GARVER

Green Valley Special Utility District Wastewater Master Plan

Final Report

PREPARED FOR

Green Valley SUD

August 2025

GREEN VALLEY
SPECIAL UTILITY DISTRICT

Green Valley Special Utility District
Wastewater Master Plan

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Engineer's Certification

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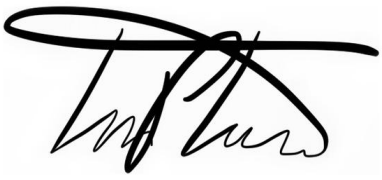

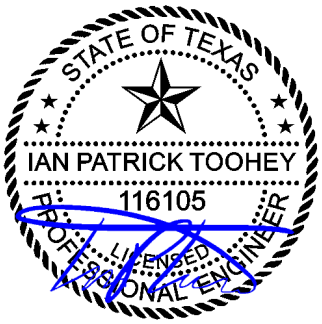

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List of Acronyms

Acronym	Definition
ADF	average daily flow
CCMA	Cibolo Creek Municipal Authority
CIP	capital improvement plan
EDU	equivalent dwelling unit
ft/s	feet per second
GBRA	Guadalupe-Blanco River Authority
GIS	geographic information system
GPD	gallons per day
GVSUD	Green Valley Special Utility District
ILS	influent lift station
LS	lift station
LF	linear feet
MGD	million gallons per day
MH	manhole
PVC	polyvinyl chloride
SARA	San Antonio River Authority
TCEQ	Texas Commission of Environmental Quality
WWMP	wastewater master plan
WWTP	wastewater treatment plant

Executive Summary

This Wastewater Master Plan (WWMP) was developed in close collaboration with Green Valley Special Utility District (GVSUD) staff. The WWMP aims to analyze the system's ability to service existing and future conditions and provide a vision of a system that is appropriately sized for anticipated growth. These evaluations and assessments from the WWMP resulted in a Capital Improvement Plan (CIP) for GVSUD to create an actionable sequence of capital improvement projects to execute.

Capital Improvement Plan

The Capital Improvement Plan (CIP) resulted in ten core CIP projects and one supplemental CIP project that totaled an estimated cost of $420,608,100. The complete list of the recommended CIPs is outlined in Section 5.0 of this WWMP. A summary of the CIP groups and their respective total cost are listed in Table ES-1. This estimate represents the investment in key wastewater infrastructure required to provide approximately 6.5 million gallons per day (MGD) of average daily flow of wastewater service to GVSUD's approximate 110 square miles service area. This includes key collection system infrastructure and facility expansion and improvements including:

- Collection System Infrastructure
  - Gravity/force mains and manholes (MH)
  - Regional lift stations (LS)
  - Santa Clara collection system expansion

- Facility Improvements
  - Expansion and upgrades to the existing Santa Clara Wastewater Treatment Plant (WWTP)
  - Construction of a greenfield WWTP to serve the eastern section of the GVSUD service area

This investment would approximately triple the service area of the existing system into areas that currently have no existing wastewater collection system infrastructure. Most of the collection system CIP projects are contingent on having a plan for treatment at their ultimate destination. Therefore, focusing on treatment is the recommended immediate-term focus of the CIP to meet the estimated long-term wastewater flow requirements of the service area.

Table ES-1: Capital Improvement Plan

CIP Group	Total Cost
Collection System CIP	$105,701,700
Facility CIP	$312,906,400
Total	$418,608,100
Supplemental Collection System CIP	$2,005,500
Total Including Supplemental CIP	**$420,613,600**

*AACE Class V Cost Estimates

1.0 Introduction

Green Valley Special Utility District (GVSUD) was established in 1963 and serves approximately 18,000 water accounts in Guadalupe, Comal and Bexar County through purchased water agreements. While most of their water customers operate on a septic system, GVSUD also owns, operates, and maintains the wastewater treatment facilities in a growing wastewater collection system that currently serves less than 2,000 accounts. GVSUD's existing wastewater infrastructure is shown in Figure 1-1. To maintain a proactive approach for accommodating future growth, the District selected Garver to complete a Wastewater Master Plan (WWMP) that includes wastewater collection system model development, collection system capacity analysis, and facility condition assessments.

1.1 Acknowledgements

Staff members throughout GVSUD were integral to the development of this WWMP. The Garver team is sincerely grateful for their dedication to this effort.

1.2 System Characteristics and Challenges

One of the most unique characteristics of the GVSUD wastewater service area with major implications for this WWMP is that the area is mostly undeveloped relative to the extent of its service area, as can be seen in Figure 1-1. With any WWMP, the rate of change of development, flow, and other conditions have a significant impact on planning to manage risk for infrastructure development. This consideration is even more important when the focus is on new infrastructure in system expansion areas.

Developing flow projections for a WWMP is inherently uncertain, as each assumption carries its own range of possible outcomes. Rather than focusing on any one assumption, it is more important that all assumptions collectively align to create a realistic and reliable framework for planning. The objective is not just to achieve accurate flow projections but to develop a holistic set of project triggers that work together to guide infrastructure sizing and long-term system performance. For a growing system like GVSUD, it is especially important to keep track of changing conditions over time that may challenge assumptions in areas and re-calibrate the CIP to account for new information.

Due to the expanded service area into currently unsewered areas, one of the first tasks of the WWMP was basin delineation and establishing a naming convention for the various areas of the collection system. Local topography was reviewed and discussed with GVSUD. The final basin delineation is shown in Figure 1-1 with the existing wastewater infrastructure. The Santa Clara basin, shown in green below, contains most of the existing collection system infrastructure. The Martinez Creek basin, shown in pink below, contains the remaining part of the existing collection system infrastructure for GVSUD. The other basins currently do not have any wastewater collection system infrastructure.

1.3 Relationships with Neighboring Utilities

GVSUD has established collaborative relationships with neighboring utilities, including the Guadalupe-Blanco River Authority (GBRA), the City of Seguin, the City of Cibolo, the City of Schertz, and the San Antonio River Authority (SARA). These entities, like GVSUD, are experiencing organic residential and industrial growth. In response, GVSUD has been actively coordinating with these utilities to align

wastewater infrastructure planning efforts, ensuring a cohesive and efficient approach to serving the growth in Central Texas.

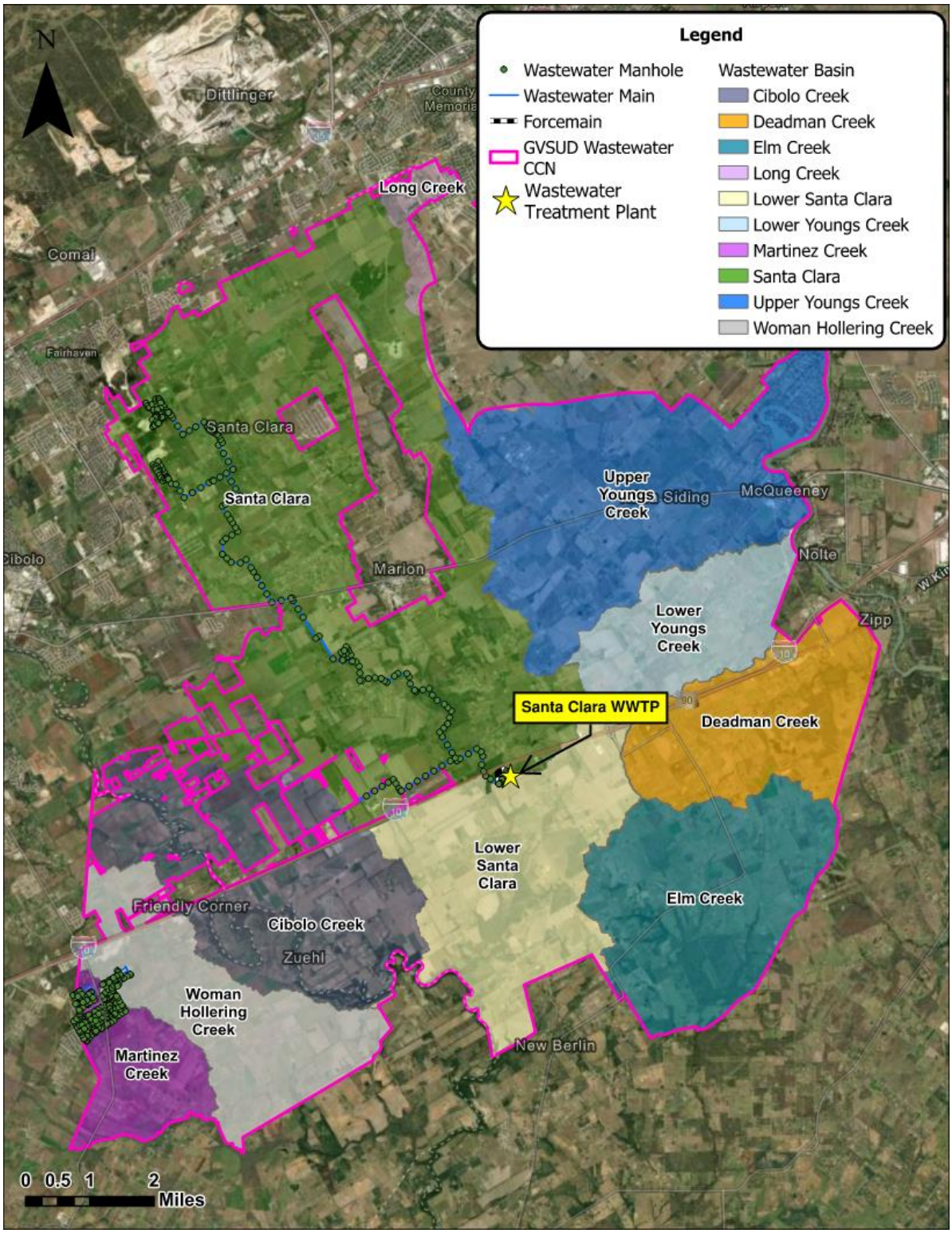


Figure 1-1: GVSUD's Existing Wastewater Infrastructure

2.0 Population and Flow Projections

This section outlines the methodology used to develop population and wastewater flow projections for the WWMP. The projections support infrastructure planning through the 2050 planning horizon and are informed by long-term buildout scenarios. The methodology integrates historical data, GIS-based land use analysis, and growth assumptions to estimate future wastewater flows across multiple drainage basins.

2.1 Key Challenges and Assumptions

The GVSUD planned service area for wastewater is larger than the extent of the existing wastewater collection system. Many basins within the planned service area have no existing wastewater infrastructure. There is a combination of developed and undeveloped areas in these intended service areas. For currently undeveloped areas, there is limited land usage data available to base total buildout potential. With these key challenges and system characteristics in mind, Garver developed the following assumptions for the purpose of developing a WWMP for a system with its unique characteristics:

2.1.1 Land Usage

With limited land usage data for the service area, buildout potential was primarily assessed relative to municipal boundaries. For development areas within city limits, buildout potential of 1.5 equivalent dwelling units (EDU)/acre was assumed due to local ordinances having tighter regulation on potential land usage density. For areas outside of city limit boundaries, buildout potential of 4 EDU/acre was assumed. Several existing developments in the service area were checked and found to align with these land usage assumptions.

2.1.2 Growth Rate

A growth rate of 6%, as aligned with the 2024 GVSUD Water Distribution System Master Plan, was assumed for all wastewater collection system basins. Alternative growth rate scenarios of 4% and 8% were provided for basin-level projections for reference only and were not used in any key infrastructure sizing decisions.

2.1.3 Currently Undeveloped Basins

The large amount of potential service areas without existing wastewater infrastructure is a challenge for conventional projection methods. Because growth is expected to come in waves more than a steady, constant growth rate, Garver recommended adding another assumption for this unique situation. Every basin in the service area is assumed to reach at least 30% of its total buildout potential by 2050. To accomplish this, currently unserved basins without sewer infrastructure were assigned a base development in 2025 ranging from 250 EDUs up to 1,000 EDUs to initiate growth and reach the intended buildout potential assumption. This is intended to simulate the addition of one or several contributing developments to each service area within the initial 5-year planning horizon.

2.1.4 Flow Rates

One EDU is assumed to contribute 185 gallons per day (GPD), as aligned with findings from analyzing historic connection counts and flow rates. Peaking factors of 2.5 and 4.0 will be used for design peak daily and hourly flow scenarios, respectively.

2.1.5 Other Assumptions

Several developments have submitted feasibility studies to GVSUD requesting wastewater service for their planned projects. GVSUD is expected to experience rapid growth related to development, and a key component of the WWMP involves planning to accommodate these known developments. Where an expected completion date was provided, those timelines were incorporated into the projections. For developments without a specified completion date, it was assumed they would be completed by 2050.

As illustrated in Figure 2-1, numerous future developments have formally requested service from GVSUD. Additionally, there are several developments within the Woman Hollering Creek sewer basin that are planned to be served by package plants including Clearwater Creek, Lily Trails, and Thea Springs as shown in Figure 2-2. Also, Table 2-1 below describes the assumed conversion rate of households on septic being added to the wastewater collection system. Septic conversions are meant to account for currently developed parcels and not include their representative areas in the assumptions for developable land.

Table 2-1: Septic Conversion Assumptions Summary

Year	Septic Account Converted
2030	10%
2035	25%
2050	50%
2075	100%

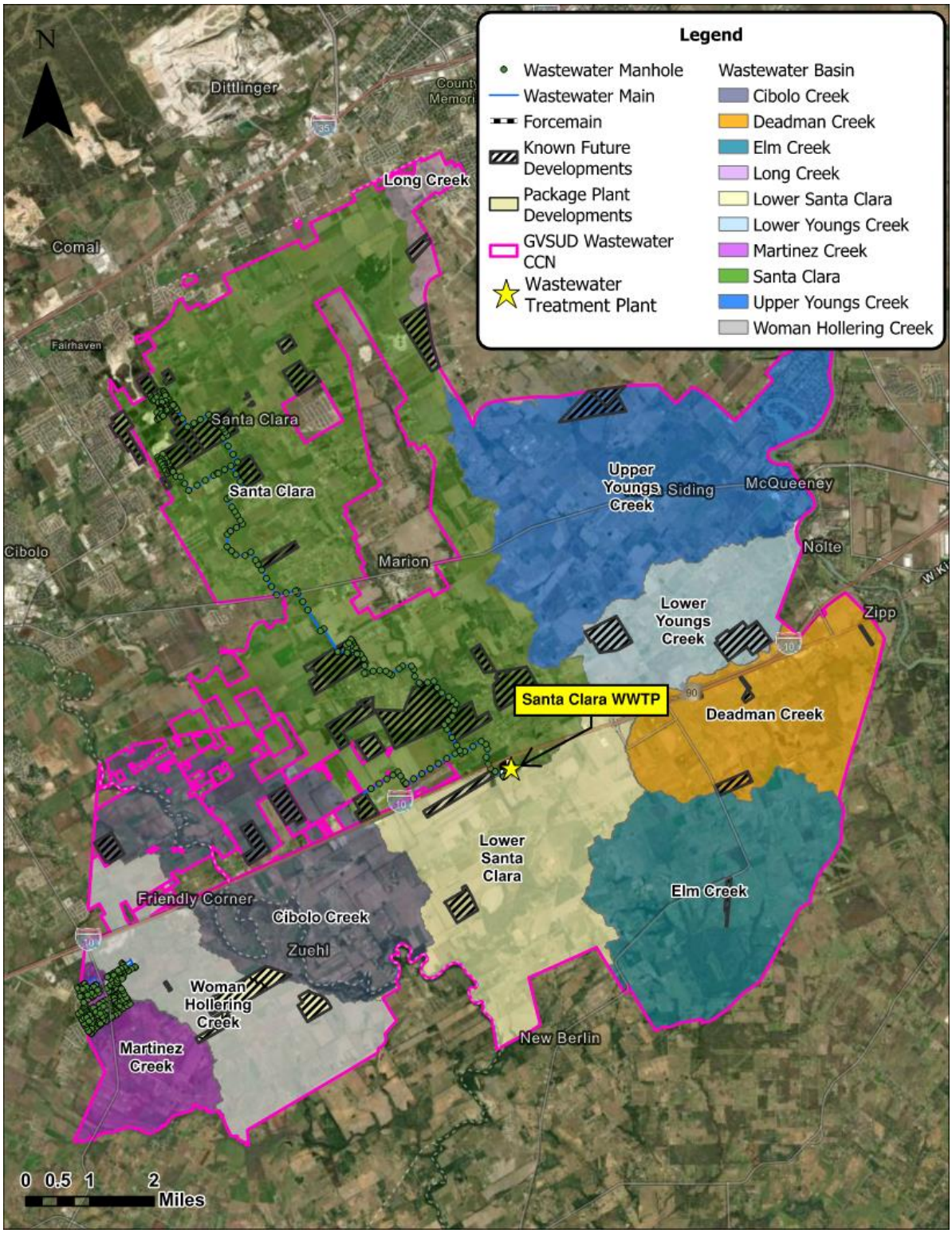


Figure 2-1: Known Future Developments System Overview

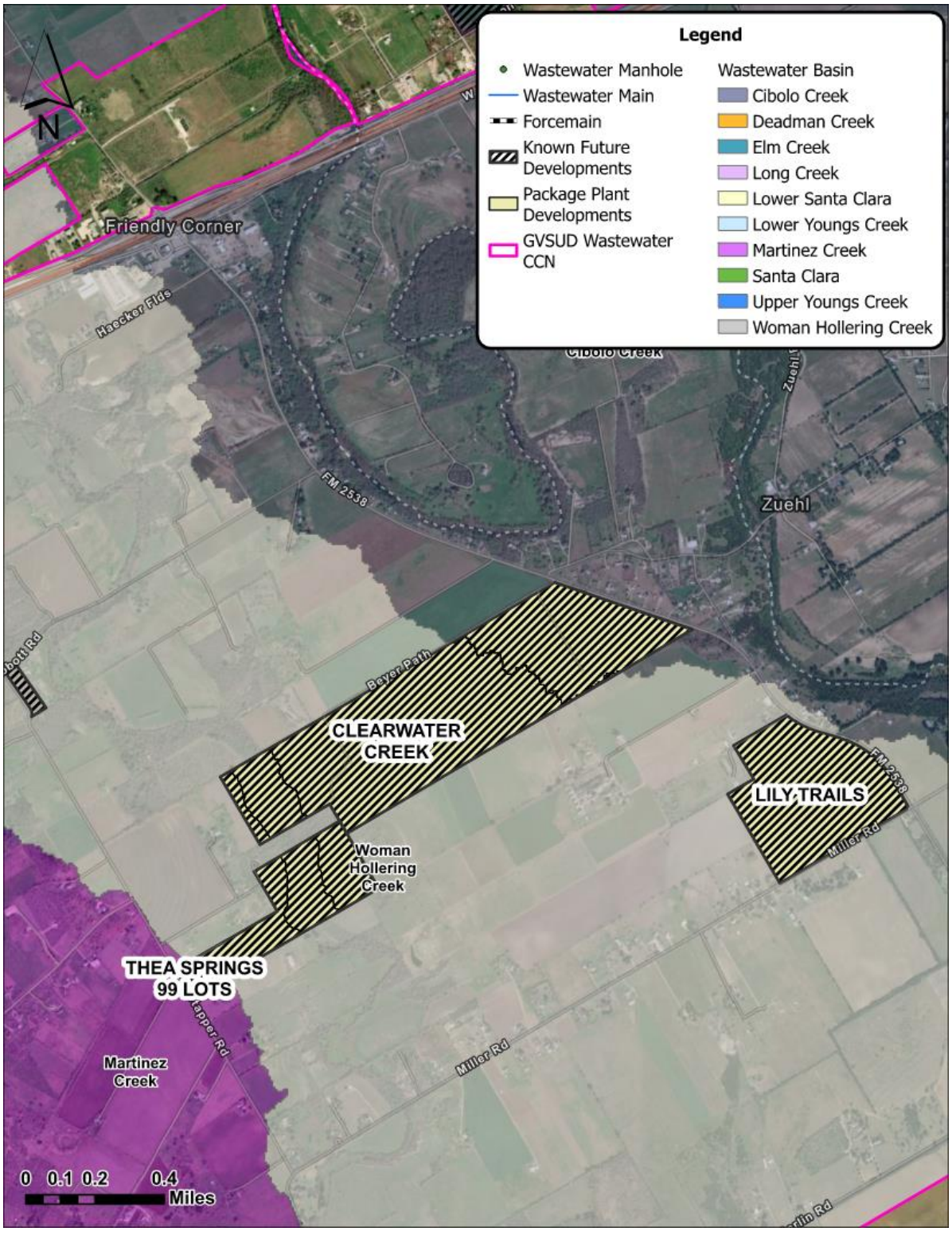


Figure 2-2: Package Plant Developments

2.2 Flow Projection Results

The assumptions described in Section 2.1 were applied to every basin. **Appendix A** contains summary sheets for every individual basin and Figure 2-3 shows a summary of the average daily flow (ADF) projections for the service area grouped into West, Central, and East Basins.

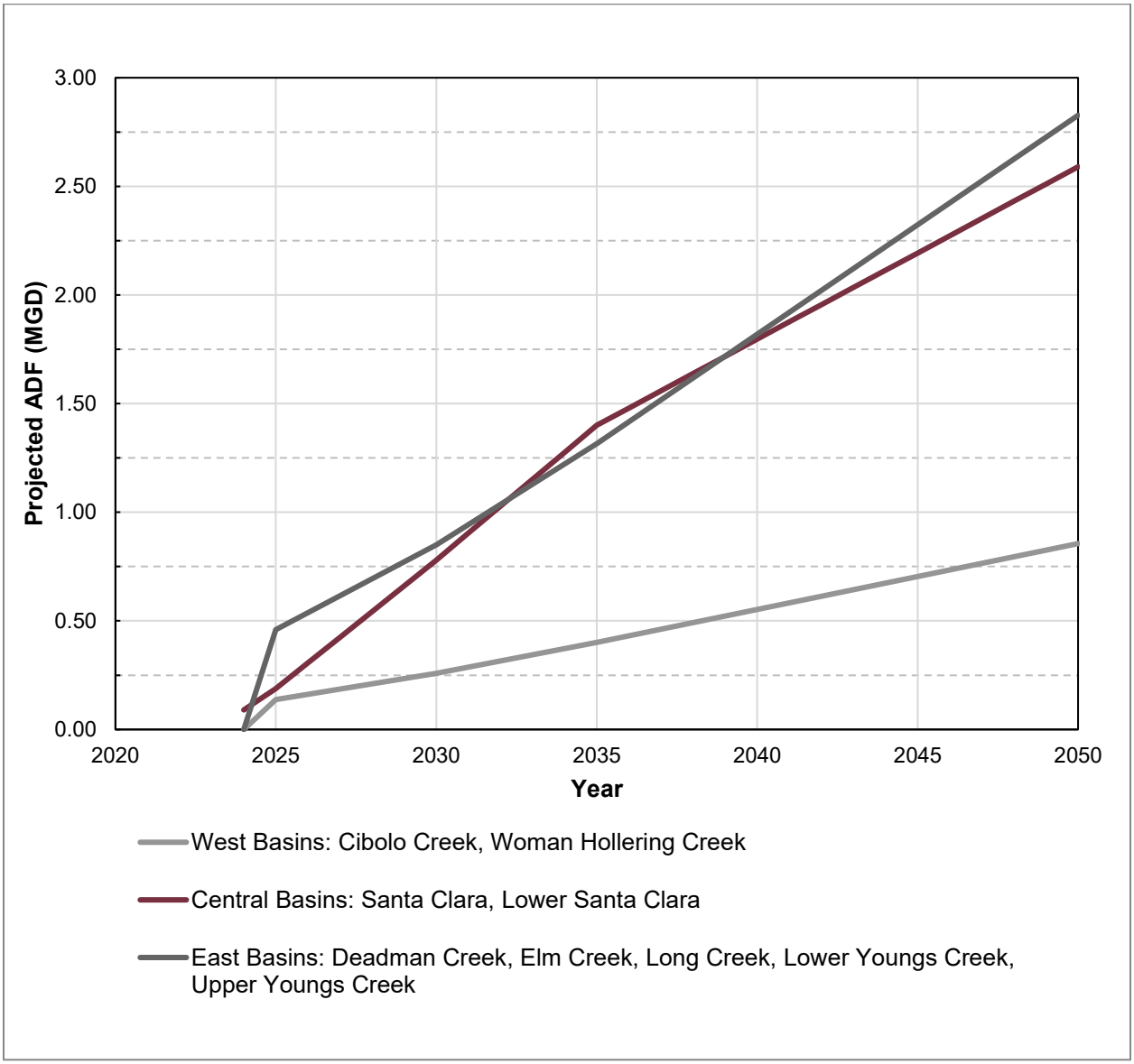


Figure 2-3: Summary of Average Daily Flow Projections by Grouped Basins

2.3 Projected Flow Distribution

For the WWMP, it was not just important to decide how much flow to assign to a given service area, but it was also critical to define the ultimate destination for that flow. At our System Capacity Workshop held on April 22, 2025, Garver and GVSUD talked through various scenarios and implications for routing the projected flows. Generally, the initial approach aimed to achieve the following:

1. Maximize existing infrastructure and agreements: This honors prior investments and promotes efficient system utilization.
2. Limit new infrastructure tunneling beneath Interstate 10 (IH-10): Tunneling under a major roadway is cost-intensive and represents a potentially significant capacity consideration for all upstream basins.
3. Send projected wastewater flow to the closest available WWTP: The large growth areas may reasonably have alternate directions for routing flow including the Cibolo Creek, Woman Hollering Creek, and Lower Santa Clara basins. In these cases, the general strategy is to route to the nearest WWTP for efficiency. The alternatives are elaborated in Section 3.3 and 3.4.

Through this discussion, the overall final flow distribution for the identified basins in the GVSUD service area was developed, as shown in Figure 2-4.

