2024 of 4 gpm, and others were very small demands.												
^D 2025 capacity increase was zero because it wasn't driven by regulatory requirements.												
^E Parallel Comanche pipeline serving as extra capacity for now and will be more fully utilized once the Comanche pump station improvements are completed.												

Table 10: Total Eligible Impact Fee Costs

Impact Fee Eligible Capital Improvements	\$130,894,601
Impact Fee Newly Completed Capital Improvements	\$9,881,266
Total Eligible Impact Fee Costs	\$140,775,867

2.4 RATE CREDITS

Chapter 395 of the TLGC outlines the requirements for impact fees in the State of Texas, including a plan for awarding a credit to developments in the Capital Improvement Plan. The plan for awarding a credit must follow one of the two following methodologies:

- 1) Credit a portion of ad valorem tax and utility service revenues generated by new service units during the program period that is used for the payment of capital improvements, or
- 2) Credit an amount equal to 50 percent of the total projected cost of implementing the capital improvements plan.

The City selected to use Option 1, as it provides a more accurate representation of the impacts of new development and is better suited for rapidly growing cities like the City of San Marcos. Although the City may ultimately choose a lower impact fee than the maximum allowable impact fee using Option 1, utilizing this methodology gives the City more flexibility in setting impact fees that balance the burden between the existing community and new development. The rate credit analysis (conducted by Raftelis) is included in **Appendix D**.

3 MAXIMUM ALLOWABLE IMPACT FEE

Chapter 395 of the TLGC establishes the maximum allowable impact fee that may be assessed as the total eligible impact fee costs less the total impact fee rate credits divided by the growth in service units over the 10-year eligible period. **Table 11** summarizes these values. The maximum allowable impact fee for the City of San Marcos was calculated to be \$14,519 per LUE. For comparison purposes, the current impact fees of other nearby cities and public utilities are listed in **Table 12**.

Table 11: Maximum Impact Fee Summary

Total Eligible Impact Fee Costs	\$140,775,867
Total Impact Fee Rate Credits	\$5,878,851
Maximum Allowable Costs	\$134,897,016
Growth in Service Units (LUE) 2025-2035	9,291
Maximum Allowable Water Impact Fee	\$14,519

Table 12: Comparison of Impact Fees

Utility	Date	Water Impact Fee	Other Fees ^A	Total
New Braunfels Utilities	2023	\$19,448	-	\$19,448
Maxwell SUD	2025	\$12,940	\$3,326 ^B	\$16,266
Pflugerville	2023	\$14,713	-	\$14,713
San Marcos - New Maximum	2026	\$14,519	-	\$14,519
County Line SUD	2025	\$11,705	\$2,093 ^C	\$13,798
Goforth SUD	2025	\$12,657	\$811 ^D	\$13,468
Crystal Clear SUD	2024	\$2,500	\$10,895 ^E	\$13,395
Leander	2023	\$8,762	-	\$8,762
Seguin	2023	\$7,308	\$355 ^F	\$7,663
Hutto	2025	\$6,808	-	\$6,808
Kyle	2023	\$6,169	-	\$6,169
San Antonio Water System	2024	\$5,470 ^G	-	\$5,470
Round Rock	2024	\$4,912	-	\$4,912
Austin Water	2023	\$4,882	-	\$4,882
San Marcos - Current		\$4,464	-	\$4,464

Notes:

^A Special Utility Districts (SUDs) operate under the Texas Water Code and are not required to comply with the Chapter 395 impact fee process applicable to municipalities. As a result, SUDs frequently recover growth-related capital costs through multiple fee components rather than a single statutory impact fee. These charges may include items such as water acquisition fees and TCEQ infrastructure capacity fees. The “Other Fees” column reflects the combined total of such additional charges, excluding any separately identified impact fee, where applicable.

^B Maxwell SUD. 2025. *Maxwell Special Utility District Service Application and Service Agreement*, p. 2. [https://maxwellwsc.com/documents/980/Individual Service Agreement revised 5.19.25.pdf](https://maxwellwsc.com/documents/980/Individual%20Service%20Agreement%20revised%205.19.25.pdf)

^C County Line SUD. 2025. *District Service Policy, Section G: Service Rates and Fees*, p. 10. <https://clsud.com/wp-content/uploads/2025/12/2025.12.30-District-Service-Policy-Section-G.pdf>

^D Goforth SUD. 2025. *Summary of Standard Service Fees*. <https://goforthwater.org/wp-content/uploads/2025/04/Docs-StandardServiceFees.pdf>

^E Information was provided by the City.

^F This fee likely represents the wholesale water supply component associated with SSLGC (San Marcos/Seguin Local Government Corporation) infrastructure or capacity for the City of Seguin.

City of Seguin. 2024. *City of Seguin Capital Cost Recovery (Impact) Fees*, p. 1. https://www.seguintexas.gov/DocumentCenter/View/6598/City-of-Seguin-Impact-Fees-Updated-23-24_revised?bidId=

^G This fee applies to developments located within low-elevation areas and reflects the lower impact fee threshold established by the San Antonio Water System.

San Antonio Water System. 2024. *San Antonio Water System Water and Sewer Impact Fees*. https://apps.saws.org/business_center/Developer/ImpactFees/docs/ImpactFeesMeterSizeChart_202407.pdf

4 CONCLUSIONS

The City of San Marcos has established a process to implement the assessment and collection of water impact fees through the adoption of an impact fee ordinance that is consistent with Chapter 395 of the TLGC. This report establishes the maximum allowable water impact fee that may be assessed by the City as \$14,519 per LUE based upon the most recent Capital Improvement Plan Update, population

projections, and land use trends. Following the public hearing process, the City Council may establish an amount to be assessed (if any) up to this maximum amount and update the Water Impact Fee Ordinance accordingly.

In conclusion, the data and methodology used in this water impact fee analysis are appropriate and consistent with Chapter 395 of the Texas Local Government Code. Furthermore, the Land Use Assumptions, service unit growth, and Capital Improvement Plan are appropriately incorporated. It is recommended that the City conduct an additional water impact fee evaluation in 5 years or following any major changes to the proposed capital improvement plan.

5 REFERENCES

1. United States Census Bureau,
<https://www.census.gov/quickfacts/fact/table/sanmarcocitytexas/PST045223>, Accessed 6/25/2025
2. Public Utility Commission of Texas,
<https://www.puc.texas.gov/industry/water/utilities/gis.aspX>
3. City of San Marcos,
<https://cosm.maps.arcgis.com/apps/webappviewer/index.html?id=9b6c5eef81a445b2925265e251eabef8>
4. Vision SMTX Comprehensive Plan. October 15, 2025.
<https://www.visionsmtx.com/comprehensive-plan/>
5. Hays Central Appraisal District: Data Downloads. July 22, 2022. <https://hayscad.com/data-downloads/>.
6. Guadalupe County Maps. April 25, 2023. <https://www.co.guadalupe.tx.us/rb/maps.php>
7. Comal Appraisal District Parcels. November 01, 2019. (obtained from the county by request).
8. 2017 Metersense Water Interval Data. December 18, 2017. Alan Plummer Associates, Inc.
9. *Rules and Regulations for Public Water Systems TAC §30.1.290.D. Texas Commission on Environmental Quality. January 3, 2019.*
[https://texreg.sos.state.tx.us/public/readtac\\$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=30&pt=1&ch=290&rl=38](https://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=30&pt=1&ch=290&rl=38).

APPENDIX A

2022 CAPITAL IMPROVEMENT PLAN UPDATE

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TECHNICAL MEMORANDUM

Water Capital Improvements Plan Update and Conceptual Cost Opinions

Miscellaneous Water Modeling

City of San Marcos

PREPARED FOR	Shaun Condor, PE City of San Marcos
PREPARED BY	Hannah Leppla, PE (TX No. 130165) Plummer Associates, Inc.
cc	Stephen J. Coonan, PE, Principal
DATE	December 9, 2022
VERSION	1
PROJECT NO.	0600-018-03 Fund Allocation #1
FILE DIRECTORY	\\aus-fs.aus.apai\share\projects\0600\018-01\20220331 fa 1 - cip update\task 2 - cip update\20220622 cip update - fa 1 - task 2.docx

Attachment A CIP List: Conceptual Cost Opinions

Attachment B CIP List: Large Format Map



Texas Registered Engineering Firm F-13



1 INTRODUCTION

The City of San Marcos (City) completed a Master Plan for its water distribution system in 2016 and an update to that Master Plan in 2020. The purpose of the Master Plan is to guide the growth and development of the distribution system and to prepare a Capital Improvements Plan (CIP) list that would provide the City with a financial strategy for infrastructure improvements.

Since the time of publication of the 2020 Water Master Plan Update, the system has seen several changes, including new development and new pipeline projects, and construction costs in the industry have increased. In addition, the planning horizon for the 2025 projects is closing in and prioritization and details are needed in order to adequately plan for the design and implementation of the 2025 projects.

For these reasons, the City retained Plummer Associates, Inc. (Plummer) to complete an update to the 2020 CIP list for the projects required in the planning horizon and the conceptual cost of each of the remaining projects.

Table 1 presents the CIP cost opinions from the 2020 Water Master Plan Update and Table 2 summarizes the updated conceptual cost opinions for the 2022 construction climate.

Table 1: CIP Cost Opinions (2020)

Infrastructure Type	2025	2030	2035
Pumps / Wells	\$ 7,200,000	-	\$ 1,234,000
Pipes	\$ 14,609,000	\$ 12,112,000	\$ 5,318,000
Tanks	\$ 7,326,000	\$ 4,493,000	-
Total	\$ 29,135,000	\$ 16,605,000	\$ 6,552,000

Table 2: Updated CIP Cost Opinions (2022)

Infrastructure Type	2025	2030	2035
Pumps / Wells	\$ 1,430,000	-	\$ 1,450,000
Pipes	\$ 23,220,000	\$ 17,750,000	\$ 6,390,000
Tanks	\$ 5,350,000	\$ 200,000	-
Total	\$ 30,000,000	\$ 17,950,000	\$ 7,840,000



2 CIP LIST – 2022 UPDATE

In general, the criteria used to identify the capital improvements needed to serve the projected demand in each target year were as follows:

- State regulatory criteria met for storage and pumping capacity.
- Meeting a target pressure of 35 psi during maximum day demand conditions at all service connections in the distribution system.
- Minimum allowable pressure of 20 psi under fire flow conditions.
- Head loss of less than 7 ft per 1,000 ft. in all pipes.
- Pipe velocities below 7 ft/s during maximum day demand conditions.
- Adequate fire flow availability (including 1,000 gpm for new connections, 500 gpm for existing connections) under maximum day demand conditions; and
- Reducing water age where feasible through looped connections to improve water quality and provide redundant water delivery pathways.

One other goal of the proposed CIP list is to consolidate the 11 existing pressure planes into 3 pressures planes for the entire City distribution system. Fewer pressure planes will provide greater resiliency for previously isolated areas of the system and improve operational controls and simplicity of the controls.

2.1 CIP LIST TRACKED CHANGES

Several model changes have been made to the 2020 model based on new City GIS pipeline data and discussions with the City. The changes are discussed below.

1. CIP #3: Hunter Rd. Parallel – Removed.
 - a. Since CIP #4 Southwest 810' Plane Loop will tie in the 810' pressure plane and Hunter Rd. to remain on the 936' pressure plane.
2. CIP #3: Willow Creek Connections to McCarty Pressure Plane – New project.
 - a. Two connections between the Willow Creek service area and McCarty pressure plane for redundant water sources for Willow Creek customers (well water from McCarty or surface water through Purgatory PRV).
3. CIP #9: Leah Ave. Extension – Reduced scope due to recent projects and proposed PGM of Texas Roadway Extension.
 - a. See new CIP #31 for PGM of Texas Roadway Extension scope.
4. CIP #15: Add SWTP Pump – Removed.
 - a. This project is fully funded and in the construction phase.



5. CIP #16: 12" Connection for CRWA – Updated alignment based on conceptual design documents from Freese and Nichols.
 - a. Note that CRWA recently requested a potential oversize of this line. If the pipe diameter is increased, the City shall coordinate the decision with Plummer to have the model updated.
6. CIP #22: Kissing Tree - Kingswood Line – Update alignment to connect at Lazy Lane and upsize water line in Lazy Ln. to be 12".
7. CIP #26: Ranch Road 12 Parallel (Comanche Discharge Parallel) – Confirmed that the model was using a 12" diameter (previously identified as 16" diameter project) for the Ranch Road 12 improvements between Holland St. and Craddock Ave.
8. CIP #31: PGM of Texas Extension – Previous version of CIP list had project #31 to be an upgrade of the 12" in Clovis Barker to a 16". New project will leave Clovis Barker as 12" and install new 16" along transportation master plan route as discussed.
9. CIP #34: Northside Connection – Reduced scope to remove second railroad crossing and second IH-35 crossing. The new project will rely upon the completion of the 12" network within the Whisper PID development and then connect to the furthest east end of the Whisper PID network with a new 12". As the 12" travels east, it could follow along the un-developed Whisper parcels through the Maxwell CCN and then follow the extension of William Petus to the west to meet Harris Hill.
10. CIP #35: Post Rd. Connection – Removed from CIP list since model indicates that water can move from the Blanco Vista EST to the southwest through the existing Post Rd. 16" and to the southeast through existing 12" / 16" lines and the new 12" to the east of Whisper PID (CIP #34).
11. CIP #36: Potential 810 Elevated Storage Tank – Removed.
 - a. Since additional elevated storage is not required for TCEQ compliance or for operational improvements, this project was re-named to cover the bolted tank rehabilitation project requested by Ron Riggins and Bruce Noel. Intended to cover inspection and rehabilitation of the panels at the RR 12 GST and Comanche Standpipe. Not intended for potential foundation work at Comanche.
 - b. The new project name is "Bolted Steel Tank Rehabilitation"
12. CIP #39: Centerpoint Extension – Update scope to be all 12" diameter. The previous project used 16" and 12" to connect from Old Bastrop Hwy. to the recently installed Primrose line.
13. CIP #40: Francis Harris Extension – Scope has been modified to consider the Trace developer's plans along the southeast commercial parcels. Since an 8" tee has already been installed at Snowbell and Old Bastrop Hwy, this extension of the Old Bastrop Hwy. waterline will be all 8" from Poser Rd. to the south bound Francis Harris extension. Additionally, a 12" will be installed by the Trave developer along the central corridor, Esplanade Parkway. New CIP #37.1 and #37.2.



14. CIP #42: McCarty Connection – Removed project from CIP since Crystal Clear 8" in McCarty is now in San Marcos ownership.
15. Maintenance Project #11 – Maintenance and repair data for WL21790 (24" PVC installed in 2002) has had one break in the past and is ranked as "moderate risk" based on the consequence and likelihood of failure evaluation conducted by Kirk Abbott. Maintenance Project #11 is a monitoring request because of the extremely high consequence of failure of this pipeline segment, but no CIP dollars are required to be allocated to this maintenance project. This maintenance project has been removed.

2.2 IMMEDIATE GOALS FOR 2025

1. CIP #1: Comanche Pump Improvements
 - a. Design in Process – 90%
2. CIP #3: Willow Creek Connections
 - a. Work to be completed by City staff
3. CIP #13: Airport Extension
 - a. Construction complete
4. CIP #16: Highway 80 Extension 1
 - a. Design in Process – 90%
5. CIP #26: RR 12 Pipeline Parallel
 - a. Design in Process – 100%
6. CIP #26: Sessom Drive Improvements
 - a. Design in Process – 100%



3 CONCEPTUAL COST OPINIONS

A summary of the updated conceptual cost opinions of the CIP projects is presented below, in Table 3. Detailed cost estimates for each project are included in Attachment A.

Table 3: CIP Conceptual Costs Summary

2022 CIP Number	Year	Project Name	Opinion of Probable Cost
1	2025	Replace Comanche Pumps	\$ 2,470,000
1 - P			
2	2025	Replace Soyars Pumps	\$ 1,430,000
3	2025	Willow Creek Connections to McCarty Pressure Plane	\$ 120,000
4	2025	Southwest 810' Plane Loop	\$ 1,450,000
5	2025	Stagecoach Trail Extension	\$ 940,000
6	2025	Rattler Road Loop	\$ 730,000
7	2025	South Hunter Rd Loop	\$ 1,010,000
8	2025	Patricia and Sunset Acres	\$ 1,090,000
9	2025	Leah Ave Extension	\$ 690,000
10	2025	Upgrade IH-35 Crossings	\$ 1,360,000
11	2025	Railroad Crossing and Upgrades near the Conn's shopping center.	\$ 1,010,000
12	2025	Big Hat Feed	\$ 1,060,000
13	2025	Airport Extension	\$ 1,860,000
14	2025	Blanco Vista EST	\$ 480,000
14 - T	2025		\$ 5,350,000
16	2025	CRWA Interconnect	\$ 1,630,000
17 - T	2025	Kissing Tree Tank	<i>developer cost</i>
18 - P	2025	Kissing Tree PS	<i>developer cost</i>
18			<i>developer cost</i>
20	2025	Kissing Tree Loop - Phase 2a	<i>developer cost</i>
22	2025	Kissing Tree - Kingswood Line	\$ 1,640,000
23	2025	Kissing Tree - Deerwood Line	\$ 1,120,000
24	2025	Kissing Tree - McCarty Line	<i>developer cost</i>
25	2025	Airport Loop	\$ 2,670,000
26	2025	Parallel Comanche Outlet Main	\$ 1,890,000

Technical Memorandum

San Marcos: CIP Update to 2022 Conditions



2022 CIP Number	Year	Project Name	Opinion of Probable Cost
27	2030	Kissing Tree - La Cima Loop - Connect to Estates of San Marcos	\$ 220,000
28	2030	Kissing Tree - La Cima Loop - Primary	\$ 5,360,000
29	2030	McCarty Tank Fill/Drain Line	\$ 2,280,000
30	2030	US 80 Loop	\$ 2,670,000
31	2030	PGM of Texas Extension	\$ 3,060,000
32	2030	Trace Dev. Connection	\$ 890,000
33	2030	Old Bastrop Extension 1	\$ 310,000
34	2030	North Side Connection for ARWA BV EST Water	\$ 1,310,000
36 - T	2030	Bolted Steel Tank Rehabilitation	\$ 2,160,000
37.1	2030	Trace Dev. and Old Bastrop Extension to Francis Harris (8")	\$ 200,000
37.1	2030	Trace Dev. and Old Bastrop Extension to Francis Harris (12")	\$ 500,000
37.2	2030	Francis Harris Extension	\$ 250,000
38 - W	2035	Add Well Capacity	\$ 1,450,000
39	2035	Old Bastrop Extension 2	\$ 1,660,000
40	2035	Centerpoint South Extension	\$ 1,020,000
41	2035	South LBJ Upgrade	\$ 400,000
42	2035	Old Bastrop Extension 3	\$ 950,000
43	2035	Tanger Loop	\$ 510,000
44	2035	IH 35 Frontage Upgrades	\$ 1,850,000

P – Pump Station Project

T – Tank Project

W – Well Water Project

In developing the above CIP cost opinions, the Texas Water Development Board's (TWDB) Unified Costing Model (UCM) was used as a guide for pipelines and pump stations (UCM Update February 2019). New pump stations were estimated using UCM values as a function of required horsepower (HP). All costs based on the UCM values were then updated from the last UCM publication in February 2019 to August 2022 dollars using Engineering News Record (ENR) construction cost index (CCI) values. The ENR value from February 2019 was 11213 and the ENR value from August 2022 was 13171, resulting in an increase factor of 1.17.



For pipelines, cost opinions per linear foot were determined by assuming substrate type in the area (rock or soil) as well as the development density along the developed route (urban or rural), and then looking up the value for the proposed diameter in the appropriate table in the UCM. The UCM cost was then brought to present value using the ENR CCI.

For new pump stations, required HP was determined and recent bid tabs were used to develop cost opinions for stations with HP values from 80 to 200. Stations with HP values outside this range were interpolated from the UCM table for new pump stations which use \$150 / HP to estimate pump station costs. Costs were then brought to present value using the ENR CCI.

For tanks, recent bid tabulations, detailed cost opinions, and UCM values were compared to estimated costs for new tanks. Costs were then brought to present value using the ENR CCI.

Land costs associated with easements were estimated using recent Texas A&M Real Estate Research Center land prices for the Blacklands – South Region. When looking at the data for the years 2010-2021, the average cost per acre was \$933. When zooming in on the last 5 years, the average cost per acre increased to \$1,134.

The remaining cost assumptions are summarized below in Table 4.

Table 4: CIP Conceptual Cost Assumptions

Project Cost Assumption	Value	Units
Interest During Construction	3.0%	
Rate of Return on Investments	0.5%	
Construction Period	1.0	years
Engineering, Legal, & Contingencies (Pipes)	30%	
Engineering, Legal, & Contingencies (All Other Facilities)	35%	
Debt Service Period	20	years
Annual Interest Rate	3.5%	
Operations & Maintenance (Pipelines)	1.0%	% of Capital Costs
Operations & Maintenance (Pump Stations)	2.5%	% of Capital Costs
Power Costs	\$0.08	/ kilowatt-hour

Table and assumptions derived from the TWDB UCM February 2019 Cost Model.

The conceptual cost opinions were developed using August 2022 unit costs and cost approximations. If, in the future, the conceptual costs need to be updated, the ENR CCI multiplier can be applied to the cost opinion to approximate the change in material and labor prices over the period since August 2022.

APPENDIX B

2020 WATER SYSTEM MASTER PLAN

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City of San Marcos Water Master Plan Update August 2020

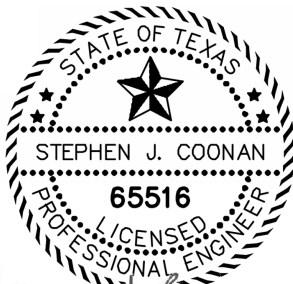


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City of San Marcos Water Master Plan Update August 2020

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Appendix C	2030 System Hydraulic Model Results
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1 Executive Summary

The City of San Marcos (City) completed a Master Plan for its water distribution system in 2016 to guide the growth and development of the distribution system. Since that time the system has seen significant changes and is anticipated to experience rapid growth in the foreseeable future with the development of several new major residential neighborhoods and two new potable water sources. For these reasons, the City retained Plummer Associates, Inc. (Plummer) to complete an update to the Water Master Plan (WMP).

In the 2016 Water Master Plan Update, the hydraulic model software was upgraded from Bentley WaterCAD to Innovyze InfoWater which functions directly within a geographic information systems (GIS) environment. The City's hydraulic model was updated and recalibrated to existing conditions. Field data collected in April 2014 were used to perform the updated model calibration. Calibration of the computer model was aided by the abundant data available from the City's Advanced Metering Infrastructure (AMI) system. Having actual hourly consumption data for every meter in the system facilitated the distribution of demands and allowed for the development of precise diurnal curves. As a result, strong calibration was achieved.

Significant changes in the City's distribution system have occurred that warrant an update to the WMP. Over the past three years, the City's participation in the Alliance Regional Water Authority resulted in the first phase of the project moving forward, which will deliver 5,379 ac-ft/yr of treated water supply. In addition, according to development plans, the City is expected to add almost 60,000 people to the water service area in the next fifteen years. Finally, the City's water service area has changed from the previous WMP. Notable changes include acquisition of the Crystal Clear Water Supply Corporation (Crystal Clear) service area along McCarty Lane and transfer of the service area south of Old Bastrop and east of Centerpoint to Crystal Clear. This Water Master Plan update provides a plan for the construction of capital improvements that allow the distribution system to effectively serve all developed areas within the City's Certificate of Convenience and Necessity (CCN) boundary and to ensure the efficient use of the new ARWA water supply.

Up-to-date spatial data for meter locations, current pipe network, and pressure plane boundaries were received from the City and incorporated into the existing model. From the infrastructure information received, the plans for new developments, and the projected water use (gallons per capita per day, or gpcd) goals, a future system model was developed for each of the following years: 2025, 2030, and 2035.

The modeled future demand and future infrastructure were evaluated for regulatory compliance and operational efficiency. Using the criteria described in the master plan, a list of projects for the City's Capital Improvements Program (CIP) was developed to meet state regulations and the City's operational requirements.

The 2020 Water Master Plan Update provides a revised capital infrastructure plan through 2035 as well as an updated hydraulic model of the potable water distribution system that incorporates new planned developments and water supplies. This report presents a summary of the modeling effort and a revised capital improvements project list (CIP List) as of March 2020.

Table ES.1: CIP Cost Opinions

Infrastructure Type	2025	2030	2035
Pumps / Wells	\$ 7,200,000	\$ -	\$ 1,234,000
Pipes	\$ 14,609,000	\$ 12,112,000	\$ 5,318,000
Tanks	\$ 7,326,000	\$ 4,493,000	\$ -
Total	\$ 29,135,000	\$ 16,605,000	\$ 6,552,000

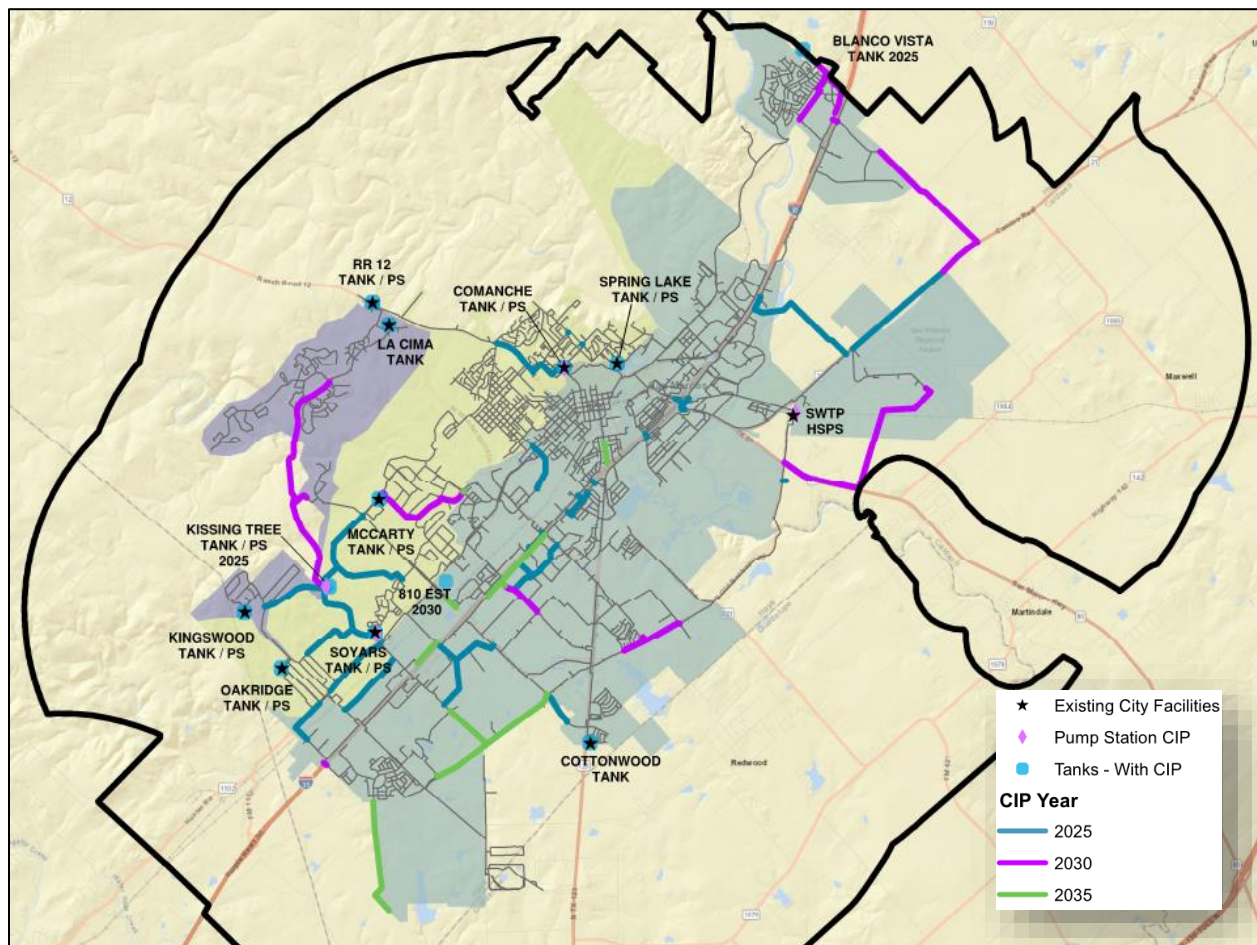


Figure ES.1: Water Distribution System with CIP

2 Introduction

The City of San Marcos provides water service to residents and businesses located within its CCN. The City is located in Hays County in Central Texas. The City completed a Master Plan for its water distribution system in 2016 to guide the growth and development of the distribution system. Since that time the system has seen significant changes and is anticipated to experience rapid growth in the foreseeable future with the development of several new major residential neighborhoods and two new potable water sources. For these reasons, the City retained Plummer Associates, Inc. (Plummer) to complete an update to the Water Master Plan (WMP).

The purpose of this evaluation is to provide the City with an updated water system model and to develop recommendations for system improvements through 2035 based on growth projections and new water supply contracts.

The following activities were defined in the project scope and were completed by Plummer for the development of the WMP update.

1. Perform data collection and system asset inventory.
2. Analyze existing data.
3. Develop preliminary existing system model.
4. Perform an evaluation for the regulatory compliance of the existing system.
5. Develop the future year demand distribution.
6. Coordinate with Alliance Regional Water Authority (ARWA) and Guadalupe Blanco River Authority (GBRA) concerning the new water source.
7. Develop and execute future year model scenarios.
8. Develop a Capital Improvements Projects (CIP) list.
9. Evaluate and recommend a City supply plan.

The efforts completed in the 2016 Master Plan included calibration of the model infrastructure, determination of friction factors for different pipe materials, development of diurnal curves for demand nodes, and maximum day / peak hour multipliers. Overall, the calibration of the 2016 hydraulic model was very successful which can be attributed to the availability of advanced metering infrastructure (AMI) data. Additionally, Hazen Williams C-factors from the old 2007 model were imported to the new 2016 InfoWater model where possible. New pipes added since 2007 were assigned an initial C-factor based on pipe material (ductile iron = 130, PVC = 150). These C-factors were attributed to new pipes in the 2020 model, as well. The availability of AMI data led to the development of new, more precise diurnal curves and refined maximum day and peak hour demand multipliers. Details about the methods of determination of these factors can be found in the 2016 Water Master Plan.

3 Existing System Overview

The City of San Marcos owns and operates a potable water distribution system to provide service to customers within its service area. The system is comprised of the following components:

- 9 MGD capacity from the regional Surface Water Treatment Plant (SWTP)
- Six active wells and well pumps at five separate sites
- Nine storage tanks (five of which serve as elevated storage to at least one pressure plane) and two clearwells at the SWTP
- Seven pump stations
- Six pressure reducing valves (PRVs)
- Over 1.3 million linear feet of pipe, mostly comprised of ductile iron or polyvinyl chloride (PVC)

3.1 Existing System Model

The demands and demand distribution for the year 2020 were previously developed in the 2016 Water Master Plan. The 2016 model was used to create a model of the City's current potable water system as of May 2019. The operation of the pumping stations and wells remained the same and the water demand for each modeled node was checked against the recent meter data received from the City.

Several CIP projects from the 2016 WMP have been implemented since its completion, including the following:

- CIP 2: New 0.5 million gallon (MG) Elevated Storage Tank (EST) for 1063 pressure plane (La Cima EST) and new pumps at the Ranch Road (RR) 12 storage tank to fill the La Cima Tank.
- CIP 4: Connect Soyars Tank to 936 pressure plane.
- CIP 5: Close gap between existing 16 inch (in.) in Hunter Rd. southwest of McCarty Ln and Soyars tank
- CIP 7: Complete 24 in. main by joining end of line at McCarty Rd. to IH-35 just north of the Premium Outlets.
- CIP: 9 Upsize existing 12 in. main to 16 in. main along E. McCarty Ln. just north of Old Bastrop Hwy.
- CIP 11: Initial portion of Kissing Tree Loop to Phase I of Development
- CIP 41.I: Upsize lines to 8 in. PVC in Fairlawn neighborhood along Crepe Myrtle Dr. and IH-35 frontage road.
- Other Project: Install new 14 in. pipeline crossing the San Marcos River at Cheatham St.

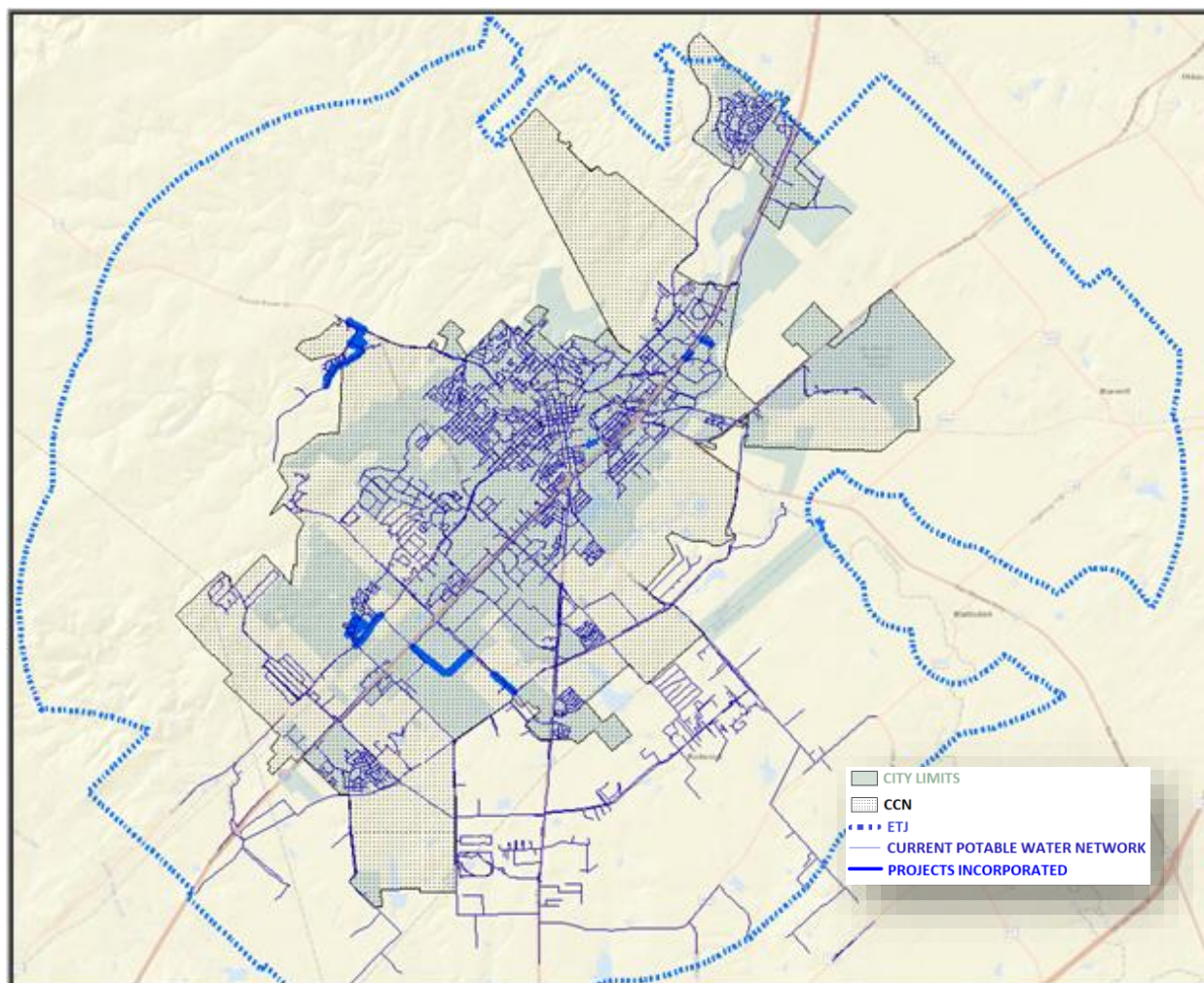


Figure 1: CIP Projects Incorporated Since 2016

These seven projects were incorporated into the 2019 model. In addition, development growth in the Kissing Tree, Blanco Vista, and La Cima neighborhoods was also included in the model.

3.2 Acquisition of Crystal Clear Service Area

The neighborhood along McCarty Ln., previously operated by Crystal Clear, will soon be served by the City's water system. At present, the City is operating the neighborhood using the inherited infrastructure for Crystal Clear. This includes the existing pipe network, two groundwater wells (390 gpm and 400 gpm), a ground storage tank with pumping station, and an elevated storage tank. It is anticipated the City will connect this neighborhood to its distribution system sometime in late 2020. The geospatial data from the City shows a potential interconnect between the Crystal Clear system and the City's system along Stagecoach Trail and another interconnect along McCarty Ln. as seen in Figure 2. It is not anticipated that the connection effort will need to be associated with a CIP project, rather, the connection can be achieved through the manipulation of valves along Stagecoach Trail and McCarty Ln.

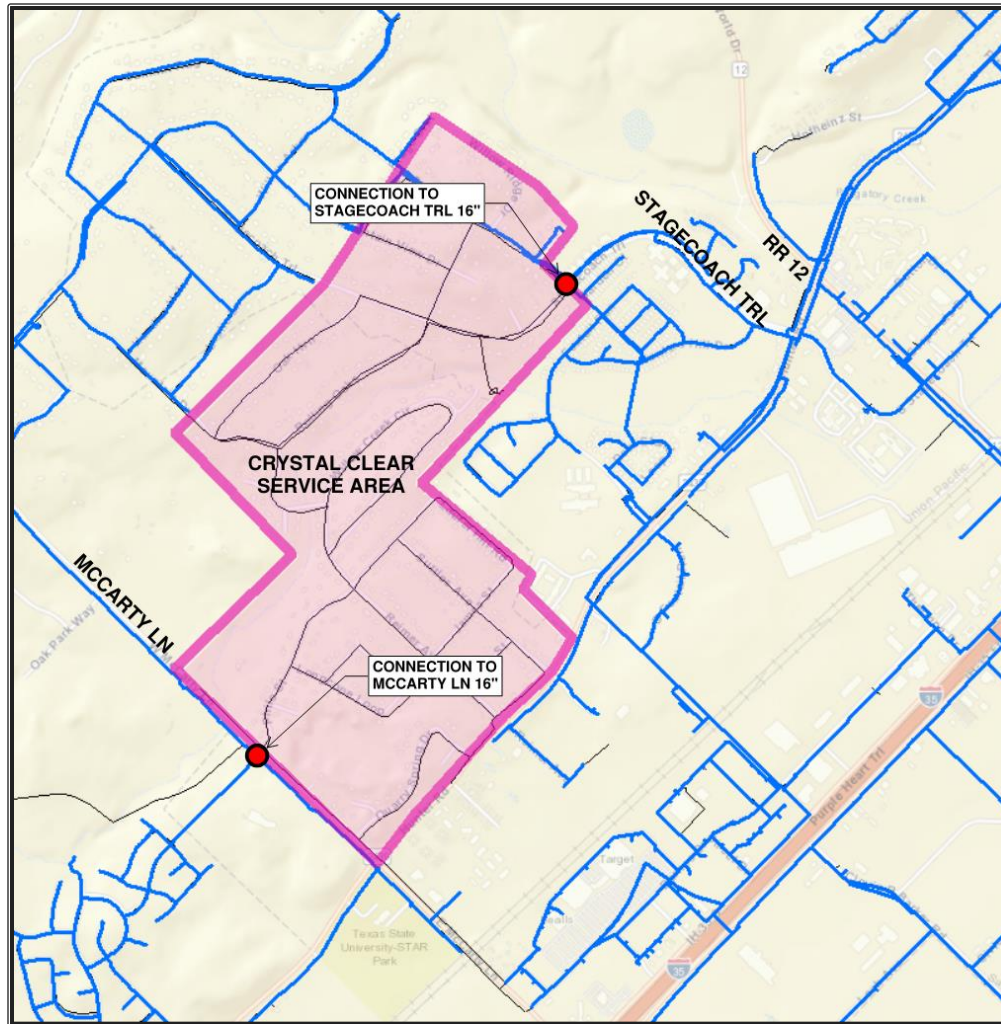


Figure 2: Area Previously Serviced by Crystal Clear

The elevation range of the meters in the Crystal Clear area is 670-ft to 730-ft. Given this elevation information, the area will be incorporated into the 936 pressure plane.

Following integration into the City's system in late 2020, the pumps at the ground storage tank are no longer needed to serve this area or any other area of the City's network. Since they are not necessary, the ground storage tank and pumps were not included in the modeled scenarios but should be maintained by the City as an emergency backup water supply. The overflow elevation of the existing Crystal Clear elevated storage tank along McCarty Ln. is 842-ft and the bottom of bowl elevation is 812-ft. At these elevations, the elevated storage tank is not able to serve as elevated storage with the City's previously defined pressure planes and is not needed to satisfy regulatory requirements. Therefore, this elevated storage tank is proposed to be demolished as CIP # xx.

The historical meter data which was received from Crystal Clear indicated that the entire area had an average annual water use of 8.8 million gallons (MG) or 17 gpm (gallons per minute). The total demand was distributed equally over the modeled nodes to simulate the neighborhood's demand distribution.

3.3 Existing System Regulatory Evaluation

The rules and regulations for public water systems are established by the Texas Commission on Environmental Quality (TCEQ) in Title 30 of the Texas Administrative Code, Chapter 290, Subchapter D (30 TAC § 290). This section discusses the regulatory requirements applicable to the City's public water system with respect to water supply, storage, and pumping capacity.

Water Supply

The regulations found in 30 TAC § 290.45(b)(2)(B) require that all surface water supplies meet a treatment plant capacity of 0.6 gpm per connection. The City applied for and received (June 11, 2015) a variance allowing an alternative capacity requirement (ACR) for its water supply requirements. The variance allowed a reduced total capacity for production. The City was granted a minimum ACR as follows:

$$\text{Total Production (Groundwater + Surface Water)} \geq 0.32 \text{ gpm/connection}$$

Based on the existing potable water demand, the number of customer connections to the City's system, and the City's existing infrastructure, the City is in full compliance with the approved ACR (Table 1).

Table 1: Existing Water Supply

Water Supply	Total Production (gpm)
Treated Surface Water	6,250
Ground Water Pumps	
Spring Lake Well	6,360
Comanche Well	2,700
Soyars Well	400
McCarty Well	400
Oakridge Well	-
Kingswood Well	200
Crystal Clear Well	390
Total	16,700
Estimated Number of Connections (2019)	31,486
gpm / connection	0.53
Meets ACR (0.32 gpm / conn)	Yes

The number of connections were determined in the 2016 WMP by counting connections and calculating a system wide demand per connection of 0.21 gpm / connection. Since we have current data on water usage, connections were determined by dividing average day demand by the average demand per connection.

Water Storage

Existing storage and storage requirements are summarized in Table 2. As indicated, the existing system meets 30 TAC § 290 requirements for total storage and elevated storage.

Pumping Capacity

TCEQ requirements for pumping are dependent upon available elevated storage. The required pumping capacity is the lesser of 2.0 gallons per minute (gpm) per connection or the ability to meet peak hour demands with firm pumping capacity and a total capacity of at least 1,000 gpm. The calculated demand based on 2.0 gpm per connection would require a pumping capacity significantly greater than the current or future planned facilities for the City. Therefore, the ability to meet peak hour demands with firm pumping capacity is evaluated for current conditions.

Table 3 summarizes the current pumping capacity information compared to the peak hour demands for each pressure plane. TCEQ requirements are satisfied in all cases.

Table 2: Existing Water Storage

Storage Facilities by Pressure Plane	Active Head Range	Tank Style	2019				
			Number of Connections	Required Total Storage ¹ (MG)	Active Total Storage (MG)	Required Elevated Storage ² (MG)	Active Elevated Storage (MG)
1063-FT			578	0.1	1.5	0.1	0.5
Ranch Road 12	905 - 936	Ground			1.0		
Kingswood GST	884 - 900	Ground			0.04		
La Cima	1025 - 1063	Elevated			0.5		0.5
936-FT			9,689	1.9	2.4	1.0	1.0
Ranch Road 12	905 - 936	Elevated			1.0		1.0
Comanche Standpipe	762 - 810	Ground			0.7		
Soyars Standpipe	742 - 805	Ground			0.3		
Oakridge GSTs (x2)	738.5 - 760	Ground			0.08		
McCarty Standpipe	758 - 810	Ground			0.3		
810-FT			21,219	4.2	7.0	2.1	2.5
Excess 936-FT Storage	N/A	Elevated			0.0		0.0
SWTP Clearwells (x2)		Ground			3.0		
Spring Lake GST	610 - 636	Ground			1.5		
Comanche Standpipe	762 - 810	Elevated			0.7		0.7
Cottonwood Elevated Tank	771 - 810	Elevated			1.1		1.1
McCarty Standpipe	758 - 810	Elevated			0.3		0.3
Soyars Standpipe	742 - 805	Elevated			0.3		0.3
System Total ³			31,486	6.3	8.6	3.1	3.9
¹ Required Total Storage in Plane is 200 gallons per connection. (30TAC§290.45)							
² Required Elevated Storage in Plane is 100 gallons per connection when connections exceed 2,500. (30TAC§290.45)							
³ Total system storage only accounts for each tank once, although in a few cases a tank may serve two pressure planes at once.							

Table 3: Existing Water Pumping

Pressure Plane	Pump Station	2019					
		Number of Connections	2019 Average Annual Demand (gpm)	2019 Maximum Day Demand (gpm)	TCEQ Required Firm Capacity ¹ (gpm)	Total PS Capacity (gpm)	Firm PS Capacity (gpm)
810-FT	SWTP HSPS	21,219	3,914	6,427	8,595	11,582	7,416
	Spring Lake					8,610	6,360
	Total per Plane					20,192	13,776
936-FT	Comanche	9,689	1,787	2,935	3,925	3,000	1,800
	Soyars					1,200	600
	McCarty					600	400
	Oakridge - Not Active					0	0
	Total per Plane					4,800	2,800
Kingswood Plane	Kingswood	578	107	175	234	400	200
	Total per Plane					400	200
La Cima Plane	Ranch Road 12					3,600	2,400
	Total per Plane					3,600	2,400
Total		31,486	5,808	9,537	12,754	-	-

4 Population and Water Demand Projections

Water service area population and water demand projections were based on the projections for future developments performed for the 2016 WMP. Adjustments were made to account for the differences between projections based solely on population and the residential development predicted by the detailed development plans. The following sections describe the methodology used to estimate water demand projections used in the hydraulic model. This chapter also presents the discussion for determining maximum day demands, peak hour demands, and diurnal variations. Table 4 and Figure 3 demonstrate the projected growth in the City's service area. The city limits, extra jurisdictional territory, and certificate of convenience and necessity (CCN) area are shown in Figure 4.

