

CITY OF SAGINAW, TEXAS

2020 WATER IMPACT FEE STUDY

NOVEMBER 2020



11/30/20

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1. EXECUTIVE SUMMARY

This document was prepared as an update to the City of Saginaw's current Water Impact Fees last updated in 2016. The implementation of Impact Fees allows the City to shift a portion of the burden of paying for new facilities onto new development. System improvements necessary to serve 10-year (2030) and ultimate system needs (2035) were evaluated. Typically, infrastructure improvements are sized beyond the 10-year requirements; however, the state's impact fee law (Chapter 395) only allows recovery of costs to serve the 10-year planning period. The remainder can be assessed as the planning window extends beyond 2030 and as the impact fees are updated in the future.

Capital improvements for the water distribution system were formulated and outlined under the appropriate section based on the City's 10-year growth projections. These projections show that the City will need to serve 2,165 additional units from now till 2030. As a result of these studies and the efforts of the Saginaw City Council and staff, the project cost of impact fee eligible system improvements is \$2,297,363. Expenditures to improve current service deficiencies are not assessable as impact fees; only expenditures for water improvements necessary to provide for future growth are assessable as impact fees. Considering only these expenditures and other recoverable costs, there will be a total of \$1,148,682 recoverable through impact fees over the next ten years. The total project cost and project recoverable cost include the eligible costs of previously constructed impact fee eligible projects.

Based on the additional service units and the recoverable capital improvement costs, the City may assess a maximum of \$531 per service unit outlined in Table 1. Following the public hearing process, the City Council may implement an amount to be assessed (if any) up to these maximums.

To recover additional CIP expenditures, a city is allowed to reevaluate the system demands and its impact fees whenever necessary; however, the impact fees must be updated at least every five years.

Table 1: Maximum Assessable Impact Fee Summary

Size	Maximum Assessable Water Impact Fee (\$)		
	Fort Worth	Saginaw	Total*
3/4" displacement	\$2,637	\$531	\$3,168
1" displacement	\$4,396	\$903	\$5,299
1-1/2" displacement	\$8,791	\$1,753	\$10,544
2" displacement	\$14,066	\$2,815	\$16,881
2" compound	\$14,066	\$2,815	\$16,881
2" turbine	\$14,066	\$2,815	\$16,881
3" compound	\$38,242	\$6,213	\$44,455
3" turbine	\$38,242	\$6,213	\$44,455
4" compound	\$65,934	\$10,620	\$76,554
4" turbine	\$65,934	\$11,151	\$77,085
6" compound	\$140,660	\$23,895	\$164,555
6" turbine	\$140,660	\$22,993	\$163,653
8" compound	\$246,155	\$28,303	\$274,458
8" turbine	\$246,155	\$49,543	\$295,698
10" turbine	\$369,233	\$74,340	\$443,573

*Total includes current City of Fort Worth Impact Fees.

2. PURPOSE

The Texas Local Government Code, Chapter 395 describes the procedure Texas cities must follow in order to create and implement impact fees. Once impact fees are implemented, the Code requires that cities update them at least every five years. The impact fees were last updated and adopted by City Council in 2016. The first step required in creating impact fees is the establishment of land use assumptions. Land use assumptions and population projections form the basis for the preparation of impact fee capital improvements plans for water facilities.

Reasonable future growth projections are necessary to aid the City of Saginaw in establishing the need and timing for capital improvements capable of serving future development. Included in this report are the growth and development projections based upon assumptions pertaining to the type, location, quantity and timing of future development within the community.

The purpose of this document is to develop and present the actual maximum impact fees that could be assessed based on the water system analysis and the capital improvements established to serve future growth.

3. LAND USE ASSUMPTIONS

A. METHODOLOGY

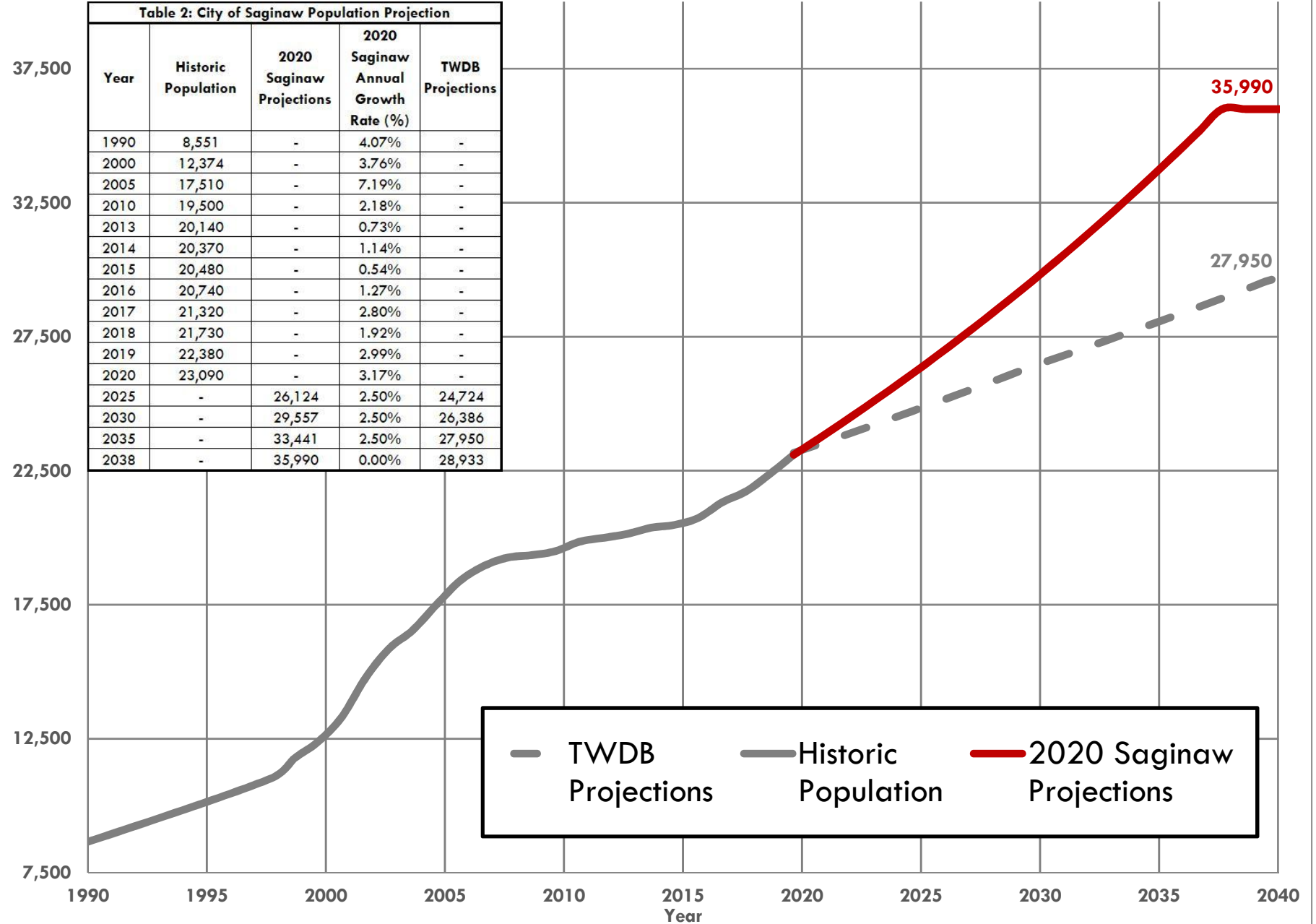
The following components of the methodology for land use assumptions will be detailed in this report: Population, Impact Fee Service Area, Existing Land Use, and Ultimate Land Use.