For the Santa Clara and Lower Santa Clara basins, flow is expected to be sent to the existing Santa Clara WWTP. The Santa Clara WWTP was placed into service in November 2021 and has a current utilization of approximately 75,000 gallons of effluent per day on average in 2024. GVSUD is planning to construct a 0.5 million gallons per day (MGD) package plant to bring the treatment capacity for this location to 0.75 MGD, which is expected to be substantially completed by October 10, 2025. As outlined in the 2025 Engineering Feasibility Report For the 2025 Santa Clara Creek Wastewater Treatment Facility Phase III report published by Utility Engineering Group (UEG) and Garver, GVSUD is currently pursuing a Phase I expansion of the WWTP to expand the capacity by an additional 1.25 MGD, bringing the total treatment capacity to 2.0 MGD with the two package plants also remaining in service. Based on expected growth in the Santa Clara and Lower Santa Clara basins, this WWMP recommends GVSUD to pursue a Phase III expansion of the Santa Clara WWTP to increase the total capacity to 3.75 MGD, by taking the 0.75 MGD package plants offline and adding on 2.50 MGD of capacity through expansion. Further information regarding the expansion recommendation is described in Section 5.0.

For the eastern basins of the GVSUD service area, a greenfield WWTP was agreed upon as the preferred method for servicing flows at this critical decision area with a new gravity sewer tunnel beneath IH-10 connecting the Youngs Creek basins to the greenfield East WWTP. Further information regarding the greenfield East WWTP is described in Section 5.0.

Additionally, the City of Cibolo has partnered with GVSUD and the City of Schertz to design and construct the Cibolo Creek Municipal Authority (CCMA) WWTP which is anticipated to service the Cibolo Creek and Women Hollering basins for GVSUD. Further information on the CCMA plant is provided in Section 3.0 of this WWMP.

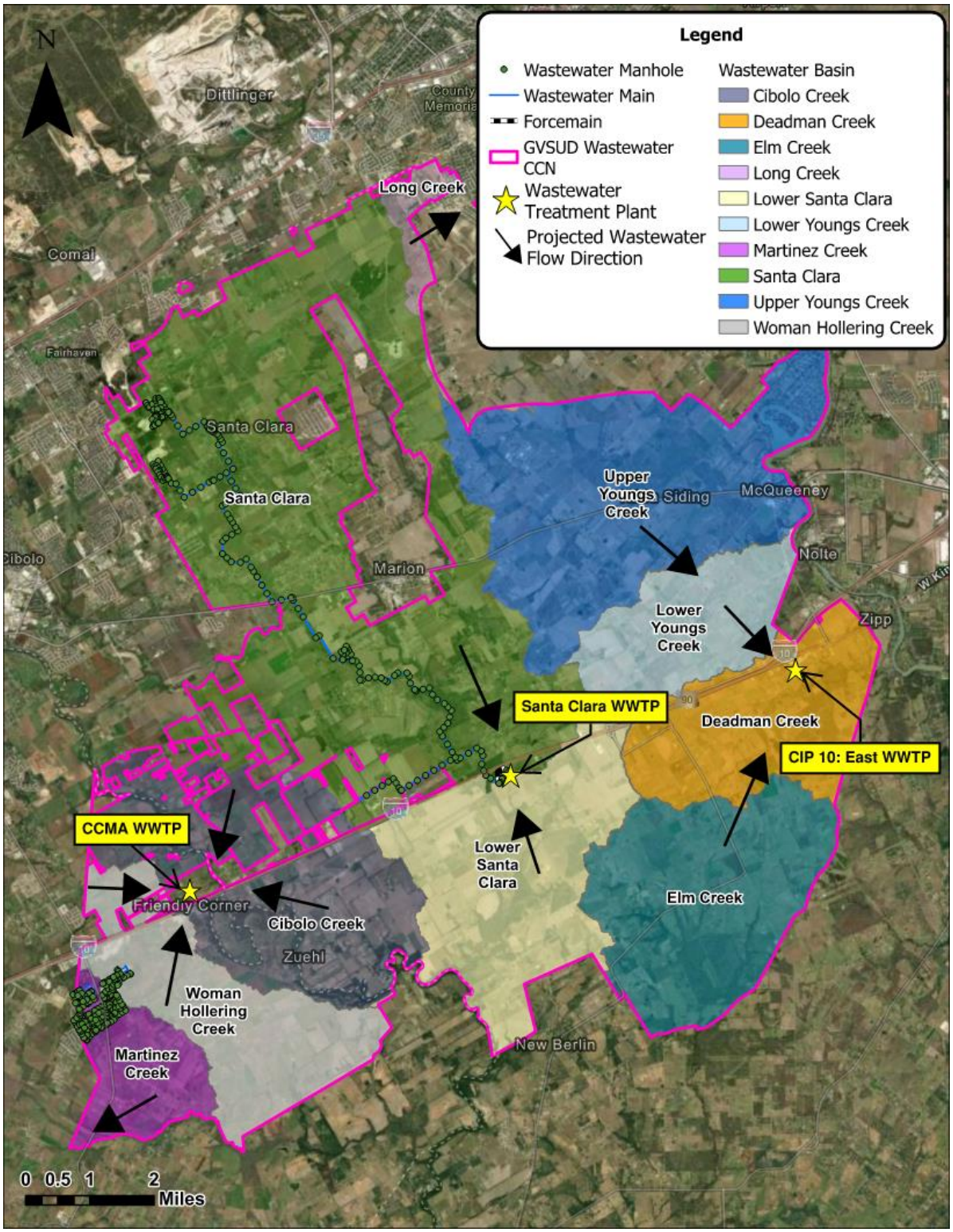


Figure 2-4: Projected Basin Flow Distribution

3.0 Wastewater Collection System Model Development and Analysis

A new hydraulic model was developed as a tool that can grow with the collection system, inform infrastructure planning and investment decisions, and analyze system requirements for the anticipated growth. This portion of the report details the approach used to model the existing system performance and for sizing new sewer infrastructure in planned expansion areas. The goal of the analysis is to provide a vision and cost estimate of a recommended collection system infrastructure that is appropriately sized to accommodate the growth in GVSUD's service area that was previously described in Section 2.0 of this WWMP.

3.1 Model Development and Existing System

A hydraulic model was developed using Bentley SewerGEMs software for the existing GVSUD sewer infrastructure shown in previous Figure 1-1. Overall, most of GVSUD's existing sewer infrastructure is in the Santa Clara service area. Flow monitors were not used in the calibration of the model. Flow distribution was derived utilizing water billing data and was adjusted until average flow conditions were approximately aligned with the average dry-weather flow conditions observed at the Santa Clara WWTP as shown in Figure 3-1. This hydraulic model building exercise highlighted that the core existing infrastructure is already in good position to provide wastewater service to the projected growth in the Santa Clara basin. This model, like the system it reflects, has room to grow with the system and will become an increasingly important tool as sewer flows continue to increase closer to the capacity of the sewer infrastructure.

As illustrated in Figure 3-1, the Santa Clara basin has recorded an approximate average dry-weather flow of 75,000 GPD since July 2024, and the highest recorded peak daily flow response had an observed peaking factor of approximately 2.5. No flow monitor data is currently available for the Martinez Creek basin, so flows are currently estimated from water billing data.

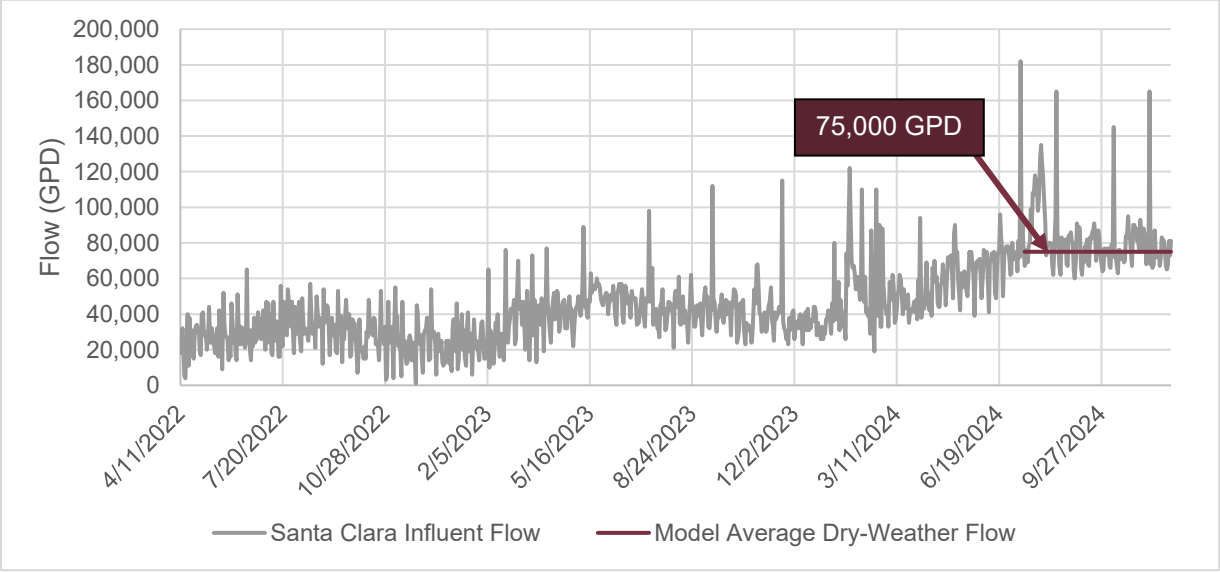


Figure 3-1: Santa Clara Influent Flow for the Study Period

3.2 Future System Approach

Most of the projected flow described previously in Section 2.0 will flow through infrastructure that does not exist today with over 2.0 MGD of ADF to a greenfield East WWTP by 2050. As such, it is important to set a target that guides the sizing for the new collection system infrastructure.

3.2.1 Gravity Sewer Mains

An industry standard practice for sizing a gravity sewer main is selecting a size where the expected maximum depth-to-diameter ratio under dry-weather flow conditions is less than 0.5. This can be analyzed by applying Manning's equation:

$$Q = \frac{1.49}{n} AR^{2/3} S^{1/2}$$

Where:

- Q = flow rate
- n = Manning's roughness coefficient
- A = cross-sectional flow area
- R = hydraulic radius
- S = slope of the pipe

By applying the maximum depth criteria, capacity estimates by diameter can be generated. For the analysis, all new sewer infrastructure is assumed to be polyvinyl chloride (PVC). For the slope, minimum slope was considered too conservative for the terrain in the service area. Instead, a capacity range was estimated by using 25th and 75th percentile slope values for gravity sewer lines from comparable gravity sewer systems. The result of these assumptions and guidelines can be found in Figure 3-2 and was used for sizing new gravity sewer infrastructure by comparing it to the required average flow estimates for the respective sewer basin.

Another method for sizing gravity sewer pipes is estimating whether the pipe will exceed its full capacity during design wet-weather flow conditions. This method will also be considered in sizing future gravity sewer pipes.

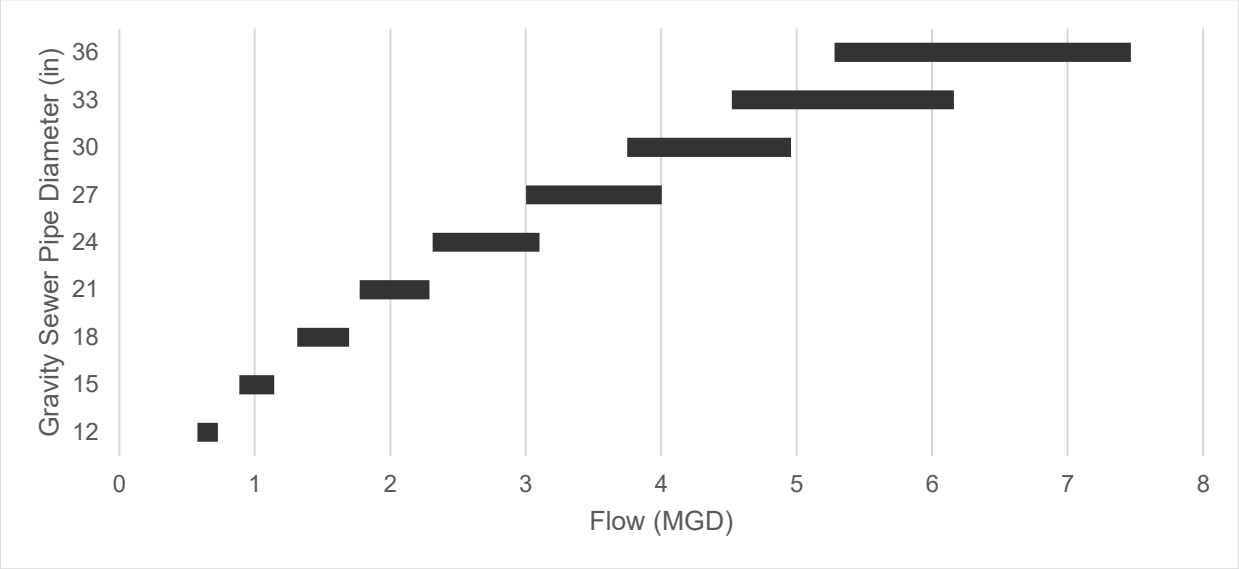


Figure 3-2: Estimated ADF Capacity Range by Diameter for Gravity Sewer Pipes

3.2.2 Pumps and Force Mains

Force mains were assumed to be at capacity at the flow rate where velocity reaches 5 feet per second (ft/s). These capacity estimates were compared to the calculated flow projections to determine an appropriate size. While the Texas Commission of Environmental Quality (TCEQ) allows force main velocities greater than 6 ft/s, there are extra requirements to certify the system is appropriately designed to handle surge pressure conditions. Details like this are design-dependent and beyond the scope of this analysis, so a more conservative criteria was used. Furthermore, a peaking factor of 2.5 was applied to the ADF to estimate the design wet-weather flow conditions used for sizing the pumps and force main. While peak design hour factor of 4.0 was used in the projections, using a peak design day factor of 2.5 was chosen for force main sizing to account for some allowance for storage and potential to exceed the velocity criteria with an appropriately designed system for surge conditions.

3.3 Future System Analysis Results

The projections and flow distribution from Section 2.0 of this WWMP, were compared to the sizing guidance described above in Section 3.2 to estimate the minimum required infrastructure sizing for the proposed collection system. Table 3-1 below summarizes the minimum estimated infrastructure sizing requirements to service the projected system expansion and growth. The following are noteworthy considerations:

- The Martinez Creek and Long Creek basins are anticipated to be serviced by the SARA and GBRA collection systems, respectively.
- The City of Cibolo has partnered with GVSUD, and the City of Schertz to design and construct the CCMA WWTP which is anticipated to service both the Cibolo Creek and Women Hollering basins for GVSUD.

- The existing Santa Clara collection system was found to be adequately sized to accommodate the projected growth for its basin.
- 2050 flow estimates were used for sizing all infrastructure except gravity sewer mains in the Lower Youngs Creek basin. Because an infrastructure tunnel under IH-10 would be required, estimated buildout flows for the basins were used for sizing its infrastructure to be more conservative and account for it being key infrastructure even beyond the planning horizons of this WWMP.

Table 3-1: Summary of Key Infrastructure Sizing for Future Collection System

Basin		2050	Estimated Minimum Size Infrastructure			
		Net ADF (MGD)	Cumulative ADF (MGD)	Gravity Sewer (in)	Pump[1] (gpm)	Force Main[1] (in)
Martinez Creek Basin (Route to SARA)						
Martinez Creek		0.44	0.44	-	-	-
Long Creek Basin (Route to GBRA)						
Long Creek		0.24	0.24	-	-	-
CCMA South Basins (Route to CCMA WWTP)						
Cibolo Creek	Primary	0.6	0.6	12	1,000	12
Woman Hollering Creek	Primary	0.22	0.82	12	1,500	16
Santa Clara Basins (Route to Santa Clara WWTP)						
Santa Clara		2.13	2.59	-	-	-
Lower Santa Clara	Primary	0.46	0.46	12	-	-
	Alternative	0.46	1.28	18	-	-
Cibolo Creek	Alternative	0.6	0.82	12	1,500	16
Woman Hollering Creek	Alternative	0.22	0.22	12	500	8
East GVSUD Basins (Route to Greenfield East WWTP)						
Lower Youngs Creek		0.48	1.34	48[2]	-	-
Upper Youngs Creek		0.86	0.86	18	1,500	16
Deadman Creek		0.44	1.24	24	-	-
Elm Creek		0.8	0.8	18	1,400	16

[1] Peak Daily Peaking Factor of 2.5 applied to cumulative ADF for sizing pumps and force mains.
[2] Minimum 48-inch recommendation primarily focused on Interstate 10 crossing and based on full build-out of Upper + Lower Youngs Creek at 5 EDU/acre.

3.4 Spatial Considerations for Future Sewer Infrastructure

The topography of the basins was considered in the estimated layout of key sewer infrastructure for the future system. This high-level analysis suggested that some basins may be reasonably serviced by a gravity sewer system while others will likely need a lift station (LS) to help provide sanitary sewer service for the local area. For gravity sewer infrastructure, the starting point was generally selected as a location that is mostly accessible to the whole basin and followed existing creeks to its discharge point. For pressurized force mains, roads leading to its discharge point were prioritized for routing. Figure 3-3 shows the estimated layout for key sewer infrastructure servicing the anticipated growth in the system.

The Woman Hollering Creek and Cibolo Creek basins are split by IH-10. Approximately one-third of their respective projected flows are anticipated to be served by new gravity sewer infrastructure north of IH-10 as outlined by agreements with the Cities of Cibolo and Schertz. The rest of the projected flows are anticipated to be served by new wastewater collection system infrastructure that is anticipated to flow south and then be pumped north to the CCMA WWTP from a LS.

Alternatively, the portions of the Woman Hollering Creek and Cibolo Creek basins south of IH-10 could be serviced by the Santa Clara WWTP. This alternative is clearly represented in Figure 3-4, and would impact three projects in Table 3-1. In the Woman Hollering Creek basin, the force main to the CCMA WWTP would no longer be required and its force main would discharge into the Cibolo Creek LS. This would effectively just change the required direction of the force main in the corridor between these basins. Cibolo Creek's force main would then discharge into the new gravity sewer trunk line in the Lower Santa Clara basin. This anticipated wastewater flows from the Woman Hollering Creek and Cibolo Creek basins would require a larger trunk line in the Lower Santa Clara basin as shown in Table 3-1. These alternatives provide different approaches for long-term treatment options for the Woman Hollering Creek and Cibolo Creek basins.

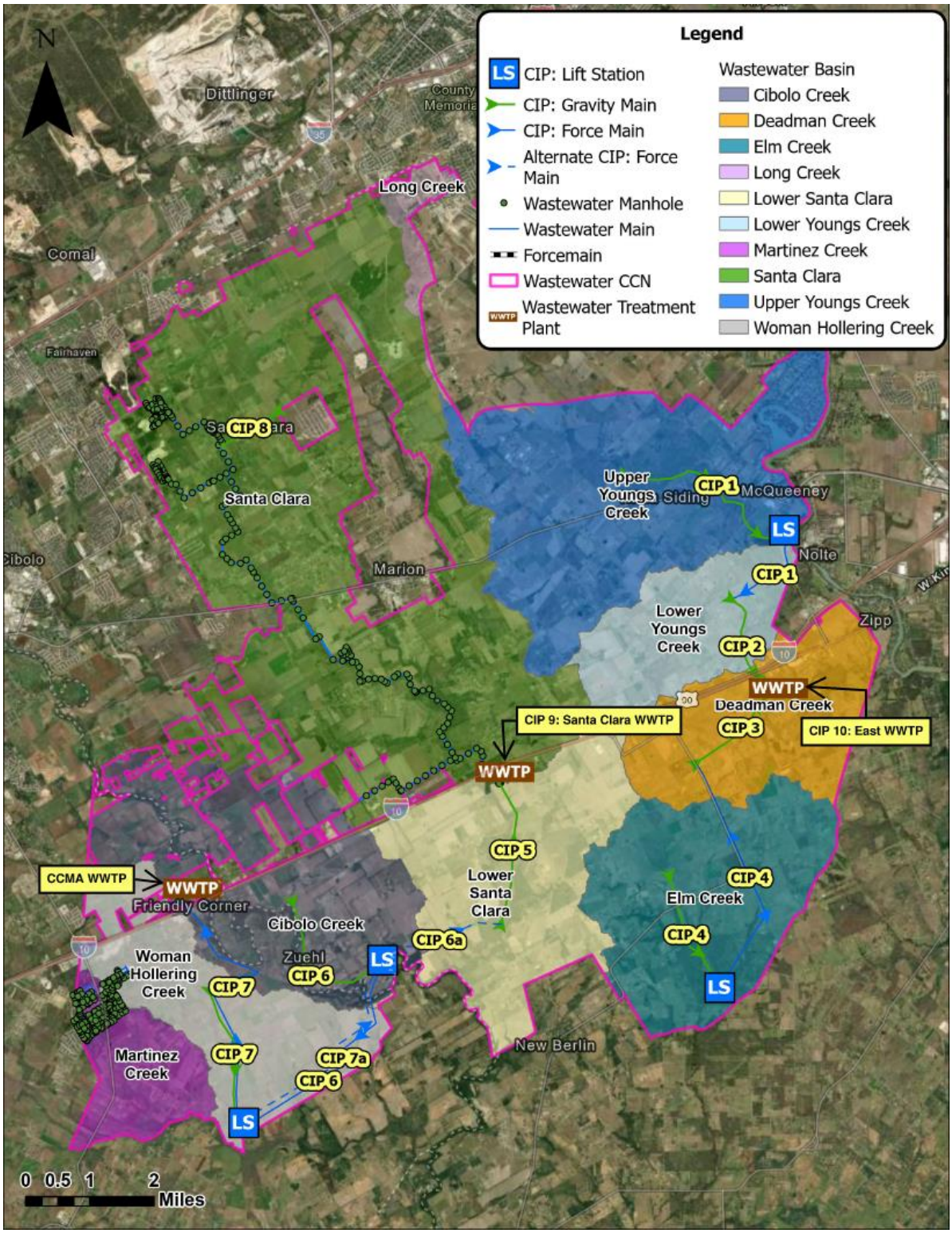


Figure 3-3: Estimated Layout of Capital Improvement Projects

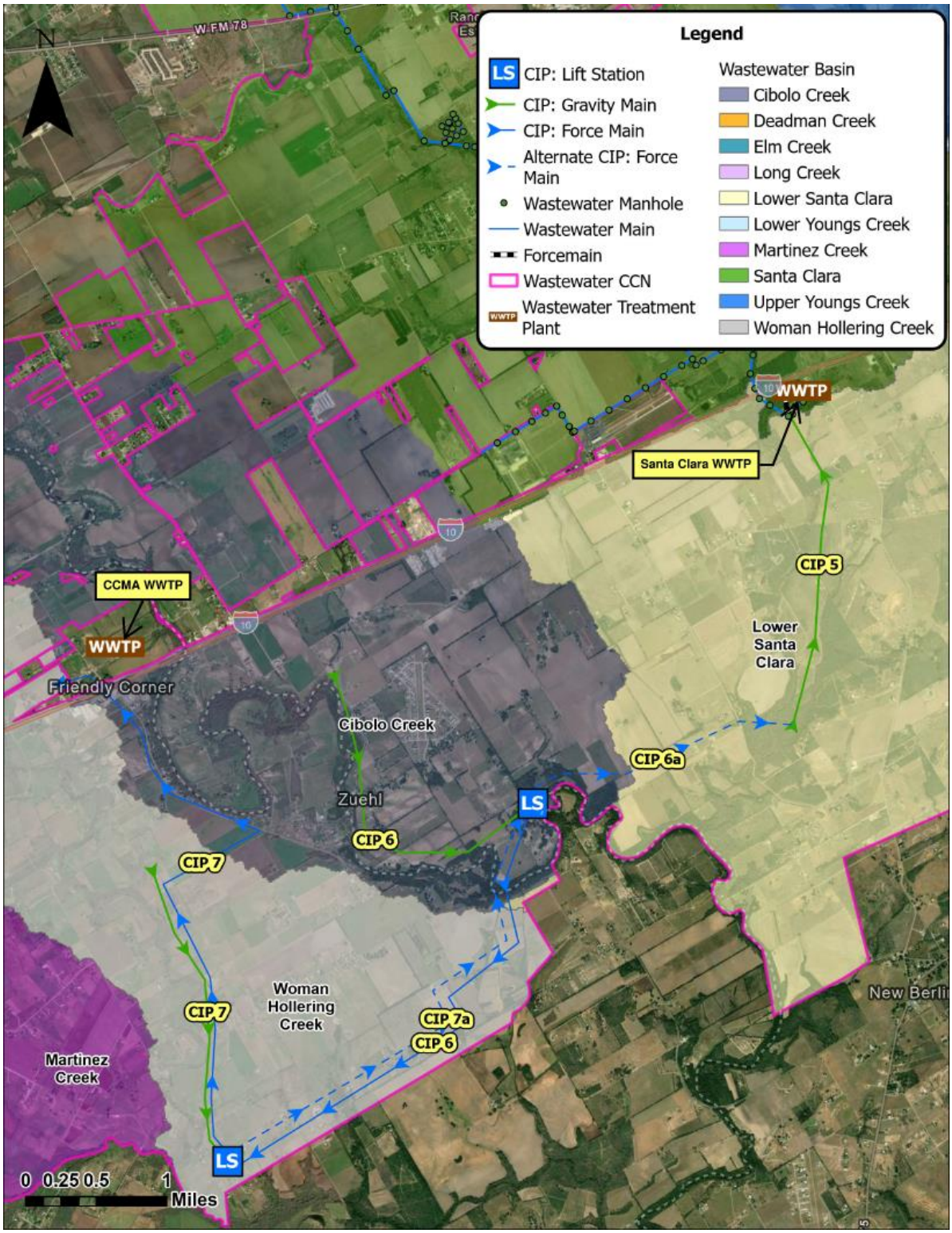


Figure 3-4: Southwest Service Area Estimated Layout of Capital Improvement Projects

4.0 Wastewater System Condition Assessment

To execute the wastewater collection system condition assessment and to provide recommendations for CIP projects, a limited condition assessment was conducted including visual field investigations on April 10, 2025, that was accompanied by a review of historical condition assessment information. The following collection system infrastructure and facilities were evaluated as listed below:

- Santa Clara WWTP
- Cibolo Farms Lift LS
- Select Manholes (MH) within the Collection System

4.1 Santa Clara WWTP

Santa Clara WWTP, located at 8935 IH-10 Frontage Rd, Seguin, Texas 78155, was built in 2022 and treats wastewater from the Santa Clara basin as shown previously in Figure 1-1. Due to the age of the facility, and the overall good condition, only one condition related CIP project is recommended by Garver.