Table 4: Projected Service Area Population

	Region L Projections (Within City Limits)	Development-Based Projections	Difference (ETJ Population and Additional Growth)
2019	N/A	65,234	-
2020	71,135	N/A	-
2025	77,998	89,372	11,374
2030	84,861	102,695	17,834
2035	93,048	133,701	40,653

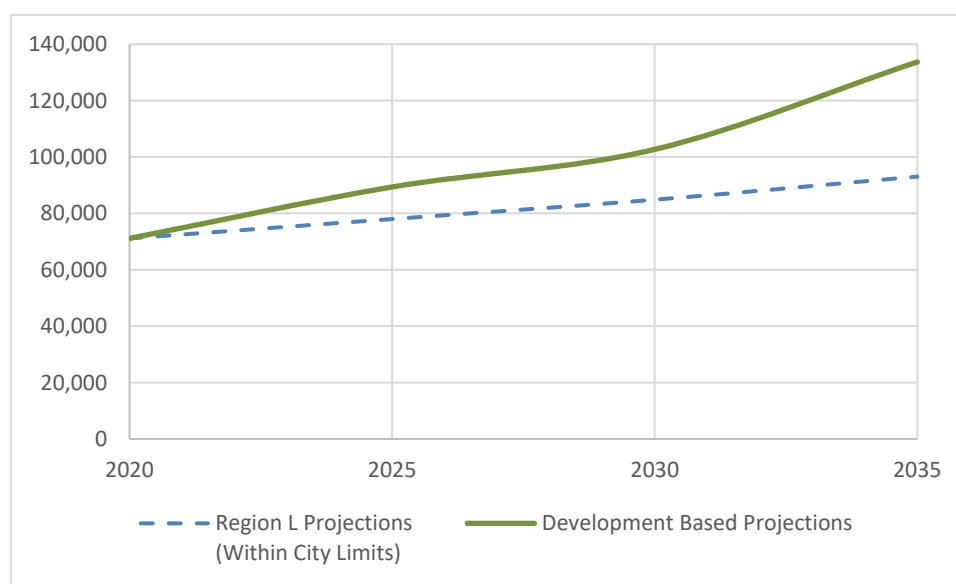


Figure 3: Service Area Population Projections

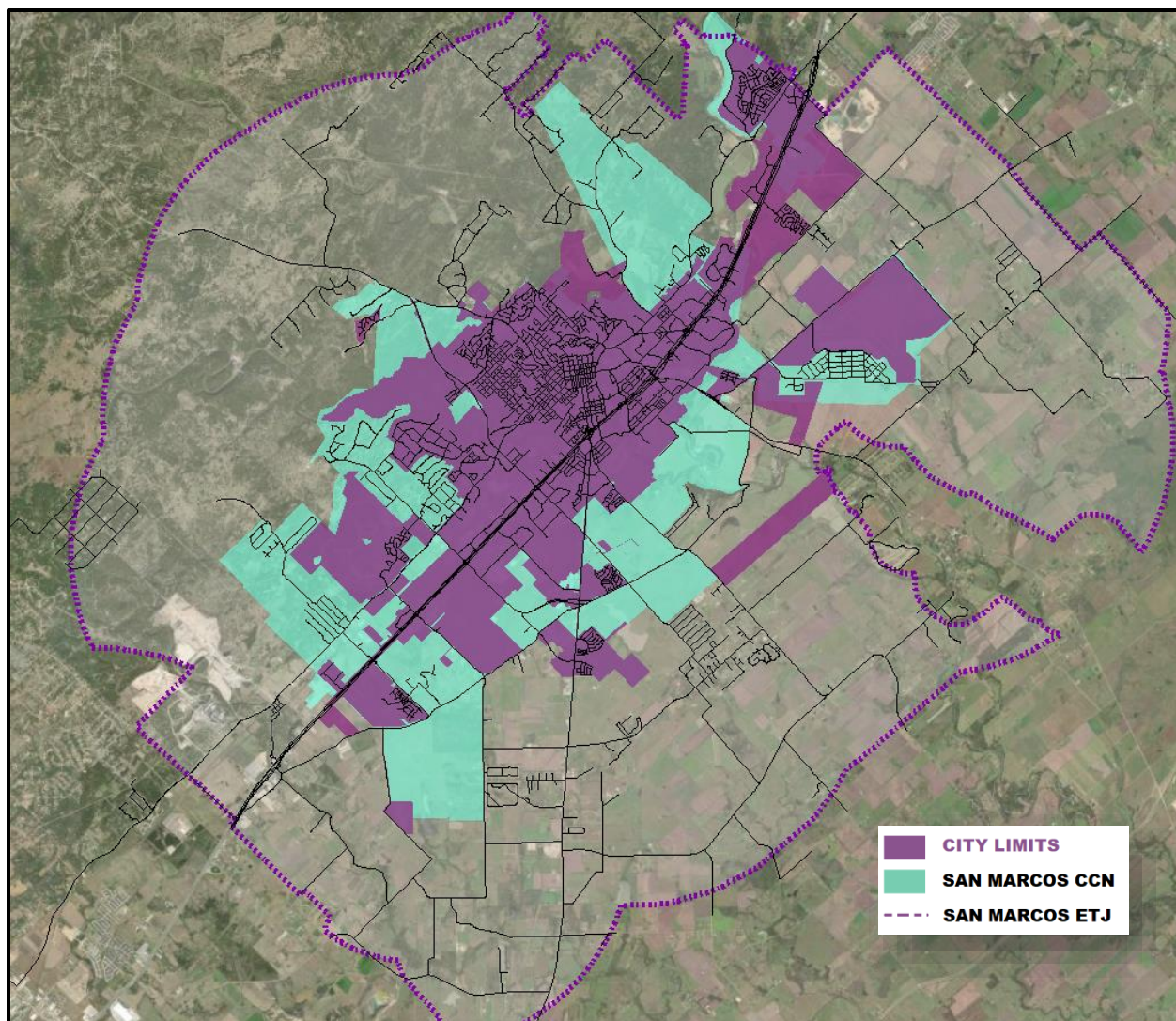


Figure 4: Water Service Area Map

4.1 Future Demand Projections

As populations increase, the demand for potable water will increase in the City's service area. According to the City's Comprehensive Plan (2013), with local conservation efforts, it is projected that the per capita demand will drop from 122 gpcd in 2019 to 112 gpcd in 2035. Although the population projections presented in the Region L Water Plan (Table 4) show less growth than the table below, the development and demand projections received from the City dictated the growth projections. After consulting with City staff, Plummer utilized the higher population projections which were back calculated from known water demand projections.

Table 5 and Figure 5 show the population and demand projections for each of the future modeling scenarios. Figure 6 shows how the total demand depends on the demand of the developers.

The value of 0.21 gpm / connection determined in the 2016 WMP was used to project the number of connections in the future service area. This is consistent with the projected per capita demand for the City.

Table 5: Total Projected Demands

	Service Area Population Estimate	Projected GPCD ¹	Average Day Demand Estimate (gpm / MGD)
2019	65,234	128	5,808 / 8.4
2025	89,372	116	7,199 / 10.4
2030	102,695	114	8,130 / 11.7
2035	133,701	112	10,399 / 15.0

¹ GPCD projections have been recently been updated by the City's Water Conservation and Drought Response Plan (April 2019). The projections presented in the plan predict a demand of 112 gpcd in 2025, 110 gpcd in 2030, and 109 gpcd in 2035. For the purposes for the planning document, the higher demands shown in the table were used when predicting future water supply and infrastructure needs.

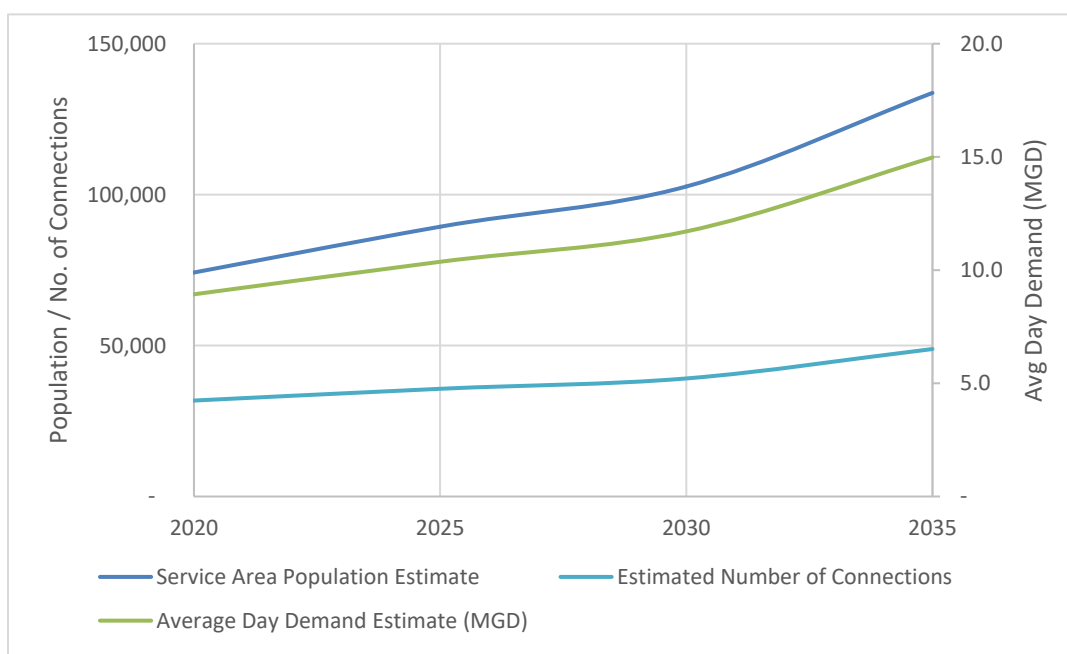


Figure 5: Population and Demand Growth

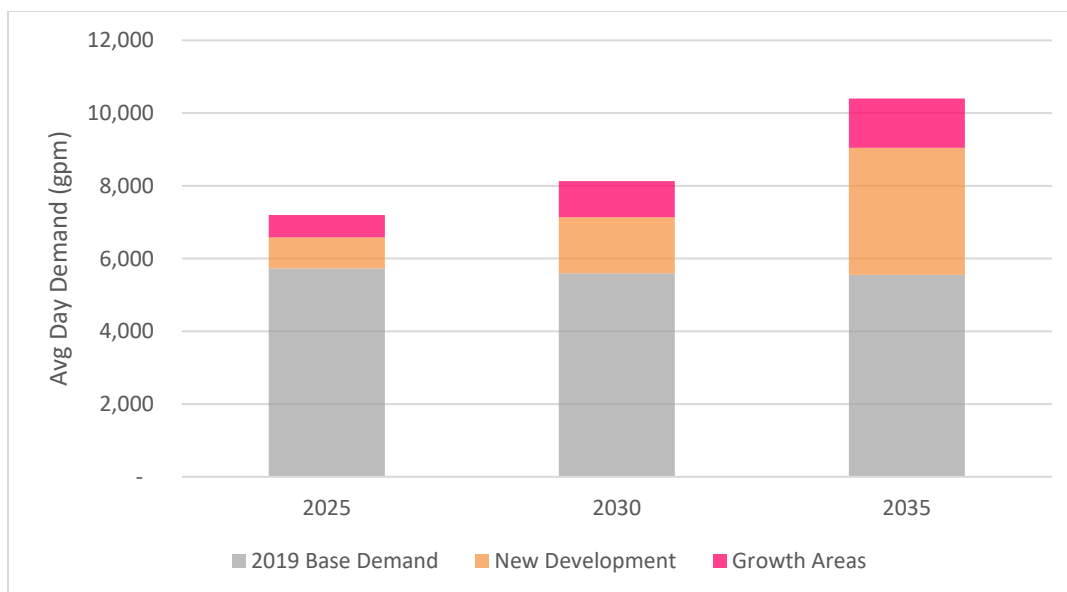


Figure 6: Growing Demand from Developments

Figure 7 shows the areas of the City's service area which are starting to develop or are growing in their demand in the next 10 years.

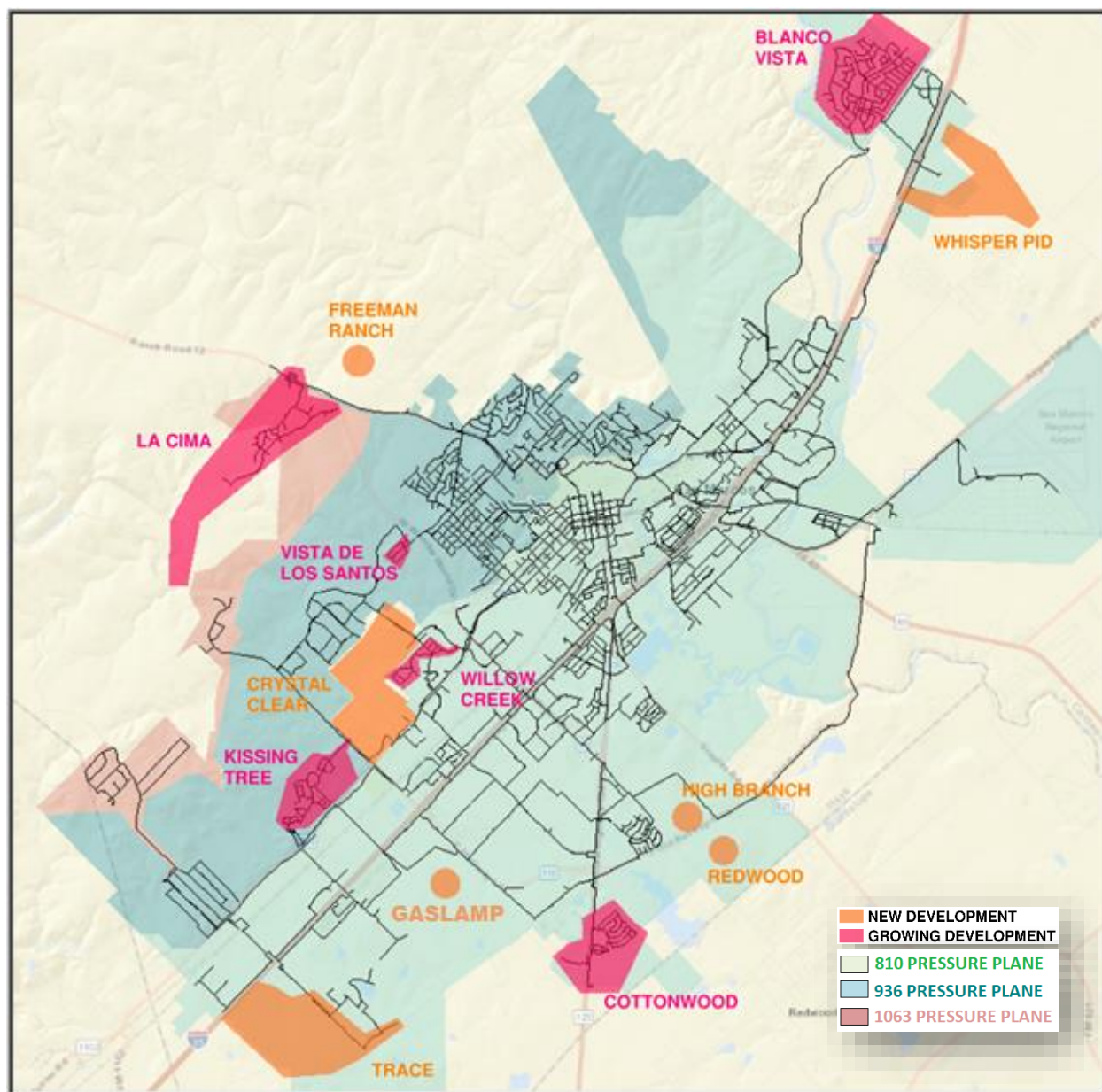


Figure 7: Growth and Development Areas

4.2 Growing Developments

Several developments which were included in the 2016 WMP have grown faster than previously assumed and thus the potable water demand has also increased as compared to initial estimates. In addition, greater growth has been projected based on availability of more detailed development plans. These developments are summarized in Table 6.

Table 6: Growing Development Areas

Development Name	Area Description	Pressure Plane
Blanco Vista	Mostly residential area on far north end of service area.	810
Cottonwood	Mostly residential area on far south end of service area.	810
Willow Creek	Smaller neighborhood of single-family homes, centrally located.	936
Vista de los Santos	Smaller neighborhood of single-family homes, centrally located.	936
Kissing Tree	Large new development just north of the Soyars pump station.	936
La Cima	Large new development on the north west end of the service area.	1063

Development projections were used to estimate the growth in demand over the next 15 years and modeled for each future year scenario.

Table 7: Annual Average Demand Projections – Growing Developments

Year	Blanco Vista	Cottonwood	Willow Creek	Vista de los Santos	Kissing Tree	La Cima	TOTAL Growth
Plane	810		936			1063	-
2025	182 gpm	70 gpm	24 gpm	8 gpm	89 gpm	245 gpm	618 gpm
2030	227 gpm	91 gpm	22 gpm	14 gpm	244 gpm	396 gpm	994 gpm
2035	304 gpm	125 gpm	22 gpm	14 gpm	343 gpm	547 gpm	1,355 gpm

4.3 New Developments

In addition to the growth areas described above, several new developments have been planned since completion of the 2016 WMP. These developments were added to the model for the future year scenarios and are summarized in Table 8.

Table 8: New Development Areas

Development Name	Area Description	Pressure Plane
Trace	A mix of residential and commercial development on the furthest southern end of the IH-35 corridor.	810
Whisper PID	A mix of residential and commercial development on the north east end of the service area.	810
High Branch	Smaller neighborhood of single-family homes, along HWY 123 in the eastern end of the service area.	810
Redwood	Smaller neighborhood of single-family homes, along HWY 123 in the eastern end of the service area.	810
Gaslamp	Large commercial / industrial development to the east of the Outlet Mall.	810
Willow Creek (Crystal Clear)	A centrally located neighborhood of older single-family homes recently adopted into the City's service area.	936
Freeman	A development on the Freeman Ranch located north west along RR 12.	1063

A discussion between Plummer and the City was held in mid-October in which the City indicated that a large new industrial development (Gaslamp) may become a major water user in the coming years. With direction from the City, it was assumed that in 2025 and 2030 the average day demand for the Gaslamp development would be 1 MGD of potable water. The Gaslamp average day demands would increase to 3.5 MGD in 2035 and could potentially be met with both potable water and non-potable water.

Development projections for other areas were used to estimate the growth in demand over the next 15 years and modeled for each future year scenario. If number of homes or apartments was known for the new development, demand per connection was used to estimate average water use. In some cases, only acres of land were estimated for different uses in the proposed development (single-family, multi-family, commercial, parkland, etc). For these developments, a standard number of units per acre was used to calculate the estimated number of service units per category. The number of units was then multiplied by the appropriate gpm per service unit equivalent (SUE) value from the City's Impact Fee Ordinance. The resulting demands are presented in Table 9.

Table 9: Annual Average Demand Projections – New Developments

Year	Trace	Whisper PID	High Branch	Redwood	Gaslamp	Willow Creek (Crystal Clear)*	Freeman	TOTAL Growth
Plane	810					936	1063	-
2025	25 gpm	88 gpm	53 gpm	117 gpm	694 gpm	13 gpm	-	992 gpm
2030	114 gpm	403 gpm	97 gpm	214 gpm	694 gpm	12 gpm	201 gpm	1,736 gpm
2035	241 gpm	851 gpm	97 gpm	214 gpm	2,450 gpm	12 gpm	201 gpm	4,078 gpm

**Demand for the Crystal Clear Area seems low for the number of homes which are being served. The demand presented in this table is based on data received from Crystal Clear which indicated an annual consumption of 8.8 MG.*

5 New Water Supplies

The majority of the City's water supply originates from surface water and is treated at the SWTP which is operated by GBRA. The surface water is delivered from the Guadalupe River via a raw water pipeline from an intake on a canal extending from Lake Dunlap. Groundwater extracted at each of the five well sites provides additional supply as needed. In 2019, groundwater made up 21 percent of the total water production with the other 79 percent coming from the SWTP.

The City operates and maintains six wells as follows:

1. Two wells at the Spring Lake Pump Station
2. One well each at the following facilities:
 - Comanche
 - McCarty
 - Soyars
 - Kingswood

It should be noted that since completion of the 2016 WMP, the two wells at the Oakridge Pump Station have been decommissioned due to influences of surface water and lack of available treatment.

Texas State University and Canyon Regional Water Authority Water Delivery

The City has obtained a lease for potable water rights from Texas State University's Canyon Regional Water Authority (CRWA). In May of 2019, a study was conducted to begin conceptual planning and analyses to define opportunities for CRWA and the City to utilize the nearby Hays Caldwell WTP (HCWTP or Maxwell Plant) and associated water distribution system to treat and deliver additional water that could be shared with CRWA members and the City.

The details of the proposed agreement and required WTP improvements are presented in Appendix G. In summary, the City would buy in to the improvements needed at the HCWTP and receive 1,314 ac-ft/year (1.2 MGD) of treated water from the HCWTP to be delivered directly to the City's distribution system. The water would be delivered to the City's system with a new high service pump station (HSPS) at the HCWTP and a 12 in. delivery pipeline installed along the north side of TX 80. The new 12 in. pipeline would connect into the existing 30 in. pipeline along Old Bastrop Hwy. near the intersection with TX 80 (see Figure 8).

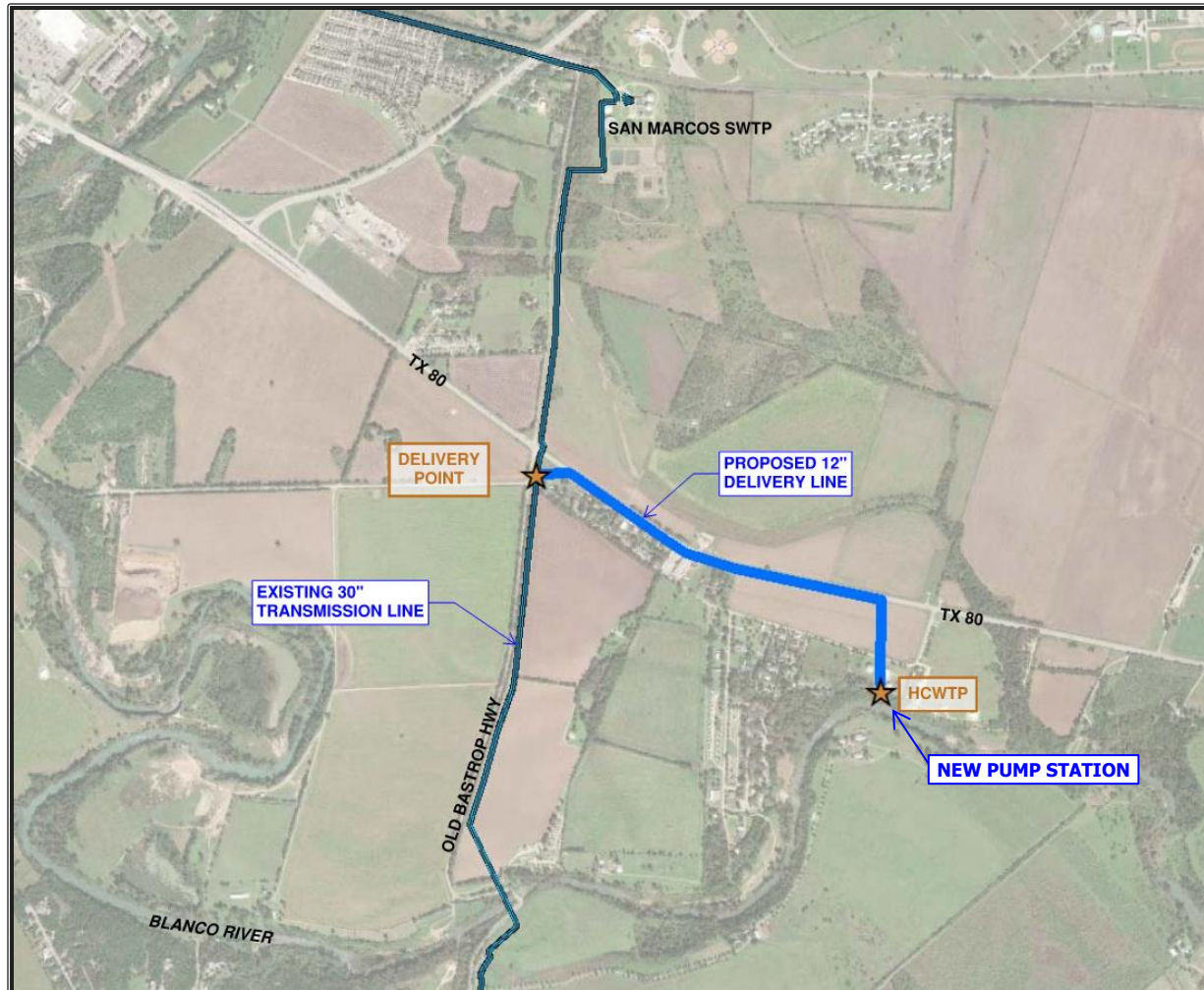


Figure 8: CRWA Delivery Location

Alliance Regional Water Authority Water Delivery

ARWA has leased groundwater rights in eastern Caldwell County and will deliver treated Carrizo Aquifer groundwater to various project sponsors, including the City, beginning in 2023 (Phase I). The City will maintain two delivery points for the new ARWA water supply – San Marcos 1, a ground storage tank at the City’s SWTP, associated with the 30 in. ARWA Segment B pipeline and San Marcos 2, a new elevated storage tank in the Blanco Vista subdivision, related to the 30 in. ARWA Segment C pipeline (Figure 9).

The timing of the implementation of the Phase II infrastructure is difficult to predict since unknown factors for each project sponsor are still undetermined, such as their individual development rates and growth in population. Phase II construction will consist of a groundwater WTP expansion, pump station expansions, and paralleled transmission mains. For the Water Master Plan Update, an implementation date of 2035 is assumed for the Phase II delivery rates from ARWA. Table 10 shows the contracted delivery rates.

Table 10: Contracted Alliance Water

ARWA Phase	Contract Amount (ac-ft/yr)	Average Delivery Rate (gpm)	Peaking Factor	Peak Delivery Rate (gpm)
Phase I (2025)*	5,379	3,335	-	5,003
San Marcos 1 – SWTP	2,518	1,561	1.5	2,342
San Marcos 2 – BV EST	2,861	1,774	1.5	2,661
Phase II (2035)*	12,798	7,935¹	-	11,903
San Marcos 1 – SWTP	5,991	3,715	1.5	5,573 ¹
San Marcos 2 – BV EST	6,807	4,220	1.5	6,330 ¹

* The City is allowed to accept the total amount of ARWA flow at either of their delivery points. For example, 5,003 gpm may be accepted by either delivery point 1 or delivery point 2 during Phase I. For Phase II, (Superscript 1) a maximum flow rate of 7,935 gpm may be accepted by either delivery point 1 or delivery point 2 and the total flow to the two delivery points cannot exceed 11,903 gpm (17.1 MGD).

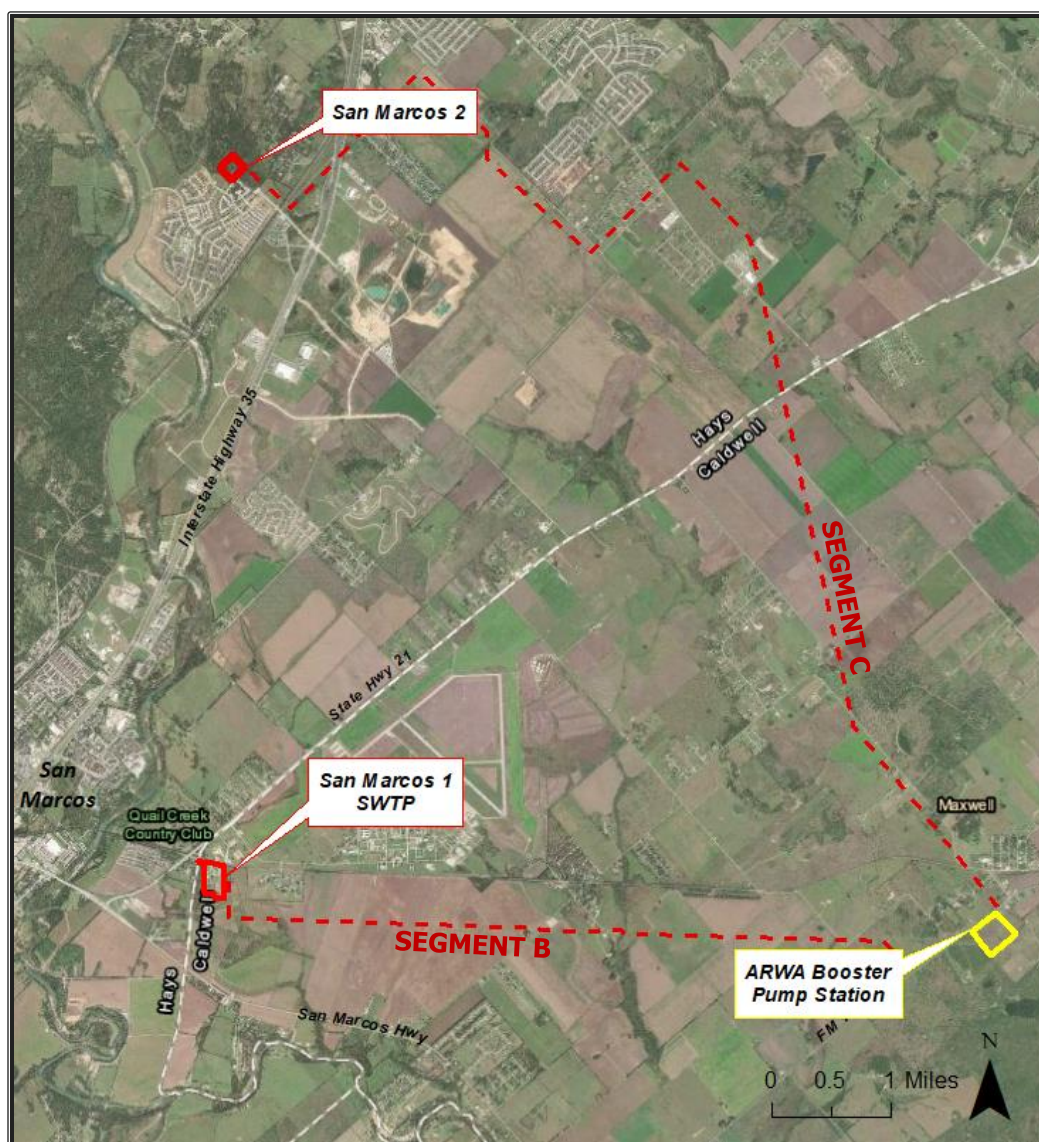


Figure 9: Alliance Regional Water Authority Delivery to the City of San Marcos

Table 11 summarizes the existing and future potable water supplies for the City's system.

Table 11: 2035 Available Water Supply

Source	Annual Average Supply
Surface Water	
San Marcos SWTP	10,088 ac-ft / year
Hays-Caldwell WTP	1,345 ac-ft / year
Groundwater	
San Marcos Wells – Edwards Aquifer (Firm)	19,010 ac-ft / year
ARWA Wells – Carrizo Wilcox Aquifer (Phase I & II)	12,778 ac-ft / year
Total Available	43,221 ac-ft / year

Finding new sources of water is critical to guaranteeing water reliability for the City's current and future customers. The City has a diverse water supply portfolio which helps meet future increases in water supply demand. The diversity of the City's water supply also ensures a reliable and consistent water service for its customers.

6 Future Year System Evaluation

Hydraulic modeling scenarios were developed for the average day and maximum day demand cases in each targeted future year. In general, the criteria used to identify the capital improvements needed to serve the projected demand in each target year were as follows:

- State regulatory criteria met for storage and pumping capacity;
- Meeting a target pressure of 35 psi during maximum day demand conditions at all service connections in the distribution system;
- Minimum allowable pressure of 20 psi under fire flow conditions;
- Headloss of less than 7 ft per 1,000 ft. in all pipes;
- Pipe velocities below 7 ft/s during maximum day demand conditions;
- Adequate fire flow availability (including 1,000 gpm for new connections, 500 gpm for existing connections) under maximum day demand conditions; and
- Reducing water age where feasible through looped connections to improve water quality and provide redundant water delivery pathways.

For new average day demands within future year simulations, the previously defined diurnal curves were assigned based on the pressure plane location and use. Additionally, the maximum day and peak hour multipliers were used from the 2016 WMP (Table 12).

Table 12: Maximum Day and Peak Hour Multipliers

MD:AD Multiplier (system wide average)	1.64
PH:MD Multiplier (system wide average)	1.34

Several model changes have been made since 2016 and are discussed below.

- Seven new developments have submitted plans to the City to request water service between 2020 and 2030 (see discussion of projected demands from these developments in Section 4.3). These developments were not yet proposed in 2015 and were not a part of the previous WMP. These include Trace, Whisper, High Branch, Redwood, and Freeman Ranch. In addition, the City has been in contact with a major industrial developer which will be built east of the outlet malls and referred to as the Gaslamp District. A previous iteration of the Gaslamp District development was modeled in the previous WMP as a mixed use development with an average demand of 26 gpm, just 4% of the demand of the new industrial user. In addition to the brand new development, the new acquisition of the Crystal Clear / Willow Creek service area has recently been confirmed.

- The 12 in. pipeline in Hunter Rd. has been modified to be operated permanently on the 936 plane due to low pressures at the fire station and veterinary clinic on Hunter Rd.
- Since the membrane treatment facility is no longer operational, the new model has retired the Oakridge Groundwater Facility. The Oakridge ground storage tank (GST) and pump station still serve the Deerwood neighborhood and 936 plane in the future scenarios.
- It is recommended that the SWTP pumps operate off of Comanche Standpipe levels as the Ranch Road 12 Tank is filled by the Comanche pumps. The model has been updated to control the SWTP pump with the water level in the Comanche Standpipe instead of the Cottonwood EST

Model results for the future year scenarios are provided in Appendix B, C, and D and include the following scenarios:

- 2025 – Steady State – Maximum Day Fireflow Availability
- 2025 – Extended Period Simulation – Maximum Day Minimum Pressures
- 2025 – Extended Period Simulation – Water Age
- 2030 – Steady State – Maximum Day Fireflow Availability
- 2030 – Extended Period Simulation – Maximum Day Minimum Pressures
- 2030 – Extended Period Simulation – Water Age
- 2035 – Steady State – Maximum Day Fireflow Availability
- 2035 – Extended Period Simulation – Maximum Day Minimum Pressures
- 2035 – Extended Period Simulation – Water Age

6.1 2025 System Updates

If the rapid growth projected over the next five years is realized, there will be significant capital improvements necessary to meet all water service criteria. The 936 pressure plane will be configured to include the newly acquired Crystal Clear service area along McCarty Ln. with a connection to the neighborhood through the 16 in. line along Stagecoach Trail and another 16 in. line along McCarty Ln.

The 936 pressure plane will be extended to the south and east to include any future developments on the south side of Hunter Rd.

To serve the continued growth of the Kissing Tree development, the Soyars Pump Station will be upgraded. The following major projects are also proposed to be incorporated into the system by 2025:

- Construct a new 1.0 MG EST to serve Kissing Tree and the 936 pressure plane and a new pumping station at the tank to boost water into the Kingswood pressure plane.
- Upgrade the existing 600 gpm pumps at the Comanche pump station to 1,250 gpm each bringing the total pumping capacity to 4,950 gpm with a firm capacity of 3,700 gpm.

- Improvements related to the new ARWA water source include a new 1.0 MG EST in the Blanco Vista neighborhood, a new 2.0 MG GST at the SWTP, and one new high service pump at the SWTP. A number of water line projects will be needed to serve the new developments proposed for 2025 including La Cima, Kissing Tree, and Trace. Figure 10 depicts the proposed 2025 system, with all pressure planes identified. Appendix B contains additional figures showing minimum pressure nodes and fire flow availability results for the 2025 system.

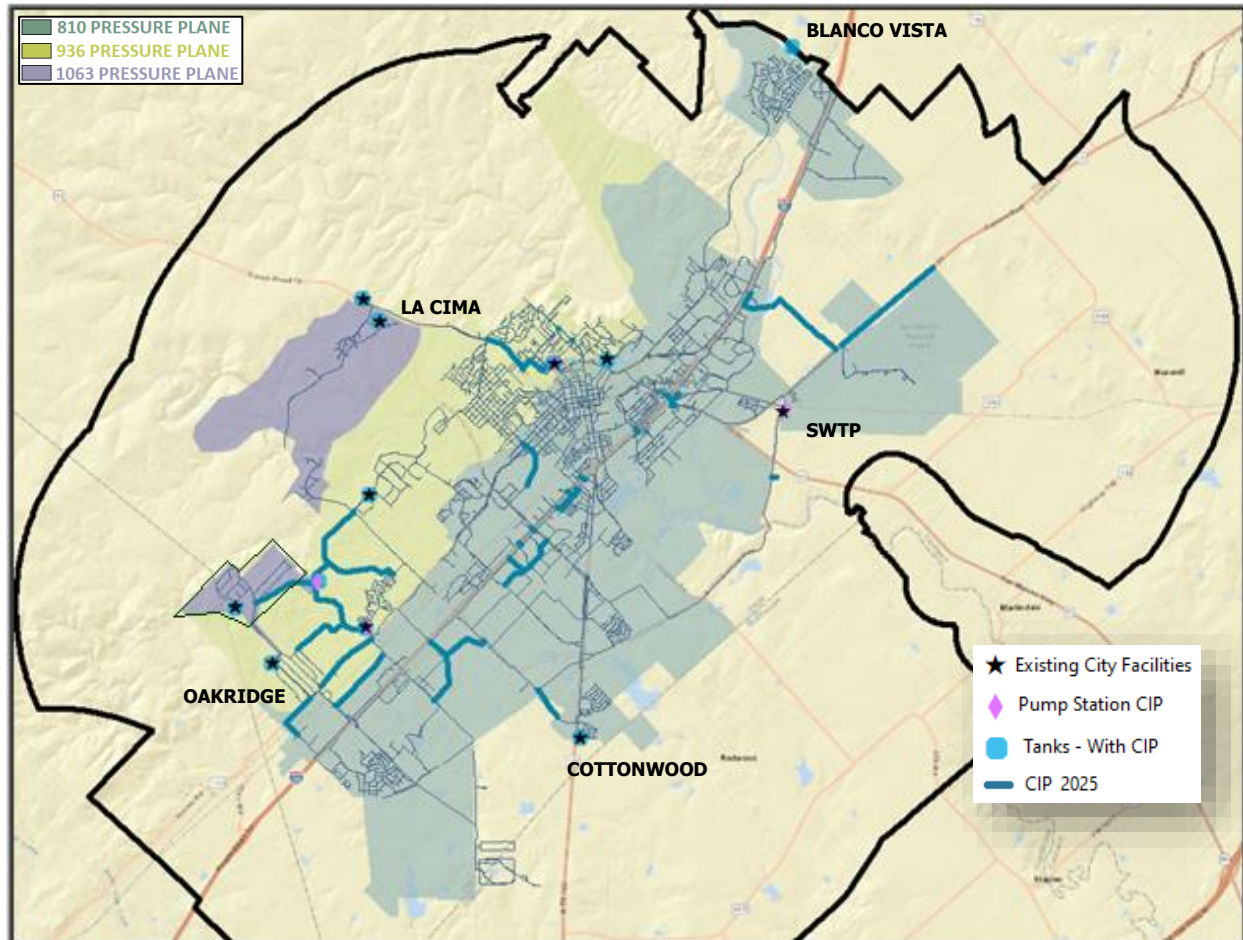


Figure 10: 2025 System Figure

6.2 2030 System Updates

The major projects that should be implemented by 2030 include the following:

- The McCarty Tank will be connected to the 810 pressure plane, providing additional elevated supply for this main zone. It should be noted that this tank will be operated at less than full as its overflow is currently 857-ft.
- Connect the new Kissing Tree PS to La Cima with a 16 in. water main. This project also includes an 8 in. line off the main to serve the Estates at San Marcos (PRV at 95 psi included). The La Cima development and Kingswood neighborhood will be joined into a single 1063 pressure plane with a 12 in. line.
- Installation of a new 1.0 MG EST along McCarty Ln. north of Hunter Rd. (actual location not yet determined). This tank will provide additional elevated storage for the 810 pressure plane, bringing the number of elevated gallons per connection within the acceptable range as set by the TCEQ (100 gal / connection). This tank will only be required if the population projections made by this report are fully realized. If the growth predicted for the year 2030 is slower than anticipated, this project can be pushed out into the future.
- Construct an outlet line from the Blanco Vista EST to Whisper PID on the east side of IH-35 and continue towards the new 12 in. on HWY 21 just north of the airport.

In 2030, the 1063 pressure plane will be fully connected through the RR 12 pump station, La Cima, and Kingswood. Figure 11 depicts the proposed 2030 system, with all pressure planes identified. Appendix C contains additional figures showing minimum pressure nodes and fire flow availability results for the 2030 system.

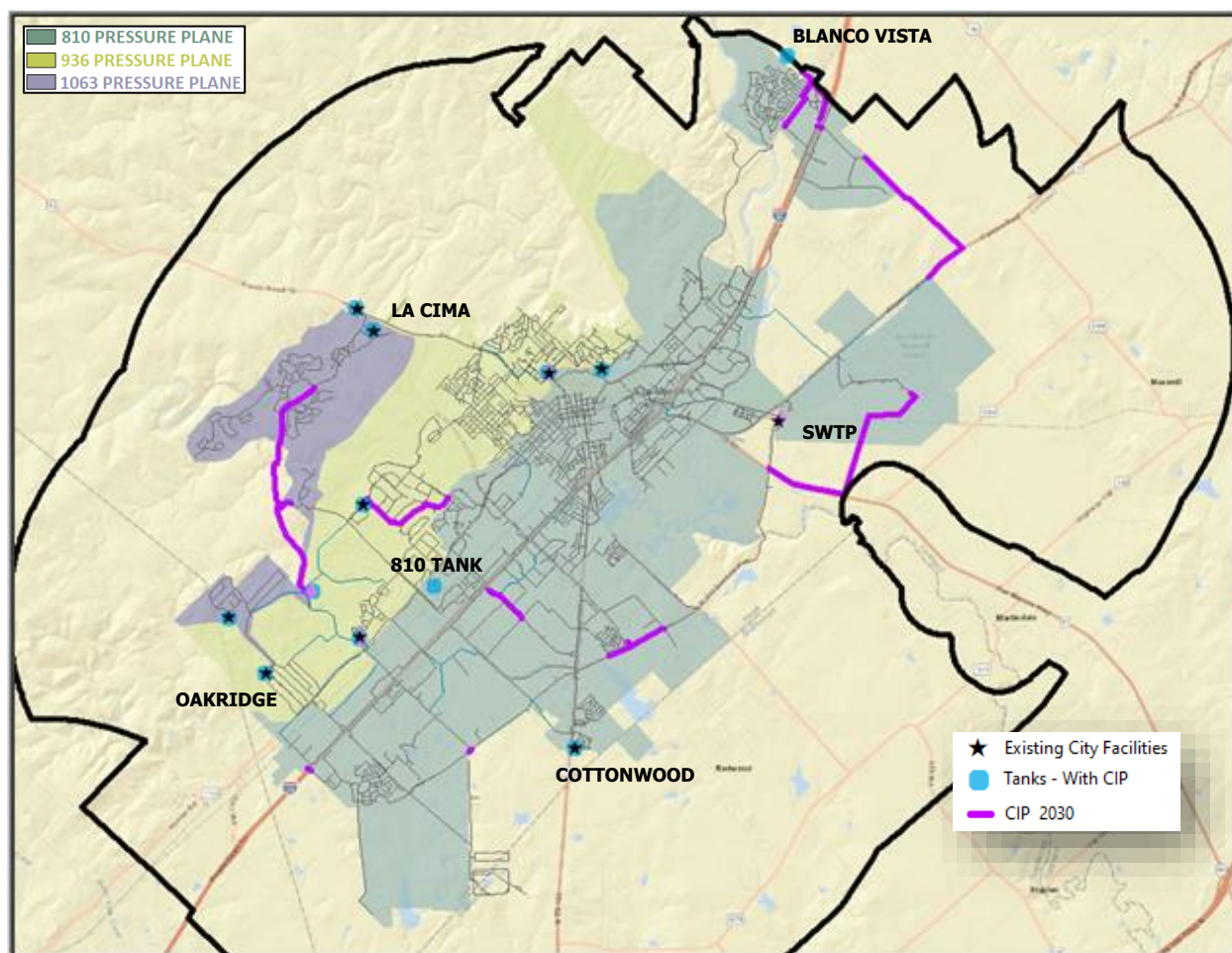


Figure 11: 2030 System Figure

6.3 2035 System Updates

Between 2030 and 2035, the population growth rate is projected to slow down as compared with the previous decade. Furthermore, much of the major CIP needs to support the ultimate planning horizon of 2035 will have been completed by 2030. As a result, the capital projects planned for completion between 2030 and 2035 are mostly small diameter pipe upgrades with only a few larger diameter pipeline segments remaining for completion. The completion of the 16 in. along Old Bastrop and connection to the dead end at the southeast end of Centerpoint Rd. will support Gaslamp as their projections increase from 1.0 MGD to 3.5 MGD. The key projects for the year 2035 include the following:

- Completion of the upgrades along Old Bastrop Road (Centerpoint to Rattler Rd.),
- Upgrade small diameter lines to 16 in. diameter along northbound IH-35 frontage road, south of downtown.
- New 1,100 gpm groundwater well at Comanche pump station.

Operationally, the distribution system will function much like it does in 2030 with increased flow from the Blanco Vista EST as Phase II of the ARWA groundwater becomes available. All developments presented in Table 6 and Table 7 are expected to be fully built out by this time frame.

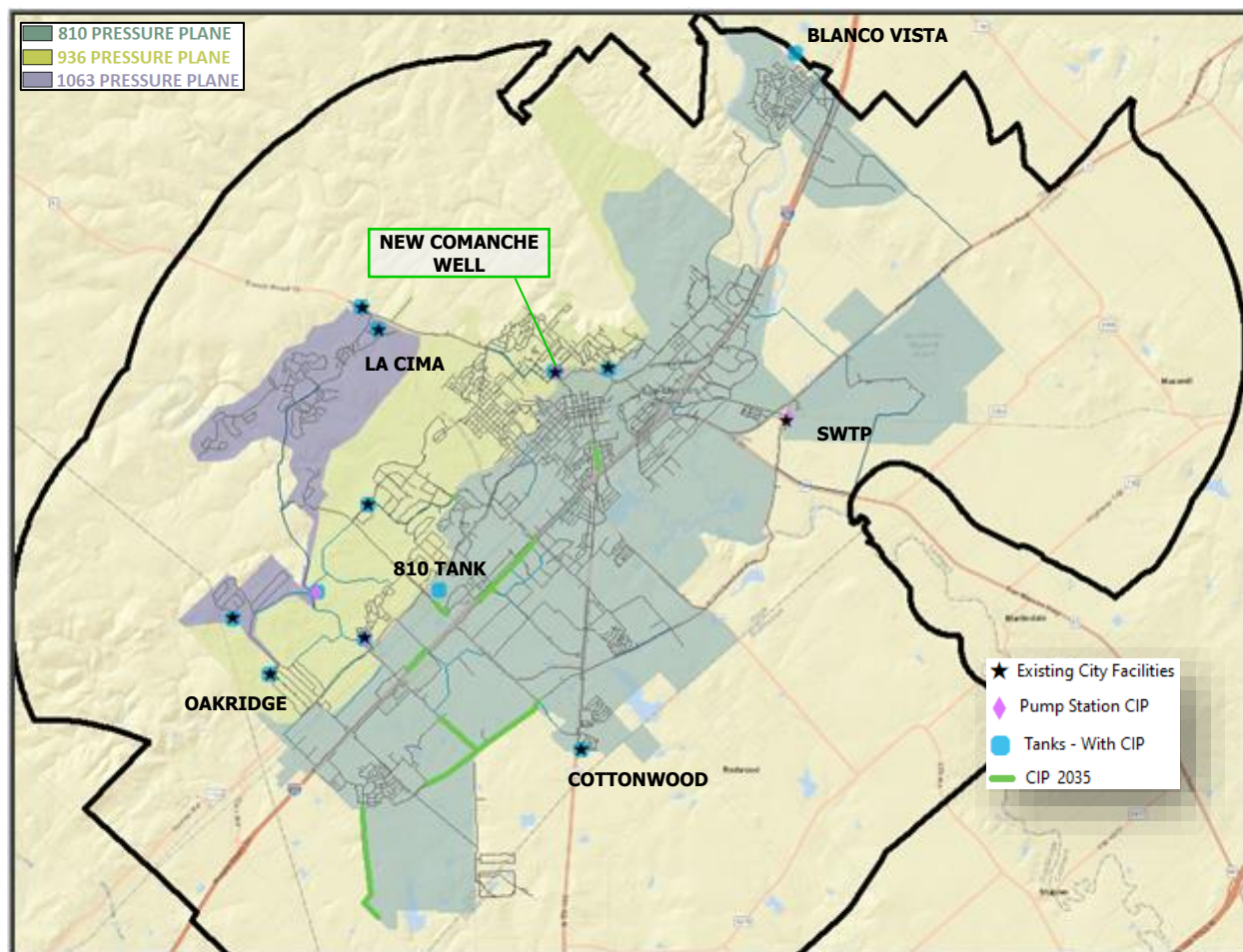


Figure 12: 2035 System Figure

6.4 Future Regulatory Evaluation

This section discusses the regulatory requirements applicable to the City's public water system with respect to water supply, storage, and pumping capacity using projected number of connections and estimated population served.

