GRASS VALLEY
A PLACE TO LIVE AND THRIVE

Water & Wastewater Capacity Fee Study

Draft Report

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Section 1. Executive Summary

A. Background and Purpose

The City of Grass Valley retained NBS to conduct a water and wastewater capacity fee study in conjunction with the recent water and wastewater rate study for two primary reasons: (1) to ensure that the fees are updated to comply with legal requirements and industry standards, and (2) to ensure that these fees reflect the cost of capital infrastructure needed to serve new connections, or any person requesting additional capacity in the City's water and/or wastewater utility (referred to throughout as "future customers").

The fees updated in this study are commonly referred to as "connection fees," "capital facility fees," "system development charges," or in this case, "capacity fees." The terms are often used interchangeably, and California Government Code Section 66013 defines these types of fees (referred to as a "capacity charge") as a one-time "charge for public facilities in existence at the time a charge is imposed or charges for new public facilities to be acquired or constructed in the future that are of proportional benefit to the person or property being charged, including supply or capacity contracts for rights or entitlements, real property interests, and entitlements and other rights of the local agency involving capital expense relating to its use of existing or new public facilities."

It authorizes public agencies to impose capacity fees on customers connecting to or upsizing their connection to the water and/or wastewater systems. The fee is intended to ensure that they pay their fair share of existing utility asset costs plus the costs of new facilities needed to serve them. In its simplest form, capacity fees are the result of dividing the cost (or value) of the current system assets plus planned capital improvements, by the expected number of future customers. As a result, future customers connecting to the City's water and/or wastewater utilities would enter as equal participants along with current customers regarding their financial commitment and obligations to the utilities.

Whereas water and sewer rate increases imposed on existing customers require a protest ballot under Proposition 218, capacity fees do not because they are considered an appropriate funding mechanism for facilities that benefit new development. These fees may be imposed by a majority vote of the governing legislative body, which in this case is the Grass Valley City Council. This report provides the documentation and findings necessary for the adoption of the proposed capacity fees.

B. Overview of Capacity Fee Program Methodology

Various methodologies have been and are currently used to calculate water and wastewater capacity fees. The following lists the most common methodologies from the American Water Works Association's *Principles of Water Rates, Fees and Charges*[1], also referred to as Manual M1:

- The value of existing (historical) system assets, often called a "system buy-in" methodology.

[1] *Principles of Water Rates, Fees, and Charges, Manual of Water Supply Practices, Manual M1, American Water Works Association (AWWA), Seventh Edition, 2017.*

- The value of planned future improvements, also called the "incremental" or "system development" methodology.
- A combination of these two approaches.

This analysis uses the "Combination Approach,[2]" which requires new customers to pay both their fair share of existing system assets as well as their share of the planned future capital improvements needed to provide them with capacity in the City's water and wastewater systems.

In its simplest form, capacity fees are calculated by dividing the costs allocated to future development by the anticipated number of units for new development as defined below:

- Costs of planned future facilities and improvements required to serve new development are those that can reasonably be allocated to future development.
- The number of new units (i.e., growth) are those units projected to occur within the timeframe covered by the capacity fee analysis.

Capacity fees are one-time fees intended to reflect the cost of existing infrastructure and planned improvements available to new services, which place new utility customers or existing customers requesting an increase in service capacity on equal basis from a financial perspective with existing customers. Once new customers are added to the system, they then incur the obligation to pay the same service charges or water and wastewater rates that existing rate customers pay.

This capacity fee study and the recommended fees assume a given level of development activity over the course of the study period based on data available from the City's 2016 Water System Master Plan. The development that occurs may result in both different impacts and fee revenues than those that are calculated in this study. For that reason, regular updates are recommended to adjust the fees to match the needs created by the rate of actual development.

In developing the proposed fees, NBS worked cooperatively with City staff. The fees presented in this study reflect input provided by City staff regarding financial matters, available capacity in the water and wastewater systems, existing asset values, and planned capital improvements.

Sections 2 and 3 discuss in more detail the development of the water and wastewater capacity fees and presents the updated fees recommended for new and upsized connections.

[2] Method of calculating capacity fees (also known as System Development Fees, Connection Fees, Capital Facility Fees) are set forth in the American Water Works Association's *Principles of Water Rates, Fees and Charges* Seventh Edition (2017) pages 311 to 347.