Based on Garver's observation, there was minor rusting at the joints in the piping, as shown below in Figure 4-1. The pipes should be monitored but are not currently in critical condition; there are no condition improvements recommended at this time.

Figure 4-1: Visible Rusting of pipes

The jib crane located at the Santa Clara WWTP is experiencing a malfunction with the joint on the main mast, such that the top half of the crane swings freely in windy conditions. As shown in Figure 4-2, operators have currently chained the main mast to the nearby bollards due to the safety hazard of a free moving jib crane mast. Garver has contacted the manufacturer, ProservCrane, and discussed that a technical inspection is recommended to be performed to identify what maintenance is needed to address the safety concern.

Figure 4-2: Jib Crane at Santa Clara WWTP

The 40-foot deep and 12-foot diameter Influent LS, shown in Figure 4-3, at the Santa Clara WWTP has a total of three pumps including one standby pump & two duty pumps. The ILS currently operates from a 3-float system. Garver has recommended installing a 4-5 float system, as desired by GVSUD staff, to enhance operational efficiency and redundancy. The installation of this system would include dropping the floats and tying in the electrical components to the existing control panel. A greater explanation of the ILS improvements recommendation is included as CIP 11 in **Appendix B**.

Figure 4-3: Santa Clara WWTP Influent Lift Station

As mentioned on the condition site assessment visit, GVSUD operators expressed the current issues with the Dwyer Transducers in the ILS. Garver recommends maintaining an inventory of Dwyer Transducers to replace as needed to maintain operations. No further condition-related projects for the Santa Clara WWTP are currently recommended.

4.2 Cibolo Farms Lift Station

Cibolo Farms LS, shown in Figure 4-4, is located near the intersection of Green Valley Road and FM 1103. This facility was recently constructed to assist in wastewater service from the Cibolo Farms subdivision. This LS is currently owned by the developer; however, a transfer of ownership to GVSUD is planned. Due to the age of the facility, current ownership, and the overall good condition, no CIP improvements are currently recommended.

Figure 4-4: Cibolo Farms LS

4.3 Manhole conditions

Garver selected three wastewater manhole (MH) locations to conduct a condition assessment as shown in Figure 4-5, and listed below:

- MH-SC-0215
- MH-SC-0074
- MH-SC-0115

The selected MHs were strategically chosen based on their locations throughout the GVSUD system to provide representative insights. MH-SC-0215, located within near the Grace Valley subdivision, is a newer installation and serves as a benchmark for evaluating recently constructed MHs in the system. MH-SC-0074, situated along West FM 78 at the intersection with Cattle Creek Lane, is positioned approximately midway along the Santa Clara Interceptor, offering valuable information regarding the interceptor's condition. MH-SC-0115, located at the intersection of South Santa Clara Road and Bolton Road near the entrance to the AISIN Facility—an industrial customer of GVSUD—was selected to assess the condition of MHs serving industrial users.

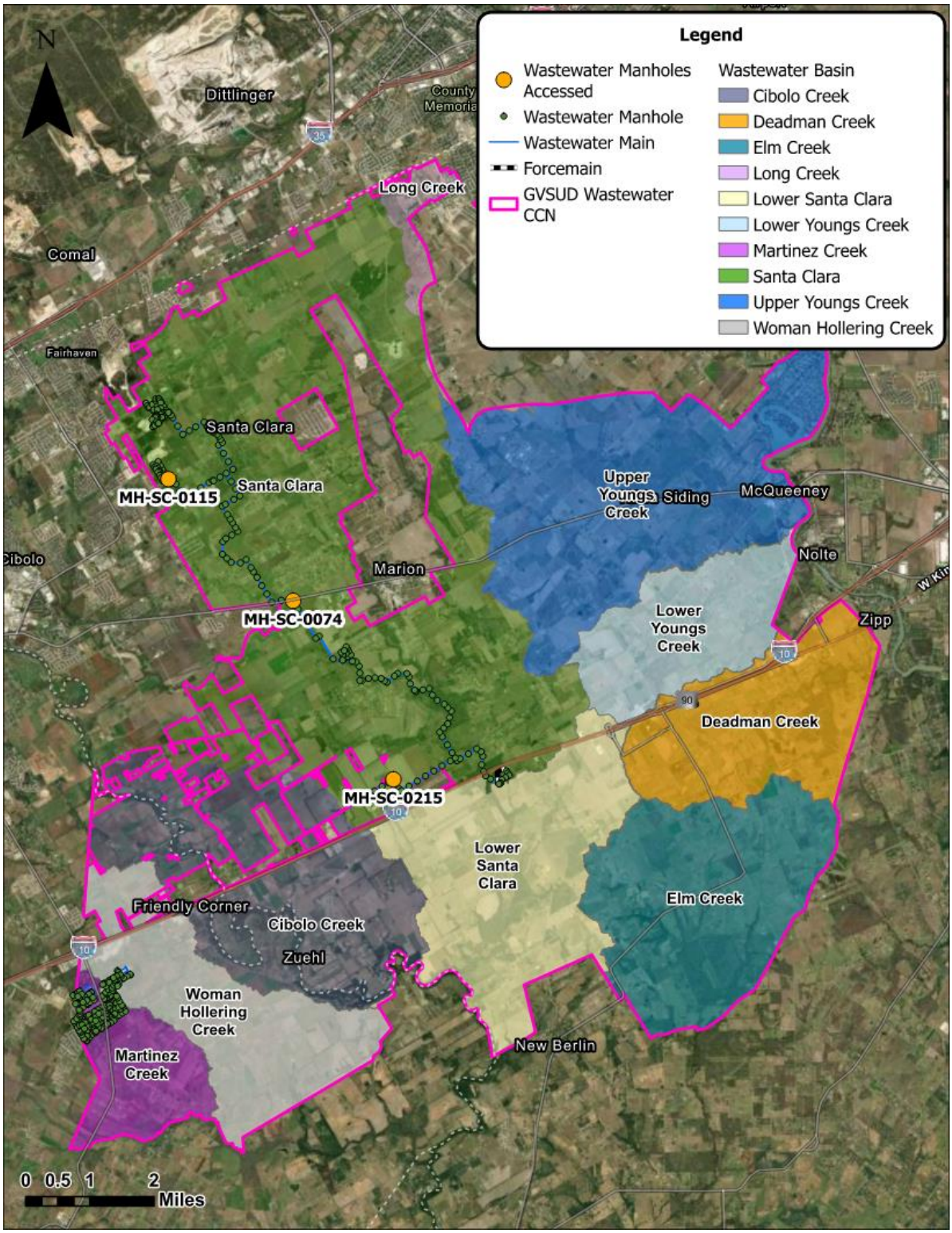


Figure 4-5: Select Wastewater Manholes for Condition Assessment

The MHs that were accessed are in good condition. An example is shown below in Figure 4-6, there is no visual damage or corrosion to the MHs that is of concern. There are no CIP improvements recommended at this time for the GVSUD MHs.

Figure 4-6: Wastewater Manhole - MH-SC-0074

5.0 Capital Improvement Plan and Recommendations

The WWMP for GVSUD presents a strategic and data-driven roadmap for expanding GVSUD's wastewater infrastructure. Based on field evaluations, historical data analysis, regulatory review, and stakeholder collaboration, Garver has developed a comprehensive CIP to service the system's anticipated growth. The CIP includes ten core CIP projects totaling approximately $106 million dollars of new collection system infrastructure and approximately $313 million dollars of new treatment facility infrastructure - as well as one supplemental collection system CIP totaling approximately $2 million dollars.

We recommend that GVSUD plan to pursue the Phase III expansion of the Santa Clara WWTP due to the anticipated growth in the Santa Clara basin and lower Santa Clara basin. The expansion is expected to be a 2.50 MGD increase in treatment capacity to get to a total of 3.75 MGD. Unlike most CIP projects in this WWMP that are planning brand new wastewater infrastructure, this project is a plan for existing infrastructure and should be based on a flow trigger. If growth in the planning horizon deviates from the expected projections for the basin, then the recommended timeline would shift accordingly. The expansion recommendation is identified as CIP 9 in **Appendix B.**

We recommend that GVSUD proceed with building a greenfield WWTP in the Deadman Creek basin due to anticipated growth in that area of the system and the corresponding need to treat increased volumes of wastewater. The proposed facility would be a 3.0 MGD WWTP. GVSUD can construct the WWTP or possibly collaborate with neighboring partners to construct a regional WWTP. A regional approach could offer several benefits, including shared operational costs and a realized economies of scale for construction and operations and maintenance. However, even with cost-sharing opportunities, GVSUD should plan for the full scope of its own treatment needs. The greenfield WWTP is identified as CIP 10 in **Appendix B**.

A high-level CIP summary map is shown Figure 5-1. Section 5.1 and 5.2 summarize the recommended Collection System Capital Improvement Plan and Facility Capital Improvement Plan, respectively. These tables provide estimated project timelines to support GVSUD in planning for when each project is anticipated to be initiated. The project horizons were established based on the best available data for the basin and are subject to adjustment as development progresses throughout the area. They also include projected durations encompassing engineering design, bidding, and construction phases, as well as estimated project costs in 2025 dollars. The cost estimates account for contingency, contractor overhead and profit, design fees, easement acquisition, and mobilization. Refer to **Appendix B** for detailed CIP exhibits outlining the project descriptions, estimated costs, and project durations.

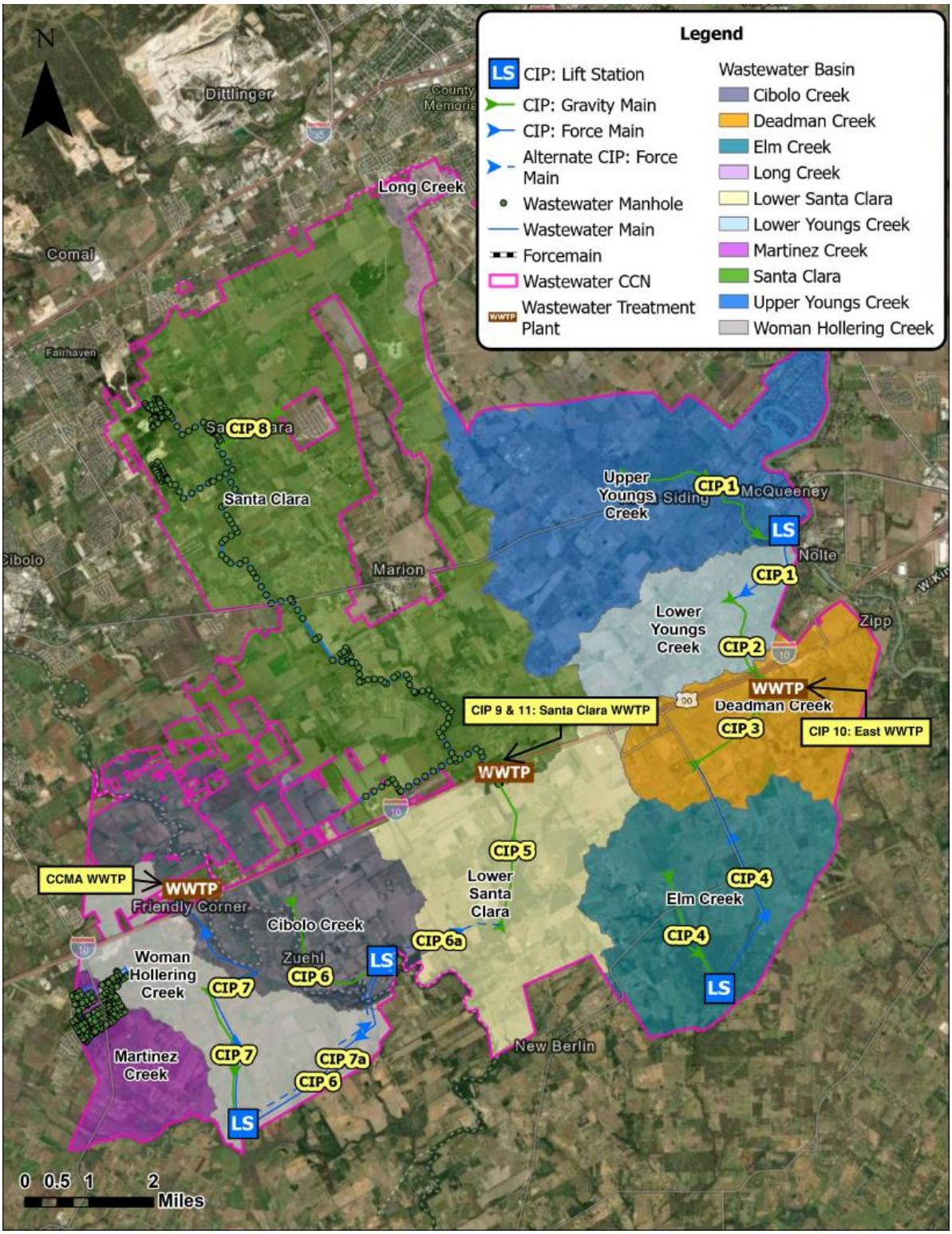


Figure 5-1: Overall CIP Exhibit

5.1 Collection System Capital Improvement Plan

Key collection system CIP projects are listed in Table 5-1.

Table 5-1: Collection System CIP

CIP Number	Name	Description	Project Horizon	Estimated Total Project Duration (months)	Estimated Total Cost
1	Upper Youngs Creek WW Collection System	Install approximately 17,000 LF of 18-inch PVC Gravity Sewer Pipes and 50 Manholes. Install 9,000 LF of 16-inch PVC Pressurized Force Main. Install approximately 20-Foot Deep Triplex Lift Station with 1,500 GPM Firm Capacity.	2035*	34	$19,142,000
2	Lower Youngs Creek WW Collection System	Install approximately 10,000 LF of 48-inch PVC Gravity Sewer Pipes and 30 Manholes. Jack & Bore 350 LF underneath Interstate 10 with 60-Inch Steel Casing Pipe.	2035*	36	$13,362,500
3	Deadman Creek WW Collection System	Install approximately 10,000 LF of 24-inch PVC Gravity Sewer Pipes and 30 Manholes.	2035*	30	$5,622,600
4	Elm Creek WW Collection System	Install approximately 11,000 LF of 18-inch PVC Gravity Sewer Pipes and 33 Manholes. Install approximately 21,000 LF of 16-inch PVC Pressurized Force Main. Install 20-Foot Deep Triplex Lift Station with 1,500 GPM Firm Capacity.	2035*	44	$21,290,300
5	Lower Santa Clara WW Collection System	Install approximately 13,000 LF of 12-inch PVC Gravity Sewer Pipes and 40 Manholes.	2030*	30	$5,539,800

CIP Number	Name	Description	Project Horizon	Estimated Total Project Duration (months)	Estimated Total Cost
5a	Lower Santa Clara WW Collection System Alternative	Install 13,000 LF of 18-inch PVC Gravity Sewer Pipes and 40 Manholes.	2030*	32	$7,197,300
6	Cibolo Creek WW Collection System	Install 14,000 LF of 12-inch PVC Gravity Sewer Pipes and 42 Manholes. Install 21,000 LF of 12-inch PVC Pressurized Force Main. Install 20-Foot Deep Triplex Lift Station with 1,000 GPM Firm Capacity.	2030*	40	$18,174,700
6a	Cibolo Creek WW Collection System Alternative	Install 14,000 LF of 12-inch PVC Gravity Sewer Pipes and 42 Manholes. Install 11,000 LF of 16-inch PVC Pressurized Force Main. Install 20-Foot Deep Triplex Lift Station with 1,500 GPM Firm Capacity.	2030*	38	$16,628,600
7	Woman Hollering Creek WW Collection System	Install approximately 12,000 LF of 12-inch PVC Gravity Sewer Pipes and 36 Manholes. Install approximately 26,000 LF of 16-inch PVC Pressurized Force Main. Install 20-Foot Deep Triplex Lift Station with 1,500 GPM Firm Capacity.	2030*	40	$22,569,800
7a	Woman Hollering Creek WW Collection System Alternative	Install 12,000 LF of 12-inch PVC Gravity Sewer Pipes and 36 Manholes. Install 21,000 LF of 8-inch PVC Pressurized Force Main. Install 20-Foot Deep Triplex Lift Station with 500 GPM Firm Capacity.	2030*	38	$14,357,000
Collection System Total					**$105,701,700**
8	Santa Clara WW Collection System (Supplemental)	Install 6,000 LF of 18-inch PVC Gravity Sewer Pipes and 18 Manholes.	2030*	20	$2,005,500
Collection System Total Including Supplemental CIP					**$107,707,200**

* The project horizon was determined based on the current information available for the basin and may be adjusted as development progresses throughout the area.

5.2 Facility Capital Improvement Plan

Key treatment facility CIP projects are listed in Table 5-2.

Table 5-2: Facility CIP

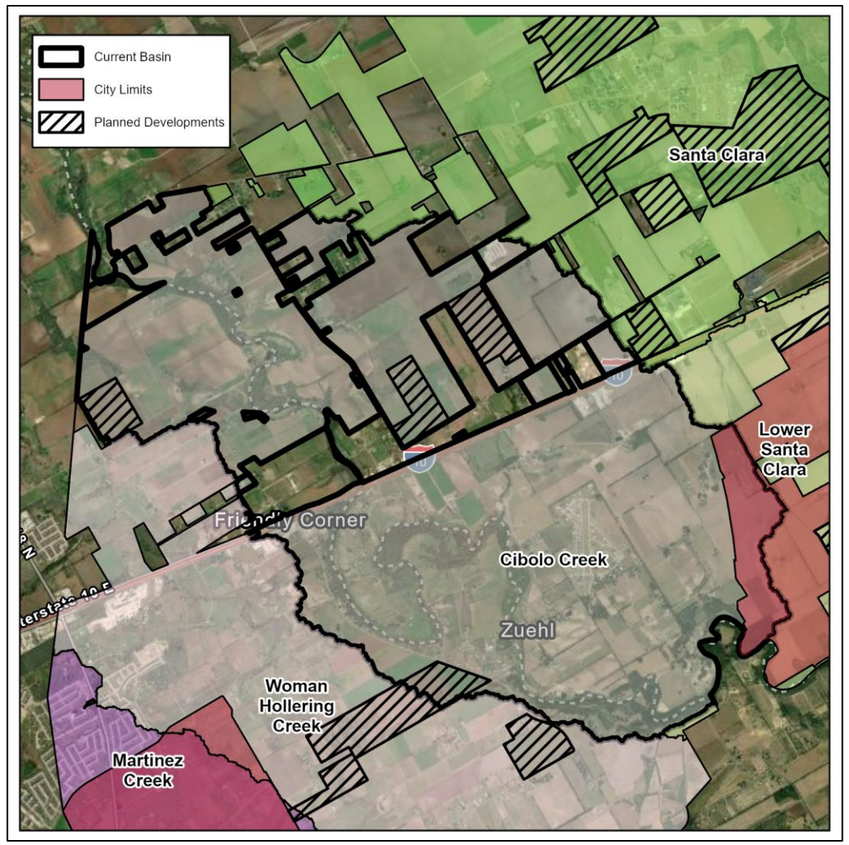
CIP Number	Name	Description	Project Horizon	Estimated Total Project Duration (months)	Estimated Total Cost
9	Santa Clara WWTP Expansion	Expand the Santa Clara WWTP by taking the 0.25 MGD, and 0.5 MGD package plants offline and expanding the 1.25 MGD facility to a total capacity of 3.75 MGD.	2030*	49	$140,080,000
10	East WWTP	Design and Construction of a 3.0 MGD Wastewater Treatment Plant to serve the Eastern portion of GVSUD's service area.	2035*	58	$172,800,000
11	Santa Clara WWTP Wet Well Improvements	Install a 4-5 Float system in the Santa Clara Wastewater Treatment Plant Influent Lift Station.	2025	2	$26,400
WWTP Facility Total					**$312,906,400**

* The project horizon was determined based on the current information available for the basin and may be adjusted as development progresses throughout the area.

Appendix A

Basin Plan Sheets

Cibolo Creek

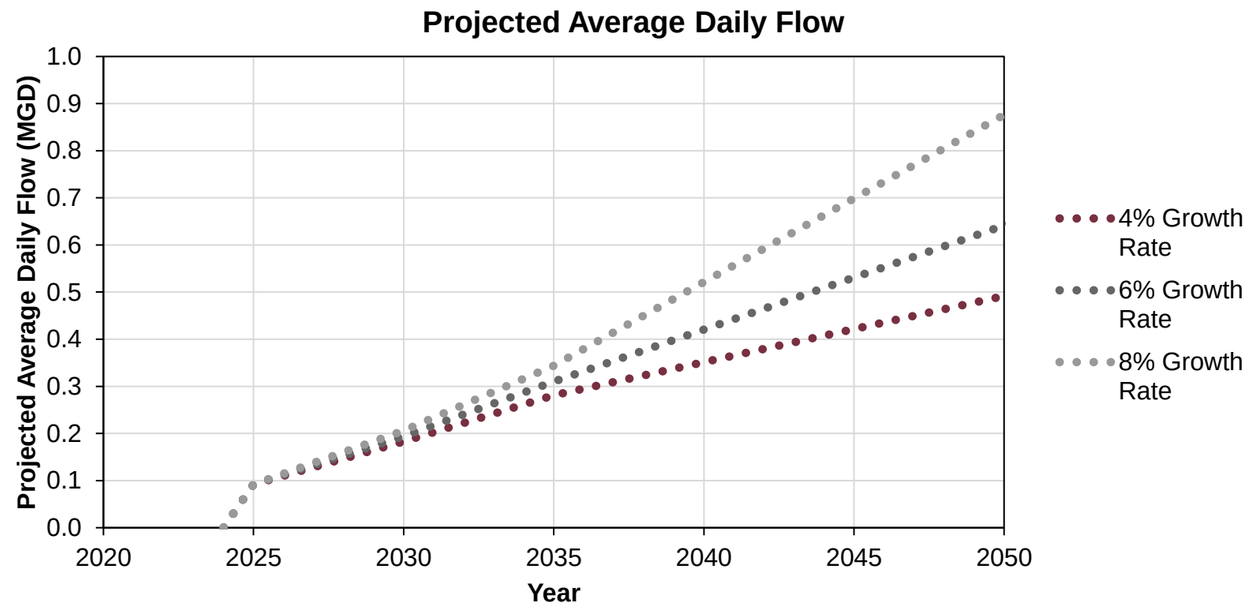


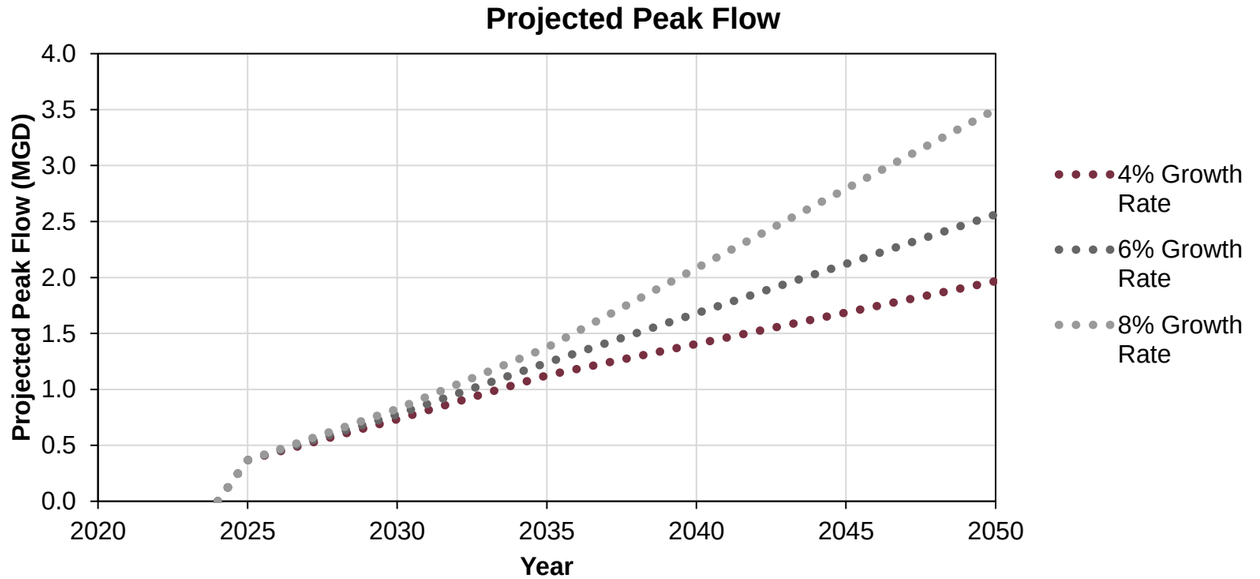
2050 Projections

Growth Rate	2050 ADF (MGD)	2050 PHF (MGD)
4%	0.49	1.97
6%	0.64	2.56
8%	0.88	3.50

Buildout Projections

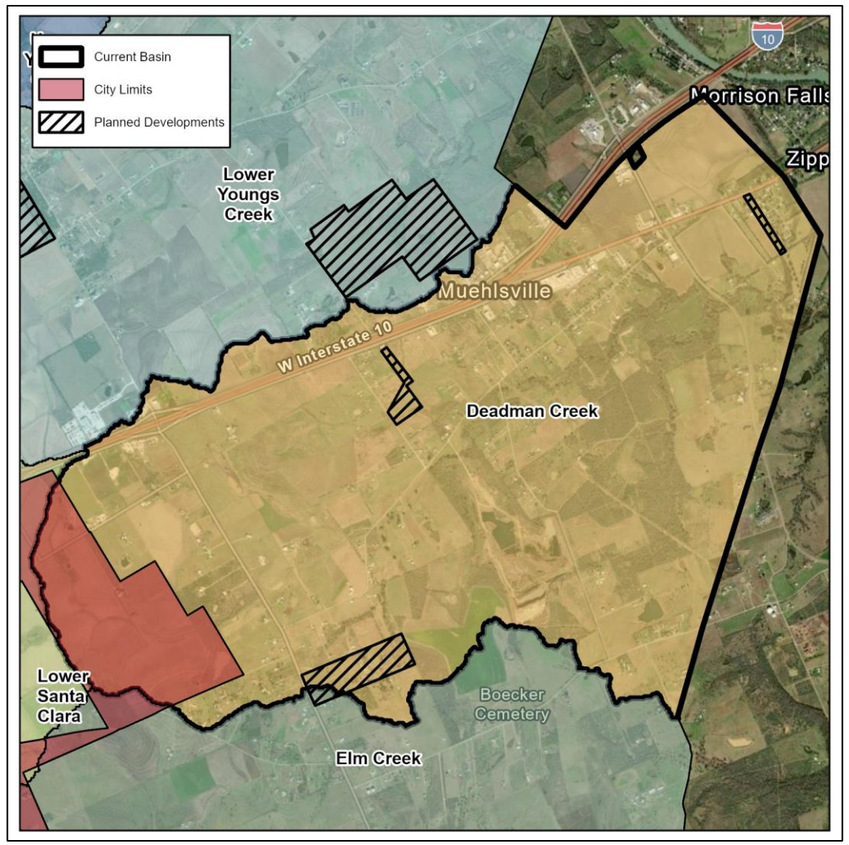
EDU/AC	Max ADF (MGD)	Max PHF (MGD)
0.5	0.60	1.30
1.0	0.92	3.67
1.5	1.24	4.94
2.0	1.55	6.21
2.5	1.87	7.48
3.0	2.19	8.75
4.0	2.82	11.29
5.0	3.46	13.83





46% of the area in Cibolo Creek Basin is developable area outside city limits, while 1% of the area is developable area within city limits (City of New Berlin). 30% of the area is undevelopable, while 18% of the area has water service only accounts that is assumed to eventually convert to sewer accounts. Planned developments cover 5% of the basin area.

