



Memorandum

December 6, 2019

To:	Fieldbrook Glendale Community Services District	Ref. No.:	11159235
From:	Rebecca Crow, PE	Tel:	707.443.8326
cc:	Neal Carnam, PE; Hannah Gidanian		
Subject:	FGCSD Rate Study – Alternative Summer Rate Structure		

INTRODUCTION

The Fieldbrook Glendale Community Services District (FGCSD or District) contracted with GHD to conduct an assessment and evaluation of the District's existing sewer rates and to develop alternative rate structures to meet system revenue requirements in late 2018. As a result, the District's current sewer rate structure was updated in 2019. Prior to the update, the rate structure had not been changed for 15 years. The new 2019 rate structure implemented a volume-based sewer charge based on water consumption. The rate included a 15% discount applied to the base rate for summertime irrigation, water use that does not enter the sewer.

Since implementation of the 2019 rate structure the method of crediting customers for summer irrigation water use has been questioned. This memo provides an alternative summer rate structure. An ideal rate structure covers all operational expenses through charges that are fair and equitable. This memo also reviews future budget projections, capital improvement projects, and water consumption data.

FGCSD operates and maintains a wastewater collection system and discharges to the City of Arcata for wastewater treatment and disposal. The system was constructed in 1989 – 1990 and includes approximately 4 miles of sewer force mains and 4.8 miles of gravity sewer mains and two pump stations. Over the past few years the District has experienced a significant increase in operational expenses. The main source is the increased cost of sewer treatment and disposal paid to the City of Arcata.

The District is billed by the City of Arcata as an individual customer for sewage service. There is a small base rate, but the majority of the cost is based on sewage flow volumes. In 2015, the District began to experience a significant increase in this expense and began investigating the cause. It was found that the City of Arcata had increased their sewer rates to address problems within their system and the District was not notified of the increase. Once the District realized the increase in rates for sewerage service, the 2018 study commenced, and a new rate was established in December of 2018.

As wastewater expenses are based on flow, one area investigated to control costs was determining if sewer flows had increased and why. This is a common occurrence for aging sewer systems, and it is typically due to increased inflow and infiltration (I/I). Inflow is stormwater entering a sewer system at points of direct connection. These sources are typically improper and/or illegal connections to the sewer system, such as roof drains. Infiltration is groundwater entering a sewer system through cracks and/or leaks in the sewer pipes. These can occur over time due to ground settlement or movements caused by earthquakes. Several



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I/I issues were discovered during these investigations, and the issues are currently being addressed by the District through various capital improvement projects and ongoing system evaluations.

These investigations also found that the sewer system has a problem with nonbiodegradable items, such as baby wipes and plastics, including sanitary products that should be disposed of with solid waste at the landfill instead of into the sewer system. The issue caused by nonbiodegradable items is that they will clog up pumps and other mechanical equipment, resulting in higher maintenance costs.

While there has been a slight increase in wastewater flow volumes, the main reason for the increases in expenses is due to the increasing sewer rates, adopted by the City of Arcata in 2014. Arcata has been increasing sewer rates by approximately 10% annually, while FGCS D has only been increasing rates by approximately 2% annually, the amount equivalent to the Consumer Price Index (CPI), per District Ordinance 2000-02. This has created a large revenue gap between the amount District customers are charged for the sewer utility, and the amount the District pays the City of Arcata for the service.

REVENUE REQUIREMENT

In June of 2018, the FGCS D Board of Directors reviewed a draft of the five-year budget projection for the District's Sewer fund. This budget was updated based on board comments and updated annual budget totals for FY 2018-19. The updated budget projection for FY 2019-20 and the next 4 years are shown in Table 1. The analysis conducted in September 2018 projected annual deficits of over \$200,000 per year by year 5 if a rate increase was not implemented. Hence the District implemented rate increases in December 2018

The District's near-term capital improvement needs are shown in Table 2. Recently, the District has incurred capital improvement expenses due to investigation and mitigation of the I/I issue as well as the replacement of one of the District's main pumps (costing approx. \$30,000). In addressing the I/I issue, the District expects to see some stabilization of flow volume.

In order to budget for future capital improvement projects, an estimated annual capital improvement expense has been set at 33% of the system's depreciation value. Depreciation is an accounting value that considers the cost and expected life of the various components of the system. If you were to collect 100% of the depreciation amount every year, you would accumulate enough funds to replace the entire system when it has reached the end of its "life". The majority of the system's value is in the sewer pipes and manholes. These have depreciation lives estimated at 40 years, even though they will actually last much longer. What generally happens as a practical matter is that if money is spent to maintain these components, they can last 100 years or more. Other components that need to be replaced, like pumps and valves, are included in the future capital improvement projects. For this system the current annual depreciation value is \$93,819 so an annual capital improvement expense of \$30,960 is recommended and included in the annual budget for this rate study.



