

Town of Lakewood Village, Texas

Water and Wastewater Impact Fee Report for 2017

October 2017



Prepared for:

Town of Lakewood Village
100 Highridge Drive
Little Elm, TX 75068

Prepared by:

Kimley»Horn

Kimley-Horn and Associates, Inc.
106 West Louisiana St.
McKinney, TX 75069

Phone: 469 301 2580

TBPE Firm Registration Number: F-928

Project Number: 064487100

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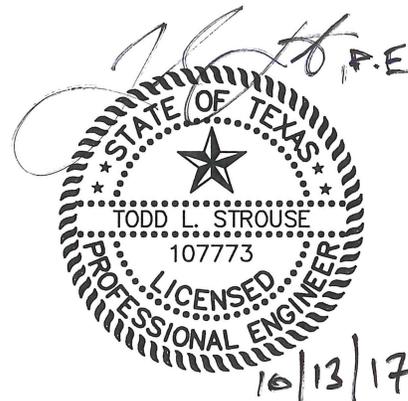




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Executive Summary

This study was performed to develop the Impact Fees for the Town of Lakewood Village's Water and Wastewater System Impact Fees. Water and wastewater system analysis and a Capital Improvements Plan (CIP) list are important tools for facilitating orderly growth of the water and wastewater system and for providing adequate facilities that promote economic development in the Town of Lakewood Village. The implementation of an impact fee is a way to shift a portion of the burden of paying for new facilities onto new development.

Water and sewer impact fees were formally adopted by the Town of Lakewood Village Town Council on November 10th, 2016. Since the adoption of these fees, the Town has requested that Kimley-Horn update the land use assumptions and CIP projects that were identified in the October 2016 report. The following report details the updated land use assumptions and CIP projects.

Water

Elements of the water system, including storage facilities, pumping facilities, water wells, and the distribution network itself, were evaluated against industry standards as outlined in the Design Criteria section of this report. Information related to the growth of the Town was obtained from the Town.

Water system improvements necessary to serve 10-year (2027) and ultimate system needs were evaluated. Typically, infrastructure improvements are sized beyond the 10-year requirements; however, Texas' impact fee law (Chapter 395) only allows recovery of costs to serve the 10-year planning period. The Town of Lakewood Village's Impact Fee Capital Improvements Plan recoverable cost total is \$1,990,270. After a 50% reduction is applied, \$995,135 is recoverable through impact fees serving the 10-year system needs.

Wastewater

Elements of the wastewater system, including lift stations, the wastewater treatment plant, force mains, and the collection network itself were evaluated against industry standards as outlined in the Design Criteria section of this report. Information related to the growth of the Town and the service areas that will potentially be served was obtained from discussions with the Town and is included in the Land Use assumptions section of this report.

Wastewater system improvements necessary to serve 10-year (2026) needs were evaluated. The Town of Lakewood Village's Impact Fee Capital Improvements Plan recoverable cost total is \$825,250. After the 50% reduction calculation is complete, \$412,625 is recoverable through impact fees serving the 10-year system needs.

Water and Wastewater Impact Fees

The impact fee law 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 Town of Lakewood Village defines a service unit as a unit of development that consumes the amount of water requiring a standard 5/8"x3/4" meter. 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 5/8"x3/4" meter. The equivalency factor and associated impact fee by meter size is shown in Table 1.1.



Based on the Town's 10-year growth projections and the associated demand (consumption) values, 148 additional service units will need water and wastewater service by the year 2027. Based on the additional service units and the recoverable capital improvements plans, the Town may assess a maximum water impact fee of \$6,724 per service unit and a maximum wastewater impact fee of \$2,788 per service unit.

Table 1.1 Maximum Assessable Water Impact Fee for Commonly Used Meters

Meter Size	Maximum Continuous Operating Capacity (gpm)**	Service Unit Equivalent	Maximum Assessable Fee Water	Maximum Assessable Fee Wastewater
5/8"x 3/4" PD	10	1	\$6,724	\$2,788
3/4" PD	15	1.5	\$10,086	\$4,182
1" PD	25	2.5	\$16,810	\$6,970
1 1/2" PD	50	5	\$33,620	\$13,940
2" PD	80	8	\$53,792	\$22,304
2" Compound	80	8	\$53,792	\$22,304
2" Turbine	160	16	\$107,584	\$44,608
3" Compound	175	17.5	\$117,670	\$48,790
3" Turbine	350	35	\$235,340	\$97,580
4" Compound	300	30	\$201,720	\$83,640
4" Turbine	650	65	\$437,060	\$181,220
6" Compound	675	67.5	\$453,870	\$188,190
6" Turbine	1,400	140	\$941,360	\$390,320
8" Compound	900	90	\$605,160	\$250,920
8" Turbine	2,400	240	\$1,613,760	\$669,120
10" Turbine	3,500	350	\$2,353,400	\$975,800