Deadman Creek

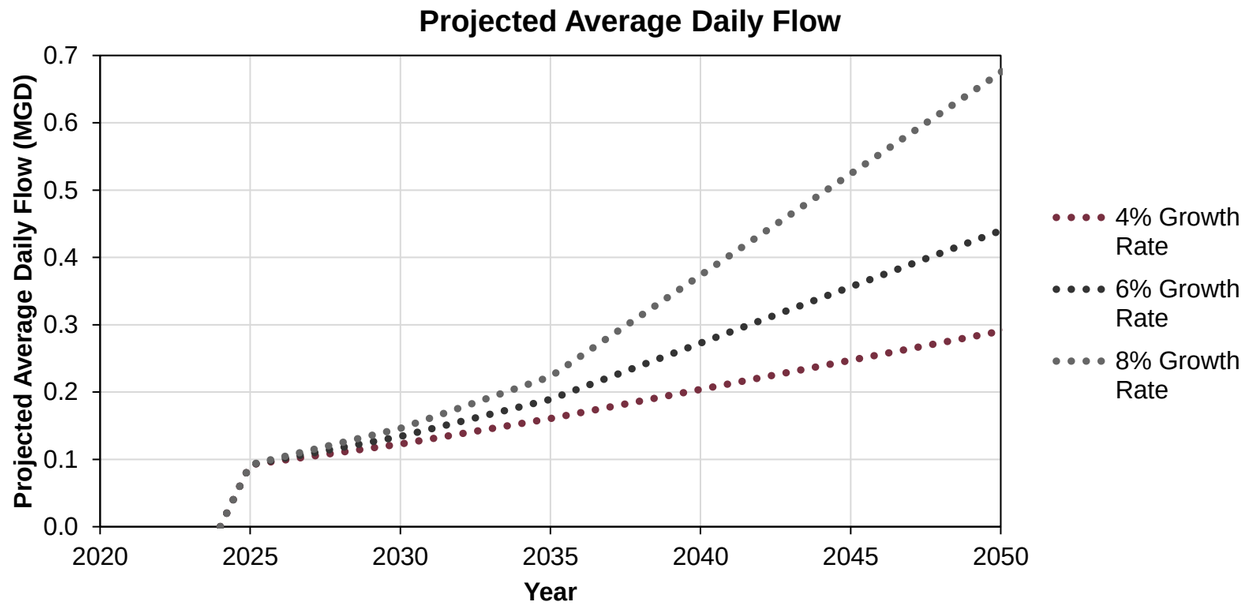


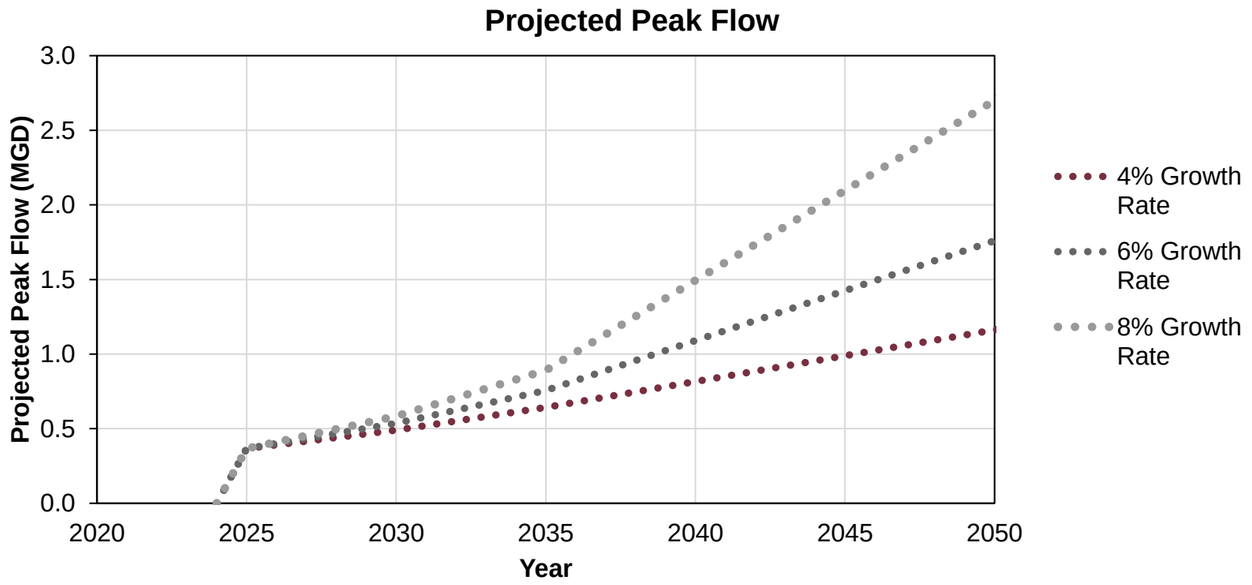
2050 Projections

Growth Rate	2050 ADF (MGD)	2050 PHF (MGD)
4%	0.29	1.16
6%	0.44	1.76
8%	0.67	2.70

Buildout Projections

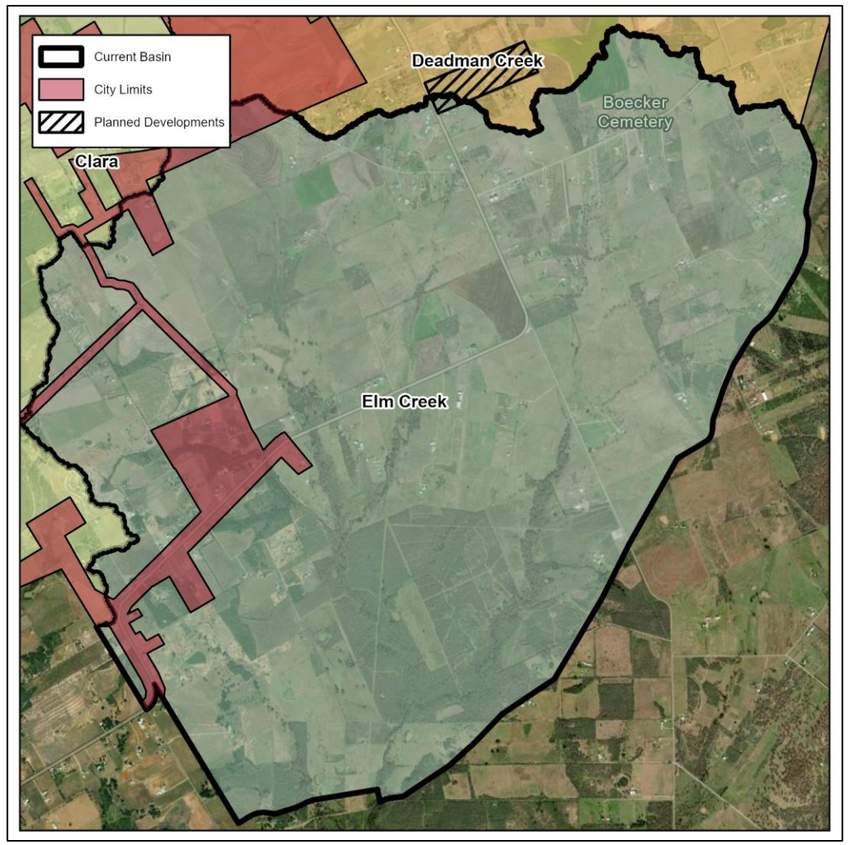
EDU/AC	Max ADF (MGD)	Max PHF (MGD)
0.5	0.28	0.83
1.0	0.48	1.92
1.5	0.68	2.72
2.0	0.88	3.52
2.5	1.08	4.32
3.0	1.28	5.12
4.0	1.68	6.71
5.0	2.08	8.31





44% of the area in Deadman Creek Basin is developable area outside city limits, while 3% of the area is developable area within city limits (City of New Berlin). 18% of the area is undevelopable, while 34% of the area has water service only accounts that is assumed to eventually convert to sewer accounts. Planned developments cover 2% of the basin area.

Elm Creek

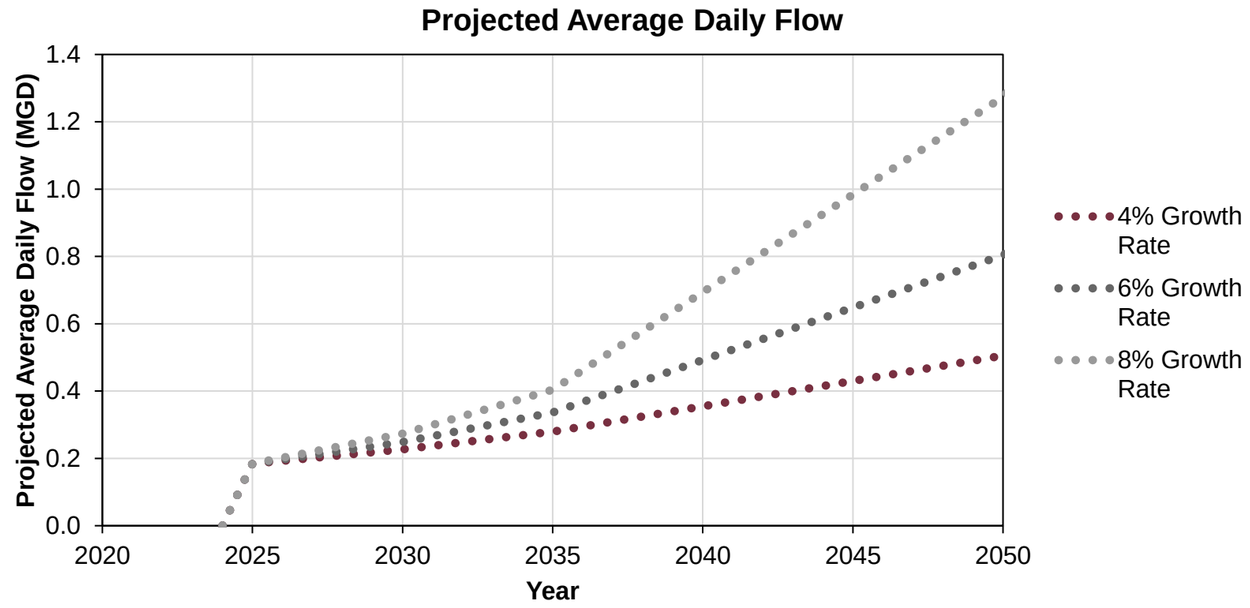


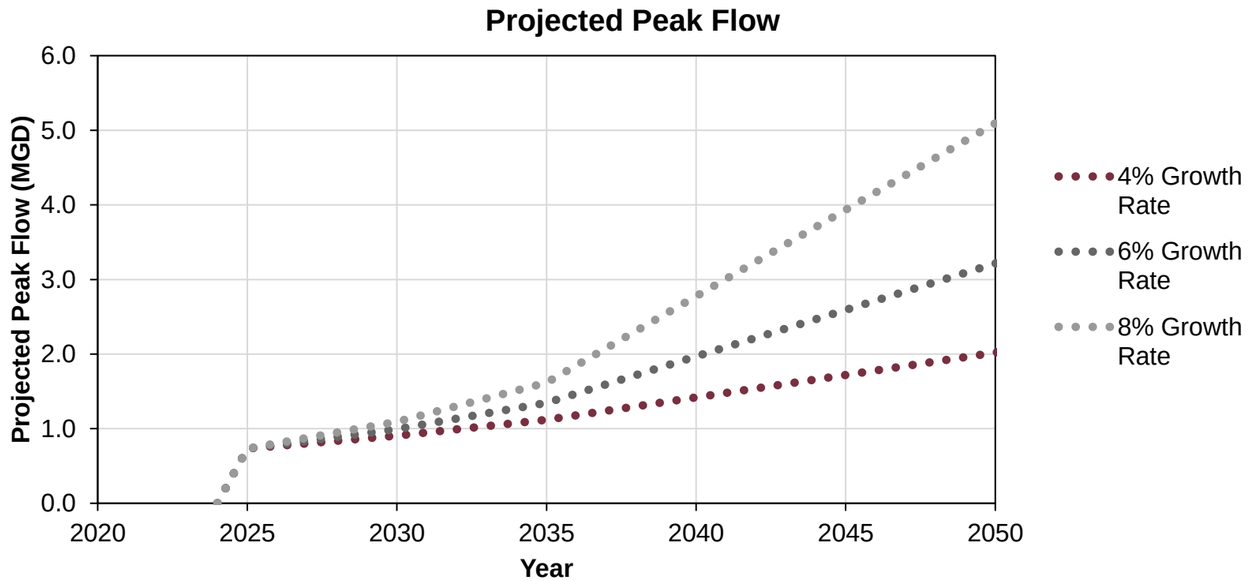
2050 Projections

Growth Rate	2050 ADF (MGD)	2050 PHF (MGD)
4%	0.50	2.02
6%	0.80	3.21
8%	1.27	5.09

Buildout Projections

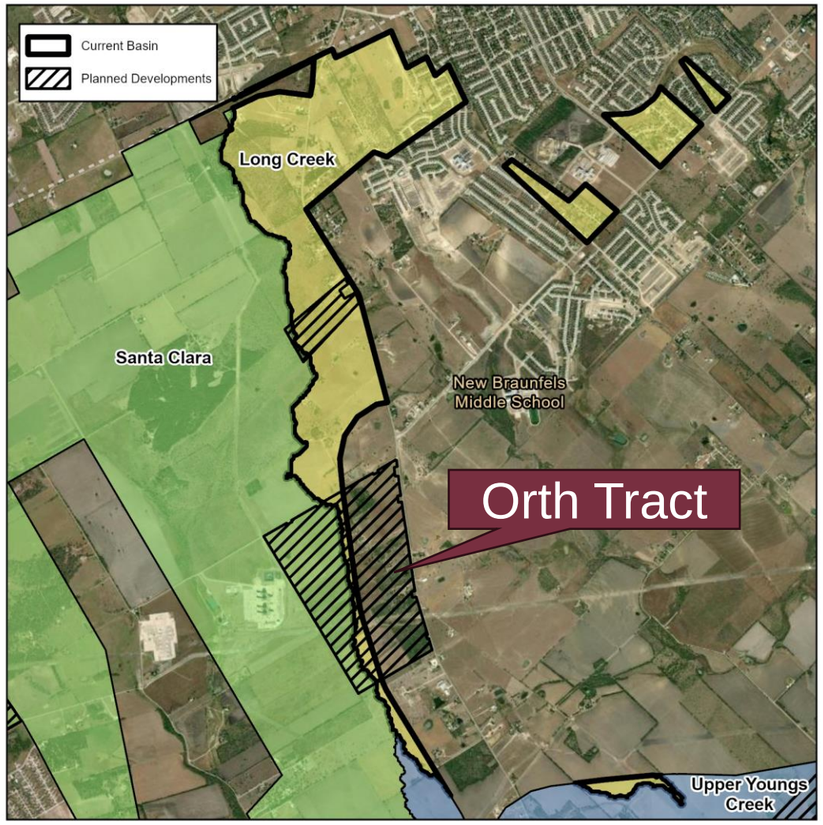
EDU/AC	Max ADF (MGD)	Max PHF (MGD)
0.5	0.45	1.69
1.0	0.86	3.43
1.5	1.26	5.05
2.0	1.67	6.67
2.5	2.07	8.29
3.0	2.48	9.91
4.0	3.29	13.15
5.0	4.10	16.39





66% of the area in Elm Creek Basin is developable area outside city limits, while 4% of the area is developable area within city limits (City of New Berlin). 9% of the area is undevelopable, while 21% of the area has water service only accounts that is assumed to eventually convert to sewer accounts. There are no planned developments in the basin

Long Creek

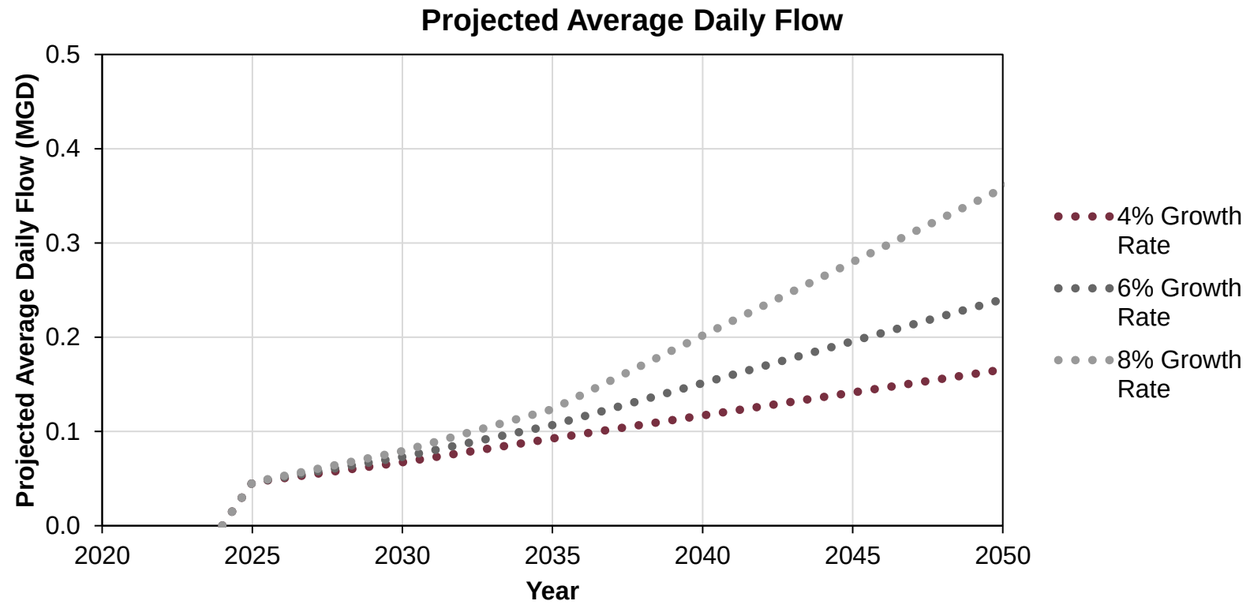


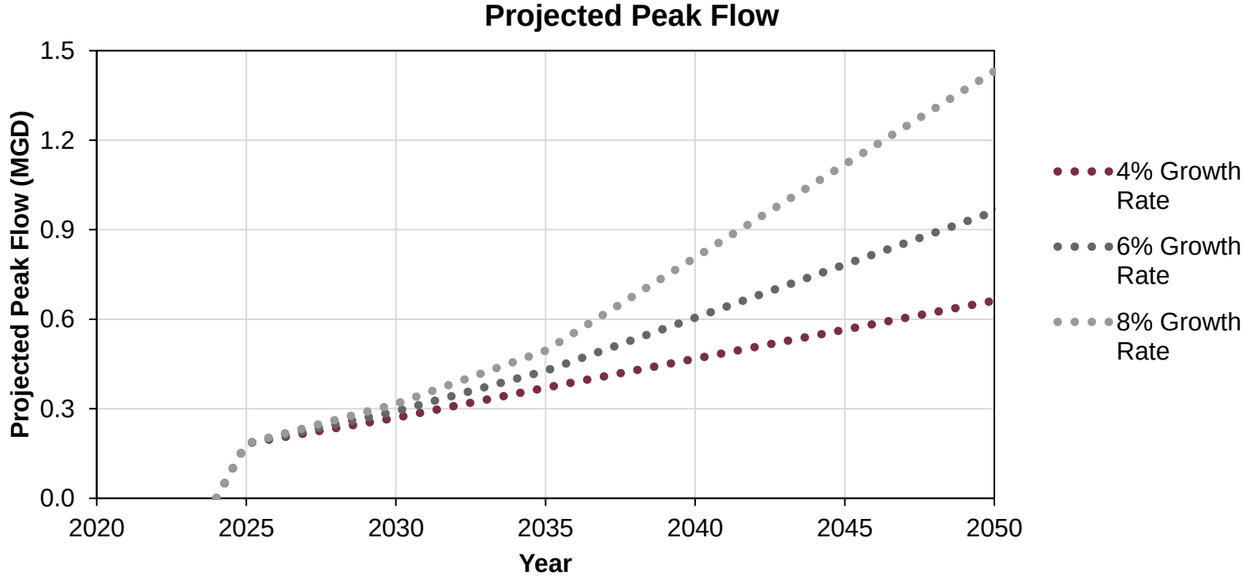
2050 Projections

Growth Rate	2050 ADF (MGD)	2050 PHF (MGD)
4%	0.17	0.66
6%	0.24	0.96
8%	0.36	1.43

Buildout Projections

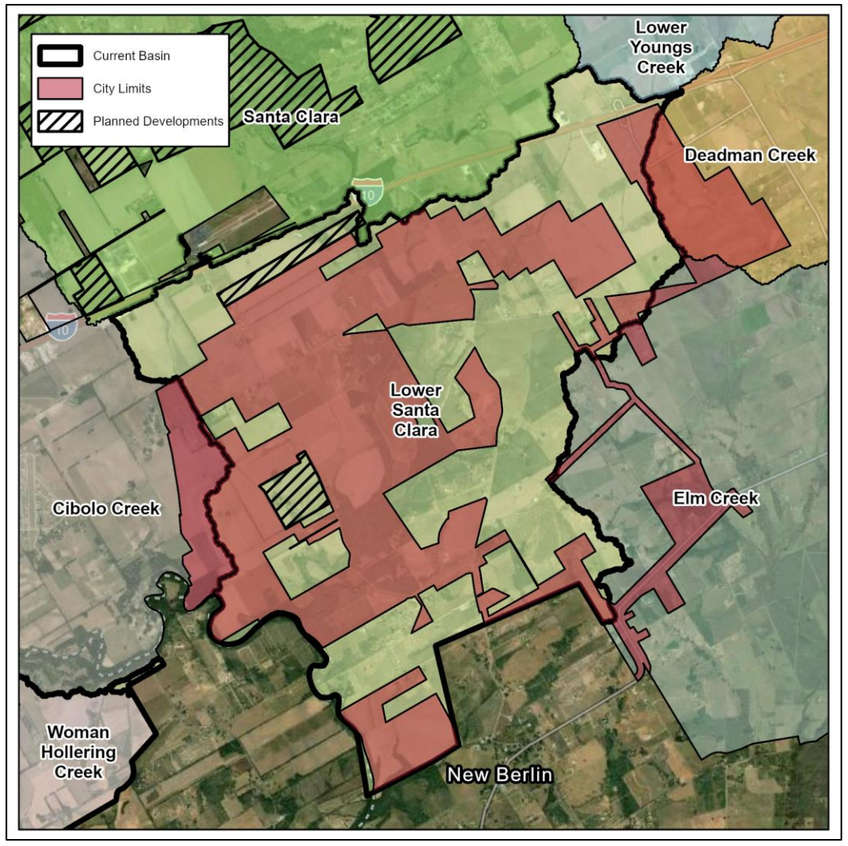
EDU/AC	Max ADF (MGD)	Max PHF (MGD)
0.5	0.11	0.46
1.0	0.17	0.69
1.5	0.23	0.92
2.0	0.29	1.15
2.5	0.34	1.38
3.0	0.40	1.61
4.0	0.52	2.07
5.0	0.63	2.53





70% of the area in Long Creek Basin is developable area outside city limits. 4% of the area is undevelopable, while 18% of the area has water service only accounts that is assumed to eventually convert to sewer accounts. Planned developments cover 8% of the basin area, but the flows from Orth Tract will all go to GBRAs Stein Falls WWTP per Section 13 Agreement.

