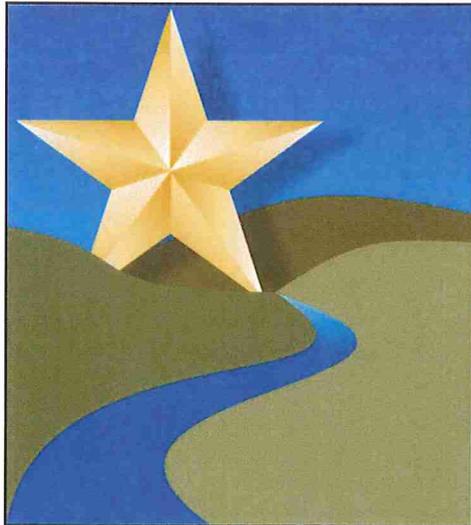


CITY OF LEANDER, TEXAS
WATER MASTER PLAN

APPROVED
WSUO 01/31/11

PREPARED FOR
THE CITY OF LEANDER, TEXAS



PREPARED BY

K FRIESE
& ASSOCIATES, INC.

AUGUST 2008

CITY OF LEANDER
WATER MASTER PLAN

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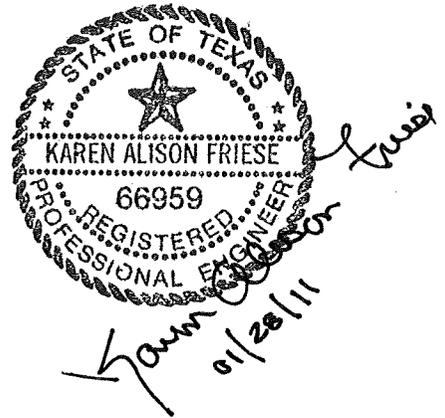


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APPENDIX 1 CIP LIST COST ESTIMATES

EXECUTIVE SUMMARY

The City of Leander (City) contracted with K Friese & Associates, Inc. to prepare a Water Master Plan for the 20-year period from 2007 to 2027. The primary goals of this plan include:

- Calculate demand projections for the water service area based on population projections provided by City staff.
- Capacity evaluation of existing significant water infrastructure, including water treatment, pump stations and transmission mains.
- Analysis and planning of methods to distribute treated water throughout the service area as it expands while providing pressure and capacity.
- Analysis of proposed improvements by utilizing WaterCAD Version 7.0 by Haested Methods to create system models and evaluate various scenarios for system expansion.
- Preparation of cost estimates of the proposed improvements required over the study period.

Modeling of the current distribution system identified certain areas that will require attention to meet the requirements of Leander's design criteria. These include providing proper pressure to areas west of Bagdad Road and providing fire flows to the downtown area.

During the study period Leander is expected to experience tremendous growth, with the total population expected to increase from nearly 25,000 currently to over 180,000 in 2027. Recent and pending transportation options to and within the City including the 183A toll road, the Ronald Reagan Boulevard extension, and proposed commuter rail, are expected to fuel this growth. Additionally, the large amount of undeveloped land in Leander's ETJ, the proposed high density Transit Oriented Development (TOD), and overall population trends in Central Texas are also expected to stimulate intensive development.

Population projections for the City were broken into several Sub-Regions (downtown, TOD, Crystal Falls, Brushy Creek, and Northwest) to further define the development patterns within the study area. Utilizing this data and Leander's water design criteria, year by year demand projections were made for existing and planned infrastructure elements.

Currently, Leander's treated water is supplied by the Lower Colorado River Authority (LCRA) through the Sandy Creek WTP and through an agreement with the City of Cedar Park, with flow rates as follows:

- Sandy Creek WTP = 12 MGD
- City of Cedar Park Interconnect = 2.18 MGD

For future additional demands the City has decided to participate in the newly formed Brushy Creek Regional Utility Authority (BCRUA), along with Cedar Park and Round Rock, which is planning a 105.8 MGD (ultimate capacity) regional WTP that will provide treated water to all three cities. Leander is planning for 50 MGD capacity from the ultimate regional WTP. It is assumed that all future additional treated water needs for Leander will be supplied by the BCRUA WTP through the study period. Per discussions with the City it is anticipated that the City of Cedar Park agreement to supply 2.18 MGD will be discontinued as the BCRUA system comes online. Therefore the currently planned ultimate capacity of treated water for Leander is as follows:

- Sandy Creek WTP = 15.6 MGD (includes planned rerating of existing WTP)
- BCRUA Regional WTP = 50 MGD

The treated water from the BCRUA WTP will enter the City at 3 locations along the southern edge of the city limits. The largest entry point will be along Ronald Reagan Boulevard to serve the expected rapid growth in that corridor. An entry point at Bagdad Road will utilize the infrastructure in place for the existing Cedar Park Interconnect. And an entry point directly from the BCRUA WTP site to the Crystal Falls area is also planned.

Additionally, as the system expands Leander will need to construct various transmission mains, elevated water storage tanks, ground storage tanks, pump stations, pressure reducing stations and other associated water infrastructure to properly distribute the water. This infrastructure will be

constructed as the City and water demands increase. The challenge will be to construct the infrastructure necessary to move water from the southern edge of the City to the northern reaches as all of the supply points are from the south.

Cost estimates for each of the proposed improvements during the 20-year period of this study have also been prepared and are discussed in Section 6 and Appendix B. The total estimated cost of water improvements through 2027 is approximately \$93,000,000 (2007 dollars).

1.0 INTRODUCTION

K Friese & Associates, Inc. (KFA) was retained by the City of Leander in 2005 to develop a Water Master Plan for Leander's proposed water service area (as further defined below). KFA has prepared interim draft reports between 2005 and 2007 and evaluated various issues related to water supply and distribution during that span, culminating in this final water master plan. In general, the study consists of developing population and water demand projections for the service area through year 2027 and determining transport and treatment improvements necessary to serve the projected growth. As of the date of this study, the City of Leander's current population is approximately 25,000 people and steady growth is anticipated over the next twenty-years. In order to meet short term needs, special emphasis has been placed on the Ronald Reagan Blvd. corridor and Transit Oriented Development (TOD) area. These portions of the City are showing signs of rapid and significant development.

The City of Leander is located northwest of Austin in the vicinity of US 183 and FM 2243 in southwestern Williamson County and northwestern Travis County. Leander's extraterritorial jurisdiction (ETJ) borders the city limits and/or ETJs of Cedar Park, Round Rock, Georgetown, Liberty Hill and Jonestown. An overall Location Map is presented as Exhibit 1-1.

1.1 Background

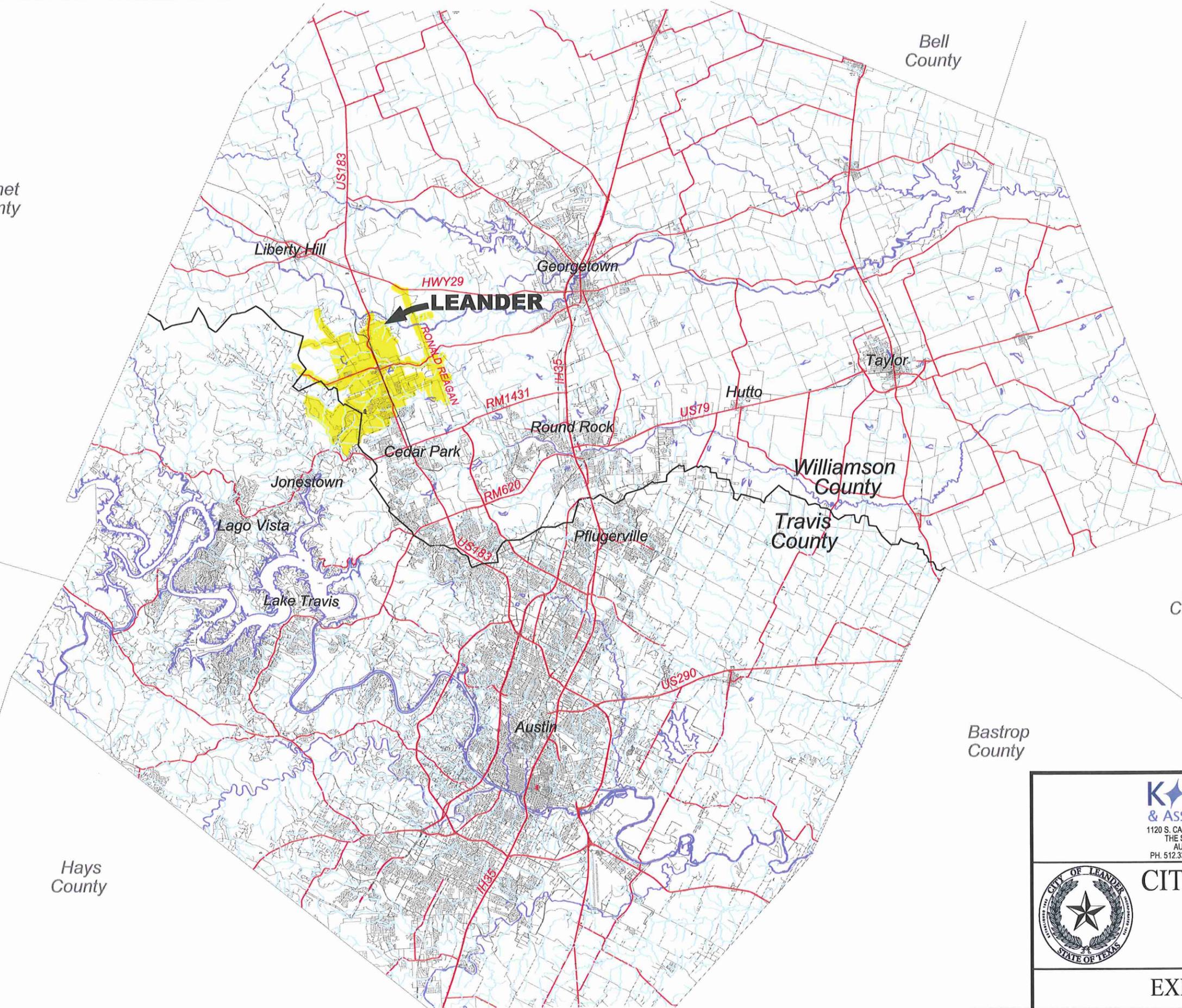
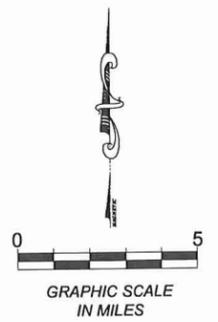
The City of Leander was incorporated in 1978 and, by the 1990s, only had a population of 3,400 people. A limited amount of water was provided through an agreement with Chisholm Trail Special Utility District (CTSUD) through a 12-inch water main. However, lack of a guaranteed long-term water supply continued to be the main restriction to Leander's growth. In 1998, the Lower Colorado River Authority (LCRA) and the Brazos River Authority (BRA) Alliance entered into a wholesale potable water supply agreement with the City of Leander. Facilities including a raw water intake, a 4.0 million gallons per day (MGD) water treatment plant (WTP) and associated infrastructure solely devoted to serving the projected growth of the City was completed in 2002. The LCRA/BRA Alliance owns and operates the WTP, referred to as the Sandy Creek WTP on Lake Travis, which has since been expanded to 6.0 MGD and about the time of this report is being expanded to 12.0 MGD.

Leander's water system is now comprised of a network of water mains, pump stations, storage tanks,

Burnet County

Bell County

Milam County



Blanco County

Hays County

Bastrop County

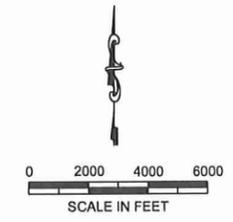
Lee County

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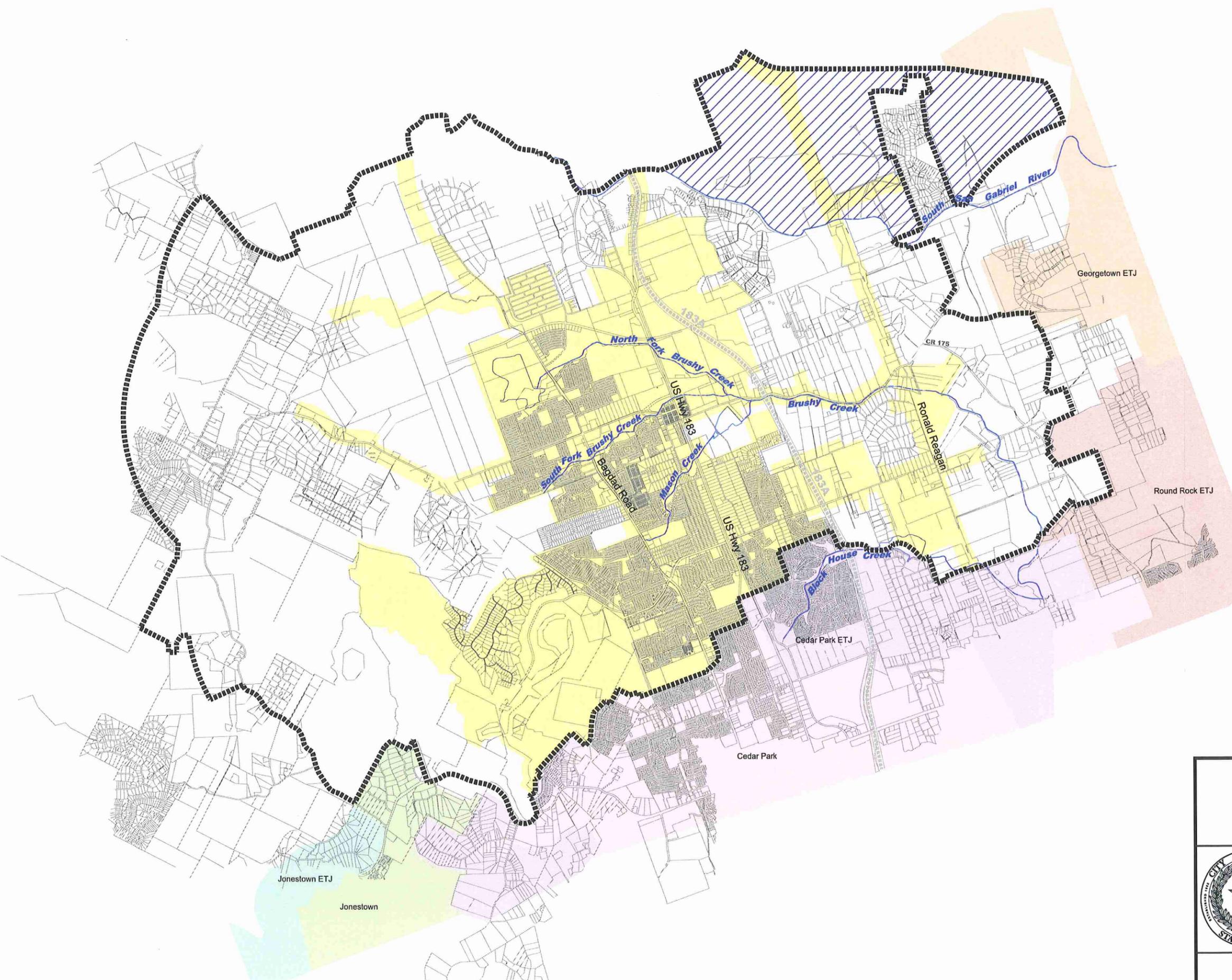
CITY OF LEANDER
 WATER MASTER PLAN
 LOCATION MAP

EXHIBIT 1-1



LEGEND

- LEANDER CITY LIMITS
- LEANDER EXTRA TERRITORIAL JURISDICTION
- LEANDER EXTRA TERRITORIAL JURISDICTION OUTSIDE OF SERVICE AREA
- SERVICE AREA BOUNDARY



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CITY OF LEANDER
STATE OF TEXAS

CITY OF LEANDER
WATER MASTER PLAN
SERVICE AREA
MAP

EXHIBIT 1-2

and hydro-pneumatic tanks. Treated potable water from the Sandy Creek WTP is supplied to the system via the Crystal Falls Ground Storage Tank and is then distributed to three pressure zones. Overall, there are approximately 2.75 million gallons of storage, over 9.0 MGD of firm pumping capacity, and a network of water mains ranging in size from 2-inch to 24-inch diameter. The City contracts operation and maintenance of the system to Southwest Water Company. Recently, the City of Leander and CTSUD have ongoing negotiations to supply wholesale water to CTSUD through Leander's distribution system.

1.2 Service Area/Project Approach

The City of Leander currently consists of about 5,000 acres. The majority of the current Leander water service area is comprised of the city limits and extra-territorial jurisdiction, which together occupy a total of approximately 39,800 acres (approximately 36,000 acres in the water service area). Portions of Leander's ETJ north of the South San Gabriel River lie within the service area of the Chisholm Trail SUD. In general, Leander's service area is bordered on the south by the Cedar Park ETJ, to the east by the Round Rock and Georgetown ETJs, and on the north by the Liberty Hill ETJ. The proposed service area may be found on Exhibit 1-2.

The study began by creation of a water model which could both evaluate the current capacity of Leander's existing water infrastructure and options for system expansion. Originally, an existing water model was provided by Jay Engineering Company, Inc.; however, it was a static model which had not been updated for several years. Therefore, KFA used Water CAD Version 7.0 by Haested Methods to develop new, dynamic system models.

The information used to create the model (pipe lengths, sizes, and locations) was primarily gathered from water system maps provided by City of Leander staff. Additionally, some modifications were made based on meetings with Leander and Southwest Water Supply Company staff assigned to operate the system. Information regarding existing pump type/size, and tank size and elevations were gathered from Southwest Water Supply Company staff.

City staff also provided the population projections, which were the same projections used to create

the City's Wastewater Master Plan. Once the modeling/design criteria were established, these projections were converted to water demand data so that future infrastructure needs could be identified. KFA has developed water models of the current system (Year 2007) and proposed future systems for years 2012, 2017, and 2027. The model evaluation included static, extended period (24-hour), and fire flow analysis of the system. Finally, a list of proposed improvements was created based on the results of our analysis. Those are provided in Section 7.

