



# 2019 Water Usage Analysis



## Introduction

Willdan recently completed a detailed analysis and recommendation concerning changes in rates being charged for water service from the City of League City. After the presentations to the City Council, there were some questions raised about details that were not available in the report. City staff has performed an analysis using data from 2019 (most of which was not available to Willdan) to provide responses to these questions.

This report presents those results. Some caveats need to be kept in mind in interpreting these results.

- Only water data is addressed in this analysis, no sewer data.
- Data used in this analysis was drawn from two systems. January and February were taken from the old AS400 system. April through December were taken from the new Munis system. During March, some data was in one system and some in the other, so the March data used in the analysis was an average of the data from February and April.

## The Data

The data extracted from the two systems was merged into a single set for analysis. The key parameters examined were:

- **Account** – There is a one to one relationship between water meters and accounts.
- **Size** – This is the size of each meter. The following meter sizes occur in the data: 0.625 in (5/8 in), 0.75 in (3/4 in), 1 in, 1.5 in, 2 in, 3 in, 4 in, 6 in, 8 in. Note that when the conversion was made one of the anomalies is that a small number of meter sizes did not convert, so they appear as Not Recorded (NR) size. This will be remedied over time.
- **Type** – Each account was characterized into one of the following categories:
  - Residential
  - Commercial
  - Multi Unit
  - School
  - Landscape
  - Effluent
  - City
  - City Landscape
- **Usage** – This data is stored as the number of thousands of gallons of water used per month.
- **Charging Tier** – Each charging category (Residential, Commercial, Landscape) has a tiered charging structure. Commercial charging tiers apply to types Commercial, Multi Unit, City, and School type accounts. Landscape charging tiers apply to Landscape and City Landscape type accounts. Effluent types are charged a separate flat rate. These usage tiers for the analysis were coded using the following scheme:
  - R0: Residential use of less than 1,000 gals usage, charged only the base rate
  - R1: Residential use between 1,000 gals and 3,000 gals
  - R2: Residential use between 4,000 gals and 10,000 gals
  - R3: Residential use between 11,000 gals and 25,000 gals
  - R4: Residential use greater than 25,000 gals
  - C0: Commercial use less than 1,000 gals
  - C1: Commercial use between 1,000 gals and 3,000 gals
  - C2: Commercial use greater than 3,000 gals
  - L0: Landscape use less than 1,000 gals
  - L1: Landscape use greater than 1,000 gals
  - EF: Effluent flat rate on all use
- **Billed Amount** – This is the amount that was billed for the usage on each meter. It includes the base amount and any tier charges.

## The Analysis

Once the data was extracted from the two systems and combined, various slices were taken through the data to evaluate the important patterns related to the questions. The summary results of this analysis are shown in the following tables.

## The Results

### 2019 Average Number of Meters by Meter Size by Type

Meter Size	Type								Total
	City	Commercial	Multi Unit	School	Landscape	City Landscape	Residential	Effluent	
0.625							2		2
0.75	10	237	19	1	134		11,023	1	11,425
1	19	383	7	4	157	3	21,465		22,038
1.5	7	111	12		48		5		183
2	18	241	100	14	218		6		597
3	4	8	4	7	34		1		58
4		24	3	7	6				40
6	1	4	5	5	4				19
8	4	209	32	4	1		2	1	253
NR		27	6				2		35
<b>Total</b>	<b>63</b>	<b>1,244</b>	<b>188</b>	<b>42</b>	<b>602</b>	<b>3</b>	<b>32,506</b>	<b>2</b>	<b>34,650</b>

### 2019 Averages per Charging Tier

Average	Commercial			Landscape		Residential					Total
	<1,000 g	1,000 – 3,000 g	>3,000 g	<1,000 g	>1,000 g	<1,000 g	1,000 – 3,000 g	4,000 – 10,000 g	11,000 – 25,000 g	>25,000 g	
Meter Count	227	282	1,031	293	365	1,060	9,628	18,151	3,326	326	34,643
	14.8%	18.3%	66.9%	44.6%	55.4%	3.3%	29.6%	55.9%	10.2%	1.0%	
Total Usage (1000 g)	0	406	74,602	0	22,525	0	22,072	108,289	48,931	13,427	290,252
	0.0%	0.5%	99.5%	0.0%	100.0%	0.0%	11.5%	56.2%	25.4%	7.0%	
Usage per	0.0	1.4	72.3	0.0	61.7	0.0	2.3	6.0	14.7	41.2	8.4
Total Billed Amount	\$1,063	\$2,503	\$394,365	\$9,386	\$155,910	\$5,083	\$62,334	\$408,398	\$250,774	\$78,247	\$1,365,217
	0.3%	0.6%	99.1%	5.7%	94.3%	0.6%	7.7%	50.7%	31.2%	9.7%	
Billed per	\$4.68	\$8.88	\$382.40	\$31.99	\$427.25	\$4.79	\$6.47	\$22.50	\$75.40	\$239.90	\$39.41