Lower Santa Clara

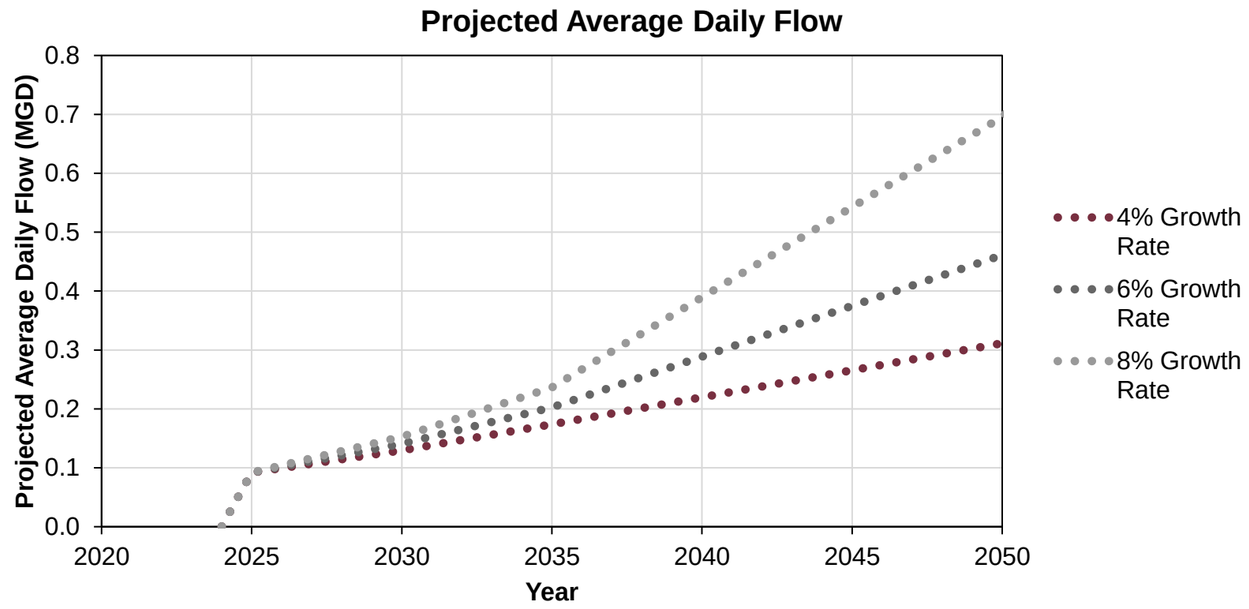


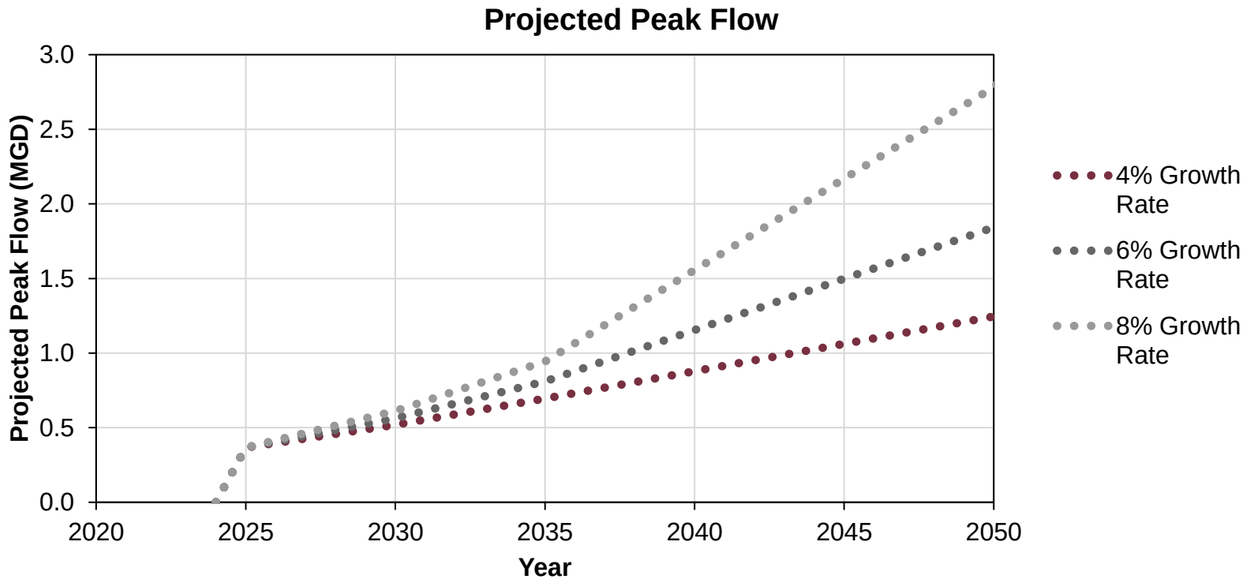
2050 Projections

Growth Rate	2050 ADF (MGD)	2050 PHF (MGD)
4%	0.31	1.25
6%	0.46	1.84
8%	0.70	2.78

Buildout Projections

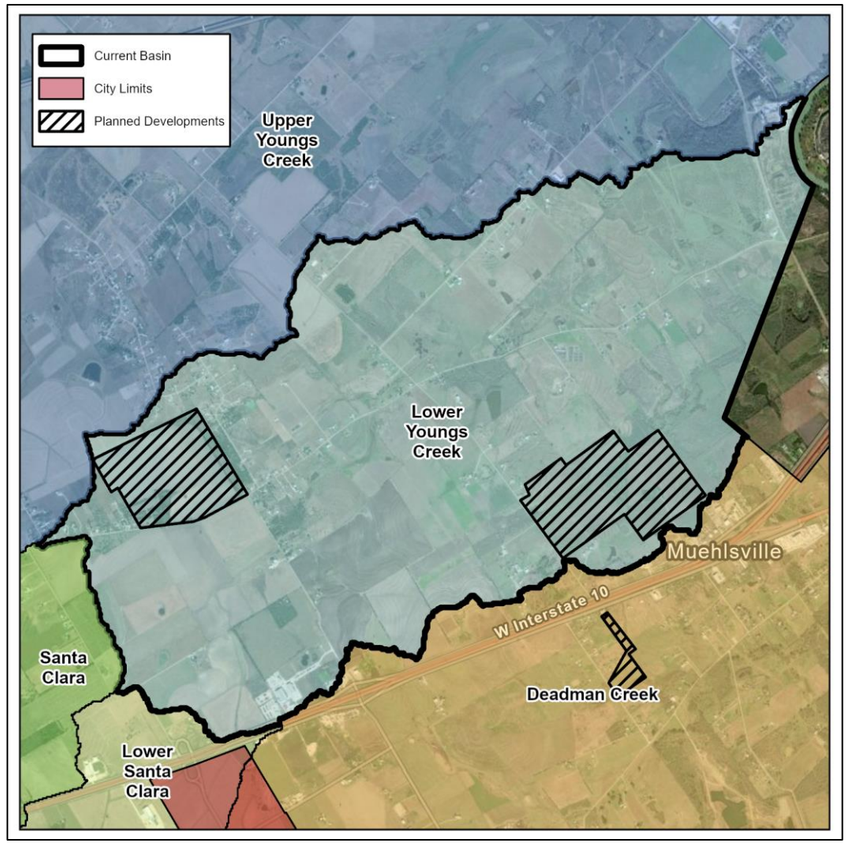
EDU/AC	Max ADF (MGD)	Max PHF (MGD)
0.5	0.43	1.36
1.0	0.72	2.86
1.5	1.00	4.02
2.0	1.29	5.17
2.5	1.58	6.33
3.0	1.87	7.48
4.0	2.45	9.79
5.0	3.03	12.10





44% of the area in Lower Santa Clara Basin is developable area outside city limits, while 10% of the area is developable area within city limits (City of New Berlin). 22% of the area is undevelopable, while 21% of the area has water service only accounts that is assumed to eventually convert to sewer accounts. Planned developments cover 3% of the basin area.

Lower Youngs Creek

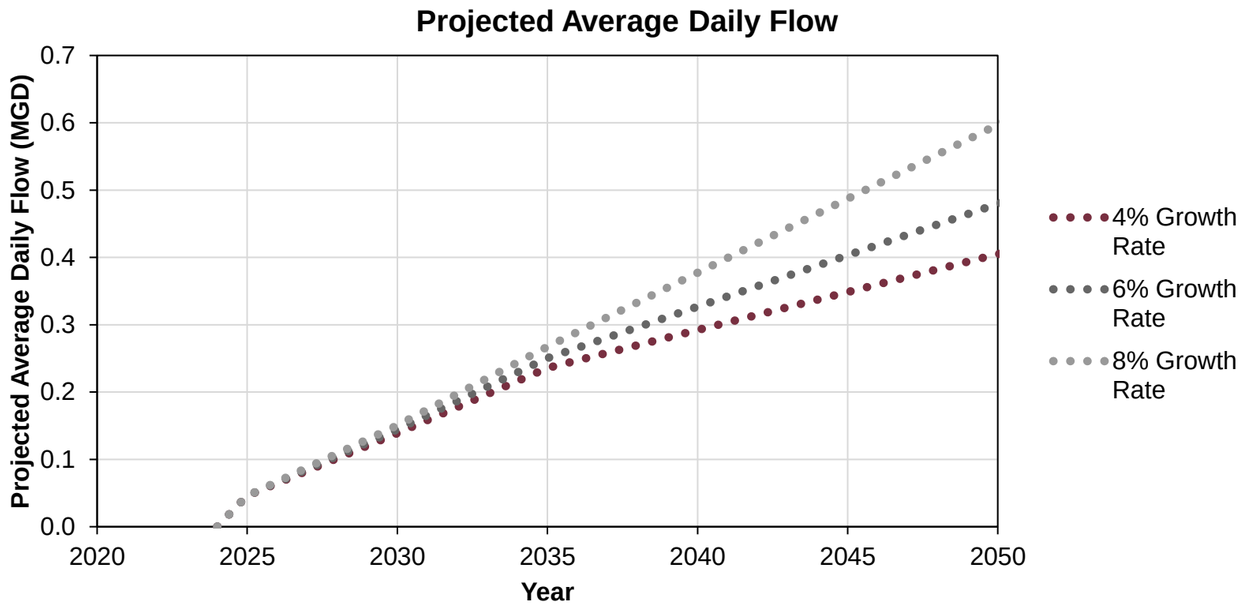


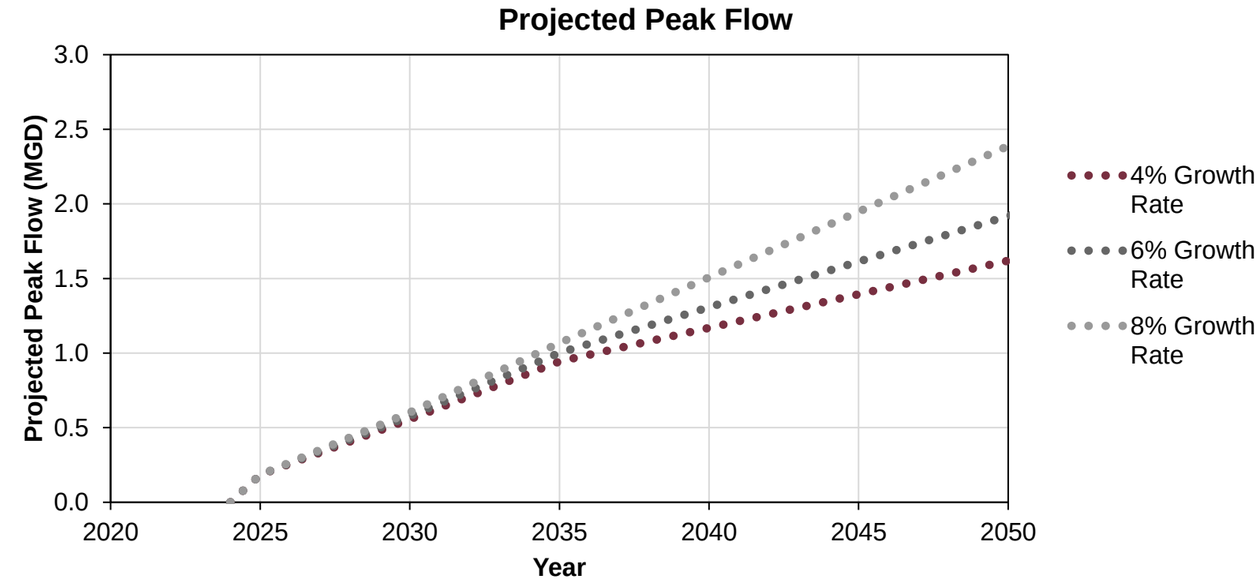
2050 Projections

Growth Rate	2050 ADF (MGD)	2050 PHF (MGD)
4%	0.40	1.62
6%	0.48	1.92
8%	0.60	2.39

Buildout Projections

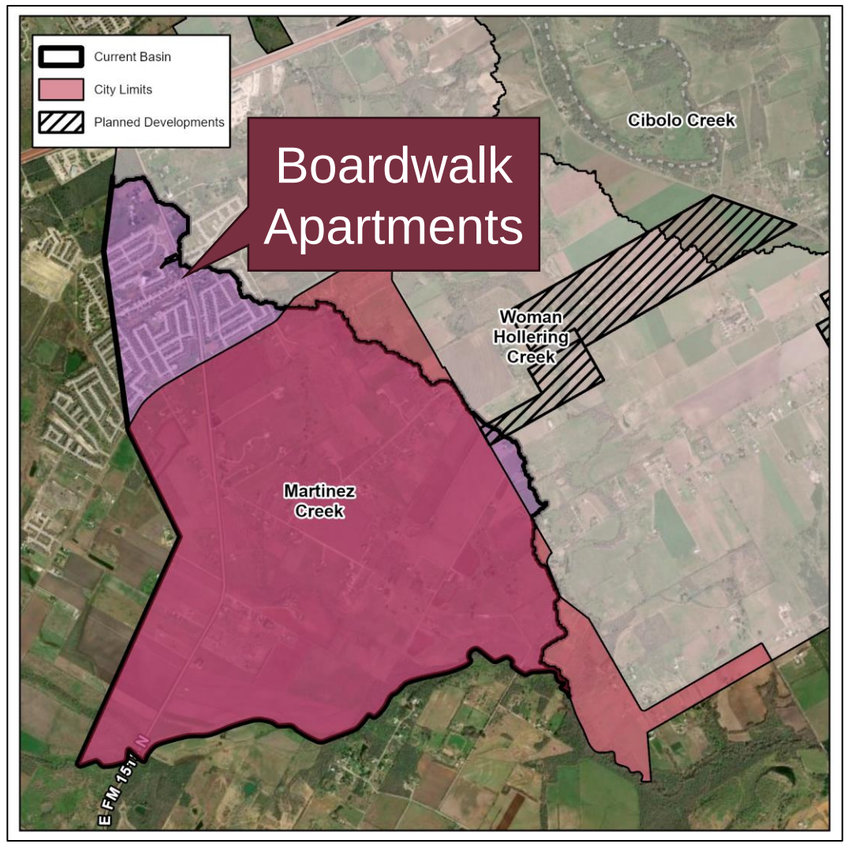
EDU/AC	Max ADF (MGD)	Max PHF (MGD)
0.5	0.46	0.65
1.0	0.62	2.49
1.5	0.78	3.14
2.0	0.95	3.78
2.5	1.11	4.43
3.0	1.27	5.08
4.0	1.59	6.38
5.0	1.92	7.67





48% of the area in Lower Youngs Creek Basin is developable area outside city limits. 11% of the area is undevelopable, while 31% of the area has water service only accounts that is assumed to eventually convert to sewer accounts. Planned developments cover 10% of the basin area.

Martinez Creek

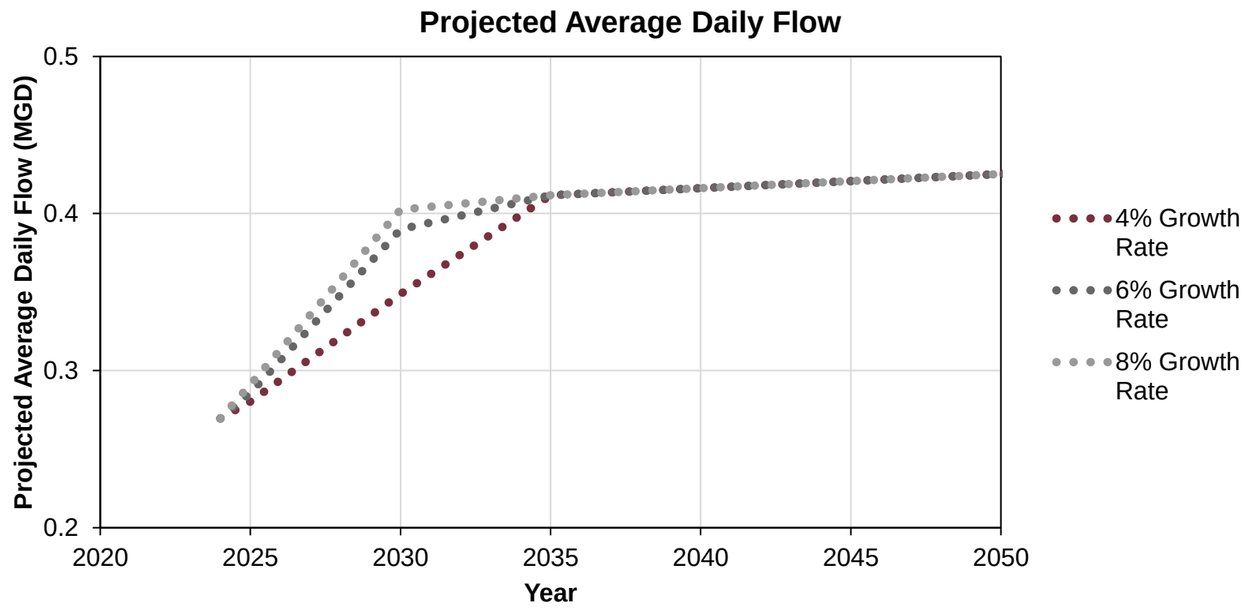


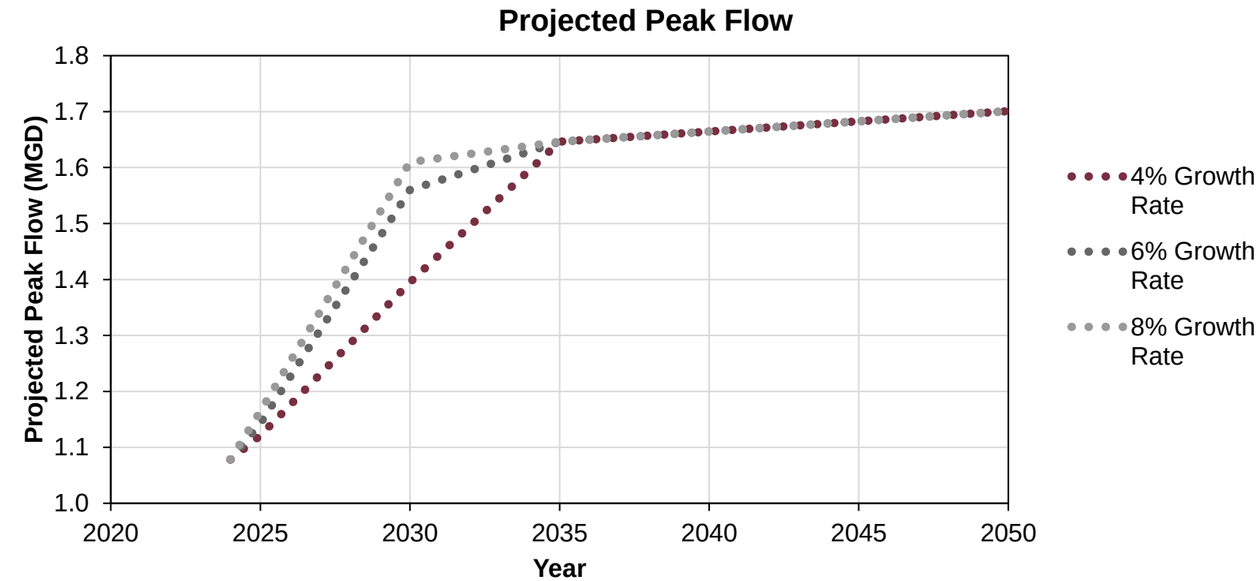
2050 Projections

Growth Rate	2050 ADF (MGD)	2050 PHF (MGD)
4%	0.43	1.70
6%	0.43	1.70
8%	0.43	1.70

Buildout Projections

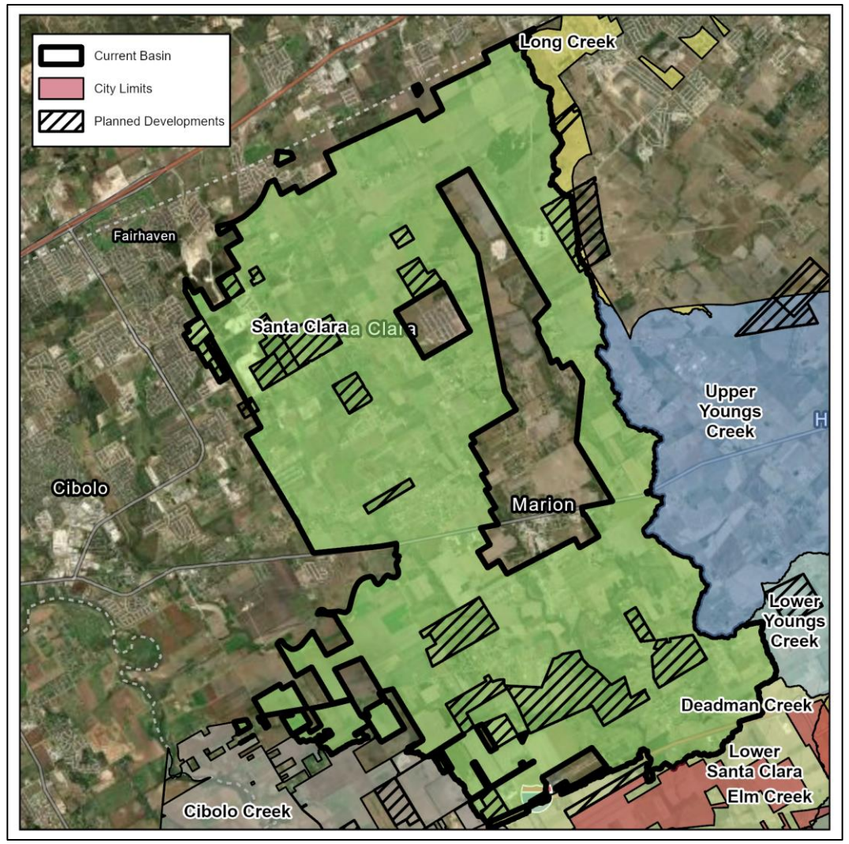
EDU/AC	Max ADF (MGD)	Max PHF (MGD)
0.5	0.39	1.57
1.0	0.41	1.64
1.5	0.42	1.70
2.0	0.44	1.76
2.5	0.46	1.82
3.0	0.47	1.88
4.0	0.50	2.01
5.0	0.53	2.13





7% of the area in Martinez Creek Basin is developable area outside city limits, while 38% of the area is developable area within city limits (City of St. Hedwig). 19% of the area is undevelopable, while 36% of the area has water service only accounts that is assumed to eventually convert to sewer accounts. The Boardwalk Apartments development is planned in the basin, but the area is negligible.