Section 2. Water Capacity Fee Study

A. Existing Connections and Projected Future Growth

The City currently has approximately 2,453 equivalent 3/4-inch water meters connected to the water system. For the purpose of this study, 5/8-inch meters are treated the same as 3/4-inch meters; which is a common industry practice when setting rates and fees for smaller meter sizes. **Figure 1** shows the current number of equivalent meters connected to the system by customer class.

Figure 1. Current Water Customers

Demographic Statistics	Existing Units
Residential	1,510
Multi Family Residential	376
Commercial Institutional	372
Manufacturing Industrial	13
Open Space/Public	51
Office Professional	131
TOTAL	***2,453***

1. Existing unit estimates from the 2016 Water System Master Plan.
Source file: rpt_wmp_grass_valley_FINAL_PRINT_20160520.pdf

Figure 2 shows the existing and projected service numbers for the water utility. The anticipated future connections are based on the City's projected water demand from the 2016 Water Master Plan. Using the projected water demand as a proxy to calculate the anticipated addition of water service accounts, new customers will be allocated about 13% of existing assets, planned assets, cash and debt in the capacity fee calculation, as shown in Figure 2.

Figure 2. Existing and Projected Service Numbers – Water Utility

Demographic Statistics	Existing	Buildout Total[1]	% Allocation Factors		Cumulative Change	
			Existing Customers	New Customers	Projected Demand	% Increase
Projected Annual Water Demand	387 MG	445 MG	87.0%	13.0%	58 MG	15.0%
Water Service Accounts	2,453	2,821	87.0%	13.0%	368	15.0%

1. Projected water demand estimates from the 2016 Water System Master Plan. Source file: *rpt_wmp_grass_valley_FINAL_PRINT_20160520.pdf*

B. Existing and Planned Assets

The capital assets addressed in this study include existing assets and planned capital improvements (i.e. the system buy-in and incremental assets). An important aspect of this study is how the value of existing utility assets is determined. For example, the purchase price does not account for wear and tear, and current book value (i.e., purchase price less accumulated depreciation) typically underestimates the "true value" of facilities as it does not account for cost increases over time. Therefore, this study uses the replacement-cost-new-less-depreciation (RCNLD) approach summarized in **Figure 3** to estimate existing asset values that reflects estimated cost inflation and depreciation.

Figure 3. Summary of Existing Asset Values – Water Utility

Asset Category[1]	System Buy-In Cost Basis	Allocation Basis (%)[2]		Distribution of Cost Basis ($)	
		Existing Customers	Future Customers	Existing Customers	Future Customers
WATER TREATMENT PLANT	$ 9,752,134	87.0%	13.0%	$ 8,481,070	$ 1,271,065
TANKS	502,719	87.0%	13.0%	437,196	65,523
MAINS & HYDRANTS	7,570,596	87.0%	13.0%	6,583,866	986,729
WATER MACHINERY & EQUIPMENT	120,778	87.0%	13.0%	105,036	15,742
Total Capital Facilities & Equipment	**$ 17,946,227**	**87.0%**	**13.0%**	**$15,607,168**	**$ 2,339,059**

1. Source file for Grass Valley current water assets as of July 2021: *Fixed Assets & Deprc. FY 2020-21_JT.xlsx*
2. Based on proportionate allocation between existing and future users. See Table 2 in Exhibit 1 for demographic expectations.

The RCNLD is calculated by escalating the book value of existing assets to current-day values using inflation factors from the Handy-Whitman Index of Public Utility Construction Costs for Water Utility Construction. Figure 3 summarizes the System Buy-In Cost Basis by Asset Category for the water utility. For this analysis, assets that have exceeded their useful life (as defined in the City's asset records) were considered to have no remaining value. This approach was used for all assets, except land, which does not depreciate.

The system cost basis was allocated to current customers based on the 87% allocation factor previously shown in Figure 2. Figure 3 shows the allocation of the $17.9 million system buy-in costs to current and future customers. Future customers are allocated approximately $2.33 million of the existing water utility assets, or about 13%.

The cost estimates for planned future improvements used to calculate the system development component of the capacity fees are allocated using the same allocations factors developed in Figure 2, as these projects benefit both current and future customers. **Figure 4** includes a list of future capital improvement projects; where future customers are allocated about $2.2 million of the planned capital costs.