B. POPULATION

The foundation for this plan is the determination of population and land use forecasts. These forecasts are the basis for the projected water demand. However, these forecasts are only projections of current population based on historical growth rates. Therefore, these forecasts should be viewed only as approximations of the expected growth of the City of Saginaw.

Table 2 shows City of Saginaw Population Projection. The historic population figures are derived from the North Central Texas Council of Governments (NCTCOG) population and employment forecasts. The future population is based on a population growth rate of 2.5% per year until build out. This population forecast anticipates that Saginaw will reach its estimated build-out population of 35,990 in approximately 2038. The Texas Water Development Board (TWDB) Projections show a more conservative projection for the growth rate projecting a population of 28,933 by year 2038.

Table 2: City of Saginaw Population Projection				
Year	Historic Population	2020 Saginaw Projections	2020 Saginaw Annual Growth Rate (%)	TWDB Projections
1990	8,551	-	4.07%	-
2000	12,374	-	3.76%	-
2005	17,510	-	7.19%	-
2010	19,500	-	2.18%	-
2013	20,140	-	0.73%	-
2014	20,370	-	1.14%	-
2015	20,480	-	0.54%	-
2016	20,740	-	1.27%	-
2017	21,320	-	2.80%	-
2018	21,730	-	1.92%	-
2019	22,380	-	2.99%	-
2020	23,090	-	3.17%	-
2025	-	26,124	2.50%	24,724
2030	-	29,557	2.50%	26,386
2035	-	33,441	2.50%	27,950
2038	-	35,990	0.00%	28,933



C. IMPACT FEE SERVICE AREA

Impact fees for the City of Saginaw have been developed for the City's water service area. The service area for the water impact fees includes the entire area within the city limits and is bounded predominantly by Old Decatur Road, a line parallel to and just north of Bailey-Boswell Road, Blue Mound Road (FM 156) and Industrial Boulevard/Longhorn Road, as shown on Figure 1.

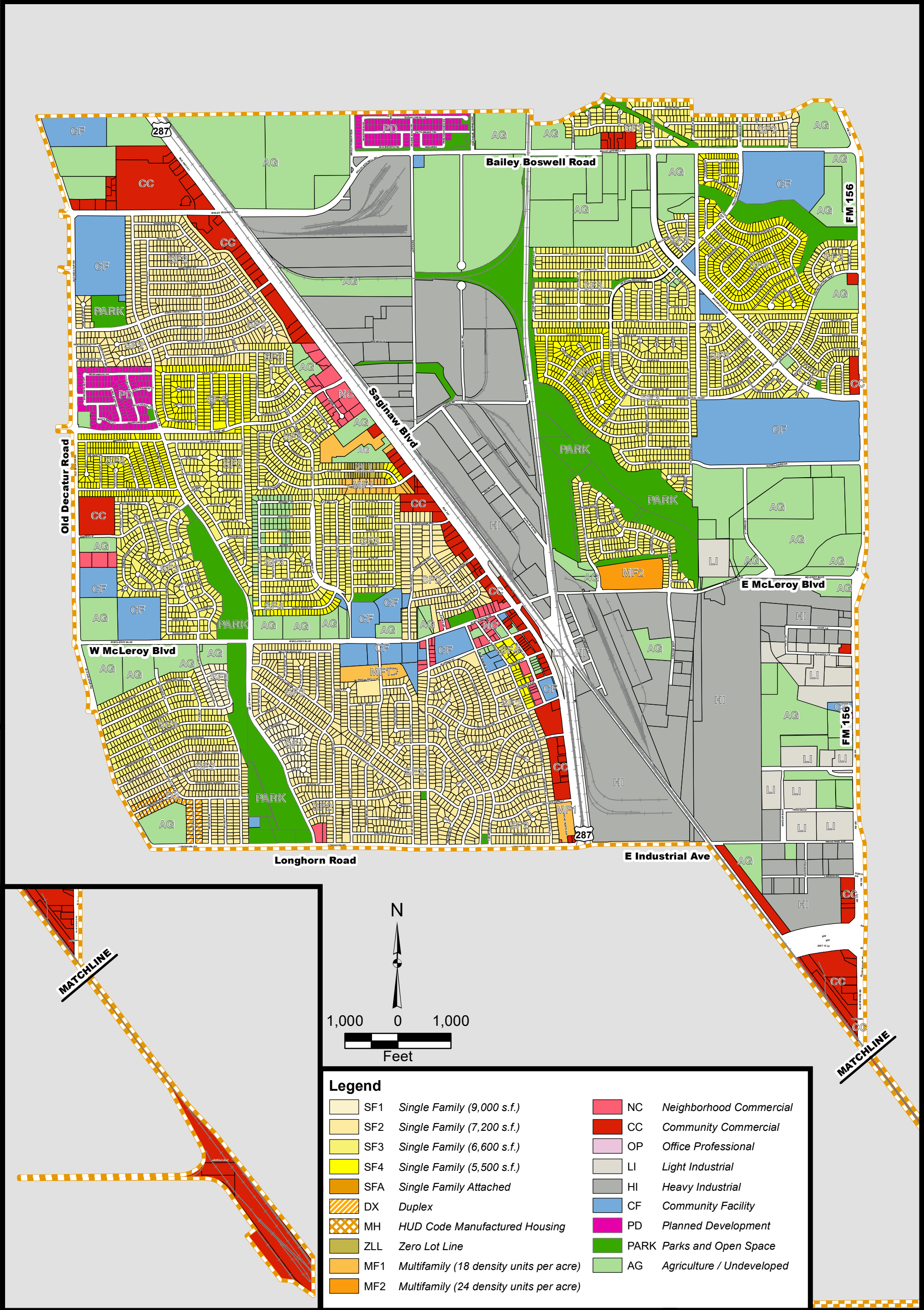
D. EXISTING LAND USE

Existing land use within the City of Saginaw consists primarily of single-family residential homes in the northwest, southwest, and northeast parts of the City. A strip of commercial development along the west side of Saginaw Blvd. (US 287) and in the central business district buffers the residential areas from the extensive industrial area bisecting the city. Industrial development is located primarily east of Saginaw Blvd. and the railroad tracks. Table 3 summarizes the areas of existing land use within the city limits.