*PD = Positive Displacement Meter (typical residential meter)

**Operating capacities obtained from American Water Works Associate (AWWA) C700-15, C701-15, and C702-15. Turbine and Compound meter flows are based on Class II (in-line) meters.



1.0 Introduction

The Town of Lakewood Village (Town) retained the services of Kimley-Horn and Associates, Inc. (Kimley-Horn) for the purpose of developing the impact fees for water and wastewater system improvements required to serve new development. The Town currently has impact fees that were adopted in November of 2016. This report is an update to the fees that were adopted in 2016. Proposed fees were calculated in accordance with Chapter 395 of the *Local Government Code* (impact fees), which requires a political subdivision imposing impact fees to update the land-use assumptions and capital improvements plan upon which the fees are calculated.

The purpose of this report is to satisfy the requirements of the law and provide the Town with an updated impact fee capital improvements plan and associated impact fees.

For convenience and reference, the following is excerpted from Chapter 395 of the code:

- (a) The political subdivision shall use qualified professionals to prepare the capital improvements plan and to calculate the impact fee. The capital improvements plan must contain specific enumeration of the following items:
 - (1) a description of the existing capital improvements within the service area and the costs to upgrade, update, improve, expand, or replace the improvements to meet existing needs and usage and stricter safety, efficiency, environmental, or regulatory standards, which shall be prepared by a qualified professional engineer licensed to perform such professional engineering services in this state;
 - (2) an analysis of the total capacity, the level of current usage, and commitments for usage of capacity of the existing capital improvements, which shall be prepared by a qualified professional engineer licensed to perform such professional engineering services in this state;
 - (3) a description of all or the parts of the capital improvements or facility expansions and their costs necessitated by and attributable to new development in the service area based on the approved land use assumptions, which shall be prepared by a qualified professional engineer licensed to perform such professional engineering services in this state;
 - (4) a definitive table establishing the specific level or quantity of use, consumption, generation, or discharge of a service unit for each category of capital improvements or facility expansions and an equivalency or conversion table establishing the ratio of a service unit to various types of land uses, including but not limited to residential, commercial, and industrial;
 - (5) the total number of projected service units necessitated by and attributable to new development within the service area based on the approved land use assumptions and calculated in accordance with generally accepted engineering or planning criteria;
 - (6) the projected demand for capital improvements or facility expansions required by new service units projected over a reasonable period of time, not to exceed 10 years; and
 - (7) a plan for awarding;



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

The study process was comprised of three tasks:

A. Land Use Assumptions

In order to assess an impact fee, Land Use Assumptions must be developed to provide the basis for population and employment growth projections within a political subdivision. As defined by Chapter 395 of the Texas Local Government Code, these assumptions include a description of changes in land uses, densities, and population in the service area. In addition, these assumptions are useful in assisting the Town of Lakewood Village in determining the need and timing of capital improvements to serve future development. The first task in the study involved identification of current and future land use by category and projections of population within the Town's service area. Kimley-Horn developed the land use assumptions used for the purposes of this study with assistance from Town of Lakewood Village staff. The development of land use assumptions is utilized in:

- Establishing impact fee service areas for water and wastewater;
- Collecting/Determining of population and employment data; and
- Projecting the ten-year population and employment data by service area.

Figure 1.1 shows the Town of Lakewood Village's service areas for water and wastewater.

Growth projections for 2027 were calculated from discussions of future land uses with the Town of Lakewood Village. At this time, single family residential lots are the only planned land use for the Town. There are approximately 160 acres of undeveloped land inside Lakewood Village Town Limits that was assumed will be developed at 1 home per acre over 80% of the total area. An additional 20 homes were assumed to be platted on an existing 13 acre vacant tract of land inside the Town limits. These assumptions were used to determine the number of connections to be added to the Town in the next 10 years. Table 1.2 summarizes the residential 10-year growth projections for water and wastewater within the Town of Lakewood Village from 2017 to 2027.