Although not the primary focus of this study, it should be noted that water supply options and system delivery points were considered in some detail, as the receiving location and quantity supplied impact internal system improvements. As of the date of this study, the LCRA, and the Cities of Round Rock and Cedar Park are in the process of developing design contracts for a 105.8 MGD Regional WTP and constructing additional intake capacity, raw water lines, and regional water transmission mains. Concurrently, LCRA and BRA are planning a rerating of the existing Sandy Creek WTP that they expect to increase the rated capacity from 12.0 MGD to 15.6 MGD. The final water supply option used for this Study, based on conversation with Leander staff, relies on obtaining 15.6 MGD from the Sandy Creek facility and the necessary supply above that amount from the Regional Plant.

2.0 PLANNING AND DESIGN CRITERIA

In order to properly model, size and plan for future facilities, a comprehensive set of design criteria must be established. In developing the proposed Leander planning criteria, a comparison of City of Austin, LCRA, and TCEQ requirements was performed. From this comparison and after conversations with City Staff, the proposed Leander modeling criteria were determined as shown in Table 2-1.

TABLE 2-1 PLANNING AND DESIGN CRITERIA

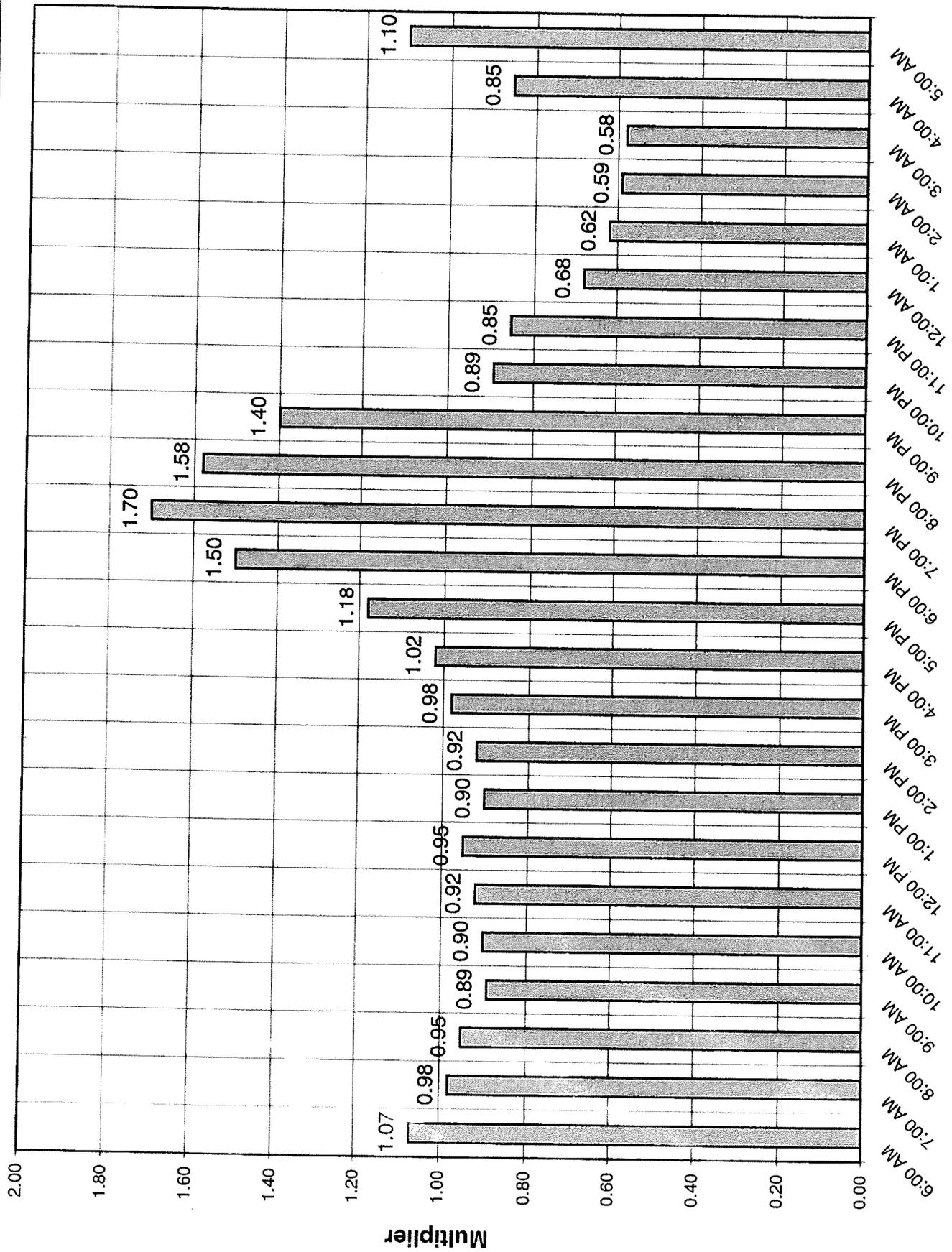
CRITERIA	PROPOSED LEANDER
People per connection	2.8
Average Day Demand*	360 gpd/LUE in 2007 324 gpd/LUE in 2027
Maximum Day Demand*	954 gpd/LUE in 2007 859 gpd/LUE in 2027
Peak Hour Demand	1620 gpd/LUE in 2007 1460 gpd/LUE in 2027
Fire Flow Residential	1,000 gpm for 2 hours
Fire Flow/Other	3,500 gpm for 3 hours
Minimum Maximum Day Pressure	50 psi
Minimum Average Day Pressure	50 psi
Minimum Peak Hour Pressure	35 psi
Minimum Fire Flow Pressure	20 psi at Maximum Day Demand
Total Storage	200 gal/LUE
Pump Capacity	0.6 gpm/LUE
Max Velocity – Peak Hour	5 fps
Max Velocity – Fire Flow	10 fps
Max Pressure (Static)	110 psi
Max Pressure (Must provide PRV)	85 psi
C-Factor	120

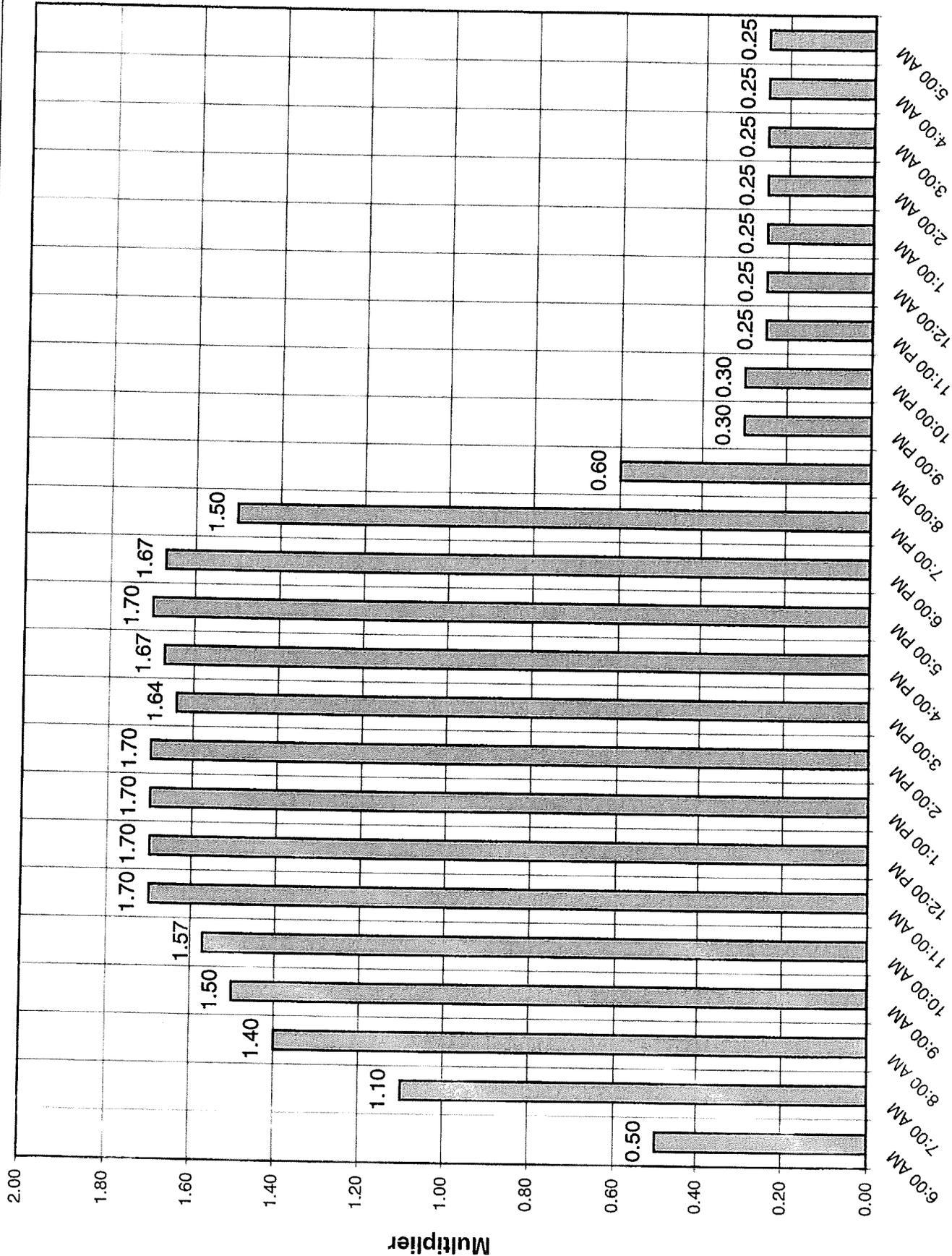
*Average and Maximum Day Demands are planned to decrease by 12.5% during the study period

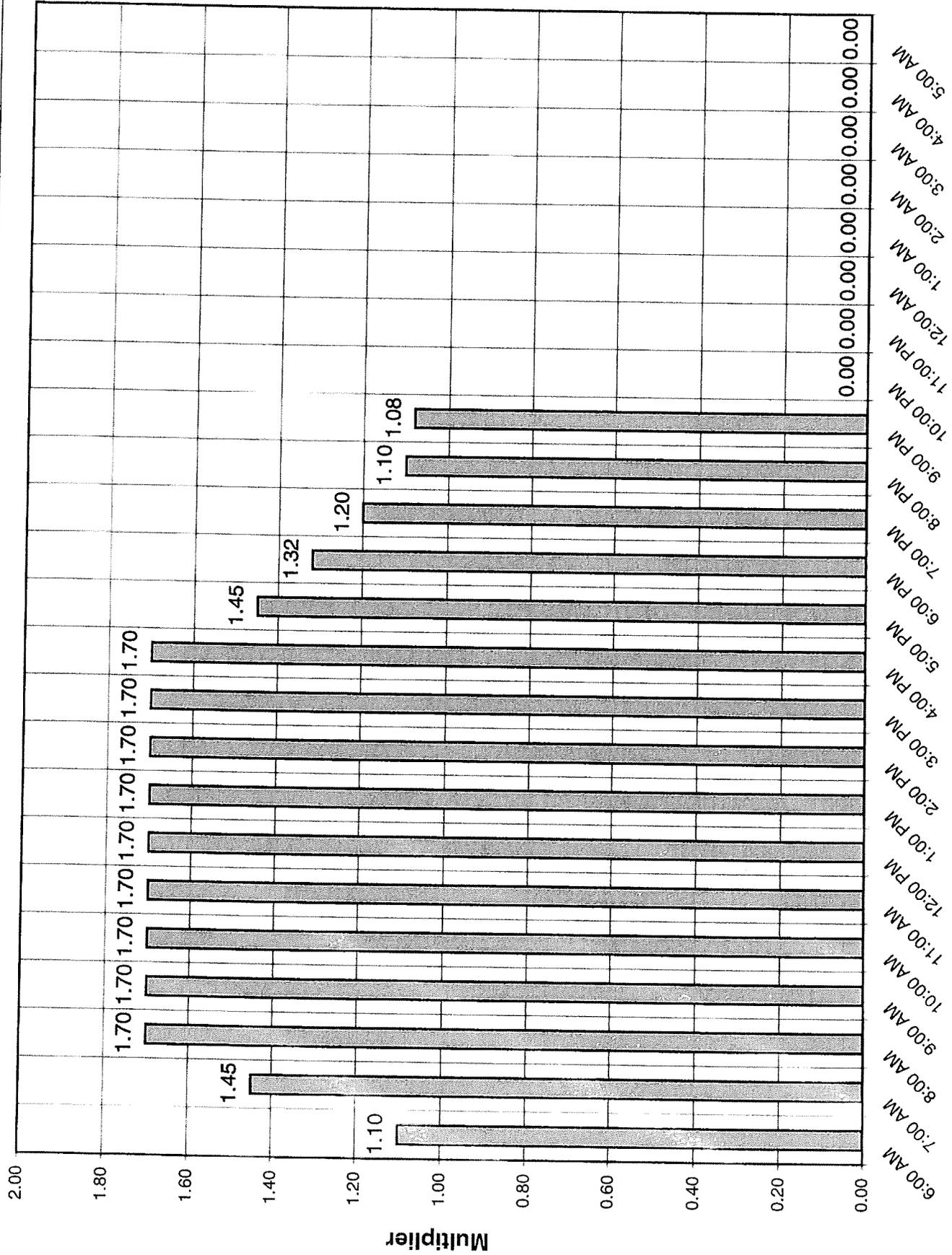
These criteria were used to generate water demands for the service area during static, extended period, and fire flow scenarios. Once the water demands were determined, the design criteria were utilized to calculate capacities of existing facilities and to size planned facilities.

Through water conservation efforts, the City expects the Average and Maximum Day Demands to decrease by 12.5% by 2027. For purposes of this Master Plan it was assumed that this reduction would take place in a linear fashion from 2008 to 2027.

Diurnal curves, representing the hourly water demand, have been developed for residential, commercial and school demands. These curves are shown in Exhibits 2-1, 2-2, and 2-3. The diurnal curves are applied to each demand node based on the development applied to the node.







3.0 POPULATION AND WATER DEMAND PROJECTIONS

3.1 Land Use and Population Projections

Population projections and distribution throughout the service area were developed in large part through the guidance of City of Leander engineering and planning staff. Several Sub-Regions were identified, each with their own independently analyzed projections. The ultimate population projections and growth rate in each area were based on staff input, existing or proposed zoning, density, developer projections, market studies, and topography. Exhibit 3-1 depicts these Sub-Region boundaries.

3.1.1 Total Leander Service Area

The current Leander ETJ and proposed Service Area lie within two counties – Williamson and Travis. The Williamson/Travis county line closely follows the ridgeline between two major river basins – the Brazos River Basin and the Colorado River basin. Within these basins, Leander then falls into several topographic watersheds. Approximately 49% of the service area is within the Brushy Creek watershed, and 16% is in the San Gabriel watershed (both of which lie within the Brazos River Basin). Finally, approximately 35% lies within the Big Sandy Creek basin within the Colorado River Basin.

There is a noticeable difference in terrain between the Colorado and Brazos basins in this area. Steep slopes with small plateau areas characterize the Colorado portion, while more gentle slopes are typical in the Brazos portion. The milder slopes in the east are conducive to more intensive development, while land use in the Colorado basin to the west is tending toward low density large-lot residential development.

As of October 2007, there are 8,265 water service accounts in Leander and an approximately 25,000 residents. To project population growth to year 2027, the City looked at recent trends, neighboring city growth trends, and proposed development plans. They developed annual growth rates projected in certain years, for various areas within the City. These projections were modified to include TOD projections as prepared by Bury + Partners, Inc., with the final projections as shown in Table 3-1. Per the City's projections, the estimated total Leander population for the year 2027 is 186,402 people.

TABLE 3-1

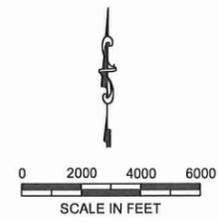
POPULATION PROJECTIONS

Year	Leander's Population Projections		
	Estimated Water Accounts	Total Population	Average Annual Growth Rate
1980*	N/A	2,179	
1990*	N/A	3,398	4.34%
2000*	N/A	9,884	9.77%
2003**	5,760	17,280	15.20%
2004**	6,185	18,555	7.37%
2005***	6,618	19,854	7%
2007***	8,265	23,898	12%
2012***	15,345	47,549	14%
2017***	27,022	86,430	12%
2022***	42,912	136,452	9.7%
2027***	59,342	186,402	6.7%

Table 3-2 shows a year by year population distribution for the service area and each sub-region.