Water Supply

Assuming that the approved ACR variance of 0.32 gpm/connection applies to future conditions, the City will meet this ACR under the projected future 2035 scenario, with the proposed improvements, as shown in Table 13.

Table 13: Alternative Capacity Requirements – 2035

Water Supply	Total Production (gpm)
Treated Surface Water	6,250
Ground Water Pumps	
Spring Lake Well	6,360
Comanche Well	2,700
Soyars Well	400
McCarty Well	400
Oakridge Well	-
Kingswood Well	200
Crystal Clear	390
Future Well (Comanche)	1,100
ARWA Delivery	7,935
CRWA Share	833
Total	26,768
Estimated Number of Connections (2035)	48,850
gpm / connection	0.55
Meets ACR (0.32 gpm / conn)	Yes

Water Storage

The total storage and storage per connection under proposed conditions (2035) are presented in

Table **14**. By 2035, four proposed projects will provide additional storage for future years. A new 1.0 MG EST in the Blanco Vista neighborhood will receive water from the ARWA project and have an overflow elevation of 815-ft, delivering the water supply at a pressure just slightly higher than that of the 810 pressure plane. A 1.0 MG elevated storage tank at a hydraulic grade of 810-ft is recommended to serve the projected growth in the central region of the water serve area. The new EST will be built near the edge of the 810 / 936 pressure plane divide along McCarty Ln. Additionally, a 1.0 MG tank located on a hilltop

will provide elevated storage to the proposed Kissing Tree Development and surrounding area. And finally, a new 2.0 MG GST at SWTP will serve as an additional delivery point for the ARWA water supply.

Pumping Capacity

As mentioned earlier, the TCEQ requirements for pumping are dependent upon available elevated storage. Table 15 displays the future pumping facility information compared to the peak hour demands for each pressure plane.

As can be seen in Tables 14 and 15, the City has adequate planned pumping capacity to meet the TCEQ requirements only if the potable water use by the Gaslamp commercial development does not exceed 3.5 MGD.

Table 14: Storage Tanks and Volumes – 2035

Storage Facilities by Pressure Plane	Proposed Active Head Range	Tank Style	2035				
			Projected Number of Connections	Required Total Storage ¹ (MG)	Proposed Active Total Storage (MG)	Required Elevated Storage ² (MG)	Proposed Active Elevated Storage (MG)
810-FT			38,926	7.8	11.2	3.9	4.7
SWTP Clearwells (x3)		Ground			5.0		
Spring Lake GST	610 - 636	Ground			1.5		
Comanche Standpipe	762 - 810	Elevated			0.7		0.7
Cottonwood Elevated Tank	771 - 810	Elevated			1.1		1.1
McCarty Standpipe	758 - 810	Elevated			0.3		0.3
Soyars Standpipe	742 - 805	Elevated			0.3		0.3
Blanco Vista EST	775-815	Elevated			1.2		1.2
POTENTIAL 810 EST	771 - 810	Elevated			1.1		1.1
936-FT			6,591	1.3	3.2	0.7	1.9
Comanche Standpipe	762 - 810	Ground			0.7		
Soyars Standpipe	742 - 805	Ground			0.3		
Oakridge GSTs (x2)	738.5 - 760	Ground			0.08		
McCarty Standpipe	758 - 810	Ground			0.3		
Ranch Road 12	905 - 936	Elevated			1.0		1.0
Willow Creek EST ⁴	812-842	Elevated					
Willow Creek GST ⁴	660-624	Ground					
Kissing Tree (Future Tank)	870 - 936	Elevated			0.9		0.9
1063-FT			3,333	0.7	2.4	0.3	0.5
Ranch Road 12	905 - 936	Ground			1.0		
Kissing Tree (Future Tank)	870 - 936	Ground			0.9		
Kingswood GST	884 - 900	Ground			0.04		
La Cima	1025 - 1063	Elevated			0.5		0.5
System Total ³			48,850	9.8	30.6	4.9	14.1
(TAC 30, Ch. D, §290.45)							
¹ Required Total Storage in Plane is 200 gallons per connection. (TAC 30, Ch. D, §290.45)							
² Required Elevated Storage in Plane is 100 gallons per connection when connections exceed 2,500. (TAC 30, Ch. D, §290.45)							
³ Total system storage only accounts for each tank once, although in a few cases a tank may serve two pressure planes at once.							
⁴ Willow Creek infrastructure inherited from the central Crystal Clear service area - not used in evaluation.							

Table 15: Pumping Stations and Capacities – 2035

Pressure Plane	Pump Station	2035					
		Projected Number of Connections	Projected 2035 Average Annual Demand (gpm)	Projected 2035 Maximum Day Demand (gpm)	TCEQ Required Firm Capacity ¹ (gpm)	Projected Total PS Capacity (gpm)	Projected Firm PS Capacity (gpm)
1063 (Kingswood, La Cima)	Kingswood	3,333	709	1,165	1,558	400	200
	Kissing Tree (Future)					3,200	1,600
	Ranch Road 12					3,600	2,400
	Total per Plane					7,200	4,200
936 (Mid-Range)	Comanche (Larger Pumps)	6,591	1,403	2,304	3,081	5,000	3,750
	Soyars					1,200	600
	McCarty					600	400
	Oakridge - Not Active					0	0
	Total per Plane					6,800	4,750
810 (SWTP)	SWTP HSPS (Add One Pump)	38,926	8,286	13,607	18,197	16,664	12,498
	CRWA Share (Future)					833	833
	Spring Lake					8,610	6,360
	Total per Plane					26,107	19,691
Total		48,850	10,399	17,076	22,836	-	-
(30TAC§290.45)							
¹ Based upon peak hourly demands. The calibration effort in the scope of the 2016 WMP describes how peak hourly demands were calculated.							

7 Recommended Capital Improvements

The updated CIP list for the City is discussed in this section.

7.1 Development of Project List

Based on the modeled scenarios, a list of recommended capital improvement program projects (CIP List) was developed for the interval between each future target year. The CIP list presented below is inclusive of all projects which were recommended in the 2016 Water Master Plan Update, but these projects have been renumbered for purposes of this update. Those projects which have already been implemented in the City's system have been removed from the list and incorporated into the 2019 ("Existing") model scenario.

The projects listed in the table below are required based on the model results for the future year scenarios and compliance with the system criteria listed in Chapter 3. Additional projects were also identified for the following reasons:

- Improvement of water age / quality.
- Improvement of hydraulic efficiency (elimination of dead-ends, creation of looped systems).
- Upgrading small-diameter connections (less than 6-in diameter pipes).

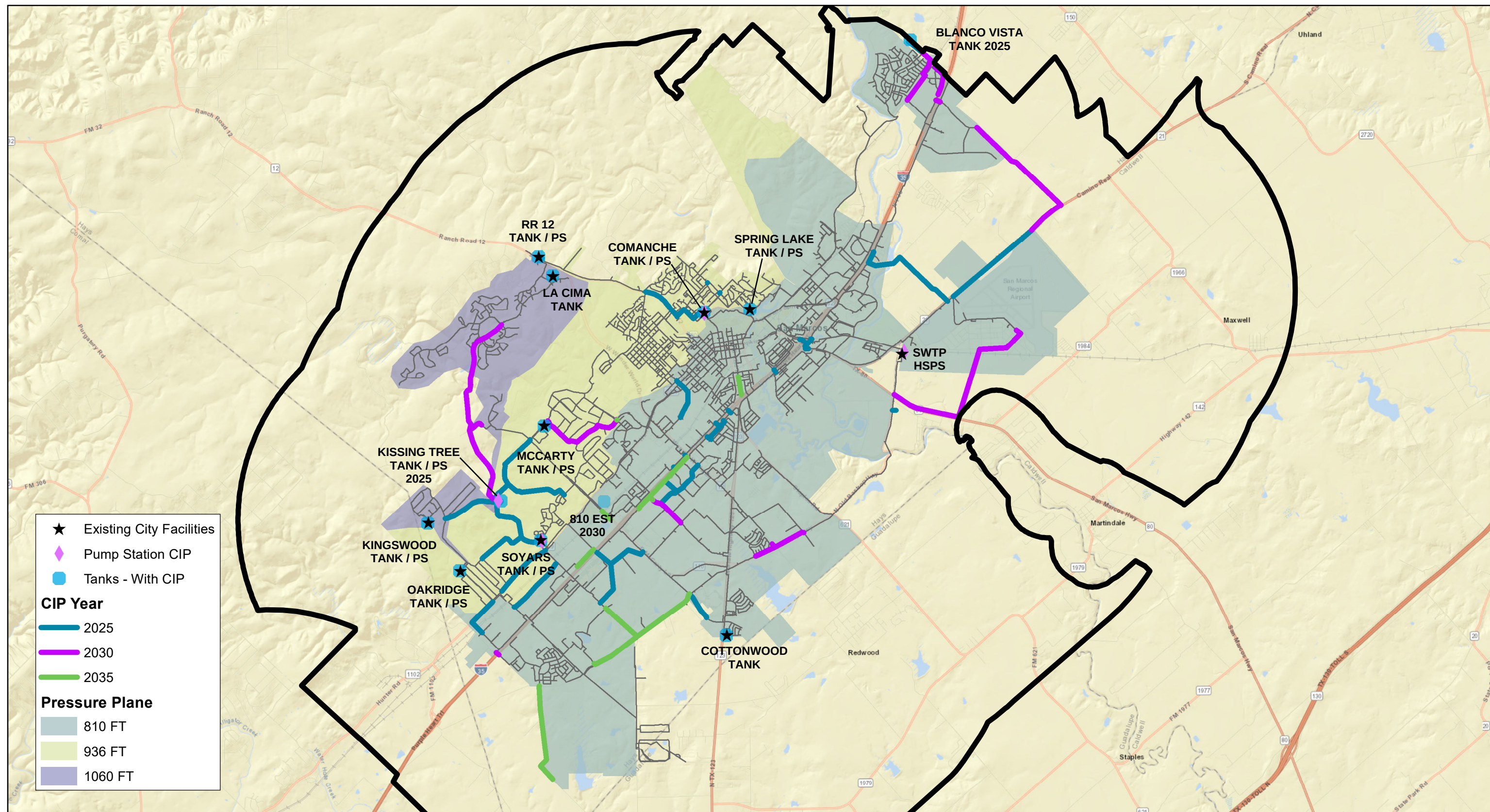
CIP projects which are new to the 2020 Water Master Plan or have moved up in the proposed implementation schedule are designated with an asterisk (*) in the left hand column. CIP projects which have the suffix (D) in their CIP number are developer driven and are not the City's responsibility for funding.

Table 16: Proposed CIP Projects

NEW Project	CIP Number	2016 CIP Number	CIP Year	Project Name
	1	1	2025	Replace Comanche Pumps
	2	3	2025	Replace Soyars Pumps
	3	6	2025	Hunter Rd Parallel
	4	-	2025	Southwest 810' Plane Loop
	5	8	2025	Stagecoach Trail Extension
	6	-	2025	Rattler Road Loop
	7	14	2025	South Hunter Rd Loop
*	8	-	2025	Patricia and Sunset Acres Upgrades
	9	-	2025	Leah Ave Extension
	10	16	2025	Upgrade IH-35 Crossings
	11	-	2025	Railroad Crossing and Upgrades near the Conn's shopping center.
	12	-	2025	Gaslamp Feed
	13	17	2025	Airport Extension

NEW Project	CIP Number	2016 CIP Number	CIP Year	Project Name
*	14	-	2025	Blanco Vista EST
*	15	37	2025	Add SWTP Pump
*	16	-	2025	12 in. Connection for CRWA Share
	17 (D)	18	2025	Kissing Tree Tank
	18 (D)			Kissing Tree PS
	19 (D)	21	2025	Kissing Tree Loop - Phase 2a
	20 (D)			
	21 (D)	22	2025	Kissing Tree Loop - Phase 2b
	22	23	2025	Kissing Tree - Kingswood Line
	23	24	2025	Kissing Tree - Deerwood Line
	24 (D)	25	2025	Kissing Tree - McCarty Line
	25	28	2025	Airport Loop
*	26	20	2025	Parallel Comanche Outlet Main (See Note 1)
	27	26	2030	Kissing Tree - La Cima Loop (16 in. and 24 in.) (See Note 1)
	28			
	29	27	2030	McCarty Tank Fill / Drain Line to 810 Plane
	30	29	2030	US 80 Loop
	31	31	2030	Clovis Barker Upgrade
*	32	-	2030	Trace Development Connection
*	33	-	2030	Redwood to HWY 123
*	34	-	2030	North Side Connection
*	35	-	2030	Post Rd Connection
*	36	-	2030	Potential 810 EST along McCarty Ln.
*	37	19	2035	Add Well Capacity at Comanche
*	38	30	2035	Old Bastrop Extension 2
*	39	32	2035	Centerpoint Extension
*	40	34	2035	Francis Harris Extension
*	41	35	2035	South LBJ Upgrade
*	42	36	2035	McCarty Connection
	43	38	2035	Old Bastrop Extension 3
	44	39	2035	Tanger Loop
	45	-	2035	IH 35 Frontage Upgrades

Note 1: In 2025, it is proposed that the existing 16 in. discharge line from the Comanche pump station be paralleled with another 16 in. (CIP 36) to send more flow up to the RR 12 tank. The 16 in. line connecting La Cima to the Kissing Tree pump station is proposed to be installed prior to 2030 (CIP 25/26). Kingswood will benefit from the pressure maintenance of the La Cima EST and the new Kissing Tree pump station will be able to send flow to La Cima for their demands. Both of these projects are aiding the new 1063 plane with additional flow as La Cima continues to develop. The projects are not interchangeable, but the model results show that a paralleled discharge line from Comanche will help in 2025 and 2030 to meet the La Cima demands if the 16 in. line from Kissing Tree to La Cima is not installed until 2030. The new discharge line project should be coordinated with other upgrade projects along the north side of Ranch Road 12 between Holland St. and Craddock Ave.



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**City of San Marcos: Water Master Plan Update
Capital Improvement Projects: 2025, 2030, and 2035
04/06/2020**



7.2 Infrastructure Renewal and Maintenance Projects

The City has developed and continues to maintain a water system risk model which assesses the condition of each pipe in the system based on two criteria: break history for the last five years and the remaining useful life based on install date and pipe material. The consequence of failure for each of the system's pipes accounts for the role of the pipe within the network (minor line, major line, or transmission line), the proximity to roadways, and whether or not it is located in an environmentally sensitive area. The City's risk model calculates a score for each pipe and identifies the pipe's risk of failure as "Low", "Moderate", or "High".

According to the risk model developed by the City, there are two pipelines which are at high risk of failure. These two pipes are recommended to be budgeted for replacement with the other 2025 CIP projects. The risk model should continue to be updated as additional data is collected. However, at this time, based on current risk scores, it is recommended that the City budget for and replace nine pipelines (in addition to the two above) by the year 2030. It is also recommended that the City closely monitor pipe WL21790 (pipe #11 in table below). This 24 in. diameter pipe is relatively young but has a high consequence of failure resulting in a moderate risk ranking.

Table 17: Maintenance CIP Projects

Pipe Number	CIP Year	Original Install Year	Material	Diameter (inches)	Location Description
1	2025	2002	PVC	2	Riverside Dr.
2	2025	1975	UNKNOWN	6	Staples Rd.
3	2030	1980	PVC	2	Briarwood Dr.
4	2030	1974	PVC	1	Roosevelt St. Neighborhood
5	2030	1974	PVC	2	Roosevelt St. Neighborhood
6	2030	1974	PVC	2	Roosevelt St. Neighborhood
7	2030	1945	PVC	2	Harvey St.
8	2030	1958	PVC	2	Panorama Dr.
9	2030	1974	PVC	2	Roosevelt St. Neighborhood
10	2030	1910	UNKNOWN	6 / 8	Hopkins St.
11	Monitor	2007	PVC	24	McCarty East

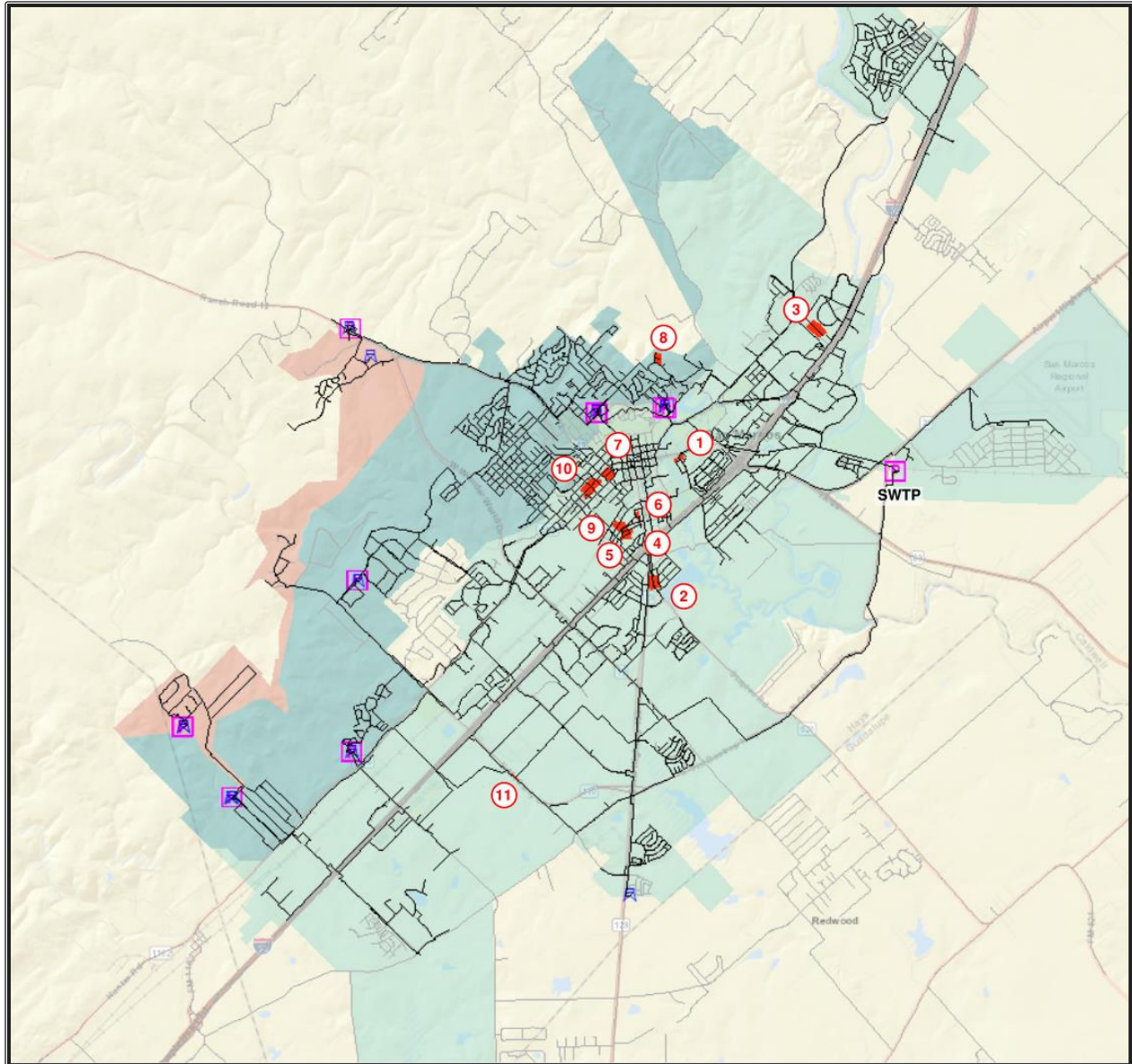


Figure 13: Recommended Pipeline Maintenance Projects

7.3 Opinion of Probable Construction Costs

A summary of the estimated construction costs of the CIP projects is presented below. Detailed cost estimates for each project are included in Appendix E.

In developing the above CIP cost opinions, the Texas Water Development Board's (TWDB) Unified Costing Model (UCM) was used as a guide for pipelines and pump stations. However, when these values were compared to recent bid tabulations for the City of San Marcos, the bids suggested that the UCM values should be adjusted. The cost adjustment was determined to be a factor of 1.48 for all pipelines. New pump stations were estimated using UCM values as a function of required horsepower (HP). All costs based on

the UCM values were then updated from the last UCM publication in March 2012 to November 2019 dollars using Engineering News Record (ENR) construction cost index (CCI) values.

For pipelines, cost opinions per linear foot were determined by assuming substrate type in the area (rock or soil) as well as the development density along the developed route (urban or rural), and then looking up the value for the proposed diameter in the appropriate table in the UCM. The UCM cost was then multiplied by the City's adjustment factor of 1.48 and then brought to present value using the ENR CCI.

For new pump stations, required HP was determined and recent bid tabs were used to develop cost opinions for stations with HP values from 80 to 200. Stations with HP values outside this range were interpolated from the UCM table for new pump stations. Costs were then brought to present value using the ENR CCI.

For tanks, recent bid tabulations, detailed cost opinions, and UCM values were compared to estimated costs for new tanks. Costs were then brought to present value using the ENR CCI.

Land costs associated with easements were estimated using recent Hays County appraisal values where available. If no appraisal values were available in the area, best engineering judgement was used to estimate land costs.

Table 18: 2025 CIP Cost Opinions

CIP Number	Project Name	Description	Dia. (in)	Estimated Total Cost
1	Replace Comanche Pumps	New Pumps at Comanche to fill RR 12 & 50 LF 16 in. yard piping	16	\$ 2,686,000
			-	
2	Replace Soyars Pumps	Replace Soyars pumps to fill the 936 Pressure Plane and Kissing Tree	-	\$ 1,212,000
3	Hunter Rd Parallel	Hunter Road from Quail Run to Centerpoint (near Soyars) Extension in 936 Plane, serving the south side of Hunter Rd customers	12	\$ 684,000
4	Southwest 810' Plane Loop	Connect Centerpoint to Transportation Way in the 810 plane	12	\$ 662,000
5	Stagecoach Trail Extension	Extend line from end of Stagecoach to intersection of Belvin and Bishop (existing 12 in. tie in)	12	\$ 523,000
		Stream crossing – Bore	12	
6	Rattler Road Loop	Complete 12 in. loop around the high school on Rattler Rd. and build ~500 LF of 16 in. to the southwest along Old Bastrop Ln.	12	\$ 263,000
7	South Hunter Rd Loop	Connect existing 12 in. (on 810 plane) in Hunter Rd to 12 in. in Industrial Fork Rd.	12	\$ 507,000
8	Patricia and Sunset Acres	Upsize 2 in. line along Del Sol Dr and 8 in. line along Patricia Dr. to each be 12	8	\$ 342,000

CIP Number	Project Name	Description	Dia. (in)	Estimated Total Cost
		in. diameter as a part of the Sunset Acres drainage project	12	
9	Leah Ave Extension	Install 12 in. to connect Leah Ave between Cottonwood Pkwy and Clovis Barker	12	\$ 859,000
10	Upgrade IH-35 Crossings	Upgrade 6 or 7 existing water line crossings to 16 in. Between McCarty & Aquarena Springs Rd.	12 16	\$ 1,867,000
11	Railroad Crossing and Upgrades near the Conn's shopping center	Upgrade IH 35 crossing near the railroad crossing and upsize the 8 in./10 in. lines to the east of IH 35 IH-35 Crossing Section	12 12	\$ 696,000
12	Gaslamp Feed	Install 12 in. from McCarty behind the Premium outlets to the 24 in. to feed the industrial development area and 18 in. line to serve Gaslamp	12	\$ 319,000
13	Airport Extension	Extend 12 in. northeast along HWY 21	12	\$ 968,000
14	Blanco Vista EST	Build 1.0 MG elevated storage tank and 24 in. outlet line to Blanco Vista Blvd	24	\$ 586,000 \$ 4,493,000
15	Add SWTP Pump	New Pump at SWTP Pump Station	-	\$ 401,000
16	12 in. Connection for CRWA Share	12 in. x 30 in. connection on the 30 in. transmission main, just south of the WTP	12	\$ 30,000
17 (D)	Kissing Tree Tank	New 0.50 MG Elevated Storage for 936 pressure plane	-	\$ 2,247,000
18 (D)	Kissing Tree PS	Pumps to fill La Cima Tank and deliver to 1063 pressure plane	12 16	\$ 2,729,000 \$ 172,000
19 (D) 20 (D)	Kissing Tree Loop - Phase 2a	Central Loop in Development Phase I	16 24	\$ 1,521,000
21 (D)	Kissing Tree Loop - Phase 2b	Central Loop in Development Phase 2	12 16	\$ 1,176,000
22	Kissing Tree - Kingswood Line	Connect Kissing Tree to Kingswood at Lazy Ln (include flow control valve)	12	\$ 414,000
23	Kissing Tree - Deerwood Line	Connect Kissing Tree Loop to Trails End	12	\$ 417,000
24 (D)	Kissing Tree - McCarty Line	Connect Kissing Tree Loop to 16 in. KT line from McCarty Ln.	12 16	\$ 715,000
25	Airport Loop	Connect IH-35 to HWY 21 along Harris Hill Rd, creating a loop for the northeast service area	12	\$ 977,000
26	Parallel Comanche Outlet Main	Parallel of existing 20 in./16 in. Comanche PS to Craddock Ave. & RR12	16	\$ 1,669,000

Table 19: 2030 CIP Cost Opinions

CIP Number	Project Name	Description	Dia. (in)	Estimated Total Cost
27	Kissing Tree - La Cima Loop	Kissing Tree Tank to La Cima PS via new line to and through La Cima development. Also connect this loop to existing neighborhood (Estates of San Marcos) with an 8 in. new line along W. McCarty Ln. New 8 in. needs PRV to reduce pressure to 95 psi.	8	\$ 3,016,000
28			12	
			16	
29	McCarty Tank Fill/Drain Line	Connect McCarty Standpipe to 810 pressure plane via Stagecoach	12	\$ 1,581,000
30	US 80 Loop	Extend 12 in. line from existing 30 in. along SH 80 to edge of CCN, then north along property boundaries to connect to dead end at airport.	12	\$ 1,907,000
31	Clovis Barker Upgrade	Upgraded lines along Clovis Barker to 16 in. to tie into existing 24 in. Also upgraded lines along IH-35 to 16 in. to tie into existing 16 in. lines.	16	\$ 622,000
32	Trace Dev. Connection	Connect development on the south end to 16 in. along IH 35	16	\$ 208,000
33	Redwood to HWY 123	Connect the 16 in. along Old Bastrop Rd to the East to the 18 in. line north of Cottonwood and complete 12 in. line on Redwood south to connect at Old Bastrop.	12	\$ 547,000
34	North Side Connection	Add 12 in. line to move ARWA water from the Blanco Vista Tank to the east side of IH 35 (follow Yarrington extension).	8	\$ 3,877,000
			12	
			16	
35	Post Rd Connection	Close loop along north end of Post Rd., south of Champions Blvd	12	\$ 354,000
36	Potential 810 Elevated Storage Tank	New elevated storage tank with overflow elevation of 810 to be installed along McCarty Ln. near the top of the 810 pressure plane.	-	\$ 4,493,000

Table 20: 2035 CIP Cost Opinions

CIP Number	Project Name	Description	Dia. (in)	Estimated Total Cost
37	Add Well Capacity	Add groundwater well at Comanche.	-	\$ 1,234,000
38	Old Bastrop Extension 2	Rattler to Centerpoint Extension along Old Bastrop Highway	16	\$ 1,303,000
39	Centerpoint Extension	Install 16 in. perpendicular to Old Bastrop to 12 in. Existing Line	12 16	\$ 565,000
40	Francis Harris Extension	Extend 8 in. line from existing terminus of 12 in. line in Old Bastrop to Francis Harris, then along Francis Harris to power plant.	8	\$ 748,000
41	South LBJ Upgrade	Upgrade small diameter line in S. LBJ from E. Grove St. to IH-35 Crossing	12	\$ 250,000
42	McCarty Connection	Extend existing 12 in. line further south along E. McCarty Lane toward IH-35 to connect to future growth area.	12	\$ 182,000
43	Old Bastrop Extension 3	Centerpoint to Horace Howard Extension along Old Bastrop Highway, Include connection to existing line on Horace Howard Dr.	12	\$ 463,000
44	Tanger Loop	Connect existing 24 in. to end of proposed 12 in. developer line along IH-35 north of Centerpoint (Behind Bill Miller's)	12	\$ 419,000
45	IH 35 Frontage Upgrades	Upgrade IH 35 lines along northbound side to 16 in. pipes from tan warehouse building north of McCarty to the northeast until Wonder World Dr.	16	\$ 1,388,000

8 Recommended Supply Plan

With the new supply from the regional ARWA project, the City will have four main sources of potable water for their customers. The following recommendation is based on minimizing operation and maintenance costs of running the HSPS at the SWTP and preserving the City's groundwater rights.

Since the ARWA supply is negotiated as a take or pay contract between the City and ARWA and the water source is already delivered at the required pressure, the City will not be paying power costs associated with running the SWTP and HSPS for this supply volume. The ARWA source should be the first to be utilized.

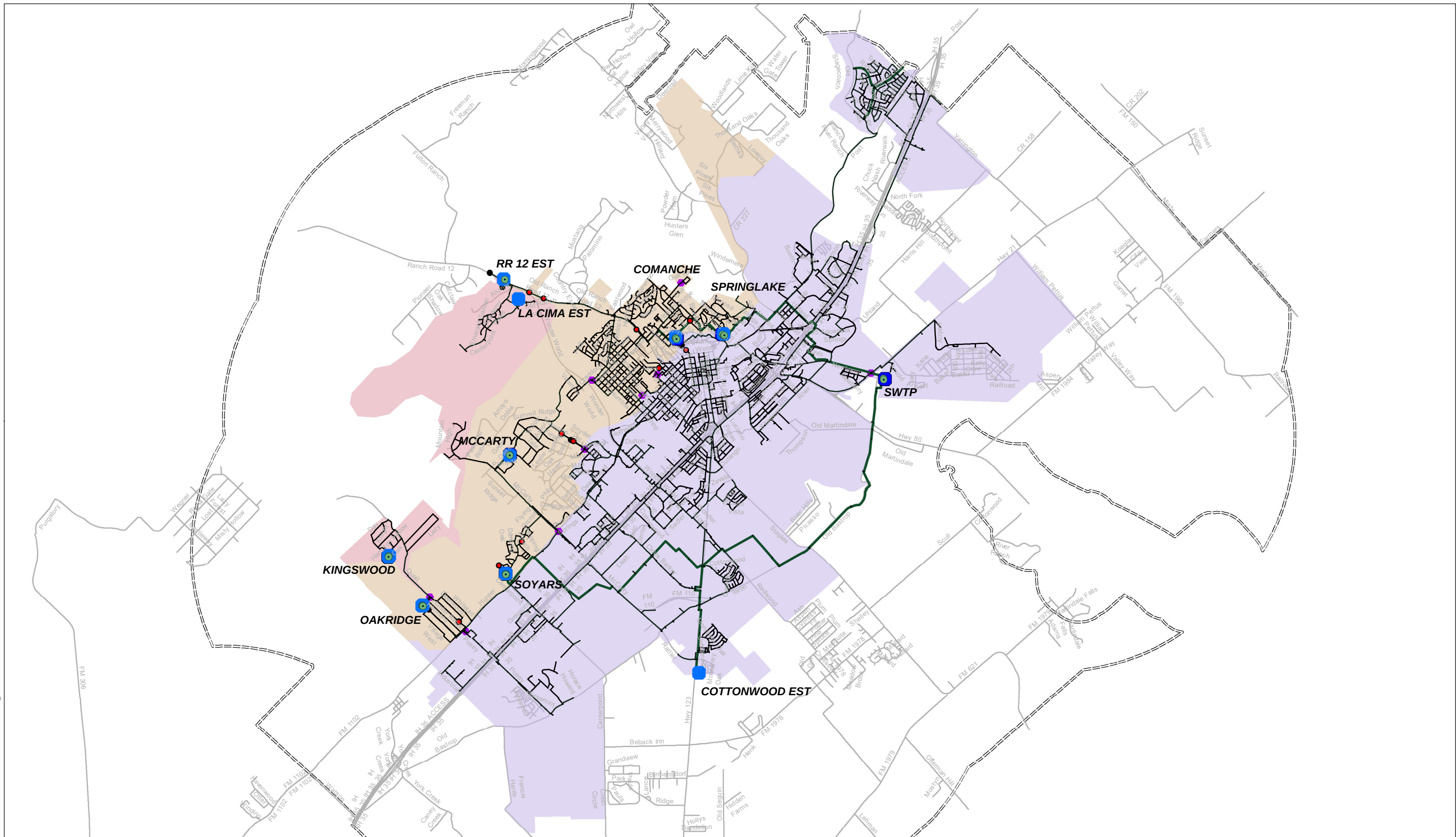
1. Take full ARWA allocation through the new Blanco Vista EST for base flow.
2. Utilize full share of Hays-Caldwell WTP capacity to supplement base flow.
3. Use treated surface water from the HSPS at the SWTP to fill tanks during peak flows.
4. Exercise wells as needed to maintain Edwards Aquifer rights.

Table 21: Projected Supply and Demands

	Average Day Demand Estimate (MGD)	Peak Demand (MGD)	ARWA Supply (MGD)	SWTP Supply (MGD)	H-C WTP Share (MGD)	Groundwater Potential (MGD)	Total Supply Provided (MGD)
2025	10.4	22.8	4.8	9.0	1.2	14.8	29.8
2030	11.7	25.7	4.8	9.0	1.2	14.8	29.8
2035	15.0	32.9	11.4	9.0	1.2	16.4	38.0

APPENDIX A

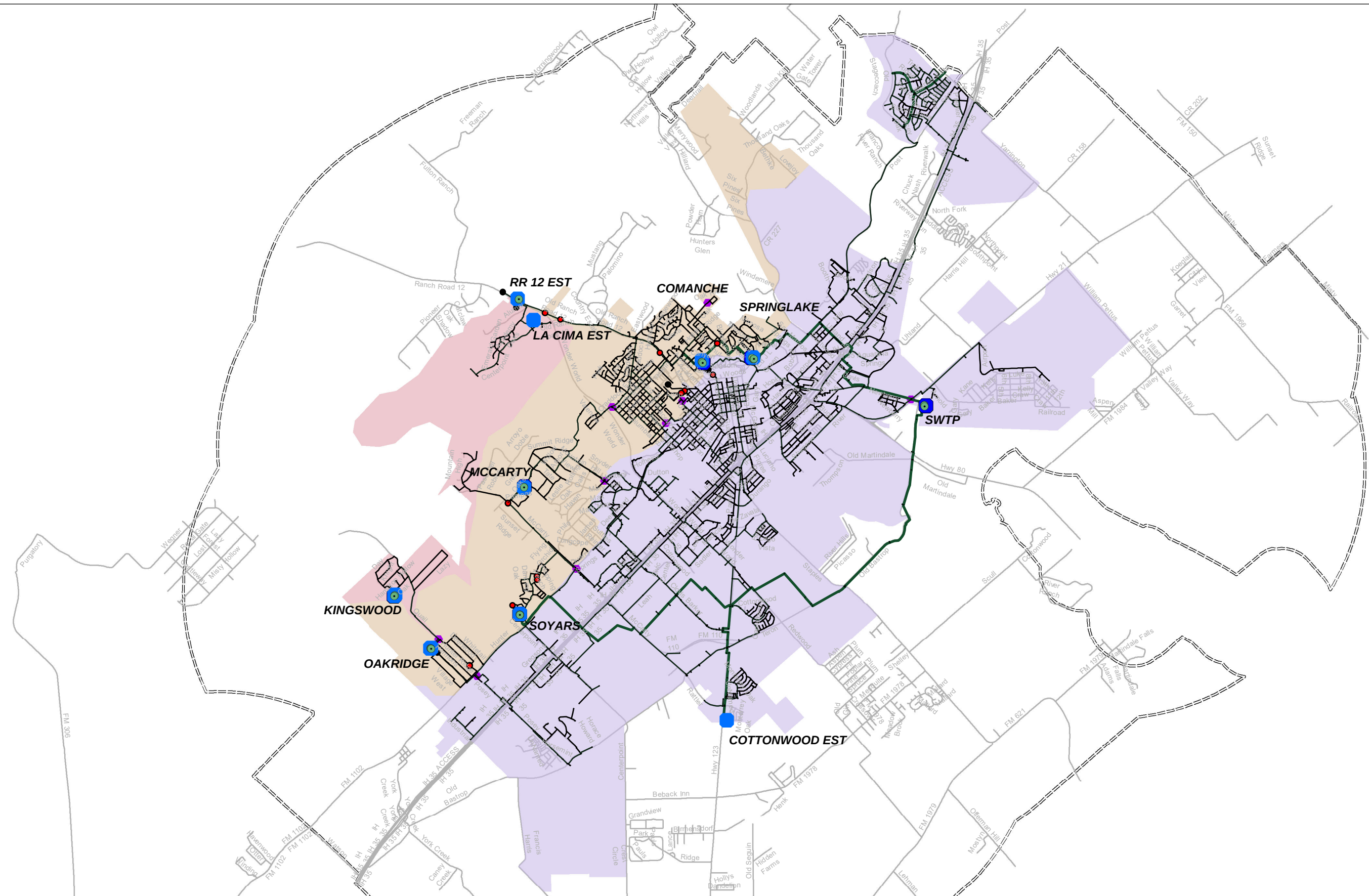
EXISTING SYSTEM MODEL RESULTS



	WATER STORAGE AND PUMPING		MIN PRESSURE LESS THAN 35 PSI
	WATER STORAGE		MIN PRESSURE LESS THAN 25 PSI
	PRESSURE REDUCING VALVE		

CITY OF SAN MARCOS
WATER MASTER PLAN UPDATE
EXHIBIT A-1: 2019 AVERAGE DEMAND
EPS RESULTS: MINIMUM PRESSURE

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|---|----------------------------------|---|--------------------------------------|
|  | WATER STORAGE AND PUMPING |  | MIN PRESSURE LESS THAN 35 PSI |
|  | WATER STORAGE |  | MIN PRESSURE LESS THAN 25 PSI |
|  | PRESSURE REDUCING VALVE | | |

CITY OF SAN MARCOS
WATER MASTER PLAN UPDATE
EXHIBIT A-2: 2019 MAXIMUM DEMAND
EPS RESULTS: MINIMUM PRESSURE



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APPENDIX B

2025 SYSTEM MODEL RESULTS



- MIN PRESSURE LESS THAN 35 PSI
- MIN PRESSURE LESS THAN 25 PSI

**CITY OF SAN MARCOS
WATER MASTER PLAN UPDATE
EXHIBIT B-1: 2025 AVERAGE DEMAND
EPS RESULTS: MINIMUM PRESSURE**



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- WATER STORAGE AND PUMPING
- WATER STORAGE
- PRESSURE REDUCING VALVE

- MIN PRESSURE LESS THAN 35 PSI
- MIN PRESSURE LESS THAN 25 PSI

**CITY OF SAN MARCOS
WATER MASTER PLAN UPDATE
EXHIBIT B-2: 2025 MAXIMUM DEMAND
EPS RESULTS: MINIMUM PRESSURE**



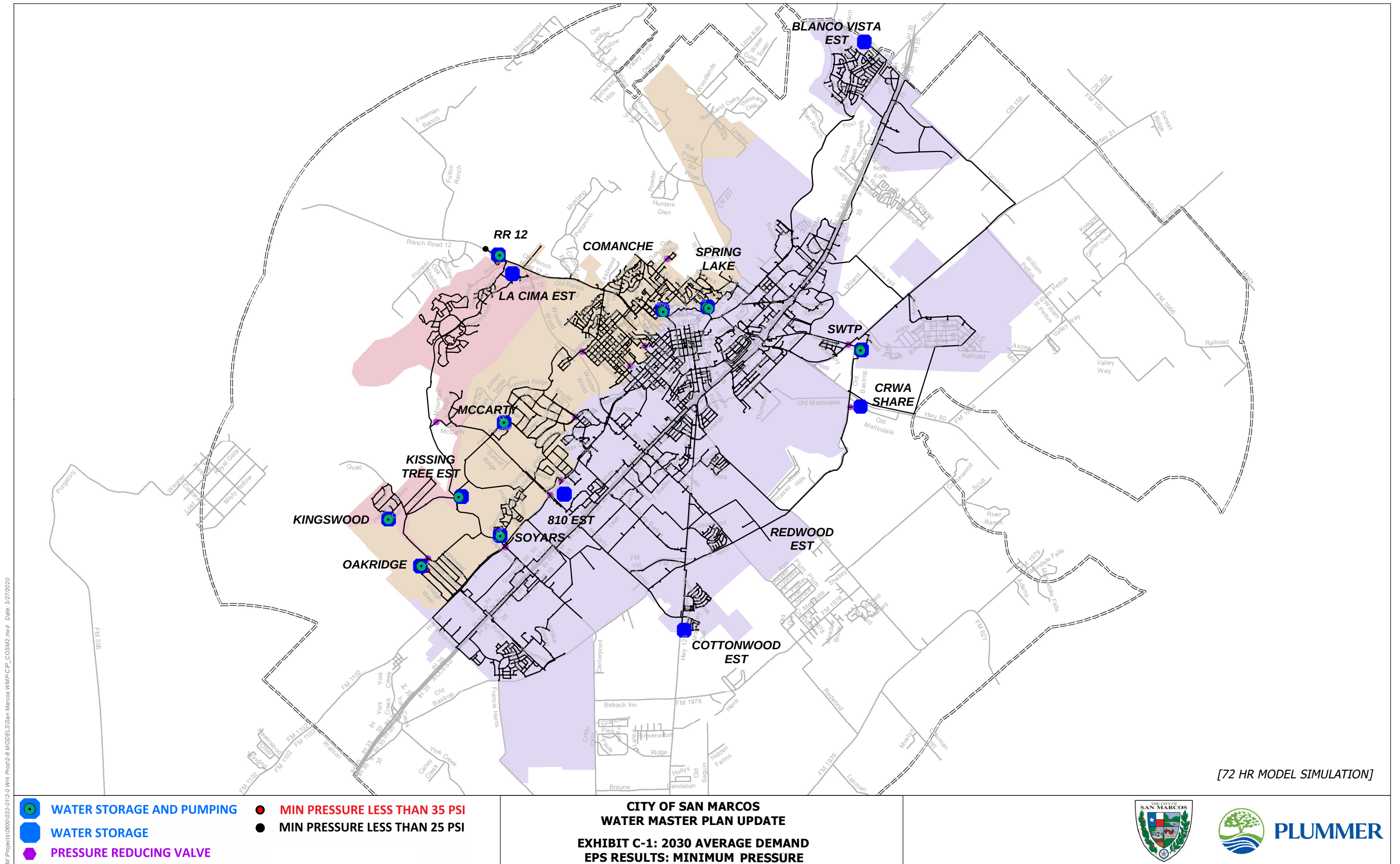
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APPENDIX C

2030 SYSTEM MODEL RESULTS

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APPENDIX D

2035 SYSTEM MODEL RESULTS



-  **WATER STORAGE AND PUMPING**  **MIN PRESSURE LESS THAN 35 PSI**
-  **WATER STORAGE**  **MIN PRESSURE LESS THAN 25 PSI**
-  **PRESSURE REDUCING VALVE**