Table 1.2 Residential 10-Year Growth Projections for the Town of Lakewood Village

Water & Wastewater Land Use Assumptions		
	Residential Population	Residential Connections
2017	711	237
2027	1,155	385

B. Impact Fee Capital Improvements Plan

This task involved developing a list of necessary water and wastewater capital improvements by evaluating current infrastructure capacities and developing future water and wastewater demands. The existing infrastructure



capacities were compared with future demands to identify necessary improvements to the system to accommodate the expected population growth in the 10-year planning window. Capital improvement projects identified for the water system are shown on Figure 2.1 and Figure 3.1 shows capital improvement projects identified for the wastewater system.

C. Impact Fee Analysis and Report

This task included calculating the additional service units, service unit equivalents, and credit reduction. These values were then used to determine the impact fee per service unit and the maximum assessable impact fee by meter size.



SCALE: 1" = 400'
 0 200 400 800

LEGEND

- LAKEWOOD VILLAGE CITY LIMITS ---
- WATER & WASTEWATER CIP SERVICE AREA (LAKEWOOD VILLAGE ETJ BOUNDARY) ---

DATE:	OCTOBER 2017
DESIGN:	SAW
DRAWN:	SAW
CHECKED:	TLS
KHA NO.:	064487100

FIGURE
1.1

WATER & WASTEWATER SERVICE AREA MAP

Town of Lakewood Village Water Impact Fee Update

Kimley»Horn
Texas Board of Professional Engineers Firm Registration Number: F-1928
 Licensed Professional Engineer, State of Texas, License No. 92277-00000

NO.	REVISION	By	Date

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2.0 Water

Water lines identified for the Impact Fee Capital Improvements plan meet or exceed the criteria outlined by chapter 290 of the Texas Administrative Code (Public Drinking Water) and the American Water Works Association (AWWA) requirements for the design and operation of potable water utility systems. The design criteria used to plan for water infrastructure needs are discussed in the following subsection. While the design criteria above and explained in further detail below govern the design of the Town's water system, for the purposes of this report, the water demands were based on current and projected future residential dwelling units. Existing water demands were used in conjunction with projected future dwelling units to determine future infrastructure needs.

A. Design Criteria

Water Transmission Lines

Water transmission lines shall be sized to maintain the following pressure requirements:

- Peak hour demand with a minimum pressure of 35 psi;
- Max day demand plus 1,500 gpm fire flow with a minimum pressure of 20 psi

Storage Tanks

The Texas Commission on Environmental Quality (TCEQ) has established criteria for ground and pressure tank water storage. These criteria address volume requirements only. The layout of the distribution system, location of the storage facilities, and the interaction with the high service pumps and booster pumps affect the amount of storage necessary for the most efficient and reliable operation of the system.

Ground storage serves two functions:

- Equalization for differing feed rates between water supply and pumping output to the system; and
- 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. Suggested storage capacities are established based on several criteria. There are specific requirements of the TCEQ. These criteria are detailed later in this section. Although ground and pressure storage facilities perform separate functions within the system, both are aimed at decreasing the impact of demand fluctuations. Their capacities are established based on knowledge of how demand varies seasonally and daily.

Pressure tank storage serves the purpose of providing 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.

Suggested storage capacities are established by the TCEQ. Adequate operational storage is established by determining the required volume to equalize the daily fluctuations in flow during the maximum day demand, plus the reserve volume required for fire protection.

The minimum requirements for storage, according to Chapter 290 of the Texas Administrative Code, are as follows:

- Total Storage: equal to 200 gallons per connection.
- Pressure Tank Storage: equal to 20 gallons per connection



Pump Stations

Pumping capacity should supply the peak hour demand with sufficient redundancy to allow for the largest pump at the pump station to be out of service. This is known as firm pumping capacity.

Each pump station or pressure plane must have two or more pumps that have a total capacity of 2.0 gpm per connection or have a total capacity of at least 1,000 gpm and the ability to meet peak hour demand with the largest pump out of service, whichever is less. If the system provides elevated storage capacity of 200 gallons per connection, two service pumps with a minimum combined capacity of 0.6 gpm per connection are required.

Water Demand

Water usage data was provided to Kimley-Horn by the Town for 2014 and 2015. The Town was only able to confidently provide historical data for 2014 and 2015. Records prior to 2014 were incomplete and The Town was not comfortable with this data being used for demand projections. Therefore, demand for 2014, the largest of the average day demand, was used to project demand over the next 10 years. Single family residential is the only land use currently planned for the Town. The demand used to project total average demand in the future is 368 gallons per day per dwelling unit.