Table 3: Existing Land Use

Type	Existing Land Use		
	Land Use Abbreviations	Acreage (Acres)	% of Total
Agriculture / Vacant	AG	911	18.6%
Single Family (9,000 s.f.)	SF1	22	0.5%
Single Family (7,200 s.f.)	SF2	530	10.8%
Single Family (6,600 s.f.)	SF3	637	13.0%
Single Family (5,500 s.f.)	SF4	202	4.1%
Single Family Attached (2,500 s.f.)	SFA	0	0%
Duplex (7,200 s.f.)	DX	10	0.2%
HUD Code Manufactured Housing	MH	0	0%
Zero Lot Line	ZLL	4	0.1%
Multifamily (18 density units per acre)	MF1	27	0.6%
Multifamily (24 density units per acre)	MF2	14	0.3%
Office Professional	OP	0	0%
Neighborhood Commercial	NC	35	0.7%
Community Commercial	CC	294	6.0%
Community Facility	CF	250	5.1%
Park / Open Space	Park	275	5.6%
Light Industrial	LI	90	1.8%
Heavy Industrial	HI	833	17.0%
Planned Development	PD	53	1.1%
ROW AND Railroad / Easement	ROW	721	14.5%
Total		4,911	100%

Table 3 includes areas for each of the major land use types in terms of total acreage and percent of the total area. The existing land use is based on a May 2020 aerial photograph and recent developments known to the City. Of the 4,911 acres within the City of Saginaw, approximately 4,000 acres, approximately 81%, has been developed. This does not include areas that are currently developed but may be redeveloped at a later date as a different land use. Figure 1 displays a map of the existing land uses within the City. The existing land uses may differ from the current zoning classifications. Land use represents the current use for the parcel; zoning represents the allowable uses per the zoning regulations.



E. ULTIMATE LAND USE

The ultimate land use plan will guide development in the City, however, the ultimate land use plan should be flexible enough to allow the market to determine actual specific uses as long as it maintains compatibility with the adjoining land uses and meets Saginaw's expectation for excellence in design and is consistent with long-term economic viability.

There were several key ideas and planning principles which were used as the foundation for the land use of a development area:

Neighborhoods – Found near the center of a development area. Neighborhoods, consisting of single-family residences, are the focal point of the development area.

Higher density dwellings – Consists of duplexes and multi-family complexes near the edges of neighborhoods and the development area.

Commercial – Typically found along the edges of the development area, near the intersection of arterial streets where there is good access and high visibility for businesses.

Neighborhood Commercial - May be found within residential areas to provide for establishments such as convenience stores and other low traffic generating businesses.

Office Commercial and Office Park - Located in such a manner as to serve as a buffer between incompatible uses and yet be accessible to major thoroughfares, residential areas, downtown Fort Worth, and higher density commercial developments and industrial areas.

Schools and Parks – Located at the center of the development area. The intent is that all residents are only a short distance from a school or park without having to cross a major thoroughfare.

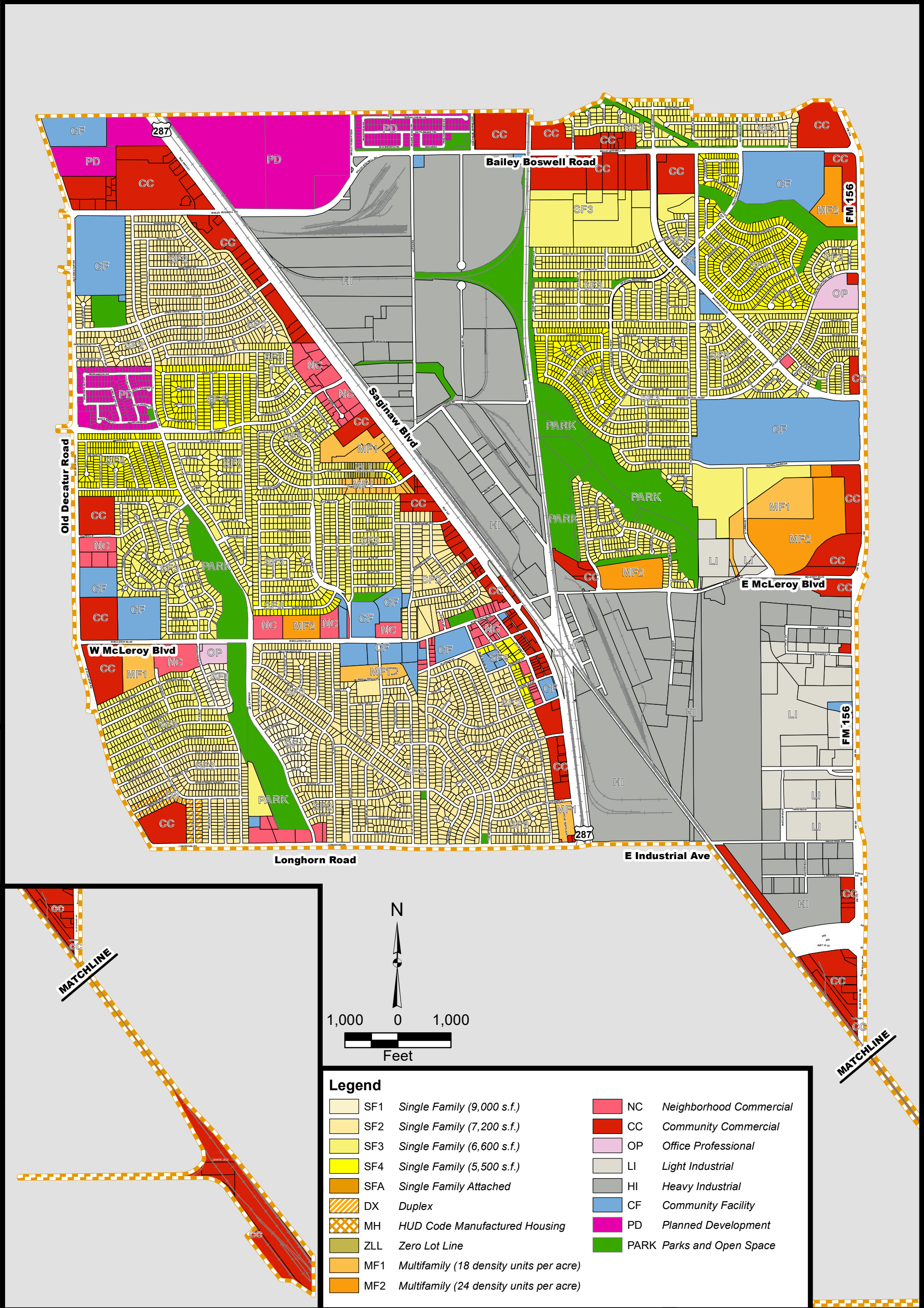
Industrial – Located within a separate and distinct area from neighborhoods. The use of buffer zones is important to separate industrial land types from neighborhoods.

Table 4 indicates the areas projected for each classification for the 2035 (build-out) condition.