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Table 1: 5 Year Budget Projection (11.18.2019 update)

Line Item	Fix %	Variable %	Projected Annual Change	Actual 2019	Projected FY 2019/20	Projected FY 2020/21	Projected FY 2021/22	Projected FY 2022/23	Projected FY 2022/23
Sewer Treatment	20	80	2.5%	\$ 205,717	\$ 210,860	\$ 216,131	\$ 221,534	\$ 227,073	\$ 227,211
Contract Labor and Administration	100	0	5%	\$ 45,712	\$ 47,997	\$ 50,397	\$ 52,917	\$ 55,563	\$ 55,695
Insurance	100	0	2.5%	\$ 2,377	\$ 2,437	\$ 2,498	\$ 2,560	\$ 2,624	\$ 2,626
Professional Services	100	0	0	\$ 4,558	\$ 4,558	\$ 4,558	\$ 4,558	\$ 4,558	\$ 4,558
Dues and Memberships	100	0	5%	\$ 605	\$ 635	\$ 667	\$ 700	\$ 735	\$ 737
Utilities	0	100	3%	\$ 12,141	\$ 12,505	\$ 12,881	\$ 13,267	\$ 13,665	\$ 13,677
Property Taxes	100	0	2%	\$ 324	\$ 330	\$ 337	\$ 344	\$ 351	\$ 351
Supplies	50	50	0	\$ 1,015	\$ 1,015	\$ 1,015	\$ 1,015	\$ 1,015	\$ 1,015
Maintenance	50	50	5%	\$ 8,688	\$ 9,122	\$ 9,578	\$ 10,057	\$ 10,560	\$ 10,585
Bad Debts/Bank Fees	100	100	0	\$ 5,282	\$ 5,282	\$ 5,282	\$ 5,282	\$ 5,282	\$ 5,282
Licenses & Fees	100	0	0	\$ 3,163	\$ 3,163	\$ 3,163	\$ 3,163	\$ 3,163	\$ 3,163
Payroll	100	0	2.5%	\$ 24,892	\$ 25,515	\$ 26,153	\$ 26,806	\$ 27,476	\$ 27,493
33% of Depreciation	100	0	0	\$ 30,960	\$ 30,960	\$ 30,960	\$ 30,960	\$ 30,960	\$ 30,960
Annual Operating	50%	50%		\$ 345,434	\$ 354,379	\$ 363,619	\$ 373,164	\$ 383,025	\$ 383,353



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Table 2: Future Capital Improvement Projects (to be addressed within the next 5 years)

Location	Equipment	Condition	Needs	2017 Est. Cost	Timeframe
Pump Station #1	Generator	Good	Generator	-	-
	Pump 1	Good	Replaced 2016	-	-
	Pump 2	30 yrs old	Refurbish? Send to factory TBD	\$15,000	1-5 years
	Backup Pump	Refurbish 30 yr old Pump #1	Finalize refurbish (or not?)		
Pump Station #2	Pump 1	Good	Replaced 2013	-	-
	Pump 2	30 years old	Replace	\$10,000	1-5 years
	Generator	Mobile backup generator available at Fire House. This generator will need to be replaced to meet current Air Board Standards and threat of PG&E PSPS program			2020
Both Lift Stations	Wet Wells	Partially filled with sediment/grease	Need to be pumped out and cleaned of sediment and grease. Coordinate with City of Arcata	TBD	next 2 years
	Telemetry System	Not working, if any	Minimum: add light to signal if there is an issue, or other alert/messaging system	\$2,000	1-2 years
			Alternate upgrade telemetry for pump tail/high water level alarms	TBD	TBD
Sewer System Lines	Multiple Locations (approx. 6)	TBD	Hydro & Camera sewer lines to determine their condition	TBD	Summer 18
Air Relief Valves	12 Air Relief Valves from Glendale to Arcata	Annual maintenance has not been regularly performed. Sewer technician is starting the process and, as of May 2018, one unit was found working and a second unit was found to be leaking. The condition of the remaining Air Relief Valves should be evaluated, and a regular maintenance schedule set up	Inspect, clean, and replace Air Relief Valves if needed. Equipment from City of Arcata would be needed	TBD	Next 2 Years
			Obtain one backup Air Relief Valves new to have on hand.	approx. \$1,200 ea.	Next 2 years



RATE ANALYSIS

The primary objective in designing a rate structure is to meet the District's revenue requirement while fairly assessing volume-based charges between winter water use, which primarily enters the sewer system, and summer water use, which can include irrigation water which does not enter the sewer. This rate analysis examines the various customer classes utilizing the service to determine a fair structure that equitably allocates the revenue requirement across customer classes.