Santa Clara

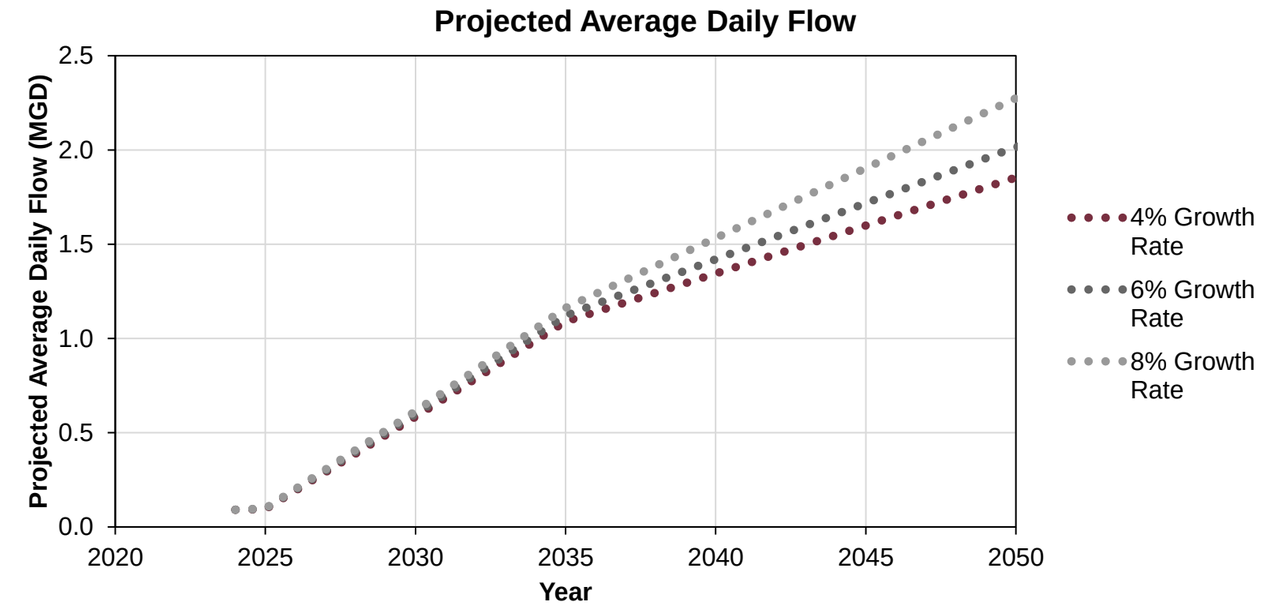


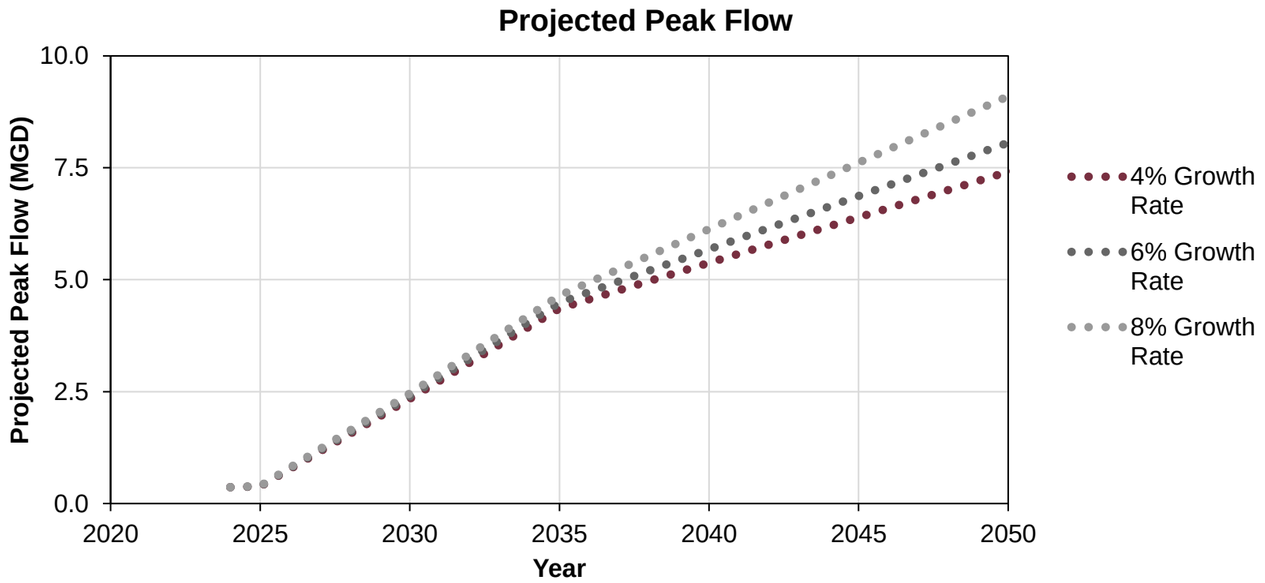
2050 Projections

Growth Rate	2050 ADF (MGD)	2050 PHF (MGD)
4%	1.97	7.89
6%	2.13	8.53
8%	2.39	9.57

Buildout Projections

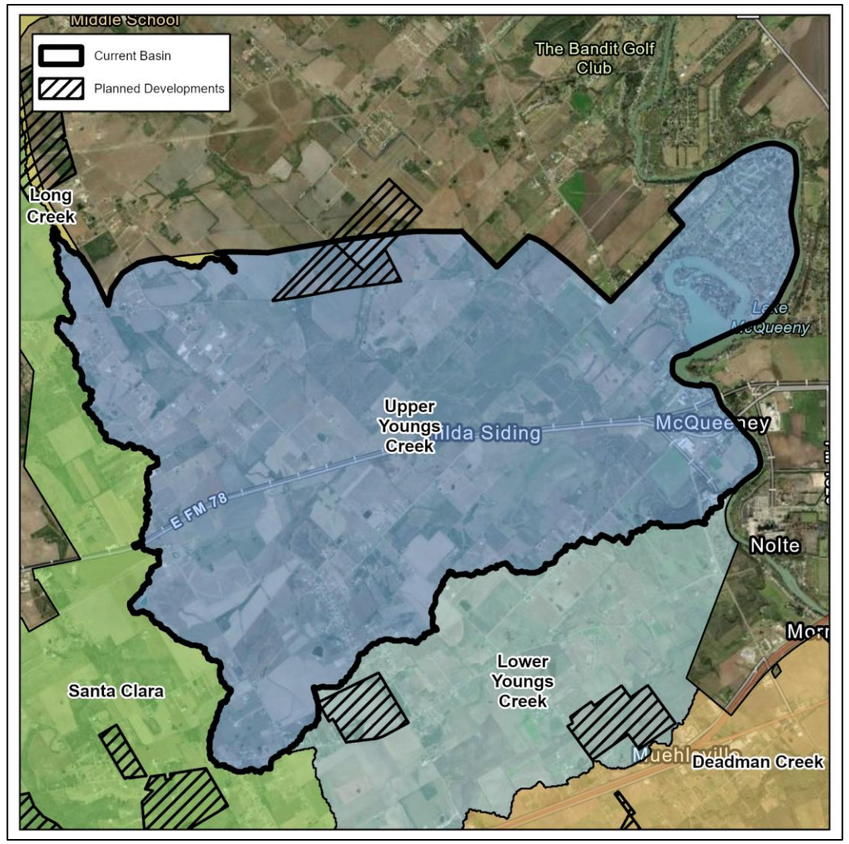
EDU/AC	Max ADF (MGD)	Max PHF (MGD)
0.5	2.82	11.29
1.0	3.82	15.27
1.5	4.81	19.25
2.0	5.81	23.23
2.5	6.80	27.21
3.0	7.80	31.19
4.0	9.79	39.15
5.0	11.78	47.10





50% of the area in Santa Clara Creek Basin is developable area outside city limits. 14% of the area is undevelopable, while 25% of the area has water service only accounts that is assumed to eventually convert to sewer accounts. Planned developments cover 11% of the basin area.

Upper Youngs Creek

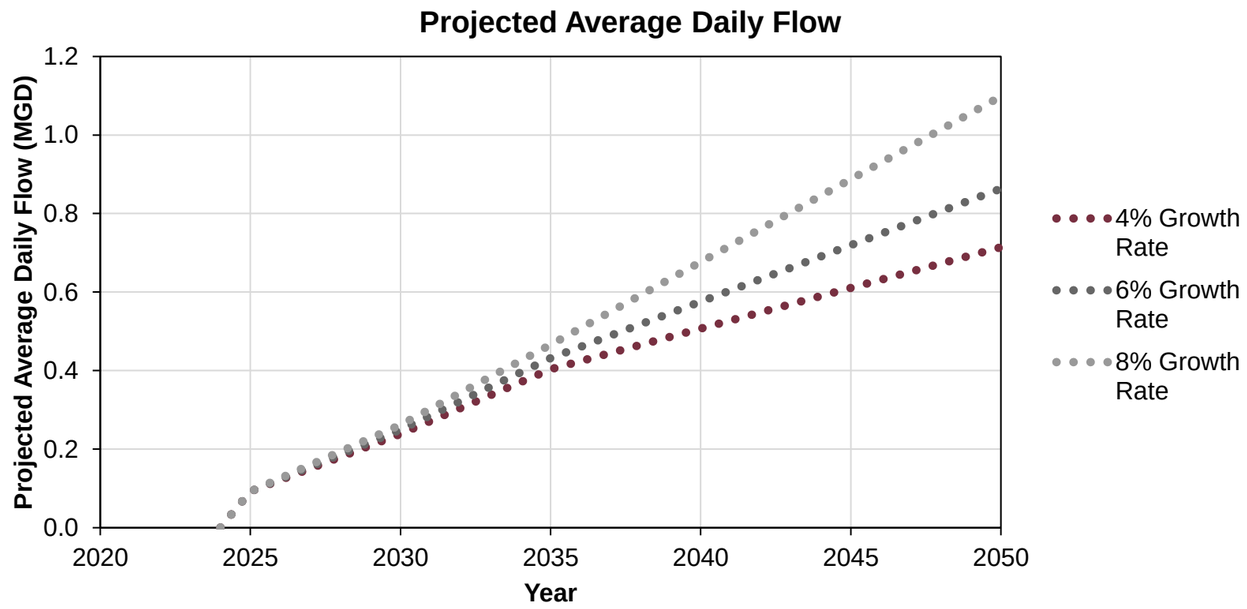


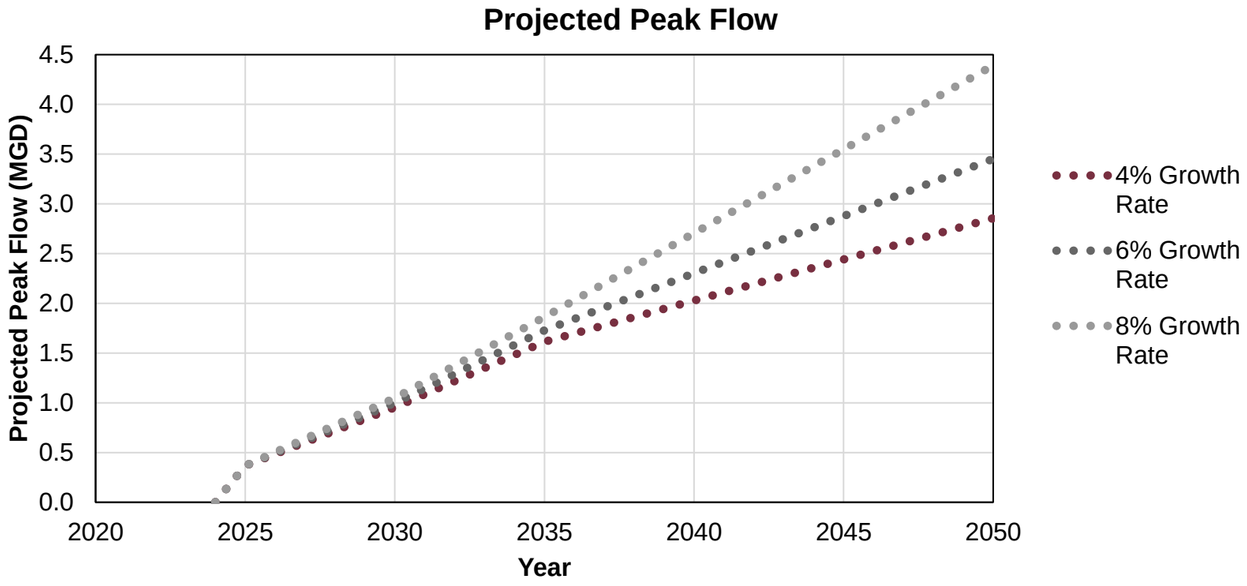
2050 Projections

Growth Rate	2050 ADF (MGD)	2050 PHF (MGD)
4%	0.71	2.86
6%	0.86	3.45
8%	1.10	4.39

Buildout Projections

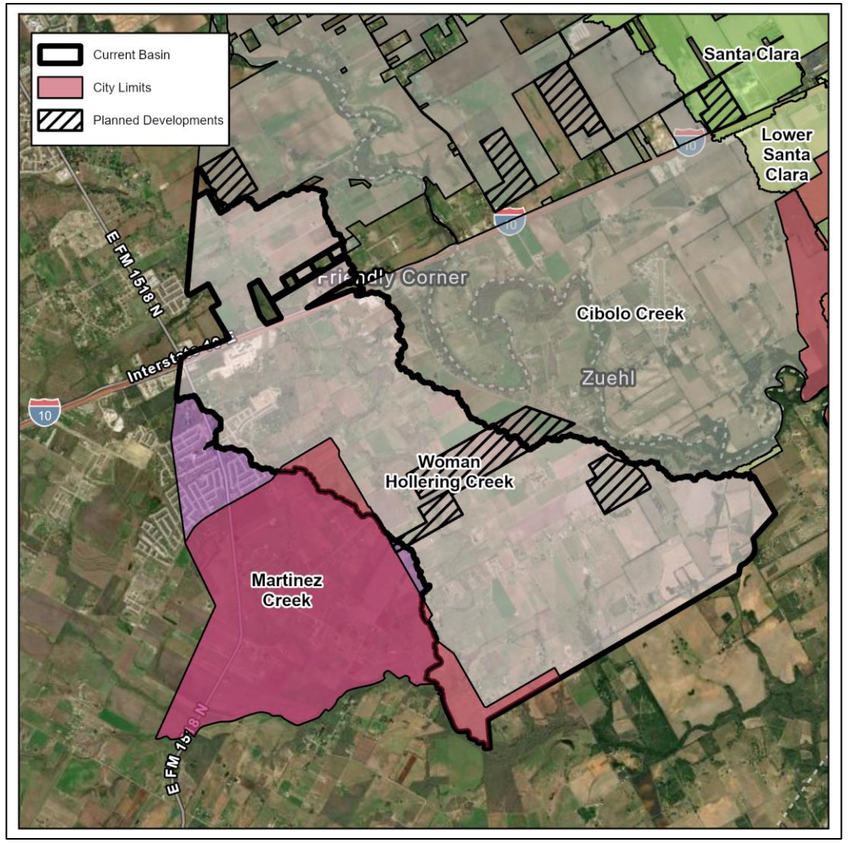
EDU/AC	Max ADF (MGD)	Max PHF (MGD)
0.5	1.02	1.65
1.0	1.43	5.73
1.5	1.85	7.38
2.0	2.26	9.03
2.5	2.67	10.68
3.0	3.08	12.33
4.0	3.91	15.63
5.0	4.73	18.93





45% of the area in Upper Youngs Creek Basin is developable area outside city limits. 22% of the area is undevelopable, while 31% of the area has water service only accounts that is assumed to eventually convert to sewer accounts. Planned developments cover 2% of the basin area.

Woman Hollering Creek

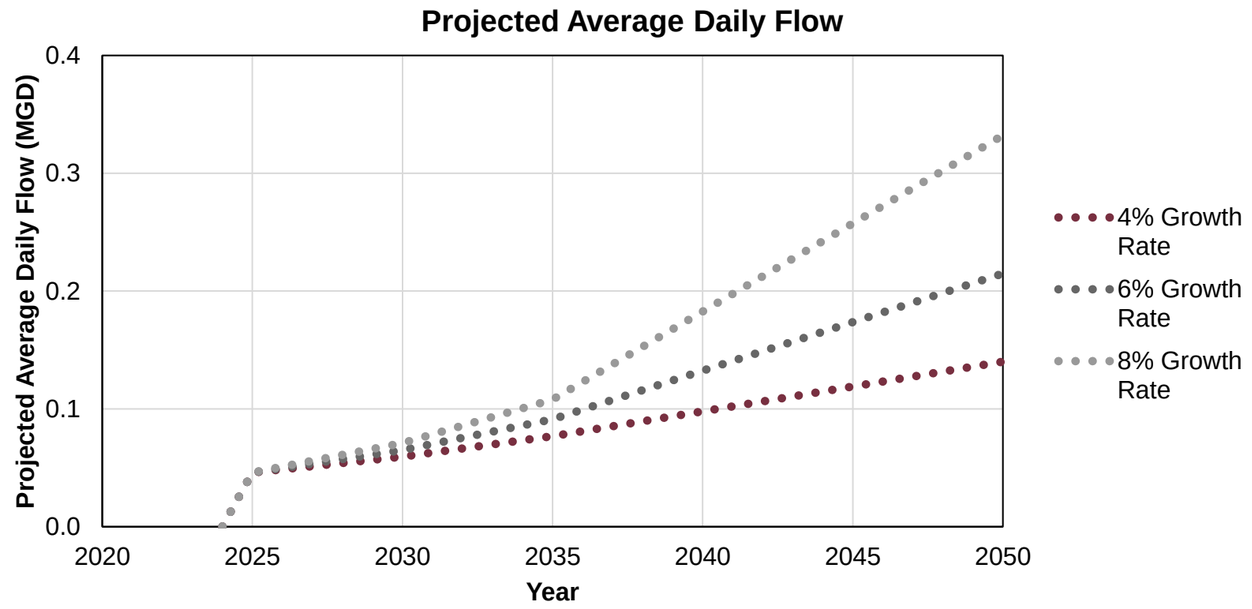


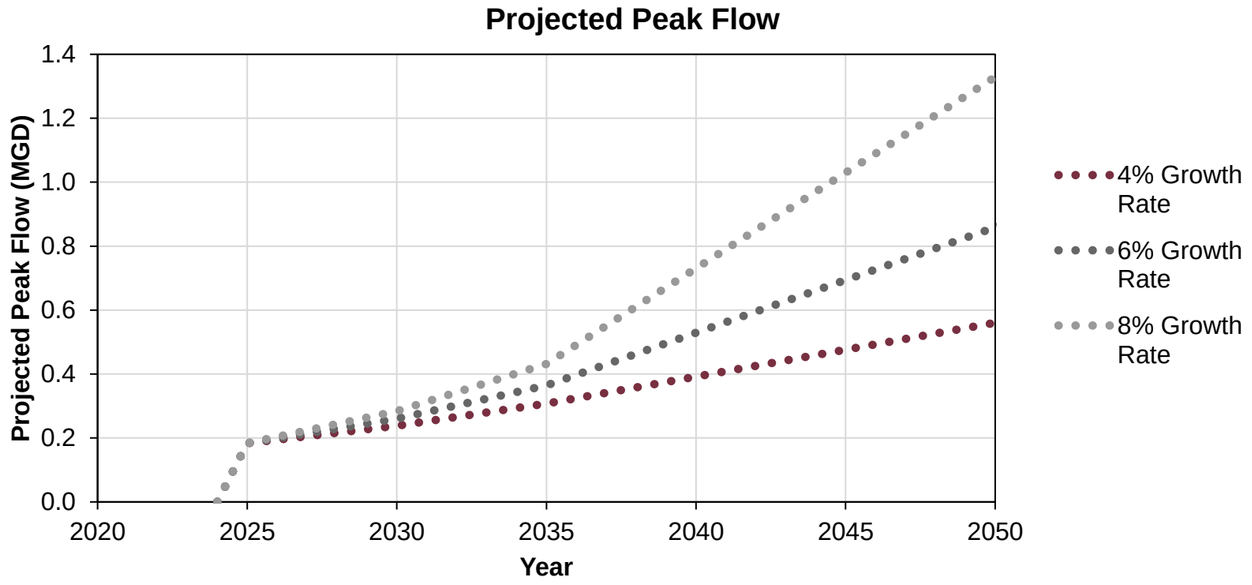
2050 Projections

Growth Rate	2050 ADF (MGD)	2050 PHF (MGD)
4%	0.14	0.56
6%	0.21	0.86
8%	0.33	1.33

Buildout Projections

EDU/AC	Max ADF (MGD)	Max PHF (MGD)
0.5	0.23	0.78
1.0	0.41	1.66
1.5	0.60	2.40
2.0	0.79	3.14
2.5	0.97	3.88
3.0	1.16	4.62
4.0	1.53	6.11
5.0	1.90	7.59





38% of the area in Woman Hollering Creek Basin is developable area outside city limits, while 2% of the area is developable area within city limits (City of St. Hedwig). 13% of the area is undevelopable, while 41% of the area has water service only accounts that is assumed to eventually convert to sewer accounts. Planned developments cover 6% of the basin area, which will be treated by a package plant.

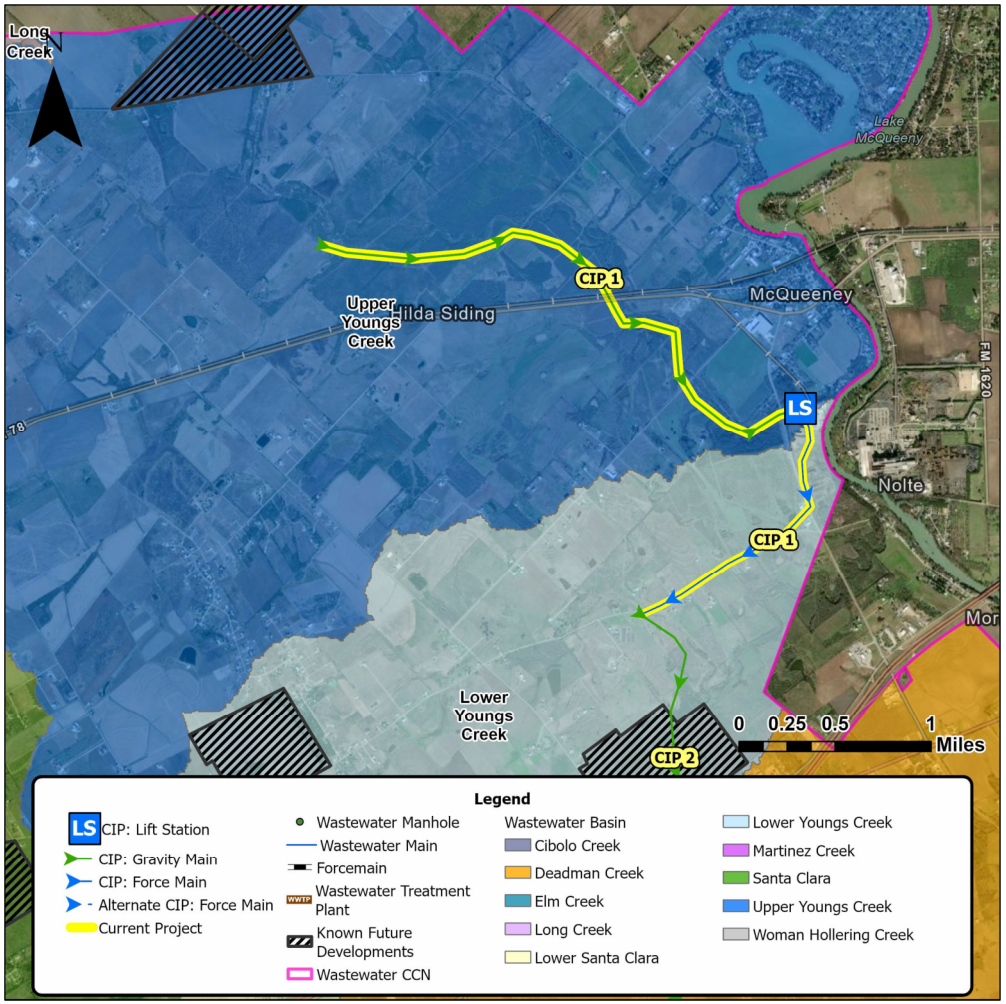
Appendix B

Capital Improvement Project Exhibits

Project 1: Upper Youngs Creek WW Collection System

Capital Improvement

Project Horizon: 2035



Project Description

1. Install 17,000 LF of 18-inch PVC Gravity Sewer Pipes and 50 Manholes.
2. Install 9,000 LF of 16-inch PVC Pressurized Force Main.
3. Install 20-Foot Deep Triplex Lift Station with 1,500 GPM Firm Capacity.

Dependencies

CIP 1 is dependent on CIP 2 and CIP 10.

Project Implementation

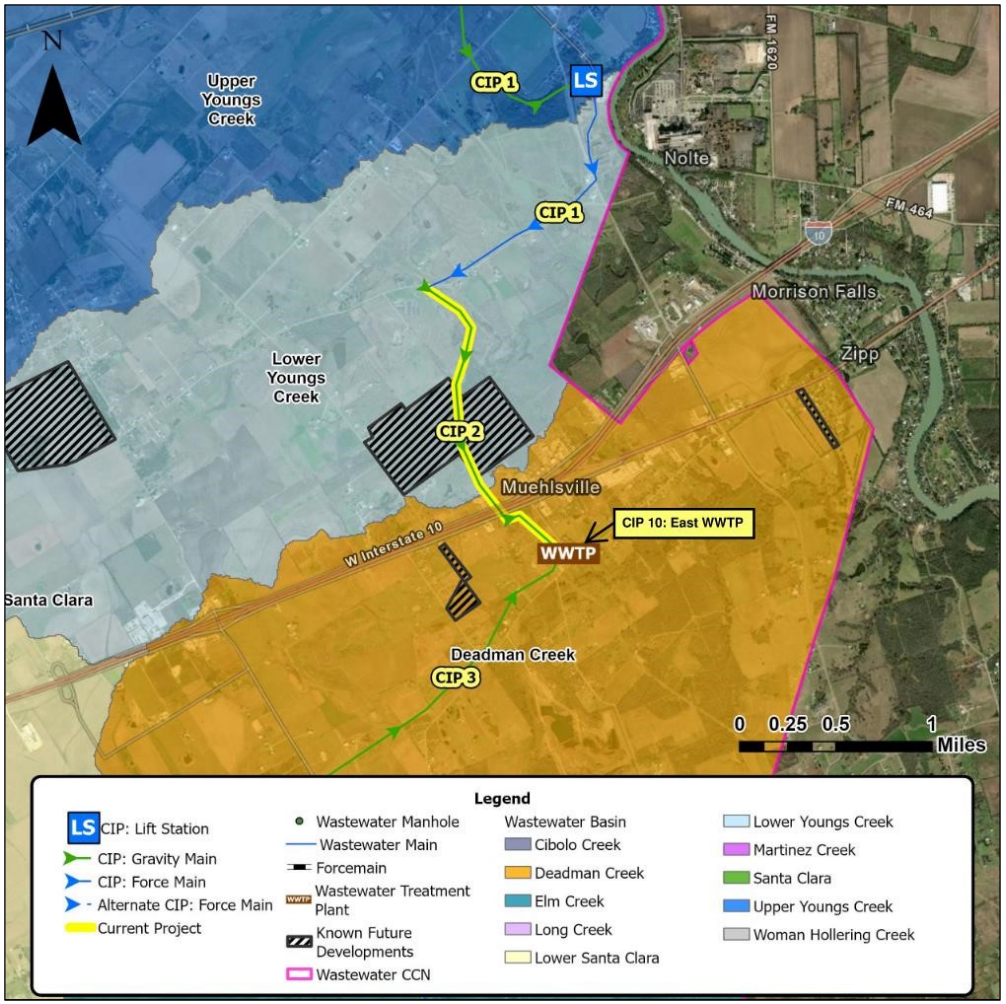
Engineering & Design	12 months
Bidding	4 months
Construction	18 months
Total Project Duration	**34 months**

No.	Description	Size	Quantity	Unit Cost	Total Cost
1	Wastewater Gravity Main	18 inch	17,000 LF	$ 175	$ 2,975,000
2	Wastewater Force Main	16 inch	9,000 LF	$ 140	$ 1,260,000
3	Manhole	4 ft	50 EA	$ 7,200	$ 360,000
4	Lift Station	1,500 gpm	1 LS	$ 3,361,500	$ 3,361,500
5	Misc. Restoration (Pavement, Seeding)		26,000 LF	$ 120	$ 3,120,000
6	Trench Safety Plan and Implementation		26,000 LF	$ 6	$ 156,000
7	Traffic Control		1 LS	$ 15,000	$ 15,000
8	SWPPP		1 LS	$ 12,500	$ 12,500
				Subtotal	$ 11,260,000
				Contingency and OH&P (40%)	$ 4,504,000
				Design (15%)	$ 1,689,000
				Easement Acquisition (10%)	$ 1,126,000
				Mobilization (5%)	$ 563,000
				Opinion of Probable Construction Cost	$ 19,142,000

Project 2: Lower Youngs Creek WW Collection System

Capital Improvement

Project Horizon: 2035



Project Description

1. Install 10,000 LF of 48-inch PVC Gravity Sewer Pipes and 30 Manholes.
2. Jack & Bore 350 LF underneath Interstate 10 with 60-Inch Steel Casing Pipe.