Table 4: Ultimate Land Use

Type	Ultimate Land Use		
	Land Use Abbreviations	Acreage (Acres)	% of Total
Agriculture / Vacant	AG	0	0%
Single Family (9,000 s.f.)	SF1	22	0.5%
Single Family (7,200 s.f.)	SF2	534	10.9%
Single Family (6,600 s.f.)	SF3	757	15.4%
Single Family (5,500 s.f.)	SF4	204	4.1%
Single Family Attached (2,500 s.f.)	SFA	0	0%
Duplex (7,200 s.f.)	DX	10	0.2%
HUD Code Manufactured Housing	MH	0	0%
Zero Lot Line	ZLL	4	0.1%
Multifamily (18 density units per acre)	MF1	67	1.4%
Multifamily (24 density units per acre)	MF2	77	1.6%
Office Professional	OP	14	0.3%
Neighborhood Commercial	NC	79	1.6%
Community Commercial	CC	494	10.0%
Community Facility	CF	253	5.2%
Park / Open Space	Park	260	5.3%
Light Industrial	LI	161	3.3%
Heavy Industrial	HI	961	19.6%
Planned Development	PD	292	6.0%
ROW AND Railroad / Easement	ROW	721	14.5%
Total		4,911	100%

Table 4 includes areas for each of the major land use types in terms of total acreage and percent of the total area by ultimate land use. Figure 2 displays a map of the ultimate land uses within the City.



4. METHODOLOGY OF WATER CAPITAL IMPROVEMENTS

Kimley-Horn has analyzed the existing City of Saginaw water system using both City and TCEQ criteria. The existing water system is adequate to serve the City's current population. As the City approaches its build out population, Kimley-Horn recommends capital improvements to meet the development growth.

A. DEFINITIONS

- Water Supply can either be from a surface water source or a ground water source. Saginaw is 100% dependent upon the City of Fort Worth for wholesale water supply, which is surface water.
- Water Treatment is the treatment of raw water so it is fit for human consumption. The City of Fort Worth provides treated water to the City of Saginaw.
- High Service Pumping is the pumping required to move the water from a treatment facility or ground storage to the transmission and distribution systems.
- Booster Pumps increase the pressure from a stored source or from another water line.
- Transmission System is comprised of large water lines which transport large quantities of water from one area to another.
- Distribution System is comprised of smaller water lines which distribute water from the transmission system to the customers.
- Service Lines are the small, privately owned, water lines which connect each individual customer to the distribution system.
- Elevated Storage are tanks that are raised above the ground and connected to the transmission system to help maintain the system pressure. Excess water pumped flows into these tanks, or if pumping does not meet customer demand, water drains from the tanks to supplement the pumping.
- Ground Storage are tanks at ground level that store water so that it can be pumped into the system as demand warrants.
- Average Day Demand (ADD) Annual water consumption divided by the number of days in a year. The average daily water demand a given water system experiences over a one-day period.
- Demand (Consumption) Volume of water used for a given time period, typically measured in units of Million Gallons Per Day (MGD) or gallons per minute (gpm).

- Firm Pumping Capacity The total pumping capacity that a pump station can deliver with the largest pump out of service.
- GPD Gallons Per Day
- GPM Gallons Per Minute
- MGD Million Gallons per Day
- Peak Day Demand (PDD) Water consumption, in volume of water, used on the highest consumption day in a year. Also known as maximum day demand.
- Peak Hour Demand (PHD) The maximum total one-hour water demand given in units of volume per day that a given distribution system experienced or would experience during a particular year or other time period. Also known as maximum hour demand.
- Pressure Plane (Pressure Zone) A network of water pipes having a common pressure range; each plane is separated from the other planes by closed valves, pressure-regulating valves, pump stations, and storage facilities. The City of Saginaw's water system is on one pressure plane.
- Service Unit A standardized measure of consumption, use, generation, or discharge attributable to an individual unit of development calculated in accordance with generally accepted engineering or planning principles for a particular category of capital improvements or facility expansions.
- TCEQ Texas Commission on Environmental Quality
- Total Pumping Capacity The total pumping capacity that a pump station can deliver.

B. WATER DEMAND

There have been two main factors that affect water use in the City of Saginaw: population and the amount of precipitation. Population can be estimated from year to year and generally increases within a predictable range. Rainfall can vary greatly from year to year and it is impossible to predict how much rainfall will occur in a given year. Water projections are produced with a range of likely demands based on population, industrial and commercial demand, and anticipated rainfall amounts. Projections are divided into normal, wet, and dry ranges for a given year. Table 5 shows historical and projected average day demand. Table 6 shows the historical and projected peak day demands.

Table 5: Average Daily Water Demand (MGD)				
YEAR	HISTORICAL USE	NORMAL YEAR USE	WET YEAR USE	DRY YEAR USE
2000	1.98	1.76	1.63	1.90
2010	2.79	2.78	2.65	2.92
2013	2.83	2.87	2.74	3.01
2014	2.97	2.91	2.77	3.04
2015	2.76	2.92	2.79	3.06
2016	2.77	2.96	2.82	3.09
2017	2.82	3.04	2.91	3.18
2018	2.97	3.10	2.96	3.23
2019	3.13	3.19	3.06	3.33
2020	-	3.29	3.16	3.43
2025	-	3.73	3.59	3.86
2030	-	4.22	4.08	4.35
2035	-	4.77	4.63	4.90
2038	-	5.13	5.00	5.27