**CITY OF SAN MARCOS
WATER MASTER PLAN UPDATE
EXHIBIT D-1: 2035 AVERAGE DEMAND
EPS RESULTS: MINIMUM PRESSURE**



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APPENDIX E

CAPITAL IMPROVEMENTS PROGRAM PROJECTS COST OPINIONS

2020 CIP Number	Project Name	Description	Dia. (in)	Length (ft)	Tank Size	Pump Size (GPM)	Pump Qty	Year	Soil Type	\$/LF	Line Placement	Pipeline Cost	Easement Width (ft)	Easement Acreage	Land Cost (\$)	10% Surveying (\$)	Pavement Repair Cost	Project Costs (\$)	Engineering, Legal, Financing, Contingency	Environmental	Rounded Total Cost
1	Replace Comanche Pumps	New Pumps at Comanche to fill RR 12 & 50 LF 16" yard piping	16	51	-	-	-	2025	Soil	\$ 104	City Property	\$ 5,312	30	0.04	\$ -	\$ -	\$ -	\$ 5,312	\$ 1,195	\$ 122	\$ 7,000
						1,250	3		-	-	-	-	-	-	\$ 2,186,434	\$ 491,948	\$ -	\$ 2,679,000			
2	Replace Soyars Pumps	Replace Soyars pumps to fill the 936' Pressure Plane (2020) and Kissing Tree in 2025.	-	-	-	600	2	2025	-	-	-	-	-	-	-	-	-	\$ 988,691	\$ 222,455	\$ -	\$ 1,212,000
3	Hunter Rd Parallel	Hunter Road from Quail Run to Centerpoint (near Soyars) Extension in 936 Plane, serving the south side of Hunter Rd customers.	12	5,230	-	-	-	2025	Combo	\$ 83	Easement / Rural & City Street	\$ 433,065	30	3.60	\$ 104,327	\$ 10,433	-	\$ 547,825	\$ 123,261	\$ 12,600	\$ 684,000
4	Southwest 810' Plane Loop	Connect Centerpoint to Transportation Way in the 810' plane.	12	5,317	-	-	-	2025	Soil	\$ 76	Easement/ Industrial then Rural	\$ 401,568	30	3.66	\$ 116,784	\$ 11,678	\$ -	\$ 530,030	\$ 119,257	\$ 12,191	\$ 662,000
5	Stagecoach Trail Extension	Extend line from end of Stagecoach to intersection of Belvin and Bishop (existing 12" tie in).	12	1,899	-	-	-	2025	Soil	\$ 76	Easement/ Rural (Stream Crossing)	\$ 143,424	30	1.65	\$ 9,188	\$ 919	-	\$ 410,684	\$ 102,671	\$ 9,446	\$ 523,000
		Stream crossing	12	500	-	-	-		Soil	\$ 514		\$ 257,153									
6	Rattler Road Loop	Complete 12" loop around the high school on Rattler Rd. and build ~500 LF of 16" to the southwest along Old Bastrop Ln.	12	2,429	-	-	-	2025	Soil	\$ 76	Easement / Rural & City Street (school)	\$ 183,498	30	1.67	\$ 22,805	\$ 2,280	\$ 1,536	\$ 210,119	\$ 47,277	\$ 4,833	\$ 263,000
7	South Hunter Rd Loop	Connect existing 12" (on 810 plane) in Hunter Rd to 12" in Industrial Fork Rd.	12	3,837	-	-	-	2025	Combo	\$ 83	Easement / Rural & City Street	\$ 317,767	30	2.64	\$ 76,551	\$ 7,655	\$ 3,840	\$ 405,813	\$ 91,308	\$ 9,334	\$ 507,000
8	Patricia and Sunset Acres	Upsize 2" line along Del Sol Dr and 8" line along Patricia Dr. to each be 12" diameter as a part of the Sunset Acres drainage project.	8	407	-	-	-	2025	Soil	\$ 71	City Roads	\$ 28,894	20	0.19	-	\$ 355	\$ -	\$ 273,502	\$ 61,538	\$ 6,291	\$ 342,000
			12	2,334					Soil	\$ 87	City Roads	\$ 203,861	30	1.61	-	\$ 3,054	\$ 37,338				
9	Leah Ave Extension	Install 12" to connect Leah Ave between Cottonwood Pkwy and Clovis Barker	12	6,429	-	-	-	2025	Soil	\$ 83	Easement / Rural & City Street	\$ 532,361	30	4.43	\$ 141,210	\$ 14,121	\$ 1,920	\$ 687,692	\$ 154,731	\$ 15,817	\$ 859,000
10	Upgrade IH-35 Crossings	Upgrade 6 or 7 existing water line crossings to 16" Between McCarty & Aquarena Springs Rd.	12	1,389	-	-	-	2025	Combo	\$ 514	Road Crossing IH-35	\$ 714,389	30	0.96	-	\$ 1,818	-	\$ 1,480,454	\$ 370,113	\$ 15,817	\$ 1,867,000
			16	1,482	-	-	-		Combo	\$ 514		\$ 762,308	30	1.02	-	\$ 1,940	-				
11	Railroad Crossing and Upgrades near the Conn's shopping center.	Upgrade IH 35 crossing near the railroad crossing and upsize the 8"/10" lines to the east of IH 35.	12	1,474	-	-	-	2025	Combo	\$ 96	Easement & City Street	\$ 142,138	30	1.01	\$ 7,378	\$ 738	\$ 1,536	\$ 556,903	\$ 125,303	\$ 12,809	\$ 696,000
		IH-35 Crossing Section	12	800					Combo	\$ 514	Road Crossing IH-35	\$ 411,444	30	0.55		\$ 1,047					
12	Gas Lamp Feed	Install 12" from McCarty behind the Premium outlets to the 24" to feed new industrial development and 18" line to serve Gas Lamp.	12	3,885	-	-	-	2025	Soil	\$ 64	Easement / Rural	\$ 247,503	30	2.68	\$ 6,614	\$ 661	\$ 384	\$ 255,163	\$ 57,412	\$ 5,869	\$ 319,000
13	Airport Extension	Extend 12" northeast along HWY 21	12	9,007	-	-	-	2025	Soil	\$ 71	Easement	\$ 639,855	30	6.20	\$ 123,040	\$ 12,304	-	\$ 775,199	\$ 174,420	\$ 17,830	\$ 968,000
14	Blanco Vista EST	Build 1.0 MG elevated storage tank and 24" outlet line to Blanco Vista Blvd	24	1,921		-	-	2025	Rock	\$ 222	Development	\$ 426,494	40	1.76	\$ 39,099	\$ 3,351	-	\$ 468,943	\$ 105,512	\$ 10,786	\$ 586,000
			-	-	1.0 MG	-	-		-	-	-	-	1.00	\$ 22,167	-	-	\$ 3,600,000	\$ 810,000	\$ 82,800	\$ 4,493,000	
15	Add SWTP Pump	New Pump at SWTP Pump Station	-	-	-	4,200	1	2025	-	-	-	-	-	-	-	-	-	\$ 320,613	\$ 72,138	\$ 7,374	\$ 401,000
16	12" Connection for CRWA Share	12" x 30" connection on the 30" transmission main, just south of the WTP.	12	327	-	-	-	2025	Soil	\$ 64	Easement / Rural	\$ 20,861	30	0.23	\$ 2,719	\$ 429	-	\$ 24,009	\$ 5,402	\$ 552	\$ 30,000
17 (D)	Kissing Tree Tank	New 0.50 MG Elevated Storage for 936' pressure plane	-		0.50 MG	-	-	2025	-	-	-	-	-	-	-	-	-	\$ 1,800,000	\$ 405,000	\$ 41,400	\$ 2,247,000
18 (D)	Kissing Tree PS	Pumps to fill La Cima Tank and deliver to 1063' pressure plane	12	35	-	1,400	2	2025	-	-	-	-	-	-	-	-	-	\$ 2,186,434	\$ 491,948	\$ 50,288	\$ 2,729,000
			16	1,100	-	-	-		Rock	\$ 124	Easement Rural and Development	\$ 136,192	30	0.76	-	\$ 1,440	-	\$ 137,632	\$ 30,967	\$ 3,166	\$ 172,000
19 (D)	Kissing Tree Loop - Phase 2a	Central Loop in Development Phase 1	16	1,720	-	-	-	2025	Rock	\$ 146	Easement Rural and Development	\$ 250,368	30	1.18	-	\$ 2,250	-	\$ 1,218,681	\$ 274,203	\$ 28,030	\$ 1,521,000
20 (D)			24	4,361	-	-	-		Rock	\$ 222		\$ 968,313	40	4.00	-	\$ 7,609	-				
21 (D)	Kissing Tree Loop - Phase 2b	Central Loop in Development Phase 2	12	19	-	-	-	2025	Rock	\$ 75	Easement Rural and Development	\$ 1,455	30	0.01	-	\$ 26	-	\$ 942,251	\$ 212,007	\$ 21,672	\$ 1,176,000
			16	7,522	-	-	-		Rock	\$ 124		\$ 930,928	30	5.18	-	\$ 9,843	-				
22	Kissing Tree - Kingswood Line	Connect Kissing Tree to Kingswood at Lazy Ln (include flow control valve)	12	4,706	-	-	-	2025	Combo	\$ 69	Development	\$ 325,497	30	3.24	-	\$ 6,159	-	\$ 331,655	\$ 74,622	\$ 7,628	\$ 414,000

2020 CIP Number	Project Name	Description	Dia. (in)	Length (ft)	Tank Size	Pump Size (GPM)	Pump Qty	Year	Soil Type	\$/LF	Line Placement	Pipeline Cost	Easement Width (ft)	Easement Acreage	Land Cost (\$)	10% Surveying (\$)	Pavement Repair Cost	Project Costs (\$)	Engineering, Legal, Financing, Contingency	Environmental	Rounded Total Cost
23	Kissing Tree - Deerwood Line	Connect Kissing Tree Loop to Trails End	12	4,400	-	-	-	2025	Rock	\$ 75	Development	\$ 328,320	30	3.03	-	\$ 5,758	-	\$ 334,078	\$ 75,167	\$ 7,684	\$ 417,000
24 (D)	Kissing Tree - McCarty Line	Connect Kissing Tree Loop to 16" KT line from McCarty Ln.	12	73	-	-	-	2025	Combo	\$ 69	Development	\$ 5,058	30	0.05	-	\$ 96	-	\$ 572,588	\$ 128,832	\$ 13,170	\$ 715,000
			16	4,932					Combo	\$ 114	Development	\$ 560,981	30	3.40	-	\$ 6,453	-				
25	Airport Loop	Connect IH 35 to HWY 21 along Harris Hill Rd, creating a loop for the northeast service area.	12	9,929	-	-	-	2025	Soil	\$ 64	Easement (mainly rural)	\$ 632,499	30	6.84	\$ 135,642	\$ 13,564	\$ 768	\$ 782,473	\$ 176,056	\$ 17,997	\$ 977,000
26	Parallel Comanche Outlet Main	Parallel of existing 207/16" Comanche PS to Craddock Ave. & RR12	16	6,981	-	-	-	2025	Rock	\$ 175	Easement	\$ 1,219,724	30	4.81	\$ 106,576	\$ 10,658	\$ -	\$ 1,336,958	\$ 300,815	\$ 30,750	\$ 1,669,000
27	Kissing Tree - La Cima Loop	Kissing Tree Tank to La Cima PS via new line to and through La Cima development. Also connect this loop to existing neighborhood (Estates of San Marcos) with an 8" new line along W. McCarty Ln. New 8" needs PRV to reduce pressure to 95 psi.	8	1,308	-	-	-	2030	Rock	\$ 74	Development	\$ 96,390	20	0.60	-	\$ 1,141	-	\$ 97,531	\$ 21,944	\$ 2,243	\$ 122,000
			12	6,521	-	-	-		Rock	\$ 90	Development	\$ 587,487	30	4.49	-	\$ 8,533	-				
			16	11,439					Rock	\$ 149	Development	\$ 1,707,156	30	7.88	-	\$ 14,969	-				
29	McCarty Tank Fill/Drain Line	Connect McCarty Standpipe to 810 plane via Stagecoach	12	8,376	-	-	-	2030	Rock	\$ 106	Easement / Urban	\$ 884,133	30	5.77	\$ 346,105	\$ 34,611	\$ 1,536	\$ 1,266,384	\$ 284,936	\$ 29,127	\$ 1,581,000
30	US 80 Loop	Extend 12" line from existing 30" along SH 80 to edge of CCN, then north along property boundaries to connect to dead end at airport.	12	16,858	-	-	-	2030	Soil	\$ 76	Easement (mostly rural)	\$ 1,273,283	30	11.61	\$ 230,292	\$ 23,029	\$ 768	\$ 1,527,372	\$ 343,659	\$ 35,130	\$ 1,907,000
31	Clovis Barker Upgrade	Upgraded lines along Clovis Barker to 16" to tie into existing 24". Also upgraded lines along IH-35 to 16" to tie into existing 16" lines.	16	3,297	-	-	-	2030	Soil	\$ 146	Easement	\$ 479,979	30	2.27	\$ 16,505	\$ 1,651	\$ -	\$ 498,135	\$ 112,080	\$ 11,457	\$ 622,000
32	Trace Dev. Connection	Connect development on the south end to 16" along IH 35	16	314	-	-	-	2030	Rock	\$ 514	Bore below IH-35	\$ 161,648	30	0.22	\$ 1,574	\$ 157	\$ -	\$ 163,379	\$ 40,845	\$ 3,758	\$ 208,000
33	Redwood to HWY 123	Connect the 16" along Old Bastrop Rd to the East to the 18" line north of Cottonwood and complete 12" line on Redwood south to connect at Old Bastrop.	12	5,099	-	-	-	2030	Soil	\$ 76	Easement / Rural & Urban	\$ 385,109	30	3.51	\$ 47,861	\$ 4,786	\$ 384	\$ 438,139	\$ 98,581	\$ 10,077	\$ 547,000
34	North Side Connection	Add 12" line to move ARWA water from the Blanco Vista Tank to the east side of IH 35 (follow Yarrington extension).	8	1,446	-	-	-	2030	Combo	\$ 78	Easement Urban (some rural)	\$ 113,162	20	0.66	\$ 4,827	\$ 483	\$ 768	\$ 3,106,207	\$ 698,897	\$ 71,443	\$ 3,877,000
			12	243	-	-	-			\$ 96		\$ 23,421	30	0.17	\$ 1,216	\$ 122					
			16	17,881	-	-	-			\$ 160		\$ 2,863,732	30	12.31	\$ 89,525	\$ 8,953					
35	Post Rd Connection	Close loop along north end of Post Rd., south of Champions Blvd	12	2,651	-	-	-	2030	Soil	\$ 96	Easement	\$ 255,680	30	1.83	\$ 24,881	\$ 2,488	\$ -	\$ 283,048	\$ 63,686	\$ 6,510	\$ 354,000
36	Potential 810 Elevated Storage Tank	New elevated storage tank with overflow elevation of 810 to be installed along McCarty Ln. near the top of the 810 pressure plane.	-	-	1.0 MG	-	-	2030	-	-	-	-	-	1.00	\$ 22,167	-	-	\$ 3,600,000	\$ 810,000	\$ 82,800	\$ 4,493,000

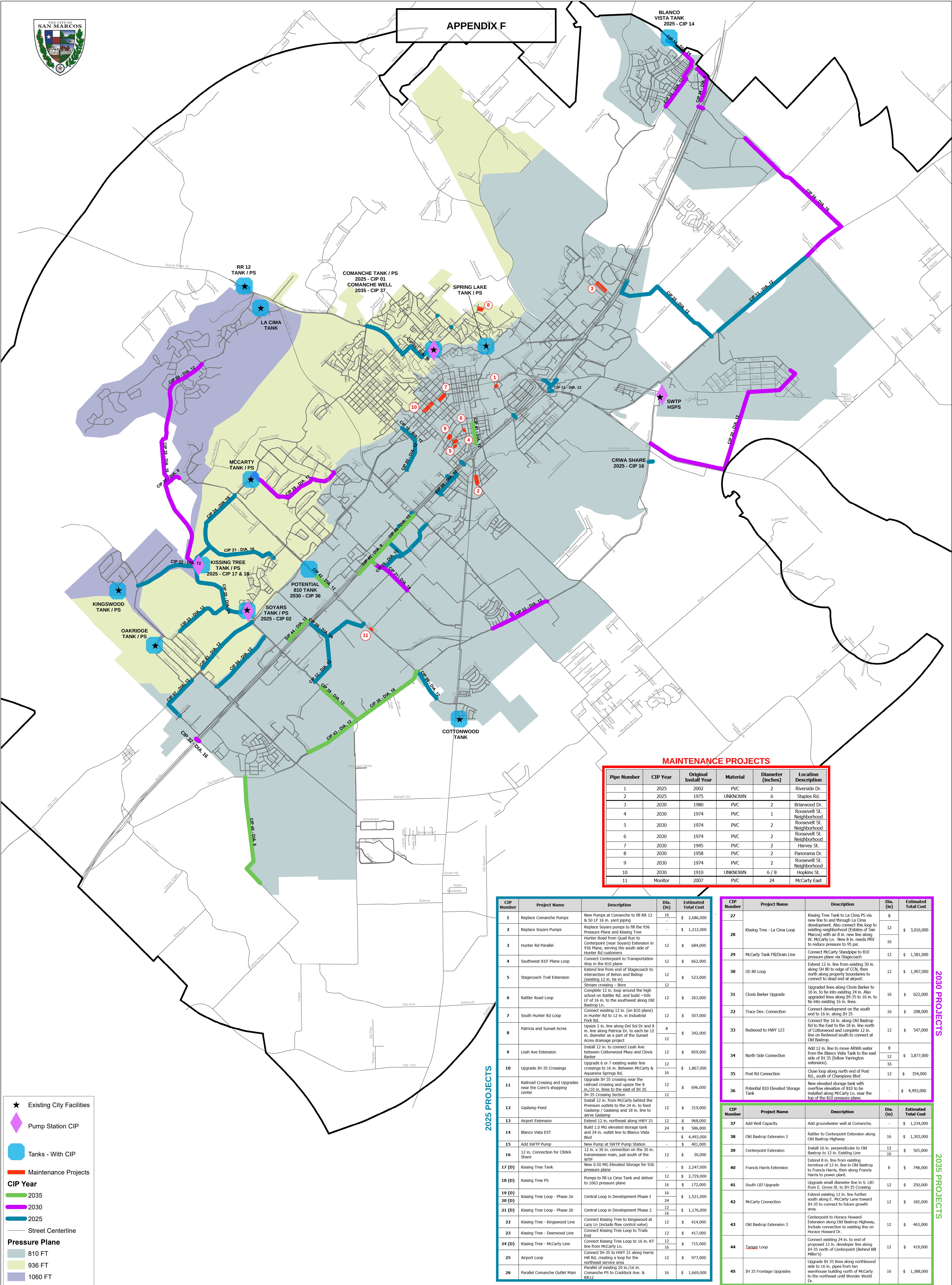
2020 CIP Number	Project Name	Description	Dia. (in)	Length (ft)	Tank Size	Pump Size (GPM)	Pump Qty	Year	Soil Type	\$/LF	Line Placement	Pipeline Cost	Easement Width (ft)	Easement Acreage	Land Cost (\$)	10% Surveying (\$)	Pavement Repair Cost	Project Costs (\$)	Engineering, Legal, Financing, Contingency	Environmental	Rounded Total Cost
37	Add Well Capacity	Add groundwater well at Comanche.	-		-	1,100	1	2035	-	-	-	-	-	-	-	-	-	\$ 988,691	\$ 222,455	\$ 22,740	\$ 1,234,000
38	Old Bastrop Extension 2	Rattler to Centerpoint Extension along Old Bastrop Highway	16	6,012	-	-	-	2035	Soil	\$ 146	Easement	\$ 875,323	30	4.14	\$ 153,342	\$ 15,334	\$ -	\$ 1,044,000	\$ 234,900	\$ 24,012	\$ 1,303,000
39	Centerpoint Extension	Install 16" perpendicular to Old Bastrop to 12" Existing Line	12	2,014	-	-	-	2035	Soil	\$ 87	Easement	\$ 175,960	30	1.39	\$ 18,840	\$ 1,884	\$ -	\$ 452,197	\$ 101,744	\$ 10,401	\$ 565,000
			16	1,706					Soil	\$ 146	Easement	\$ 248,328	30	1.17	\$ 6,533	\$ 653	\$ -				
40	Francis Harris Extension	Extend 8" line from existing terminus of 12" line in Old Bastrop to Francis Harris, then along Francis Harris to power plant.	8	8,824	-	-	-	2035	Soil	\$ 51	City Roads	\$ 449,691	20	4.05	\$ -	\$ 7,698	\$ 141,192	\$ 598,581	\$ 134,681	\$ 13,767	\$ 748,000
41	South LBJ Upgrade	Upgrade small diameter line in S. LBJ from E. Grove St. to IH-35 Crossing	12	1,630	-	-	-	2035	Rock	\$ 106	City Roads	\$ 172,032	30	1.12	\$ -	\$ 2,133	\$ 26,076	\$ 200,240	\$ 45,054	\$ 4,606	\$ 250,000
42	McCarty Connection	Extend existing 12" line further south along E. McCarty Lane toward IH-35 to connect to future growth area.	12	1,186	-	-	-	2035	Rock	\$ 106	City Roads	\$ 125,203	30	0.82	\$ -	\$ 1,552	\$ 18,978	\$ 145,733	\$ 32,790	\$ 3,352	\$ 182,000
43	Old Bastrop Extension 3	Centerpoint to Horace Howard Extension along Old Bastrop Highway, Include connection to existing line on Horace Howard Dr.	12	4,195	-	-	-	2035	Soil	\$ 87	Easement	\$ 366,450	30	2.89	\$ 39,375	\$ 3,937	\$ -	\$ 370,388	\$ 83,337	\$ 8,519	\$ 463,000
44	Tanger Loop	Connect existing 24" to end of proposed 12" developer line along IH-35 north of Centerpoint (Behind Bill Miller's)	12	2,058	-	-	-	2035	Soil	\$ 87	Easement	\$ 179,763	30	1.42	\$ 141,718	\$ 14,172	\$ -	\$ 335,653	\$ 75,522	\$ 7,720	\$ 419,000
45	IH 35 Frontage Upgrades	Upgrade IH 35 lines along northbound side to 16" pipes from tan warehouse building north of McCarty to the northeast until Wonder World Dr.	16	6,542	-	-	-	2035	Soil	\$ 146	Easement	\$ 952,471	30	4.51	\$ 143,692	\$ 14,369	\$ 1,536	\$ 1,112,068	\$ 250,215	\$ 25,578	\$ 1,388,000

APPENDIX F

CAPITAL IMPROVEMENTS PROGRAM PROJECTS LARGE FORMAT MAP



APPENDIX F



MAINTENANCE PROJECTS					
Pipe Number	CIP Year	Original Install Year	Material	Diameter (Inches)	Location Description
1	2025	2002	PVC	2	Riverside Dr.
2	2025	1975	UNKNOWN	6	Staples Rd.
3	2030	1980	PVC	2	Brianwood Dr.
4	2030	1974	PVC	1	Roosevelt St. Neighborhood
5	2030	1974	PVC	2	Roosevelt St. Neighborhood
6	2030	1974	PVC	2	Roosevelt St. Neighborhood
7	2030	1945	PVC	2	Harvey St.
8	2030	1958	PVC	2	Panorama Dr.
9	2030	1974	PVC	2	Roosevelt St. Neighborhood
10	2030	1910	UNKNOWN	6 / 8	Hopkins St.
11	Monitor	2007	PVC	24	McCarty East

CIP Number	Project Name	Description	Dia. (in)	Estimated Total Cost
1	Replace Comanche Pumps	New Pumps at Comanche to fill RR 12 & 50 LF 16 in. yard piping	16	\$ 2,686,000
2	Replace Soyers Pumps	Replace Soyers pumps to fill the 936 Pressure Plane and Kissing Tree	-	\$ 1,212,000
3	Hunter Rd Parallel	Hunter Road from Quail Run to Centerpoint (near Soyers) Extension in 936 Plane, serving the south side of Hunter Rd customers	12	\$ 684,000
4	Southwest 810' Plane Loop	Connect Centerpoint to Transportation Way in the 810 plane	12	\$ 662,000
5	Stagecoach Trail Extension	Extend line from end of Stagecoach to intersection of Belvin and Bishop (existing 12 in. tie in)	12	\$ 523,000
6	Rattler Road Loop	Stream crossing - Bore	12	\$ 263,000
7	South Hunter Rd Loop	Complete 12 in. loop around the high school on Rattler Rd. and build ~500 LF of 16 in. to the southwest along Old Bastrop Ln.	12	\$ 507,000
8	Patricia and Sunset Acres	Connect existing 12 in. (on 810 plane) in Hunter Rd to 12 in. in Industrial Fork Rd.	12	\$ 342,000
9	Leah Ave Extension	Upsize 2 in. line along Del Sol Dr and 8 in. line along Patricia Dr. to each be 12 in. diameter as a part of the Sunset Acres drainage project	8	\$ 859,000
10	Upgrade IH-35 Crossings	Install 12 in. to connect Leah Ave between Cottonwood Pkwy and Clovis Barker	12	\$ 1,867,000
11	Railroad Crossing and Upgrades near the Conn's shopping center	Upgrade 6 or 7 existing water line crossings to 16 in. between McCarty & Aquarena Springs Rd.	12	\$ 696,000
12	Gaslamp Feed	Upgrade IH 35 crossing near the railroad crossing and upsize the 8 in. 10 in. lines to the east of IH 35 IH-35 Crossing Section	12	\$ 319,000
13	Airport Extension	Install 12 in. from McCarty behind the Premium outlets to the 24 in. to feed Gaslamp / Gaslamp and 18 in. line to serve Gaslamp	12	\$ 968,000
14	Blanco Vista EST	Extend 12 in. northeast along HWY 21	12	\$ 586,000
15	Add SWTP Pump	Build 1.0 MG elevated storage tank and 24 in. outlet line to Blanco Vista Blvd	24	\$ 4,493,000
16	12 in. Connection for CRWA Share	New Pump at SWTP Pump Station 12 in. x 30 in. connection on the 30 in. transmission main, just south of the WTP	-	\$ 401,000
17 (D)	Kissing Tree Tank	New 0.50 MG Elevated Storage for 936 pressure plane	12	\$ 2,247,000
18 (D)	Kissing Tree PS	Pumps to fill La Cima Tank and deliver to 1063 pressure plane	12	\$ 2,729,000
19 (D)	Kissing Tree Loop - Phase 2a	16 in. to 1063 pressure plane	16	\$ 172,000
20 (D)	Kissing Tree Loop - Phase 2b	Central Loop in Development Phase 1	16	\$ 1,521,000
21 (D)	Kissing Tree - Kingswood Line	Central Loop in Development Phase 2	24	\$ 1,176,000
22	Kissing Tree - Kingswood Line	Connect Kissing Tree to Kingswood at Lazy Ln (include flow control valve)	12	\$ 414,000
23	Kissing Tree - Deerwood Line	Connect Kissing Tree Loop to Trails End	12	\$ 417,000
24 (D)	Kissing Tree - McCarty Line	Connect Kissing Tree Loop to 16 in. KT line from McCarty Ln.	12	\$ 715,000
25	Airport Loop	Connect IH-35 to HWY 21 along Harris Hill Rd, creating a loop for the northeast service area	12	\$ 977,000
26	Parallel Comanche Outlet Main	Parallel of existing 20 in./16 in. Comanche PS to Craddock Ave. & 9812	16	\$ 1,669,000

CIP Number	Project Name	Description	Dia. (in)	Estimated Total Cost
27	Kissing Tree - La Cima Loop	Kissing Tree Tank to La Cima PS via new line to and through La Cima development. Also connect this loop to existing neighborhood (Estates of San Marcos) with an 8 in. new line along W. McCarty Ln. New 8 in. needs RRV to reduce pressure to 95 psi.	8	\$ 3,016,000
28			12	
29	McCarty Tank Fill/Drain Line	Connect McCarty Standpipe to 810 pressure plane via Stagecoach	12	\$ 1,581,000
30	US 80 Loop	Extend 12 in. line from existing 30 in. along SH 80 to edge of C/N, then north along property boundaries to connect to dead end at airport.	12	\$ 1,907,000
31	Clovis Barker Upgrade	Upgraded lines along Clovis Barker to 16 in. to tie into existing 24 in. Also upgraded lines along IH-35 to 16 in. to tie into existing 16 in. lines.	16	\$ 622,000
32	Trace Dev. Connection	Connect development on the south end to 16 in. along IH 35	16	\$ 208,000
33	Redwood to HWY 123	Connect the 16 in. along Old Bastrop Rd to the East to the 18 in. line north of Cottonwood and complete 12 in. line on Redwood south to connect at Old Bastrop.	12	\$ 547,000
34	North Side Connection	Add 12 in. line to move ARWA water from the Blanco Vista Tank to the east side of IH 35 (follow Yarrington extension).	8	\$ 3,877,000
35	Post Rd Connection	Close loop along north end of Post Rd., south of Champions Blvd	12	
36	Potential 810 Elevated Storage Tank	New elevated storage tank with overflow elevation of 810 to be installed along McCarty Ln. near the top of the 810 pressure plane.	-	\$ 4,493,000
CIP Number	Project Name	Description	Dia. (in)	Estimated Total Cost
37	Add Well Capacity	Add groundwater well at Comanche.	-	\$ 1,234,000
38	Old Bastrop Extension 2	Rattler to Centerpoint Extension along Old Bastrop Highway	16	\$ 1,303,000
39	Centerpoint Extension	Install 16 in. perpendicular to Old Bastrop to 12 in. Existing Line	12	\$ 565,000
40	Francis Harris Extension	Extend 8 in. line from existing terminus of 12 in. line in Old Bastrop to Francis Harris, then along Francis Harris to power plant.	8	\$ 748,000
41	South LBJ Upgrade	Upgrade small diameter line in S. LBJ from E. Grove St. to IH-35 Crossing	12	\$ 250,000
42	McCarty Connection	Extend existing 12 in. line further south along E. McCarty Lane toward IH-35 to connect to future growth area.	12	\$ 182,000
43	Old Bastrop Extension 3	Centerpoint to Horace Howard Extension along Old Bastrop Highway, include connection to existing line on Horace Howard Dr.	12	\$ 463,000
44	Tanager Loop	Connect existing 24 in. to end of proposed 12 in. developer line along IH-35 north of Centerpoint (behind Bill Miller's)	12	\$ 419,000
45	IH 35 Frontage Upgrades	Upgrade IH 35 lines along northbound side to 16 in. pipes from tan warehouse building north of McCarty to the northeast until Wonder World Dr.	16	\$ 1,388,000

APPENDIX G

CANYON REGIONAL WATER AUTHORITY – CITY OF SAN MARCOS SHARED FACILITIES STUDY

DRAFT



Hays Caldwell Water Treatment Plant Shared Facilities Study

Canyon Regional Water Authority
and
City of San Marcos

This draft report is released for review under
the authority of Alan V. Thompson, PE, Texas
38455.

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engineers | architects | surveyors

TBPE FIRM NO. F-366

May 1, 2019

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Exhibit 4.....	Existing FEMA Effective Flood Plain Map
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Exhibit 7.....	Flood Wall
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Exhibit 12	Proposed Water Transmission Lines

Canyon Regional Water Authority

Shared Facilities Study for Hays Caldwell Water Treatment Plant and Associated Water Distribution System

LNV Project No. 170100



Executive Summary

The Shared Facilities Study for the Hays Caldwell Water Treatment Plant (HCWTP) was performed to prepare conceptual planning and analyses to define opportunities for Canyon Regional Water Authority (CRWA) and the City of San Marcos (COSM) to utilize the HCWTP and associated water distribution system to treat and deliver additional water that can be shared with CRWA members and the COSM. Three areas of interest were studied:

- Source Water
- Facility Improvements
- Water Distribution System

The HCWTP currently has 2.59 million gallons of water per day (mgd) committed to the plant for treatment. The plant can operate at 3.44 mgd to assist in meeting peak demands for its participants.

The membranes at the plant are rated at 5.5 mgd but cannot be fully utilized because of a lack of water to be treated and some of the existing facilities cannot operate at that flow rate. There is capacity to treat additional water at the plant if the water is available and some facility and operational improvements are made.

The City of San Marcos has 1.17 mgd of water and Martindale Water Supply Corporation has 0.23 mgd of water that could be committed to HCWTP for treatment and use. This would bring the total water committed to the plant to 3.99 mgd. This water could be used during peak periods with a peaking factor of 1.35.

If the City of San Marcos and Martindale elect to commit the water to the HCWTP, the entities would be required to pay “buy-in” cost to use the investment made by others. If both entities commit the water to the plant, the buy-in cost for San Marcos would be \$3,406,659 and for Martindale WSC, the cost would be \$359,618 (for additional water only). If only San Marcos commits the water, the cost to San Marcos would be \$3,613,574.

An analysis was made of existing plant facilities and operations, and from that analysis, the following improvements were identified. These improvements will facilitate protection of the plant from flooding, better utilization of the plant treatment capacity and reduce operation and maintenance cost.

1. Construct flood wall (increase plant reliability and protect investment)

2. Construct a new decant and water recycle system (improve operational efficiency and reduce cost)
3. Replace existing hydraulically-deficient piping and pumps (reduce operation cost and increase reliability)
4. Construct a new raw water clarifier (improve plant efficiency and provide operational redundancy)
5. Construct new finished water storage tank (improve plant efficiency and provide operational redundancy)
6. Acquire adjacent tract (improve operational efficiency, secure plant site and have additional area to assist in meeting San Marcos Development Code requirements)
7. Construct new water transmission pipeline to serve County Line SUD, Martindale WSC and Maxwell WSC (operational efficiency and increase system reliability)
8. Construct new water transmission pipeline to serve San Marcos (operational efficiency and increase system reliability)

An estimate of probable construction cost was prepared for each item (with a 30 percent contingency). The items in the list are not sequential. The items can be implemented as needed by the project participants.

A summary of the project estimated opinion of probable construction cost is as follows:

1. Flood Wall - \$1,993,400
2. New Decant and Recycling System - \$1,925,300
3. Replace Hydraulically Deficient Piping - \$1,628,300
4. New Raw Water Clarifier - \$2,508,200
5. New Finished Water Storage Tank - \$1,954,700
6. Acquire Adjacent Tract - \$375,000

SUBTOTAL OF ITEMS 1 THROUGH 6 - \$10,384,900

7. New County Line and Maxwell Pipeline - \$12,811,300
8. New San Marcos Pipeline - \$3,525,000

SUBTOTAL OF ITEMS 1 THROUGH 8 - \$26,712,200

The following sequence is recommended to move forward with implementation of the shared facilities:

1. CRWA will request endorsement of the shared facilities project with members of HCWTP that participate in the project.
2. The CRWA will be requested to endorse the shared facilities project.
3. The City of San Marcos and Martindale WSC will be requested to commit the identified water supplies to the HCWTP.
4. The parties with interest in the HCWTP will then select the improvements they are wanting to move forward considering recommendations from CRWA staff.
5. An engineering feasibility study will be completed for the selected projects.
6. The results of the engineering feasibility study will be used to select the preferred financing method to implement the projects.
7. Funds will be obtained to implement the projects.
8. Complete planning, permitting, design and construction.

The proposed shared facilities will further endorse the concept of a regional water supply, bring additional source water to the HCWTP and improve operation of the plant and facilitate delivery of treated water to the project participants.

Section 1

Introduction and Purpose

The Shared Facilities Study for the Hays Caldwell Water Treatment Plant (HCWTP) was performed to prepare conceptual planning and analyses to define opportunities for Canyon Regional Water Authority (CRWA) and the City of San Marcos (COSM) to utilize the HCWTP and associated water distribution system to treat and deliver additional water that can be shared with CRWA members and the COSM. Three areas of interest were studied:

- Source Water
- Facility Improvements
- Water Distribution System

The HCWTP is located at 135 Old Martindale Road, San Marcos, Texas 78666, on the northern bank of the San Marcos River as shown in **Exhibit 1**. The HCWTP is currently rated at 5.5 million gallons per day (mgd) at 35 degrees Fahrenheit. The plant production rate is currently limited to a daily average of 2.59 mgd based the raw water supply available to the plant and capacity limitations of the existing San Marcos River diversion take-out pump.

CRWA is currently carrying out a plant improvement project (2017 Texas Water Development Board Bond Project) that will enable HCWTP to switch to a free-chlorine disinfection protocol, add a finish water storage tank and construct a new river water intake. The improvements proposed as part of the 2017 TWDB Bond Project will be designed for an interim capacity of 6.0 mgd and where practical, be configured to accommodate a future expansion of the facility to an ultimate treatment capacity of 12 mgd. Components of the HCWTP influenced by the 2017 TWDB Bond Project will address the interim and ultimate treatment capacities but will not change the rated capacity of HCWTP. The clarifiers, flocculation/coagulation, ultrafiltration (UF) membranes, high service pumps, and existing chemical feed, except the final chlorination point, are not included in 2017 TWDB Bond Project.

Section 2

Project Background

The HCWTP is in the heart of one of the fastest growing parts of Texas. CRWA members County Line Special Utility District (SUD), Crystal Clear SUD, Martindale Water Supply Corporation WSC and Maxwell WSC currently take treated water from the HCWTP. The City of San Marcos is located adjacent to Crystal Clear and Maxwell and has water rights in the San Marcos River that could be diverted and treated at the HCWTP. **Exhibit 2** shows the boundaries of the Certificates of Convenience and Necessity (CCN) held by each entity.

The proximity of all five entities, the location of the HCWTP and its distribution system combined with the availability of other surface water in the river not currently committed to the HCWTP provide the opportunity for the entities to share the benefits and cost of new expanded water supplies and treatment facilities to meet future needs and reduce the cost of water for all entities.

Section 3

Source Water

The HCWTP treats surface water it receives from an existing San Marcos River intake and from the Guadalupe River through a pipeline operated by the Guadalupe-Blanco River Authority (GBRA).

Table 1 presents a summary of the existing source water for the HCWTP. The average daily flow is 2.59 mgd but as needed, the plant can be operated at 3.44 mgd based on the combined capacity of the GBRA delivery from the Guadalupe River and pumping from the San Marcos River so long as the average annual pumping rate does not exceed 2.59 mgd. The production rate of 3.44 mgd represents a 1.33 peaking factor over the average daily flow of 2.59 mgd. The peaking factor assists in meeting increased water demands during summer months so that as much of the annually appropriated capacity can be used because of the lower water demands in the winter months.

The division of the average 2.59 mgd among the plant participants is shown in **Table 1**. While these capacities represent what the participants are responsible for funding, the entities work cooperatively to share daily production among the group to meet demands of each member from unused capacity of other participants. A true-up of water use at the end of each year allows the entities to work with each other to recover cost as needed.

Additional river water that could be treated in at the HCWTP has been identified and is also presented in **Table 1**. The total is 1,569.84 Acre-Feet per year or 1.40 mgd. The additional water

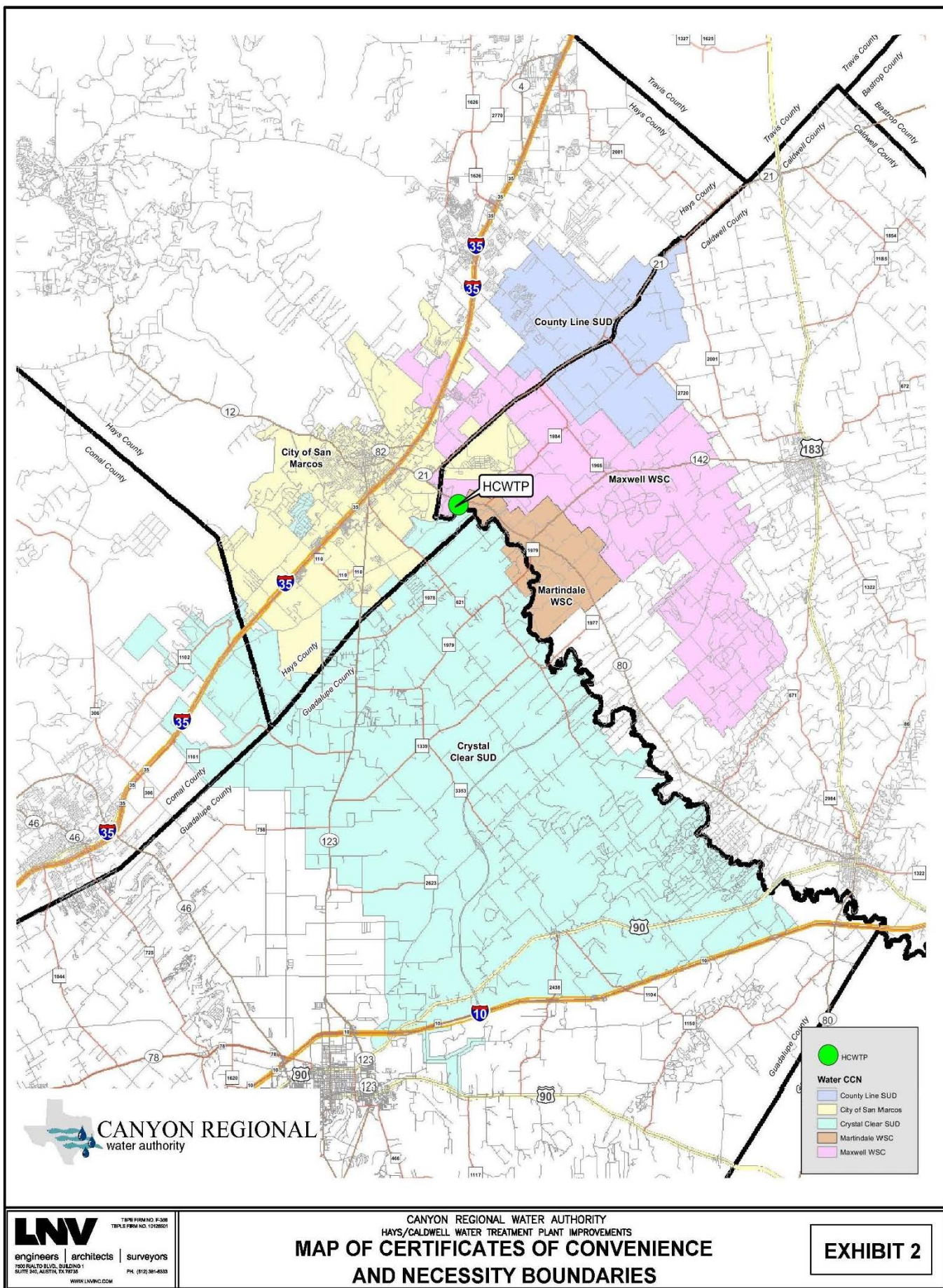


TABLE 1							
SOURCE WATER FOR HAYS CALDWELL WATER TREATMENT PLANT							
April 12, 2019							
EXISTING SOURCES	TOTAL ANNUAL AMOUNT, acre-feet/year	AVERAGE DAILY VOLUME mgd	COUNTY LINE VOLUME acre-feet/year	CRYSTAL CLEAR VOLUME acre-feet/year	MARTINDALE VOLUME acre-feet/year	MAXWELL VOLUME acre-feet/year	SAN MARCOS VOLUME acre-feet/year
Guadalupe-Blanco River Authority	2,038.00	1.82	1,052.00	292.00	50.00	644.00	-
Baugh B&B Family Partnership	320.00	0.29	60.00	106.56	140.16	13.28	-
Cummings Water Rights	516.16	0.46	188.00	93.44	-	234.72	-
Foster Water Rights	24.00	0.02	8.00	8.00	-	8.00	-
TOTAL EXISTING	2,898.16	2.59	1,308.00	500.00	190.16	900.00	-
POSSIBLE ADDITIONAL SOURCES	TOTAL AMOUNT, acre-feet/year	AVERAGE DAILY VOLUME mgd	COUNTY LINE VOLUME acre-feet/year	CRYSTAL CLEAR VOLUME acre-feet/year	MARTINDALE VOLUME acre-feet/year	MAXWELL VOLUME acre-feet/year	SAN MARCOS VOLUME acre-feet/year
San Marcos (TSU Reuse Trade)	1,164.00	1.04	-	-	-	-	1,164.00
Martindale WSC	255.84	0.23	-	-	255.84	-	-
Wooten Water Right (San Marcos) ¹	150.00	0.13	-	-	-	-	150.00
TOTAL ADDITIONAL	1,569.84	1.40	-	-	255.84	-	1,314.00
TOTAL EXISTING AND ADDITIONAL	4,468.00	3.99	1,308.00	500.00	446.00	900.00	1,314.00
ADDITIONAL WATER NEEDED TO 6 MGD	2,253.32	2.01					
ADDITIONAL WATER NEEDED TO 12 MGD	8,974.64	8.01					

Note:

¹ Water right is downstream and requires a permit amendment to move to HCWTP intake; is not a firm water right

from San Marcos and Martindale WSC is considered as reliable sources while the Wooten water right has a permit date that impacts its reliability. In addition, the Wooten right would have to be moved upstream to the CRWA river intake and the size of the right may be impacted based on water availability modeling and obtaining an amendment to the water right from the Texas Commission on Environmental Quality (TCEQ). The division of the possible additional sources is shown in **Table 1**.

The sum of the source water from existing sources and possible additional sources is 4,468.00 acre-feet per year or 3.99 mgd. If improvements are made to the plant to treat up to the rated 5.5 mgd capacity of the membranes, a peaking factor of 1.38 could be obtained. In addition, if the remaining parts of the plant are upgraded to treat 5.5 mgd, a portion of the buffer in the peaking capacity could be used to treat other surface water that may become available for the plant.

The HCWTP was originally laid out to enable expansion of the treatment building to increase the plant capacity to 12.0 mgd. CRWA will need to obtain an additional 8.01 mgd (8,974.64 acre-feet per year) beyond the 3.99 mgd to run the plant at a constant production rate of 12.0 mgd.

The cost of the source water for the 2.59 mgd capacity is included in the operating and funding agreements for the HCWTP. If City of San Marcos and Martindale WSC elect to have the additional 1.40 mgd treated at the HCWTP, it is anticipated that there will be no cost incurred by CRWA to dedicate the water to the plant.

The City of San Marcos and Martindale could enter agreements with the other plant participants to take portions of the additional water treated at the plant if San Marcos and Martindale WSC are not in need of the treated water at this time.

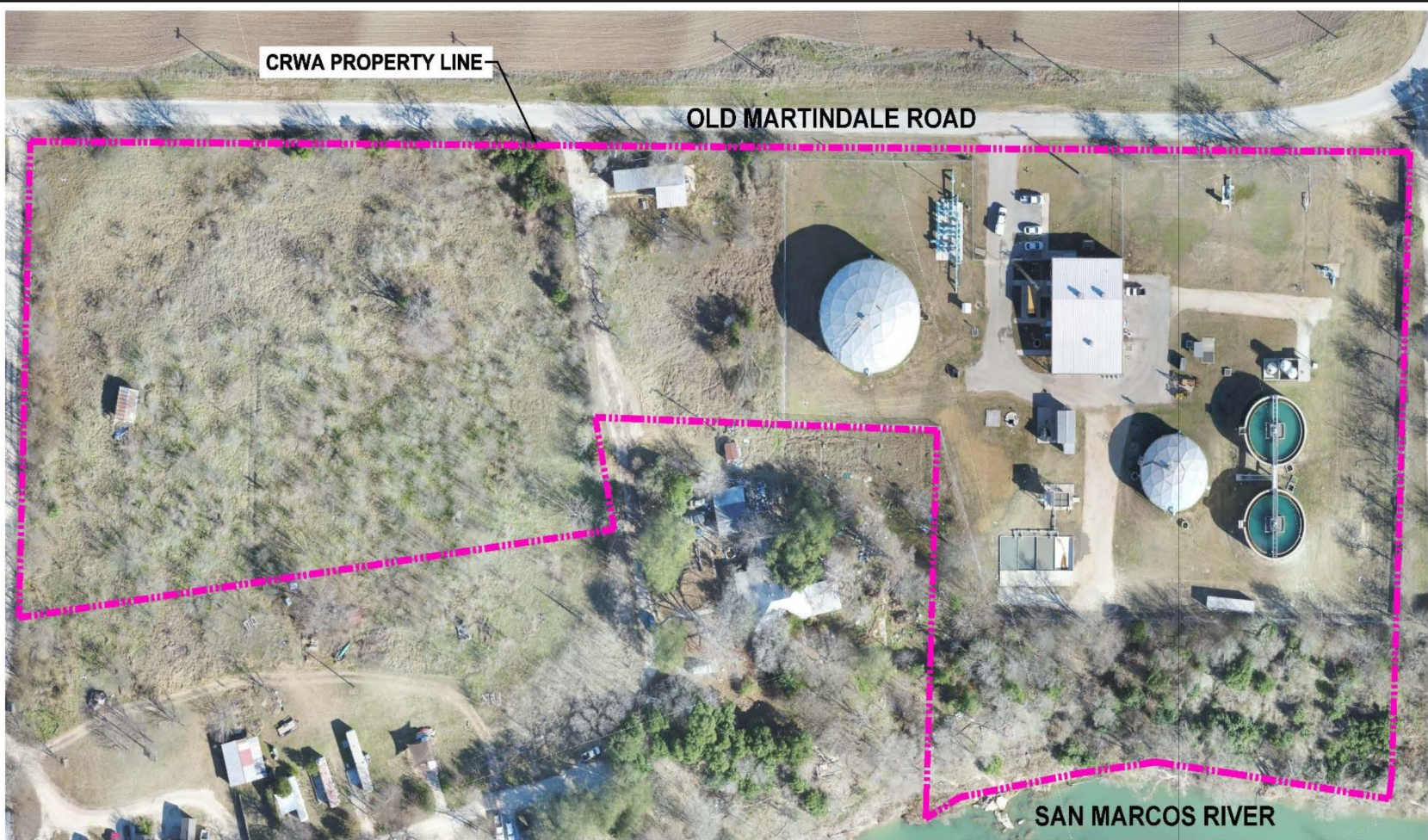
SECTION 4

Facility Improvements

HCWTP is currently rated at 3.44 mgd and CRWA has underway an improvement program (2017 Texas Water Development Board Bond Project) to add necessary disinfection and unit process improvements to enable HCWTP to switch to a free-chlorine disinfection protocol, add a finished water storage tank and construct a new water intake facility.