Dependencies

CIP 2 is dependent on CIP 10.

Project Implementation

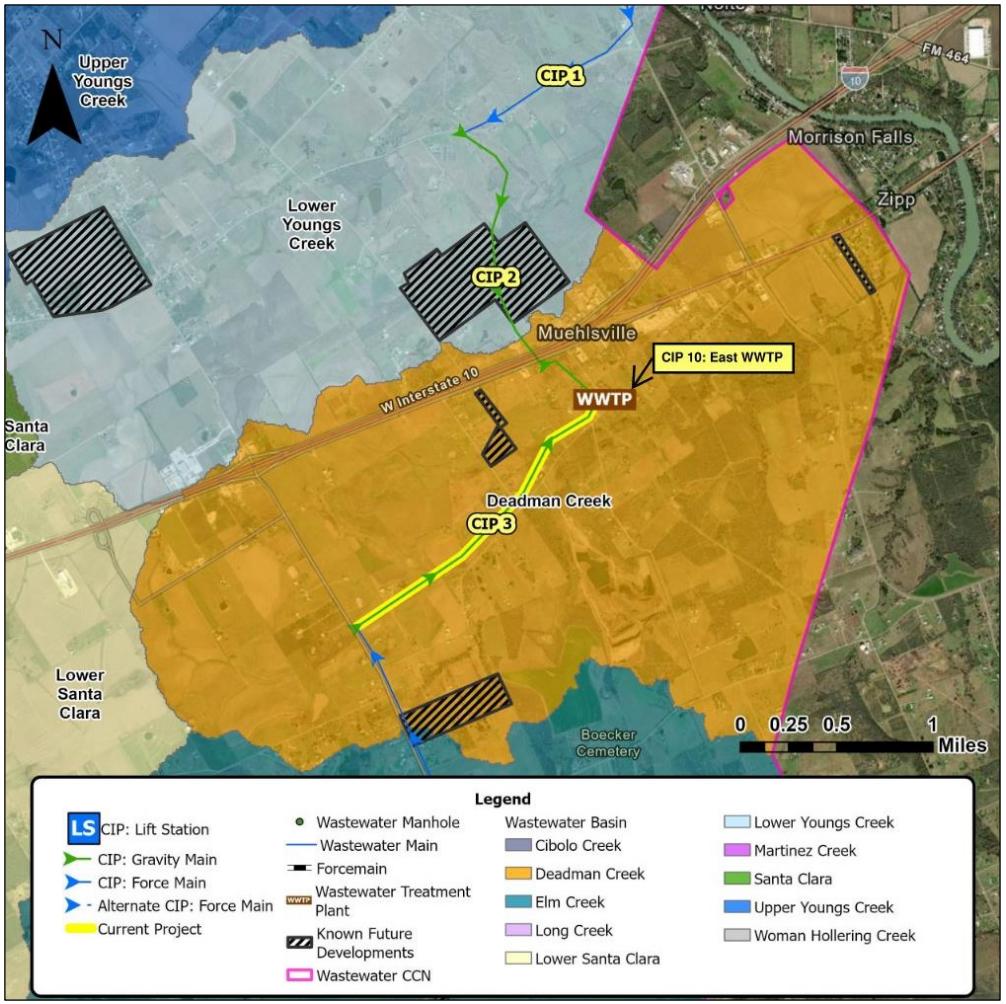
Engineering & Design	14 months
Bidding	4 months
Construction	18 months
Total Project Duration	**36 months**

No.	Description	Size	Quantity	Unit Cost	Total Cost
1	Wastewater Gravity Main	48 inch	10,000 LF	$ 500	$ 5,000,000
2	Steel Casting Pipe (Jack & Bore)	60 inch	350 LF	$ 3,750	$ 1,312,500
3	Manhole	4 ft	30 EA	$ 7,200	$ 216,000
4	Misc. Restoration (Pavement, Seeding)		10,350 LF	$ 120	$ 1,242,000
5	Trench Safety Plan and Implementation		10,350 LF	$ 6	$ 62,100
6	Traffic Control		1 LS	$ 15,000	$ 15,000
7	SWPPP		1 LS	$ 12,500	$ 12,500
				Subtotal	$ 7,860,100
				Contingency and OH&P (40%)	$ 3,144,100
				Design (15%)	$ 1,179,100
				Easement Acquisition (10%)	$ 786,100
				Mobilization (5%)	$ 393,100
				Opinion of Probable Construction Cost	$ 13,362,500

Project 3: Deadman Creek WW Collection System

Capital Improvement

Project Horizon: 2035



Project Description

1. Install 10,000 LF of 24-inch PVC Gravity Sewer Pipes and 30 Manholes.

Dependencies

CIP 3 is dependent on CIP 10.

Project Implementation

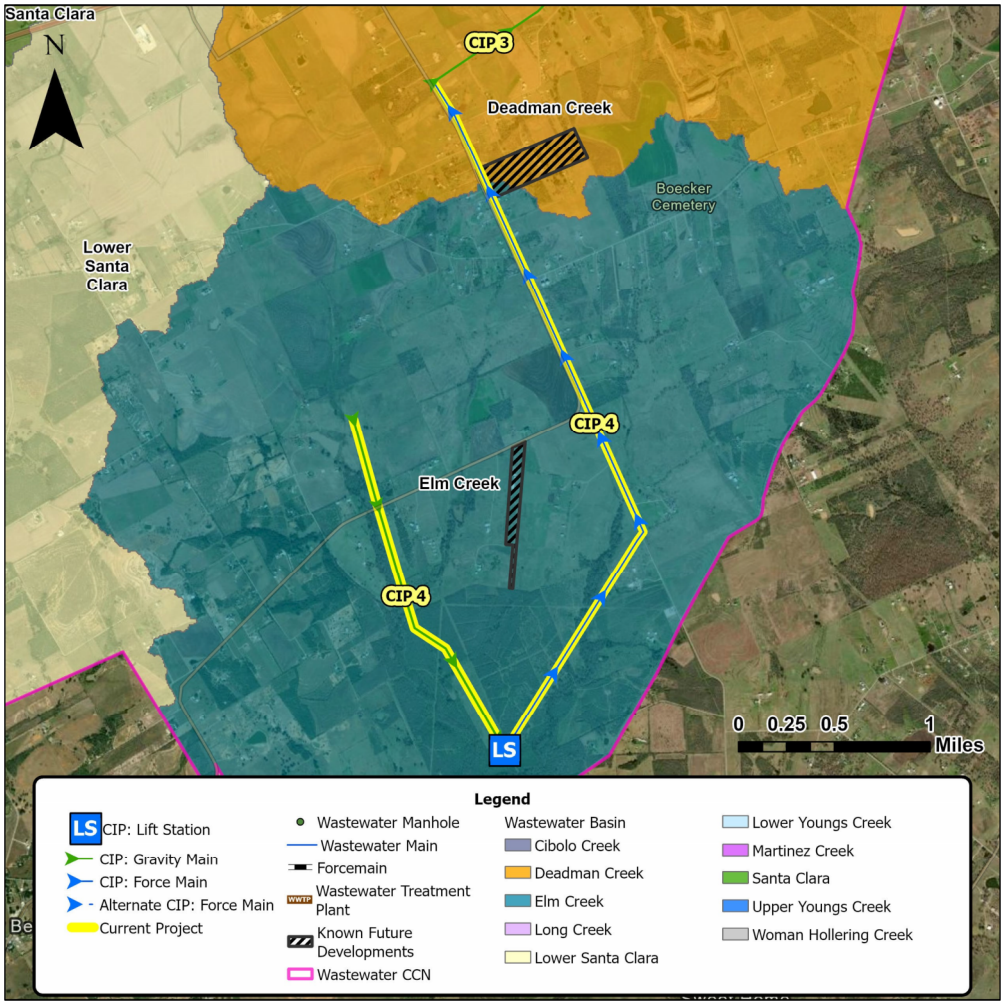
Engineering & Design	12 months
Bidding	4 months
Construction	14 months
Total Project Duration	**30 months**

No.	Description	Size	Quantity	Unit Cost	Total Cost
1	Wastewater Gravity Main	24 inch	10,000 LF	$ 180	$ 1,800,000
2	Manhole	4 ft	30 EA	$ 7,200	$ 216,000
3	Misc. Restoration (Pavement, Seeding)		10,030 LF	$ 120	$ 1,203,600
4	Trench Safety Plan and Implementation		10,030 LF	$ 6	$ 60,200
5	Traffic Control		1 LS	$ 15,000	$ 15,000
6	SWPPP		1 LS	$ 12,500	$ 12,500
				Subtotal	$ 3,307,300
				Contingency (40%)	$ 1,323,000
				Design (15%)	$ 496,100
				Easement Acquisition (10%)	$ 330,800
				Mobilization (5%)	$ 165,400
				Opinion of Probable Construction Cost	$ 5,622,600

Project 4: Elm Creek WW Collection System

Capital Improvement

Project Horizon: 2035



Project Description

1. Install 11,000 LF of 18-inch PVC Gravity Sewer Pipes and 33 Manholes.
2. Install 21,000 LF of 16-inch PVC Pressurized Force Main.
3. Install 20-Foot Deep Triplex Lift Station with 1,500 GPM Firm Capacity.

Dependencies

CIP 4 is dependent on CIP 3 and CIP 10.

Project Implementation

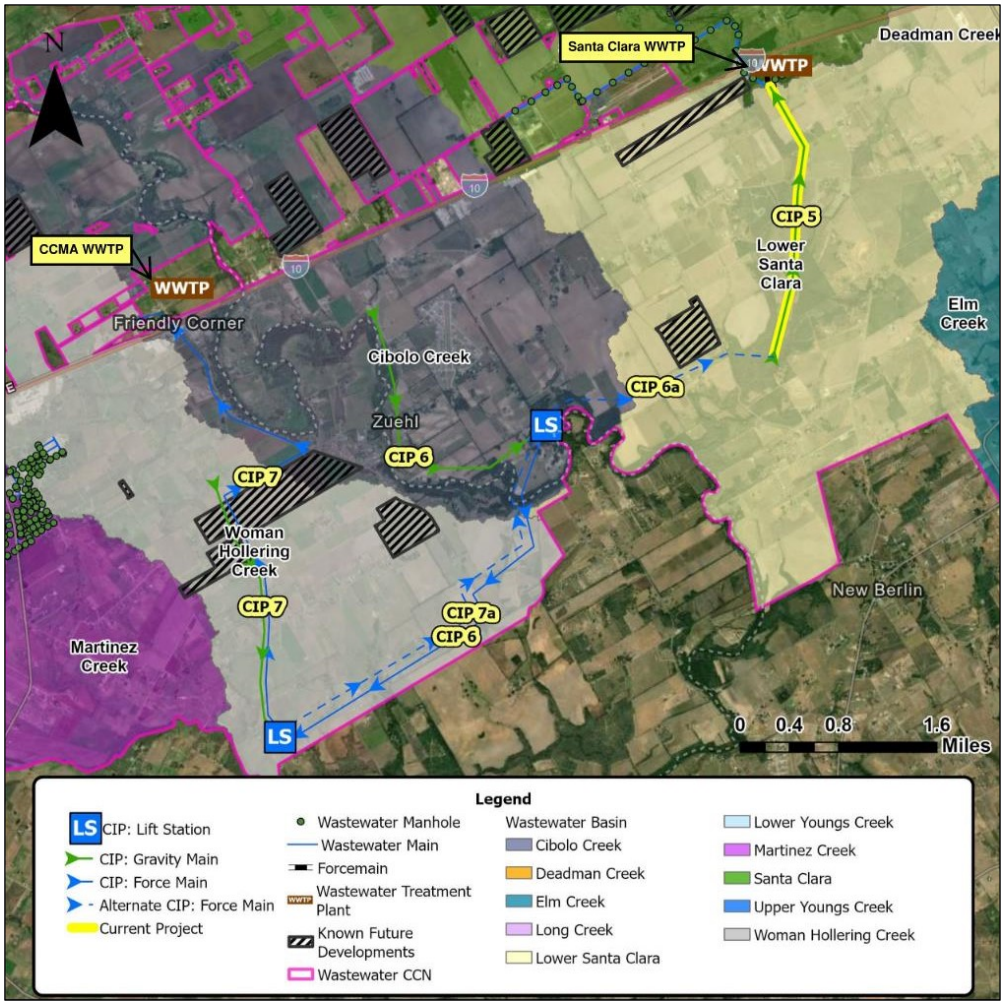
Engineering & Design	16 months
Bidding	4 months
Construction	24 months
Total Project Duration	**44 months**

No.	Description	Size	Quantity	Unit Cost	Total Cost
1	Wastewater Gravity Main	18 inch	11,000 LF	$ 175	$ 1,925,000
2	Wastewater Force Main	16 inch	21,000 LF	$ 140	$ 2,940,000
3	Manhole	4 ft	33 EA	$ 7,200	$ 237,600
4	Lift Station	1,500 gpm	1 LS	$ 3,361,500	$ 3,361,500
5	Misc. Restoration (Pavement, Seeding)		32,000 LF	$ 120	$ 3,840,000
6	Trench Safety Plan and Implementation		32,000 LF	$ 6	$ 192,000
7	Traffic Control		1 LS	$ 15,000	$ 15,000
8	SWPPP		1 LS	$ 12,500	$ 12,500
				Subtotal	$ 12,523,600
				Contingency and OH&P (40%)	$ 5,009,500
				Design (15%)	$ 1,878,600
				Easement Acquisition (10%)	$ 1,252,400
				Mobilization (5%)	$ 626,200
				Opinion of Probable Construction Cost	$ 21,290,300

Project 5: Lower Santa Clara WW Collection System

Capital Improvement

Project Horizon: 2030



Project Description

CIP 5 is sized to accommodate flows from the Lower Santa Clara basin. However, if GVSUD proceeds with CIP 6a and/or CIP 7a, CIP 5a will need to be implemented instead of CIP 5 to accommodate for the increase the capacity of the wastewater gravity main.

1. Install 13,000 LF of 12-inch PVC Gravity Sewer Pipes and 40 Manholes.

Dependencies

CIP 5 is dependent on the capacity of the Santa Clara WWTP.

Project Implementation

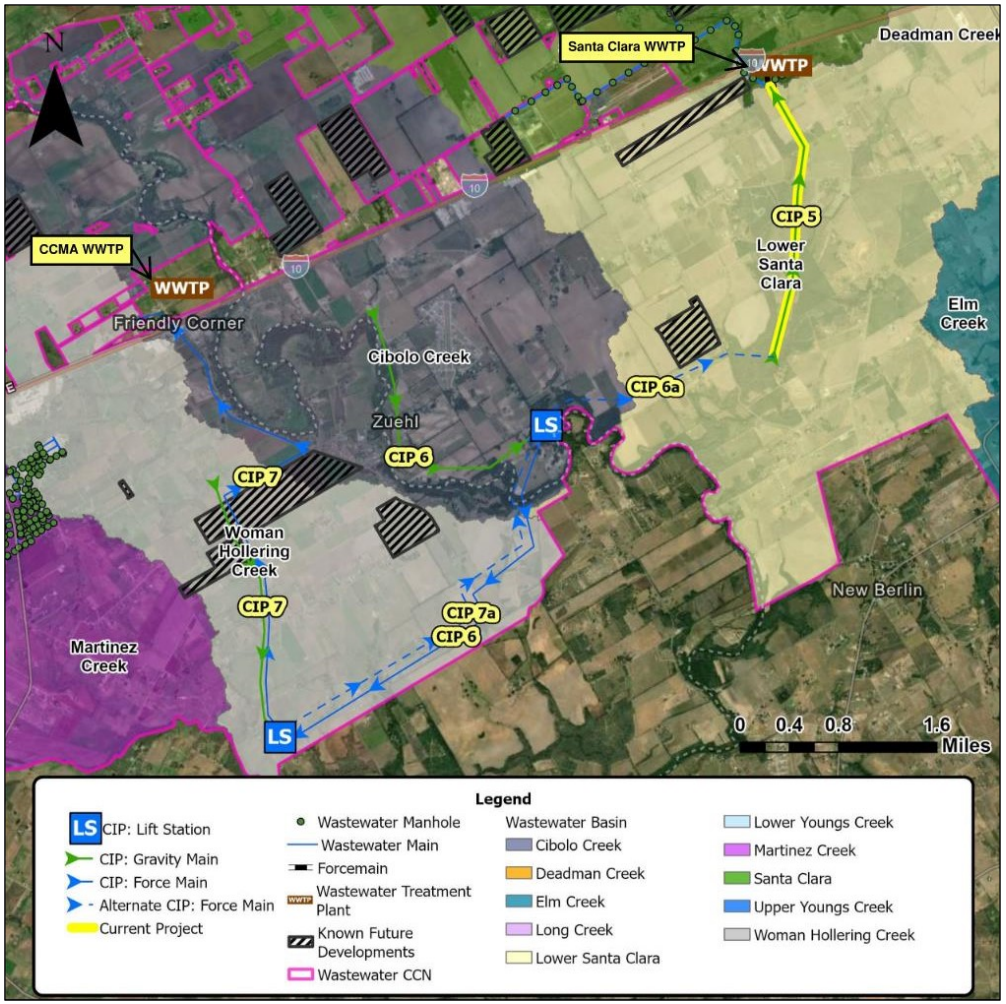
Engineering & Design	12 months
Bidding	4 months
Construction	14 months
Total Project Duration	**30 months**

No.	Description	Size	Quantity	Unit Cost	Total Cost
1	Wastewater Gravity Main	12 inch	13,000 LF	$ 100	$ 1,300,000
2	Manhole	4 ft	40 EA	$ 7,200	$ 288,000
3	Misc. Restoration (Pavement, Seeding)		13,040 LF	$ 120	$ 1,564,800
4	Trench Safety Plan and Implementation		13,040 LF	$ 6	$ 78,300
5	Traffic Control		1 LS	$ 15,000	$ 15,000
6	SWPPP		1 LS	$ 12,500	$ 12,500
				Subtotal	$ 3,258,600
				Contingency (40%)	$ 1,303,500
				Design (15%)	$ 488,800
				Easement Acquisition (10%)	$ 325,900
				Mobilization (5%)	$ 163,000
				Opinion of Probable Construction Cost	$ 5,539,800

Project 5a: Lower Santa Clara WW Collection System Alternative

Capital Improvement

Project Horizon: 2030



Project Description

CIP 5a is sized to accommodate flows from CIP 6a and/or 7a. However, if GVSUD proceeds with CIP 6 and/or CIP 7, CIP 5 will need to be implemented instead of CIP 5a to have the appropriate capacity of the wastewater gravity main.

1. Install 13,000 LF of 18-inch PVC Gravity Sewer Pipes and 40 Manholes.

Dependencies

CIP 5a is dependent on the capacity of the Santa Clara WWTP.

Project Implementation

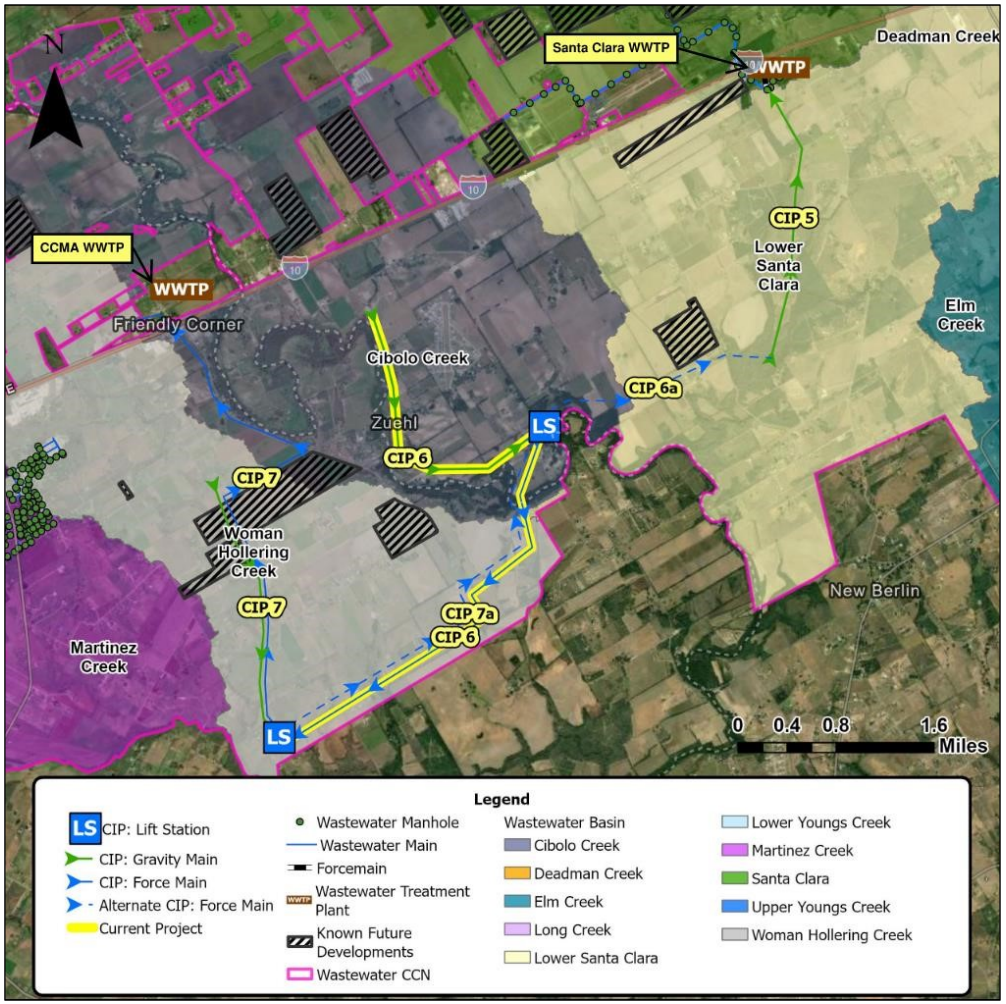
Engineering & Design	12 months
Bidding	4 months
Construction	16 months
Total Project Duration	**32 months**

No.	Description	Size	Quantity	Unit Cost	Total Cost
1	Wastewater Gravity Main	12 inch	13,000 LF	$ 100	$ 1,300,000
2	Manhole	4 ft	40 EA	$ 7,200	$ 288,000
3	Misc. Restoration (Pavement, Seeding)		13,040 LF	$ 120	$ 1,564,800
4	Trench Safety Plan and Implementation		13,040 LF	$ 6	$ 78,300
5	Traffic Control		1 LS	$ 15,000	$ 15,000
6	SWPPP		1 LS	$ 12,500	$ 12,500
				Subtotal	$ 3,258,600
				Contingency (40%)	$ 1,303,500
				Design (15%)	$ 488,800
				Easement Acquisition (10%)	$ 325,900
				Mobilization (5%)	$ 163,000
				Opinion of Probable Construction Cost	$ 5,539,800

Project 6: Cibolo Creek WW Collection System

Capital Improvement

Project Horizon: 2030



Project Description

1. Install 14,000 LF of 12-inch PVC Gravity Sewer Pipes and 42 Manholes.
2. Install 21,000 LF of 12-inch PVC Pressurized Force Main.
3. Install 20-Foot Deep Triplex Lift Station with 1,000 GPM Firm Capacity.

Dependencies

CIP 6 is dependent on CIP 7 and the CCMA WWTP.

Project Implementation

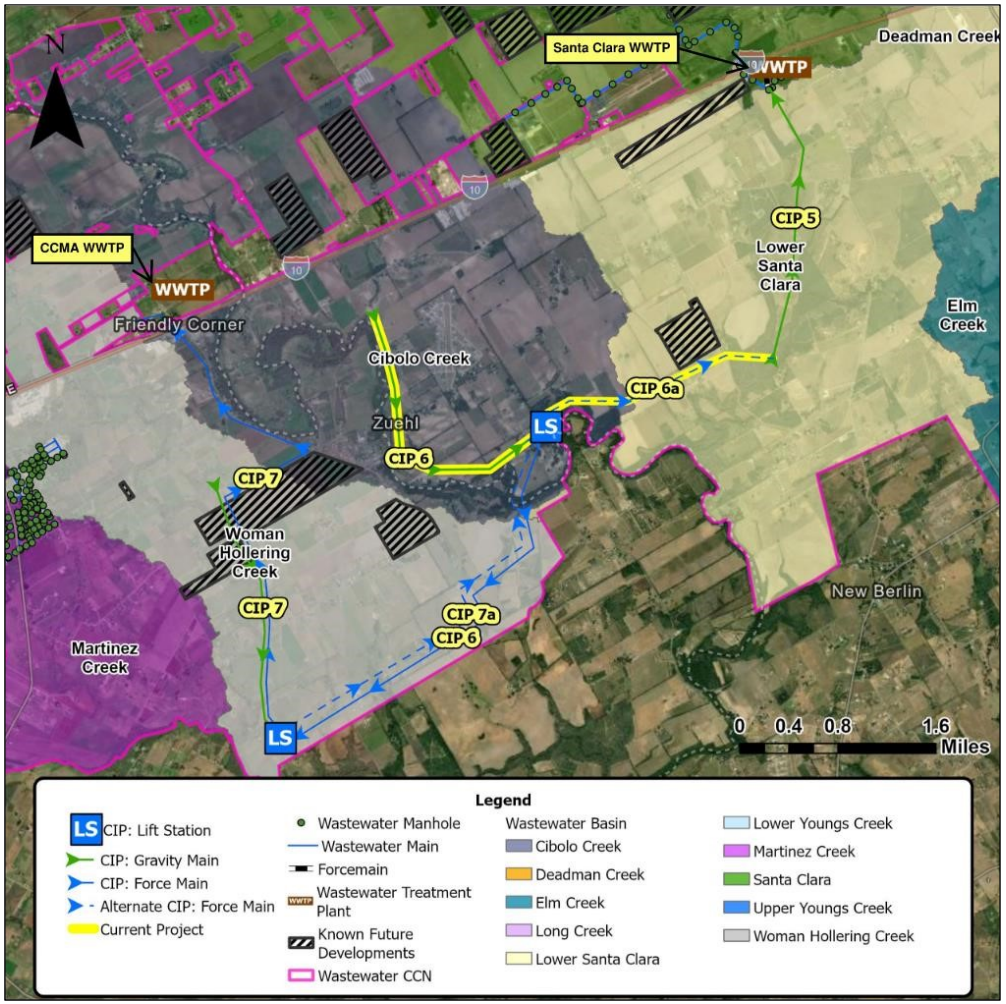
Engineering & Design	16 months
Bidding	4 months
Construction	20 months
Total Project Duration	**40 months**

No.	Description	Size	Quantity	Unit Cost	Total Cost
1	Wastewater Gravity Main	12 inch	14,000 LF	$ 100	$ 1,400,000
2	Wastewater Force Main	12 inch	21,000 LF	$ 110	$ 2,310,000
3	Manhole	4 ft	42 EA	$ 7,200	$ 302,400
4	Lift Station	1,000 gpm	1 LS	$ 2,241,000	$ 2,241,000
5	Misc. Restoration (Pavement, Seeding)		35,000 LF	$ 120	$ 4,200,000
6	Trench Safety Plan and Implementation		35,000 LF	$ 6	$ 210,000
7	Traffic Control		1 LS	$ 15,000	$ 15,000
8	SWPPP		1 LS	$ 12,500	$ 12,500
				Subtotal	$ 10,690,900
				Contingency and OH&P (40%)	$ 4,276,400
				Design (15%)	$ 1,603,700
				Easement Acquisition (10%)	$ 1,069,100
				Mobilization (5%)	$ 534,600
				Opinion of Probable Construction Cost	$ 18,174,700

Project 6a: Cibolo Creek WW Collection System Alternative

Capital Improvement

Project Horizon: 2030



Project Description

1. Install 14,000 LF of 12-inch PVC Gravity Sewer Pipes and 42 Manholes.
2. Install 11,000 LF of 16-inch PVC Pressurized Force Main.
3. Install 20-Foot Deep Triplex Lift Station with 1,500 GPM Firm Capacity.