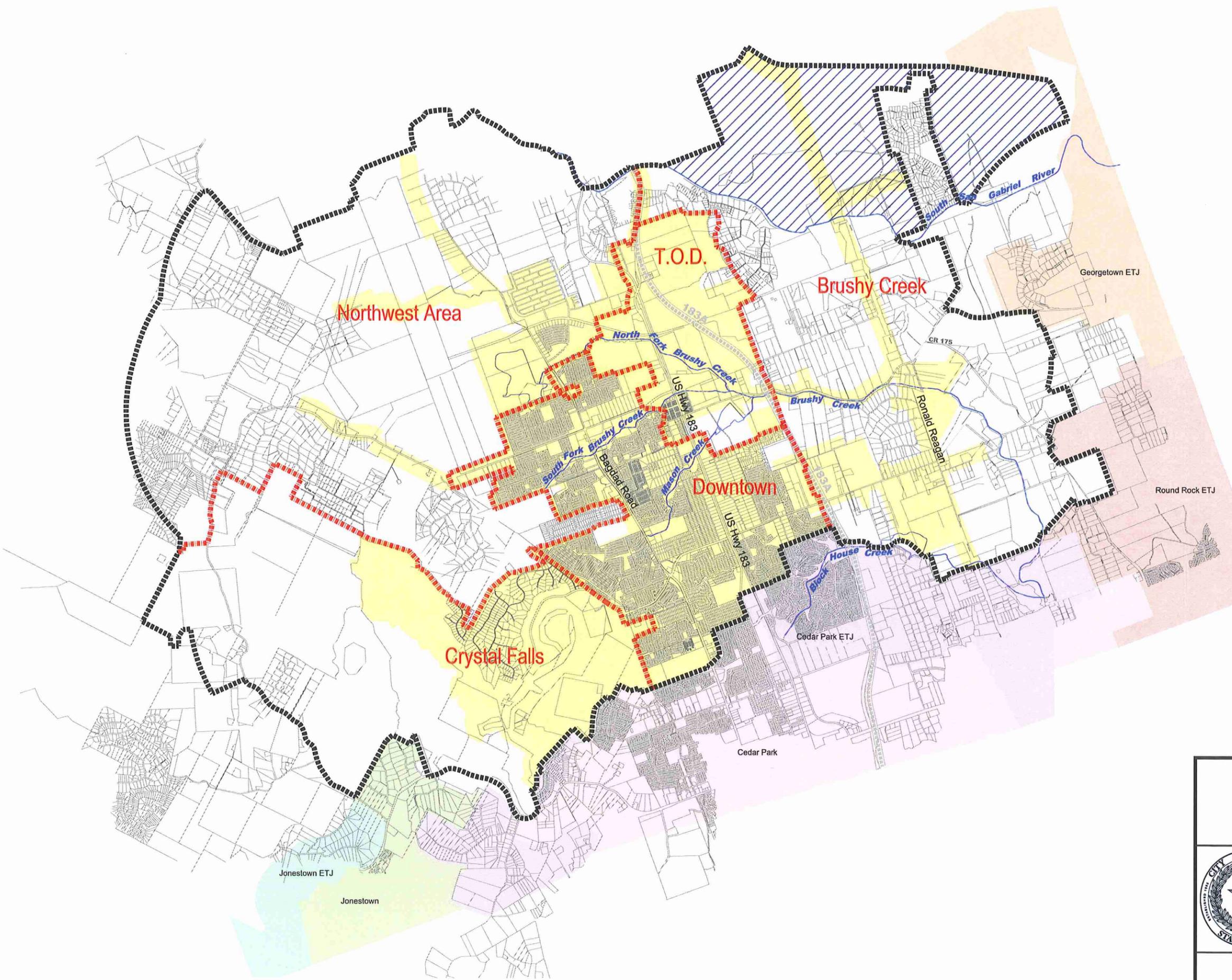
3.1.2 Downtown Sub-Region Population Projections

The Downtown Sub-Region has been defined as that area within the city limits of Leander which is, for the most part, already developed. It includes a mix of established commercial and residential development. Undeveloped areas within the City, located along the edge of the city limits, were more naturally included within other neighboring sub-regions. The Downtown Sub-Region excludes the proposed Transit Oriented Development, the Crystal Falls area and the far eastern areas more appropriately assigned to the Brushy Creek Sub-Region.



LEGEND

- LEANDER CITY LIMITS
- LEANDER EXTRA TERRITORIAL JURISDICTION
- LEANDER EXTRA TERRITORIAL JURISDICTION OUTSIDE OF SERVICE AREA
- SERVICE AREA BOUNDARY
- SUB-REGIONS BOUNDARY



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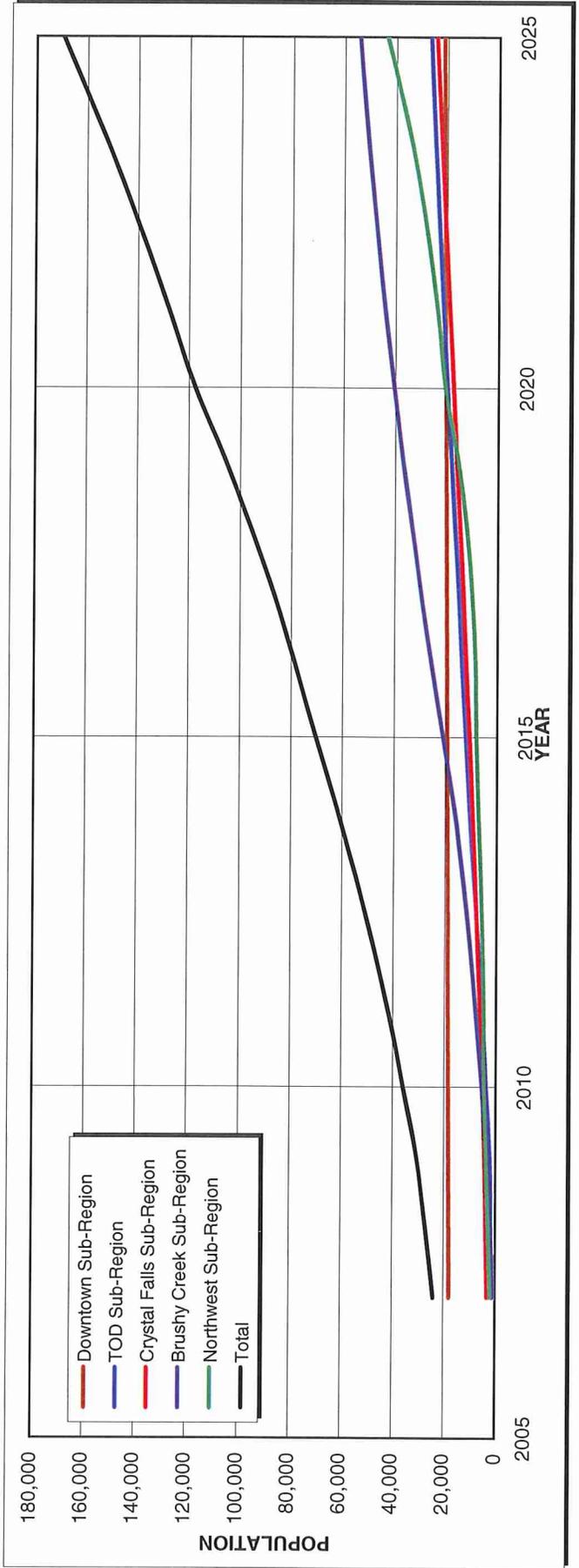


CITY OF LEANDER
 WATER MASTER PLAN
 SERVICE AREA
 SUB-REGIONS

EXHIBIT 3-1

TABLE 3-2 SUB-REGION POPULATION GROWTH

Year	Downtown Sub-Region		TOD Sub-Region		Crystal Falls Sub-Region		Brushy Creek Sub-Region		Northwest Sub-Region	
	Cumulative Population	Annual Growth Rate	Cumulative Population	Annual Growth Rate	Cumulative Population	Annual Growth Rate	Cumulative Population	Annual Growth Rate	Cumulative Population	Annual Growth Rate
2007	17,490	--	1,087	--	2,895	--	740	--	1,685	--
2008	17,687	1.1%	1,586	45.9%	3,455	19.3%	1,770	139.2%	2,590	53.7%
2009	17,885	1.1%	2,085	31.5%	4,015	16.2%	3,240	83.1%	3,525	36.1%
2010	18,086	1.1%	3,550	70.3%	4,855	20.9%	5,150	59.0%	4,280	21.4%
2011	18,288	1.1%	5,014	41.2%	5,975	23.1%	7,500	45.6%	4,563	6.6%
2012	18,494	1.1%	6,841	36.4%	7,095	18.7%	10,000	33.3%	5,120	12.2%
2013	18,701	1.1%	8,667	26.7%	8,215	15.8%	12,940	29.4%	5,922	15.7%
2014	18,911	1.1%	10,494	21.1%	9,335	13.6%	16,320	26.1%	7,061	19.2%
2015	19,123	1.1%	11,976	14.1%	10,595	13.5%	20,720	27.0%	7,920	12.2%
2016	19,338	1.1%	13,458	12.4%	11,995	13.2%	25,120	21.2%	8,281	4.6%
2017	19,554	1.1%	14,777	9.8%	13,115	9.3%	29,282	16.6%	9,702	17.2%
2018	19,774	1.1%	16,354	10.7%	14,515	10.7%	33,205	13.4%	11,976	23.4%
2019	19,996	1.1%	17,931	9.6%	15,915	9.6%	36,891	11.1%	15,482	29.3%
2020	20,220	1.1%	19,476	8.6%	17,301	8.7%	40,338	9.3%	20,349	31.4%
2021	20,447	1.1%	21,022	7.9%	18,701	8.1%	43,547	8.0%	23,232	14.2%
2022	20,676	1.1%	22,436	6.7%	20,101	7.5%	46,517	6.8%	26,721	15.0%
2023	20,908	1.1%	23,851	6.3%	21,501	7.0%	49,250	5.9%	31,217	16.8%
2024	21,143	1.1%	25,266	5.9%	22,901	6.5%	51,744	5.1%	36,791	17.9%
2025	21,380	1.1%	26,384	4.4%	24,301	6.1%	54,000	4.4%	43,506	18.3%
2026	23,023	7.7%	27,502	4.2%	25,701	5.8%	56,354	4.4%	45,485	4.5%
2027	24,666	7.1%	28,359	3.1%	27,101	5.4%	58,811	4.4%	47,464	4.4%



The year 2007 population of the Downtown Sub-Region is estimated to be approximately 17,490 people. This was calculated by subtracting the 2007 populations within the TOD and Crystal Falls areas from the Leander service area 2007 population. The Northwest area and Brushy Creek area currently have very little contributing populations.

The Downtown sub-region is currently the densest within the service area as it represents virtually the total existing population. However, a relatively small portion of the overall service area's population growth is anticipated within this sub-region, and is only expected to grow by an additional 25% of its current population during the 20 year planning period before reaching a 2027 population of 24,666 people. This equates to an annual growth rate (AGR) of approximately 1.1%.

3.1.3 TOD Sub-Region Population Projections

The proposed Transit Oriented Development is located in the north central portion of the Leander service area. It is comprised of 2,400 acres, and is a proposed master-planned community of mixed residential, commercial and recreational components. A report entitled "Leander Transit Oriented Development – Market Analysis" authored by Capital Market Research in January 2005 summarizes a planned growth pattern for this area using market demographics and independently developed regional population projections. Additionally, Bury + Partners, Inc. (BPI) has been contracted by the City to create a Water and Wastewater Master Plan for the TOD sector that has refined population projections. Using the growth patterns obtained from BPI, there is an existing population within the TOD of 1,087 people in year 2007 and a projected population of 28,359 people in year 2027.

3.1.4 Crystal Falls Sub-Region Population Projections

The Crystal Falls sub-region encompasses 5,049 acres and is located on the western side of the Leander service area. It currently consists of single-family residential subdivisions and the Crystal Falls golf course. Specifically, the subdivisions within this sub-region include Grand Mesa, the Fairways and the proposed Key Deer Ranch – a 580 acre development. There has recently been discussion of large master planned communities proposed for this area although nothing has been determined. Based on possible developments in this area, a density of the undeveloped areas of 2.5 LUEs/acre has been assumed as it builds out through 2027, resulting in a total population of 27,101.

The existing and proposed phases of the Grand Mesa development are not included in wastewater flow projections as this development consists of septic systems on large lots and will not contribute to the system. Therefore, the total year 2027 population considered to develop wastewater flow projections is 25,726 people. A Section of ETJ northwest of Crystal Falls consisting of approximately 2,677 acres is currently undeveloped and it has been assumed that this area will not develop during the study period.

3.1.5 Brushy Creek Sub-Region Population Projections

The Brushy Creek Sub-Region is generally located in the eastern side of the service area. In 2005, there were no service connections in this region. It is anticipated, through discussions with local developers and City Staff, that the Brushy Creek Sub-Region will realize a total population of 58,811 people in year 2027. The population growth from 2007 to 2027 for this sub-region was fit to a normal distribution, or bell curve. This distribution was then adjusted to fit within the established growth curve for the entire service area.

3.1.6 Northwest Sub-Region Population Projections

The Northwest Sub-Region is located in the northwestern portion of the service area. Very few current wastewater service connections exist in the Northwest sub-region although it is anticipated that new developments will be coming soon, including the planned Texas X Park. Growth for this area was calculated by assigning the remainder of the Leander service area growth after subtracting the other four population regions. The population for this largely undeveloped area is projected to be 47,464 people in year 2027.

3.2 Water Demand Projections

Using the planning criteria discussed in Section 2, water demand projections have been prepared for the Leander service area and each Sub-Region. The 2007 water demand projections, do not strictly follow the population projections contained in this section, rather windshield surveys of the existing developments and tax record research was performed to physically count the number of existing LUEs in the service area. The demand projections were input into the water model and used to analyze existing facilities and to determine the size and timing of future Capital Improvement Projects. Table 3-3 summarizes these results.

TABLE 3-3

LEANDER WATER DEMAND PROJECTIONS

Area	Year			
	2007	2012	2017	2027
Total Leander Study Area				
LUEs	8,967	16,237	27,777	59,833
Average Day Demand (MGD)	3.23	5.69	9.41	18.85
Max Day Demand (MGD)	8.55	15.08	24.93	49.95
Peak Hour Demand (MGD)	14.53	25.61	42.33	84.81
Downtown Sub-Region				
LUEs	6,764	7,006	7,248	8,809
Average Day Demand (MGD)	2.43	2.46	2.45	2.77
Max Day Demand (MGD)	6.45	6.51	6.51	7.35
Peak Hour Demand (MGD)	10.96	11.05	11.05	12.49
TOD Sub-Region				
LUEs	388	2,443	5,277	10,128
Average Day Demand (MGD)	0.14	0.86	1.79	3.19
Max Day Demand (MGD)	0.37	2.27	4.74	8.45
Peak Hour Demand (MGD)	0.63	3.85	8.04	14.36
Crystal Falls Sub-Region				
LUEs	1,034	2,534	4,684	9,679
Average Day Demand (MGD)	0.37	0.89	1.59	3.05
Max Day Demand (MGD)	0.99	2.35	4.20	8.08
Peak Hour Demand (MGD)	1.68	4.00	7.14	13.72
Northwest Sub-Region				
LUEs	602	1,829	3,465	16,951
Average Day Demand (MGD)	0.22	0.64	1.17	5.34
Max Day Demand (MGD)	0.57	1.70	3.11	14.15
Peak Hour Demand (MGD)	0.97	2.88	5.28	24.03
Brushy Creek Sub-Region				
LUEs	179	2,426	7,102	14,265
Average Day Demand (MGD)	0.06	0.85	2.41	4.49
Max Day Demand (MGD)	0.17	2.25	6.37	11.91
Peak Hour Demand (MGD)	0.29	3.83	10.82	20.22

Using the yearly population projection figures, the Average Day Demand was calculated by multiplying the number of LUEs by 360 gpd/LUE in 2007 and converting to millions of gallons per day. The Maximum Day Demand was calculated by multiplying the number of LUEs by 954 gpd/LUE in 2007 and converting to millions of gallons per day. And the Peak Hour Demand was found by multiplying the number of LUEs by 1,620 gpd/LUE in 2007 and converting to millions of gallons per day. Per City staff, the Average, Max and Peak Day Demands were decreased by 12.5% in the 2027 planning year. For the 2012 and 2017 planning years a straight line extrapolation between 2008 and 2027 was used to account for the reduction in demand.

4.0 WATER SUPPLY

In 1998, LCRA, BRA, and the City of Leander entered into a wholesale potable water service agreement. Under the terms of that agreement, LCRA is responsible for the planning, design and construction of improvements to meet the peak day water needs of Leander. The primary source of meeting those needs is through the Sandy Creek WTP located at the end of Trails End Road, which is jointly owned and operated by the LCRA/BRA Alliance. The WTP has recently been expanded to a capacity of 12.0 MGD with Leander currently its only wholesale customer, although that may change in the coming years with the enactment of House Bill 1437. In the future, the City of Georgetown, Liberty Hill WSC, and the Chisholm Trail SUD may also be supplied. The treated water from the WTP is supplied to the 1.0 MG Crystal Falls ground storage tank and the 0.5 MG County Glen ground storage tank. These two tanks serve as elevated storage on the 1127 pressure plane and also as reservoirs to serve the 1200 and 1252 pressure planes. City Staff, the LCRA and the BRA plan to rerate the existing 12.0 MGD Sandy Creek WTP and expect it to be rated at 15.6 MGD of capacity. This is planned to take place in 2009.

The second water supply source is from a connection with the City of Cedar Park water system along Bagdad Road. The current agreement, which may be discontinued in the near future, dictates that Leander may take a maximum of 2.18 MGD (with a minimum 'take-or-pay' of 0.73 MGD) of treated water. Currently, Leander is taking approximately the minimum of 0.73 MGD on average. The treated water from Cedar Park is supplied to the 0.75 MG Cedar Park Interconnect ground storage tank. Water from this tank is pumped to the 1127 pressure plain. Exhibit 4-1 depicts the existing and proposed water supply to the City of Leander.

4.1 Future Water Supply

The demand projections described in Section 3.2 indicate that the City of Leander will require the following maximum day supply:

- Year 2012 – 15.08 MGD
- Year 2017 – 24.93 MGD
- Year 2027 – 49.95 MGD

The cities of Cedar Park and Round Rock, and Leander have recently created the Brushy Creek Regional Utility Authority (BCRUA) with the initial goal of planning, designing and constructing a regional WTP to serve each of the three cities. This WTP is planned to have an ultimate capacity of 105.8 MGD. Phasing of the plant construction is currently being evaluated, and design of several pieces of the required infrastructure is currently ongoing. The proposed site for the WTP is at the off of Industrial Blvd. north of FM 1431 within the City of Cedar Park although the site borders the City of Leander. The regional components would include:

- a deep water intake and pipeline that would supply the Regional WTP and Cedar Park WTP
- a Regional WTP with ultimate capacity of 105.8 MGD;
- a 48 thru 78-inch diameter transmission main along New Hope Road supplying Cedar Park, Leander, and Round Rock.

The BCRUA Regional WTP would deliver water to Leander in three locations; at the existing Cedar Park interconnect point along Bagdad Road, along Ronald Reagan Blvd., and at a direct connection from the WTP to the Crystal Falls area.