The budget projected for FY 2019/2020 is approximately \$354,379. Using this as the revenue requirement an alternative methodology for assessing sewer rates in the summer was developed.

Using actual monthly customer data from Jan-Oct 2019, Figure 1 shows the distribution of residential customers by level of consumption. From this we can see that the median customer water use during the winter is approximately 500 CF per month and 850 CF per month in the summer (June - October). A low-water use customer consumes approximately 300 CF per month, a high-water use customer consumes approximately 800 CF per month, and a very-high use customer consumes 2300 CF per month (only approximately 6% of customers are above this). These customer benchmarks are used to evaluate the effects of the updated methodology on different customer types.

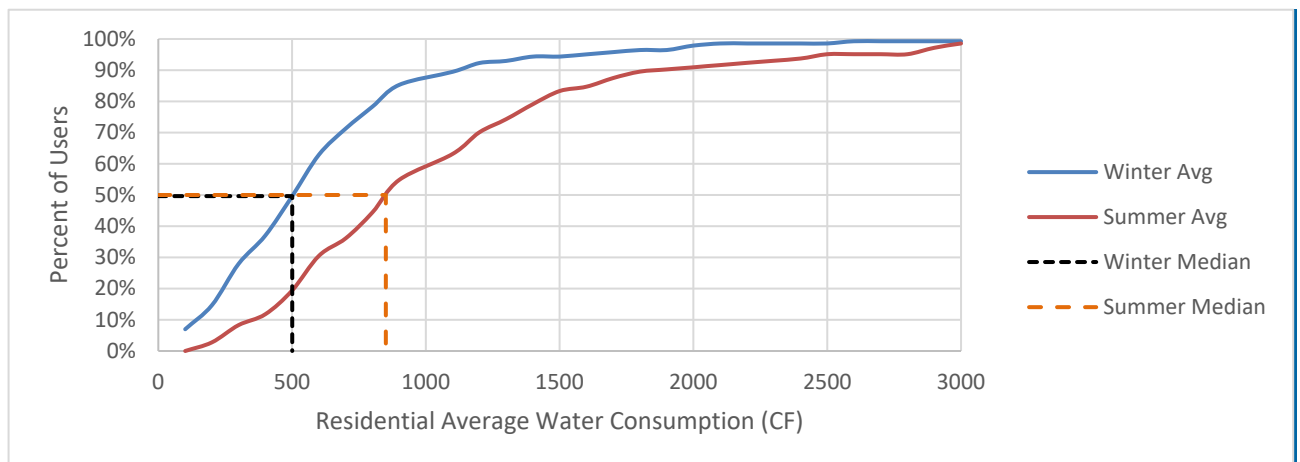


Figure 1: Wet Month Average vs. Dry Month Average Cumulative Frequency Chart

Note that the analysis presented in Figure 1 & 2 uses only measurements taken from January to October of 2019.

Figure 2 shows a breakdown of the percent difference between summer (mid Jun- mid Oct) and winter water use for 0-15% change, 15-30% change, 30-40% change, and greater than a 90% change by the number of customers within each range through mid-June to mid-October (billing months Jul-Oct).