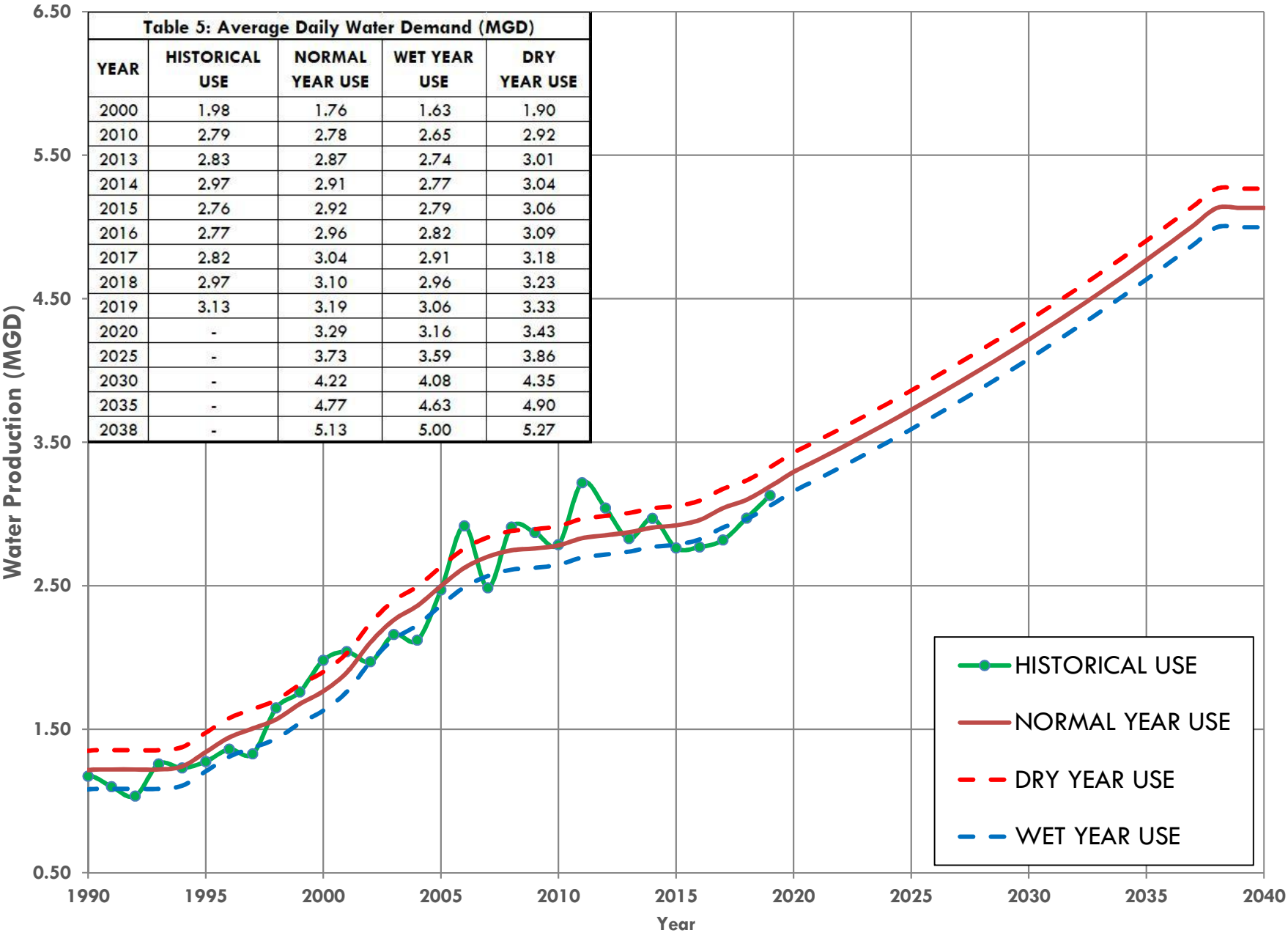
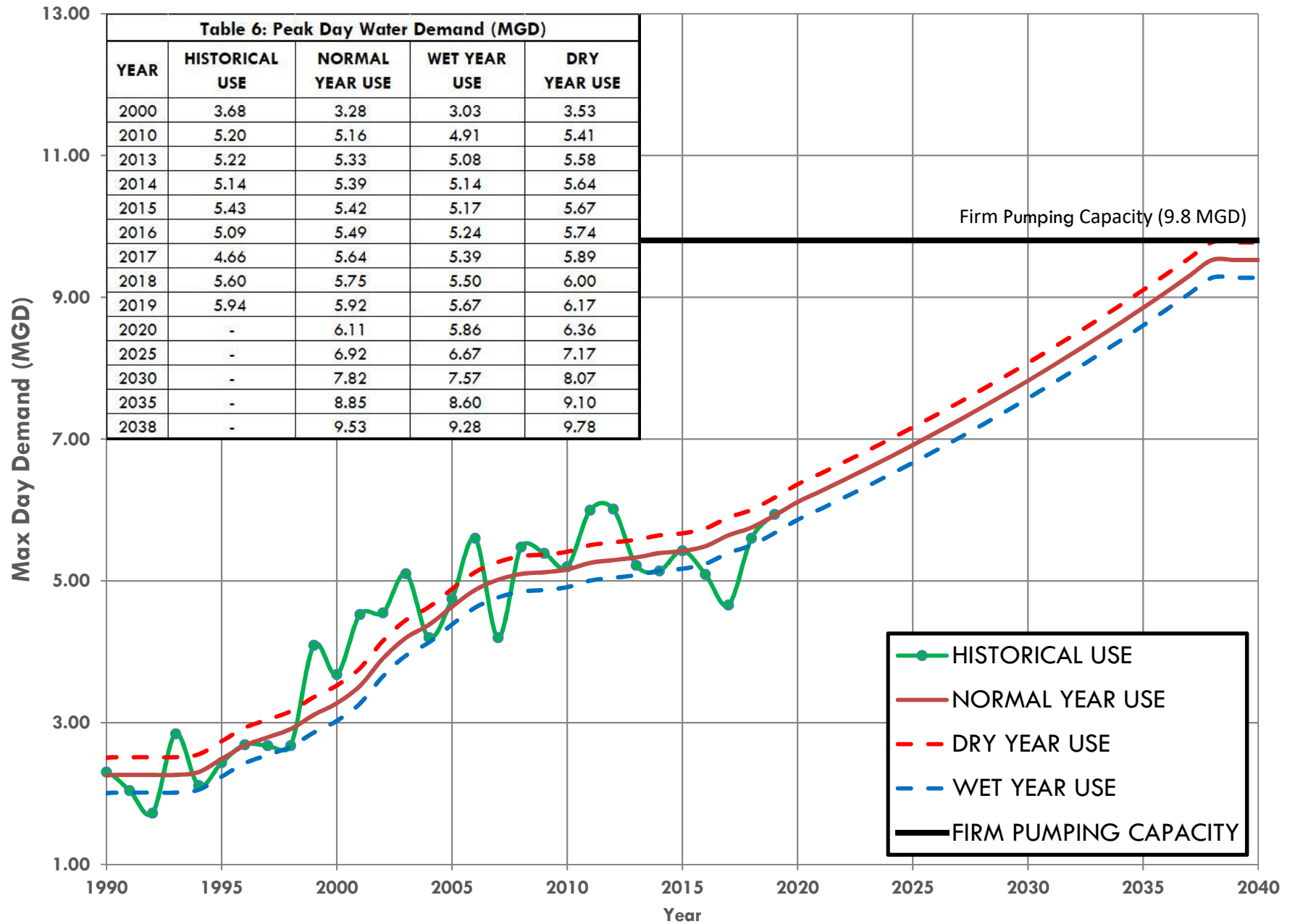


Table 6: Peak Day Water Demand (MGD)				
YEAR	HISTORICAL USE	NORMAL YEAR USE	WET YEAR USE	DRY YEAR USE
2000	3.68	3.28	3.03	3.53
2010	5.20	5.16	4.91	5.41
2013	5.22	5.33	5.08	5.58
2014	5.14	5.39	5.14	5.64
2015	5.43	5.42	5.17	5.67
2016	5.09	5.49	5.24	5.74
2017	4.66	5.64	5.39	5.89
2018	5.60	5.75	5.50	6.00
2019	5.94	5.92	5.67	6.17
2020	-	6.11	5.86	6.36
2025	-	6.92	6.67	7.17
2030	-	7.82	7.57	8.07
2035	-	8.85	8.60	9.10
2038	-	9.53	9.28	9.78



C. CITY DESIGN CRITERIA

The following criteria were established by Kimley-Horn and the City as minimum standards from which to evaluate current and future water system components. These criteria could change over time based on demand patterns and regulatory mandates.

- **Water Supply**

The City is 100% dependent upon the City of Fort Worth for wholesale water supply, which is surface water. It is recommended that the City maintain water supply production equal to the maximum day demand.

- **Pumping Facilities**

It is recommended that the pumping facilities provide the maximum day demand required by the water system.

- **Elevated Storage**

Elevated storage serves three purposes

- Functionally, elevated storage equalizes the pumping rate to compensate for daily variations in demand and to maintain a constant pumping rate (usually referred to as operational storage), or a pumping rate that conforms to the requirements of the local electrical rate structure.
- Provides pressure maintenance and protection against surges created by instantaneous demand, such as fire flow and main breaks, and instantaneous change in supply, such as pumps turning on and off.
- Maintains a reserve capacity for fire protection and pressure maintenance in case of power failure to one or more pump stations. Sufficient storage should be maintained to provide four (4) hours of fire flow demand during a loss of power to the pump station or well fields.