The City may have additional capital projects that are needed to serve future developments, and the costs of such projects may be recovered through a development agreement. This will be evaluated on a case by case basis as part of the development review process.

Figure 4. Planned Assets Allocated to Current & Future Customers – Water Utility

Capital Project Description[1]	Future Cost Estimate (thru 2042)[1]	Funding Source[1]	% Allocation[2]		Distribution of Cost Basis ($)	
			Existing Customers	Future Customers	Existing Customers	Future Customers
Replace 4" on E. Main Street. Install 6" pipeline, and hydrants	$ 260,000	*Future*	0.0%	100.0%	$ -	$ 260,000
Replace 2" steel line	$ 80,000	Current/Future	87.0%	13.0%	$ 69,573	$ 10,427
Replace water main with 8" water main, extend 2" water line and connect 2 parcels	$ 140,000	*Future*	0.0%	100.0%	$ -	$ 140,000
Upgrade to 2", no hydrant	$ 80,000	*Future*	0.0%	100.0%	$ -	$ 80,000
Construct 4 new services with meters	$ 30,000	Current/Future	87.0%	13.0%	$ 26,090	$ 3,910
Eliminate dead end system on Kendall St.	$ 210,000	Current/Future	87.0%	13.0%	$ 182,629	$ 27,371
Replace 4" line and tie to 6" line	$ 130,000	Current/Future	87.0%	13.0%	$ 113,056	$ 16,944
Replace 2" steel like with 8" line	$ 230,000	*Future*	0.0%	100.0%	$ -	$ 230,000
Replace 2" and tie in to 12"	$ 230,000	Current/Future	87.0%	13.0%	$ 200,022	$ 29,978
Replace with 6" pipe Maryland Dr.	$ 250,000	Current/Future	87.0%	13.0%	$ 217,416	$ 32,584
Upgrade to 6" North Church St.	$ 250,000	Current/Future	87.0%	13.0%	$ 217,416	$ 32,584
Upgrade to 6" on Temby St.	$ 160,000	Current/Future	87.0%	13.0%	$ 139,146	$ 20,854
Reround line from Wood St to N. Auburn	$ 90,000	Current/Future	87.0%	13.0%	$ 78,270	$ 11,730
Install new pipelines to increase Fire flow	$ 1,100,000	Current/Future	87.0%	13.0%	$ 956,629	$ 143,371
Install new 6" pipeline at Cornwall	$ 100,000	Current/Future	87.0%	13.0%	$ 86,966	$ 13,034
Upgrade to 8" at Stacy Ln.	$ 300,000	Current/Future	87.0%	13.0%	$ 260,899	$ 39,101
Install new booster pump and check valves	$ 260,000	Current/Future	87.0%	13.0%	$ 226,112	$ 33,888
Rehab Empire Tank coating systems	$ -	Current/Future	87.0%	13.0%	$ -	$ -
Remove and waste existing booster pumps	$ 10,000	Current/Future	87.0%	13.0%	$ 8,697	$ 1,303
Piping upgrades for new pumps	$ 40,000	Current/Future	87.0%	13.0%	$ 34,787	$ 5,213
Install flow control valve on new pump discharge	$ 20,000	Current/Future	87.0%	13.0%	$ 17,393	$ 2,607
Install new booster pumps	$ 260,000	Current/Future	87.0%	13.0%	$ 226,112	$ 33,888
Upsize downstream main	$ 270,000	Current/Future	87.0%	13.0%	$ 234,809	$ 35,191
Install new booster pump for Empire Ct.	$ 260,000	Current/Future	87.0%	13.0%	$ 226,112	$ 33,888
Booster pump check valves	$ 110,000	Current/Future	87.0%	13.0%	$ 95,663	$ 14,337
Install streaming current monitor in influent channel	$ 60,000	Current/Future	87.0%	13.0%	$ 52,180	$ 7,820
Install flow control valve on raw water influent line	$ 140,000	Current/Future	87.0%	13.0%	$ 121,753	$ 18,247
Replace Flocculator Paddles	$ 550,000	Current/Future	87.0%	13.0%	$ 478,315	$ 71,685
Replace catwalks between flocculation and sedimentation basins	$ 480,000	Current/Future	87.0%	13.0%	$ 417,438	$ 62,562
Repair cracks in sedimentation basin	$ 200,000	Current/Future	87.0%	13.0%	$ 173,933	$ 26,067
Replace filter media and repair filter basin walls	$ 230,000	Current/Future	87.0%	13.0%	$ 200,022	$ 29,978
Replace filter underdrain and overflow troughs (requires inspection of existing facilities)	$ 350,000	Current/Future	87.0%	13.0%	$ 304,382	$ 45,618
Upgrade plant water system - pumps hydropneumatics, etc. (requires inspection of existing facilities)	$ 590,000	Current/Future	87.0%	13.0%	$ 513,101	$ 76,899
Replace sodium hypochlorite tank	$ 100,000	Current/Future	87.0%	13.0%	$ 86,966	$ 13,034
Install sunshade structure over chemical storage tanks	$ 200,000	Current/Future	87.0%	13.0%	$ 173,933	$ 26,067
Stormwater sump improvements at treated water storage tanks	$ 200,000	Current/Future	87.0%	13.0%	$ 173,933	$ 26,067
Water recycle pumps in storage basin	$ 280,000	Current/Future	87.0%	13.0%	$ 243,506	$ 36,494
Ongoing generator maintenance program	$ 40,000	Current/Future	87.0%	13.0%	$ 34,787	$ 5,213
Install paperless recorders to replace chart recorders	$ 130,000	Current/Future	87.0%	13.0%	$ 113,056	$ 16,944
Upgrade plant SCADA system	$ 240,000	Current/Future	87.0%	13.0%	$ 208,719	$ 31,281
Future Projects[3]	$ 2,465,833	Current/Future	87.0%	13.0%	$ 2,144,444	$ 321,390
Total	**$ 11,125,833**		**81.4%**	**18.6%**	**$ 9,058,264**	**$ 2,067,569**