Leander has decided to participate in the BCRUA system and utilize that for future water supply above what is currently supplied from Sand Creek WTP. There were two primary factors considered when evaluating Leander's participation in the regional facilities versus expansion of the Sandy Creek WTP beyond 12 MGD:

1. Capital and operational impacts to Leander's pumping, storage and distribution system. The Sandy Creek WTP delivers water to the Crystal Falls tank site, a developed area with significant existing infrastructure. The Regional WTP will be delivering water to the Ronald Reagan corridor. Existing development in this area is relatively sparse, although it is projected to greatly increase in upcoming years requiring the installation of water facilities to support the growth. Land acquisition, construction costs, and public impacts make it more attractive to supply a larger amount of water to the Ronald Reagan area (an undeveloped area requiring new infrastructure) than to the Crystal Falls area (a developed area with existing infrastructure).

2. Capital costs of expansion of the Sandy Creek WTP versus participation in the Regional WTP. Preliminary estimates based on work performed by TC&B on the Sandy Creek WTP expansion and by HDR on the Regional WTP Concept Plan indicate that Leander's capital costs for expansion of the Sandy Creek facilities beyond 12 MGD would be very expensive due to the intake and transmission improvements that would be required.

Table 4-1 shows the projected water demands and supply source for Years 2007, 2012, 2017, and 2027. The total demands include 6.20 MGD maximum day demand for Chisolm Trail SUD beginning in Year 2012. The City of Leander is currently in negotiations with Chisolm Trail SUD to provide wholesale water service.

TABLE 4-1 WATER DEMAND & SUPPLY

Area	Year			
	2007	2012	2017	2027
<i>Leander Study Area Demand</i>				
LUEs	8,967	16,237	27,777	59,833
Average Day Demand (MGD)	3.23	5.69	9.41	18.85
Max Day Demand (MGD)	8.55	15.08	24.93	49.95
Peak Hour Demand (MGD)	14.53	25.61	42.33	84.81
<i>Chisolm Trail SUD Demand</i>				
LUEs	N/A	N/A	N/A	N/A
Average Day Demand (MGD)	0	3.10	3.10	3.10
Max Day Demand (MGD)	0	6.20	6.20	6.20
Peak Hour Demand (MGD)	0	6.20	6.20	6.20
<i>Total Leander Demand</i>				
LUEs	N/A	N/A	N/A	N/A
Average Day Demand (MGD)	3.23	8.79	12.51	21.95
Max Day Demand (MGD)	8.55	21.28	31.13	56.15
Peak Hour Demand (MGD)	14.53	31.81	48.53	91.01
<i>Water Supply (MGD)</i>				
Sandy Creek WTP	12	15.6	15.6	15.6
Cedar Park Interconnect (at Bagdad Rd)	2.18	0	0	0
Regional WTP (direct connection)	0	0	2	8
Regional WTP (at Bagdad Rd)	0	0	4	13
Regional WTP (at Ronald Reagan Blvd)	0	10	11	24
Total Supply	14.18	25.6	32.6	60.6

5.0 EXISTING WATER SYSTEM INFRASTRUCTURE

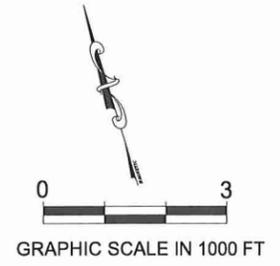
Information regarding the location and dimensions of existing water infrastructure was provided to KFA by the City and Southwest Water Supply Company. The information was primarily taken from existing City of Leander Water System Maps as well as verbal and written communication with utility staff. Exhibit 5-1 depicts the major existing water infrastructure and the boundaries of the various pressure planes. A summary of Leander's existing potable water storage tanks is included as Table 5-1, and a summary of Leander's existing pumps is included as Table 5-2.

TABLE 5-1 EXISTING LEANDER STORAGE TANKS

Description	Pressure Plane	Volume	Overflow Elevation	Notes
Ground Storage				
Cedar Park Interconnect GST	NA	0.75 MG	Unknown	Serves as reservoir for pumping to Low Zone
Elevated Storage				
Crystal Falls GST	Low (1127)	1.0 MG	1,127 feet	Serves as elevated storage for Low Zone and reservoir for pumping to Middle and Upper Zones
Glen County GST	Low (1127)	0.5 MG	1,127 feet	Serves as elevated storage for Low Zone
Crystal Falls EST	Middle (1197)	0.5 MG	1,197 feet	Serves as elevated storage for Middle Zone
Hydro-Pneumatic Tanks				
Crystal Falls Hydrotank	Upper (1260)	20,000 gal	NA	

TABLE 5-2 EXISTING LEANDER PUMPING FACILITIES

Description	Zone	Pumps	# Extra Slots	Rating	Power	Type
Cedar Park Interconnect Pump Station	Low	2	1	2500 gpm @ 228 feet	200-HP @ 1780 rpm	Aurora
Crystal Falls Pump Station	Middle	2	1	2500 gpm @ 70 feet	60-HP @ 1175 rpm	Aurora
Crystal Falls Pump Station	Upper	2	1	1250 gpm @ 138 feet	75 HP @ 1750 rpm	Aurora
Falcon Oaks Pump Station	Falcon Oaks	2	0	Unknown	Unknown	Unknown



LEGEND

- LOW PRESSURE PLANE
- MIDDLE PRESSURE PLANE
- UPPER PRESSURE PLANE
- EXISTING WATERLINES
- PUMP STATION
- GROUND STORAGE TANK
- ELEVATED STORAGE TANK
- HYDROTANK

Water Supply - Existing 2008

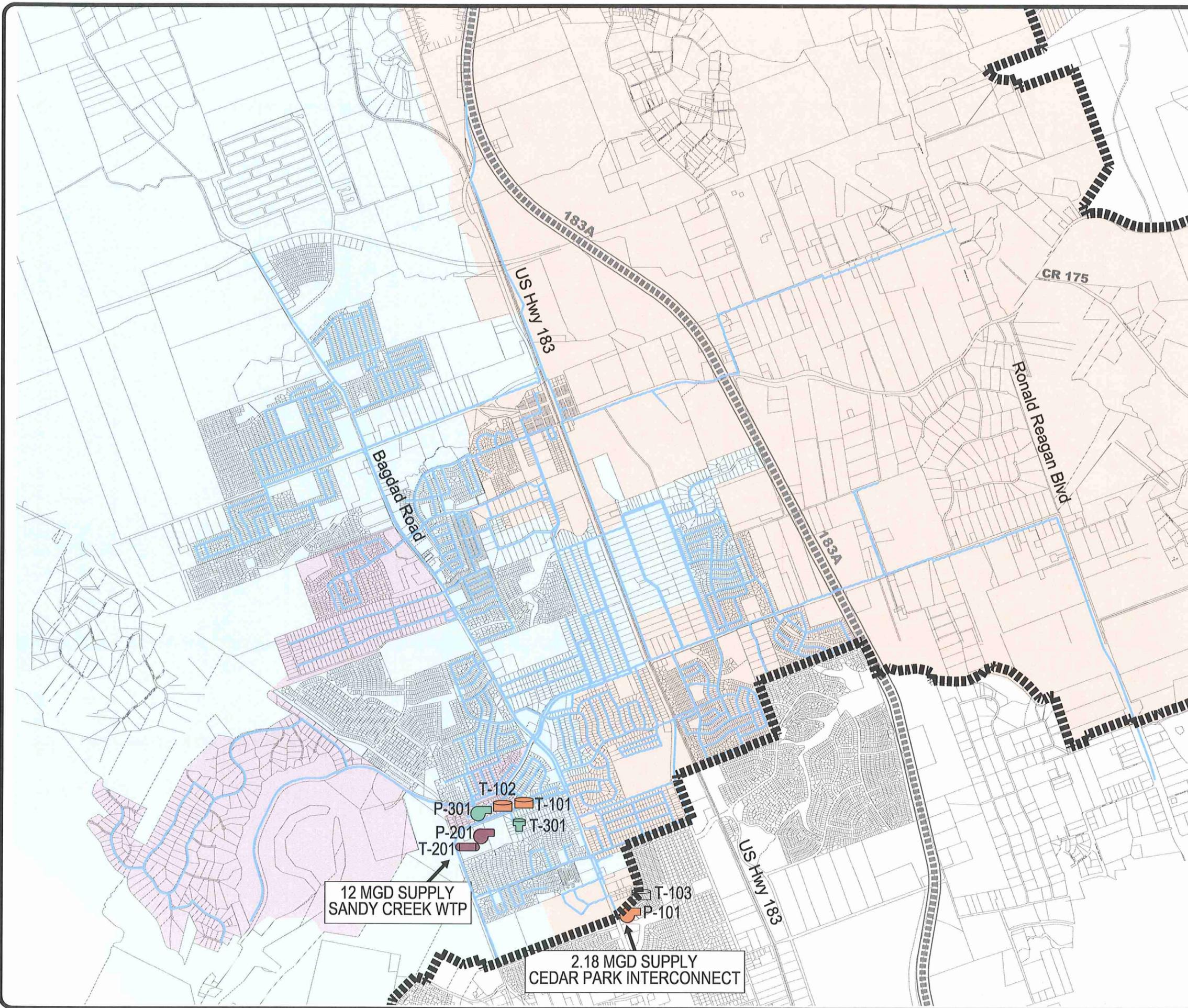
Cedar Park Interconnect	2.18 MGD
Sandy Creek WTP	12.00 MGD
Total	14.18 MGD

Water Storage - Existing 2008

Tank	Name	Capacity	Overflow Elev.
Off System			
T-103	Cedar Park Int.	0.75 MG	UNK
Low Zone			
T-101	County Glen GST	0.50 MG	1127
T-102	Crystal Falls GST	1.00 MG	1127
Middle Zone			
T-301	Crystal Falls EST	0.50 MG	1200
Upper Zone			
T-201	Hydrotank	0.02 MG	1260

Pump Stations - Existing 2008

Tank	Name	Capacity
Low Zone		
P-101	Cedar Park Int. PS	3.6 MGD
Middle Zone		
P-301	Crystal Falls PS	3.6 MGD
Upper Zone		
P-201	Crystal Falls PS	1.8 MGD



12 MGD SUPPLY
SANDY CREEK WTP

2.18 MGD SUPPLY
CEDAR PARK INTERCONNECT



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CITY OF LEANDER
WATER MASTER PLAN
EXISTING WATER
INFRASTRUCTURE

EXHIBIT 5-1

5.1 1127 Pressure Plane

All of the water supply enters the Leander system in the 1127 foot pressure plane (Low Zone), and then is pumped to the higher pressure planes. The zone currently covers the south eastern and north eastern portions of the service area.

5.1.1 Storage Tanks and Pump Stations

Treated water from the LCRA's Sandy Creek WTP is delivered to Leander's 1.0 MG Crystal Falls ground storage tank. This tank has an overflow elevation of 1,127 feet and serves as elevated storage for the Low Zone. Additionally, the 0.5 MG County Glen ground storage tank serves as elevated storage for the Low Zone with an overflow elevation of 1,127 feet. These two tanks are located in close proximity along County Glen in the southwestern portion of the City, and therefore typically work in tandem.

Water from the Cedar Park Interconnect enters Leander's system at the Cedar Park Interconnect 0.75 MG ground storage tank. Water is pumped from this tank into the 1127 foot pressure plane by an adjacent pump station which consists of two 2,500 gpm pumps. The pump station is controlled by the water elevation in the County Glen ground storage tank.

5.1.2 Transmission Mains

The water mains in the Low Zone mostly consist of 4 to 8-inch mains serving a mixture of residential, commercial, and school customers. The primary transmission main leading from the County Glen and Crystal Falls ground storage tanks (serving as elevated tanks on the Low Zone) is a 24-inch diameter pipe in County Glen. The 24-inch transmission main feeds a 16-inch main in Bagdad Road which delivers water to the southeastern portion of the City along Bagdad Road and County Road 272. A 10-inch main connects to the 16-inch main on County Road 272 and carries water north along US Hwy 183 to the northeastern portion of the City.

5.2 1197 Pressure Plane

The 1197 foot pressure plane, or Middle Zone, covers the largest portion of the existing service area and serves the majority of current customers. Its area covers the western half of the City from north to south, excluding the 1260 pressure plane, and also the eastern side of the City in the center. This plane is currently having difficulty supplying the required pressures to the northern reaches of the existing service area as the pump station and elevated tank are remote from these locations.

5.2.1 Storage Tanks and Pump Stations

Water is supplied to the 1197 foot pressure plane from the Crystal Falls ground storage tank. Water is pumped from this tank into the 0.5 MG Crystal Falls elevated storage tank via the Crystal Falls Pump Station, with two 2,500 gpm pumps pumping to the Middle Zone. The Crystal Falls Elevated Storage Tank has an overflow elevation of 1,200 feet.

5.2.2 Transmission Mains

The water mains in the Middle Zone largely consist of 4 to 12-inch diameter pipes running in residential streets, with the majority of them being 8-inch diameter. The primary transmission main serving the Middle Zone is an 18-inch diameter pipe in Bagdad Road, running from Crystal Falls Parkway to FM 2243.

5.3 1252 Pressure Plane

The 1252 pressure plane, or Upper Zone, primarily serves the Crystal Falls development, golf course and surrounding developments at the western edge of the City. The Upper Zone is currently the smallest zone on the system and is required to serve the higher elevations in this hilly portion of the City.

5.3.1 Storage Tanks and Pump Stations

Water is supplied to the Upper Zone via a 20,000 gallon hydro-pneumatic tank located adjacent to the Crystal Falls ground storage tank. Water is pumped from the ground storage tank to the hydro-pneumatic tank by two 1,250 gpm pumps located in the Crystal Falls Pump Station. Currently, the maximum pressure in the hydro-pneumatic tank is approximately 1,260 feet. A new tank with an overflow at 1252

is currently under construction in the northwestern part of the City, which is why this zone will be referred to as the 1252 Pressure Plane.

5.3.2 Transmission Mains

The mains in the Upper Zone consist of 6 and 8-inch diameter pipes in residential streets. The transmission main for the Upper Zone is a 12-inch diameter main in Crystal Falls Parkway from Overland Drive to the west. A 24-inch transmission main is under construction to supply the under construction elevated storage tank in the northwestern part of the City.

6.0 WATER SYSTEM ANALYSIS

6.1 Computer Modeling

KFA developed water models of the current system (Year 2007) and proposed future systems for planning years 2012, 2017, and 2027. Water CAD Version 7.0 by Haested Methods has been used to create the system models and evaluate options for system expansion. The model evaluation included static, extended period (24-hour), and fire flow analysis of each system.

6.1.1 Model Setup

The City provided mapping of the existing water system which was used to develop the horizontal alignment of the model. In general, existing pipes 4-inches in diameter and larger have been included in the model. Some pipes have not been included in the model as they were deemed to not have an effect on model operation since they are short dead end pipes with demand that could be applied to a nearby node.

The water model primarily consists of pipes, nodes, pumps, tanks, reservoirs and valves. A pipe represents a water main, a node represents a pipe junction and/or water demand point, a tank represents a ground storage tank or elevated storage tank, a reservoir represents a water supply source, and a valve represents a pressure modifying valve, typically a pressure reducing valve. Each of these elements has specific attributes assigned to them in the model that define their characteristics and the method in which they operate. A list of the primary attributes for each element and their definition is contained in Table 6-1.

TABLE 6-1

WATER MODEL ELEMENT ATTRIBUTES

Attribute	Definition
Pipe	
Number	P-#### (first number indicates pressure zone)*
Pipe Diameter	Nominal value in inches
Pipe Material	Ductile Iron or PVC
C-Factor	100 for Ductile Iron (larger than 12-inch diameter) 120 for PVC (12-inch and smaller diameter)
Open/Closed	Closed pipes represent closed valves in system
Check Valve	Pipes can be defined to flow in one direction only
Node	
Number	J-#### (first number indicates pressure zone)*
Elevation	Ground Elevation in Feet
Demand	Assign water demand for node and assign diurnal curve
Zone	Label node's pressure zone
Pump	
Number	PMP-### (first number indicates pressure zone)
Elevation	Ground Elevation in Feet
Pump Definition	Assign pump curve to pump
Controls	Assign control options for pump during extended period analysis
Tank	
Number	T-### (first number indicates pressure zone)
Elevations	Assign maximum, minimum, base and initial elevations to tank
Cross Section	Define shape and volume of tank
Reservoir	
Number	R-#
Elevation	Represents pressure plane of water supply to system
Pressure Reducing Valve	
Number	PRV-#
Elevation	Ground Elevation in Feet
Diameter	Nominal valve diameter in inches
Settings	Define valve operation

*Changes in zones occur and some planning years do not reflect accurate zone labels

6.2 Existing Water System Analysis (Year 2007)

6.2.1 System Requirements (Year 2007)

The TCEQ requires that Leander’s distribution system shall provide a minimum of 0.6 gpm per LUE of system capacity. Additionally, TCEQ requires that Leander maintain a minimum total storage capacity of 200 gallons per LUE and a minimum elevated storage capacity of 100 gallons per LUE. Table 6-2 shows the minimum system requirements based on TCEQ regulations and what is provided in the proposed system for Year 2007 after the required improvements are made.