Elevated storage is evaluated separately for each pressure plane. Excess storage on any given pressure plane may only be credited on a lower elevation plane. The design criteria set for the City consisted of three levels. Level 1: Adequate operational (equalization) storage established by determining the required volume to equalize the daily functions in flow during the maximum day demand; Level 2: The reserve volume equal to 3,000 gpm for four (4) hours required for fire protection; Level 3: Emergency storage equal to 20% of the combined equalization and fire storage volume. Because elevated storage is approximately four times more expensive than ground storage, an economical balance between elevated storage and pumping should be sought.

- **Ground Storage**

Ground storage serves two functions:

- Equalization for differing feed rates between the water supply and pumping to the system.
- Emergency capacity in the event of temporary loss of water supply.
- Generally, ground storage facilities are located at water supply points or at each pump station within the water distribution system. Although ground and elevated storage facilities perform separate functions within the system, both are aimed at decreasing the impact of demand fluctuations.

- **Transmission System**

The function of the transmission system is to transfer water across the water system and fill the elevated storage tanks. There are three conditions for which the transmission system is evaluated:

- Peak hour demand - this is the maximum demand that the system experiences. It is the condition under which the lowest operational pressures are experienced.
- Tank filling - this is the period during which the elevated tanks are replenished, and is the condition under which the highest operational pressures are experienced.
- Fire flow demand - during the maximum day demand, the local transmission lines are tested to ensure that fire protection requirements are met. Pressures are allowed to fall below normal operating pressures but should not drop below 20 psi at any point in the system.

The transmission system should be sized to maintain a minimum pressure of 40 psi during normal operating conditions and a minimum pressure of 20 psi during extreme operating conditions. In an urban-type water system, operating pressures of 40-45 psi normally result in customer complaints. For most water systems, pressures above 80 psi are undesirable and should be avoided if possible. The transmission system should also be sized to limit maximum velocity in the pipe to seven (7) feet per second. The maximum pressure in extreme conditions should be limited to 100 psi because high operating pressures will result in increased system maintenance and increased operational cost. Table 7 summarizes the system design criteria developed by Kimley-Horn and the City.

Table 7: City Water System Criteria

City Criteria	
Water Supply	Max Day Demand
Pumping Facilities	Max Day Demand
Elevated Storage	Level 1: Equalization Storage during Max Day Demand Level 2: 3,000 gpm for 4 hours for Fire Protection Level 3: 20% of combined total for Level 1 and Level 2
Transmission System	Normal Conditions = Minimum 40 psi Extreme Conditions = Minimum 20 psi

D. TEXAS COMMISSION ON ENVIRONMENTAL QUALITY CRITERIA

Texas Commission on Environmental Equality (TCEQ) has infrastructure requirements based on the number of connections the City is currently serving. TCEQ criteria was used to determine if the City's current infrastructure is compliant. Table 8 below summarizes the water system criteria.

Table 8: TCEQ Water System Criteria

	TCEQ Criteria >2,500 Connections
Wholesale Water Supply	0.6 gpm / connection
Total Water Storage	200 gal / connection
Total Pumping Capacity	2 gpm / connection or 1,000 gpm or ability to meet peak hourly demands with the largest pump out of service, whichever is less. 0.6 gpm / connection is acceptable in systems that provide 200 gal / connection of elevated storage.
Elevated Storage	100 gal / connection
Transmission System	Normal conditions = minimum 35 psi Extreme conditions = minimum 20 psi

5. CAPITAL IMPROVEMENT WATER ANALYSIS

The Texas Local Government Code, Chapter 395 states that impact fees may only be assessed for projects necessary to serve future development. This means that items needed to serve existing demand are not impact fee eligible. After analyzing the system requirements, no improvements are currently needed to meet the existing development. All improvements identified in this report are necessary to meet future development.

The City's existing infrastructure was analyzed using both City and TCEQ criteria. These criteria are used to evaluate the existing and proposed physical components of the water system. The components of the water system that have been evaluated are:

- Water Supply
- Pumping Capacity
- Storage
- Transmission and Distribution System

A. WATER SUPPLY

The City of Fort Worth delivers treated water to Saginaw at a single delivery point, Longhorn Pump Station. The Longhorn facility stores the water in two (2) one-million-gallon ground storage tanks which is then pumped into the Saginaw system. Saginaw takes the water as needed and pays the City of Fort Worth by volume and demand fees. Demand fees are applied if water is supplied during peak periods. There is one emergency interconnect (at Twin Mills) to the City of Fort Worth's system. If an emergency occurs, Saginaw can lose its pumping and/or storage capabilities and still be supplied via the emergency interconnect. The existing Fort Worth Longhorn meter station has a capacity of 5,500 gpm. Table 9 provides the required water supply based on both City and TCEQ criteria. As you can see, the City of Fort Worth meter capacity will need to be upsized before the year 2030. It is Kimley-Horn's recommendation that the City of Fort Worth meter be upsized to 8,500 gpm to meet future demands.

Table 9: Build Out Water Supply

	# of Connections	City Requirement 100% of Maximum Day Demand (GPM)	TCEQ Requirement (0.6 gpm / connection) (GPM)	Provided Water Supply (GPM)
2020 Connections	8,052	4,244	4,831	5,500
2030 Connections	9,276	5,433	5,566	8,500
2038 (Build Out) Connections	10,500	6,616	6,300	8,500

B. PUMPING FACILITIES

Pumping capacities must provide the maximum day demand required by the water system or the suggested capacities established by the TCEQ. In 2008, the station was upgraded to a peak and firm capacity of 10,833 gpm and 6,805 gpm, respectively. The Jarvis Road 1.5-million-gallon elevated storage tank was constructed in 2006. The Jarvis Road elevated storage tank and Park Center elevated storage tank provide sufficient elevated storage to qualify for a pumping requirement reduction. TCEQ requires 0.6 gpm per connection for this scenario. The City meets the specified City and TCEQ pumping requirement for ultimate conditions shown in Table 10

Table 10: Build Out Pumping Facilities

	# of Connections	TCEQ Requirement (0.6 gpm / connection) (GPM)	City Requirement to Meet Maximum Day Demand (GPM)	Provided Pumping Capacity (GPM)
2020 Connections	8,052	4,831	4,244	10,833
2030 Connections	9,276	5,566	5,433	10,833
2038 (Build Out) Connections	10,500	6,300	6,616	10,833

C. ELEVATED STORAGE

The City currently has 2.25 million gallons of elevated storage provided by the Jarvis Road (1.5 MG) and Park Center (0.75 MG) ESTs. Based on the current growth projections, the City has adequate elevated storage for the build out condition shown in Table 11.

Table 11: Build Out Elevated Storage

	# of Connections	*TCEQ Requirement (200 gal / connection) (MG)	City Requirement (Levels 1,2 and 3 combined) (MG)	Existing Elevated Storage (MG)
2020 Connections	8,052	1.61	0.90	2.25
2030 Connections	9,276	1.86	1.16	2.25
2038 (Build Out) Connections	10,500	2.10	1.59	2.25
*If 200 gal / connection of elevated storage is provided, then the pumping capacity required is reduced from 2 gpm / connection to 0.6 gpm / connection.				