B. Impact Fee Capital Improvements Plan

Kimley-Horn evaluated the existing water system and developed a list of projects that will be a part of the water Capital Improvements Plan for the Town of Lakewood Village. Each of these projects will be necessary to support the water demands of additional development in the Town. State law only allows cost recovery associated with eligible projects in a 10-year planning window from the time of the impact fee study.

Four (4) projects have been determined to be eligible for recoverable cost through impact fees over the next 10 years. The total of these projects is \$2,589,250. The projected total recoverable amount through impact fees is \$1,990,270. After the credit calculation is completed, \$995,135 is recoverable through impact fees serving the 10-year system needs. These impact fee improvements are listed in Table 2.1 and illustrated in Figure 2.1.



Table 2.1 Water Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost

Proj. #	Description	2017 Required Capacity (Percent Utilization)	2027 Required Capacity (Percent Utilization)	2017-2027 Required Capacity (Percent Utilization)	2027 Projected Recoverable Cost	Total Project Cost
1	Project 1 - (2) 150,000 Gallon Ground Storage Tanks	67%	100%	33%	\$295,020	\$894,000
2	Project 2 - Water Well and Supply Line to Pump Station	0%	100%	49%	\$1,578,000	\$1,578,000
3	Project 3 - Pump Station Upgrade	0%	100%	100%	\$74,000	\$74,000
4	Project 4 - Engineering Services to Adopt Impact Fees	0%	100%	100%	\$43,250	\$43,250
Total					\$1,990,270	\$2,589,250



CIP PROJECT LIST

1. (2) 150,000 GALLON GROUND STORAGE TANKS
2. WATER WELL AND SUPPLY LINE TO PUMP STATION
3. PUMP STATION UPGRADE:
 - (1) - 750 GPM PUMP
 - 12" DUCTILE IRON DISCHARGE HEADER FROM PUMP STATION TO EXISTING 8" MAIN IN HIGHRIDGE DRIVE

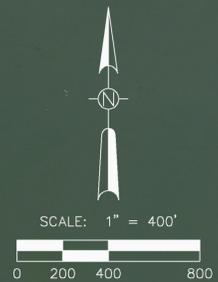
LEGEND

- EXISTING WATER LINE ———
- PROPOSED WATER LINE ———
- LAKEWOOD VILLAGE CITY LIMITS - - - -
- LAKEWOOD VILLAGE ETJ BOUNDARY - - - -
- LAKEWOOD VILLAGE WATER CCN BOUNDARY ———
- CIP PROJECT NUMBER 2
- PROPOSED GROUND STORAGE TANK ●
- PROPOSED PUMP ●
- PROPOSED WELL ●

PROPOSED PUMP STATION

■
 (2)-150,000 GAL
1

●
 (1)-750 GPM
3



**Town of Lakewood Village
Water Impact Fee Update**

**WATER IMPACT
FEE CIP MAP**

DATE:	OCTOBER 2017
DESIGN:	SAW
DRAWN:	SAW
CHECKED:	TLS
KHA NO.:	064487100

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C. Project Descriptions

1. (2) – 150,000 Gallon Ground Storage Tanks

This project will include installation of (2) 150,000 gallon ground storage tanks at the Current Lakewood Village pump station and well area located adjacent to Town Hall. The two existing tanks will be taken out of service and disposed of or sold by the Town.

Project Cost	\$894,000
Recoverable Cost	\$295,020

2. Water Well and Supply Line to Pump Station

This project includes completing a well feasibility study to evaluate the potential groundwater sources, quantities, and regulatory requirements necessary to complete a well capable of providing 400 gpm supply to the Town. This project also includes the drilling, casing, and pump to construct the well. An 8" PVC water line is also included in this project to bring water from the proposed well to the existing ground storage tanks at the pump station.

Project Cost	\$1,578,000
Recoverable Cost	\$1,578,000

3. Pump Station Upgrade

This project will include installation of (1) 750 gallon per minute pump in the existing Lakewood Village pump station. Also included in this project will be an upgrade to the existing pump discharge header to 12" from the pumps to the existing 8" water line on the west side of Highridge Drive.