TABLE 6-2

YEAR 2007 SYSTEM INFORMATION

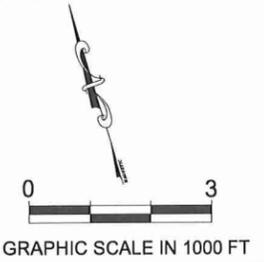
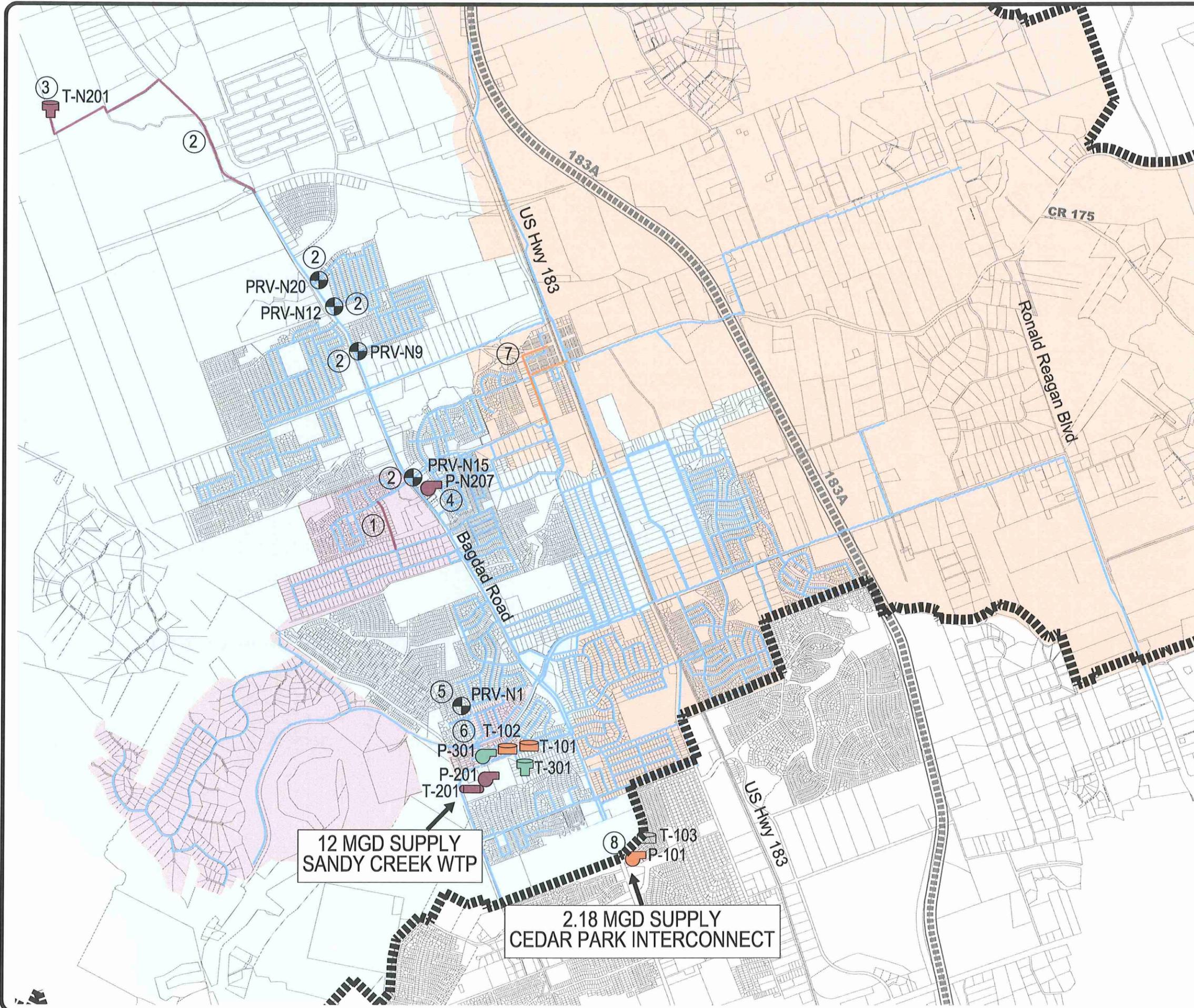
	Low Zone	Middle Zone	Upper Zone	Total Service Area
LUEs	2761	2678	3528	8,967
Average Day Demand (MGD)	0.99	0.96	1.27	3.23
Max Day Demand (MGD)	2.63	2.55	3.37	8.55
Peak Hour Demand (MGD)	4.47	4.34	5.72	14.53
Total Supply (MGD)	NA	NA	NA	8.18
Required Elevated Storage (MG)	0.28	0.27	0.35	0.90
<i>Proposed Elevated Storage (MG)</i>	1.5	0.5	1.25	3.25
Total Required Storage (MG)	0.55	0.54	0.71	1.79
<i>Proposed Ground Storage (MG)</i>	0.75	0.00	0.00	0.75
<i>Proposed Total Storage (MG)</i>	2.25	0.50	1.25	4.00

In addition to the minimum criteria regulated by the TCEQ, an evaluation of the required storage capacity of a system has been performed reviewing items such as peak hour demands, maximum day demands and fire flow demands during maximum day.

6.2.2 Model Results and Required Improvements (Year 2008)

A model of the existing system was created and evaluated to determine the functionality of the existing system with regard to the Leander design criteria. Modeling of the existing system revealed several areas that do not meet TCEQ requirements for pump capacity or minimum pressures during maximum day and fire flow demands. To rectify the deficiencies in the existing system the following improvements are required. Refer to Exhibit 6-1 and Appendix 1 for more detail on the required improvements.

1. A High Zone pipe was included to connect the Falcon Oaks subdivision and Vista Ridge subdivision to allow Falcon Oaks to be connected directly to the Upper Zone. An existing small booster station that serves Falcon Oaks would be able to be abandoned.
2. A High Zone pipe is currently under construction to connect the proposed Bagdad Upper Pump Station with the proposed Northwest Upper EST. PRV's are to be installed along the Upper Pressure main running between the Bagdad Upper Pump Station and the Northwest Upper EST.



LEGEND

- LOW PRESSURE PLANE
- MIDDLE PRESSURE PLANE
- UPPER PRESSURE PLANE
- EXISTING WATERLINES
- PROPOSED WATERLINES (LOW)
- PROPOSED WATERLINES (MIDDLE)
- PROPOSED WATERLINES (UPPER)
- PUMP STATION
- GROUND STORAGE TANK
- ELEVATED STORAGE TANK
- HYDROTANK
- X PROJECT NUMBER
- + NEW PRV

Water Supply - 2008

Cedar Park Interconnect	2.18 MGD
Sandy Creek WTP	12.00 MGD
Total	14.18 MGD

Water Storage - 2008

Tank	Name	Capacity	Overflow Elev.
Off System			
T-103	Cedar Park Int.	0.75 MG	UNK
Low Zone			
T-101	County Glen GST	0.50 MG	1127
T-102	Crystal Falls GST	1.00 MG	1127
Middle Zone			
T-301	Crystal Falls EST	0.50 MG	1200
Upper Zone			
T-201	Hydrotank	0.02 MG	1252
T-N201	Northwest Upper EST	1.26 MG	1262

Pump Stations - 2008

Tank	Name	Capacity
Low Zone		
P-101	Cedar Park Int. PS	3.6 MGD
Middle Zone		
P-301	Crystal Falls PS	7.2 MGD
Upper Zone		
P-201	Crystal Falls PS	1.8 MGD
P-N207	Bagdad Upper PS	3.0 MGD

NOTE: BOLD ELEMENT INDICATES NEW PROJECT

12 MGD SUPPLY
SANDY CREEK WTP

2.18 MGD SUPPLY
CEDAR PARK INTERCONNECT



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CITY OF LEANDER
WATER MASTER PLAN
REQUIRED 2008 IMPROVEMENTS
TO WATER INFRASTRUCTURE

EXHIBIT 6-1

3. Due to low pressures in the northwest portion of the existing service area on the Middle Zone, construction of a new 1.25 million gallon elevated tank is underway by the City (Northwest Upper EST).
4. A pump station is also under construction to pump to the proposed Upper tank. The proposed pump station has been located on Bagdad Road near the existing City Park.
5. Areas of the Mason Creek subdivision in the Middle Zone have low pressures during maximum day demands. A pressure reducing valve on Vista Drive between the High and Middle Zones was added to the model to provide an additional supply point to the neighborhood during high demands.
6. Additional 2,500 gpm pump installed in the existing Crystal Falls Middle Pump Station for supply required due to the new Bagdad Upper Pump Station.
7. A Low Zone main was added in the downtown area to meet commercial fire flow requirements.
8. The existing Cedar Park Interconnect pump station pumps (2500 gpm at 228 feet operating point) are not properly sized to pump to the Low Zone, which results in high pressures and large pressure fluctuations in the Low Zone. These pumps have been replaced in the model to be properly sized for the flow and head requirements.

Some existing residential areas have 4 and 6-inch mains which are not able to meet the fire flow requirements. These localized deficiencies have not been able to be rectified in the model since increasing pressure for these areas would cause over pressurization during regular demands. Larger pipes would be required throughout these residential areas to achieve fire flow rates and the City should evaluate upsizing these pipes.

6.3 Planning Year 2012 Analysis

6.3.1 Proposed Water Supply and System Requirements (Year 2012)

Table 6-3 shows the minimum system requirements based on TCEQ regulations and what is provided in the proposed system for Year 2012 after the required improvements are made.

TABLE 6-3 YEAR 2012 SYSTEM INFORMATION

	Low Zone	Middle Zone	Upper Zone	Total Service Area
LUEs	5853	4137	6247	16237
Average Day Demand (MGD)	4.16	1.45	2.19	7.80
Max Day Demand (MGD)	11.02	3.84	5.80	20.66
Peak Hour Demand (MGD)	18.71	6.53	9.85	35.09
Total Supply (MGD)	NA	NA	NA	22.18
Required Elevated Storage (MG)	1.19	0.41	0.62	2.22
<i>Proposed Elevated Storage (MG)</i>	3.50	1.00	1.25	5.75
Total Required Storage (MG)	2.37	0.83	1.25	4.45
<i>Proposed Ground Storage (MG)</i>	2.75	0.00	0.00	2.75
<i>Proposed Total Storage (MG)</i>	6.25	1.00	1.25	8.50

* Demands include 3.1 MGD Average Day and 6.2 MGD Max Day for CTSUD

6.3.2 Model Results and Required Improvements (Year 2012)

A model of the proposed Year 2012 system was created based on the projected system demands. Future demands were placed at nodes based on the distribution of LUEs for each sub-region. To locate these demands within the sub-regions, a growth pattern was assumed, and demands were placed based on the projected LUE density for each sub-region. The model was evaluated to determine the functionality of the system with regard to the Leander design criteria. A general description of the proposed major improvements required to meet the projected demands are listed below. Refer to Exhibit 6-2 and Appendix 1 for more detail on the required improvements.

1 & 2. Regional WTP Supply at Ronald Reagan and Associated Low Zone Improvements

- a. A new supply point from the proposed Regional WTP, with a 10.0 MGD supply, is to be constructed and will enter the Leander system along Ronald Reagan.
- b. A 1.0 MGD elevated storage tank (Brushy Creek South EST) on the Low Zone.
- c. The entry point at Ronald Reagan requires a new transmission main (42-inch to the proposed Brushy Creek South EST) running along Ronald Reagan to the north.



LEGEND

- LOW PRESSURE PLANE
- MIDDLE PRESSURE PLANE
- UPPER PRESSURE PLANE
- EXISTING WATERLINES
- PROPOSED WATERLINES (LOW)
- PROPOSED WATERLINES (MIDDLE)
- PROPOSED WATERLINES (UPPER)
- PUMP STATION
- GROUND STORAGE TANK
- ELEVATED STORAGE TANK
- PROJECT NUMBER
- NEW PRV

Water Supply - 2012

Cedar Park Interconnect	0.00 MGD
Sandy Creek W TP	15.60 MGD
Regional W TP Reagan	10.00 MGD
Total	25.60 MGD

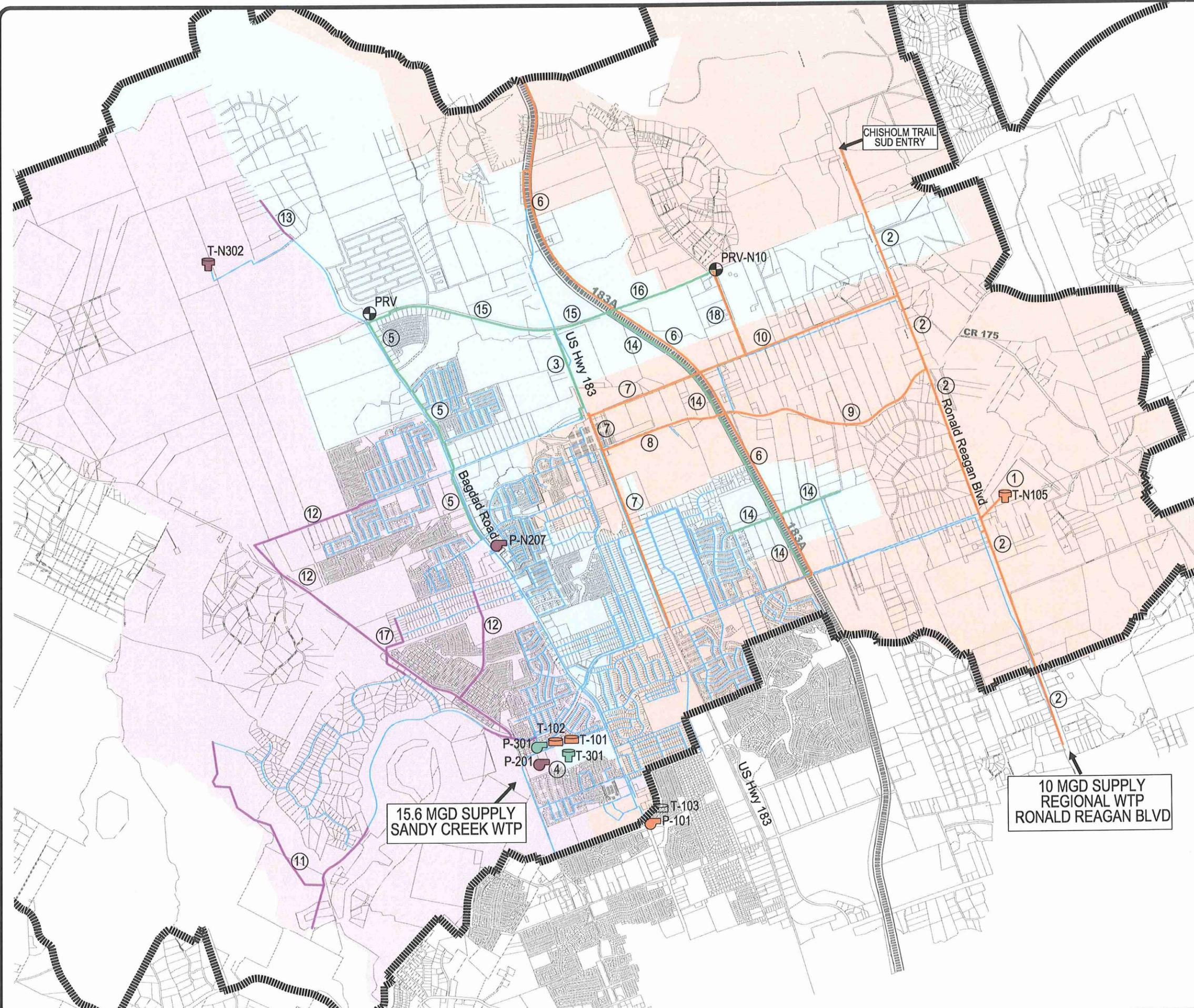
Water Storage - 2012

Tank	Name	Capacity	Overflow Elev.
Off System			
T-103	Cedar Park Int.	0.75 MG	UNK
Low Zone			
T-101	County Glen GST	0.50 MG	1127
T-102	Crystal Falls GST	2.00 MG	1127
T-N105	Brushy Creek South EST	1.00 MG	1127
Middle Zone			
T-N302	Bagdad Middle EST	0.50 MG	1200
T-301	Crystal Falls EST	0.50 MG	1200
Upper Zone			
T-N201	Northwest Upper EST	1.25 MG	1252

Pump Stations - 2012

Tank	Name	Capacity
Low Zone		
P-101	Cedar Park Int. PS	0.00 MGD
Middle Zone		
P-301	Crystal Falls PS	7.2 MGD
Upper Zone		
P-201	Crystal Falls PS	5.04 MGD
P-N207	Bagdad Upper PS	3.0 MGD

NOTE: BOLD ELEMENT INDICATES NEW PROJECT



15.6 MGD SUPPLY SANDY CREEK WTP

10 MGD SUPPLY REGIONAL WTP RONALD REAGAN BLVD



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EXHIBIT 6-2

- d. The Year 2012 model includes supplying the Chisholm Trail SUD with 3.1 MGD average day, and 6.2 MGD maximum day demand at a point of entry at Ronald Reagan at the northern edge of Leander's service area. The primary supply for this interconnection will be through proposed 18 and 24-inch pipes that runs along the Ronald Reagan Blvd. alignment to the border of the CTSUD.

3, 5, 15 & 16. *Supply to the Transit Oriented Development*

- a. Construction of 18 to 24-inch Middle Zone mains along Bagdad Road to FM 2243 and then east along FM 2243 to serve the TOD is proposed.
- b. Construction of a 12-inch Middle Zone main along 183 from FM 2243 to CR 276.

4. *Increased Ground Storage at Crystal Falls*

- a. Construction of an additional 1.0 million gallons of storage and increasing the middle zone pumping capacity at the Crystal Falls Pump Station are proposed.

6 & 14. *Supply along 183A*

- a. The proposed 24-inch Low Zone pipe in US 183A will provide service to the TOD and 183A corridor.
- b. A proposed 8 to 18-inch Middle Zone pipe along US 183A will supply areas along this new corridor.

7, 8, 9, 10 & 18. *Parallel Low Main Along 183, Loops on CR 272*

- b. To provide additional supply and looping to the downtown area 12 and 16-inch mains are proposed to be constructed along 183 from Crystal Falls to CR 272 and along CR 272 towards Ronald Reagan.

11. *Crystal Falls Area Mains*

- a. Proposed 12 to 16-inch mains as the Crystal Falls development area grows.

12 & 17. *Upper Zone Mains Along the Extension of Lakeline Boulevard*

- b. Proposed 12 to 18-inch mains will supply areas along the extension of Lakeline Blvd. and will tie to the Falcon Oaks and Vista Ridge subdivisions for additional looping.

6.4 Planning Year 2017 Analysis

6.4.1 System Requirements (Year 2017)

Table 6-4 shows the minimum system requirements based on TCEQ regulations and what is provided in the proposed system for Year 2017 after the required improvements are made.