Dependencies

CIP 6a is dependent on CIP 5 and the capacity of the Santa Clara WWTP.

Project Implementation

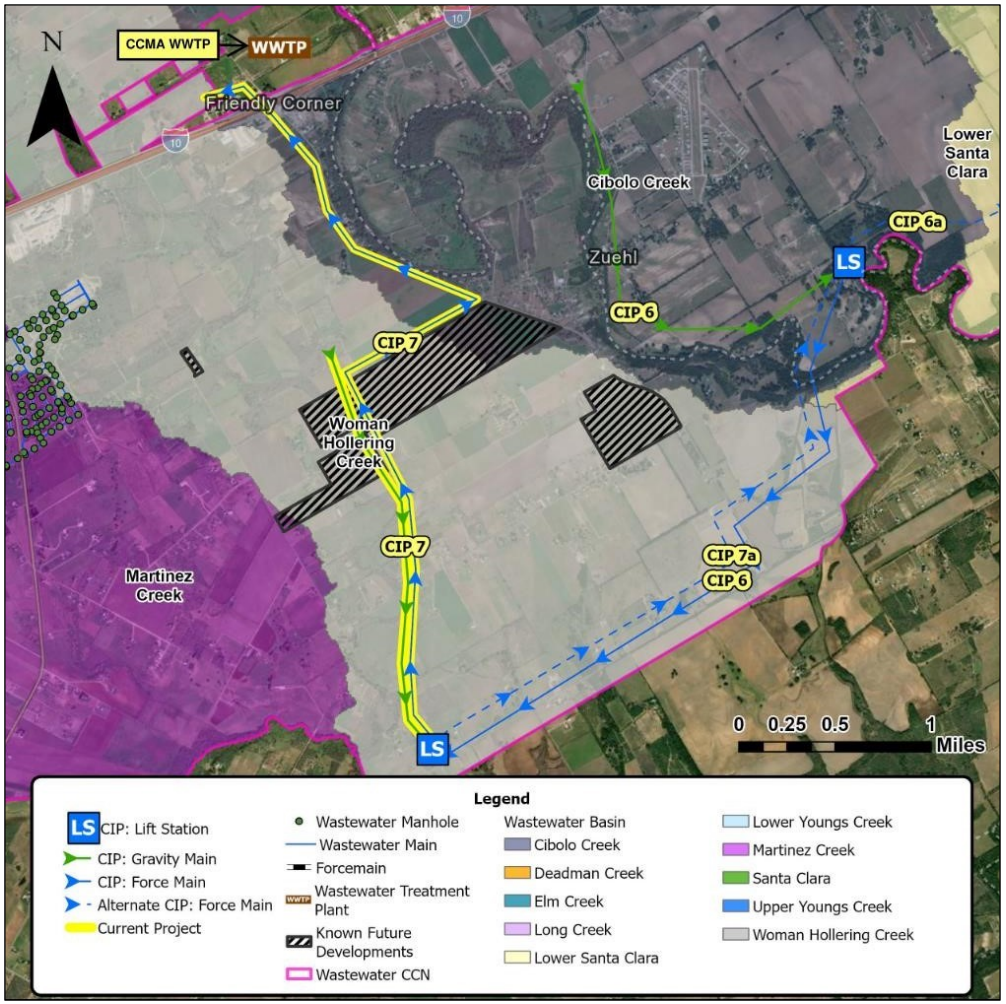
Engineering & Design	16 months
Bidding	4 months
Construction	18 months
Total Project Duration	**38 months**

No.	Description	Size	Quantity	Unit Cost	Total Cost
1	Wastewater Gravity Main	12 inch	14,000 LF	$ 100	$ 1,400,000
2	Wastewater Force Main	16 inch	11,000 LF	$ 140	$ 1,540,000
3	Manhole	4 ft	42 EA	$ 7,200	$ 302,400
4	Lift Station	1,500 gpm	1 LS	$ 3,361,500	$ 3,361,500
5	Misc. Restoration (Pavement, Seeding)		25,000 LF	$ 120	$ 3,000,000
6	Trench Safety Plan and Implementation		25,000 LF	$ 6	$ 150,000
7	Traffic Control		1 LS	$ 15,000	$ 15,000
8	SWPPP		1 LS	$ 12,500	$ 12,500
				Subtotal	$ 9,781,400
				Contingency and OH&P (40%)	$ 3,912,600
				Design (15%)	$ 1,467,300
				Easement Acquisition (10%)	$ 978,200
				Mobilization (5%)	$ 489,100
				Opinion of Probable Construction Cost	$ 16,628,600

Project 7: Woman Hollering Creek WW Collection System

Capital Improvement

Project Horizon: 2030



Project Description

1. Install 12,000 LF of 12-inch PVC Gravity Sewer Pipes and 36 Manholes.
2. Install 26,000 LF of 16-inch PVC Pressurized Force Main.
3. Install 20-Foot Deep Triplex Lift Station with 1,500 GPM Firm Capacity.

Dependencies

CIP 7 is dependent on the capacity of the CCMA WWTP.

Project Implementation

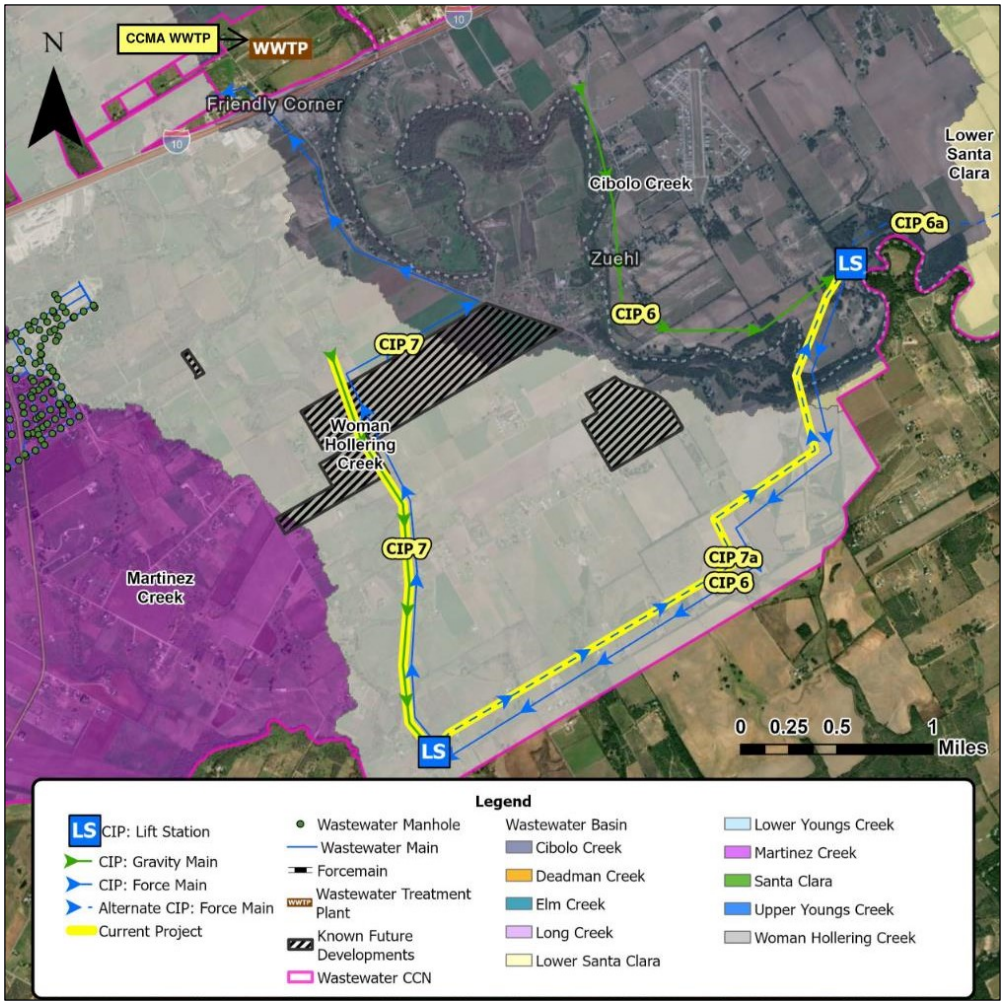
Engineering & Design	16 months
Bidding	4 months
Construction	20 months
Total Project Duration	**40 months**

No.	Description	Size	Quantity	Unit Cost	Total Cost
1	Wastewater Gravity Main	12 inch	12,000 LF	$ 100	$ 1,200,000
2	Wastewater Force Main	16 inch	26,000 LF	$ 140	$ 3,640,000
3	Manhole	4 ft	36 EA	$ 7,200	$ 259,200
4	Lift Station	1,500 gpm	1 LS	$ 3,361,500	$ 3,361,500
5	Misc. Restoration (Pavement, Seeding)		38,000 LF	$ 120	$ 4,560,000
6	Trench Safety Plan and Implementation		38,000 LF	$ 6	$ 228,000
7	Traffic Control		1 LS	$ 15,000	$ 15,000
8	SWPPP		1 LS	$ 12,500	$ 12,500
				Subtotal	$ 13,276,200
				Contingency and OH&P (40%)	$ 5,310,500
				Design (15%)	$ 1,991,500
				Easement Acquisition (10%)	$ 1,327,700
				Mobilization (5%)	$ 663,900
				Opinion of Probable Construction Cost	$ 22,569,800

Project 7a: Woman Hollering Creek WW Collection System

Capital Improvement

Project Horizon: 2030



Project Description

1. Install 12,000 LF of 12-inch PVC Gravity Sewer Pipes and 36 Manholes.
2. Install 21,000 LF of 8-inch PVC Pressurized Force Main.
3. Install 20-Foot Deep Triplex Lift Station with 500 GPM Firm Capacity.

Dependencies

CIP 7a is dependent on CIP 5a, CIP 6a, and the capacity of the Santa Clara WWTP.

Project Implementation

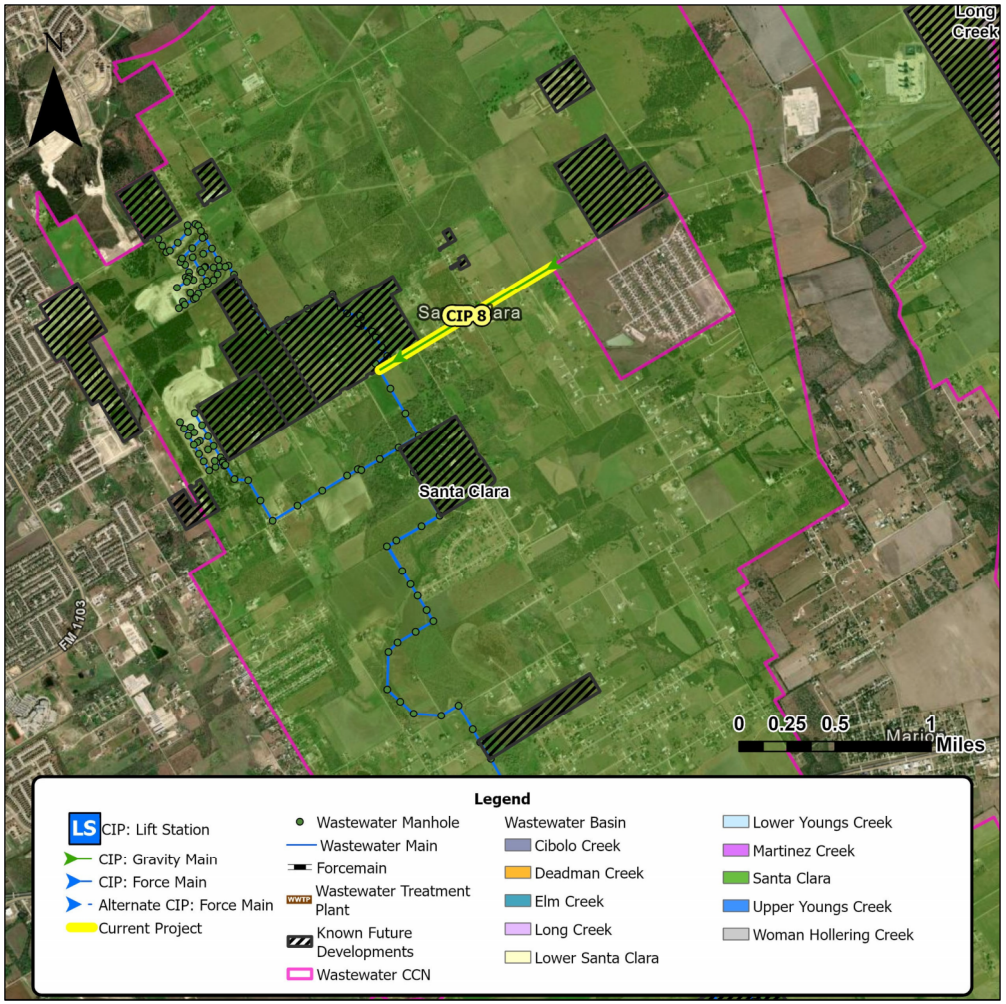
Engineering & Design	16 months
Bidding	4 months
Construction	18 months
Total Project Duration	**38 months**

No.	Description	Size	Quantity	Unit Cost	Total Cost
1	Wastewater Gravity Main	12 inch	12,000 LF	$ 100	$ 1,200,000
2	Wastewater Force Main	8 inch	21,000 LF	$ 80	$ 1,680,000
3	Manhole	4 ft	36 EA	$ 7,200	$ 259,200
4	Lift Station	500 gpm	1 LS	$ 1,120,500	$ 1,120,500
5	Misc. Restoration (Pavement, Seeding)		33,000 LF	$ 120	$ 3,960,000
6	Trench Safety Plan and Implementation		33,000 LF	$ 6	$ 198,000
7	Traffic Control		1 LS	$ 15,000	$ 15,000
8	SWPPP		1 LS	$ 12,500	$ 12,500
				Subtotal	$ 8,445,200
				Contingency and OH&P (40%)	$ 3,378,100
				Design (15%)	$ 1,266,800
				Easement Acquisition (10%)	$ 844,600
				Mobilization (5%)	$ 422,300
				Opinion of Probable Construction Cost	$ 14,357,000

Project 8: Santa Clara WW Collection System (Supplemental)

Capital Improvement

Project Horizon: 2030



Project Description

1. Install 6,000 LF of 18-inch PVC Gravity Sewer Pipes and 18 Manholes.

Dependencies

CIP 8 is not dependent on any other CIPs.

Project Implementation

Engineering & Design	8 months
Bidding	4 months
Construction	8 months
Total Project Duration	**20 months**

No.	Description	Size	Quantity	Unit Cost	Total Cost
1	Wastewater Gravity Main	18 inch	6,000 LF	$ 175	$ 1,050,000
2	Manhole	4 ft	18 EA	$ 7,200	$ 129,600
				Subtotal	$ 1,179,600
				Contingency and OH&P (40%)	$ 471,900
				Design (15%)	$ 177,000
				Easement Acquisition (10%)	$ 118,000
				Mobilization (5%)	$ 59,000
				Opinion of Probable Construction Cost	$ 2,005,500

Project 9: Santa Clara WWTP Expansion

Capital Improvement

Project Horizon: 2030

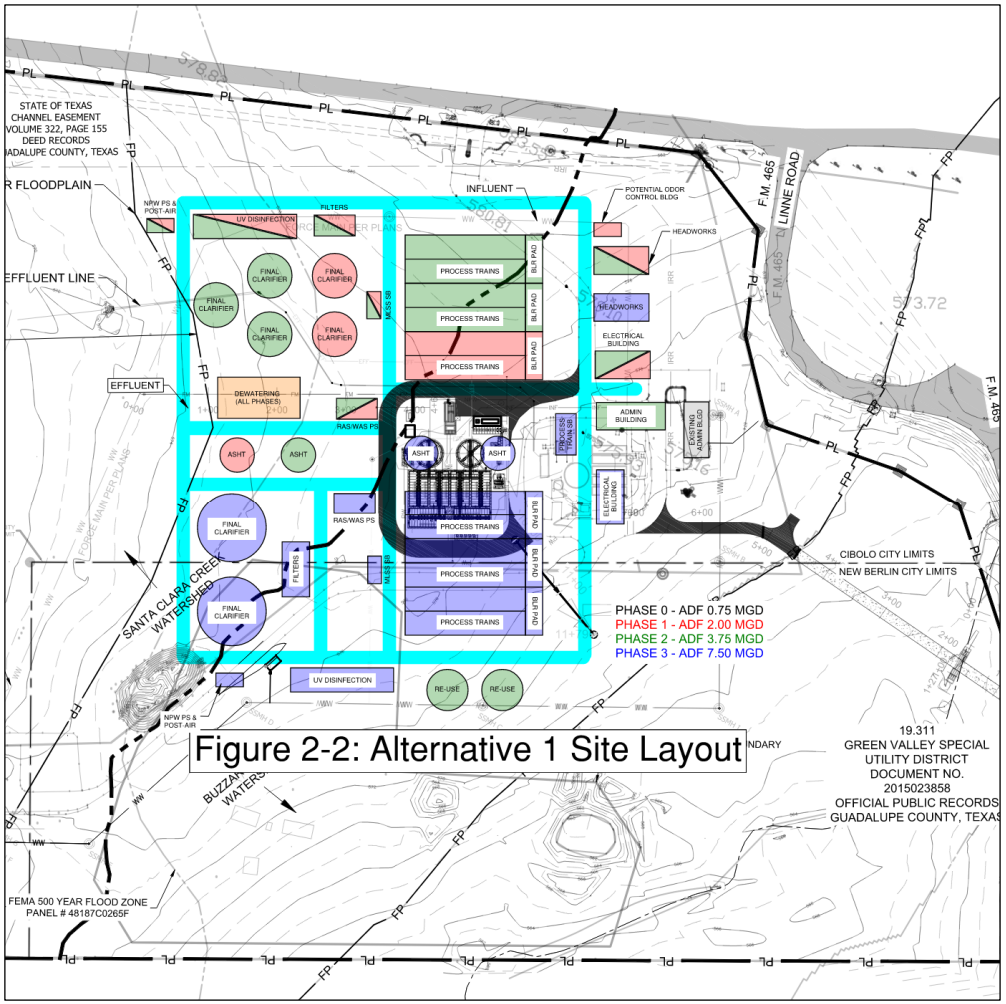


Figure 2-2: Alternative 1 Site Layout

Source: 2025 Engineering Feasibility Report For the 2025 Santa Clara Creek Wastewater Treatment Facility Phase III report

Project Description

1. Expand the Santa Clara WWTP by taking the 0.25 MGD, and 0.5 MGD package plants offline and expanding the 1.25 MGD facility to a total capacity of 3.75 MGD.

Dependencies

CIP 9 is not dependent on any other CIPs.

Project Implementation

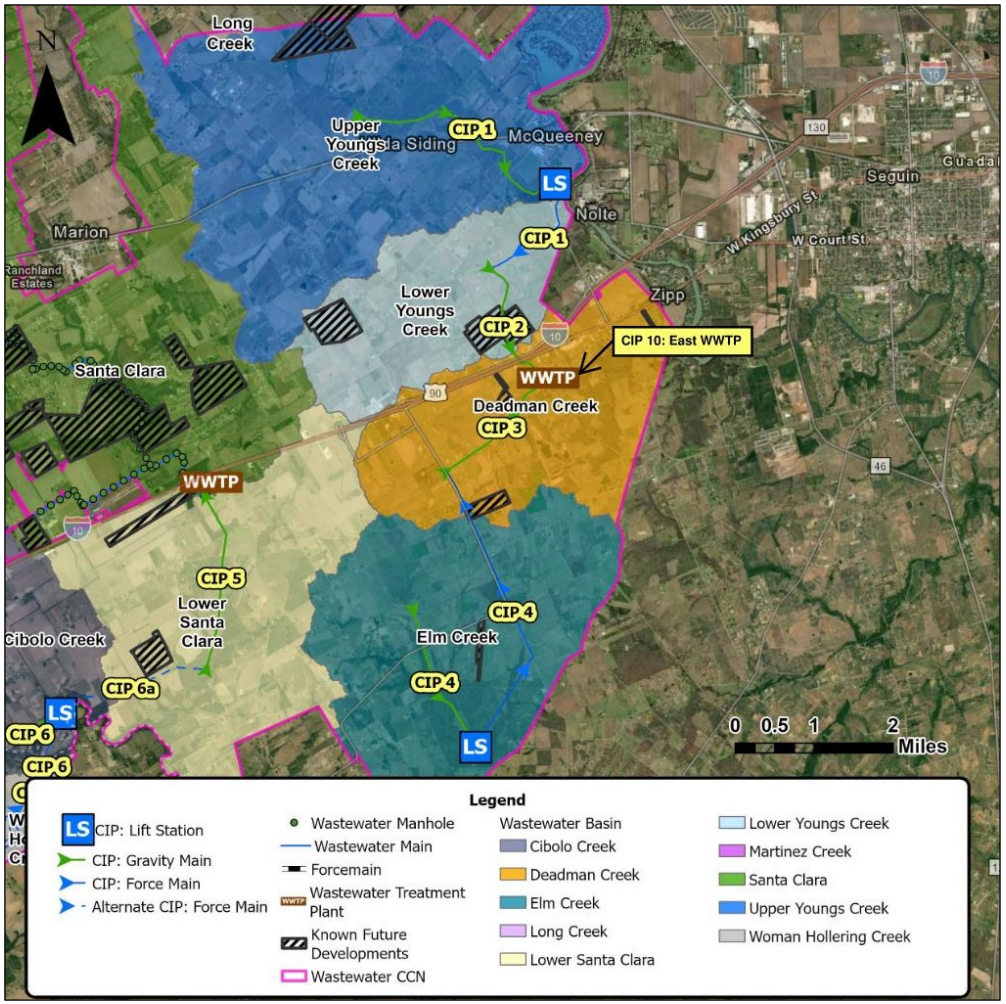
Engineering & Design	15 months
Bidding	4 months
Construction	30 months
Total Project Duration	**49 months**

No.	Description	Size	Quantity	Unit Cost	Total Cost
1	WWTP	2.5 MGD	1 EA	$ 87,500,000	$ 87,500,000
2	Decommissioning Package Plants	0.75 MGD	1 EA	$ 50,000	$ 50,000
				Subtotal	$ 87,550,000
				Contingency and OH&P (40%)	$ 35,020,000
				Design (15%)	$ 13,132,500
				Mobilization (5%)	$ 4,377,500
				Opinion of Probable Construction Cost	$ 140,080,000

Project 10: East WWTP

Capital Improvement

Project Horizon: 2035



Project Description

1. Design and Construction of a 3.0 MGD Wastewater Treatment Facility to serve the Eastern Portion of GVSUD's service area.

Dependencies

CIP 10 is not dependent on any other CIPs.

Project Implementation

Engineering & Design	18 months
Bidding	4 months
Construction	36 months
Total Project Duration	**58 months**

No.	Description	Size	Quantity	Unit Cost	Total Cost
1	WWTP	2.5 MGD	1 EA	$105,000,000	$ 105,000,000
2	Property Acquisition		1 EA	$ 3,000,000	$ 3,000,000
				Subtotal	$ 108,000,000
				Contingency and OH&P (40%)	$ 43,200,000
				Design (15%)	$ 16,200,000
				Mobilization (5%)	$ 5,400,000
				Opinion of Probable Construction Cost	$ 172,800,000

Project 11: Santa Clara WWTP Influent Lift Station Improvements

Capital Improvement

Project Horizon: 2025

Project Description

1. Install a 4-5 Float system in the Santa Clara Wastewater Treatment Plant Lift Station.

Dependencies

CIP 11 is not dependent on any other CIPs.

Project Implementation

Engineering & Design	0 months
Bidding	0 months
Construction	2 months
Total Project Duration	2 months

No.	Description	Size	Quantity	Unit Cost	Total Cost
1	Install a 4-5 Float System		1 LS	$ 17,000	$ 17,000
				Subtotal	$ 17,000
				Contingency and OH&P (40%)	$ 6,800
				Design (15%)	$ 2,600
				Opinion of Probable Construction Cost	$ 26,400

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