Exhibit 3 shows the existing plant followed by **Exhibit 4** that illustrates the boundary of the 100-year floodplain and 100-year floodway as shown by the current effective Federal Emergency Management Agency (FEMA) maps. The improvements proposed as part of this project will be designed for an interim capacity of 5.5 mgd and to accommodate the future expansion of the facility to an ultimate treatment capacity of 12 mgd. All components of the HCWTP influenced

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SCALE: 1"=40'

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22"x34" SCALE: 1"=40'
11"x17" SCALE: 1"=80'

LNV

engineers | architects | surveyors

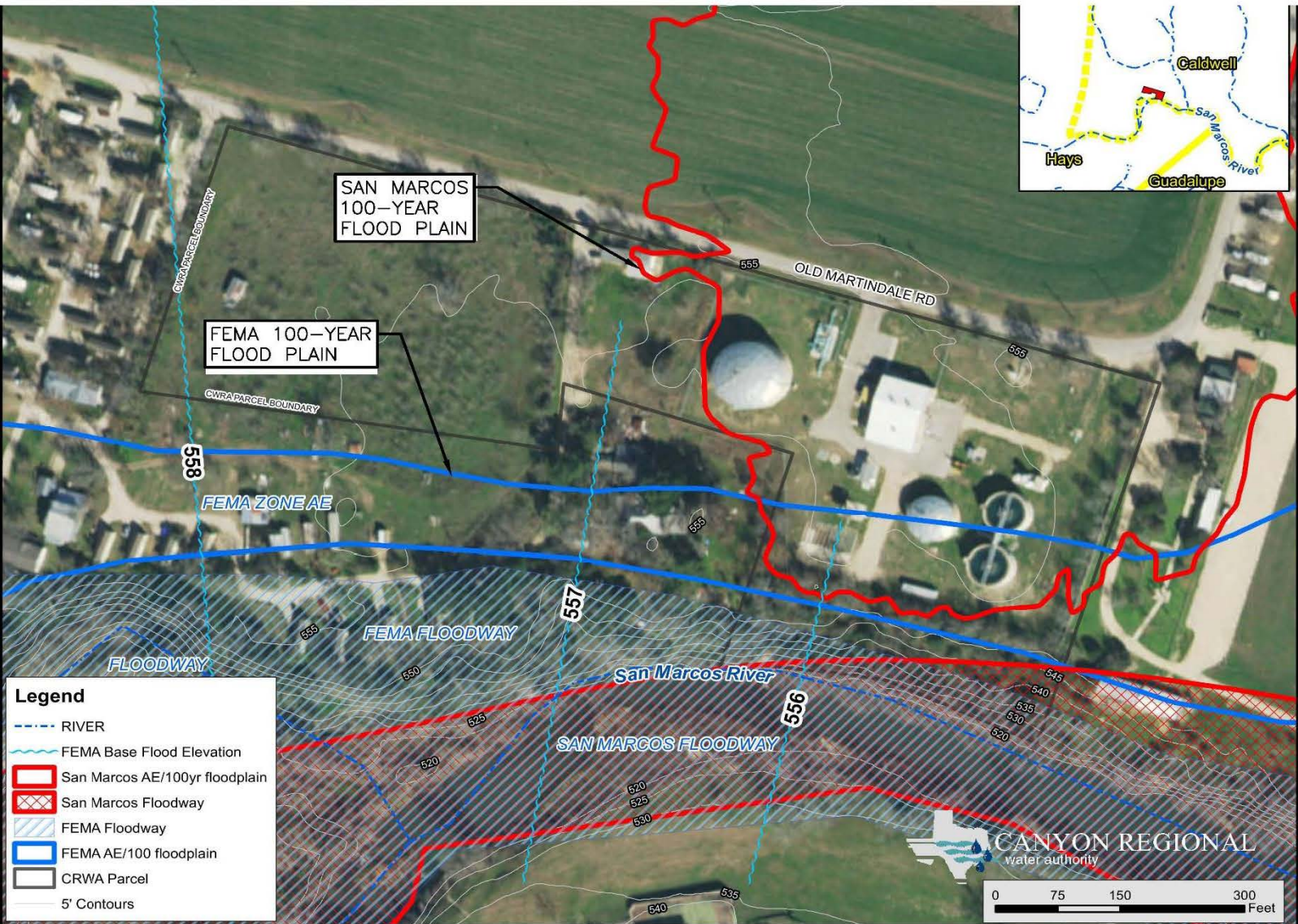
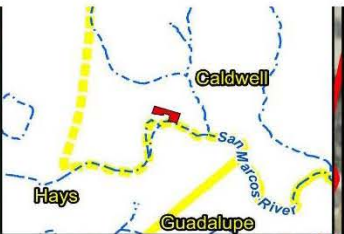
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CANYON REGIONAL
water authority

CANYON REGIONAL WATER AUTHORITY
HAYS/CALDWELL WATER TREATMENT PLANT IMPROVEMENTS
**EXISTING HAYS CALDWELL
WATER TREATMENT PLANT**

EXHIBIT 3



- Legend**
- RIVER
 - FEMA Base Flood Elevation
 - San Marcos AE/100yr floodplain
 - X San Marcos Floodway
 - FEMA Floodway
 - FEMA AE/100 floodplain
 - CRWA Parcel
 - 5' Contours

by the improvements proposed as part of the 2017 project will be addressed with consideration for both the interim and ultimate treatment capacities but the 2017 project will not change the current rated capacity of HCWTP. The proposed 2017 TWDB Bond Projects are illustrated on **Exhibit 5**. As part of the Preliminary Engineering Report prepared for 2017, a hydraulic analysis was completed for the HCWTP. **Table 2** illustrates the results of the hydraulic evaluation.

TABLE 2

HYDRAULIC EVALUATION OF EXISTING PLANT

Item No.	Component	6 MGD Interim Flow		12 MGD Ultimate Flow	
		Status	Min. Improvement Needed	Status	Min. Improvement Needed
1	Raw Water Pump	Inadequate	New Pump Station	Inadequate	New Pump Station
2	Raw Water Pipeline (SM River to GBRA)	Inadequate	Upsize to 14-inch	Inadequate	Upsize to 18-inch
*3	Raw Water Pipeline (GBRA to Clarifier)	OK	N/A	Inadequate	Split Flow to New Clarifiers
*4	Raw/Reject Water Pump Station	OK	N/A	Inadequate	Additional Pump
*5	Clarifiers	Marginal	N/A	Inadequate	2 Additional 65' dia. Clarifiers
*6	Settled Water Pipeline	OK	N/A	Marginal	N/A
*7	Settled Water Storage Tank	OK	N/A	OK	N/A
*8	Membrane Building Influent Line	Marginal	N/A	Inadequate	Flow split to Membran Expan.
*9	Membranes	Marginal	N/A	Inadequate	Membrane Expansion
*10	Filtered Water Line	Marginal	N/A	Inadequate	Upsize to 24-inch
11	1 MG Clearwell	OK	N/A	OK	N/A
*12	High Service Suction Line	Marginal	N/A	Inadequate	Upsize to 30-inch
*13	High Service Pump Station	OK	N/A	Marginal	N/A

* Denotes improvements which are excluded from this project



The analysis for the 6 mgd plant size (5.5 mgd based on membrane flux rate) indicates that the critical improvement to improve the plant to 5.5 mgd capacity is to construct a new San Marcos River take-out structure, pump station and pipeline to the existing pump vault to lift raw water to the plant water clarifiers. These critical improvements are part of the 2017 Texas Water Development Board Improvement Project.

However, there are some items that have been identified as needed improvements to protect the investment that has been made in the HCWTP, improve operation efficiency and support the potential addition of 1.4 mgd of raw water from the City of San Marcos and Martindale WSC.

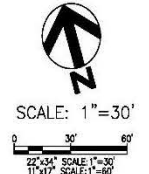
Another factor that impacts the operation of the HCWTP is recent expansion of the San Marcos City Limit toward the HCWTP. While the HCWTP is not in the City Limits, the HCWTP is now within the Extraterritorial Jurisdiction (ETJ) of San Marcos as provided for in the Texas Local Government Code. San Marcos has land development and flood plain ordinance that apply in the ETJ and the HCWTP is now subject to those regulations. Impacts to the HCWTP include:

- Water Quality Zone (100-foot wide) parallel to the San Marcos River FEMA defined floodway
- Water Quality Buffer Zone (100 feet wide) parallel to the Water Quality Zone
- Impervious Cover Limits
- An adopted 100-year flood elevation at the site that exceeds the elevation in the current effective FEMA floodplain maps
- Floodplain development permitting
- Subdivision platting and associated requirements for driveway connections to public roads
- Runoff detention and stormwater quality treatment to reduce off-site flood impacts and water quality degradation

Thus, when improvements are made at the HCWTP, the above issues require permitting by the City of the proposed improvements.

Exhibit 6 presents a map showing the location of the Water Quality Zone and the Water Quality Buffer Zone as described by the City of San Marcos. These two zones include a significant part of the WCWTP site and will impact future improvements and increase cost.

From the results of the water source analysis, the plant hydraulic evaluation, discussions with CRWA management and staff and the changes caused by the HCWTP now being in the ETJ of



NOTE: AREA OUTSIDE FEMA FLOODWAY AND 100-FT WATER QUALITY ZONE IS IN THE WATER QUALITY BUFFER ZONE.

LEGEND

- WATER
- TREATED WATER
- REJECTED WATER
- SLUDGE LINE
- PROCESS WATER RETURN
- IRRIGATION
- CHLORINE
- CHLORINE DIOXIDE
- SETTLED WATER
- DRAIN
- FILTERED WATER
- RAW WATER
- BACKWASH SUPPLY
- ALUM
- LIQUID AMMONIUM SULFATE
- UNDERGROUND ELECTRIC
- OVERHEAD ELECTRIC
- EXISTING
- DEMO



San Marcos, several infrastructure and operational additions and improvements have been identified and are recommended for implementation by CRWA. The priority for the improvements is indicated by their place in the flowing list:

- Construct flood wall (increase plant reliability and protect investment)
- Construct a new decant and water recycle system (improve operational efficiency and reduce cost)
- Replace existing hydraulically-deficient piping and pumps (reduce operation cost and increase reliability)
- Construct a new raw water clarifier (improve plant efficiency and provide operational redundancy)
- Construct new finished water storage tank (improve plant efficiency and provide operational redundancy)
- Acquire adjacent tract (improve operational efficiency, secure plant site and have additional area to assist in meeting San Marcos Development Code requirements)
- Construct new water transmission pipeline to serve County Line SUD, Martindale WSC and Maxwell WSC (operational efficiency and increase system reliability)
- Construct new water transmission pipeline to serve San Marcos (operational efficiency and increase system reliability)

Section 5

Construct Flood Wall

The HCWTP sits on the bank of the San Marcos River and a large portion of the site has been mapped as being subject to riverine flooding from the 100-year flood event on the San Marcos River (see **Exhibits 4 and 6**). These flood boundaries represent regulatory requirements for new construction at the site. In general, the requirement is to avoid new structures in the floodway and the water quality zone and if structures are built within the floodplain boundary, they must not impede the flow of floodwaters, increase floodwater elevations and the lowest floor in the structure must be a minimum of one foot above the 100-year flood elevation.

However, a significant flood event occurred at the HCWTP site on May 15, 2015, when floodwater from primarily the Blanco River watershed flooded out of its banks and created sheet flow across the site that combined with floodwater from the San Marcos River, flooded the HCWTP and water entered several of the structures at the HCWTP. Of critical concern was the potential flooding of the electrical and instrumentation equipment for the plant.

If the equipment had been damaged by the floodwater, the plant would have been out of service and the retail water supply entities taking water from the plant would not be able to adequately serve their customers for days or weeks until replacement equipment could have been installed. In addition, the cost of the repairs, replacements and clean-up could exceed one million dollars.

Keeping the plant safe from flooding so that it can operate during and immediately after flood events is critical to preventing low water pressures, contamination of water lines by polluted

water and to assist in rescue, recovery and clean-up after the storm. There is an existing stand-alone power generation unit at the site to support operation of the plant if a power interruption occurs in the Bluebonnet Electric Cooperative service to the site.

As presented in **Exhibit 7**, a flood wall is proposed for construction to protect the plant site from the 100-year flood event. The proposed flood wall would be placed around the existing water production facilities at the site and proposed additions in the 2017 improvement program.

The wall proposed will be constructed of concrete with a minimum of two movable gates to provide access into the site. The proposed wall is targeted to have a top of wall elevation of 559.0 feet above mean sea level. The targeted top of wall elevation should provide a minimum of three feet of freeboard to meet regulatory requirements.

The wall will be designed as a retaining wall imbedded in earth an adequate depth to prevent piping under the wall and with footers as needed to prevent the wall from sliding or overturning during flood events.

Management of rainfall that falls within the flood wall is required during non-flood events and flood events. Two methods to manage the stormwater were investigated.

The first method involves passes to flood water through the wall and letting it flow to the San Marcos River. A series of drainage pipes with flap gates would allow floodwater to pass through the wall during non-flood rainfall events. A stormwater pump station would be required to lift the stormwater through the wall during flood events.

Regulatory requirements will result in a water detention pond within the floodwall to reduce stormwater peak flows from the site and to provide water quality treatment to mitigate for impervious cover. To meet these requirements a stormwater storage pond will be constructed on the down-slope side of the plant site next to the flood wall. Approximately 2.1 acres will be within the floodwall (depending on final alignment adjustments) and the pump station will be sized to move 20 cubic feet per second (cfs) or 9,000 gallons per minute.

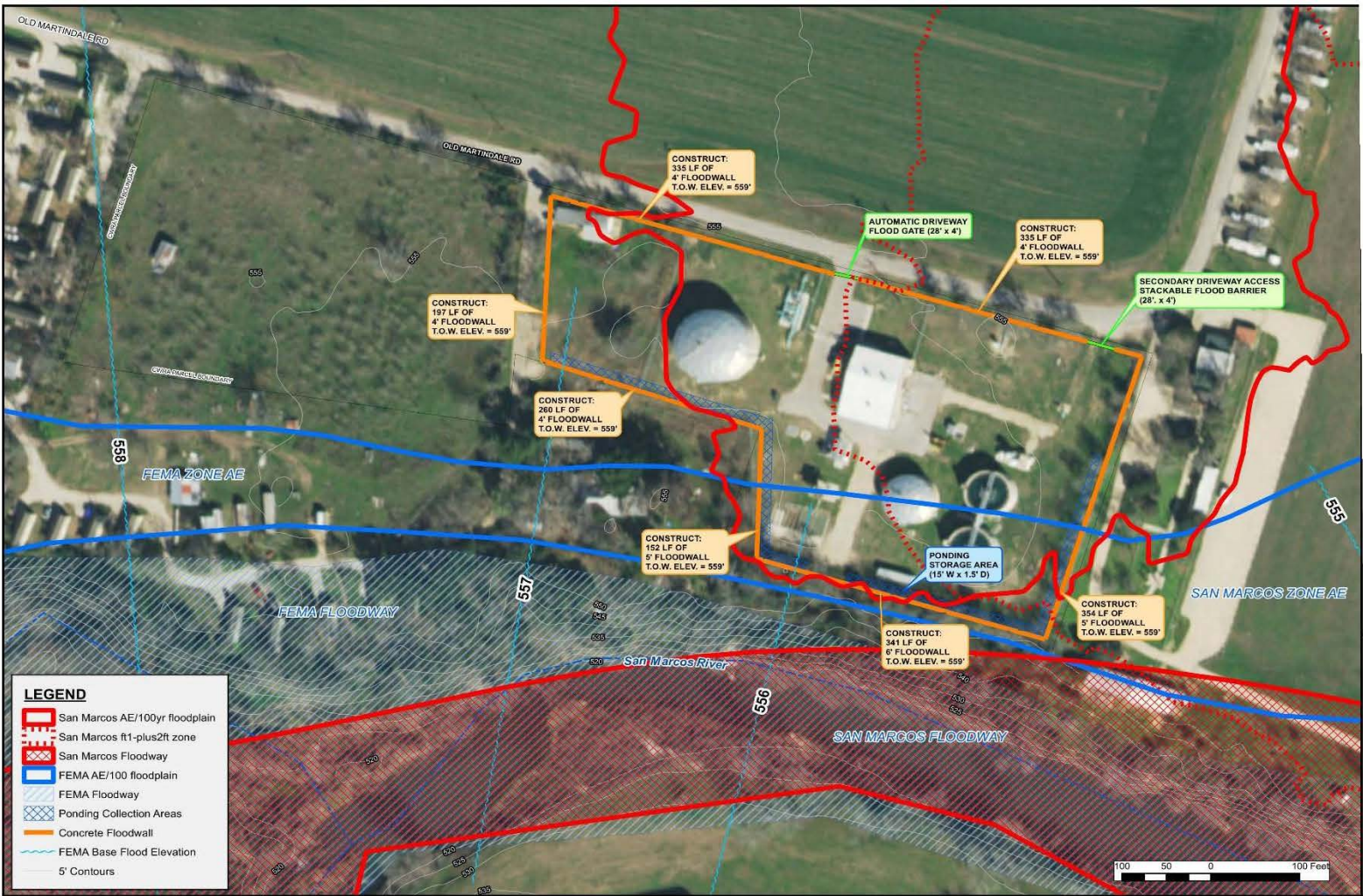
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FLOOD WALL

EXHIBIT 7



For Method One of stormwater disposal, the gravity flow and pumped flow past the floodwater will be point discharges and the flow must be dispersed and dropped to the San Marcos River without eroding the steep river bank.

Method Two for internal stormwater disposal involves capturing the stormwater and letting it flow by gravity during non-flood periods or pumping during flood events to the wet well to be constructed for the new raw water intake. This method of disposal would be an innovative approach to stormwater use and prevent the need for point discharges to the San Marcos River. The stormwater would be passed through a rock and sand filter prior to entering the wet well.

Use of Method Two would require coordination and approval by the TCEQ for water rights and water quality. Best management practices would need to be implemented within the flood wall to manage pollutant generation, remove grass clippings and use of natural fertilizers.

The approval and permitting of the flood wall will require that hydraulic modeling be performed and submitted to FEMA or the authorized cooperating partner. To be approved, the Conditional Letter of Map Revision (CLOMR) submitted must show no significant impact by the flood wall to flood levels. Once approved and the flood wall is constructed, a final Letter of Map Revision (LOMR) must be submitted.

The Texas Historical Commission requires that excavation at the site be monitored by a trained archaeologist for indications of historic artifacts. If there are findings, the construction could be delayed pending resolution of the concerns around a specific find.

Table 3 presents the opinion of probable construction cost (OPCC) for the flood wall. The OPCC is \$1,993,400 and includes a 30 percent contingency.

Section 6

New Water Decant and Recycle System

The current filter backwash and sludge waste from the two existing clarifiers is pumped to a plate separator and then passed to decant ponds for solids settling prior to the decanted water being pumped back to the clarifier headworks. The settled solids are accumulated and hauled to an authorized landfill by a contracted and licensed hauler.

The plate separator has not been effective and the existing decant ponds are undersized for current and future flows. This results in solid being pumped back to the clarifier headworks and subsequent build-up of solids in the raw water flow stream. The build-up of solids impacts the performance of the membranes by lowered efficiency and causing more backwash from the membranes to go back to the clarifier headworks. In addition, the build-up of recycled solids impacts the quality of water produced and could cause interference with the water disinfection chemicals that could lead to the formation of water treatment disinfection by-products.



TABLE 3

TEFF No. F-365

Project: Hays/Caldwell WTP Shared Facilities Study
Flood Wall
Project #: 170325

PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST					
Item	Description	Qty	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	\$ 90,600	\$ 90,600
2	Concrete Flood Wall	2,029	LF	\$ 400	\$ 811,600
3	Collection Channel Excavation and Hauling	1,000	CY	\$ 20	\$ 20,000
4	Static Flood Wall Gate	1	LS	\$ 25,000	\$ 25,000
5	Automatic Flood Wall Gate	1	LS	\$ 75,000	\$ 75,000
6	36" Diameter Stormwater Pipe	80	LF	\$ 150	\$ 12,000
7	24" Automated Gate for Drain Pipe	1	LS	\$ 25,000	\$ 25,000
8	Rock for Stormwater Filter	20	CY	\$ 100	\$ 2,000
9	Sand for Stormwater Filter	75	CY	\$ 100	\$ 7,500
10	Concrete Vault for Pumps	33	CY	\$ 500	\$ 16,500
11	Two 40-Horsepower Stormwater Pumps	2	EA	\$ 30,000	\$ 60,000
12	18" Force Main to Wet Well	100	LF	\$ 120	\$ 12,000
13	Electrical, Instrumentation, SCADA	1	LS	\$ 50,000	\$ 50,000
				SUB TOTAL	\$ 1,207,200
				30% CONTINGENCY	\$ 362,200
				TOTAL PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST (2019 \$)	\$ 1,569,400
DESIGN		10.0%		\$	157,000
ADDITIONAL SERVICES		5.0%		\$	78,500
CONSTRUCTION MONITORING		5.0%		\$	78,500
ARCHAEOLOGICAL MONITORING		0.5%		\$	7,900
PERMITTING		4.0%		\$	62,800
TESTING		1.0%		\$	15,700
BOND INSURANCE		1.0%		\$	15,700
MISC. (PRINTING, ETC)		0.5%		\$	7,900
				ADMINISTRATIVE SUB TOTAL	\$ 424,000
				PROJECT TOTAL (2019 \$)	\$ 1,993,400

CRWA estimates that up to ten percent of the water entering the treatment plant is sent to the decant ponds for settlement of solids and recycling back to the clarifier headworks. For a design plant treatment capacity of 6 mgd, 600,000 gallons of water a day will be sent to the decant basins. If the ultimate plant capacity of 12 mgd is implemented, about 1.2 mgd of water would be recycled. For the existing decant system at HCWTP, backwash water from the clarifiers and wasted sludge from the bottom of the clarifiers is sent to the plate separator and decant ponds.

To increase the removal of solids from the recycle flow stream, it is proposed to construct new decant ponds on the western portion of the CRWA tract that is currently unused. The biggest influence on the efficiency of solids removal in the detention time for recycled water to enable the solids to be removed.

The second factor that will improve solids separation is use of a flocculating agent in the decant ponds to promote the formation of aggregated smaller particles (organic and inorganic) and water stable soil aggregates. Use of the flocculation agent will assist in removing visible sediments and materials and reduce water turbidity by removing colloids.

The target detention time for a decant basin is 24 hours and thus a basin would need to hold up to 1.2 million gallons. When flows are smaller than 1.2 mgd, the detention time would increase and additional solids removal will occur.

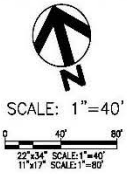
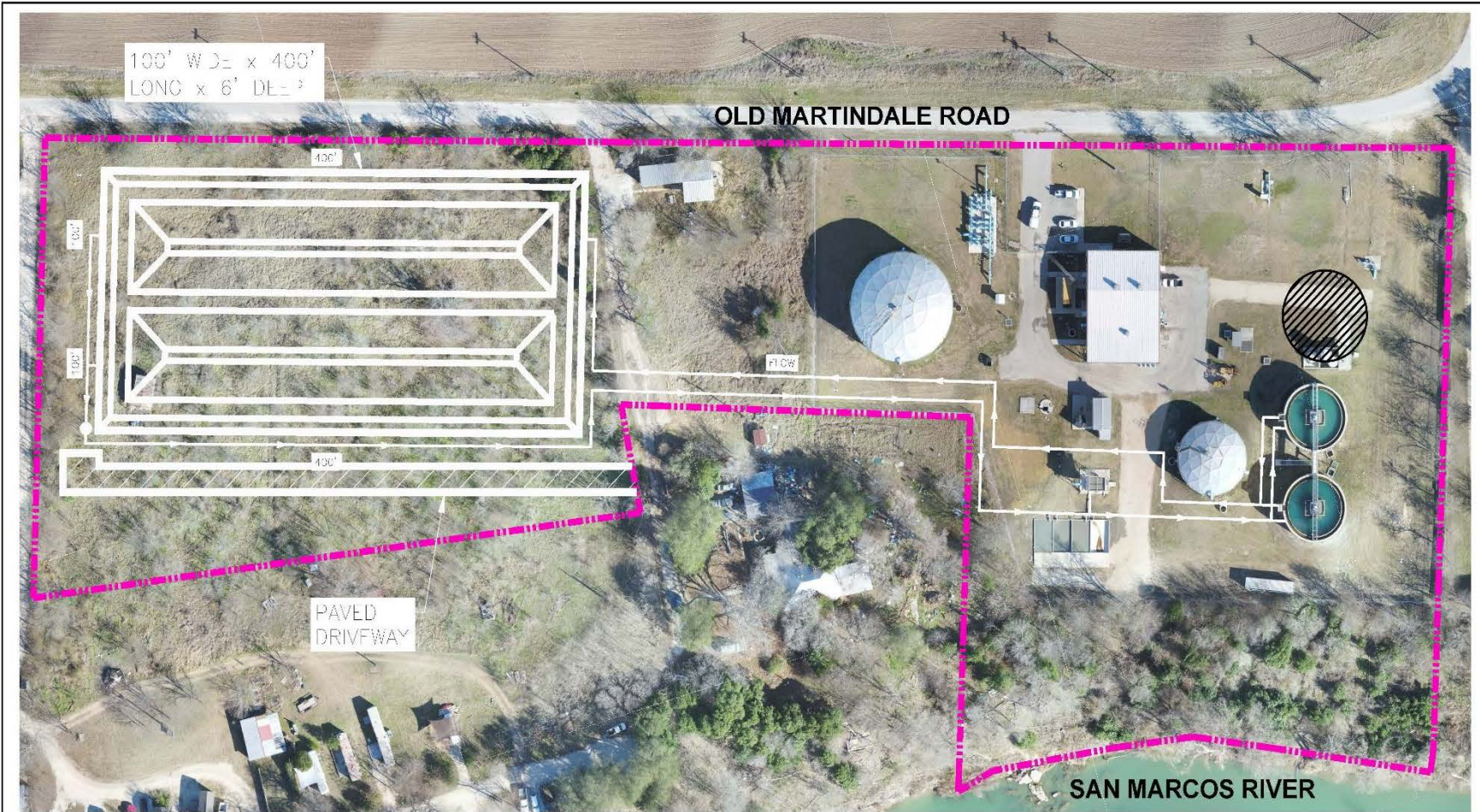
To enable operational redundancy, two basins are proposed. **Exhibit 8A** shows the configuration of the basins when constructed with earth. Each basin will have a total depth of ten feet from top of embankment to bottom of the pond. The active water depth in the pond would be 7.5 feet with 2.5 feet for freeboard. The proposed length of each pond will be 400 feet with a width of 100 feet (outside to outside dimensions).

The embankments will have a top of crest elevation of 556.0 feet. The embankment side slopes will be three horizontal to one vertical. The outside slope will be protected with riprap to prevent erosion during flood events and the inside will be paved with concrete riprap.

The available storage volume using this configuration is 553,000 gallons for one basin. This is slightly lower than the volume needed for one day of detention at a 6.0 mgd flow rate. With both basins in operation, the storage volume would be 1,106,000 gallons.

New flow lines from the clarifiers to the decant basins will be required and new return flow lines will also need to be constructed. A decant water return flow pump station will also be

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CANYON REGIONAL WATER AUTHORITY
HAYS/CALDWELL WATER TREATMENT PLANT IMPROVEMENTS
**NEW WATER DECANT & RECYCLE SYSTEM
CONSTRUCTED WITH EARTH**



EXHIBIT 8A

needed to send the water back to the clarifier headworks. A new driveway to reach the return water pump station will be constructed.

The City of San Marcos floodplain permitting issues faced by the flood wall, the water quality zone and water quality buffer zone will also need to be addressed for the decant ponds. However, the decant ponds will be “no discharge” to the river structures and should assist in mitigated the impacts of the basins. The archaeological impacts of the construction will also require monitoring.

Table 4 presents the OPCC for the earth basins and is \$1,925,300 including a 30 percent contingency.

Exhibit 8B shows the configuration of the basins when constructed with reinforced concrete. Each basin will have a total depth of six feet from top of the wall to the bottom of the pond. The active water depth in the basins would be 4.0 feet with 2.0 feet for freeboard. The proposed length of each pond will be 400 feet with a width of 100 feet (outside to outside dimensions).

The wall will have a top of wall elevation of 555.0 feet. The wall side slopes will be vertical. The outside and inside of the wall is constructed of concrete and thus no protection from floodwater is required. The basins will have concrete bottoms.

The available storage volume using this configuration is 1,196,000 gallons for one basin. This is slightly lower than the volume needed for one day of detention at a 12.0 mgd flow rate. With both basins in operation, the storage volume would be 2,392,000 gallons.

New flow lines from the clarifiers to the decant basins will be required and new return flow lines will also need to be constructed. A decant water return flow pump station will also be constructed.

The City of San Marcos floodplain permitting issues faced by the flood wall, the water quality zone and water quality buffer zone will also need to be addressed for the decant ponds. However, the decant ponds will be “no discharge” to the river structures and should assist in mitigated the impacts of the basins. The archaeological impacts of the construction will also require monitoring.

Table 5 presents the OPCC for the concrete basins and is \$4,388,600 including a 30 percent contingency.

 Solutions Today with a Vision for Tomorrow engineers architects surveyors TABLE No. F-368 Project: Hays/Caldwell WTP Shared Facilities Study New Water Decant and Recycle System with Earth Basins Project #: 170325 TABLE 4					
PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST					
Item	Description	Qty	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	\$ 87,500	\$ 87,500
2	Basin Excavation and Haul	9,000	CY	\$ 20	\$ 180,000
3	Compacted Earth Embankment	8,000	CY	\$ 20	\$ 160,000
4	External Rock Riprap for Slope Protection	60	CY	\$ 100	\$ 6,000
5	Internal Concrete Rock Riprap Lining	400	CY	\$ 450	\$ 180,000
6	Decant Piping to Basins, 12"	440	LF	\$ 150	\$ 66,000
7	Decant Piping Return to Clearwell from Basins, 12"	440	LF	\$ 150	\$ 66,000
8	Gates for Pipelines, Automated	12	CY	\$ 10,000	\$ 120,000
9	Backflow Preventers	2	CY	\$ 20,000	\$ 40,000
10	Concrete Vault for Pumps	50	CY	\$ 500	\$ 25,000
11	Two 75-Horsepower Stormwater Pumps	2	EA	\$ 75,000	\$ 150,000
12	Paved Driveway	700	SY	\$ 15	\$ 10,500
13	Electrical, Instrumentation, SCADA	1	LS	\$ 75,000	\$ 75,000
				SUB TOTAL	\$ 1,166,000
				30% CONTINGENCY	\$ 349,800
				TOTAL PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST (2019 \$)	\$ 1,515,800
	DESIGN	10.0%		\$	151,600
	ADDITIONAL SERVICES	5.0%		\$	75,800
	CONSTRUCTION MONITORING	5.0%		\$	75,800
	ARCHAEOLOGICAL MONITORING	0.5%		\$	7,600
	PERMITTING	4.0%		\$	60,700
	TESTING	1.0%		\$	15,200
	BOND INSURANCE	1.0%		\$	15,200
	MISC. (PRINTING, ETC)	0.5%		\$	7,600
				ADMINISTRATIVE SUB TOTAL	\$ 409,500
				PROJECT TOTAL (2019 \$)	\$ 1,925,300



SCALE: 1"=40'

0 40' 80'
22"x34" SCALE: 1"=40'
11"x17" SCALE: 1"=80'

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CANYON REGIONAL WATER AUTHORITY
HAYS/CALDWELL WATER TREATMENT PLANT IMPROVEMENTS
**NEW WATER DECANT & RECYCLE SYSTEM
CONSTRUCTED WITH CONCRETE**



EXHIBIT 8B

LNV Solutions Today with a Vision for Tomorrow engineers architects surveyors TABLE 5 TEPE No. F-586 Project: Hays/Caldwell WTP Shared Facilities Study New Water Decant and Recycle System with Concrete Basins Project #: 170325					
PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST					
Item	Description	Qty	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	\$ 199,400	\$ 199,400
2	Basin Excavation and Haul	6,000	CY	\$ 20	\$ 120,000
3	Concrete Basins (2)	3,200	CY	\$ 500	\$ 1,600,000
4	External Rock Riprap for Slope Protection	60	CY	\$ 100	\$ 6,000
5	Internal Concrete Rock Riprap Lining	400	CY	\$ 450	\$ 180,000
6	Decant Piping to Basins, 12"	440	LF	\$ 150	\$ 66,000
7	Decant Piping Return to Cleanwell from Basins, 12"	440	LF	\$ 150	\$ 66,000
8	Gates for Pipelines, Automated	12	CY	\$ 10,000	\$ 120,000
9	Backflow Preventers	2	CY	\$ 20,000	\$ 40,000
10	Concrete Vault for Pumps	50	CY	\$ 500	\$ 25,000
11	Two 75-Horsepower Stormwater Pumps	2	EA	\$ 75,000	\$ 150,000
12	Paved Driveway	700	SY	\$ 15	\$ 10,500
13	Electrical, Instrumentation, SCADA	1	LS	\$ 75,000	\$ 75,000
				SUB TOTAL	\$ 2,657,900
				30% CONTINGENCY	\$ 797,400
				TOTAL PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST (2019 \$)	\$ 3,455,300
DESIGN		10.0%		\$	345,600
ADDITIONAL SERVICES		5.0%		\$	172,800
CONSTRUCTION MONITORING		5.0%		\$	172,800
ARCHAEOLOGICAL MONITORING		0.5%		\$	17,300
PERMITTING		4.0%		\$	138,300
TESTING		1.0%		\$	34,600
BOND INSURANCE		1.0%		\$	34,600
MISC. (PRINTING, ETC)		0.5%		\$	17,300
				ADMINISTRATIVE SUB TOTAL	\$ 933,300
				PROJECT TOTAL (2019 \$)	\$ 4,388,600

Section 7

Replace Existing Hydraulically Deficient Piping and Pumps

The 2018 Preliminary Engineering Report prepared for the 2017 Texas Water Development Board Project identified piping and pump systems that are hydraulically marginal at a flow rate of 6.0 mgd. It is proposed that those lines and pumps be replaced to improve plant operability and reduce operation cost.

The piping and pumps recommended for replacement are the clarifier flow line from the raw water mixing vault to the clarifiers (100 feet of 24-inch line), membrane influent line (90 feet of 24-inch line), the filtered water line (100 feet of 24-inch line) and the high service pump station suction line (50 feet of 36-inch line). Pump systems needing upgrades are raw water intake (2 new pumps) and the clarifier sludge dump pumps (increase to peak of 7,600 gallons per minute).

The archaeological impacts of the construction will also require monitoring.

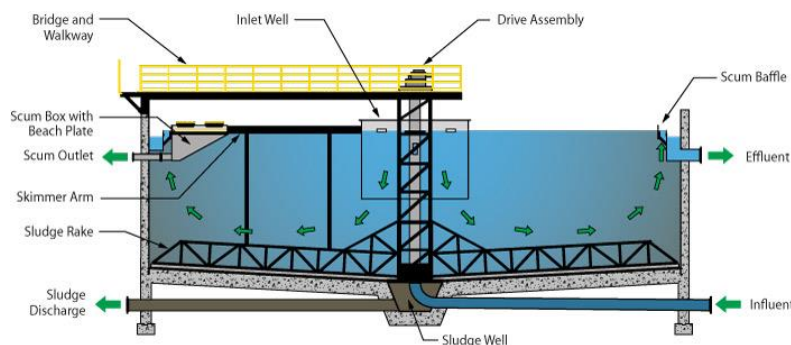
Table 6 presents the OPCC for the replacement of the hydraulically deficient piping and pumps and is \$1,628,300 including a 30 percent contingency.

Section 8

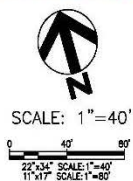
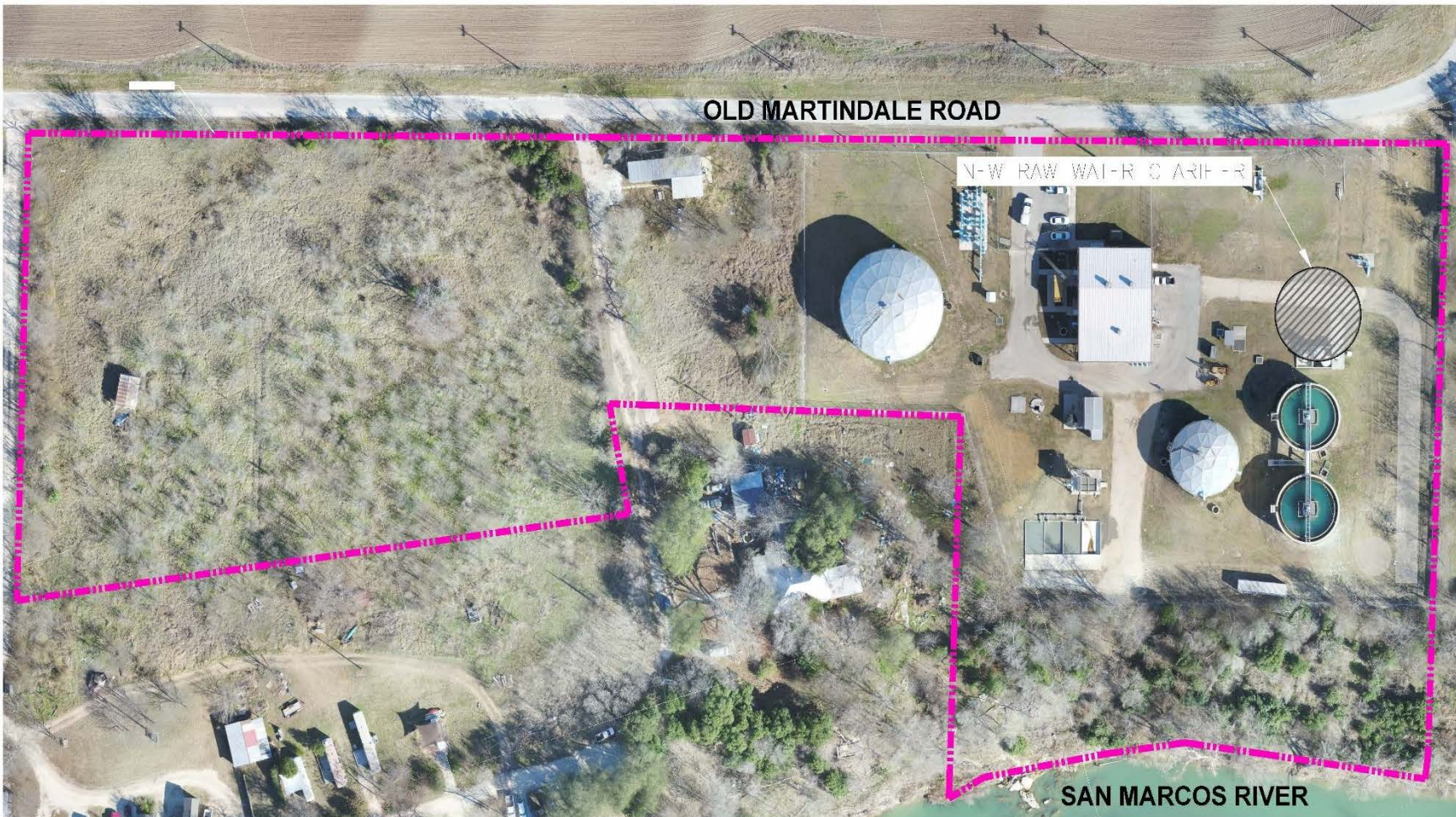
New Raw Water Clarifier

Exhibit 9 presents the location of a new raw water clarifier that will reduce hydraulic loading to the existing raw water clarifiers and improve the efficiency of the clarifiers. In addition, the third clarifier will enable some operational flexibility for taking a clarifier out of service for repair and cleaning.

The proposed new raw water clarifier will have a 70-foot diameter, and a loading rate of 0.6 gallons per square foot. Thus, the flow-through capacity of the clarifier would be 3.3 mgd. The clarifier would be a concrete basin with attendant yard piping, electrical service, SCADA, skimmer, sludge rake, scum collection and bridge and walkway.



 Solutions Today with a Vision for Tomorrow engineers architects surveyors TABLE No. F-368 Project: Hays/Caldwell WTP Shared Facilities Study Replace Existing Hydraulically Deficient Piping and Pumps Project #: 170325 TABLE 6					
PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST					
Item	Description	Qty	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	\$ 74,000	\$ 74,000
2	Line from Raw Water Mixing Vault to Clarifiers, 24" diameter	100	LF	\$ 300	\$ 30,000
3	Membrane Influent Line, 24" diameter	90	LF	\$ 300	\$ 27,000
4	Filtered Water Line, 24" diameter	100	LF	\$ 300	\$ 30,000
5	High Service Pump Station Suction Line, 30" diameter	50	LF	\$ 500	\$ 25,000
6	Raw Water Pumps	2	EA	\$ 200,000	\$ 400,000
7	Decant pumps to and from ponds	4	EA	\$ 100,000	\$ 400,000
				SUB TOTAL	\$ 986,000
				30% CONTINGENCY	\$ 295,800
				TOTAL PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST (2019 \$)	\$ 1,281,800
DESIGN		10.0%			\$ 128,200
ADDITIONAL SERVICES		5.0%			\$ 64,100
CONSTRUCTION MONITORING		5.0%			\$ 64,100
ARCHAEOLOGICAL MONITORING		0.5%			\$ 6,500
PERMITTING		4.0%			\$ 51,300
TESTING		1.0%			\$ 12,900
BOND INSURANCE		1.0%			\$ 12,900
MISC. (PRINTING, ETC)		0.5%			\$ 6,500
				ADMINISTRATIVE SUB TOTAL	\$ 346,500
				PROJECT TOTAL (2019 \$)	\$ 1,628,300



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TRCPC PROJ NO. F-308
TRCPC PERM NO. F-105001

CANYON REGIONAL WATER AUTHORITY
HAYS/CALDWELL WATER TREATMENT PLANT IMPROVEMENTS
NEW RAW WATER CLARIFIER

EXHIBIT 9

The City of San Marcos floodplain permitting issues faced by the flood wall, the water quality zone and water quality buffer zone will also need to be addressed for the new clarifier. However, the clarifier will be a “no discharge” to the river structure and should assist in mitigated the impacts of the clarifier. The archaeological impacts of the construction will also require monitoring.

Table 7 presents the OPCC for the new raw water clarifier and is \$2,508,200 including a 30 percent contingency.

Section 9

New Finished Water Storage Tank

Exhibit 10 presents the location of a new proposed 1.0 million-gallon finished water ground storage tank. The new tank will be placed in service to enable retirement of the existing bolted steel tank at the site. The existing bolted steel tank needs repairs and some work is planned to rehabilitate the tank to keep it in service for a limited time. A concern is the potential impact of residual ozone in the finished water that will attack the metal and sealants for the bolted steel tank and lead to leaks and tank failure.

The new finished water storage tank will then work in tandem with the new storage tank in the 2017 bond improvement project to provide redundancy and operation flexibility. In addition, with two million gallons of potential finished water storage, plant production could be curtailed for power outages or emergency repairs.

The City of San Marcos floodplain permitting issues faced by the flood wall, the water quality zone and water quality buffer zone will also need to be addressed for the new ground storage tank. The archaeological impacts of the construction will also require monitoring.

Table 8 presents the OPCC for the new finished water storage tank and is estimated as \$1,954,700 including a 30 percent contingency.

Section 10

Acquire Adjacent Tract

Exhibit 11 outlines the location of an adjacent tract of land that sits on the bank of the San Marcos River that is accessed by crossing through an ingress/egress easement across the HCWTP tract. This easement is a nuisance and impacts the efficient use of the CRWA’s tract and increases operational cost. In addition, it is possible that another owner or lessor of the property could use the property for other purposes that would infringe on CRWA’s ability to operate.



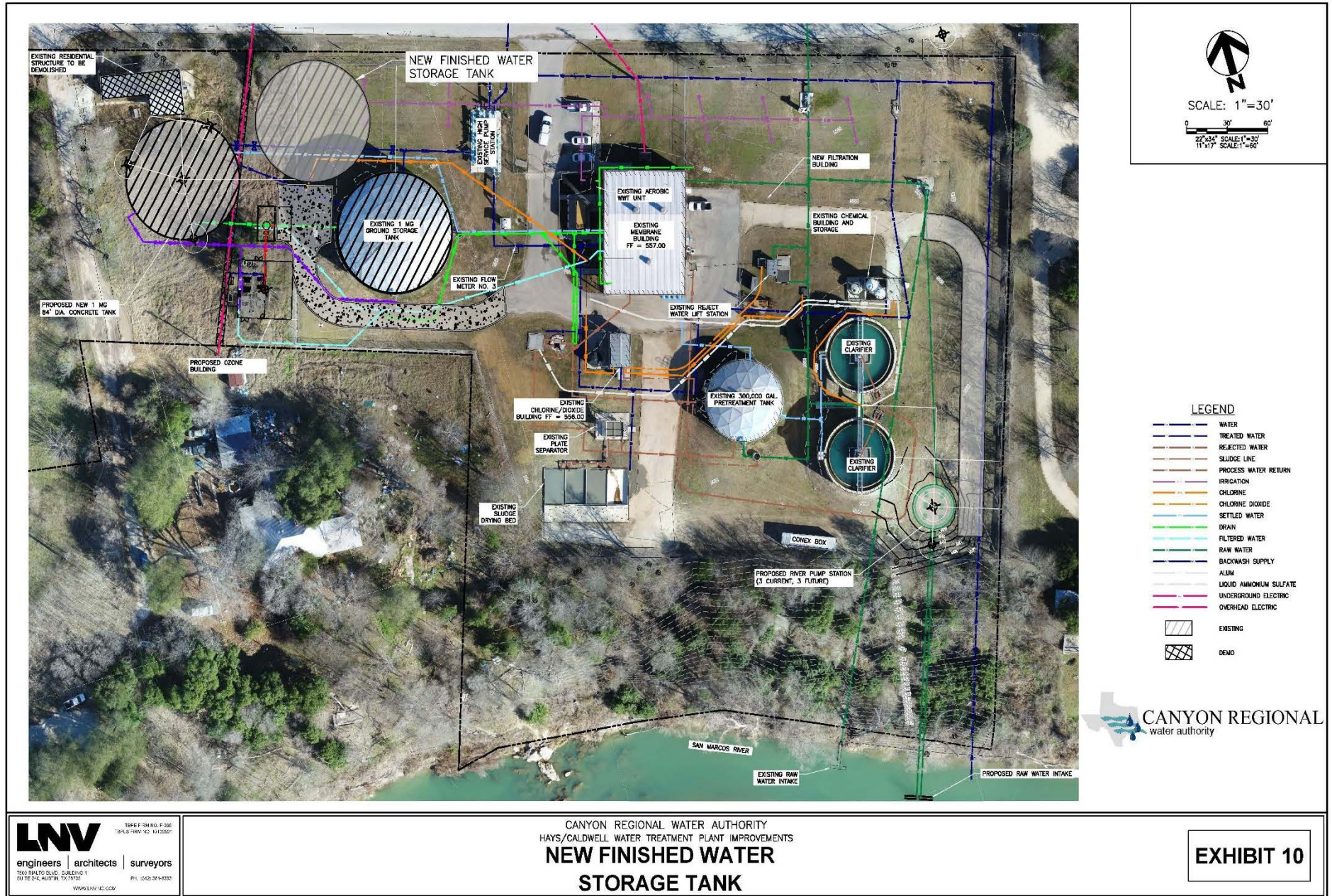
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TABLE 7

TEPE 110 F-300

Project: Hays/Caldwell WTP Shared Facilities Study
New Raw Water Clarifier
Project #: 170325

PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST					
Item	Description	Qty	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	\$ 114,000	\$ 114,000
2	New Clarifier, 3.3 mgd	1	LS	\$ 1,250,000	\$ 1,250,000
3	Influent Piping, 18" diameter	150	LF	\$ 300	\$ 45,000
4	Effluent Piping, 24" diameter	100	LF	\$ 350	\$ 35,000
5	Electrical, Instrumentation, SCADA	1	LS	\$ 75,000	\$ 75,000
				SUB TOTAL	\$ 1,519,000
				30% CONTINGENCY	\$ 455,700
				TOTAL PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST (2019 \$)	\$ 1,974,700
DESIGN		10.0%		\$	197,500
ADDITIONAL SERVICES		5.0%		\$	98,800
CONSTRUCTION MONITORING		5.0%		\$	98,800
ARCHAEOLOGICAL MONITORING		0.5%		\$	9,900
PERMITTING		4.0%		\$	79,000
TESTING		1.0%		\$	19,800
BOND INSURANCE		1.0%		\$	19,800
MISC. (PRINTING, ETC)		0.5%		\$	9,900
				ADMINISTRATIVE SUB TOTAL	\$ 533,500
				PROJECT TOTAL (2019 \$)	\$ 2,508,200





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TSPE No. F-386

Project: Hays/Caldwell WTP Shared Facilities Study
New Finished Water Storage Tank
Project #: 170325

TABLE 8

PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST					
Item	Description	Qty	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	\$ 88,800	\$ 88,800
2	New Finished Water Ground Storage Tank, 1 MG, Pre-Stressed Concrete	1	LS	\$ 900,000	\$ 800,000
3	Foundation Excavation and Haul	1,800	CY	\$ 25	\$ 45,000
4	Engineered Backfill	2,000	CY	\$ 25	\$ 50,000
5	Piping, 30-inch diameter	250	CY	\$ 300	\$ 75,000
6	Gates for Pipelines, Automated	3	EA	\$ 25,000	\$ 75,000
7	Electrical, Instrumentation, SCADA	1	LS	\$ 50,000	\$ 50,000
				SUB TOTAL	\$ 1,183,800
				30% CONTINGENCY	\$ 355,200
				TOTAL PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST (2019 \$)	\$ 1,539,000
	DESIGN	10.0%		\$	153,900
	ADDITIONAL SERVICES	5.0%		\$	77,000
	CONSTRUCTION MONITORING	5.0%		\$	77,000
	ARCHAEOLOGICAL MONITORING	0.5%		\$	7,700
	PERMITTING	4.0%		\$	61,600
	TESTING	1.0%		\$	15,400
	BOND INSURANCE	1.0%		\$	15,400
	MISC. (PRINTING, ETC)	0.5%		\$	7,700
				ADMINISTRATIVE SUB TOTAL	\$ 415,700
				PROJECT TOTAL (2019 \$)	\$ 1,954,700



SCALE: 1"=30'

0 30' 60'

22°x34" SCALE: 1"=30'
11"x17" SCALE: 1"=60'

- ### LEGEND
- | | |
|---|-------------------------|
|  | WATER |
|  | TREATED WATER |
|  | REFLECTED WATER |
|  | SLUDGE LINE |
|  | PROCESS WATER RETURN |
|  | IRRIGATION |
|  | CHLORINE |
|  | CHLORINE DIOXIDE |
|  | SETTLED WATER |
|  | DRAIN |
|  | FILTERED WATER |
|  | RAW WATER |
|  | BACKWASH SUPPLY |
|  | ALUM |
|  | LIQUID AMMONIUM SULFATE |
|  | UNDERGROUND ELECTRIC |
|  | OVERHEAD ELECTRIC |
|  | EXISTING |
|  | DEMO |



EXHIBIT 11

The subject tract is 2.009 acres and was appraised in the records of the Caldwell County Appraisal District at a value of \$231,850 in 2018. The Caldwell CAD records report that the main dwelling was built in 1906 and consists of a 2,680 square foot house. The house has three unattached buildings including a garage, storage utility building and shed.