D. GROUND STORAGE

TCEQ doesn't provide any requirements for ground storage, but they do require that 200 gallons per connection is provided of total storage which includes elevated storage. The City is able to provide 200 gallons of storage until build out by elevated storage alone. Therefore, no ground storage improvements are required at this time.

E. TRANSMISSION AND DISTRIBUTION SYSTEM

The existing transmission system is adequately sized to maintain a minimum pressure of 45 psi during normal operating conditions and a minimum pressure of 20 psi during extreme operating conditions. All proposed transmission and distribution improvements are to provide future developments with water service and acceptable pressures.

6. WATER IMPACT FEE CAPITAL IMPROVEMENTS PLAN

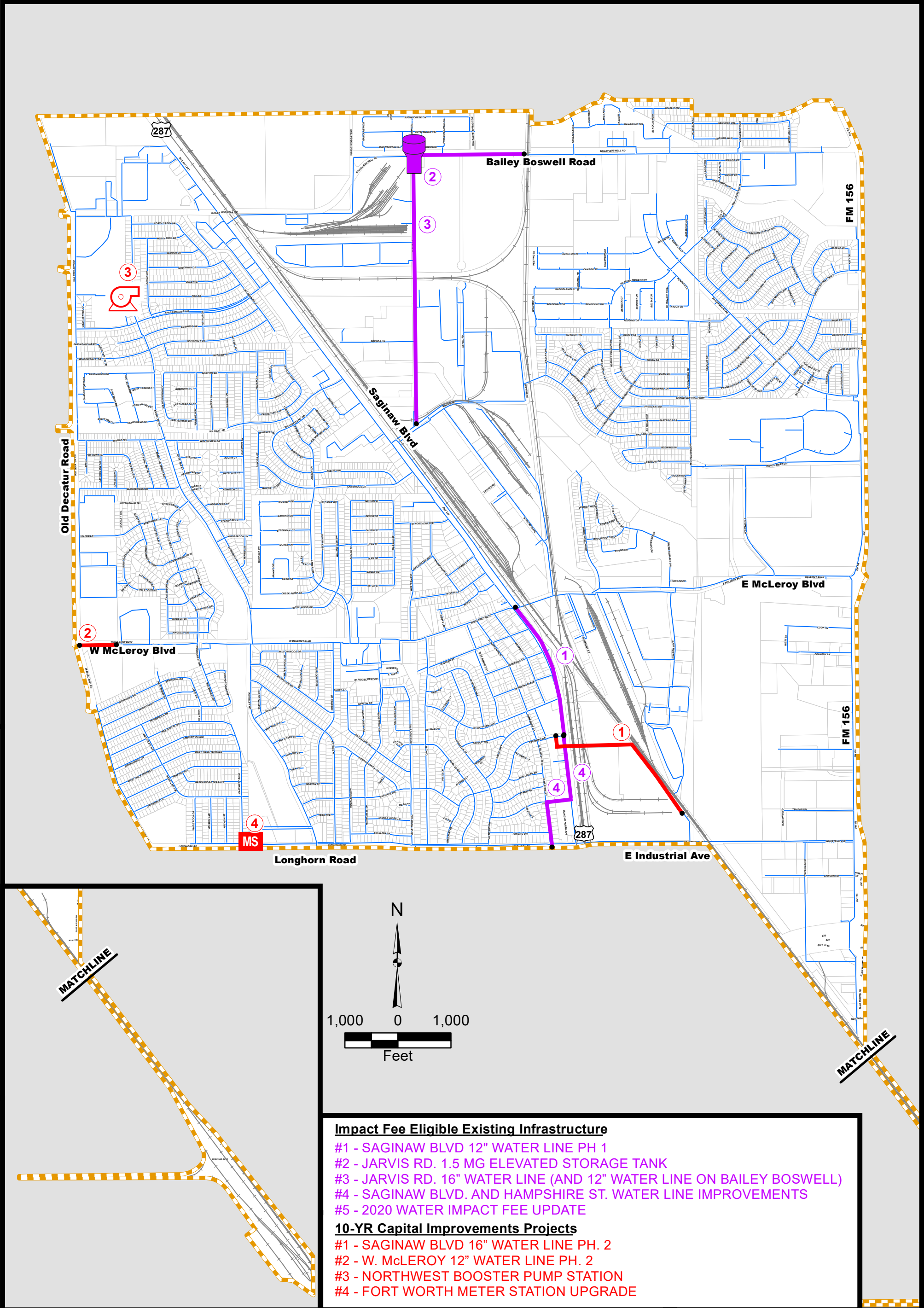
The Water CIP provides the City with a logical strategy for upgrading and expanding its water distribution system to accommodate future growth.

Five (5) existing and four (4) proposed projects identified in the Water CIP are determined eligible for recoverable cost through impact fee over the next 10 years. The total cost of these projects is \$6,412,738. The projected total recoverable through impact fees is \$2,297,363. After the credit reduction calculation is complete \$1,148,682 is recoverable through impact fees serving the 10-year system needs.

These capital improvements projects are shown in Table 12. Further information about each of these projects is shown in Figure 3 – Impact Fee Capital Improvement Plan.

Table 12: City of Saginaw Water Impact Fee Capital Improvements, Project Costs, And 10-Year Recoverable Cost

Project Number	Description	2020 Required Capacity (Percent Utilization)	2030 Required Capacity (Percent Utilization)	2020-2030 Required Capacity (Percent Utilization)	2030 Projected Recoverable Cost	Total Project Cost
Existing						
1	SAGINAW BLVD 12" WATER LINE PH. 1	64%	82%	18%	\$95,148	\$529,614
2	JARVIS RD. 1.5 MG ELEVATED STORAGE TANK	77%	88%	12%	\$282,290	\$2,421,600
3	JARVIS RD. 16" WATER LINE (AND 12" WATER LINE ON BAILEY BOSWELL)	64%	82%	18%	\$111,807	\$622,339
4	SAGINAW BLVD. AND HAMPSHIRE ST. WATER LINE IMPROVEMENTS	64%	82%	18%	\$121,135	\$674,262
5	2020 WATER IMPACT FEE UPDATE	0%	100%	100%	\$15,500	\$15,500
Existing Subtotal					\$625,880	\$4,263,315
Proposed						
1	SAGINAW BLVD 16" WATER LINE PH. 2	0%	82%	82%	\$912,986	\$1,111,923
2	W. McLEROY 12" WATER LINE PH. 2	0%	82%	82%	\$266,854	\$325,000
3	NORTHWEST BOOSTER PUMP STATION	0%	100%	100%	\$462,500	\$462,500
4	FORT WORTH METER STATION UPGRADE	77%	88%	12%	\$29,143	\$250,000
Proposed Subtotal					\$1,671,483	\$2,149,423
Total					\$2,297,363	\$6,412,738