Project Cost	\$74,000
Recoverable Cost	\$74,000

4. Engineering Services to Adopt Impact Fees

This project includes the professional services fees to generate a CIP list for the Town of Lakewood Village and to determine the maximum allowable impact fee that the Town can charge its citizens by law.

Project Cost	\$43,250
Recoverable Cost	\$43,250

D. 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." The Town of Lakewood Village is only confident in the flow metering data for water consumption for the years 2014 and 2015 due to inaccuracy in prior year's numbers. Therefore, the Town of Lakewood Village defines a service unit based on historical water usage over the past 2 years as compared to the number of residential units. The residential unit is the development type that predominately uses a 5/8"x3/4" meter. The measure of consumption per service unit is based on a 5/8"x3/4" meter and the data is shown in Table 2.2.



Table 2.2 Water Service Unit Consumption Calculation

Year	Residential Units	Water Usage Average Day Demand (gal)	Consumption per Service Unit (gpd)
2014	215	79,147	368
2015	219	72,179	330
Average Consumption per Service Unit			349

Because of limited historical data, per capita demand was increased to 130 gpd based on Kimley-Horn's experience in this area. Assuming 3 people per service unit, the consumption per service unit used for projections was 390 gpd.

Additional Service Units and Water Impact Fee Calculation

Based on the Town's 10-year growth projections and the resulting water demand projections, water service will be required for an additional 148 service units. The calculation is as follows:

- A service unit, which is a unit of development that consumes approximately 390 gallons per day (gpd), is a typical residential connection that uses a 5/8"x3/4" meter. Table 2.3 outlines the future water demand projections and their relationships to the additional service units projected for the next ten years.

Table 2.3 Water 10-year Additional Service Units Calculation

Year	Average Day Demand (gal)	Service Unit Demand (gpd)	Service Units
2016	92,430	390	237
2026	150,150	390	385
10-year Additional Service Units			148

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 to pay for a portion of future capital improvements. The intent of this credit is to prevent the Town from double charging development for future capital improvements via impact fees and utility rates. If the Town 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 Town has chosen not to perform a financial analysis. The maximum recoverable cost for impact fee is shown below.

A breakdown of the 10-year recoverable costs and the associated impact fee per service unit is as follows:

Table 2.4 Water 10-year Recoverable Cost Breakdown

Recoverable Impact Fee CIP Costs	\$1,990,270
50% Reduction in Recoverable Costs	(\$995,135)
Maximum Recoverable Cost for Impact Fee	\$995,135



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

$$\text{Impact fee per service unit} = \frac{\$995,135}{148}$$

$$\text{Impact fee per service unit} = \$6,724$$

Therefore, the maximum assessable water impact fee for the Town per service unit is \$6,724.

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 5/8"x3/4" meter. The maximum impact fee that could be assessed for other meter sizes is based on the value shown in Table 2.5 below.

Table 2.5 Water Service Unit Equivalency Table for Commonly Used Meters

Meter Size	Maximum Continuous Operating Capacity (gpm)**	Service Unit Equivalent	Maximum Assessable Fee Water
5/8"x 3/4" PD	10	1	\$6,724
3/4" PD	15	1.5	\$10,086
1" PD	25	2.5	\$16,810
1 1/2" PD	50	5	\$33,620
2" PD	80	8	\$53,792
2" Compound	80	8	\$53,792
2" Turbine	160	16	\$107,584
3" Compound	175	17.5	\$117,670
3" Turbine	350	35	\$235,340
4" Compound	300	30	\$201,720
4" Turbine	650	65	\$437,060
6" Compound	675	67.5	\$453,870
6" Turbine	1,400	140	\$941,360
8" Compound	900	90	\$605,160
8" Turbine	2,400	240	\$1,613,760
10" Turbine	3,500	350	\$2,353,400

* PD = Positive Displacement Meter (typical residential meter)

** Operating capacities obtained from American Water Works Associate (AWWA) C700-15, C701-15, and C702-15. Turbine and Compound meter flows are based on Class II (in-line) meters.



3.0 Wastewater

Development of the Impact Fee Capital Improvements Plan meet or exceed the criteria outlined by Chapter 217 of the Texas Administrative Code (Design Criteria for Domestic Wastewater Systems). The design criteria used to plan for the wastewater infrastructure needs are discussed in the following subsection. While the design criteria listed above and explained in further detail below govern the design of the Town's wastewater system, for the purposes of this report, the wastewater demands were calculated based on current numbers of connections and assumed GPCD flow rates.