The easement crossing the CRWA tract must always be uncontrolled and impacts the ongoing 2017 projects and future projects. Because of the house proximity to the San Marcos River, it is in the 100-year floodplain of the river and the water quality zone established by the City of San Marcos.

The benefits of CRWA purchasing the tract include:

- Extinguishing the driveway easement across the HCWTP
- Increased usability of the CRWA tract
- Increased operation efficiency
- Protection from a third part using the adjacent tract for other purposes
- Having additional buffer from residences
- Improves facility siting and development
- Provides additional area that will not be built on that can lower impervious cover percentage
- The undeveloped portions of the tract can be used as a vegetated filter strip
- Eliminating the 450 feet of fence and gates that will be built along the access easement

The reasons for CRWA not purchasing the tract include:

- Cost of acquisition
- About 370 feet of fence required to fence the tract
- Possible house would be designated a historic structure
- Cost of demolishing the house and other structures and restoring the site

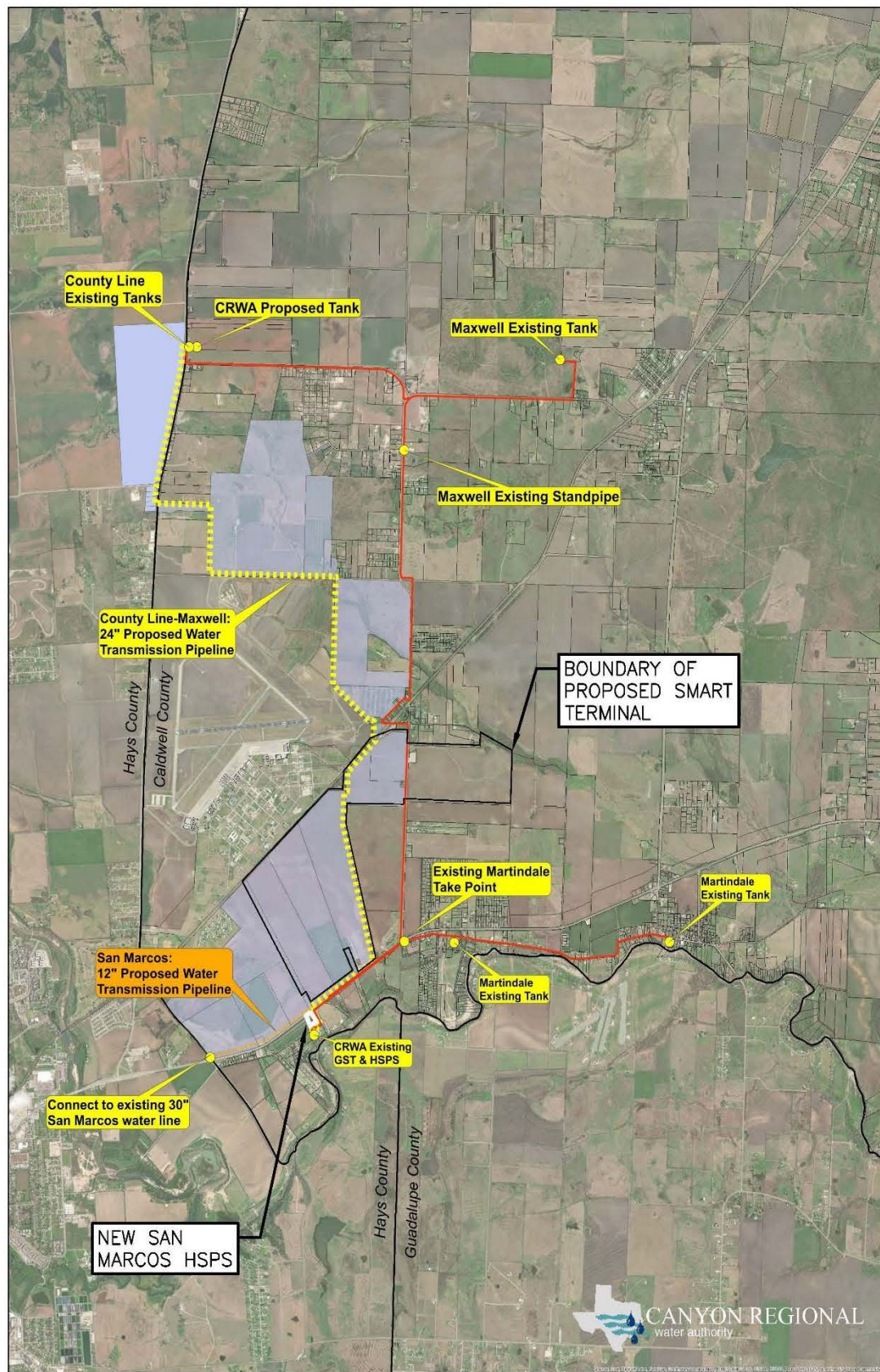
Table 9 presents the OPCC to purchase the adjacent tract and is estimated as \$375,000 with a 30 percent contingency.

Section 11

Treated Water Distribution

Exhibit 12 presents the location of new proposed water transmission lines, a new high service pump station and a new 500,000-gallon elevated storage tank that will be used to convey water to the users of the water treated at the HCWTP. The existing water transmission line sending

 Solutions Today with a Vision for Tomorrow engineers architects surveyors TABLE 9 TSPE No. F-368 Project: Hays/Caldwell WTP Shared Facilities Study Purchase Adjacent Tract Project #: 170325					
PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST					
Item	Description	Qty	Unit	Unit Price	Total Price
1	Land Purchase, 2.009-acre Tract	1	LS	\$ 231,800	\$ 231,800
2	Structure Demolition and Site Cleaning	1	LS	\$ 25,000	\$ 25,000
3	Additional Fencing	350	LF	\$ 25	\$ 8,750
4	Real Estate Fee	1	LS	\$ 15,000	\$ 15,000
5	Closing Cost	1	LS	\$ 5,000	\$ 5,000
				SUB TOTAL	\$ 285,550
				30% CONTINGENCY	\$ 85,700
				TOTAL PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST (2019 \$)	\$ 371,250
	DESIGN	0.0%		\$	-
	ADDITIONAL SERVICES	1.0%		\$	3,800
	CONSTRUCTION MONITORING	0.0%		\$	-
	ARCHAEOLOGICAL MONITORING	0.0%		\$	-
	PERMITTING	0.0%		\$	-
	TESTING	0.0%		\$	-
	BOND INSURANCE	0.0%		\$	-
	MISC. (PRINTING, ETC)	0.0%		\$	-
				ADMINISTRATIVE SUB TOTAL	\$ 3,800
				PROJECT TOTAL (2019 \$)	\$ 375,050



treated water to Martindale WSC, Maxwell WSC and County Line SUD has operational issues with undersized lines, bottlenecks and has experienced numerous pipe breaks.

County Line SUD takes water from the existing Maxwell WSC line and needs to increase the reliability of service with a new right-sized line. Maxwell WSC will be able to connect to the new pipeline in several locations and will be able to convert their existing line to a distribution line that could operate at lower pressures and flow rates.

The proposed 24-inch diameter, 36,000 linear foot long water transmission pipeline would serve Martindale WSC, Maxwell WSC and County Line SUD. The line could be constructed of concrete-lined steel cylinder pipe, PVC pipe or ductile iron depending on ultimate design and pricing at construction bid time. The sizing of the new line will allow the 5.5 mgd flow to be sent to County Line SUD and Maxwell WSC if needed.

The proposed 12-inch diameter, 5,800 linear foot long water transmission pipeline would serve the City of San Marcos. The line could be constructed of PVC pipe or ductile iron depending on ultimate design and pricing at construction bid time. The sizing of the new line will convey the 1.04 mgd dedicated to the City with the ability to peak flow up to about 1.5 the average capacity.

The proposed 500,000-gallon elevated storage tank at the terminal end of the County Line SUD and Maxwell WSC line will provide pressure stability to the pipeline for operating purposes and to enable delivery of water if there are line breaks or power outages.

The proposed high service pump station to serve the City of San Marcos pipeline will be sized to move 1.5 mgd (a peaking factor of 1.5). The water line will connect to an existing 30-inch diameter line and be fitted with valving and backflow preventers to protect both systems. The meter for measuring flow will be at HCWTP.

The archaeological impacts of the construction will also require monitoring.

Easements will need to be obtained for the pipeline route. The recommended easement width will be 60 feet with parallel temporary construction easements where needed. Pipelines under roadways will be bored and with casing and carrier pipes. Environmental assessments and permitting will be completed to identify and where appropriate, mitigate any identified issues.

Table 10 presents the opinion of probable construction cost (OPCC) for the County Line SUD and Maxwell WSC pipeline and associated elevated storage tank. The OPCC is \$12,811,300 and includes a 30 percent contingency.

 Solutions Today with a Vision for Tomorrow engineers architects surveyors TABLE No. F-88 Project: Hays/Caldwell WTP Shared Facilities Study County Line SUD and Maxwell WSC Pipeline Project #: 170325					
PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST					
Item	Description	Qty	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	\$ 582,000	\$ 582,000
2	Connection to Existing Pump Station	1	LS	\$ 25,000	\$ 750,000
3	24" Pipeline	36,000	LF	\$ 120	\$ 4,320,000
4	Connection to Existing Martindale Line	1	LS	\$ 25,000	\$ 25,000
5	Boring, Casing Under Roadways and Railway	1,000	LF	\$ 600	\$ 600,000
6	Gate Valves	12	EA	\$ 25,000	\$ 300,000
7	Elevated Storage Tank, 500,000 Gallon	1	EA	\$ 500,000	\$ 500,000
8	Connection to Existing County Line System	1	EA	\$ 25,000	\$ 25,000
9	Flow Measuring Meter	3	EA	\$ 10,000	\$ 30,000
10	Easements	49	AC	\$ 10,000	\$ 490,000
11	Land Purchase for Elevated Storage Tank	2	AC	\$ 25,000	\$ 37,500
12	Electrical, Instrumentation, SCADA	1	LS	\$ 100,000	\$ 100,000
				SUB TOTAL	\$ 7,759,500
				30% CONTINGENCY	\$ 2,327,900
				TOTAL PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST (2019 \$)	\$ 10,087,400
DESIGN		10.0%			\$ 1,008,800
ADDITIONAL SERVICES		5.0%			\$ 504,400
CONSTRUCTION MONITORING		5.0%			\$ 504,400
ARCHAEOLOGICAL MONITORING		0.5%			\$ 50,500
PERMITTING		4.0%			\$ 403,500
TESTING		1.0%			\$ 100,900
BOND INSURANCE		1.0%			\$ 100,900
MISC. (PRINTING, ETC)		0.5%			\$ 50,500
				ADMINISTRATIVE SUB TOTAL	\$ 2,723,900
				PROJECT TOTAL (2019 \$)	\$ 12,811,300

Table 11 presents the opinion of probable construction cost (OPCC) for the City of San Marcos pipeline. The OPCC is \$3,525,000 and includes a 30 percent contingency.

Section 12

Existing and Future Infrastructure Buy-In

The existing infrastructure for the HCWTP has been paid and is being paid for through a series on bond sales and internally generated capital. These funds are considered as capital assets and are subject to depreciation based on their assigned useful life. The net book value for these assets represents the “buy-in” of plant capacity if another entity wanted to join the group and benefit from the investments that have been made by others.

The cost of future improvements would be shared by the project participants based on their percentage of the total plant contracts. Participants could sell or lease their interest to other members of the group, but the payment responsibility would remain with the original borrowers unless amendments to the financing documents are agreed to.

Operation and maintenance costs are estimated on an annual basis and include a fixed rate plus a variable rate. Operation and maintenance costs are not capital assets and thus are not part of a buy-in calculation.

Table 12 presents a summary of the HCWTP asset plant cost and the net book value as on 2019. The depreciation is on a straight-line basis and are the dates are the year of installation. The Net Book Value of the Assets in 2019 is \$11,585,676.

Table 13 presents the cost per acre-foot of water committed to the plant for treatment (based on plant contracts). This calculation does not include the potential additional water from the City of San Marcos and Martindale WSC.

Table 14 presents the cost per acre-foot of water committed to the plant for treatment. The calculation presented assumes that the City of San Marcos and Martindale WSC commit a total of 1.40 mgd of new raw water to the plant (1,569.84 acre-feet per year).

Table 15 presents the share on ownership in the plant based on a total of 4,468 acre-feet of water per year. Also presented is the new cost of the plant capacity for each entity.

Table 16 presents the cost for buy-in for the City of San Marcos and Martindale WSC commit to add 1,314 acre-feet per year and an additional 255.84 acre-feet per year respectively to the HCWTP.

Table 17 presents the annual cost for buy-in if the buy-in is financed for 20, 25 or 30 years. The annual interest rate is assumed to be 4.0 percent.

 Solutions Today with a Vision for Tomorrow engineers architects surveyors TEFE No. F-306 Project: Hays/Caldwell WTP Shared Facilities Study San Marcos Water Distribution Pipeline Project #: 170325 TABLE 11					
PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST					
Item	Description	Qty	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	\$ 160,200	\$ 160,200
2	High Service Pump Station, 1.5 mgd Capacity	1	LS	\$ 750,000	\$ 750,000
3	Pipe Connection to Tank, 24" diameter	100	LF	\$ 300	\$ 30,000
4	Distribution Pipeline, 12-inch diameter	5,800	CY	\$ 125	\$ 725,000
5	Boring, Casing Under Roadways	200	LF	\$ 600	\$ 120,000
6	Gate Valves	5	EA	\$ 20,000	\$ 100,000
7	Connection to Existing 30" Line	1	EA	\$ 25,000	\$ 25,000
8	Gate Valves for Existing 30" Line	2	EA	\$ 30,000	\$ 60,000
9	Flow Measuring Meter	1	EA	\$ 10,000	\$ 10,000
10	Easements	8	AC	\$ 10,000	\$ 80,000
11	Electrical, Instrumentation, SCADA	1	LS	\$ 75,000	\$ 75,000
				SUB TOTAL	\$ 2,135,200
				30% CONTINGENCY	\$ 640,600
				TOTAL PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST (2019 \$)	\$ 2,775,800
	DESIGN	10.0%		\$	277,600
	ADDITIONAL SERVICES	5.0%		\$	138,800
	CONSTRUCTION MONITORING	5.0%		\$	138,800
	ARCHAEOLOGICAL MONITORING	0.5%		\$	13,900
	PERMITTING	4.0%		\$	111,100
	TESTING	1.0%		\$	27,800
	BOND INSURANCE	1.0%		\$	27,800
	MISC. (PRINTING, ETC)	0.5%		\$	13,900
				ADMINISTRATIVE SUB TOTAL	\$ 749,700
				PROJECT TOTAL (2019 \$)	\$ 3,525,500

TABLE 12					
INVESTMENT, DEPRECIATION AND NET BOOK VALUE OF HAYS CALDWELL WATER TREATMENT PLANT ASSETS					
ORIGINAL COST	INSTALL YEAR	ORIGINAL COST	USEFUL LIFE, YEARS	ACCUMULATED DEPRECIATION	NET BOOK VALUE
HAYS CALDWELL - PHASE I					
Construction Costs	2002	\$6,298,725	50	\$2,141,567	\$4,157,159
Capitalized Interest	2002	\$1,047,705	50	\$356,220	\$691,485
Land Purchase	2002	\$290,838	Not Applicable	\$290,838	\$290,838
Improvements	2005	\$16,814	30	\$7,847	\$8,967
TOTAL		\$7,654,082		\$2,796,471	\$5,148,449
HAYS CALDWELL - PHASE II					
Plant Expansion	2006	\$1,560,824	50	\$405,814	\$1,155,010
Pumps and Equipment	2008	\$470,941	25	\$207,214	\$263,727
Portable Building	2009	\$8,468	10	\$8,468	\$0
Operating Equipment	2010	\$3,933	10	\$3,540	\$393
Operating Equipment	2017	\$26,828	5	\$10,731	\$16,097
TOTAL		\$2,070,994		\$635,767	\$1,435,227
PLANT IMPROVEMENTS 2017					
Plant Improvements	2019	\$5,000,000	50	\$0	\$5,000,000
TOTAL PLANT COSTS		\$14,725,076		\$3,432,238	\$11,583,676

TABLE 13**PER ACRE-FOOT REMAINING COST OF WATER COMMITTED TO THE PLANT
BY CURRENT PARTICIPANTS WITHOUT SAN MARCOS AND ADDITIONAL
WATER FROM MARTINDALE WSC**

PARTICIPANT	PLANT CONTRACT IN ACRE- FEET	PERCENTAGE OF PLANT	NET BOOK VALUE RESPONSIBLE FOR
Crystal Clear SUD	500	17.194	\$1,991,691
County Line SUD	1,308	44.9794	\$5,210,264
Martindale WSC	200	6.8776	\$796,676
Maxwell WSC	900	30.949	\$3,585,044
TOTAL	2,908	100.000	\$11,583,676

TABLE 14			
PER ACRE-FOOT REMAINING COST OF WATER COMMITTED TO THE PLANT BY CURRENT PARTICIPANTS, SAN MARCOS AND ADDITIONAL WATER FROM MARTINDALE WSC			
PARTICIPANT	PLANT CONTRACT IN ACRE- FEET	PERCENTAGE OF PLANT	NET BOOK VALUE RESPONSIBLE FOR
Crystal Clear SUD	500	11.191	\$1,296,293
County Line SUD	1,308	29.2748	\$3,391,103
Martindale WSC	446	9.9821	\$1,156,294
Maxwell WSC	900	20.143	\$2,333,328
City of San Marcos	1,314	29.409	\$3,406,659
TOTAL	4,468	100.000	\$11,583,676

TABLE 15			
PER ACRE-FOOT REMAINING COST OF WATER COMMITTED TO THE PLANT BY CURRENT PARTICIPANTS AND SAN MARCOS			
PARTICIPANT	PLANT CONTRACT IN ACRE- FEET	PERCENTAGE OF PLANT	NET BOOK VALUE RESPONSIBLE FOR
Crystal Clear SUD	500	11.843	\$1,371,823
County Line SUD	1,308	30.9806	\$3,588,690
Martindale WSC	200	4.7371	\$548,729
Maxwell WSC	900	21.317	\$2,469,282
City of San Marcos	1,314	31.123	\$3,605,152
TOTAL	4,222	100.000	\$11,583,676

TABLE 16**SUMMARY OF BUY-IN COST FOR SAN MARCOS AND ADDITIONAL
MARTINDALE WATER (EXISTING PLANT)**

ITEM	BUY-IN TOTAL	ACRE-FEET	COST PER ACRE- FOOT
SAN MARCOS AND ADDITIONAL MARTINDALE WATER			
Additional Martindale WSC	\$359,618	246	\$1,462
City of San Marcos	\$3,406,659	1,314	\$2,593
SAN MARCOS ONLY			
City of San Marcos	\$3,613,574	1,314	\$2,750

TABLE 17										
AMORTIZED COST OF BUY-IN WATER AT 4.0 PERCENT ANNUAL INTEREST RATE (EXISTING PLANT)										
ITEM	BUY-IN TOTAL	TERM, YEARS	ANNUAL PAYMENT, 20- YEAR TERM	ANNUAL COST OF WATER PER ACRE- FOOT (20-YEAR)	TERM, YEARS	ANNUAL PAYMENT, 25- YEAR TERM	ANNUAL COST OF WATER PER ACRE- FOOT (25-YEAR)	TERM, YEARS	ANNUAL PAYMENT, 30- YEAR TERM	ANNUAL COST OF WATER PER ACRE- FOOT (30-YEAR)
SAN MARCOS AND ADDITIONAL MARTINDALE WATER										
Martindale WSC	\$359,618	20	\$26,461	\$108	25	\$23,020	\$94	30	\$20,797	\$85
City of San Marcos	\$3,406,659	20	\$250,668	\$191	25	\$218,067	\$166	30	\$197,007	\$150
SAN MARCOS ONLY										
City of San Marcos	\$3,613,574	20	\$265,893	\$202	25	\$231,312	\$176	30	\$208,973	\$159

TABLE 18**COST OF PROPOSED IMPROVEMENTS PER PARTICIPANT**

PARTICIPANT	PLANT CONTRACT IN ACRE- FEET	PERCENTAGE OF PLANT	SHARE OF PROPOSED COST
Crystal Clear SUD	500	11.191	\$1,162,142
County Line SUD	1,308	29.2748	\$3,040,163
Martindale WSC	446	9.9821	\$1,036,631
Maxwell WSC	900	20.143	\$2,091,855
City of San Marcos	1,314	29.409	\$3,054,109
TOTAL	4,468	100.000	\$10,384,900

TABLE 19**PER ACRE-FOOT COST OF PROPOSED IMPROVEMENTS (WITH SAN MARCOS AND
ADDITIONAL MARTINDALE WATER)**

ITEM	ACRE-FEET OF WATER	PERCENTAGE OF PLANT	SHARE OF TOTAL COST	PER ACRE-FOOT COST
Crystal Clear SUD	500	11.191	\$1,162,142	\$2,324
County Line SUD	1,308	29.2748	\$3,040,163	\$2,324
Martindale WSC	446	9.9821	\$1,036,631	\$2,324
Maxwell WSC	900	20.143	\$2,091,855	\$2,324
City of San Marcos	1,314	29.409	\$3,054,109	\$2,324
TOTAL	4,468	100.000	\$10,384,900	\$2,324

TABLE 20							
AMORTIZED COST OF PROPOSED IMPROVEMENTS AT 4.0 PERCENT ANNUAL INTEREST RATE							
ITEM	SHARE OF TOTAL COST	TERM, YEARS	ANNUAL PAYMENT, 20- YEAR TERM	TERM, YEARS	ANNUAL PAYMENT, 25- YEAR TERM	TERM, YEARS	ANNUAL PAYMENT, 30- YEAR TERM
Crystal Clear SUD	\$1,162,142	20	\$85,512	25	\$74,391	30	\$67,207
County Line SUD	\$3,040,163	20	\$223,701	25	\$194,607	30	\$175,813
Martindale WSC	\$1,036,631	20	\$76,277	25	\$66,357	30	\$59,940
Maxwell WSC	\$2,091,855	20	\$153,922	25	\$133,904	30	\$120,970
City of San Marcos	\$3,054,109	20	\$224,727	25	\$195,500	30	\$176,615
TOTAL	\$10,384,900	20	\$764,139	25	\$664,758	30	\$600,560
Annual Cost Per Acre-Foot of Water			\$171		\$149		\$135

APPENDIX C

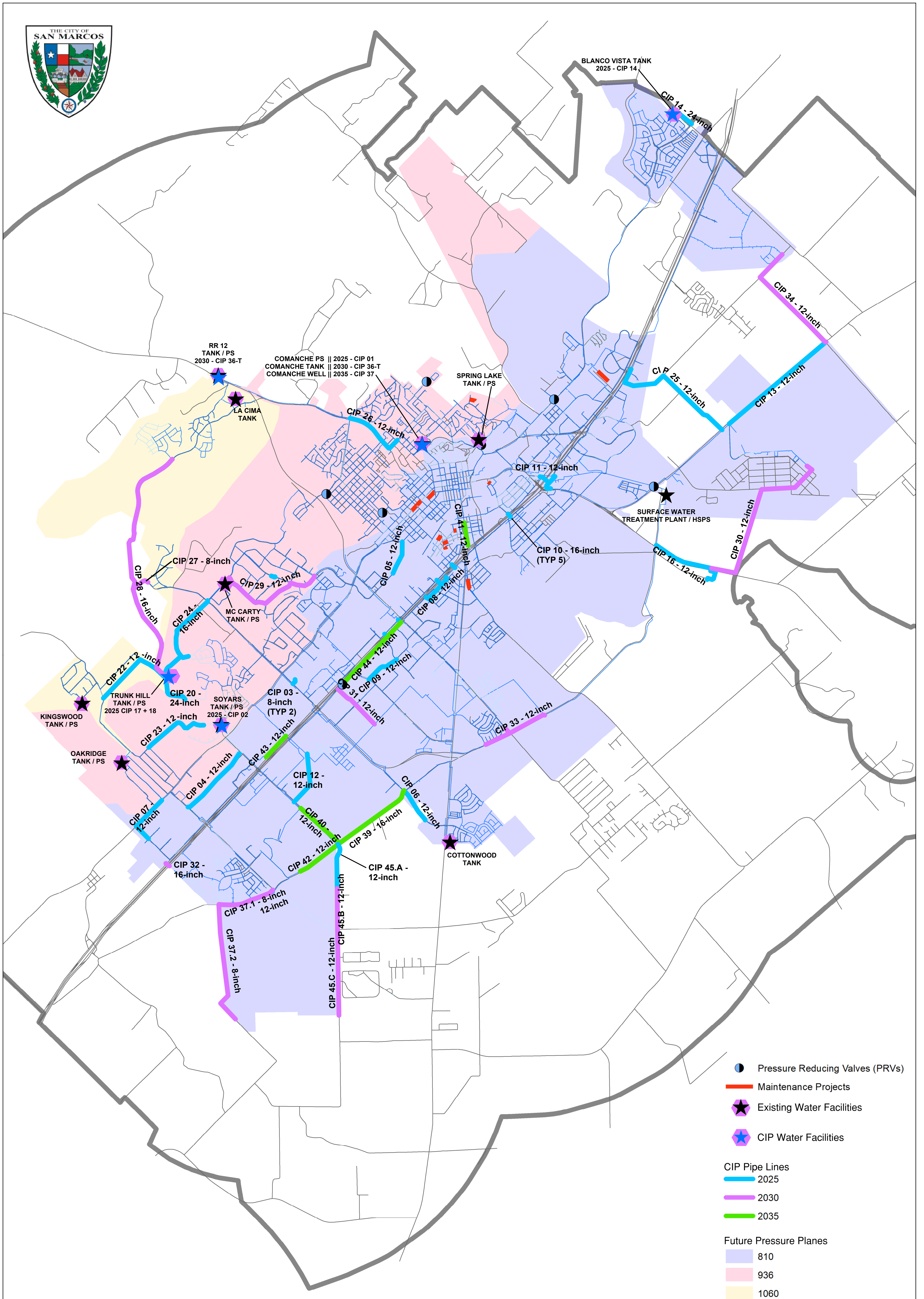
2024 ADDENDUM TO THE 2020 WATER MASTER PLAN

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2022 CIP Number		Year	Project Priority	Project Category	Project Name	Dia. (in)	Description	Length (ft)	Soil Type	Rural / Urban	Crossing Length (ft)	Crossing Unit Costs	\$/LF (2022)	Line Placement	Project Cost	Land Acquisition	Surveying	Engineering	Environmental	Loan Interest	Opinion of Probable Cost
1		2025	High	Capacity	Replace Comanche Pumps	16	New Pumps at Comanche to fill RR 12 & 50 LF 16" yard piping	51	Soil					City Property	\$ 2,400,000					\$ 66,000	\$ 2,470,000
1 - P		2025				Pumps															
2		2025	High	Development	Replace Soyars Pumps	Pumps	Replace Soyars pumps to fill the 936' Pressure Plane (2020) and Kissing Tree in 2025.														\$ 1,430,000
3		2025	High	Operational Benefit	Willow Creek Connections to McCarty Pressure Plane	8	Two connections between the Willow Creek service area and McCarty pressure plane for redundant water sources (well water from McCarty or surface water through Purgatory PRV).	690	Soil	Rural			\$ 116	Neighborhood	\$ 80,040	\$ 539	\$ 1,000	\$ 24,012	\$ 3,267	\$ 3,000	\$ 120,000
4		2025	Medium	Operational Benefit	Southwest 810' Plane Loop	12	Connect Centerpoint to Transportation Way in the 810' plane.	5,320	Soil	Rural			\$ 200	Easement / Industrial then Rural	\$ 1,064,000	\$ 4,155	\$ 3,000	\$ 319,200	\$ 25,189	\$ 30,000	\$ 1,450,000
5		2025		Operational Benefit	Stagecoach Trail Extension	12	Extend line from end of Stagecoach to intersection of Belvin and Bishop (existing 12" tie in).	2,400	Soil	Rural	500	\$ 422	\$ 200	Easement / Rural (Stream Crossing)	\$ 691,073	\$ 1,874	\$ 3,000	\$ 207,322	\$ 13,731	\$ 20,000	\$ 940,000
6		2025		Operational Benefit	Rattler Road Loop	12	Complete 12" loop around the high school on Rattler Rd.	2,430	Soil	Urban			\$ 220	Easement / Rural & City Street (School)	\$ 534,600	\$ 1,898	\$ 3,000	\$ 160,380	\$ 11,506	\$ 15,000	\$ 730,000
7		2025		Development	South Hunter Rd Loop	12	Connect existing 12" (on 810 plane) in Hunter Rd to 12" in Industrial Fork Rd.	3,840	Rock	Urban + Road Crossing	115	\$ 422	\$ 179	Easement / Rural & City Street	\$ 735,907	\$ 2,999	\$ 3,000	\$ 220,772	\$ 18,182	\$ 21,000	\$ 1,010,000
8		2025		Capacity	Patricia and Sunset Acres	12	Upsize 2" line along Del Sol Dr and 8" line along Patricia Dr. to each be 12" diameter as a part of the Sunset Acres drainage project.	2,730	Soil	Urban			\$ 200	City Roads	\$ 546,000			\$ 163,800	\$ 12,926	\$ 16,000	\$ 1,090,000
9		2025		Capacity	Leah Ave Extension	12	Install 12" to connect Leah Ave between Cottonwood Pkwy and Clovis Barker	2,510	Soil	Urban			\$ 200	Easement / Rural & City Street	\$ 502,000	\$ 1,960	\$ 3,000	\$ 150,600	\$ 11,884	\$ 14,000	\$ 690,000
10		2025		Operational Benefit	Upgrade IH-35 Crossings	16	Upgrade 5 existing water line crossings (8" / 12") to be 16" Between McCarty & Aquarena Springs Rd. These IH-35 crossings are existing but need to be upgrades for 810' water.	1,490	Rock	Urban			\$ 652	Road Crossing IH-35	\$ 970,839		\$ 10,000	\$ 339,794	\$ 7,055	\$ 27,000	\$ 1,360,000
11		2025		Operational Benefit	Railroad Crossing and Upgrades	12	Upgrade IH 35 crossing near the railroad crossing and upsize the 8"/10" lines to the east of IH 35 near the Conn's shopping center.	2,280	Rock	Urban	800	\$ 422	\$ 179	Easement & City Street	\$ 745,499		\$ 5,000	\$ 223,650	\$ 14,583	\$ 21,000	\$ 1,010,000
12		2025		Development	Big Hat Feed	12	Install 12" from McCarty behind the Premium outlets to the 24" to feed new industrial development and 18" line to serve Gas Lamp.	3,890	Soil	Rural			\$ 200	Easement / Rural	\$ 778,000	\$ 3,038	\$ 3,000	\$ 233,400	\$ 18,419	\$ 22,000	\$ 1,060,000
13		2025		Development	Airport Extension	12	Extend 12" northeast along HWY 21	9,010	Soil	Rural			\$ 200	Easement	\$ 1,802,000					\$ 50,000	\$ 1,860,000
14		2025	High, Need to meet ARWA schedule for receiving flow	Development	Blanco Vista EST	24	Build 1.0 MG elevated storage tank and 24" outlet line to Blanco Vista Blvd	1,570	Rock				\$ 267	Development	\$ 348,599	\$ 1,226	\$ 3,000	\$ 104,580	\$ 7,434	\$ 10,000	\$ 480,000
14 - T		2025				EST															
															\$ 5,200,000					\$ 143,000	\$ 5,350,000
16		2025	High, Need to meet CRWA schedule for receiving flow	Capacity	12" Connection for CRWA Share	12	CRWA WTP HSPS 12" connection to proposed 12" line in Hwy 80.	5,900	Soil	Street Crossing	327	\$ 422	\$ 179	Easement / Rural	\$ 1,194,458	\$ 4,608	\$ 3,000	\$ 358,337	\$ 27,936	\$ 33,000	\$ 1,630,000
17 - T	(D)	2025		Development / Capacity	Kissing Tree Tank	EST	New 0.50 MG Elevated Storage for 936' pressure plane														
18 - P	(D)	2025		Development / Capacity	Kissing Tree PS	Pumps	Pumps to fill La Cima Tank and deliver to 1063' pressure plane														
18	(D)	2025				16		1,110													
20	(D)	2025		Development	Kissing Tree Loop - Phase 2a	24	Central Loop in Development Phase I	2,400													
22		2025	Medium, Depends on the completion of the Trunk Hill tank and PS.	Operational Benefit	Kissing Tree - Kingswood Line	12	Connect Kissing Tree to Kingswood neighborhood by coming down Lazy Ln (include flow control valve). Note that if Kissing Tree develops the area around the proposed route, then Kissing Tree can oversize to 12" in their project.	6,020	Rock	Rural			\$ 200	Development	\$ 1,204,000	\$ 4,702	\$ 3,000	\$ 361,200	\$ 28,504	\$ 34,000	\$ 1,640,000
23		2025	Low	Operational Benefit	Kissing Tree - Deerwood Line	12	Connect Kissing Tree Loop to Trails End	4,120	Rock	Rural			\$ 200	Development	\$ 824,000	\$ 3,218	\$ 3,000	\$ 247,200	\$ 19,508	\$ 23,000	\$ 1,120,000
24	(D)	2025		Development	Kissing Tree - McCarty Line	16	Connect Kissing Tree Loop to 16" KT line from McCarty Ln.	5,010													
25		2025	Low	Operational Benefit	Airport Loop	12	Connect IH 35 to HWY 21 along Harris Hill Rd, creating a loop for the northeast service area.	9,800	Soil	River Crossing + Rural	500	\$ 422	\$ 179	Easement (Mainly R	\$ 1,965,273	\$ 7,654	\$ 3,000	\$ 589,582	\$ 46,402	\$ 55,000	\$ 2,670,000
26		2025	High	Capacity	Old Ranch Road 12 Parallel Comanche Outlet Main	12	Parallel of existing 16" Comanche PS discharge line between Holland and Craddock.	6,990	Rock	Urban			\$ 200	Easement	\$ 1,398,000			\$ 419,400	\$ 33,097	\$ 39,000	\$ 1,890,000
45.A		2025		Development	Center Point South - Segment A (North)	12	Extend a new 12" line from Old Bastrop Hey to Gypsy Cove to serve developments west of Center Point Rd. and South of Old Bastrop Hwy.	2,900	Soil	Urban			\$ 381	Easement	\$ 1,105,992		\$ 7,500	\$ 331,798	\$ 13,731	\$ 31,000	\$ 1,500,000

2022 CIP Number		Year	Project Priority	Project Category	Project Name	Dia. (in)	Description	Length (ft)	Soil Type	Rural / Urban	Crossing Length (ft)	Crossing Unit Costs	\$/LF (2022)	Line Placement	Project Cost	Land Acquisition	Surveying	Engineering	Environmental	Loan Interest	Opinion of Probable Cost
27		2030		Operational Benefit	Kissing Tree - La Cima Loop - Connect to Estates of San Marcos	8	Connect the Estates of San Marcos to the 1063' pressure plane with an 8" tee and 8" pipe from the new 16" Kissing Tree-La Cima connection (See CIP 28).	1,310	Rock	Rural			\$ 116	Development	\$ 151,960	\$ 1,023	\$ 3,000	\$ 45,588	\$ 6,203	\$ 5,000	\$ 220,000
28		2030		Operational Benefit / Capacity	Kissing Tree - La Cima Loop - Primary	16	16" cross country pipeline from the new Kissing Tree Truck Hill Elevated Storage Tank to La Cima neighborhood. Also connect this loop to existing neighborhood (Estates of San Marcos) with an 8" new line along W. McCarty Ln. New 8" needs PRV to reduce pressure to 95 psi. (See CIP 27)	17,970	Rock	Rural			\$ 220	Development / Rural	\$ 3,953,400	\$ 14,034	\$ 7,500	\$ 1,186,020	\$ 85,085	\$ 109,000	\$ 5,360,000
29		2030		Operational Benefit	McCarty Tank Fill/Drain Line	12	Connect McCarty Standpipe to 810 plane via Stagecoach. McCarty should now be operated at 810' (max elev is 857') and serve as elevated storage for the 810' plane.	8,380	Rock	Urban			\$ 200	Easement / Urban	\$ 1,676,000	\$ 6,545	\$ 3,000	\$ 502,800	\$ 39,678	\$ 47,000	\$ 2,280,000
30		2030		Operational Benefit	US 80 Loop	12	Extend 12" line from existing 30" along SH 80 to edge of CGN, then north along property boundaries to connect to dead end at airport.	12,550	Soil	Rural			\$ 179	Easement (Mainly Rural)	\$ 2,246,450	\$ 9,801	\$ 3,000	\$ 673,935	\$ 59,422	\$ 62,000	\$ 3,060,000
31		2030		Operational Benefit	PGM of Texas Extension	12	Install new 12" line along the proposed roadway alignment which connects to the PGM of Texas access drive. Tie into 16" along IH 35, 12" in Leah Ave, and 24" behind Amazon.	3,610	Soil	Urban			\$ 179	Easement	\$ 646,190		\$ 5,000	\$ 193,857	\$ 17,093	\$ 18,000	\$ 890,000
32		2030		Development	Trace Dev. Connection	12	Connect development on the south end to 16" along IH 35	320	Rock	I-35 Crossing		\$ 704		Bore Below IH-35	\$ 221,204		\$ 5,000	\$ 66,361	\$ 1,515	\$ 7,000	\$ 310,000
33		2030		Operational Benefit	Old Bastrop Extension 1	12	Connect the 16" along Old Bastrop Rd to the East to the 18" line north of Cottonwood and complete 12" line on Redwood south to connect at Old Bastrop.	5,100	Soil	Redwood Drive Crossing		\$ 422	\$ 179	Easement / Rural & Urban	\$ 961,447	\$ 3,983	\$ 3,000	\$ 288,434	\$ 24,148	\$ 27,000	\$ 1,310,000
34		2030		Capacity / Development	North Side Connection for ARWA BV EST Water	12	Connect to 12" lines in Whisper and continue 12" to the east toward Hwy 21. Connect to 12" in Hwy 21 at the intersection with William Petus.	8,850	Soil	Rural			\$ 179	Easement (Mainly Rural)	\$ 1,584,150	\$ 6,912	\$ 3,000	\$ 475,245	\$ 41,903	\$ 44,000	\$ 2,160,000
36 - T		2030		Operational Benefit / Capacity	Bolted Steel Tank Rehabilitation	Tank	Bolted steel tank rehabilitation project as requested by Ron Riggins and Bruce Noel. Intended to cover inspection and rehabilitation of the tank panels at the RR 12 GST and Comanche Standpipe.														\$ 200,000
37.1	(D)	2030		Development	Trace Dev. and Old Bastrop Extension to Francis Harris	8	This project includes the proposed 8" line to be installed by Trace Development on the south portion of their property, along their commercial frontage. The align will be from Posey Rd. to Francis Harris.	3,070	Soil	Rural			\$ 116	City Roads	\$ 356,120	\$ 2,398	\$ 1,000	\$ 106,836	\$ 14,536	\$ 10,000	\$ 500,000
37.1	(D)	2030		Development	Trace Dev. and Old Bastrop Extension to Francis Harris	12	This project includes the proposed 12" line to be installed by Trace Development on the south portion of their property, along their commercial frontage. The align will be from Posey Rd. to Francis Harris.	1,010	Soil	Rural			\$ 179	City Roads	\$ 180,790	\$ 789	\$ 1,000	\$ 54,237	\$ 4,782	\$ 5,000	\$ 250,000
37.2		2030		Industrial	Francis Harris Extension	8	Extend a new 8" line to the Francis Harris to power plant from Trace 12" line in Old Bastrop.	8,830	Soil	Rural			\$ 116	City Roads	\$ 1,024,280		\$ 1,000	\$ 307,284	\$ 41,809	\$ 29,000	\$ 1,410,000
45.B	(D)	2030		Development	Center Point South - Segment B (Middle)	12	Extend a new 12" line from Gypsy Cove to Beback Inn Rd. to serve developments east of Center Point Rd. and South of Old Bastrop Hwy.	3,600	Soil	Urban			\$ 360	Easement	\$ 1,295,182		\$ 7,500	\$ 388,555	\$ 17,045	\$ 36,000	\$ 1,750,000
45.C	(D)	2030		Development	Center Point South - Segment C (South)	12	Extend a new 12" line from Beback Inn Rd. south towards Braune Rd. to serve developments east of Center Point Rd. and South of Old Bastrop Hwy.	4,500	Soil	Urban			\$ 329	Easement	\$ 1,481,179		\$ 7,500	\$ 444,354	\$ 21,307	\$ 41,000	\$ 2,000,000
38 - W		2035		Operational Benefit	Add Well Capacity	Well	Add groundwater well at Comanche.										\$ 3,000				\$ 1,450,000
39		2035		Development / Capacity	Old Bastrop Extension 2	16	Rattler to Centerpoint Extension along Old Bastrop Highway	6,090	Soil	Rural			\$ 200	Easement	\$ 1,218,000	\$ 4,756	\$ 3,000	\$ 365,400	\$ 28,835	\$ 34,000	\$ 1,660,000
40		2035		Operational Benefit	Center Point North Extension	12	Install 12" perpendicular to Old Bastrop to 12" Existing Line and connect to end point of 12" in Centerpoint Rd. near the Master's School.	3,720	Soil	Rural			\$ 200	Easement	\$ 744,000	\$ 2,905	\$ 3,000	\$ 223,200	\$ 17,614	\$ 21,000	\$ 1,020,000
41		2035		Operational Benefit	South LBJ Upgrade	12	Upgrade small diameter line in S. LBJ from E. Grove St. to IH-35 Crossing	1,630	Rock	Urban			\$ 179	City Roads	\$ 291,770		\$ 1,000	\$ 87,531	\$ 7,718	\$ 9,000	\$ 400,000
42		2035		Development / Capacity	Old Bastrop Extension 3	12	Centerpoint to Horace Howard Extension along Old Bastrop Highway, Include connection to existing line on Horace Howard Dr.	3,460	Soil	Rural			\$ 200	Easement	\$ 692,000	\$ 2,702	\$ 3,000	\$ 207,600	\$ 16,383	\$ 20,000	\$ 950,000
43		2035		Operational Benefit	Tanger Loop	12	Connect existing 24" to end of proposed 12" developer line along IH-35 north of Centerpoint (Behind Bill Miller's)	2,060	Soil	Rural			\$ 179	Easement	\$ 368,740	\$ 1,609	\$ 3,000	\$ 110,622	\$ 9,754	\$ 11,000	\$ 510,000
44		2035		Operational Benefit	IH 35 Frontage Upgrades	12	Upgrade IH 35 lines along northbound side to 12" pipes from tan warehouse building north of McCarty to the northeast until Wonder World Dr.	6,180	Soil	Urban			\$ 220	Easement	\$ 1,359,600		\$ 7,500	\$ 407,880	\$ 29,261	\$ 38,000	\$ 1,850,000



- Pressure Reducing Valves (PRVs)
- Maintenance Projects
- Existing Water Facilities
- CIP Water Facilities
- CIP Pipe Lines
 - 2025
 - 2030
 - 2035
- Future Pressure Planes
 - 810
 - 936
 - 1060

APPENDIX D

WATER IMPACT FEE CREDIT ANALYSIS REPORT

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CITY OF SAN MARCOS

Water Impact Fee Credit Analysis

FINAL REPORT / FEBRUARY 5, 2026



February 5, 2026

Ms. Qiwen Zhang, PE
Project Manager
Plummer Associates, Inc.
8911 N Capital of TX Hwy, Suite 1350
Austin, TX 78759

Subject: San Marcos Water Impact Fee Credit Analysis

Dear Ms. Zhang:

Raftelis is pleased to provide this Water Impact Fee Credit Analysis Report (Report) for the City of San Marcos (City) to create an impact fee that helps the City fund the capital needs to serve new growth in compliance with Texas Local Government Code Chapter 395.

The major objectives of the study include the following:

- Calculating the Impact Fee Eligible Costs
- Calculating the Credit Amount
- Determining the Max Allowable Impact Fee per LUE

The report summarizes the key findings and recommendations related to the credit analysis required for the development of the water impact fee.

It has been a pleasure working with you, and we thank you, Plummer staff, and the City staff for the support provided during the course of this study.

Sincerely,

A handwritten signature in black ink that reads 'Peter E. Purdy'.

Peter Purdy, PE
Manager

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Table 3. Max Allowable IF Costs..... 4

Table 4. Max Allowable IF per LUE 5

Appendix

Credit Analysis Model Export

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Executive Summary

In 2024, Plummer Associates Inc. (Plummer) engaged Raftelis Financial Consultants, Inc. (Raftelis) to conduct a Credit Analysis for the Water Impact Fee Study they were performing for the City of San Marcos (City). The Credit Analysis kicked off in late 2025 and was completed in early 2026 in coordination with Plummer and the City.

Based on the calculated values of the existing and proposed CIPs (including financing costs where applicable), the anticipated growth in the 10-year period from 2026 to 2035, the Max Allowable Water Impact Fee per Living Unit Equivalent (LUE) is \$14,519.11. The methodology used to determine this amount is explained in the rest of this report, and an export of the financial model is included in the **Appendix**.

Methodology

Texas Local Government Code (LGC) Chapter 395 outlines the guidelines and requirements for impact fees in the State of Texas. In particular, the statutes require that the Capital Improvement Plan contain a plan for awarding a credit using either of the following methodologies:

- 1) A credit for the portion of ad valorem tax and utility service revenues generated by new service units during the program period that is used for the payment of improvements, including the payment of debt, that are included in the capital improvements plan; or
- 2) In the alternative, a credit equal to 50 percent of the total projected cost of implementing the capital improvements plan.

The City selected Option 1 because it more accurately reflects the impacts of new development and is better suited to a rapidly growing city like San Marcos with large capital needs. Although the City may ultimately choose a lower impact fee than the maximum allowable impact fee using Option 1, utilizing this methodology gives the City more flexibility in setting impact fees that balance the burden between the existing community and new development.

Impact Fee Eligible Costs

Impact fee eligible costs can potentially come from proposed projects or previously completed projects. Regardless of the project type, only the costs associated with providing capacity or service to new development in the 10-year impact fee period (2026-2035) may be considered. For example, if a completed project was 50% allocated to serving existing customers, 30% allocated to serving customers being added between 2026 and 2035, and 20% allocated to customers in 2036 and beyond, only 30% of that project would be impact fee eligible.