Impact Fee Eligible Existing Infrastructure

- #1 - SAGINAW BLVD 12" WATER LINE PH 1
- #2 - JARVIS RD. 1.5 MG ELEVATED STORAGE TANK
- #3 - JARVIS RD. 16" WATER LINE (AND 12" WATER LINE ON BAILEY BOSWELL)
- #4 - SAGINAW BLVD. AND HAMPSHIRE ST. WATER LINE IMPROVEMENTS
- #5 - 2020 WATER IMPACT FEE UPDATE

10-YR Capital Improvements Projects

- #1 - SAGINAW BLVD 16" WATER LINE PH. 2
- #2 - W. McLEROY 12" WATER LINE PH. 2
- #3 - NORTHWEST BOOSTER PUMP STATION
- #4 - FORT WORTH METER STATION UPGRADE

A. WATER IMPACT FEE CALCULATION

Chapter 395 of the Local Government Code defines a service unit as follows, “Service Unit” means a standardized measure of consumption attributable to an individual unit of development calculated in accordance with generally accepted engineering or planning standards and based on historical data and trends applicable to the political subdivision in which the individual unit of development is located during the previous 10 years. Therefore, the City of Saginaw defines a service unit based on historical water usage over the past 10 years as compared to the estimated residential units. The residential unit is the development type that predominately uses a 3/4” meter. The measure of consumption per service unit is based on a 3/4” meter and the data shown in Table 13.

Table 13: Service Unit Consumption Calculation

Year	Population	Residential Units (3 persons/unit)	Water Usage Average Day Demand (MGD)	Consumption per Service Unit (GPD)
2010	19,500	6,500	2.79	429
2011	19,850	6,617	3.22	486
2012	19,995	6,665	3.04	456
2013	20,140	6,713	2.83	421
2014	20,370	6,790	2.97	437
2015	20,480	6,827	2.76	405
2016	20,740	6,913	2.77	401
2017	21,320	7,107	2.82	397
2018	21,730	7,243	2.97	410
2019	22,380	7,460	3.13	420
Average Consumption per Service Unit				426

B. ADDITIONAL SERVICE UNITS AND WATER IMPACT FEE CALCULATION

Based on the City’s 10-year growth projections and the resulting water demand projections, water service will be required for an additional 2,165 service units. The calculation is as follows:

A service unit, which is a unit of development that consumes approximately 426 gallons per day (GPD), is a typical residential connection that uses a 3/4” meter. Table 14 outlines the future water demand projections and its relationship to the additional service units projected for the next 10-years.

Table 14: 10-Year Additional Service Units Calculation

Year	Average Day Demand (MGD)	Service Unit Demand (GPD)	Service Units
2020	3.29	426	7,730
2030	4.22	426	9,895
10-year Additional Service Units			2,165

Impact fee law allows for a credit calculation to credit back the development community based on the utility revenues or ad valorem taxes that are allocated for paying a portion of future capital improvements. The intent of this credit is to prevent the City from double charging development for future capital improvements via impact fees and utility rates. If the city chooses not to do a financial analysis to determine the credit value they are required by law to reduce the recoverable cost by 50 percent. The city has chosen the latter. Therefore, the maximum recoverable cost for impact fee shown below is 50 percent of the Pre-Credit Recoverable Cost.

Table 15 lists a breakdown of the 10-year recoverable costs and the associated impact fee per service unit.

Table 15: 10-Year Recoverable Cost Breakdown

Recoverable Impact Fee CIP Costs	\$ 2,297,363.00
Credit for Utility Revenues (50% credit)	\$ 1,148,682.00
Maximum Recoverable Cost for Impact Fee	\$ 1,148,682.00

$$\text{Impact fee per service unit} = \frac{\text{10-year recoverable costs}}{\text{10-year additional service units}}$$

$$\text{Impact fee per service unit} = \frac{\$1,148,682}{2,165}$$

$$\text{Impact fee per service unit} = \underline{\$531}$$

Therefore, the maximum assessable impact fee per service unit is \$531.

For a development that requires a different size meter, a service unit equivalent is established at a multiplier based on its capacity with respect to the 3/4" meter. The maximum impact fee that could be assessed for other meter sizes is based on the value shown on Table 16, Service Unit Equivalency Table for Commonly Used Meters.

Table 16: Maximum Water Impact Fee for Commonly Used Meters

Meter Size/Type	Service Unit Equivalent	Maximum Assessable Impact Fee (\$)
3/4" displacement	1.0	\$531
1" displacement	1.7	\$903
1-1/2" displacement	3.3	\$1,753
2" displacement	5.3	\$2,815
2" compound	5.3	\$2,815
2" turbine	5.3	\$2,815
3" compound	11.7	\$6,213
3" turbine	11.7	\$6,213
4" compound	20.0	\$10,620
4" turbine	21.0	\$11,151
6" compound	45.0	\$23,895
6" turbine	43.3	\$22,993
8" compound	53.3	\$28,303
8" turbine	93.3	\$49,543
10" turbine	140.0	\$74,340
Data Sources: American Water Works Association (AWWA) C-700-15, C-701-15 and C-702-15.		

7. CONCLUSIONS AND RECOMMENDATIONS

It will be possible for Saginaw to assess and collect impact fees to recover capital expenditures associated with water system improvements.

The City of Saginaw is required to assess City of Fort Worth impact fees as part of the total impact fees. Table 17 presents the maximum Saginaw impact fees, City of Fort Worth impact fees, and the maximum impact fee Saginaw may assess for water.

This report establishes the maximum allowable impact fees which could be assessed by the City of Saginaw. It is intended to serve as a guide to assessing impact fees pertaining to the water distribution system based on future growth. Following the public hearing process, the City Council may establish an amount to be assessed (if any) up to this maximum.

The next steps will be for the development community and the City's Capital Improvement Advisory Committee (CIAC) to receive the impact fee study, to provide questions and comments to the City staff and then ultimately, to submit comments to the City Council.

The steps that are required of the City Council are to establish and advertise the public hearing date, make the impact fee report available to the public, hold a public hearing, make a policy decision on the Actual Impact Fee to collect, and to pass an impact fee ordinance to include the Maximum Impact Fee and the Actual Impact Fee to be collected.

Table 17: Maximum Assessable Impact Fee Summary

Size	Maximum Assessable Water Impact Fee (\$)		
	Fort Worth	Saginaw	Total*
3/4" displacement	\$2,637	\$531	\$3,168
1" displacement	\$4,396	\$903	\$5,299
1-1/2" displacement	\$8,791	\$1,753	\$10,544
2" displacement	\$14,066	\$2,815	\$16,881
2" compound	\$14,066	\$2,815	\$16,881
2" turbine	\$14,066	\$2,815	\$16,881
3" compound	\$38,242	\$6,213	\$44,455
3" turbine	\$38,242	\$6,213	\$44,455
4" compound	\$65,934	\$10,620	\$76,554
4" turbine	\$65,934	\$11,151	\$77,085
6" compound	\$140,660	\$23,895	\$164,555
6" turbine	\$140,660	\$22,993	\$163,653
8" compound	\$246,155	\$28,303	\$274,458
8" turbine	\$246,155	\$49,543	\$295,698
10" turbine	\$369,233	\$74,340	\$443,573

*Total includes current City of Fort Worth Impact Fees.