A. Design Criteria

Sewer Lines

The design criteria for sizing sanitary sewer trunk lines or interceptors is based on the TCEQ requirements to contain wet weather design flows with no overflows while maintaining a minimum of 2 feet per second pipe flow velocity and not exceeding a maximum of 8 feet per second pipe flow velocity.

Lift Stations

Pumping Capacity

The design criteria for lift station pumps is based on providing pumping capacity to meet peak wet weather design flows. The firm pumping capacity is defined as the available total pumping capacity with the largest lift station pump out of service.

Wet Well Capacity

The design criteria for lift station wet wells is based on providing adequate volumes to limit pump cycling to once every 10 minutes. Based on this criterion, the required operating volume for each pump can be calculated as follows:

$$V = tQ/4 \text{ where,}$$

t = Maximum pump cycling time = 10 minutes

Q = Lead pump discharge rate in gallons per minute (gpm)

V = Required wet well volume between pump start and stop elevation

Force Mains

The design criteria recommended for force mains is based on providing the required pumping capacity of the lift station at a discharge velocity less than 6 feet per second and a maximum discharge pressure of 100 psi and to allow a minimum of 2 feet per second scouring velocity during a single pump operation.

B. Impact Fee Capital Improvements Plan

As part of the Impact Fee Update Project, Kimley-Horn worked with the Town to develop a CIP project list to provide a logical strategy for upgrading and expanding its wastewater collection system to accommodate future growth, and for addressing existing system deficiencies. State law only allows cost recovery associated with eligible projects in a 10-year planning window from the time of the impact fee study. The following details the projects and the eligible recoverable cost.

Two (2) projects are determined to eligible for recoverable cost through impact fee over the next 10 years. The Town of Lakewood Village's Impact Fee Capital Improvements Plan recoverable cost total is \$825,250. After the 50%



reduction is completed, \$412,625 is recoverable through impact fees serving the 10-year system needs. These impact fee improvements are listed in Table 3.1 and illustrated in Figure 3.1.

Table 3.1 Wastewater Impact Fee Capital Improvements Plan Costs

Proj. #	Description	2017 Required Capacity (Percent Utilization)	2027 Required Capacity (Percent Utilization)	2017-2027 Required Capacity (Percent Utilization)	2027 Projected Recoverable Cost	Total Project Cost
1	Project 1 - Existing Wastewater Treatment Plant Expansion to 0.2 MGD Capacity	0%	100%	100%	\$795,000	\$795,000
2	Project 2 - Engineering Services to Update Impact Fees	0%	100%	100%	\$30,250	\$30,250
	Total				\$825,250	\$825,250

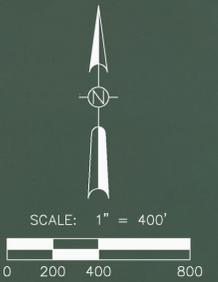


CIP PROJECT LIST

1. EXISTING WASTEWATER TREATMENT PLANT EXPANSION TO 0.2 MGD CAPACITY

LEGEND

- EXISTING FORCE MAIN ---
- EXISTING SEWER LINE —
- LAKEWOOD VILLAGE CITY LIMITS ---
- LAKEWOOD VILLAGE ETJ BOUNDARY ---
- LAKEWOOD VILLAGE SEWER CCA BOUNDARY ---
- CIP PROJECT NUMBER ①
- EXISTING LIFT STATION ▲
- EXISTING TREATMENT PLANT ■
- FUTURE WASTEWATER TREATMENT PLANT EXPANSION ■
- EXISTING MANHOLE ●



DATE:	SEPTEMBER 2017
DESIGN:	SAW
DRAWN:	DGD
CHECKED:	TLS
KHA NO.:	064487100

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C. Project Descriptions

- Existing Wastewater Treatment Plant Expansion to 0.2 MGD Capacity
 A parallel treatment train similar to the existing treatment plant is proposed to bring the capacity of the plant from 0.1 MGD to 0.2 MGD.

Project Cost	\$795,000
Recoverable Cost	\$795,000

- Engineering Services to Update Impact Fees
 This project includes engineering fees incurred by the Town to develop wastewater impact fees.

Project Cost	\$30,250
Recoverable Cost	\$30,250

D. Wastewater Impact Fee Calculation

Chapter 395 of the Local Government Code defines a service unit as "...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." For the purpose of this study, a service unit is based on assumed wastewater discharge based on the land use and the number of wastewater connections since no flow monitoring data is available. The residential unit is the development type that predominately uses a 3/4-inch water meter, which directly correlates to the representative return flow as wastewater from the same residential unit.