1. Estimated capital improvement project costs found in source files: *rpt_wmp_grass_valley_FINAL_PRINT_20160520.pdf, Appendix*
2. Costs allocated to current and future determined in City CIP file.
3. Future projects estimated at $750,000 annually starting in FY 32, and future customers are estimated to be responsible for 25% of total costs through FY 2042.

C. Adjustments to the Cost Basis

Before the capacity fees are developed, an adjustment is applied to the cost basis to account for existing cash reserves and outstanding debt. Existing cash reserves are treated as an asset because they were funded by current customers and are available to pay for capital and/or operating costs of the water utility that future customers will benefit from, once connected. The cash reserves are, in a sense, no different than any other water utility asset. The existing cash reserves allocated to current and future customers are summarized in **Figure 5** using the same percent allocation factors from Figure 2. Future customers are credited about $442,000 of cash reserves.

Figure 5. Cash Reserves Allocated to Future Customers – Water Utility

Cash Reserves	Beginning Cash[1]	% Allocation		$ - Allocation	
		Existing Customers	Future Customers	Existing Customers	Future Customers
Un-restricted Reserves					
Water Operating Reserve Fund	$ 2,054,755	87.0%	13.0%	$ 1,786,944	$ 267,811
Working Capital Reserve Fund	$ 325,000	87.0%	13.0%	$ 282,640	$ 42,360
System Reinvestment Reserve Fund	$ 360,663	87.0%	13.0%	$ 313,655	$ 47,008
Emergency Reserve Fund	$ 300,000	87.0%	13.0%	$ 260,899	$ 39,101
Restricted Reserves					
Debt Service Reserve Fund[2]	$ 350,761	87.0%	13.0%	$ 305,044	$ 45,717
Connection Fee Reserve Fund[3]	$ -	87.0%	13.0%	$ -	$ -
Total Beginning Cash	**$ 3,391,179**	**87.0%**	**13.0%**	**$ 2,949,183**	**$ 441,996**

1. Beginning cash balance for the Water Fund is found in trial balance. Source File: *Trial Balance - Water_Sewer as of 092021.pdf*
   Cash Balances for individual funds from City staff: Email from Dec. 9, 2021
2. Beginning cash balance for two debt reserves from City staff: *Email from Dec. 9, 2021*
3. Connection fees are used for applicable items each year as they are collected.
   Connection Fee revenue from current budget: *Water_Sewer Budget Report FY2021-22.pdf*

Since new connections pay their share of existing asset values, including the debt payments on those same assets would double count the asset values included in the capacity fees. Therefore, future customers are credited approximately $408,000 is credited towards future customers as shown in **Figure 6.**