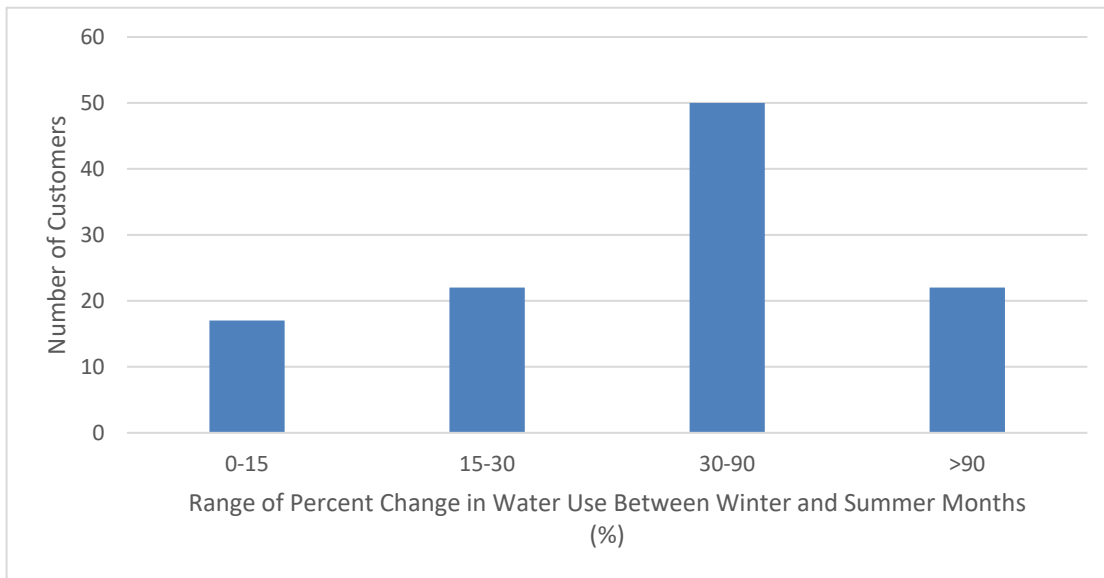


Figure 2: Number of Customers with a Percent Change in Water Use Between Winter and Summer

Figure 2 demonstrates that only 23% of the customers currently have a percent change of 15% or lower between summer and winter. Thus, the original rate implementation methodology did not fully capture the credit for summer irrigation.

FGCSD Sewer Rate

From **Figure 2** it can be concluded that the current 15% summer allotment is not an accurate account of summer sewer usage. In reviewing the seasonal variations, it is recommended the District modify the summer water use discount from a 15% credit of summer water usage to averaging the Feb-Apr months and using this average for the calculation of sewer rates in the summer months of mid-June to mid-October (billing months Jul-Oct).

This means, that District customers will be billed based on the Feb-Apr average usage. The exception would be when the actual summer use is lower than the winter average. In this case actual water use would be used as it results in a lower, more accurate sewer bill. Businesses would be excluded from this discount.

Fieldbrook's current sewer rate incorporates a monthly sewer charge per living unit and an additional charge for every 100 cubic feet (CF) over 400 CF (Table 3). The methodology for applying the summer credit was updated as described above. Business and residential customers are charged the same.



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Table 3: Proposed FGCS Rate Structure and Summer Discount

Customer Type	Base Rate per Service Connection	Consumption included with Base (CF)	Excess Rate (per 100 CF)
Domestic:	\$100.61	400	\$9.40
Business:	\$100.61	400	\$9.40

Note: The summer discount is applied by taking the average Feb-Apr consumption to calculate the sewer bill rather than actual amount used, unless the summer amount is less than the Feb-Apr average. The summer months are Mid June to Mid October.

To confirm that the District would meet revenue requirements by incorporating the new summer month methodology into the existing sewer rate, the projected annual revenue was calculated using current water usage data. The estimated revenue, using the updated methodology, resulted in an annual revenue of \$359,800, which is just above the revenue requirement.

To assess if the District customers will have fair sewer prices, actual customer accounts ranging from low, high, and very high water use were compared and are shown in Table 4. Table 4 demonstrates that the updated summer discount will significantly reduce sewer bills for customers with high summer water use related to irrigation.

Table 4: Comparing Existing Summer Costs of District Customers with Projected Summer Costs Using Actual Customer Data

Existing Water Usage Charged for (Highest Usage) CF	Winter Avg (Avg Feb-April) CF	Existing Summer Cost	Projected Summer Cost
400	400	\$ 81.81	\$ 100.61
800	300	\$ 119.40	\$ 100.61
2300	900	\$ 178.60	\$ 147.41
3500	400	\$ 373.21	\$ 100.61



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Table 5 shows estimated sewer bills based on water use.

Table 5: Example Sewer and Water Rate Bills Based on Consumption

Consumption (CF)	400	600	800	1000	1500	2000	3000
Wastewater Base Rate (\$100.61)	\$100.61	\$100.61	\$100.61	\$100.61	\$100.61	\$100.61	\$100.61
Wastewater Consumption Rate (\$9.40/100CF)	\$0.00	\$18.80	\$37.60	\$56.40	\$103.40	\$150.40	\$244.40
Wastewater Bill Total	\$100.61	\$119.41	\$138.21	\$157.01	\$204.01	\$251.01	\$345.01
Water Base Rate (\$48.33)	\$48.33	\$48.33	\$48.33	\$48.33	\$48.33	\$48.33	\$48.33
Water Consumption Rate (\$2.64/100CF)	\$0.00	\$2.64	\$7.92	\$13.20	\$26.40	\$39.60	\$66.00
Water Bill Total	\$48.33	\$50.97	\$56.25	\$61.53	\$74.73	\$87.93	\$114.33
Total Wastewater and Water Bill	\$148.94	\$170.38	\$194.46	\$218.54	\$278.74	\$338.94	\$459.34

Note that the water base rate is based on the assumption of a 5/8" water meter size. If the meter is bigger the rate will vary.

Following District review and public discussion, the new rate structure can be adopted. It is recommended the District retain the provision that allows for increases in charges adopted by the City of Arcata and an annual increase to account for increases in CPI.