Table 3.2 Wastewater Service Unit Consumption Calculation

Year	Residential Units	Water Usage Average Day Demand (gal)	Consumption per Service Unit (gpd)
2012	198	35,000	177
2013	206	42,000	204
2014	215	54,000	251
2015	219	57,000	260
Average Consumption per Service Unit			223

Because of limited historical data, an industry standard of 100 gallons per capita day and 3 persons / single family dwelling unit was assumed to project future wastewater flow rates.

Additional Service Units and Water Impact Fee Calculation

Based on the City's 10-year growth projections and the resulting wastewater flow projections, wastewater service will be required for an additional 148 service units. The calculation is as follows:



- A service unit, which is a unit of development that discharges approximately 300 gallons per day (GPD), is a typical residential connection that uses a 5/8 X 3/4-inch meter.

Table 3.3 outlines the future wastewater discharge projections and its relationship to the additional service units projected for the next 10-years.

Table 3.3 Wastewater 10-year Additional Service Unit Calculation

Year	Average Day Flow (MGD)	Service Unit Demand (GPD)	Service Units
2017	0.07	300	237
2027	0.12	300	385
10-year Additional Service Units			148

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 Town from double charging development for future capital improvements via impact fees and utility rates. If the Town chooses not to pursue a financial analysis to determine the credit value, to the Chapter 395 law requires that they reduce the recoverable cost by 50 percent. The Town has chosen not to calculate the credit value. Therefore, the maximum recoverable cost for impact fee shown below is 50 percent of the recoverable cost for impact fee CIP with debt service.

A breakdown of the 10-year recoverable costs and the associated impact fee per service unit is as follows:

Table 3.4 Wastewater 10-year Recoverable Cost Breakdown

Recoverable Impact Fee CIP Costs	\$ 825,250
50 Percent Reduction	\$ (412,625)
Maximum Recoverable Cost for Impact Fee	\$ 412,625

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

$$\text{Impact fee per service unit} = \frac{\$412,625}{148}$$

$$\text{Impact fee per service unit} = \$2,788$$

Therefore, the maximum assessable impact fee per service unit is \$2,788.

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 5/8" x 3/4-inch meter. The maximum impact fee that could be assessed for other meter sizes is based on the value shown on Table 3.5, Service Unit Equivalency Table for Commonly Used Meters.



Table 3.5 Wastewater Service Unit Equivalency Table for Commonly Used Meters

Meter Size	Maximum Continuous Operating Capacity (gpm)**	Service Unit Equivalent	Maximum Assessable Fee Wastewater
5/8"x 3/4" PD	10	1	\$2,788
3/4" PD	15	1.5	\$4,182
1" PD	25	2.5	\$6,970
1 1/2" PD	50	5	\$13,940
2" PD	80	8	\$22,304
2" Compound	80	8	\$22,304
2" Turbine	160	16	\$44,608
3" Compound	175	17.5	\$48,790
3" Turbine	350	35	\$97,580
4" Compound	300	30	\$83,640
4" Turbine	650	65	\$181,220
6" Compound	675	67.5	\$188,190
6" Turbine	1,400	140	\$390,320
8" Compound	900	90	\$250,920
8" Turbine	2,400	240	\$669,120
10" Turbine	3,500	350	\$975,800



Appendix A: Construction Cost Projections

Client: Town of Lakewood Village	Date: 9/28/2017
Project: Impact Fee Updates	Prepared By: SAW
KHA No.: 064487100	Checked By: TLS

Title: Project 1 - (2) 150,000 Gallon Ground Storage Tanks	Sheet: 1
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Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$20,000.00	\$60,000
2	6" Water Line	200	LF	\$75.00	\$15,000
3	6" Gate Valve	4	EA	\$3,000.00	\$12,000
4	150,000 Gallon AWWA D100 Welded Steel Ground Storage Tank	2	EA	\$210,000.00	\$420,000
5	Foundation	2	EA	\$90,000.00	\$180,000

Basis for Cost Projection: <input checked="" type="checkbox"/> No Design <input type="checkbox"/> Preliminary <input type="checkbox"/> Final Design	Subtotal:		\$687,000
	Engineering/Surveying/CCA	15	\$103,050
	Conting. (%,+/-)	15	\$103,050
	Total:		\$894,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable construction costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: Town of Lakewood Village	Date: 9/28/2017
Project: Impact Fee Updates	Prepared By: SAW
KHA No.: 064487100	Checked By: TLS