TABLE 6-4 YEAR 2017 SYSTEM INFORMATION

	Low Zone	Middle Zone	Upper Zone	Total Service Area
LUEs	12,014	5,771	9,992	27,777
Average Day Demand (MGD)	6.24	1.97	3.42	11.63
Max Day Demand (MGD)	16.52	5.23	9.06	30.81
Peak Hour Demand (MGD)	28.09	8.89	15.39	52.37
Total Supply (MGD)	NA	NA	NA	32.18
Required Elevated Storage (MG)	1.82	0.58	1.00	3.40
Proposed Elevated Storage (MG)	5.00	1.00	2.75	8.75
Total Required Storage (MG)	3.65	1.15	2.00	6.80
Proposed Ground Storage (MG)	3.50	0.00	0.00	3.50
Proposed Total Storage (MG)	8.50	1.00	2.75	12.25

* Demands include 3.1 MGD Average Day and 6.2 MGD Max Day for CTSUD

6.4.2 Proposed Improvements (Year 2017)

A model of the proposed Year 2017 system was created based on the projected system demands. Future demands were placed at nodes based on the distribution of LUEs for each sub-region for Year 2017. To locate these demands within the sub-regions, a growth pattern was assumed, and demands were placed based on the projected LUE density for each sub-region. The model was evaluated to determine the functionality of the existing system with regard to the Leander design criteria. A general description of the proposed major improvements required to meet the projected demands for Year 2017 are listed below. It is assumed that the pressures delivered from the BCRUA will be below 1,127 feet of head at Ronald Reagan and therefore a ground tank and pump station will be required. Refer to Exhibit 6-3 and Appendix 1 for more detail on the required improvements.

1. *Increased Supply at the Ronald Reagan Delivery Point*

- a. The entry point from the Regional WTP at Ronald Reagan is increased to 11 MGD. Expansion of the Brushy Creek North and South Pump Stations is required. A 1.5

MG ground storage tank is proposed at this entry point for the new pump stations to pump from.

2&6. Crystal Falls West Elevated Tank and Mains

- a. With increasing demands on the Upper Zone, construction of a 1.0 million gallon elevated tank is required (Crystal Falls West EST). The proposed elevated tank will be located in the Crystal Falls development. New 12 to 24-inch mains are required to serve the EST and new developments. Once the Crystal Falls West EST is in service the existing hydrotank at Crystal Falls will be abandoned.

3&5. Conversion of the Cedar Park Interconnect Pump Station to the Middle Zone

- a. An additional 4.0 MGD will be supplied from the Regional WTP at the Bagdad entry point. To balance the supply to take water from each of the three supply points, the Cedar Park Interconnect pump station is expanded (to 5.0 MGD) and converted to a Middle Zone pump station that is controlled by the elevation of the new Bagdad Middle EST.
- b. Construction of a new 36-inch Middle Zone transmission main from the Cedar Park Interconnect pump station is required. This transmission has high pressures near the southern portion of the service area and should not be tied into other Middle Zone pipes (without a PRV) until near the Bagdad Middle EST.

4 & 9. Middle Loop Mains on Bagdad and East of Bagdad

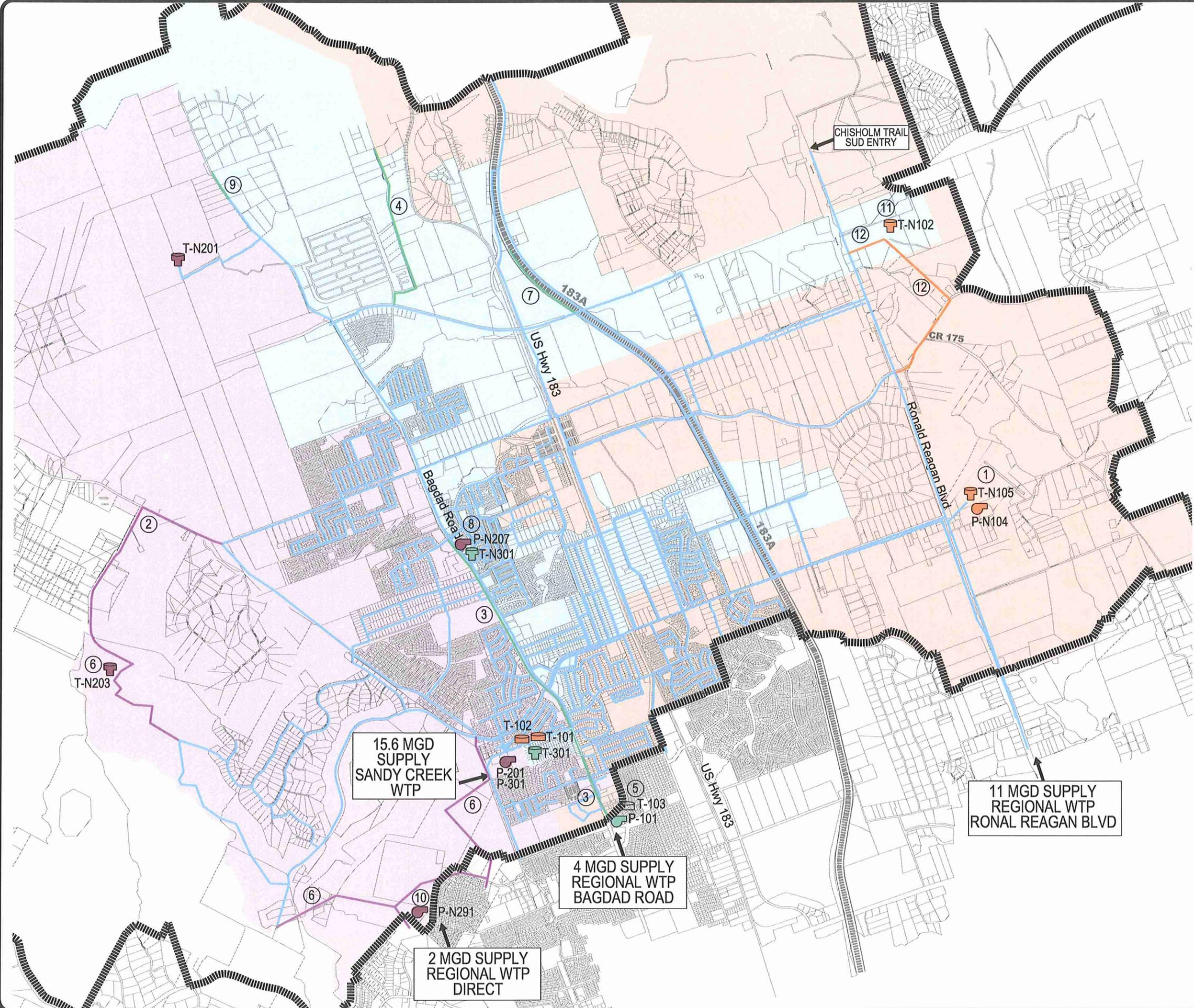
7. 183 A Middle Zone Main Extension

8. New Bagdad Middle Elevated Storage Tank

- a. A new elevated storage tank on the Middle Zone is proposed adjacent to the Bagdad Upper Pump Station.

10. New BCRUA WTP Direct Connection Pump Station

- a. New High Zone Pump Station to take water directly from the BCRUA WTP and pump to the Crystal Falls EST.



LEGEND

- LOW PRESSURE PLANE
- MIDDLE PRESSURE PLANE
- UPPER PRESSURE PLANE
- EXISTING WATERLINES
- PROPOSED WATERLINES (LOW)
- PROPOSED WATERLINES (MIDDLE)
- PROPOSED WATERLINES (UPPER)
- PUMP STATION
- GROUND STORAGE TANK
- ELEVATED STORAGE TANK
- PROJECT NUMBER
- NEW PRV

Water Supply - 2017

Sandy Creek WTP	15.60 MGD
Regional WTP Reagan	11.00 MGD
Regional WTP Bagdad Rd.	4.00 MGD
Regional WTP Direct	2.00 MGD
Total	32.60 MGD

Water Storage - 2017

Tank	Name	Capacity	Overflow Elev.
Off System			
T-103	Cedar Park Int.	2.00 MG	UNK
T-N100	Ronald Reagan GST	1.50 MG	UNK
Low Zone			
T-101	County Glen GST	0.50 MG	1127
T-102	Crystal Falls GST	2.00 MG	1127
T-N102	Brushy Creek EST	1.50 MG	1127
T-N105	Brushy Creek South EST	1.00 MG	1127
Middle Zone			
T-301	Crystal Falls EST	0.50 MG	1200
T-N302	Bagdad Middle EST	0.50 MG	1200
Upper Zone			
T-N201	Northwest Upper EST	1.25 MG	1252
T-N203	Crystal Falls West EST	1.00 MG	1252

Pump Stations - 2017

Tank	Name	Capacity
Low Zone		
P-N104	Ronald Reagan South PS	3.0 MGD
P-N108	Ronald Reagan North PS	11.0 MGD
Middle Zone		
P-301	Crystal Falls PS	7.2 MGD
P-101	Cedar Park Int. PS	5.0 MGD
Upper Zone		
P-201	Crystal Falls PS	5.0 MGD
P-N291	BCRUW WTP PS	2.2 MGD
P-N207	Bagdad Upper PS	3.0 MGD

NOTE: BOLD ELEMENT INDICATES NEW PROJECT

15.6 MGD
SUPPLY
SANDY CREEK
WTP

11 MGD SUPPLY
REGIONAL WTP
RONAL REAGAN BLVD

4 MGD SUPPLY
REGIONAL WTP
BAGDAD ROAD

2 MGD SUPPLY
REGIONAL WTP
DIRECT

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WATER SYSTEM

EXHIBIT 6-3

11 & 12. *New Brushy Creek Elevated Storage Tank and Piping*

- a. A new elevated storage tank on the Low Zone is proposed in the northeastern part of the City to maintain pressures in the Low Zone. 24-inch mains are proposed to lead to the EST.

6.5 Planning Year 2027 Analysis

6.5.1 Proposed Water Supply and System Requirements (Year 2027)

Table 6-5 shows the minimum system requirements based on TCEQ regulations and what is provided in the proposed system for Year 2027 after the required improvements are made.

TABLE 6-5 **YEAR 2027 SYSTEM INFORMATION**

	Low Zone	Middle Zone	Upper Zone	Total Service Area
LUEs	20,649	12,915	26,269	59,833
Average Day Demand (MGD)	8.86	4.18	8.51	21.55
Max Day Demand (MGD)	23.47	11.09	22.55	57.11
Peak Hour Demand (MGD)	39.90	18.85	38.34	97.09
Total Supply (MGD)	NA	NA	NA	64.18
Required Elevated Storage (MG)	2.73	1.29	2.63	6.65
Proposed Elevated Storage (MG)	5.00	2.00	2.75	9.75
Total Required Storage (MG)	5.47	2.58	5.25	13.30
Proposed Ground Storage (MG)	5.00	0.00	0.00	5.00
Proposed Total Storage (MG)	10.00	2.00	2.75	14.75

* Demands include 3.1 MGD Average Day and 6.2 MGD Max Day for CTSUD

6.5.2 Model Results and Required Improvements (Year 2027)

A model of the proposed Year 2027 system was created based on the projected system demands. Future demands were placed at nodes based on the distribution of LUEs for each sub-region for Year 2027. To locate these demands within the sub-regions, a growth pattern was assumed, and demands were placed based on the projected LUE density for each sub-region. The model was evaluated to determine the functionality of the existing system with regard to the Leander design criteria. A general description of the proposed major improvements required to meet the projected demands for Year 2027 are listed below. Refer to Exhibit 6-4 and Appendix 1 for more detail on the required improvements.

1 & 2. Increased Water Supply at Ronald Reagan

- a. The water supply from the Regional WTP is increased to 24 MGD. This requires expansion of the Ronald Reagan Low Zone pump station to be increased and the construction of an additional 1.5 million gallons of ground storage at this entry point.
- b. Parallel Low Zone transmission mains will be required along Ronald Reagan to handle the additional supply.

3. Additional Low Zone Demand

- a. New Low Zone transmission mains are required to serve new demands in the northern portion of the Brushy Creek Sub-Region.

4, 7, 14 & 15. Additional Middle Zone Demand

- b. A proposed 7 MGD Middle Zone pump station adjacent to the Low Zone Brushy Creek EST in the northeastern portion of the service area is required. This Middle Zone pump station will be controlled by the elevation of the Northwest Middle EST.
- c. Construction of the 1.0 MG Northwest Middle EST is required to maintain pressures in the Middle Zone. This is proposed off of Bagdad Road north of San Gabriel Parkway.
- d. Construction of a transmission main from the proposed Brushy Creek Middle Zone pump station to the west is required.
- e. Additional Middle Zone transmission mains will be required to serve new demands in the Northwest Sub-Region.

5. Increased Water Supply at the Bagdad Entry Point

- a. The water supply from the Regional WTP is increased to 13 MGD. This requires expansion of the Middle Zone pump station to 16.25 MGD.

6, 9 & 12. Additional Upper Zone Demand

- a. Increase capacity of Bagdad Upper Zone Pump Station to 14 MGD.
- b. Additional Upper Zone transmission mains will be required to serve new demands in the Northwest Sub-Region.



LEGEND

- LOW PRESSURE PLANE
- MIDDLE PRESSURE PLANE
- UPPER PRESSURE PLANE
- EXISTING WATERLINES
- PROPOSED WATERLINES (LOW)
- PROPOSED WATERLINES (MIDDLE)
- PROPOSED WATERLINES (UPPER)
- PROPOSED WATERLINES (X-LOW)
- PUMP STATION
- GROUND STORAGE TANK
- ELEVATED STORAGE TANK
- X PROJECT NUMBER
- + NEW PRV

Water Supply - 2027

Sandy Creek WTP	15.60 MGD
Regional WTP Reagan	24.00 MGD
Regional WTP Bagdad Rd.	13.00 MGD
Regional WTP Direct	8.00 MGD
Total	60.60 MGD

Water Storage - 2027

Tank	Name	Capacity	Overflow Elev.
Off System			
T-103	Cedar Park Int.	2.00 MG	UNK
T-N100	Ronald Reagan GST	3.00 MG	UNK
Low Zone			
T-101	County Glen GST	0.50 MG	1127
T-102	Crystal Falls GST	2.00 MG	1127
T-N102	Brushy Creek EST	1.50 MG	1127
T-N105	Brushy Creek South EST	1.00 MG	1127
Middle Zone			
T-301	Crystal Falls EST	0.50 MG	1200
T-N301	Bagdad Middle EST	0.50 MG	1200
T-N302	Northwest Middle EST	1.00 MG	1200
Upper Zone			
T-N201	Northwest Upper EST	1.25 MG	1252
T-N203	Crystal Falls West EST	1.00 MG	1252

Pump Stations - 2027

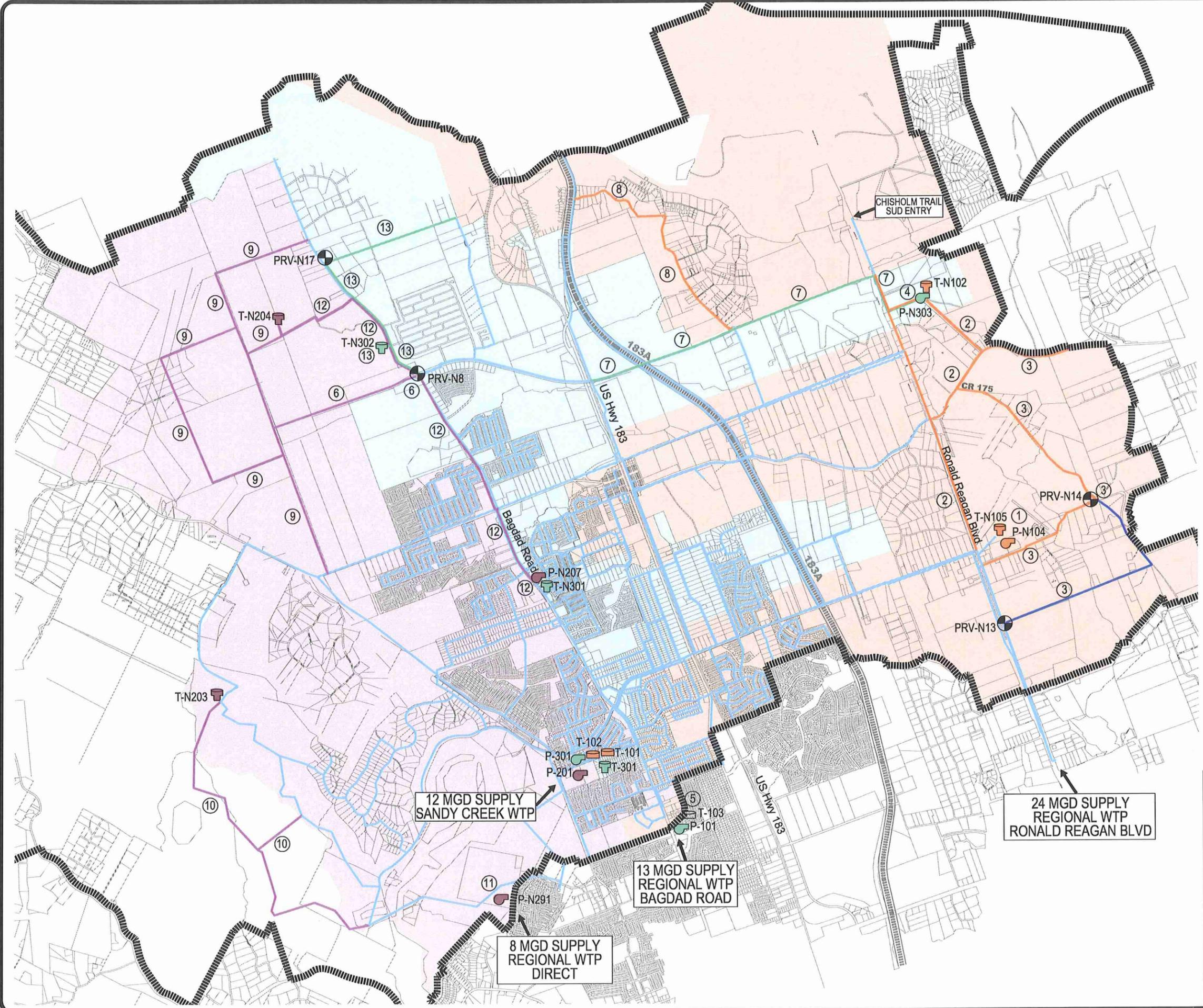
Tank	Name	Capacity
Low Zone		
P-N104	Ronald Reagan South PS	7.0 MGD
P-N108	Ronald Reagan North PS	23.0 MGD
Middle Zone		
P-301	Crystal Falls PS	7.2 MGD
P-101	Cedar Park Int. PS	16.3 MGD
P-N303	Brushy Creek PS	7.0 MGD
Upper Zone		
P-N207	Bagdad Upper PS	14.0 MGD
P-N291	BCRUA WTP PS	8.8 MGD
P-201	Crystal Falls PS	5.0 MGD

NOTE: BOLD ELEMENT INDICATES NEW PROJECT

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 WATER SYSTEM



8. *North TOD Loop Mains*

- a. New 8 to 16-inch mains in the northern area of the TOD.