Project costs were provided by Plummer and the City. Financing costs for projects with existing debt were taken from the term sheets of those debt issuances. Financing costs for proposed projects were calculated using a 20-year term and 5% interest as specified by the City. Proposed projects were assigned an Online Date by Plummer which represents the date the project should theoretically be online in order to serve new development. Many projects have an Online Date of 2025, meaning that they are already needed and the City should prioritize them.

To estimate financing costs, projects with an Online Date of 2025 were divided into 5 equal debt issuances from 2026 to 2030. Similarly, projects with an Online Date of 2030 were divided into 5 equal debt issuances from 2031 to 2035.

Several projects needed to serve development in the 10-year period are shown as being paid for by developers, but are still included in the Total CIP costs. However, the City's portion of those projects is 0% so the impact fee eligible amount on those projects is \$0. Chapter 395 requires that projects must be shown on the CIP in order for impact fee funds to be used to pay for them. By still including these projects in the CIP list, the City will have the flexibility to use impact fee funds to pay for part of them or all of them should circumstances change in the future.

Credit Calculations

Using the selected methodology from Chapter 395 requires that the credit be calculated based on "... the portion of ad valorem tax and utility service revenues generated by new service units during the program period that is used for the payment of improvements, including the payment of debt, that are included in the capital improvements plan." In this case, that means the credit will come from a portion of the payments of existing debt and proposed debt paid through rates. In both scenarios, only the portion paid for by the new service units added in the 10-year period is considered. Additionally, only the payments made during the 10-year impact fee period are considered.

For example, if the payment on impact fee eligible projects in Year 1 was \$1,000,000 and there were 1,000 new service units out of 10,000 total service units in the system (9,000 existing and 1,000 new), then the credit would be $1,000/10,000 \times \$1,000,000 = \$100,000$. If the payment in Year 2 was still \$1M and 1,000 more service units were added, the credit would be $2,000/11,000 \times \$1,000,000 = \$181,818$. This would continue until Year 10 and no further payments would be counted.

The portion of the existing and proposed debt payments between 2026 and 2035 that are for eligible CIP costs between 2026 and 2035 were totaled to calculate the credit.

Details of the credit calculations are shown in the **Appendix**.

Maximum Allowable Impact Fee per LUE Calculations

Once the impact fee eligible costs and the credit have been determined, the maximum allowable impact fee can be found by following a few simple steps as outlined below.

Step 1 – Total Impact Fee Eligible Costs

Add up the existing and proposed Impact Fee eligible costs, making sure that only the costs associated with serving growth in the 10-year Impact Fee study period are being counted.

Table 1. Total IF Eligible Costs

Component	Amount
Existing CIP IF Eligible Costs	\$9,881,266
Proposed CIP IF Eligible Costs	\$130,894,601
Total IF Eligible Costs	\$140,775,867

Step 2 – Total Credit

Add up the credit from the existing debt and the proposed debt, making sure that only the costs associated with serving growth in the 10-year IF study period are being counted.

Table 2. Total Credit

Component	Amount
Credit from Existing Debt	\$4,844,635
Credit from Proposed Debt	\$1,034,216
Total Credit	\$5,878,851

Step 3 – Maximum Allowable IF Costs

The maximum allowable IF costs can be determined by subtracting the Total Credit amount from the Total IF Costs amount.

Table 3. Max Allowable IF Costs

Component	Amount
Total IF Eligible Costs	\$140,775,867
- Total Credit	- \$5,878,851
Max Allowable IF Costs	\$134,897,016

Step 4 – Maximum Allowable IF per LUE

The maximum allowable Impact Fee per LUE can be determined by dividing the Maximum Allowable Impact Fee Costs by the total number of LUEs in the 10-year period.

Table 4. Max Allowable IF per LUE

Component	Amount
Max Allowable IF Costs	\$134,897,016
LUEs in 10-Year Period	9,291
Max Allowable IF per LUE	\$14,519.11

APPENDIX:

Credit Analysis Model Export



City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
February 5, 2026
Preliminary Credit Analysis Summary

Existing CIP IF Eligible Costs	\$9,881,266
Proposed CIP IF Eligible Costs	\$130,894,601
Total IF Eligible Costs	\$140,775,867

Existing Debt Credit	\$4,844,635
Proposed Debt Credit	\$1,034,216
Total Credit	\$5,878,851
<i>Total Credit %</i>	<i>4.2%</i>

Growth in LUEs in 10-Year Period	9,291
----------------------------------	-------

Total IF Eligible Costs	\$140,775,867
- Credit	-\$5,878,851
Max Allowable IF Costs	\$134,897,016

Total IF Eligible Costs per LUE	\$15,151.85
- Credit per LUE	-\$632.75
Max Allowable IF Costs per LUE	\$14,519.11

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
February 5, 2026
Inputs

Project	
Client	City of San Marcos
Project	2025 Water Impact Fee Credit Analysis
Report	FINAL Report
Date	February 5, 2026

General	
Units	LUE
Start Year (Year 0)	2025
Years	10

Financing	
Payments	20
Interest	5%
Issuance	0%

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
February 5, 2026
LUE Calcs

Provided Data

Table 7: 10-Year LUE Projections

Year	LUE
2025	42,426
2027	44,140
2029	45,923
2031	47,779
2033	49,709
2035	51,717

Table 6: 2025 Water Meters and LUE

Meter Size	Meter Count	LUE/Meter	LUE
5/8"	16,002	1	16,002
3/4"	232	1.5	348
1"	533	2.5	1,333
1.5"	238	5	1,190
2"	502	8	4,016
3"	138	17.5	2,415
4"	43	30	1,290
6"	27	67.5	1,823
8"	54	240	12,960
10"	3	350	1,050
Total	17,772	-	42,426

Source: 11/26/25 Email from Plummer (Qiwen Zhang), and Page 8 of Water Impact Fee Study, October 2025

The SUE value of 0.4 gpm was estimated by Plummer in 2017 using the San Marcos 2017 SUE Determination report. The estimate was based on August 2017 MeterSense water interval data for the City of San Marcos. The report (Project No. 0600-018-01, dated December 18, 2017) was prepared for Laurie Moyer, P.E. by Stephen J. Coonan, P.E. (TX No. 65516).

LUE Calculations

Beginning LUEs	42,426	(from Page 8 of report)
Growth Rate	2%	(from Page 8 of report)

Year	Total LUEs	Rounded Total LUEs	Added LUEs	nulative Added LUEs
2025	42,426	42,426	0	0
2026	43,275	43,275	849	849
2027	44,140	44,140	865	1,714
2028	45,023	45,023	883	2,597
2029	45,923	45,923	900	3,497
2030	46,842	46,842	918	4,416
2031	47,779	47,779	937	5,353
2032	48,734	48,734	956	6,308
2033	49,709	49,709	975	7,283
2034	50,703	50,703	994	8,277
2035	51,717	51,717	1,014	9,291

Added LUEs	9,291
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WMP CIP No.	CIP Name	Project Cost	2025 Use*	2035 Use*	IF Use	Total Capacity	Unit	New LUE Served	% Capacity Utilization of New LUE	% of Project Paid for by City	% Eligible	Eligible Cost	Include	ID	Notes
Pumping Capacity		\$1,430,000										\$0			
2	Replace Soyars Pumps	\$1,430,000	1,020	1,200	180	1,200	gpm	3,000	15.00%	0.00%	0.00%		☐		Not included because built by developer per City email 1/19/2026
Storage		\$5,992,529										\$5,992,529			
A2	Surface Water Treatment Plant IMPR	\$5,992,529	0	1,561	1,561	1,561	gpm	3,903	100.00%	100.00%	100.00%	\$5,992,529	☒	E-1	Appears to be actual cost
Supply		\$0										\$0			
Transmission / Distribution		\$5,653,390										\$3,888,737			
3	Willow Creek Connections to McCarty Pressure Plane	\$117,000	392	783	392	783	gpm	979	50.00%	100.00%	50.00%	\$58,500	☒	E-2	City said to keep at \$120k in 1/19/2026, removed \$3k loan interest per Appendix
13	Airport Extension	\$1,648,775	10	1,763	1,753	1,763	gpm	4,382	99.43%	100.00%	99.43%	\$1,639,422	☒	E-3	
A3	Blanco Vista Waterline Improvements	\$494,017	0	7,051	7,051	7,051	gpm	17,627	100.00%	100.00%	100.00%	\$494,017	☒	E-4	
A1	Comanche 24" Water Trans Main	\$3,393,598	3,525	7,051	3,525	7,051	gpm	8,813	50.00%	100.00%	50.00%	\$1,696,799	☒	E-5	
Design		\$0										\$0			
Grand Total		\$13,075,919										\$9,881,266			

City of San Marcos
 2025 Water Impact Fee Credit Analysis - FINAL Report
 February 5, 2026
 Existing Impact Fee Cip Split

ID	Project Type	WMP CIP No.	CIP Name	Total Cost	Eligible Cost	Cash %	Bond %	Cash \$	Bond \$
E-1	Storage	A2	Surface Water Treatment Plant IMPR	\$5,992,529	\$5,992,529	100%	0%	\$5,992,529	\$0
E-2	Transmission / Distribution	3	Willow Creek Connections to McCarty Pressure Plane	\$117,000	\$58,500	100%	0%	\$58,500	\$0
E-3	Transmission / Distribution	13	Airport Extension	\$1,648,775	\$1,639,422	100%	0%	\$1,639,422	\$0
E-4	Transmission / Distribution	A3	Blanco Vista Waterline Improvements	\$494,017	\$494,017	100%	0%	\$494,017	\$0
E-5	Transmission / Distribution	A1	Comanche 24" Water Trans Main	\$3,393,598	\$1,696,799	100%	0%	\$1,696,799	\$0
TOTAL				\$11,645,919	\$9,881,266			\$9,881,266	\$0

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
February 5, 2026
2017C ARWA Revenue Bond

Alliance Regional Water Authority

\$11,450,000 Contract Revenue Bonds (Regional Water Supply Contract Project - City of San Marcos, Texas), Series 2017C (20-Year Low Interest Loan)

Uses of Funds

Cost of Issuance	\$268,765.50
Deposit to Project Construction Fund	\$11,181,234.50
Total Uses	\$11,450,000.00

Debt Service Schedule

Date	Principal	Interest	Total P+I	Fiscal Total
11/22/2017				
8/15/2018		\$132,039.88	\$132,039.88	
9/30/2018				\$132,039.88
2/15/2019		\$90,369.50	\$90,369.50	
8/15/2019	\$540,000.00	\$90,369.50	\$630,369.50	
9/30/2019				\$720,739.00
2/15/2020		\$88,668.50	\$88,668.50	
8/15/2020	\$545,000.00	\$88,668.50	\$633,668.50	
9/30/2020				\$722,337.00
2/15/2021		\$86,761.00	\$86,761.00	
8/15/2021	\$550,000.00	\$86,761.00	\$636,761.00	
9/30/2021				\$723,522.00
2/15/2022		\$84,616.00	\$84,616.00	
8/15/2022	\$550,000.00	\$84,616.00	\$634,616.00	
9/30/2022				\$719,232.00
2/15/2023		\$82,141.00	\$82,141.00	
8/15/2023	\$555,000.00	\$82,141.00	\$637,141.00	
9/30/2023				\$719,282.00
2/15/2024		\$79,338.25	\$79,338.25	
8/15/2024	\$560,000.00	\$79,338.25	\$639,338.25	
9/30/2024				\$718,676.50
2/15/2025		\$76,258.25	\$76,258.25	
8/15/2025	\$570,000.00	\$76,258.25	\$646,258.25	
9/30/2025				\$722,516.50
2/15/2026		\$72,809.75	\$72,809.75	
8/15/2026	\$575,000.00	\$72,809.75	\$647,809.75	
9/30/2026				\$720,619.50
2/15/2027		\$69,101.00	\$69,101.00	
8/15/2027	\$580,000.00	\$69,101.00	\$649,101.00	
9/30/2027				\$718,202.00

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
February 5, 2026
2017C ARWA Revenue Bond

Alliance Regional Water Authority

\$11,450,000 Contract Revenue Bonds (Regional Water Supply Contract Project - City of San Marcos, Texas), Series 2017C (20-Year Low Interest Loan)

Uses of Funds

Cost of Issuance	\$268,765.50
Deposit to Project Construction Fund	\$11,181,234.50
Total Uses	\$11,450,000.00

Debt Service Schedule

Date	Principal	Interest	Total P+I	Fiscal Total
2/15/2028		\$65,128.00	\$65,128.00	
8/15/2028	\$590,000.00	\$65,128.00	\$655,128.00	
9/30/2028				\$720,256.00
2/15/2029		\$60,673.50	\$60,673.50	
8/15/2029	\$600,000.00	\$60,673.50	\$660,673.50	
9/30/2029				\$721,347.00
2/15/2030		\$55,633.50	\$55,633.50	
8/15/2030	\$610,000.00	\$55,633.50	\$665,633.50	
9/30/2030				\$721,267.00
2/15/2031		\$50,052.00	\$50,052.00	
8/15/2031	\$620,000.00	\$50,052.00	\$670,052.00	
9/30/2031				\$720,104.00
2/15/2032		\$43,914.00	\$43,914.00	
8/15/2032	\$630,000.00	\$43,914.00	\$673,914.00	
9/30/2032				\$717,828.00
2/15/2033		\$37,425.00	\$37,425.00	
8/15/2033	\$645,000.00	\$37,425.00	\$682,425.00	
9/30/2033				\$719,850.00
2/15/2034		\$30,555.75	\$30,555.75	
8/15/2034	\$660,000.00	\$30,555.75	\$690,555.75	
9/30/2034				\$721,111.50
2/15/2035		\$23,361.75	\$23,361.75	
8/15/2035	\$675,000.00	\$23,361.75	\$698,361.75	
9/30/2035				\$721,723.50
2/15/2036		\$15,869.25	\$15,869.25	
8/15/2036	\$690,000.00	\$15,869.25	\$705,869.25	
9/30/2036				\$721,738.50
2/15/2037		\$8,072.25	\$8,072.25	
8/15/2037	\$705,000.00	\$8,072.25	\$713,072.25	
9/30/2037				\$721,144.50
Total	\$11,450,000.00	\$2,373,536.38	\$13,823,536.38	\$13,823,536.38

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
February 5, 2026
2019C ARWA Revenue Bond

Alliance Regional Water Authority
\$30,800,000 Contract Revenue Bonds (Regional Water Supply Contract Project - City of San Marcos, Texas), Series 2019C (20-Year Low Interest Loan) 11/20/19 Closing and Final Rates Provided by the TWDB on 9/30/19

Uses of Funds

Cost of Issuance	\$393,673.00
Deposit to Project Construction Fund	\$30,406,327.00
Total Uses	\$30,800,000.00

Debt Service Schedule

Date	Principal	Interest	Total P+I	Fiscal Total
11/20/2019				
8/15/2020		\$303,502.29	\$303,502.29	
9/30/2020				\$303,502.29
2/15/2021		\$206,152.50	\$206,152.50	
8/15/2021	\$1,485,000.00	\$206,152.50	\$1,691,152.50	
9/30/2021				\$1,897,305.00
2/15/2022		\$199,915.50	\$199,915.50	
8/15/2022	\$1,500,000.00	\$199,915.50	\$1,699,915.50	
9/30/2022				\$1,899,831.00
2/15/2023		\$193,540.50	\$193,540.50	
8/15/2023	\$1,510,000.00	\$193,540.50	\$1,703,540.50	
9/30/2023				\$1,897,081.00
2/15/2024		\$186,972.00	\$186,972.00	
8/15/2024	\$1,520,000.00	\$186,972.00	\$1,706,972.00	
9/30/2024				\$1,893,944.00
2/15/2025		\$180,208.00	\$180,208.00	
8/15/2025	\$1,530,000.00	\$180,208.00	\$1,710,208.00	
9/30/2025				\$1,890,416.00
2/15/2026		\$173,323.00	\$173,323.00	
8/15/2026	\$1,540,000.00	\$173,323.00	\$1,713,323.00	
9/30/2026				\$1,886,646.00
2/15/2027		\$166,085.00	\$166,085.00	
8/15/2027	\$1,555,000.00	\$166,085.00	\$1,721,085.00	
9/30/2027				\$1,887,170.00
2/15/2028		\$158,387.75	\$158,387.75	
8/15/2028	\$1,570,000.00	\$158,387.75	\$1,728,387.75	
9/30/2028				\$1,886,775.50
2/15/2029		\$150,459.25	\$150,459.25	
8/15/2029	\$1,580,000.00	\$150,459.25	\$1,730,459.25	
9/30/2029				\$1,880,918.50

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
February 5, 2026
2019C ARWA Revenue Bond

Alliance Regional Water Authority
\$30,800,000 Contract Revenue Bonds (Regional Water Supply Contract Project - City of San Marcos, Texas), Series 2019C (20-Year Low Interest Loan) 11/20/19 Closing and Final Rates Provided by the TWDB on 9/30/19

Uses of Funds

Cost of Issuance	\$393,673.00
Deposit to Project Construction Fund	\$30,406,327.00
Total Uses	\$30,800,000.00

Debt Service Schedule

Date	Principal	Interest	Total P+I	Fiscal Total
2/15/2030		\$142,243.25	\$142,243.25	
8/15/2030	\$1,595,000.00	\$142,243.25	\$1,737,243.25	
9/30/2030				\$1,879,486.50
2/15/2031		\$132,912.50	\$132,912.50	
8/15/2031	\$1,615,000.00	\$132,912.50	\$1,747,912.50	
9/30/2031				\$1,880,825.00
2/15/2032		\$122,092.00	\$122,092.00	
8/15/2032	\$1,635,000.00	\$122,092.00	\$1,757,092.00	
9/30/2032				\$1,879,184.00
2/15/2033		\$109,911.25	\$109,911.25	
8/15/2033	\$1,655,000.00	\$109,911.25	\$1,764,911.25	
9/30/2033				\$1,874,822.50
2/15/2034		\$96,174.75	\$96,174.75	
8/15/2034	\$1,680,000.00	\$96,174.75	\$1,776,174.75	
9/30/2034				\$1,872,349.50
2/15/2035		\$81,894.75	\$81,894.75	
8/15/2035	\$1,710,000.00	\$81,894.75	\$1,791,894.75	
9/30/2035				\$1,873,789.50
2/15/2036		\$67,017.75	\$67,017.75	
8/15/2036	\$1,735,000.00	\$67,017.75	\$1,802,017.75	
9/30/2036				\$1,869,035.50
2/15/2037		\$50,969.00	\$50,969.00	
8/15/2037	\$1,765,000.00	\$50,969.00	\$1,815,969.00	
9/30/2037				\$1,866,938.00
2/15/2038		\$34,201.50	\$34,201.50	
8/15/2038	\$1,795,000.00	\$34,201.50	\$1,829,201.50	
9/30/2038				\$1,863,403.00
2/15/2039		\$16,790.00	\$16,790.00	
8/15/2039	\$1,825,000.00	\$16,790.00	\$1,841,790.00	
9/30/2039				\$1,858,580.00
Total	\$30,800,000.00	\$5,242,002.79	\$36,042,002.79	\$36,042,002.79

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
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2020C ARWA Revenue Bond

Alliance Regional Water Authority

\$43,955,000 Contract Revenue Bonds (Regional Water Supply Contract Project - City of San Marcos, Texas), Series 2020C (20-Year Low Interest - Level) 11/20/20 Closing and Final Rates Provided by the TWDB on 10/1/20

Uses of Funds

Cost of Issuance	\$495,861.00
Deposit to Project Construction Fund	\$43,459,139.00
Total Uses	\$43,955,000.00

Debt Service Schedule

Date	Principal	Interest	Total P+I	Fiscal Total
11/20/2020				
8/15/2021		\$290,256.34	\$290,256.34	
9/30/2021				\$290,256.34
2/15/2022		\$197,155.25	\$197,155.25	
8/15/2022	\$2,190,000.00	\$197,155.25	\$2,387,155.25	
9/30/2022				\$2,584,310.50
2/15/2023		\$195,841.25	\$195,841.25	
8/15/2023	\$2,190,000.00	\$195,841.25	\$2,385,841.25	
9/30/2023				\$2,581,682.50
2/15/2024		\$194,308.25	\$194,308.25	
8/15/2024	\$2,195,000.00	\$194,308.25	\$2,389,308.25	
9/30/2024				\$2,583,616.50
2/15/2025		\$192,223.00	\$192,223.00	
8/15/2025	\$2,200,000.00	\$192,223.00	\$2,392,223.00	
9/30/2025				\$2,584,446.00
2/15/2026		\$189,693.00	\$189,693.00	
8/15/2026	\$2,210,000.00	\$189,693.00	\$2,399,693.00	
9/30/2026				\$2,589,386.00
2/15/2027		\$186,046.50	\$186,046.50	
8/15/2027	\$2,215,000.00	\$186,046.50	\$2,401,046.50	
9/30/2027				\$2,587,093.00
2/15/2028		\$181,173.50	\$181,173.50	
8/15/2028	\$2,225,000.00	\$181,173.50	\$2,406,173.50	
9/30/2028				\$2,587,347.00
2/15/2029		\$175,388.50	\$175,388.50	
8/15/2029	\$2,235,000.00	\$175,388.50	\$2,410,388.50	
9/30/2029				\$2,585,777.00
2/15/2030		\$168,460.00	\$168,460.00	
8/15/2030	\$2,250,000.00	\$168,460.00	\$2,418,460.00	
9/30/2030				\$2,586,920.00

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
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2020C ARWA Revenue Bond

Alliance Regional Water Authority

\$43,955,000 Contract Revenue Bonds (Regional Water Supply Contract Project - City of San Marcos, Texas), Series 2020C (20-Year Low Interest - Level) 11/20/20 Closing and Final Rates Provided by the TWDB on 10/1/20

Uses of Funds

Cost of Issuance	\$495,861.00
Deposit to Project Construction Fund	\$43,459,139.00
Total Uses	\$43,955,000.00

Debt Service Schedule

Date	Principal	Interest	Total P+I	Fiscal Total
2/15/2031		\$160,697.50	\$160,697.50	
8/15/2031	\$2,265,000.00	\$160,697.50	\$2,425,697.50	
9/30/2031				\$2,586,395.00
2/15/2032		\$150,391.75	\$150,391.75	
8/15/2032	\$2,285,000.00	\$150,391.75	\$2,435,391.75	
9/30/2032				\$2,585,783.50
2/15/2033		\$138,052.75	\$138,052.75	
8/15/2033	\$2,310,000.00	\$138,052.75	\$2,448,052.75	
9/30/2033				\$2,586,105.50
2/15/2034		\$123,846.25	\$123,846.25	
8/15/2034	\$2,340,000.00	\$123,846.25	\$2,463,846.25	
9/30/2034				\$2,587,692.50
2/15/2035		\$108,753.25	\$108,753.25	
8/15/2035	\$2,375,000.00	\$108,753.25	\$2,483,753.25	
9/30/2035				\$2,592,506.50
2/15/2036		\$92,603.25	\$92,603.25	
8/15/2036	\$2,410,000.00	\$92,603.25	\$2,502,603.25	
9/30/2036				\$2,595,206.50
2/15/2037		\$75,612.75	\$75,612.75	
8/15/2037	\$2,450,000.00	\$75,612.75	\$2,525,612.75	
9/30/2037				\$2,601,225.50
2/15/2038		\$57,850.25	\$57,850.25	
8/15/2038	\$2,490,000.00	\$57,850.25	\$2,547,850.25	
9/30/2038				\$2,605,700.50
2/15/2039		\$39,299.75	\$39,299.75	
8/15/2039	\$2,535,000.00	\$39,299.75	\$2,574,299.75	
9/30/2039				\$2,613,599.50
2/15/2040		\$20,033.75	\$20,033.75	
8/15/2040	\$2,585,000.00	\$20,033.75	\$2,605,033.75	
9/30/2040				\$2,625,067.50
Total	\$43,955,000.00	\$5,585,117.34	\$49,540,117.34	\$49,540,117.34

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
February 5, 2026
2022C ARWA Revenue Bond

Alliance Regional Water Authority
\$17,210,000 Contract Revenue Bonds (Regional Water Supply Contract Project - City of San Marcos, Texas), Series 2022C (20-Year Low Interest - Level) 11/16/22 Closing and Final Rates Provided by the TWDB on 10/5/22

Uses of Funds

Cost of Issuance	\$283,493.00
Deposit to Project Construction Fund	\$16,926,507.00
Total Uses	\$17,210,000.00

Debt Service Schedule

Date	Principal	Interest	Total P+I	Fiscal Total
9/30/2023				
2/15/2024		\$260,519.50	\$260,519.50	
8/15/2024	\$740,000.00	\$260,519.50	\$1,000,519.50	
9/30/2024				\$1,261,039.00
2/15/2025		\$251,528.50	\$251,528.50	
8/15/2025	\$755,000.00	\$251,528.50	\$1,006,528.50	
9/30/2025				\$1,258,057.00
2/15/2026		\$242,242.00	\$242,242.00	
8/15/2026	\$770,000.00	\$242,242.00	\$1,012,242.00	
9/30/2026				\$1,254,484.00
2/15/2027		\$232,655.50	\$232,655.50	
8/15/2027	\$785,000.00	\$232,655.50	\$1,017,655.50	
9/30/2027				\$1,250,311.00
2/15/2028		\$222,764.50	\$222,764.50	
8/15/2028	\$800,000.00	\$222,764.50	\$1,022,764.50	
9/30/2028				\$1,245,529.00
2/15/2029		\$212,564.50	\$212,564.50	
8/15/2029	\$815,000.00	\$212,564.50	\$1,027,564.50	
9/30/2029				\$1,240,129.00
2/15/2030		\$202,051.00	\$202,051.00	
8/15/2030	\$830,000.00	\$202,051.00	\$1,032,051.00	
9/30/2030				\$1,234,102.00
2/15/2031		\$191,136.50	\$191,136.50	
8/15/2031	\$845,000.00	\$191,136.50	\$1,036,136.50	
9/30/2031				\$1,227,273.00
2/15/2032		\$179,813.50	\$179,813.50	
8/15/2032	\$865,000.00	\$179,813.50	\$1,044,813.50	
9/30/2032				\$1,224,627.00
2/15/2033		\$168,049.50	\$168,049.50	
8/15/2033	\$880,000.00	\$168,049.50	\$1,048,049.50	

City of San Marcos
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2022C ARWA Revenue Bond

Alliance Regional Water Authority

\$17,210,000 Contract Revenue Bonds (Regional Water Supply Contract Project - City of San Marcos, Texas), Series 2022C (20-Year Low Interest - Level) 11/16/22 Closing and Final Rates Provided by the TWDB on 10/5/22

Uses of Funds

Cost of Issuance	\$283,493.00
Deposit to Project Construction Fund	\$16,926,507.00
Total Uses	\$17,210,000.00

Debt Service Schedule

Date	Principal	Interest	Total P+I	Fiscal Total
9/30/2033				\$1,216,099.00
2/15/2034		\$155,465.50	\$155,465.50	
8/15/2034	\$905,000.00	\$155,465.50	\$1,060,465.50	
9/30/2034				\$1,215,931.00
2/15/2035		\$141,845.25	\$141,845.25	
8/15/2035	\$925,000.00	\$141,845.25	\$1,066,845.25	
9/30/2035				\$1,208,690.50
2/15/2036		\$127,507.75	\$127,507.75	
8/15/2036	\$955,000.00	\$127,507.75	\$1,082,507.75	
9/30/2036				\$1,210,015.50
2/15/2037		\$111,368.25	\$111,368.25	
8/15/2037	\$980,000.00	\$111,368.25	\$1,091,368.25	
9/30/2037				\$1,202,736.50
2/15/2038		\$94,610.25	\$94,610.25	
8/15/2038	\$1,010,000.00	\$94,610.25	\$1,104,610.25	
9/30/2038				\$1,199,220.50
2/15/2039		\$77,187.75	\$77,187.75	
8/15/2039	\$1,040,000.00	\$77,187.75	\$1,117,187.75	
9/30/2039				\$1,194,375.50
2/15/2040		\$59,039.75	\$59,039.75	
8/15/2040	\$1,070,000.00	\$59,039.75	\$1,129,039.75	
9/30/2040				\$1,188,079.50
2/15/2041		\$40,154.25	\$40,154.25	
8/15/2041	\$1,105,000.00	\$40,154.25	\$1,145,154.25	
9/30/2041				\$1,185,308.50
2/15/2042		\$20,430.00	\$20,430.00	
8/15/2042	\$1,135,000.00	\$20,430.00	\$1,155,430.00	
9/30/2042				\$1,175,860.00
Total	\$17,210,000.00	\$5,981,867.50	\$23,191,867.50	\$23,191,867.50

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
#####
2024C ARWA Revenue Bond

Alliance Regional Water Authority

\$49,485,000 Contract Revenue Bonds (Regional Water Supply Contract Project - City of San Marcos, Texas), Series 2024C (20-Year Low Interest - Level)

Uses of Funds	Total	Construction	Refund
Cost of Issuance	\$541,847.00	\$351,060.28	\$190,786.72
Deposit to Refunding Fund	\$17,233,099.95		\$17,233,099.95
Deposit to Project Construction Fur	\$31,710,053.05	\$31,710,053.05	
Total Uses	\$49,485,000.00	\$32,061,113.33	\$17,423,886.67

Debt Service Schedule

Date	Principal	Interest	Total P+I	Fiscal Total	Principal	Construction Fund Portion Interest	Total P+I	Fiscal Total
12/2/2024								
8/15/2025		\$844,511.54	\$844,511.54			\$547,155.30	\$547,155.30	
9/30/2025				\$844,511.54				\$547,155.30
2/15/2026		\$600,838.25	\$600,838.25			\$389,280.45	\$389,280.45	
8/15/2026	\$2,115,000.00	\$600,838.25	\$2,715,838.25		\$1,370,299.18	\$389,280.45	\$1,759,579.63	
9/30/2026				\$3,316,676.50				\$2,148,860.08
2/15/2027		\$581,591.75	\$581,591.75			\$376,810.73	\$376,810.73	
8/15/2027	\$2,155,000.00	\$581,591.75	\$2,736,591.75		\$1,396,215.00	\$376,810.73	\$1,773,025.73	
9/30/2027				\$3,318,183.50				\$2,149,836.46
2/15/2028		\$562,196.75	\$562,196.75			\$364,244.80	\$364,244.80	
8/15/2028	\$2,200,000.00	\$562,196.75	\$2,762,196.75		\$1,425,370.30	\$364,244.80	\$1,789,615.10	
9/30/2028				\$3,324,393.50				\$2,153,859.89
2/15/2029		\$542,066.75	\$542,066.75			\$351,202.66	\$351,202.66	
8/15/2029	\$2,245,000.00	\$542,066.75	\$2,787,066.75		\$1,454,525.60	\$351,202.66	\$1,805,728.26	
9/30/2029				\$3,329,133.50				\$2,156,930.92

City of San Marcos
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#####
2024C ARWA Revenue Bond

Alliance Regional Water Authority

\$49,485,000 Contract Revenue Bonds (Regional Water Supply Contract Project - City of San Marcos, Texas), Series 2024C (20-Year Low Interest - Level)

Uses of Funds	Total	Construction	Refund
Cost of Issuance	\$541,847.00	\$351,060.28	\$190,786.72
Deposit to Refunding Fund	\$17,233,099.95		\$17,233,099.95
Deposit to Project Construction Fur	\$31,710,053.05	\$31,710,053.05	
Total Uses	\$49,485,000.00	\$32,061,113.33	\$17,423,886.67

Debt Service Schedule

Date	Principal	Interest	Total P+I	Fiscal Total	Principal	Interest	Total P+I	Fiscal Total
2/15/2030		\$521,300.50	\$521,300.50			\$337,748.30	\$337,748.30	
8/15/2030	\$2,285,000.00	\$521,300.50	\$2,806,300.50		\$1,480,441.43	\$337,748.30	\$1,818,189.72	
9/30/2030				\$3,327,601.00				\$2,155,938.02
2/15/2031		\$499,478.75	\$499,478.75			\$323,610.08	\$323,610.08	
8/15/2031	\$2,335,000.00	\$499,478.75	\$2,834,478.75		\$1,512,836.21	\$323,610.08	\$1,836,446.29	
9/30/2031				\$3,333,957.50				\$2,160,056.37
2/15/2032		\$476,128.75	\$476,128.75			\$308,481.72	\$308,481.72	
8/15/2032	\$2,385,000.00	\$476,128.75	\$2,861,128.75		\$1,545,230.99	\$308,481.72	\$1,853,712.70	
9/30/2032				\$3,337,257.50				\$2,162,194.42
2/15/2033		\$451,563.25	\$451,563.25			\$292,565.84	\$292,565.84	
8/15/2033	\$2,435,000.00	\$451,563.25	\$2,886,563.25		\$1,577,625.76	\$292,565.84	\$1,870,191.60	
9/30/2033				\$3,338,126.50				\$2,162,757.44
2/15/2034		\$425,630.50	\$425,630.50			\$275,764.12	\$275,764.12	
8/15/2034	\$2,490,000.00	\$425,630.50	\$2,915,630.50		\$1,613,260.02	\$275,764.12	\$1,889,024.15	
9/30/2034				\$3,341,261.00				\$2,164,788.27

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
#####
2024C ARWA Revenue Bond

Alliance Regional Water Authority

\$49,485,000 Contract Revenue Bonds (Regional Water Supply Contract Project - City of San Marcos, Texas), Series 2024C (20-Year Low Interest - Level)

Uses of Funds	Total	Construction	Refund
Cost of Issuance	\$541,847.00	\$351,060.28	\$190,786.72
Deposit to Refunding Fund	\$17,233,099.95		\$17,233,099.95
Deposit to Project Construction Fur	\$31,710,053.05	\$31,710,053.05	
Total Uses	\$49,485,000.00	\$32,061,113.33	\$17,423,886.67

Debt Service Schedule

Date	Principal	Interest	Total P+I	Fiscal Total	Principal	Interest	Total P+I	Fiscal Total
2/15/2035		\$398,489.50	\$398,489.50			\$258,179.59	\$258,179.59	
8/15/2035	\$2,545,000.00	\$398,489.50	\$2,943,489.50		\$1,648,894.28	\$258,179.59	\$1,907,073.87	
9/30/2035				\$3,341,979.00				\$2,165,253.46
2/15/2036		\$368,967.50	\$368,967.50			\$239,052.42	\$239,052.42	
8/15/2036	\$2,605,000.00	\$368,967.50	\$2,973,967.50		\$1,687,768.02	\$239,052.42	\$1,926,820.43	
9/30/2036				\$3,342,935.00				\$2,165,872.85
2/15/2037		\$337,056.25	\$337,056.25			\$218,377.26	\$218,377.26	
8/15/2037	\$2,675,000.00	\$337,056.25	\$3,012,056.25		\$1,733,120.71	\$218,377.26	\$1,951,497.96	
9/30/2037				\$3,349,112.50				\$2,169,875.22
2/15/2038		\$302,816.25	\$302,816.25			\$196,193.31	\$196,193.31	
8/15/2038	\$2,745,000.00	\$302,816.25	\$3,047,816.25		\$1,778,473.40	\$196,193.31	\$1,974,666.71	
9/30/2038				\$3,350,632.50				\$2,170,860.02
2/15/2039		\$266,307.75	\$266,307.75			\$172,539.62	\$172,539.62	
8/15/2039	\$2,825,000.00	\$266,307.75	\$3,091,307.75		\$1,830,305.05	\$172,539.62	\$2,002,844.66	
9/30/2039				\$3,357,615.50				\$2,175,384.28

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
#####
2024C ARWA Revenue Bond

Alliance Regional Water Authority

\$49,485,000 Contract Revenue Bonds (Regional Water Supply Contract Project - City of San Marcos, Texas), Series 2024C (20-Year Low Interest - Level)

Uses of Funds	Total	Construction	Refund
Cost of Issuance	\$541,847.00	\$351,060.28	\$190,786.72
Deposit to Refunding Fund	\$17,233,099.95		\$17,233,099.95
Deposit to Project Construction Fur	\$31,710,053.05	\$31,710,053.05	
Total Uses	\$49,485,000.00	\$32,061,113.33	\$17,423,886.67

Debt Service Schedule

Date	Principal	Interest	Total P+I	Fiscal Total	Construction Fund Portion			
					Principal	Interest	Total P+I	Fiscal Total
2/15/2040		\$227,464.00	\$227,464.00			\$147,372.92	\$147,372.92	
8/15/2040	\$2,905,000.00	\$227,464.00	\$3,132,464.00		\$1,882,136.69	\$147,372.92	\$2,029,509.62	
9/30/2040				\$3,359,928.00				\$2,176,882.54
2/15/2041		\$186,213.00	\$186,213.00			\$120,646.58	\$120,646.58	
8/15/2041	\$2,995,000.00	\$186,213.00	\$3,181,213.00		\$1,940,447.30	\$120,646.58	\$2,061,093.88	
9/30/2041				\$3,367,426.00				\$2,181,740.46
2/15/2042		\$142,935.25	\$142,935.25			\$92,607.12	\$92,607.12	
8/15/2042	\$3,085,000.00	\$142,935.25	\$3,227,935.25		\$1,998,757.90	\$92,607.12	\$2,091,365.02	
9/30/2042				\$3,370,870.50				\$2,183,972.14
2/15/2043		\$97,740.00	\$97,740.00			\$63,325.32	\$63,325.32	
8/15/2043	\$3,180,000.00	\$97,740.00	\$3,277,740.00		\$2,060,307.98	\$63,325.32	\$2,123,633.30	
9/30/2043				\$3,375,480.00				\$2,186,958.61
2/15/2044		\$50,676.00	\$50,676.00			\$32,832.76	\$32,832.76	
8/15/2044	\$3,280,000.00	\$50,676.00	\$3,330,676.00		\$2,125,097.54	\$32,832.76	\$2,157,930.30	
9/30/2044				\$3,381,352.00				\$2,190,763.05
Total	\$49,485,000.00	\$14,923,433.04	\$64,408,433.04	\$64,408,433.04	\$32,061,113.36	\$9,668,826.50	\$41,729,939.83	\$41,729,939.80

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
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2025C ARWA Revenue Bond

Alliance Regional Water Authority
\$12,015,000 Contract Revenue Bonds (Regional Water Supply Contract Project - City of San Marcos, Texas), Series 2025C

Uses of Funds

Cost of Issuance	\$241,877.00
Deposit to Project Construction Fund	\$11,773,123.00
Total Uses	\$12,015,000.00

Debt Service Schedule

Date	Principal	Interest	Total P+I	Fiscal Total
12/11/2025				
8/15/2026		\$215,591.28	\$215,591.28	
9/30/2026				\$215,591.28
2/15/2027		\$159,042.75	\$159,042.75	
8/15/2027	\$505,000.00	\$159,042.75	\$664,042.75	
9/30/2027				\$823,085.50
2/15/2028		\$154,750.25	\$154,750.25	
8/15/2028	\$515,000.00	\$154,750.25	\$669,750.25	
9/30/2028				\$824,500.50
2/15/2029		\$150,372.75	\$150,372.75	
8/15/2029	\$525,000.00	\$150,372.75	\$675,372.75	
9/30/2029				\$825,745.50
2/15/2030		\$145,831.50	\$145,831.50	
8/15/2030	\$535,000.00	\$145,831.50	\$680,831.50	
9/30/2030				\$826,663.00
2/15/2031		\$140,963.00	\$140,963.00	
8/15/2031	\$545,000.00	\$140,963.00	\$685,963.00	
9/30/2031				\$826,926.00
2/15/2032		\$135,703.75	\$135,703.75	
8/15/2032	\$555,000.00	\$135,703.75	\$690,703.75	
9/30/2032				\$826,407.50
2/15/2033		\$129,987.25	\$129,987.25	
8/15/2033	\$570,000.00	\$129,987.25	\$699,987.25	
9/30/2033				\$829,974.50
2/15/2034		\$123,859.75	\$123,859.75	
8/15/2034	\$580,000.00	\$123,859.75	\$703,859.75	
9/30/2034				\$827,719.50
2/15/2035		\$117,363.75	\$117,363.75	
8/15/2035	\$595,000.00	\$117,363.75	\$712,363.75	
9/30/2035				\$829,727.50

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
February 5, 2026
2025C ARWA Revenue Bond

Alliance Regional Water Authority
\$12,015,000 Contract Revenue Bonds (Regional Water Supply Contract Project - City of San Marcos, Texas), Series 2025C

Uses of Funds

Cost of Issuance	\$241,877.00
Deposit to Project Construction Fund	\$11,773,123.00
Total Uses	\$12,015,000.00

Debt Service Schedule

Date	Principal	Interest	Total P+I	Fiscal Total
2/15/2036		\$110,402.25	\$110,402.25	
8/15/2036	\$615,000.00	\$110,402.25	\$725,402.25	
9/30/2036				\$835,804.50
2/15/2037		\$102,499.50	\$102,499.50	
8/15/2037	\$630,000.00	\$102,499.50	\$732,499.50	
9/30/2037				\$834,999.00
2/15/2038		\$93,837.00	\$93,837.00	
8/15/2038	\$650,000.00	\$93,837.00	\$743,837.00	
9/30/2038				\$837,674.00
2/15/2039		\$84,477.00	\$84,477.00	
8/15/2039	\$670,000.00	\$84,477.00	\$754,477.00	
9/30/2039				\$838,954.00
2/15/2040		\$74,427.00	\$74,427.00	
8/15/2040	\$690,000.00	\$74,427.00	\$764,427.00	
9/30/2040				\$838,854.00
2/15/2041		\$63,766.50	\$63,766.50	
8/15/2041	\$715,000.00	\$63,766.50	\$778,766.50	
9/30/2041				\$842,533.00
2/15/2042		\$52,326.50	\$52,326.50	
8/15/2042	\$740,000.00	\$52,326.50	\$792,326.50	
9/30/2042				\$844,653.00
2/15/2043		\$40,227.50	\$40,227.50	
8/15/2043	\$765,000.00	\$40,227.50	\$805,227.50	
9/30/2043				\$845,455.00
2/15/2044		\$27,375.50	\$27,375.50	
8/15/2044	\$795,000.00	\$27,375.50	\$822,375.50	
9/30/2044				\$849,751.00
2/15/2045		\$13,940.00	\$13,940.00	
8/15/2045	\$820,000.00	\$13,940.00	\$833,940.00	
9/30/2045				\$847,880.00
Total	\$12,015,000.00	\$4,057,898.28	\$16,072,898.28	\$16,072,898.28

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
February 5, 2026
ARWA Summary

Series	Cost	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
2017C	Principal			\$540,000	\$545,000	\$550,000	\$550,000	\$555,000	\$560,000	\$570,000	\$575,000	\$580,000	\$590,000	\$600,000	\$610,000	\$620,000
	Interest		\$132,040	\$180,739	\$177,337	\$173,522	\$169,232	\$164,282	\$158,677	\$152,517	\$145,620	\$138,202	\$130,256	\$121,347	\$111,267	\$100,104
	Total		\$132,040	\$720,739	\$722,337	\$723,522	\$719,232	\$719,282	\$718,677	\$722,517	\$720,620	\$718,202	\$720,256	\$721,347	\$721,267	\$720,104
2019C	Principal					\$1,485,000	\$1,500,000	\$1,510,000	\$1,520,000	\$1,530,000	\$1,540,000	\$1,555,000	\$1,570,000	\$1,580,000	\$1,595,000	\$1,615,000
	Interest				\$303,502	\$412,305	\$399,831	\$387,081	\$373,944	\$360,416	\$346,646	\$332,170	\$316,776	\$300,919	\$284,487	\$265,825
	Total				\$303,502	\$1,897,305	\$1,899,831	\$1,897,081	\$1,893,944	\$1,890,416	\$1,886,646	\$1,887,170	\$1,886,776	\$1,880,919	\$1,879,487	\$1,880,825
2020C	Principal						\$2,190,000	\$2,190,000	\$2,195,000	\$2,200,000	\$2,210,000	\$2,215,000	\$2,225,000	\$2,235,000	\$2,250,000	\$2,265,000
	Interest						\$290,256	\$394,311	\$391,683	\$388,617	\$384,446	\$379,386	\$372,093	\$362,347	\$350,777	\$336,920
	Total						\$290,256	\$2,584,311	\$2,581,683	\$2,583,617	\$2,584,446	\$2,589,386	\$2,587,093	\$2,587,347	\$2,585,777	\$2,586,920
2022C	Principal								\$740,000	\$755,000	\$770,000	\$785,000	\$800,000	\$815,000	\$830,000	\$845,000
	Interest								\$521,039	\$503,057	\$484,484	\$465,311	\$445,529	\$425,129	\$404,102	\$382,273
	Total								\$1,261,039	\$1,258,057	\$1,254,484	\$1,250,311	\$1,245,529	\$1,240,129	\$1,234,102	\$1,227,273
2024C	Principal										\$1,370,299	\$1,396,215	\$1,425,370	\$1,454,526	\$1,480,441	\$1,512,836
	Interest									\$547,155	\$778,561	\$753,621	\$728,490	\$702,405	\$675,497	\$647,220
	Total									\$547,155	\$2,148,860	\$2,149,836	\$2,153,860	\$2,156,931	\$2,155,938	\$2,160,056
2025C	Principal											\$505,000	\$515,000	\$525,000	\$535,000	\$545,000
	Interest										\$215,591	\$318,086	\$309,501	\$300,746	\$291,663	\$281,926
	Total										\$215,591	\$823,086	\$824,501	\$825,746	\$826,663	\$826,926
Total	Principal	\$0	\$0	\$540,000	\$545,000	\$2,035,000	\$4,240,000	\$4,255,000	\$5,015,000	\$5,055,000	\$6,465,299	\$7,036,215	\$7,125,370	\$7,209,526	\$7,300,441	\$7,402,836
	Interest	\$0	\$132,040	\$180,739	\$480,839	\$876,083	\$963,374	\$943,046	\$1,442,276	\$1,947,591	\$2,350,288	\$2,379,483	\$2,292,898	\$2,201,322	\$2,103,935	\$1,998,743
	Total		\$132,040	\$720,739	\$1,025,839	\$2,911,083	\$5,203,374	\$5,198,046	\$6,457,276	\$7,002,591	\$8,815,587	\$9,415,698	\$9,418,268	\$9,410,848	\$9,404,377	\$9,401,579

	2017C	2019C	2020C	2022C	2024C	2025C	CIP Total	IF Eligible
Cost of Issuance	\$268,766	\$393,673	\$495,861	\$283,493	\$351,060	\$241,877	\$2,034,730	\$954,444
Deposit to Project Construction Fund	\$11,181,235	\$30,406,327	\$43,459,139	\$16,926,507	\$31,710,053	\$11,773,123	\$145,456,384	\$68,230,184
Total Uses	\$11,450,000	\$30,800,000	\$43,955,000	\$17,210,000	\$32,061,113	\$12,015,000	\$147,491,113	\$69,184,628
Interest	\$2,373,536	\$5,242,003	\$5,585,117	\$5,981,868	\$9,668,826	\$4,057,898	\$32,909,249	\$15,436,958
Total Eligible							\$180,400,362	\$84,621,587