Title: Project 2 - Water Well and Supply Line to Pump Station	Sheet: 2
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Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization / Bonds / Insurance / Well Test Hole	1	LS	\$250,000.00	\$250,000
2	Well Feasibility Study	1	LS	\$23,000.00	\$23,000
3	Water Well	1	LS	\$780,000.00	\$780,000
4	Land Acquisition	1	LS	\$10,000.00	\$10,000
5	8" PVC Water Line	2,600	LF	\$75.00	\$195,000
6	8" Gate Valve	2	EA	\$4,000.00	\$8,000
7	Concrete Repair	70	SY	\$80.00	\$5,600
8	Trench Safety	2,600	LF	\$2.00	\$5,200
9	Testing	1	LS	\$5,000.00	\$5,000

Basis for Cost Projection: <input checked="" type="checkbox"/> No Design <input type="checkbox"/> Preliminary <input type="checkbox"/> Final Design	Subtotal:	\$1,281,800
	Engineering/Surveying/CCA	\$107,000
	Conting. (%,+/-) 15	\$189,000
	Total:	\$1,578,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable construction costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: Town of Lakewood Village	Date: 9/28/2017
Project: Impact Fee Updates	Prepared By: SAW
KHA No.: 064487100	Checked By: TLS

Title: Project 3 - Pump Station Upgrade	Sheet: 3
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Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$5,000.00	\$5,000
2	750 GPM Pump & 40 HP Motor	1	LS	\$20,000.00	\$20,000
3	12" Ductile Iron Water Line	90	LF	\$130.00	\$11,700
4	12" Gate Valve	1	EA	\$7,000.00	\$7,000
5	Couplings and Fittings	1	LS	\$5,000.00	\$5,000
6	Connect to Existing Water Line	1	EA	\$5,000.00	\$5,000
7	Concrete Pavement Repair	12	SY	\$80.00	\$978
8	Misc. Electrical	1	LS	\$5,000.00	\$5,000
Basis for Cost Projection:					
<input checked="" type="checkbox"/> No Design <input type="checkbox"/> Preliminary <input type="checkbox"/> Final Design					
Subtotal:					\$59,678
Engineering/Surveying/CCA				15	\$5,000
Conting. (%,+/-)				15	\$8,952
Total:					\$74,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable construction costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: Town of Lakewood Village	Date: 9/28/2017
Project: Impact Fee Updates	Prepared By: SAW
KHA No.: 064487100	Checked By: TLS

Title: Project 4 - Engineering Services to Adopt Impact Fees	Sheet: 4
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Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Engineering Services to Update Impact Fees	1	LS	\$43,250.00	\$43,250
Basis for Cost Projection:				Subtotal:	\$43,250
<input checked="" type="checkbox"/> No Design <input type="checkbox"/> Preliminary <input type="checkbox"/> Final Design				Total:	\$43,250

Client: Town of Lakewood Village	Date: 9/28/2017
Project: Impact Fee Updates	Prepared By: SAW
KHA No.: 064487102	Checked By: TLS

Title: Project 1 - Existing Wastewater Treatment Plant Expansion	Sheet: 1
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Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$56,000	\$56,000
2	Package Wastewater Treatment Plant	1	LS	\$400,000	\$400,000
3	Site Work (Yard Piping, Plumbing, Commission, etc.)	1	LS	\$155,000	\$155,000

Basis for Cost Projection: <input checked="" type="checkbox"/> No Design <input type="checkbox"/> Preliminary <input type="checkbox"/> Final Design	Subtotal:		\$611,000
	Engineering/Surveying/CCA	15	\$91,650
	Conting. (%,+/-)	15	\$91,650
	Total:		\$795,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable construction costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: Town of Lakewood Village	Date: 9/28/2017
Project: Impact Fee Updates	Prepared By: SAW
KHA No.: 064487102	Checked By: TLS

Title: Project 2 - Engineering Services to Update Impact Fees	Sheet: 2
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Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Engineering Services to Update Impact Fees	1	LS	\$30,250.00	\$30,250

Basis for Cost Projection:

- No Design
- Preliminary
- Final Design

Subtotal:	\$30,250
Total:	\$30,250