10 & 11. *BCRUA PS Upgrades and Crystal Falls Mains*

- a. Expand BCRUA WTP Direct Pump Station to 8.8 MGD.
- b. New Crystal Falls area mains.

7.0 IMPROVEMENTS IMPLEMENTATION SCHEDULE AND COSTS

7.1 Implementation Schedule

Based on the projected water demands for the Leander Service area for each of the evaluated years (2007, 2012, 2017, & 2027) a Capital Improvement Program (CIP) has been created. The 2007 planning year represents projects that are required to have the existing system perform per the design criteria set out in this study, and these projects should be completed as soon as possible. Specific years for improvements have not been determined and will vary based on the completion of the supply improvements from the Sandy Creek WTP and proposed Regional WTP. Since the modeling was only performed for the four specific planning years, the CIP lists for each planning year represent the projects that should be accomplished by that year. In other words, the CIP list for planning year 2017 would be completed between the end of 2012 and the end of 2017.

7.2 Cost Estimates

Table 7-1 lists the projects that are proposed to be complete by each planning year. These lists can be correlated with Exhibits 6-1, 6-2, 6-3 and 6-4 showing a map view of the proposed improvements. All costs shown are in 2007 equivalent dollar values and are based on current construction costs for similar projects. Estimated costs for proposed easements and property acquisitions have been included in the cost estimates, for rough estimating purposes easements have been valued at \$8,000/acre and purchasing property has been valued at \$20,000/acre. More detailed cost estimates for each of the projects listed in Tables 7-1 are included in Appendix 1.

TABLE 7-1 CAPITAL IMPROVEMENTS PROGRAM LIST

APPENDIX 1

CIP LIST COST ESTIMATES

TABLE 7-1

20 YEAR CAPITAL IMPROVEMENTS PROGRAM LIST

CIP #	INFRASTRUCTURE ELEMENT	TOTAL CONSTRUCTION COST
2008 CIP PROJECTS		
2008-1	Falcon Oaks 8" and 12" Connection to Upper Zone	\$ 103,257
2008-2	24" North Bagdad Rd Main	\$ 1,776,062
2008-3	1.25 MG Northwest Middle EST	\$ 2,063,250
2008-4	2.7 MGD Bagdad Pump Station	\$ 1,553,580
2008-5	PRV-N1	\$ 44,100
2008-6	Crystal Falls PS Upgrades	\$ 90,720
2008-7	Downtown 12" Main for Fireflows	\$ 363,390
2008-8	Replace Pumps at Cedar Park Int. - 3.6 MGD	\$ 68,040
2008 CIP Total = \$		6,062,400
2012 CIP PROJECTS		
2012-1	Brushy Creek South Elevated Storage Tank	\$ 2,189,074
2012-2	12" - 42" Ronald Reagan Mains	\$ 6,070,802
2012-3	12" PVC 183 Middle Main Extension	\$ 352,483
2012-4	Crystal Falls PS Improvements & 1 MG GST	\$ 946,008
2012-5	Parallel 18" and 24" Middle Main on Bagdad Rd	\$ 1,695,907
2012-6	12" and 18" East HWY 183A Main	\$ 2,506,941
2012-7	16" HWY 183 / CR 272 Loop Mains to 183A	\$ 2,066,074
2012-8	12" FM 2243 West of HWY 183A Main	\$ 448,239
2012-9	12" FM 2243 East of HWY 183A Main	\$ 774,201
2012-10	16" and 18" Future FM 2243 - East of HWY 183A Main	\$ 1,339,346
2012-11	12" and 16" Crystal Falls Mains	\$ 2,940,389
2012-12	8" - 18" Lakeline to Northwest Mains	\$ 2,914,316
2012-13	12" North Bagdad Rd Main	\$ 322,362
2012-14	8" - 12" West HWY 183A Middle Zone Main	\$ 1,418,369
2012-15	18" and 24" CR 276 West of HWY 183A Main	\$ 1,392,763
2012-16	18" CR 276 East of HWY 183A Main	\$ 723,927
2012-17	Falcon Oaks 8" Connection to Upper Zone	\$ 209,286
2012-18	Low Main Connection East of 183A	\$ 264,441
2012 CIP Total = \$		28,574,927
2017 CIP PROJECTS		
2017-1	Ronald Reagan Low PS to 16.70 MGD and GST	\$ 1,890,000
2017-2	24" Crystal Falls to Northwest Mains	\$ 2,114,488
2017-3	Parallel 36" Middle Main on Bagdad Rd	\$ 3,712,805
2017-4	12" Middle Loop Mains East of Bagdad	\$ 637,555
2017-5	Upgrade Cedar Park Int. PS to 5.0 MGD on Middle Zone, Increase GST to 2.0 MG	\$ 4,095,000
2017-6	12"-24" Crystal Falls West EST and Mains	\$ 4,918,223
2017-7	12" West HWY 183A Middle Zone Main	\$ 312,858
2017-8	Bagdad 0.5 MG EST	\$ 945,000
2017-9	12" Upper Zone Bagdad Extension	\$ 105,569
2017-10	2.2 MGD BCRUA WTP PS	\$ 1,266,300
2017-11	1.5 MG Brushy Creek EST	\$ 2,457,000
2017-12	24" North East Mains to Brushy Creek EST	\$ 1,616,615
2017 CIP Total = \$		24,071,414
2027 CIP PROJECTS		
2027-1	Upgrade Reagan Low PS and GST	\$ 6,268,500
2027-2	24" - 42" Parallel Parmer Mains & Main to Brushy Creek EST	\$ 3,017,496
2027-3	12" - 24" East of Parmer Main Loops	\$ 3,737,946
2027-4	7.0 MGD Brushy Creek PS	\$ 3,717,019
2027-5	Upgrade Cedar Park Int. PS to 16.25 MGD	\$ 5,118,750
2027-6	8" Upper Loop Mains West of Bagdad and PRV-N8	\$ 504,755
2027-7	12" - 24" San Gabriel Pkwy East of HWY 183A Mains	\$ 2,668,824
2027-8	8" - 16" North TOD Loop Mains	\$ 1,065,355
2027-9	12" - 36" Northwest Upper Loop Mains	\$ 3,666,265
2027-10	12" - 16" Crystal Falls Mains	\$ 1,911,129
2027-11	Upgrade BCRUA PS to 8.8 MGD	\$ 2,772,000
2027-12	18" -24 " Northwest Upper Main to Northwest EST	\$ 4,120,729
2027-13	Northwest Middle EST and 8" - 18" Mains	\$ 2,058,355
2027 CIP Total = \$		40,627,124
20 Year CIP Total = \$		99,335,864

APPENDIX 1

CIP LIST COST ESTIMATES

CITY OF LEANDER - 2008 CIP LIST COST ESTIMATES

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2008-1	Falcon Oaks 8" and 12" Connection to Upper Zone				
1	8" PVC PIPE COMPLETE AND IN PLACE (U)	LF	1,639	\$ 50	\$ 81,950
SUBTOTAL					\$ 81,950
	Mobilization (5% of Subtotal)				\$ 4,098
	Contingency (20%)				\$ 17,210
Total					\$ 103,257

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2008-2	24" North Bagdad Rd Main				
1	24" DI PIPE COMPLETE AND IN PLACE (M)	LF	9,247	\$ 135	\$ 1,248,345
2	High to Middle PRV	EA	4.00	\$ 35,000	\$ 140,000
3	EASEMENT ACQUISITION	AC	2.1	\$ 10,000	\$ 21,228
SUBTOTAL					\$ 1,409,573
	Mobilization (5% of Subtotal)				\$ 70,479
	Contingency (20%)				\$ 296,010
Total					\$ 1,776,062

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2008-3	1.25 MG Northwest Middle EST				
1	1.25 Million Gallon EST (M T-N302)	MG	1.25	\$ 1,250,000.00	\$ 1,562,500
2	LAND ACQUISITION	AC	3.0	\$ 25,000	\$ 75,000
SUBTOTAL					\$ 1,637,500
	Mobilization (5% of Subtotal)				\$ 81,875
	Contingency (20%)				\$ 343,875
Total					\$ 2,063,250

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2008-4	2.7 MGD Bagdad Pump Station				
1	1 PUMP 1875 GPM (M PMP-N307)	MGD	3.02	\$ 400,000	\$ 1,208,000
2	LAND ACQUISITION	AC	1.0	\$ 25,000	\$ 25,000
SUBTOTAL					\$ 1,233,000
	Mobilization (5% of Subtotal)				\$ 61,650
	Contingency (20%)				\$ 258,930
Total					\$ 1,553,580

CITY OF LEANDER - 2008 CIP LIST COST ESTIMATES

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2008-5	PRV-N1				
1	High to Middle PRV	EA	1.00	\$ 35,000	\$ 35,000
SUBTOTAL					\$ 35,000
	Mobilization (5% of Subtotal)				\$ 1,750
	Contingency (20%)				\$ 7,350
Total					\$ 44,100

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2008-6	Crystal Falls PS Upgrades				
1	Add 2500 GPM Middle Pump (M PMP-302) - Pump Only	MGD	3.60	\$ 20,000	\$ 72,000
SUBTOTAL					\$ 72,000
	Mobilization (5% of Subtotal)				\$ 3,600
	Contingency (20%)				\$ 15,120
Total					\$ 90,720

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2008-7	Downtown 12" Main for Fireflows				
1	12" PVC PIPE COMPLETE AND IN PLACE (L)	LF	4,437	\$ 65	\$ 288,405
SUBTOTAL					\$ 288,405
	Mobilization (5% of Subtotal)				\$ 14,420
	Contingency (20%)				\$ 60,565
Total					\$ 363,390

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2008-8	Replace Pumps at Cedar Park Int. - 3.6 MGD				
1	Replace Pumps with 1900 GPM (1)	MGD	2.7	\$ 20,000	\$ 54,000
SUBTOTAL					\$ 54,000
	Mobilization (5% of Subtotal)				\$ 2,700
	Contingency (20%)				\$ 11,340
Total					\$ 68,040

CITY OF LEANDER - 2012 CIP LIST COST ESTIMATES

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2012-1	Brushy Creek South Elevated Storage Tank				
1	24" DI PIPE COMPLETE AND IN PLACE (L)	LF	736	\$ 135	\$ 99,360
2	42" DI PIPE COMPLETE AND IN PLACE (L)	LF	850	\$ 280	\$ 238,000
3	1 MILLION GALLON GST (L T-N100)	MG	1	\$ 1,250,000	\$ 1,250,000
4	LAND ACQUISITION	AC	6.00	\$ 25,000	\$ 150,000
SUBTOTAL					\$ 1,737,360
	Mobilization (5% of Subtotal)				\$ 86,868
	Contingency (20%)				\$ 364,846
Total					\$ 2,189,074

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2012-2	12" - 42" Ronald Reagan Mains				
1	12" PVC PIPE COMPLETE AND IN PLACE (L)	LF	201	\$ 65	\$ 13,065
2	18" DI PIPE COMPLETE AND IN PLACE (L)	LF	3,291	\$ 120	\$ 394,920
3	42" DI PIPE COMPLETE AND IN PLACE (L)	LF	9,874	\$ 280	\$ 2,764,720
4	24" DI PIPE COMPLETE AND IN PLACE (L)	LF	10,491	\$ 135	\$ 1,416,285
5	36" DI PIPE COMPLETE AND IN PLACE (L)	LF	760	\$ 230	\$ 174,800
6	EASEMENT ACQUISITION	AC	5.4	\$ 10,000	\$ 54,307
SUBTOTAL					\$ 4,818,097
	Mobilization (5% of Subtotal)				\$ 240,905
	Contingency (20%)				\$ 1,011,800
Total					\$ 6,070,802

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2012-3	12" PVC 183 Middle Main Extension				
1	12" PVC PIPE COMPLETE AND IN PLACE (U)	LS	4,157	\$ 65	\$ 270,205
2	EASEMENT ACQUISITION	AC	1.0	\$ 10,000	\$ 9,543
SUBTOTAL					\$ 279,748
	Mobilization (5% of Subtotal)				\$ 13,987
	Contingency (20%)				\$ 58,747
Total					\$ 352,483

CITY OF LEANDER - 2012 CIP LIST COST ESTIMATES

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2012-4	Crystal Falls PS Improvements & 1 MG GST				
1	REPLACE UPPER PUMPS (U PMP-202)	MGD	5.04	\$ 20,000	\$ 100,800
2	1 MILLION GALLON GST (L T-102)	MG	1.00	\$ 650,000	\$ 650,000
SUBTOTAL					\$ 750,800
	Mobilization (5% of Subtotal)				\$ 37,540
	Contingency (20%)				\$ 157,668
Total					\$ 946,008

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2012-5	Parallel 18" and 24" Middle Main on Bagdad Rd				
1	18" DI PIPE COMPLETE AND IN PLACE (U)	LF	7,143	\$ 120	\$ 857,160
2	24" DI PIPE COMPLETE AND IN PLACE (U)	LF	3,240	\$ 135	\$ 437,400
3	High to Middle PRV	EA	1.00	\$ 35,000	\$ 35,000
4	EASEMENT ACQUISITION	AC	1.6	\$ 10,000	\$ 16,398
SUBTOTAL					\$ 1,345,958
	Mobilization (5% of Subtotal)				\$ 67,298
	Contingency (20%)				\$ 282,651
Total					\$ 1,695,907

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2012-6	12" and 18" East HWY 183A Main				
1	12" PVC PIPE COMPLETE AND IN PLACE (L)	LF	1,798	\$ 65	\$ 116,870
2	18" DI PIPE COMPLETE AND IN PLACE (L)	LF	9,565	\$ 120	\$ 1,147,800
3	8" PVC PIPE COMPLETE AND IN PLACE (L)	LF	13,364	\$ 50	\$ 668,200
4	EASEMENT ACQUISITION	AC	5.7	\$ 10,000	\$ 56,765
SUBTOTAL					\$ 1,989,635
	Mobilization (5% of Subtotal)				\$ 99,482
	Contingency (20%)				\$ 417,823
Total					\$ 2,506,941

CITY OF LEANDER - 2012 CIP LIST COST ESTIMATES

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2012-7	16" HWY 183 / CR 272 Loop Mains to 183A				
1	16" DI PIPE COMPLETE AND IN PLACE (L)	LF	14,602	\$ 110	\$ 1,606,220
2	EASEMENT ACQUISITION	AC	3.4	\$ 10,000	\$ 33,522
SUBTOTAL					\$ 1,639,742
	Mobilization (5% of Subtotal)				\$ 81,987
	Contingency (20%)				\$ 344,346
Total					\$ 2,066,074

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2012-8	12" FM 2243 West of HWY 183A Main				
1	12" PVC PIPE COMPLETE AND IN PLACE (L)	LF	5,473	\$ 65	\$ 355,745
SUBTOTAL					\$ 355,745
	Mobilization (5% of Subtotal)				\$ 17,787
	Contingency (20%)				\$ 74,706
Total					\$ 448,239

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2012-9	12" FM 2243 East of HWY 183A Main				
1	12" PVC PIPE COMPLETE AND IN PLACE (L)	LF	9,453	\$ 65	\$ 614,445
SUBTOTAL					\$ 614,445
	Mobilization (5% of Subtotal)				\$ 30,722
	Contingency (20%)				\$ 129,033
Total					\$ 774,201

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2012-10	16" and 18" Future FM 2243 - East of HWY 183A Main				
1	18" DI PIPE COMPLETE AND IN PLACE (L)	LF	6,837	\$ 120	\$ 820,440
2	16" DI PIPE COMPLETE AND IN PLACE (L)	LF	2,020	\$ 110	\$ 222,200
3	EASEMENT ACQUISITION	AC	2.0	\$ 10,000	\$ 20,333
SUBTOTAL					\$ 1,062,973
	Mobilization (5% of Subtotal)				\$ 53,149
	Contingency (20%)				\$ 223,224
Total					\$ 1,339,346

CITY OF LEANDER - 2012 CIP LIST COST ESTIMATES

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2012-11	12" and 16" Crystal Falls Mains				
1	16" DI PIPE COMPLETE AND IN PLACE (U)	LF	18,332	\$ 110	\$ 2,016,520
2	12" PVC PIPE COMPLETE AND IN PLACE (U)	LF	4,087	\$ 65	\$ 265,655
3	EASEMENT ACQUISITION	AC	5.1	\$ 10,000	\$ 51,467
SUBTOTAL					\$ 2,333,642
	Mobilization (5% of Subtotal)				\$ 116,682
	Contingency (20%)				\$ 490,065
Total					\$ 2,940,389