City of San Marcos
2025 Water Impact Fee Credi
February 5, 2026
ARWA Summary

Series	Cost	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	Total
2017C	Principal	\$630,000	\$645,000	\$660,000	\$675,000	\$690,000	\$705,000									\$11,450,000
	Interest	\$87,828	\$74,850	\$61,112	\$46,724	\$31,739	\$16,145									\$2,373,536
	Total	\$717,828	\$719,850	\$721,112	\$721,724	\$721,739	\$721,145									\$13,823,536
2019C	Principal	\$1,635,000	\$1,655,000	\$1,680,000	\$1,710,000	\$1,735,000	\$1,765,000	\$1,795,000	\$1,825,000							\$30,800,000
	Interest	\$244,184	\$219,823	\$192,350	\$163,790	\$134,036	\$101,938	\$68,403	\$33,580							\$5,242,003
	Total	\$1,879,184	\$1,874,823	\$1,872,350	\$1,873,790	\$1,869,036	\$1,866,938	\$1,863,403	\$1,858,580							\$36,042,003
2020C	Principal	\$2,285,000	\$2,310,000	\$2,340,000	\$2,375,000	\$2,410,000	\$2,450,000	\$2,490,000	\$2,535,000	\$2,585,000						\$43,955,000
	Interest	\$300,784	\$276,106	\$247,693	\$217,507	\$185,207	\$151,226	\$115,701	\$78,600	\$40,068						\$5,585,117
	Total	\$2,585,784	\$2,586,106	\$2,587,693	\$2,592,507	\$2,595,207	\$2,601,226	\$2,605,701	\$2,613,600	\$2,625,068						\$49,540,117
2022C	Principal	\$865,000	\$880,000	\$905,000	\$925,000	\$955,000	\$980,000	\$1,010,000	\$1,040,000	\$1,070,000	\$1,105,000	\$1,135,000				\$17,210,000
	Interest	\$359,627	\$336,099	\$310,931	\$283,691	\$255,016	\$222,737	\$189,221	\$154,376	\$118,080	\$80,309	\$40,860				\$5,981,868
	Total	\$1,224,627	\$1,216,099	\$1,215,931	\$1,208,691	\$1,210,016	\$1,202,737	\$1,199,221	\$1,194,376	\$1,188,080	\$1,185,309	\$1,175,860				\$23,191,868
2024C	Principal	\$1,545,231	\$1,577,626	\$1,613,260	\$1,648,894	\$1,687,768	\$1,733,121	\$1,778,473	\$1,830,305	\$1,882,137	\$1,940,447	\$1,998,758	\$2,060,308	\$2,125,098		\$32,061,113
	Interest	\$616,963	\$585,132	\$551,528	\$516,359	\$478,105	\$436,755	\$392,387	\$345,079	\$294,746	\$241,293	\$185,214	\$126,651	\$65,666		\$9,668,827
	Total	\$2,162,194	\$2,162,757	\$2,164,788	\$2,165,253	\$2,165,873	\$2,169,875	\$2,170,860	\$2,175,384	\$2,176,883	\$2,181,740	\$2,183,972	\$2,186,959	\$2,190,763		\$41,729,940
2025C	Principal	\$555,000	\$570,000	\$580,000	\$595,000	\$615,000	\$630,000	\$650,000	\$670,000	\$690,000	\$715,000	\$740,000	\$765,000	\$795,000	\$820,000	\$12,015,000
	Interest	\$271,408	\$259,975	\$247,720	\$234,728	\$220,805	\$204,999	\$187,674	\$168,954	\$148,854	\$127,533	\$104,653	\$80,455	\$54,751	\$27,880	\$4,057,898
	Total	\$826,408	\$829,975	\$827,720	\$829,728	\$835,805	\$834,999	\$837,674	\$838,954	\$838,854	\$842,533	\$844,653	\$845,455	\$849,751	\$847,880	\$16,072,898
Total	Principal	\$7,515,231	\$7,637,626	\$7,778,260	\$7,928,894	\$8,092,768	\$8,263,121	\$7,723,473	\$7,900,305	\$6,227,137	\$3,760,447	\$3,873,758	\$2,825,308	\$2,920,098	\$820,000	\$147,491,113
	Interest	\$1,880,793	\$1,751,983	\$1,611,332	\$1,462,797	\$1,304,905	\$1,133,798	\$953,385	\$780,588	\$601,747	\$449,135	\$330,727	\$207,106	\$120,417	\$27,880	\$32,909,249
	Total	\$9,396,024	\$9,389,609	\$9,389,592	\$9,391,691	\$9,397,673	\$9,396,919	\$8,676,858	\$8,680,893	\$6,828,884	\$4,209,582	\$4,204,485	\$3,032,414	\$3,040,514	\$847,880	\$180,400,362

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
February 5, 2026
S22 Certificate of Obligation

City of San Marcos, Texas
Combination Tax & Revenue Certificates of Obligation, Series 2022 Waterworks & Wastewater Portion

Uses of Funds	Total	W/WW	Remaining
Total Underwriter's Discount	\$82,951.04		\$82,951.04
Cost of Issuance	\$147,912.00	\$75,081.54	\$72,830.46
Deposit to Project Construction Fund	\$25,930,599.00	\$13,204,918.46	\$12,725,680.54
Rounding Amount	\$379.96		\$379.96
Total Uses	\$26,161,842.00	\$13,280,000.00	\$12,881,842.00

Debt Service Schedule

Date	Principal	Interest	Total P+I
9/30/2022			\$0.00
9/30/2023	\$305,000.00	\$598,920.00	\$903,920.00
9/30/2024	\$330,000.00	\$564,350.00	\$894,350.00
9/30/2025	\$355,000.00	\$547,850.00	\$902,850.00
9/30/2026	\$375,000.00	\$530,100.00	\$905,100.00
9/30/2027	\$390,000.00	\$511,350.00	\$901,350.00
9/30/2028	\$555,000.00	\$491,850.00	\$1,046,850.00
9/30/2029	\$580,000.00	\$464,100.00	\$1,044,100.00
9/30/2030	\$610,000.00	\$435,100.00	\$1,045,100.00
9/30/2031	\$640,000.00	\$404,600.00	\$1,044,600.00
9/30/2032	\$670,000.00	\$372,600.00	\$1,042,600.00
9/30/2033	\$700,000.00	\$345,800.00	\$1,045,800.00
9/30/2034	\$735,000.00	\$310,800.00	\$1,045,800.00
9/30/2035	\$765,000.00	\$281,400.00	\$1,046,400.00
9/30/2036	\$795,000.00	\$250,800.00	\$1,045,800.00
9/30/2037	\$825,000.00	\$219,000.00	\$1,044,000.00
9/30/2038	\$860,000.00	\$186,000.00	\$1,046,000.00
9/30/2039	\$890,000.00	\$151,600.00	\$1,041,600.00
9/30/2040	\$930,000.00	\$116,000.00	\$1,046,000.00
9/30/2041	\$965,000.00	\$78,800.00	\$1,043,800.00
9/30/2042	\$1,005,000.00	\$40,200.00	\$1,045,200.00
Total	\$13,280,000.00	\$6,901,220.00	\$20,181,220.00

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
February 5, 2026
Existing Debt Credit

Existing Debt Payments

	Cost	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Total
ARWA	Principal	\$6,465,299	\$7,036,215	\$7,125,370	\$7,209,526	\$7,300,441	\$7,402,836	\$7,515,231	\$7,637,626	\$7,778,260	\$7,928,894	\$73,399,699
	Interest	\$2,350,288	\$2,379,483	\$2,292,898	\$2,201,322	\$2,103,935	\$1,998,743	\$1,880,793	\$1,751,983	\$1,611,332	\$1,462,797	\$20,033,574
	Total	\$8,815,587	\$9,415,698	\$9,418,268	\$9,410,848	\$9,404,377	\$9,401,579	\$9,396,024	\$9,389,609	\$9,389,592	\$9,391,691	\$93,433,273
S22 CO WWW	Principal	\$375,000	\$390,000	\$555,000	\$580,000	\$610,000	\$640,000	\$670,000	\$700,000	\$735,000	\$756,000	\$6,011,000
	Interest	\$530,100	\$511,350	\$491,850	\$464,100	\$435,100	\$404,600	\$372,600	\$345,800	\$310,800	\$281,400	\$4,147,700
	Total	\$905,100	\$901,350	\$1,046,850	\$1,044,100	\$1,045,100	\$1,044,600	\$1,042,600	\$1,045,800	\$1,045,800	\$1,037,400	\$10,158,700
Total	Principal	\$6,840,299	\$7,426,215	\$7,680,370	\$7,789,526	\$7,910,441	\$8,042,836	\$8,185,231	\$8,337,626	\$8,513,260	\$8,684,894	\$79,410,699
	Interest	\$2,880,388	\$2,890,833	\$2,784,748	\$2,665,422	\$2,539,035	\$2,403,343	\$2,253,393	\$2,097,783	\$1,922,132	\$1,744,197	\$24,181,274
	Total	\$9,720,687	\$10,317,048	\$10,465,118	\$10,454,948	\$10,449,477	\$10,446,179	\$10,438,624	\$10,435,409	\$10,435,392	\$10,429,091	\$103,591,973

Eligible Portion of Debt Payments

		Portion to 10-Yr Growth			2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Total
ARWA	9,291	19,807	47%	Principal	\$3,032,720	\$3,300,524	\$3,342,344	\$3,381,820	\$3,424,466	\$3,472,497	\$3,525,219	\$3,582,631	\$3,648,600	\$3,719,259	\$34,430,080
				Interest	\$1,102,465	\$1,116,160	\$1,075,545	\$1,032,589	\$986,907	\$937,564	\$882,236	\$821,814	\$755,838	\$686,164	\$9,397,281
				Total	\$4,135,185	\$4,416,683	\$4,417,889	\$4,414,408	\$4,411,373	\$4,410,061	\$4,407,455	\$4,404,446	\$4,404,438	\$4,405,422	\$43,827,361
S22 CO WWW	\$4,600,000	\$13,280,000	35%	Principal	\$129,895	\$135,090	\$192,244	\$200,904	\$211,295	\$221,687	\$232,078	\$242,470	\$254,593	\$261,867	\$2,082,123
				Interest	\$183,619	\$177,124	\$170,370	\$160,758	\$150,712	\$140,148	\$129,063	\$119,780	\$107,657	\$97,473	\$1,436,703
				Total	\$313,514	\$312,215	\$362,614	\$361,661	\$362,008	\$361,834	\$361,142	\$362,250	\$362,250	\$359,340	\$3,518,827
Total				Principal	\$3,162,615	\$3,435,614	\$3,534,588	\$3,582,723	\$3,635,761	\$3,694,184	\$3,757,297	\$3,825,101	\$3,903,193	\$3,981,126	\$36,512,204
				Interest	\$1,286,084	\$1,293,284	\$1,245,914	\$1,193,346	\$1,137,619	\$1,077,711	\$1,011,299	\$941,594	\$863,495	\$783,637	\$10,833,984
				Total	\$4,448,699	\$4,728,898	\$4,780,503	\$4,776,070	\$4,773,380	\$4,771,895	\$4,768,597	\$4,766,696	\$4,766,688	\$4,764,763	\$47,346,188
					2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Total
Impact Fee Eligible Principle + Interest					\$4,448,699	\$4,728,898	\$4,780,503	\$4,776,070	\$4,773,380	\$4,771,895	\$4,768,597	\$4,766,696	\$4,766,688	\$4,764,763	\$47,346,188
Total LUEs Each Year					43,275	44,140	45,023	45,923	46,842	47,779	48,734	49,709	50,703	51,717	
Cost per LUE					\$102.80	\$107.13	\$106.18	\$104.00	\$101.90	\$99.87	\$97.85	\$95.89	\$94.01	\$92.13	
Cumulative SUEs in 10-Year Period					849	1,714	2,597	3,497	4,416	5,353	6,308	7,283	8,277	9,291	
Portion Paid by Growth in 10-Year Period					\$87,277	\$183,621	\$275,749	\$363,688	\$449,990	\$534,604	\$617,238	\$698,367	\$778,121	\$855,980	\$4,844,635

Existing Debt Credit
\$4,844,635

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
February 5, 2026
Proposed Impact Fee CIP

WMP CIP No.	CIP Name	Project Cost	2025 Use	2035 Use	IF Use	Total Capacity	Unit	% Capacity Utilization of New LUE	% of Project Paid for by City	% Eligible	Eligible Cost	Online Date	Cash/Debt	Debt Amount
Pumping Capacity		\$3,750,000									\$1,950,000			
1	Expand Comanche Pumps	\$3,750,000	1,800	3,750	1,950	3,750	gpm	52.00%	100.00%	52.00%	\$1,950,000	2025	Cash	
Storage		\$10,410,000									\$10,410,000			
14	Blanco Vista EST	\$10,410,000	0	1	1	1	MG	100.00%	100.00%	100.00%	\$10,410,000	N/A	Cash/Debt	
Supply		\$147,491,113									\$69,184,628			
N/A	Alliance Regional Water Authority (ARWA)	\$147,491,113	0	9,291	9,291	19,807	LUE	46.91%	100.00%	46.91%	\$69,184,628	N/A	Debt	
Transmission / Distribution		\$38,934,000									\$31,522,532			
4	Southwest 810' Plane Loop	\$1,420,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$1,420,000	2025	Cash	
6	Rattler Road Loop	\$715,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$715,000	2025	Cash	
7	South Hunter Rd Loop	\$989,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$989,000	2025	Future Debt	
8	Patricia and Sunset Acres	\$1,074,000	49	1,763	1,714	1,763	gpm	97.22%	100.00%	97.22%	\$1,044,150	2025	Future Debt	
9	Leah Ave Extension	\$676,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$676,000	2025	Future Debt	
10	Upgrade IH-35 Crossings	\$1,333,000	1,763	3,134	1,371	3,134	gpm	43.75%	100.00%	43.75%	\$583,188	2025	Future Debt	
11	Railroad Crossing and Upgrades	\$989,000	1,224	1,763	539	1,763	gpm	30.56%	100.00%	30.56%	\$302,194	2025	Future Debt	
12	Centerpoint - Millbrook Connection	\$1,038,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$1,038,000	2025	Cash	
22	Kissing Tree - Kingswood Line	\$1,606,000	0	1,763	1,763	1,763	gpm	100.00%	50.00%	50.00%	\$803,000	2025	Future Debt for 50%	
23	Kissing Tree - Deerwood Line	\$1,097,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$1,097,000	2025	Future Debt for 50%	
24	Kissing Tree - McCarty Line	\$1,002,000	0	3,134	3,134	3,134	gpm	100.00%	100.00%	100.00%	\$1,002,000	2025	Future Debt for 50%	
25	Airport Loop	\$2,615,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$2,615,000	2025	Future Debt	
26	Parallel Comanche Outlet Main	\$1,851,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$1,851,000	2025	Future Debt	
27	Kissing Tree - La Cima Loop - Connect to Estates of San Marcos	\$215,000	0	783	783	783	gpm	100.00%	100.00%	100.00%	\$215,000	2030	Future Debt	
28	Kissing Tree - La Cima Loop - Primary	\$5,251,000	0	3,134	3,134	3,134	gpm	100.00%	100.00%	100.00%	\$5,251,000	2030	Future Debt	
29	McCarty Tank Fill/Drain Line	\$2,233,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$2,233,000	2030	Future Debt	
30	US 80 Loop	\$2,998,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$2,998,000	2030	Future Debt for 50%	
31	PGM of Texas Extension	\$872,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$872,000	2030	Future Debt	
32	Trace Dev. Connection	\$303,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$303,000	2030	Future Debt	
33	Old Bastrop Extension 1	\$1,283,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$1,283,000	2030	Future Debt	
34	North Side Connection for ARWA BV EST Water	\$2,116,000	0	1,763	1,763	1,763	gpm	100.00%	100.00%	100.00%	\$2,116,000	2030	Cash	
37.1	Trace Dev. and Old Bastrop Extension to Francis Harris (8")	\$490,000	0	783	783	783	gpm	100.00%	100.00%	100.00%	\$490,000	2030	Future Debt	
37.1	Trace Dev. and Old Bastrop Extension to Francis Harris (12")	\$245,000	0	783	783	783	gpm	100.00%	100.00%	100.00%	\$245,000	2030	Future Debt	
37.2	Francis Harris Extension	\$1,381,000	0	783	783	783	gpm	100.00%	100.00%	100.00%	\$1,381,000	2030	Future Debt	
45.A	Centerpointe South Segment A (North)	\$1,469,000	0	1,763	1,763	1,763	gpm	100.00%	0.00%	0.00%	\$0	2025	Cash	
45.B	Center Point South - Segment B (Middle)	\$1,714,000	0	1,763	1,763	1,763	gpm	100.00%	0.00%	0.00%	\$0	2030	Cash	
45.C	Center Point South - Segment C (South)	\$1,959,000	0	1,763	1,763	1,763	gpm	100.00%	0.00%	0.00%	\$0	2030	Future Debt	
Design		\$650,000									\$0			
N/A	Update to Master Plan & Infowater Model Re-Calibration	\$650,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.00%	\$0	N/A	Cash	
Grand Total		\$201,235,113									\$113,067,160			

WMP CIP No.	CIP Name	Notes	Include	ID	Notes
Pumping Capacity					
1	Expand Comanche Pumps		☒	P-1	
Storage					
14	Blanco Vista EST	\$4.6M debt per City from S22 CO WWW	☒	P-2	
Supply					
N/A	Alliance Regional Water Authority (ARWA)	See ARWA Debt Issuances	☒	P-3	
Transmission / Distribution					
4	Southwest 810' Plane Loop	Developer-funded project with 50% of cost associated with the City.	☒	P-4	
6	Rattler Road Loop		☒	P-5	
7	South Hunter Rd Loop		☒	P-6	
8	Patricia and Sunset Acres		☒	P-7	
9	Leah Ave Extension		☒	P-8	
10	Upgrade IH-35 Crossings		☒	P-9	
11	Railroad Crossing and Upgrades		☒	P-10	
12	Centerpoint - Millbrook Connection		☒	P-11	
22	Kissing Tree - Kingswood Line		☒	P-12	
23	Kissing Tree - Deerwood Line		☒	P-13	
24	Kissing Tree - McCarty Line		☒	P-14	
25	Airport Loop		☒	P-15	
26	Parallel Comanche Outlet Main		☒	P-16	
27	Kissing Tree - La Cima Loop - Connect to Estates of San Marcos		☒	P-17	
28	Kissing Tree - La Cima Loop - Primary		☒	P-18	
29	McCarty Tank Fill/Drain Line		☒	P-19	
30	US 80 Loop		☒	P-20	
31	PGM of Texas Extension		☒	P-21	
32	Trace Dev. Connection		☒	P-22	
33	Old Bastrop Extension 1		☒	P-23	
34	North Side Connection for ARWA BV EST Water		☒	P-24	
37.1	Trace Dev. and Old Bastrop Extension to Francis Harris (8")		☒	P-25	
37.1	Trace Dev. and Old Bastrop Extension to Francis Harris (12")		☒	P-26	
37.2	Francis Harris Extension		☒	P-27	
45.A	Centerpointe South Segment A (North)	Developer-funded project with some City costs that are currently unknown. The project is assumed to be fully credit-eligible, with any future adjustments to be made by the City.	☐		
45.B	Center Point South - Segment B (Middle)	Developer-funded project with some City costs that are currently unknown. The project is assumed to be fully credit-eligible, with any future adjustments to be made by the City.	☐		
45.C	Center Point South - Segment C (South)	Developer-funded project with some City costs that are currently unknown. The project is assumed to be fully credit-eligible, with any future adjustments to be made by the City.	☐		
Design					
N/A	Update to Master Plan & Infowater Model Re-Calibration	Ignore per Plummer	☐		
Grand Total					

City of San Marcos
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February 5, 2026
Proposed Impact Fee CIP Split

ID	Project Type	WMP CIP No.	CIP Name	Cash/Debt	Cash %	Bond %	Online Date	Bond	Project Cost	Cash \$	Bond \$	Eligible Cost	Cash \$	Bond \$
P-1	Pumping Capacity	1	Expand Comanche Pumps	Cash	100%	0%	2025		\$3,750,000	\$3,750,000	\$0	\$1,950,000	\$1,950,000	\$0
P-2	Storage	14	Blanco Vista EST	Cash/Debt	56%	44%	N/A		\$10,410,000	\$5,810,000	\$4,600,000	\$10,410,000	\$5,810,000	\$4,600,000
P-3	Supply	N/A	Alliance Regional Water Authority (ARWA)	Debt			N/A		\$147,491,113	\$0	\$0	\$69,184,628	\$0	\$0
P-4	Transmission / Distribution	4	Southwest 810' Plane Loop	Cash	100%	0%	2025		\$1,420,000	\$1,420,000	\$0	\$1,420,000	\$1,420,000	\$0
P-5	Transmission / Distribution	6	Rattler Road Loop	Cash	100%	0%	2025		\$715,000	\$715,000	\$0	\$715,000	\$715,000	\$0
P-6	Transmission / Distribution	7	South Hunter Rd Loop	Future Debt	0%	100%	2025	1	\$989,000	\$0	\$989,000	\$989,000	\$0	\$989,000
P-7	Transmission / Distribution	8	Patricia and Sunset Acres	Future Debt	0%	100%	2025	1	\$1,074,000	\$0	\$1,074,000	\$1,044,150	\$0	\$1,044,150
P-8	Transmission / Distribution	9	Leah Ave Extension	Future Debt	0%	100%	2025	1	\$676,000	\$0	\$676,000	\$676,000	\$0	\$676,000
P-9	Transmission / Distribution	10	Upgrade IH-35 Crossings	Future Debt	0%	100%	2025	1	\$1,333,000	\$0	\$1,333,000	\$583,188	\$0	\$583,188
P-10	Transmission / Distribution	11	Railroad Crossing and Upgrades	Future Debt	0%	100%	2025	1	\$989,000	\$0	\$989,000	\$302,194	\$0	\$302,194
P-11	Transmission / Distribution	12	Centerpoint - Millbrook Connection	Cash	100%	0%	2025		\$1,038,000	\$1,038,000	\$0	\$1,038,000	\$1,038,000	\$0
P-12	Transmission / Distribution	22	Kissing Tree - Kingswood Line	Future Debt for 50%	50%	50%	2025	1	\$1,606,000	\$803,000	\$803,000	\$803,000	\$401,500	\$401,500
P-13	Transmission / Distribution	23	Kissing Tree - Deerwood Line	Future Debt for 50%	50%	50%	2025	1	\$1,097,000	\$548,500	\$548,500	\$1,097,000	\$548,500	\$548,500
P-14	Transmission / Distribution	24	Kissing Tree - McCarty Line	Future Debt for 50%	50%	50%	2025	1	\$1,002,000	\$501,000	\$501,000	\$1,002,000	\$501,000	\$501,000
P-15	Transmission / Distribution	25	Airport Loop	Future Debt	0%	100%	2025	1	\$2,615,000	\$0	\$2,615,000	\$2,615,000	\$0	\$2,615,000
P-16	Transmission / Distribution	26	Parallel Comanche Outlet Main	Future Debt	0%	100%	2025	1	\$1,851,000	\$0	\$1,851,000	\$1,851,000	\$0	\$1,851,000
P-17	Transmission / Distribution	27	Kissing Tree - La Cima Loop - Connect to Estates of San Marcos	Future Debt	0%	100%	2030	2	\$215,000	\$0	\$215,000	\$215,000	\$0	\$215,000
P-18	Transmission / Distribution	28	Kissing Tree - La Cima Loop - Primary	Future Debt	0%	100%	2030	2	\$5,251,000	\$0	\$5,251,000	\$5,251,000	\$0	\$5,251,000
P-19	Transmission / Distribution	29	McCarty Tank Fill/Drain Line	Future Debt	0%	100%	2030	2	\$2,233,000	\$0	\$2,233,000	\$2,233,000	\$0	\$2,233,000
P-20	Transmission / Distribution	30	US 80 Loop	Future Debt for 50%	50%	50%	2030	2	\$2,998,000	\$1,499,000	\$1,499,000	\$2,998,000	\$1,499,000	\$1,499,000
P-21	Transmission / Distribution	31	PGM of Texas Extension	Future Debt	0%	100%	2030	2	\$872,000	\$0	\$872,000	\$872,000	\$0	\$872,000
P-22	Transmission / Distribution	32	Trace Dev. Connection	Future Debt	0%	100%	2030	2	\$303,000	\$0	\$303,000	\$303,000	\$0	\$303,000
P-23	Transmission / Distribution	33	Old Bastrop Extension 1	Future Debt	0%	100%	2030	2	\$1,283,000	\$0	\$1,283,000	\$1,283,000	\$0	\$1,283,000
P-24	Transmission / Distribution	34	North Side Connection for ARWA BV EST Water	Cash	100%	0%	2030		\$2,116,000	\$2,116,000	\$0	\$2,116,000	\$2,116,000	\$0
P-25	Transmission / Distribution	37.1	Trace Dev. and Old Bastrop Extension to Francis Harris (8")	Future Debt	0%	100%	2030	2	\$490,000	\$0	\$490,000	\$490,000	\$0	\$490,000
P-26	Transmission / Distribution	37.1	Trace Dev. and Old Bastrop Extension to Francis Harris (12")	Future Debt	0%	100%	2030	2	\$245,000	\$0	\$245,000	\$245,000	\$0	\$245,000
P-27	Transmission / Distribution	37.2	Francis Harris Extension	Future Debt	0%	100%	2030	2	\$1,381,000	\$0	\$1,381,000	\$1,381,000	\$0	\$1,381,000
Total									\$195,443,113	\$18,200,500	\$29,751,500	\$113,067,160	\$15,999,000	\$27,883,532

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
February 5, 2026
Proposed Impact Fee CIP Debt

Year	Amount	Cost	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Group 1	\$11,379,500															
2026	\$2,275,900	Principal Interest Total		\$68,829 \$113,795 \$182,624	\$72,271 \$110,354 \$182,624	\$75,884 \$106,740 \$182,624	\$79,678 \$102,946 \$182,624	\$83,662 \$98,962 \$182,624	\$87,845 \$94,779 \$182,624	\$92,238 \$90,387 \$182,624	\$96,849 \$85,775 \$182,624	\$101,692 \$80,932 \$182,624	\$106,777 \$75,848 \$182,624	\$112,115 \$70,509 \$182,624	\$117,721 \$64,903 \$182,624	\$123,607 \$59,017 \$182,624
2027	\$2,275,900	Principal Interest Total		\$0 \$0 \$182,624	\$68,829 \$113,795 \$182,624	\$72,271 \$110,354 \$182,624	\$75,884 \$106,740 \$182,624	\$79,678 \$102,946 \$182,624	\$83,662 \$98,962 \$182,624	\$87,845 \$94,779 \$182,624	\$92,238 \$85,775 \$182,624	\$96,849 \$80,932 \$182,624	\$101,692 \$75,848 \$182,624	\$106,777 \$70,509 \$182,624	\$112,115 \$64,903 \$182,624	\$117,721 \$75,848 \$182,624
2028	\$2,275,900	Principal Interest Total		\$0 \$0 \$0	\$68,829 \$113,795 \$182,624	\$72,271 \$110,354 \$182,624	\$75,884 \$106,740 \$182,624	\$79,678 \$102,946 \$182,624	\$83,662 \$98,962 \$182,624	\$87,845 \$94,779 \$182,624	\$92,238 \$90,387 \$182,624	\$96,849 \$85,775 \$182,624	\$101,692 \$80,932 \$182,624	\$106,777 \$75,848 \$182,624	\$112,115 \$70,509 \$182,624	\$123,607 \$59,017 \$182,624
2029	\$2,275,900	Principal Interest Total		\$0 \$0 \$0	\$68,829 \$113,795 \$182,624	\$72,271 \$110,354 \$182,624	\$75,884 \$106,740 \$182,624	\$79,678 \$102,946 \$182,624	\$83,662 \$98,962 \$182,624	\$87,845 \$94,779 \$182,624	\$92,238 \$90,387 \$182,624	\$96,849 \$85,775 \$182,624	\$101,692 \$80,932 \$182,624	\$106,777 \$75,848 \$182,624	\$112,115 \$64,903 \$182,624	\$123,607 \$59,017 \$182,624
2030	\$2,275,900	Principal Interest Total		\$0 \$0 \$0	\$68,829 \$113,795 \$182,624	\$72,271 \$110,354 \$182,624	\$75,884 \$106,740 \$182,624	\$79,678 \$102,946 \$182,624	\$83,662 \$98,962 \$182,624	\$87,845 \$94,779 \$182,624	\$92,238 \$90,387 \$182,624	\$96,849 \$85,775 \$182,624	\$101,692 \$80,932 \$182,624	\$106,777 \$75,848 \$182,624	\$112,115 \$64,903 \$182,624	\$123,607 \$59,017 \$182,624

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
February 5, 2026
Proposed Impact Fee CIP Debt

Year	Amount	Cost	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Group 2	\$13,772,000															
2031	\$2,754,400	Principal							\$83,300	\$87,465	\$91,838	\$96,430	\$101,252	\$106,314	\$111,630	\$117,212
		Interest							\$137,720	\$133,555	\$129,182	\$124,590	\$119,768	\$114,706	\$109,390	\$103,808
		Total	\$0	\$0	\$0	\$0	\$0	\$0	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020
2032	\$2,754,400	Principal								\$83,300	\$87,465	\$91,838	\$96,430	\$101,252	\$106,314	\$111,630
		Interest								\$137,720	\$133,555	\$129,182	\$124,590	\$119,768	\$114,706	\$109,390
		Total	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020
2033	\$2,754,400	Principal									\$83,300	\$87,465	\$91,838	\$96,430	\$101,252	\$106,314
		Interest									\$137,720	\$133,555	\$129,182	\$124,590	\$119,768	\$114,706
		Total	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020
2034	\$2,754,400	Principal										\$83,300	\$87,465	\$91,838	\$96,430	\$101,252
		Interest										\$137,720	\$133,555	\$129,182	\$124,590	\$119,768
		Total	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020
2035	\$2,754,400	Principal											\$83,300	\$87,465	\$91,838	\$96,430
		Interest											\$137,720	\$133,555	\$129,182	\$124,590
		Total	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$221,020	\$221,020	\$221,020	\$221,020
Total		Principal	\$0	\$68,829	\$141,100	\$216,984	\$296,662	\$380,324	\$482,641	\$590,073	\$702,877	\$821,321	\$945,687	\$992,971	\$1,042,620	\$1,094,751
		Interest	\$0	\$113,795	\$224,149	\$330,889	\$433,834	\$532,796	\$651,500	\$765,088	\$873,304	\$975,881	\$1,072,535	\$1,025,250	\$975,602	\$923,471
		Total	\$0	\$182,624	\$365,248	\$547,872	\$730,496	\$913,121	\$1,134,141	\$1,355,161	\$1,576,181	\$1,797,201	\$2,018,221	\$2,018,221	\$2,018,221	\$2,018,221

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Repo
February 5, 2026
Proposed Impact Fee CIP Debt

Year	Amount	Cost	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	Total
Group 1	\$11,379,500																		
2026	\$2,275,900	Principal	\$129,788	\$136,277	\$143,091	\$150,245	\$157,758	\$165,645	\$173,928										\$2,275,900
		Interest	\$52,837	\$46,347	\$39,533	\$32,379	\$24,867	\$16,979	\$8,696										\$1,376,582
		Total	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,652,482
2027	\$2,275,900	Principal	\$123,607	\$129,788	\$136,277	\$143,091	\$150,245	\$157,758	\$165,645	\$173,928									\$2,275,900
		Interest	\$59,017	\$52,837	\$46,347	\$39,533	\$32,379	\$24,867	\$16,979	\$8,696									\$1,376,582
		Total	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,652,482
2028	\$2,275,900	Principal	\$117,721	\$123,607	\$129,788	\$136,277	\$143,091	\$150,245	\$157,758	\$165,645	\$173,928								\$2,275,900
		Interest	\$64,903	\$59,017	\$52,837	\$46,347	\$39,533	\$32,379	\$24,867	\$16,979	\$8,696								\$1,376,582
		Total	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,652,482
2029	\$2,275,900	Principal	\$112,115	\$117,721	\$123,607	\$129,788	\$136,277	\$143,091	\$150,245	\$157,758	\$165,645	\$173,928							\$2,275,900
		Interest	\$70,509	\$64,903	\$59,017	\$52,837	\$46,347	\$39,533	\$32,379	\$24,867	\$16,979	\$8,696							\$1,376,582
		Total	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$0	\$0	\$0	\$0	\$0	\$0	\$3,652,482
2030	\$2,275,900	Principal	\$106,777	\$112,115	\$117,721	\$123,607	\$129,788	\$136,277	\$143,091	\$150,245	\$157,758	\$165,645	\$173,928						\$2,275,900
		Interest	\$75,848	\$70,509	\$64,903	\$59,017	\$52,837	\$46,347	\$39,533	\$32,379	\$24,867	\$16,979	\$8,696						\$1,376,582
		Total	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$182,624	\$0	\$0	\$0	\$0	\$0	\$3,652,482

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Repo
February 5, 2026
Proposed Impact Fee CIP Debt

Year	Amount	Cost	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	Total
Group 2	\$13,772,000																		
2031	\$2,754,400	Principal	\$123,072	\$129,226	\$135,687	\$142,472	\$149,595	\$157,075	\$164,929	\$173,175	\$181,834	\$190,926	\$200,472	\$210,495					\$2,754,400
		Interest	\$97,948	\$91,794	\$85,333	\$78,549	\$71,425	\$63,945	\$56,092	\$47,845	\$39,186	\$30,095	\$20,548	\$10,525					\$1,666,004
		Total	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$0	\$0	\$0	\$0	\$4,420,404
2032	\$2,754,400	Principal	\$117,212	\$123,072	\$129,226	\$135,687	\$142,472	\$149,595	\$157,075	\$164,929	\$173,175	\$181,834	\$190,926	\$200,472	\$210,495				\$2,754,400
		Interest	\$103,808	\$97,948	\$91,794	\$85,333	\$78,549	\$71,425	\$63,945	\$56,092	\$47,845	\$39,186	\$30,095	\$20,548	\$10,525				\$1,666,004
		Total	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$0	\$0	\$0	\$4,420,404
2033	\$2,754,400	Principal	\$111,630	\$117,212	\$123,072	\$129,226	\$135,687	\$142,472	\$149,595	\$157,075	\$164,929	\$173,175	\$181,834	\$190,926	\$200,472	\$210,495			\$2,754,400
		Interest	\$109,390	\$103,808	\$97,948	\$91,794	\$85,333	\$78,549	\$71,425	\$63,945	\$56,092	\$47,845	\$39,186	\$30,095	\$20,548	\$10,525			\$1,666,004
		Total	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$0	\$0	\$4,420,404
2034	\$2,754,400	Principal	\$106,314	\$111,630	\$117,212	\$123,072	\$129,226	\$135,687	\$142,472	\$149,595	\$157,075	\$164,929	\$173,175	\$181,834	\$190,926	\$200,472	\$210,495		\$2,754,400
		Interest	\$114,706	\$109,390	\$103,808	\$97,948	\$91,794	\$85,333	\$78,549	\$71,425	\$63,945	\$56,092	\$47,845	\$39,186	\$30,095	\$20,548	\$10,525		\$1,666,004
		Total	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$0	\$4,420,404
2035	\$2,754,400	Principal	\$101,252	\$106,314	\$111,630	\$117,212	\$123,072	\$129,226	\$135,687	\$142,472	\$149,595	\$157,075	\$164,929	\$173,175	\$181,834	\$190,926	\$200,472	\$210,495	\$2,754,400
		Interest	\$119,768	\$114,706	\$109,390	\$103,808	\$97,948	\$91,794	\$85,333	\$78,549	\$71,425	\$63,945	\$56,092	\$47,845	\$39,186	\$30,095	\$20,548	\$10,525	\$1,666,004
		Total	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$4,420,404
Total		Principal	\$1,149,488	\$1,206,963	\$1,267,311	\$1,330,676	\$1,397,210	\$1,467,071	\$1,540,424	\$1,434,821	\$1,323,938	\$1,207,511	\$1,085,263	\$956,902	\$783,727	\$601,893	\$410,967	\$210,495	\$25,151,500
		Interest	\$868,733	\$811,259	\$750,911	\$687,545	\$621,011	\$551,151	\$477,797	\$400,776	\$329,035	\$262,838	\$202,462	\$148,199	\$100,354	\$61,168	\$31,073	\$10,525	\$15,212,929
		Total	\$2,018,221	\$2,018,221	\$2,018,221	\$2,018,221	\$2,018,221	\$2,018,221	\$2,018,221	\$1,835,597	\$1,652,973	\$1,470,349	\$1,287,725	\$1,105,101	\$884,081	\$663,061	\$442,040	\$221,020	\$40,364,429

City of San Marcos
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Proposed Impact Fee CIP Eligible Debt

Year	IF Amount	Cost	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Group 1	\$9,511,532															
2026	\$1,902,306	Principal Interest Total		\$57,531 \$95,115 \$152,646	\$60,407 \$92,239 \$152,646	\$63,428 \$89,218 \$152,646	\$66,599 \$86,047 \$152,646	\$69,929 \$82,717 \$152,646	\$73,425 \$79,221 \$152,646	\$77,097 \$75,549 \$152,646	\$80,951 \$71,695 \$152,646	\$84,999 \$67,647 \$152,646	\$89,249 \$63,397 \$152,646	\$93,711 \$58,935 \$152,646	\$98,397 \$54,249 \$152,646	\$103,317 \$49,329 \$152,646
2027	\$1,902,306	Principal Interest Total			\$57,531 \$95,115 \$152,646	\$60,407 \$92,239 \$152,646	\$63,428 \$89,218 \$152,646	\$66,599 \$86,047 \$152,646	\$69,929 \$79,221 \$152,646	\$73,425 \$75,549 \$152,646	\$77,097 \$71,695 \$152,646	\$80,951 \$67,647 \$152,646	\$84,999 \$63,397 \$152,646	\$89,249 \$58,935 \$152,646	\$93,711 \$54,249 \$152,646	\$98,397 \$54,249 \$152,646
2028	\$1,902,306	Principal Interest Total				\$57,531 \$95,115 \$152,646	\$60,407 \$92,239 \$152,646	\$63,428 \$89,218 \$152,646	\$66,599 \$86,047 \$152,646	\$69,929 \$82,717 \$152,646	\$73,425 \$79,221 \$152,646	\$77,097 \$75,549 \$152,646	\$80,951 \$71,695 \$152,646	\$84,999 \$67,647 \$152,646	\$89,249 \$63,397 \$152,646	\$93,711 \$58,935 \$152,646
2029	\$1,902,306	Principal Interest Total					\$57,531 \$95,115 \$152,646	\$60,407 \$92,239 \$152,646	\$63,428 \$89,218 \$152,646	\$66,599 \$86,047 \$152,646	\$69,929 \$82,717 \$152,646	\$73,425 \$79,221 \$152,646	\$77,097 \$75,549 \$152,646	\$80,951 \$71,695 \$152,646	\$84,999 \$67,647 \$152,646	\$89,249 \$63,397 \$152,646
2030	\$1,902,306	Principal Interest Total						\$57,531 \$95,115 \$152,646	\$60,407 \$92,239 \$152,646	\$63,428 \$89,218 \$152,646	\$66,599 \$86,047 \$152,646	\$69,929 \$82,717 \$152,646	\$73,425 \$79,221 \$152,646	\$77,097 \$75,549 \$152,646	\$80,951 \$71,695 \$152,646	\$84,999 \$67,647 \$152,646

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
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Proposed Impact Fee CIP Eligible Debt

Year	IF Amount	Cost	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Group 2	\$13,772,000															
2031	\$2,754,400	Principal							\$83,300	\$87,465	\$91,838	\$96,430	\$101,252	\$106,314	\$111,630	\$117,212
		Interest							\$137,720	\$133,555	\$129,182	\$124,590	\$119,768	\$114,706	\$109,390	\$103,808
		Total	\$0	\$0	\$0	\$0	\$0	\$0	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020
2032	\$2,754,400	Principal								\$83,300	\$87,465	\$91,838	\$96,430	\$101,252	\$106,314	\$111,630
		Interest								\$137,720	\$133,555	\$129,182	\$124,590	\$119,768	\$114,706	\$109,390
		Total	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020
2033	\$2,754,400	Principal									\$83,300	\$87,465	\$91,838	\$96,430	\$101,252	\$106,314
		Interest									\$137,720	\$133,555	\$129,182	\$124,590	\$119,768	\$114,706
		Total	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020
2034	\$2,754,400	Principal										\$83,300	\$87,465	\$91,838	\$96,430	\$101,252
		Interest										\$137,720	\$133,555	\$129,182	\$124,590	\$119,768
		Total	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020
2035	\$2,754,400	Principal											\$83,300	\$87,465	\$91,838	\$96,430
		Interest											\$137,720	\$133,555	\$129,182	\$124,590
		Total	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$221,020	\$221,020	\$221,020	\$221,020
Total		Principal	\$0	\$57,531	\$117,938	\$181,365	\$247,964	\$317,893	\$417,088	\$521,243	\$630,605	\$745,435	\$866,007	\$909,308	\$954,773	\$1,002,512
		Interest	\$0	\$95,115	\$187,354	\$276,573	\$362,620	\$445,337	\$567,162	\$684,028	\$795,685	\$901,875	\$1,002,323	\$959,023	\$913,558	\$865,819
		Total	\$0	\$152,646	\$305,292	\$457,938	\$610,584	\$763,230	\$984,250	\$1,205,270	\$1,426,290	\$1,647,311	\$1,868,331	\$1,868,331	\$1,868,331	\$1,868,331

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Repo
February 5, 2026
Proposed Impact Fee CIP Eligible Debt

Year	IF Amount	Cost	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	Total
Group 1	\$9,511,532																		
2026	\$1,902,306	Principal	\$108,483	\$113,907	\$119,602	\$125,582	\$131,861	\$138,454	\$145,377										\$1,902,306
		Interest	\$44,163	\$38,739	\$33,044	\$27,064	\$20,785	\$14,192	\$7,269										\$1,150,613
		Total	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,052,920
2027	\$1,902,306	Principal	\$103,317	\$108,483	\$113,907	\$119,602	\$125,582	\$131,861	\$138,454	\$145,377									\$1,902,306
		Interest	\$49,329	\$44,163	\$38,739	\$33,044	\$27,064	\$20,785	\$14,192	\$7,269									\$1,150,613
		Total	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,052,920
2028	\$1,902,306	Principal	\$98,397	\$103,317	\$108,483	\$113,907	\$119,602	\$125,582	\$131,861	\$138,454	\$145,377								\$1,902,306
		Interest	\$54,249	\$49,329	\$44,163	\$38,739	\$33,044	\$27,064	\$20,785	\$14,192	\$7,269								\$1,150,613
		Total	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,052,920
2029	\$1,902,306	Principal	\$93,711	\$98,397	\$103,317	\$108,483	\$113,907	\$119,602	\$125,582	\$131,861	\$138,454	\$145,377							\$1,902,306
		Interest	\$58,935	\$54,249	\$49,329	\$44,163	\$38,739	\$33,044	\$27,064	\$20,785	\$14,192	\$7,269							\$1,150,613
		Total	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$0	\$0	\$0	\$0	\$0	\$0	\$3,052,920
2030	\$1,902,306	Principal	\$89,249	\$93,711	\$98,397	\$103,317	\$108,483	\$113,907	\$119,602	\$125,582	\$131,861	\$138,454	\$145,377						\$1,902,306
		Interest	\$63,397	\$58,935	\$54,249	\$49,329	\$44,163	\$38,739	\$33,044	\$27,064	\$20,785	\$14,192	\$7,269						\$1,150,613
		Total	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$152,646	\$0	\$0	\$0	\$0	\$0	\$3,052,920

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Repo
February 5, 2026
Proposed Impact Fee CIP Eligible Debt

Year	IF Amount	Cost	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	Total
Group 2	\$13,772,000																		
2031	\$2,754,400	Principal	\$123,072	\$129,226	\$135,687	\$142,472	\$149,595	\$157,075	\$164,929	\$173,175	\$181,834	\$190,926	\$200,472	\$210,495					\$2,754,400
		Interest	\$97,948	\$91,794	\$85,333	\$78,549	\$71,425	\$63,945	\$56,092	\$47,845	\$39,186	\$30,095	\$20,548	\$10,525					\$1,666,004
		Total	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$0	\$0	\$0	\$0	\$4,420,404
2032	\$2,754,400	Principal	\$117,212	\$123,072	\$129,226	\$135,687	\$142,472	\$149,595	\$157,075	\$164,929	\$173,175	\$181,834	\$190,926	\$200,472	\$210,495				\$2,754,400
		Interest	\$103,808	\$97,948	\$91,794	\$85,333	\$78,549	\$71,425	\$63,945	\$56,092	\$47,845	\$39,186	\$30,095	\$20,548	\$10,525				\$1,666,004
		Total	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$0	\$0	\$0	\$4,420,404
2033	\$2,754,400	Principal	\$111,630	\$117,212	\$123,072	\$129,226	\$135,687	\$142,472	\$149,595	\$157,075	\$164,929	\$173,175	\$181,834	\$190,926	\$200,472	\$210,495			\$2,754,400
		Interest	\$109,390	\$103,808	\$97,948	\$91,794	\$85,333	\$78,549	\$71,425	\$63,945	\$56,092	\$47,845	\$39,186	\$30,095	\$20,548	\$10,525			\$1,666,004
		Total	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$0	\$0	\$4,420,404
2034	\$2,754,400	Principal	\$106,314	\$111,630	\$117,212	\$123,072	\$129,226	\$135,687	\$142,472	\$149,595	\$157,075	\$164,929	\$173,175	\$181,834	\$190,926	\$200,472	\$210,495		\$2,754,400
		Interest	\$114,706	\$109,390	\$103,808	\$97,948	\$91,794	\$85,333	\$78,549	\$71,425	\$63,945	\$56,092	\$47,845	\$39,186	\$30,095	\$20,548	\$10,525		\$1,666,004
		Total	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$0	\$4,420,404
2035	\$2,754,400	Principal	\$101,252	\$106,314	\$111,630	\$117,212	\$123,072	\$129,226	\$135,687	\$142,472	\$149,595	\$157,075	\$164,929	\$173,175	\$181,834	\$190,926	\$200,472	\$210,495	\$2,754,400
		Interest	\$119,768	\$114,706	\$109,390	\$103,808	\$97,948	\$91,794	\$85,333	\$78,549	\$71,425	\$63,945	\$56,092	\$47,845	\$39,186	\$30,095	\$20,548	\$10,525	\$1,666,004
		Total	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$221,020	\$4,420,404
Total		Principal	\$1,052,637	\$1,105,269	\$1,160,533	\$1,218,559	\$1,279,487	\$1,343,462	\$1,410,635	\$1,328,521	\$1,242,301	\$1,151,770	\$1,056,712	\$956,902	\$783,727	\$601,893	\$410,967	\$210,495	\$23,283,532
		Interest	\$815,693	\$763,062	\$707,798	\$649,771	\$588,843	\$524,869	\$457,696	\$387,164	\$320,738	\$258,623	\$201,035	\$148,199	\$100,354	\$61,168	\$31,073	\$10,525	\$14,083,085
		Total	\$1,868,331	\$1,868,331	\$1,868,331	\$1,868,331	\$1,868,331	\$1,868,331	\$1,868,331	\$1,715,685	\$1,563,039	\$1,410,393	\$1,257,747	\$1,105,101	\$884,081	\$663,061	\$442,040	\$221,020	\$37,366,616

City of San Marcos
2025 Water Impact Fee Credit Analysis - FINAL Report
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Proposed Debt Credit

Total Proposed IF Eligible Debt Payments

Cost	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Total
Principal	\$0	\$57,531	\$117,938	\$181,365	\$247,964	\$317,893	\$417,088	\$521,243	\$630,605	\$745,435	\$3,237,063
Interest	\$0	\$95,115	\$187,354	\$276,573	\$362,620	\$445,337	\$567,162	\$684,028	\$795,685	\$901,875	\$4,315,748
Total	\$0	\$152,646	\$305,292	\$457,938	\$610,584	\$763,230	\$984,250	\$1,205,270	\$1,426,290	\$1,647,311	\$7,552,811

	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Total
Impact Fee Eligible Principle + Interest	\$0	\$152,646	\$305,292	\$457,938	\$610,584	\$763,230	\$984,250	\$1,205,270	\$1,426,290	\$1,647,311	\$7,552,811
Total LUEs Each Year	43,275	44,140	45,023	45,923	46,842	47,779	48,734	49,709	50,703	51,717	
Cost per LUE	\$0.00	\$3.46	\$6.78	\$9.97	\$13.03	\$15.97	\$20.20	\$24.25	\$28.13	\$31.85	
Cumulative SUEs in 10-Year Period	849	1,714	2,597	3,497	4,416	5,353	6,308	7,283	8,277	9,291	
Portion Paid by Growth in 10-Year Period	\$0	\$5,930	\$17,608	\$34,865	\$57,540	\$85,487	\$127,422	\$176,613	\$232,832	\$295,918	\$1,034,216

Proposed Debt Credit
\$1,034,216