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2012-12	8" - 18" Lakeline to Northwest Mains				
1	8" PVC PIPE COMPLETE AND IN PLACE (U)	LF	177	\$ 50	\$ 8,850
2	12" PVC PIPE COMPLETE AND IN PLACE (U)	LF	9,066	\$ 65	\$ 589,290
3	16" DI PIPE COMPLETE AND IN PLACE (U)	LF	14,115	\$ 110	\$ 1,552,650
4	18" DI PIPE COMPLETE AND IN PLACE (U)	LF	1,061	\$ 120	\$ 127,320
5	EASEMENT ACQUISITION	AC	3.5	\$ 10,000	\$ 34,839
SUBTOTAL					\$ 2,312,949
	Mobilization (5% of Subtotal)				\$ 115,647
	Contingency (20%)				\$ 485,719
Total					\$ 2,914,316

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2012-13	12" North Bagdad Rd Main				
1	12" PVC PIPE COMPLETE AND IN PLACE (U)	LF	2,092	\$ 120	\$ 251,040
2	EASEMENT ACQUISITION	AC	0.5	\$ 10,000	\$ 4,803
SUBTOTAL					\$ 255,843
	Mobilization (5% of Subtotal)				\$ 12,792
	Contingency (20%)				\$ 53,727
Total					\$ 322,362

CITY OF LEANDER - 2012 CIP LIST COST ESTIMATES

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2012-14	8" - 12" West HWY 183A Middle Zone Main				
1	8" PVC PIPE COMPLETE AND IN PLACE (M)	LF	7,569	\$ 50	\$ 378,450
2	12" PVC PIPE COMPLETE AND IN PLACE (M)	LF	11,496	\$ 65	\$ 747,240
SUBTOTAL					\$ 1,125,690
	Mobilization (5% of Subtotal)				\$ 56,285
	Contingency (20%)				\$ 236,395
Total					\$ 1,418,369

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2012-15	18" and 24" CR 276 West of HWY 183A Main				
1	18" DI PIPE COMPLETE AND IN PLACE (L)	LF	2,352	\$ 120	\$ 282,240
1	24" DI PIPE COMPLETE AND IN PLACE (M)	LF	8,051	\$ 135	\$ 1,086,885
2	EASEMENT ACQUISITION	AC	1.8	\$ 10,000	\$ 18,483
SUBTOTAL					\$ 1,105,368
	Mobilization (5% of Subtotal)				\$ 55,268
	Contingency (20%)				\$ 232,127
Total					\$ 1,392,763

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2012-16	18" CR 276 East of HWY 183A Main				
1	18" DI PIPE COMPLETE AND IN PLACE (M)	LF	4,698	\$ 120	\$ 563,760
2	EASEMENT ACQUISITION	AC	1.1	\$ 10,000	\$ 10,785
SUBTOTAL					\$ 574,545
	Mobilization (5% of Subtotal)				\$ 28,727
	Contingency (20%)				\$ 120,654
Total					\$ 723,927

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2012-17	Falcon Oaks 8" Connection to Upper Zone				
1	8" PVC PIPE COMPLETE AND IN PLACE (U)	LF	3,322	\$ 50	\$ 166,100
SUBTOTAL					\$ 166,100
	Mobilization (5% of Subtotal)				\$ 8,305
	Contingency (20%)				\$ 34,881
Total					\$ 209,286

CITY OF LEANDER - 2012 CIP LIST COST ESTIMATES

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2012-18	Low Main Connection East of 183A				
1	8" PVC PIPE COMPLETE AND IN PLACE (U)	LF	3,822	\$ 50	\$ 166,100
3	Middle to Low PRV	EA	1.00	\$ 35,000	\$ 35,000
4	EASEMENT ACQUISITION	AC	0.9	\$ 10,000	\$ 8,774
SUBTOTAL					\$ 209,874
	Mobilization (5% of Subtotal)				\$ 10,494
	Contingency (20%)				\$ 44,074
Total					\$ 264,441

CITY OF LEANDER - 2017 CIP LIST COST ESTIMATES

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2017-1	Ronald Reagan Low PS to 16.70 MGD and GST				
1	BRUSHY CREEK SOUTH LOW PUMP STATION, 2,500 GPM (L PMP-104)	MGD	3.00	\$ 250,000	\$ 750,000
2	BRUSHY CREEK NORTH LOW PUMP STATION, 8,000 GPM (L PMP-108)	MGD	11.00	\$ 250,000	\$ 2,750,000
3	BRUSHY CREEK GST	MG	1.50	\$ 1,000,000	\$ 1,500,000
SUBTOTAL					\$ 1,500,000
	Mobilization (5% of Subtotal)				\$ 75,000
	Contingency (20%)				\$ 315,000
Total					\$ 1,890,000

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2017-2	24" Crystal Falls to Northwest Mains				
1	24" DI PIPE COMPLETE AND IN PLACE (U)	LF	12,223	\$ 135	\$ 1,650,105
2	EASEMENT ACQUISITION	AC	2.8	\$ 10,000	\$ 28,060
SUBTOTAL					\$ 1,678,165
	Mobilization (5% of Subtotal)				\$ 83,908
	Contingency (20%)				\$ 352,415
Total					\$ 2,114,488

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2017-3	Parallel 36" Middle Main on Bagdad Rd				
1	36" DI PIPE COMPLETE AND IN PLACE (U)	LS	12,685	\$ 230	\$ 2,917,550
2	EASEMENT ACQUISITION	AC	2.9	\$ 10,000	\$ 29,121
SUBTOTAL					\$ 2,946,671
	Mobilization (5% of Subtotal)				\$ 147,334
	Contingency (20%)				\$ 618,801
Total					\$ 3,712,805

CITY OF LEANDER - 2017 CIP LIST COST ESTIMATES

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2017-4	12" Middle Loop Mains East of Bagdad				
1	12" PVC PIPE COMPLETE AND IN PLACE (M)	LF	7,519	\$ 65	\$ 488,735
2	EASEMENT ACQUISITION	AC	1.73	\$ 10,000	\$ 17,261
SUBTOTAL					\$ 505,996
	Mobilization (5% of Subtotal)				\$ 25,300
	Contingency (20%)				\$ 106,259
Total					\$ 637,555

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2017-5	Upgrade Cedar Park Int. PS to 5.0 MGD on Middle Zone, Increase GST to 2.0 MG				
1	UPGRADE 2 PUMPS TO 2400 GPM EA (M PMP-101)	MGD	5.00	\$ 400,000	\$ 2,000,000
2	1.25 MILLION GALLON GST (L T-102)	MG	1.25	\$ 1,000,000	\$ 1,250,000
SUBTOTAL					\$ 3,250,000
	Mobilization (5% of Subtotal)				\$ 162,500
	Contingency (20%)				\$ 682,500
Total					\$ 4,095,000

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2017-6	12"-24" Crystal Falls West EST and Mains				
1	12" PVC PIPE COMPLETE AND IN PLACE (U)	LF	3,552	\$ 65	\$ 230,880
2	16" DI PIPE COMPLETE AND IN PLACE (U)	LF	6,345	\$ 110	\$ 697,950
3	24" DI PIPE COMPLETE AND IN PLACE (U)	LF	10,028	\$ 135	\$ 1,353,780
4	EASEMENT ACQUISITION	AC	4.6	\$ 10,000	\$ 45,742
5	1.0 MILLION GALLON EST (U T-N202)	MG	1.00	\$ 1,500,000	\$ 1,500,000
6	LAND ACQUISTION	AC	3.0	\$ 25,000	\$ 75,000
SUBTOTAL					\$ 3,903,352
	Mobilization (5% of Subtotal)				\$ 195,168
	Contingency (20%)				\$ 819,704
Total					\$ 4,918,223

CITY OF LEANDER - 2017 CIP LIST COST ESTIMATES

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2017-7	12" West HWY 183A Middle Zone Main				
1	12" PVC PIPE COMPLETE AND IN PLACE (M)	LF	3,820	\$ 65	\$ 248,300
SUBTOTAL					\$ 248,300
	Mobilization (5% of Subtotal)				\$ 12,415
	Contingency (20%)				\$ 52,143
Total					\$ 312,858

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2017-8	Bagdad 0.5 MG EST				
1	0.5 MILLION GALLON EST (T-N301)	MG	0.50	\$ 1,500,000	\$ 750,000
SUBTOTAL					\$ 750,000
	Mobilization (5% of Subtotal)				\$ 37,500
	Contingency (20%)				\$ 157,500
Total					\$ 945,000

Total

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2017-9	12" Upper Zone Bagdad Extension				
1	12" PVC PIPE COMPLETE AND IN PLACE (U)	LF	1,289	\$ 65	\$ 83,785
SUBTOTAL					\$ 83,785
	Mobilization (5% of Subtotal)				\$ 4,189
	Contingency (20%)				\$ 17,595
Total					\$ 105,569

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2017-10	2.2 MGD BCRUA WTP PS				
1	NEW 2.2 MGD BCRUA PS (H PMP-N291)	MGD	2.20	\$ 400,000	\$ 880,000
2	PUMP STATION LAND ACQUISITION	AC	5.00	\$ 25,000	\$ 125,000
SUBTOTAL					\$ 1,005,000
	Mobilization (5% of Subtotal)				\$ 50,250
	Contingency (20%)				\$ 211,050
Total					\$ 1,266,300

CITY OF LEANDER - 2017 CIP LIST COST ESTIMATES

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2017-11	1.5 MG Brushy Creek EST				
1	1.5MILLION GALLON EST (L T-N102)	MG	1.50	\$ 1,250,000	\$ 1,875,000
2	LAND ACQUISTION	AC	3.0	\$ 25,000	\$ 75,000
SUBTOTAL					\$ 1,950,000
	Mobilization (5% of Subtotal)				\$ 97,500
	Contingency (20%)				\$ 409,500
Total					\$ 2,457,000

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2017-12	24" North East Mains to Brushy Creek EST				
1	24" DI PIPE COMPLETE AND IN PLACE (U)	LF	9,345	\$ 135	\$ 1,261,575
2	EASEMENT ACQUISITION	AC	2.1	\$ 10,000	\$ 21,453
SUBTOTAL					\$ 1,283,028
	Mobilization (5% of Subtotal)				\$ 64,151
	Contingency (20%)				\$ 269,436
Total					\$ 1,616,615

CITY OF LEANDER - 2027 CIP LIST COST ESTIMATES

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2027-1	Upgrade Reagan Low PS and GST				
1	ADD 1.5 MG GROUND TANK	MG	1.50	\$ 650,000	\$ 975,000
2	ADD 8,000 GPM PUMP TO BRUSHY CREEK SOUTH PUMP STATION	MGD	12.00	\$ 250,000	\$ 3,000,000
3	ADD 2,500 GPM PUMP TO BRUSHY CREEK NORTH PUMP STATION	MGD	4.00	\$ 250,000	\$ 1,000,000
SUBTOTAL					\$ 4,975,000
	Mobilization (5% of Subtotal)				\$ 248,750
	Contingency (20%)				\$ 1,044,750
Total					\$ 6,268,500

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2027-2	24" - 42" Parallel Parmer Mains & Main to Brushy Creek EST				
1	12" DI PIPE COMPLETE AND IN PLACE (L)	LF	3,307	\$ 65	\$ 214,955
2	18" DI PIPE COMPLETE AND IN PLACE (L)	LF	1,959	\$ 120	\$ 235,080
3	24" DI PIPE COMPLETE AND IN PLACE (L)	LF	5,744	\$ 135	\$ 775,440
3	30" DI PIPE COMPLETE AND IN PLACE (L)	LF	6,276	\$ 180	\$ 1,129,680
5	EASEMENT ACQUISITION	AC	3.97	\$ 10,000	\$ 39,683
SUBTOTAL					\$ 2,394,838
	Mobilization (5% of Subtotal)				\$ 119,742
	Contingency (20%)				\$ 502,916
Total					\$ 3,017,496

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2027-3	12" - 24" East of Parmer Main Loops				
1	8" PVC PIPE COMPLETE AND IN PLACE (L)	LF	30	\$ 50	\$ 1,500
2	8" PVC PIPE COMPLETE AND IN PLACE (0)	LF	11,239	\$ 50	\$ 561,950
3	16" DI PIPE COMPLETE AND IN PLACE (L)	LF	12,761	\$ 110	\$ 1,403,710
4	24" DI PIPE COMPLETE AND IN PLACE (L)	LF	6,368	\$ 135	\$ 859,680
5	PRV-N13 AND PRV-N14	EA	2.00	\$ 35,000	\$ 70,000
6	EASEMENT ACQUISITION	AC	6.98	\$ 10,000	\$ 69,784
SUBTOTAL					\$ 2,966,624
	Mobilization (5% of Subtotal)				\$ 148,331
	Contingency (20%)				\$ 622,991
Total					\$ 3,737,946

CITY OF LEANDER - 2027 CIP LIST COST ESTIMATES

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2027-4	7.0 MGD Brushy Creek PS				
1	18" DI PIPE COMPLETE AND IN PLACE (L)	LF	246	\$ 120	\$ 29,520
2	24" DI PIPE COMPLETE AND IN PLACE (L)	LF	80	\$ 135	\$ 10,800
3	24" DI PIPE COMPLETE AND IN PLACE (M)	LF	257	\$ 135	\$ 34,695
4	NEW 7 MGD BRUSHY CREEK PS (M PMP-N303)	MGD	7.00	\$ 400,000	\$ 2,800,000
5	LAND ACQUISTION	AC	3.0	\$ 25,000	\$ 75,000
SUBTOTAL					\$ 2,950,015
	Mobilization (5% of Subtotal)				\$ 147,501
	Contingency (20%)				\$ 619,503
Total					\$ 3,717,019

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2027-5	Upgrade Cedar Park Int. PS to 16.25 MGD				
1	2 PUMPS 5700 GPM (M PMP-101)	MGD	16.25	\$ 250,000	\$ 4,062,500
SUBTOTAL					\$ 4,062,500
	Mobilization (5% of Subtotal)				\$ 203,125
	Contingency (20%)				\$ 853,125
Total					\$ 5,118,750

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2027-6	8" Upper Loop Mains West of Bagdad and PRV-N8				
1	8" PVC PIPE COMPLETE AND IN PLACE (U)	LF	6,991	\$ 50	\$ 349,550
2	EASEMENT ACQUISITION	AC	1.6	\$ 10,000	\$ 16,049
3	PRV N-8	EA	1	\$ 35,000	\$ 35,000
SUBTOTAL					\$ 400,599
	Mobilization (5% of Subtotal)				\$ 20,030
	Contingency (20%)				\$ 84,126
Total					\$ 504,755

CITY OF LEANDER - 2027 CIP LIST COST ESTIMATES

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2027-7	12" - 24" San Gabriel Pkwy East of HWY 183A Mains				
1	12" PVC PIPE COMPLETE AND IN PLACE (M)	LF	2,360	\$ 65	\$ 153,400
2	18" DI PIPE COMPLETE AND IN PLACE (M)	LF	4,708	\$ 120	\$ 564,960
3	24" DI PIPE COMPLETE AND IN PLACE (M)	LF	10,077	\$ 135	\$ 1,360,395
4	EASEMENT ACQUISITION	AC	3.94	\$ 10,000	\$ 39,360
SUBTOTAL					\$ 2,118,115
	Mobilization (5% of Subtotal)				\$ 105,906
	Contingency (20%)				\$ 444,804
Total					\$ 2,668,824

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2027-8	8" - 16" North TOD Loop Mains				
1	8" PVC PIPE COMPLETE AND IN PLACE (L)	LF	4,813	\$ 50	\$ 240,650
2	12" PVC PIPE COMPLETE AND IN PLACE (L)	LF	3,942	\$ 65	\$ 256,230
3	16" DI PIPE COMPLETE AND IN PLACE (L)	LF	2,614	\$ 110	\$ 287,540
4	PRV-N10	EA	1.00	\$ 35,000	\$ 35,000
5	EASEMENT ACQUISITION	AC	2.61	\$ 10,000	\$ 26,100
SUBTOTAL					\$ 845,520
	Mobilization (5% of Subtotal)				\$ 42,276
	Contingency (20%)				\$ 177,559
Total					\$ 1,065,355

CITY OF LEANDER - 2027 CIP LIST COST ESTIMATES

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2027-9	12" - 36" Northwest Upper Loop Mains				
1	12" PVC PIPE COMPLETE AND IN PLACE (U)	LF	7,198	\$ 65	\$ 467,870
2	16" DI PIPE COMPLETE AND IN PLACE (U)	LF	6,199	\$ 110	\$ 681,890
3	24" DI PIPE COMPLETE AND IN PLACE (U)	LF	7,543	\$ 135	\$ 1,018,305
4	8" PVC PIPE COMPLETE AND IN PLACE (U)	LF	13,263	\$ 50	\$ 663,150
5	EASEMENT ACQUISITION	AC	7.85	\$ 10,000	\$ 78,519
SUBTOTAL					\$ 2,909,734
	Mobilization (5% of Subtotal)				\$ 145,487
	Contingency (20%)				\$ 611,044
Total					\$ 3,666,265

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2027-10	12" - 16" Crystal Falls Mains				
1	12" PVC PIPE COMPLETE AND IN PLACE (U)	LF	14,394	\$ 65	\$ 935,610
2	16" DI PIPE COMPLETE AND IN PLACE (U)	LF	4,881	\$ 110	\$ 536,910
3	EASEMENT ACQUISITION	AC	4.4	\$ 10,000	\$ 44,249
SUBTOTAL					\$ 1,516,769
	Mobilization (5% of Subtotal)				\$ 75,838
	Contingency (20%)				\$ 318,522
Total					\$ 1,911,129

ITEM	DESCRIPTION	UNITS	QTY	UNIT COST	TOTAL COST
2027-11	Upgrade BCRUA PS to 8.8 MGD				
1	UPGRADE BCRUA PS TO 8.8 MGD (H PMP-N291)	MGD	8.80	\$ 250,000	\$ 2,200,000
SUBTOTAL					\$ 2,200,000
	Mobilization (5% of Subtotal)				\$ 110,000
	Contingency (20%)				\$ 462,000
Total					\$ 2,772,000

Appendix D

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