Figure 6: Debt Service Allocated to Future Customers – Water Utility

Bond Issue	Outstanding Principal	% Allocation		$ - Allocation	
		Existing Customers	Future Customers	Existing Customers	Future Customers
2020 Pension Bonds - Capital One	$ 842,306	87.0%	13.0%	$ 732,522	$ 109,784
Municipal Finance Corporation - Solar Equipment Lease	$ 368,336	87.0%	13.0%	$ 320,328	$ 48,008
Bank of America Leasing - Automated Meter Reading	$ 834,880	87.0%	13.0%	$ 726,065	$ 108,816
State of California Safe Drinking Water Loan	$ 1,090,791	87.0%	13.0%	$ 948,620	$ 142,170
Grand Total	**$ 3,136,313**	**87.0%**	**13.0%**	**$ 2,727,535**	**$ 408,778**

1. Grass Valley debt schedules for water funds in source file: *Water & Sewer Debt Schedules - June 30, 2020.xlsx*

D. Calculated Capacity Fees – Water Utility

The sum of the existing and future planned asset values (i.e., the system buy-in and system development costs), along with the adjustment for cash reserves, defines the total cost basis allocated to future customers. **Figure 7** summarizes this calculation.

Figure 7. Summary of Cost Basis Allocated to Future Customers – Water Utility

System Asset Values Allocated to Future Development	
Costs Included in Existing System Buy-In:	
Existing Assets[1]	$ 2,339,059
Planned, Future Capital Projects[2]	2,067,569
Total: Existing & Future System Costs	$ 4,406,628
Adjustments to Cost Basis:	
Cash Reserves[3]	$ 441,996
Outstanding Long-Term Debt (Principal)[3]	(408,778)
Total: Adjustments to Cost Basis	$ 33,218
Total Cost Basis for New Development	**$ 4,439,847**

The total adjusted cost basis is then divided by the number of future customers, measured in 3/4-inch meter equivalents, expected to connect to the water utility (that is, the 368 meter equivalents) in order to determine the base capacity charge for a 3/4-inch water meter. This calculation is shown in **Figure 8**.

Figure 8. Summary of New Base Capacity Fees – Water Utility

Summary of Capacity Fee Calculation	Adjusted System Cost Basis	Build-Out Total *(Units)*	Base Capacity Fee
Proposed Capacity Fee	$ 4,439,847	368	$12,077

Based on the combined system buy-in and incremental capacity fee methodology, and the assumptions used in this analysis, NBS has calculated the new water capacity fees by meter size, as shown in **Figure 9.** The updated fees represent the maximum that the City can charge for new connections.

Larger meters have the potential to use more of the system's capacity, compared to smaller meters. The potential capacity demanded by each meter is proportional to the maximum hydraulic flow through each meter size as established by AWWA's hydraulic capacity ratios. The hydraulic capacity ratios (also known as flow factors, or meter equivalencies) used in this study are shown in the second column of Figure 9. The maximum flow rate, in gallons per minute (gpm) for each size meter is used to determine the number of equivalent 1-inch meter units currently connected to the water system.

For example, a 2-inch meter has a greater capacity, or potential peak demand than a 3/4-inch meter. The "equivalency to a 3/4-inch meter" is calculated by dividing the maximum capacity or flow of larger meters by the capacity of the base (3/4-inch) meter size. The meter capacity factors shown in Figure 9 are the ratio of potential flow through each meter size compared to the flow through a 3/4-inch meter. For instance, column three in Figure 9 shows that the equivalency of a 2-inch meter is 3.20 times greater compared to a 3/4-inch meter.

The actual number of meters by size is multiplied by the corresponding meter equivalency to calculate the total number of equivalent meters. The number of equivalent meters is used as a proxy for the potential demand that each customer can place on the water system. A significant portion of a water system's peak capacity, and in turn the utility's fixed capital costs, is related to meeting system capacity requirements. Therefore, the capacity fee for a new connection will be proportional to the service's meter equivalence.

Figure 9. Updated Water Capacity Fees

Meter Size	Standard Meters[1]		Capacity Fee by Meter Size
	Meter Capacity (gpm)	Equivalency to 3/4-inch meter	
Current Fee			$11,681
	Displacement Meters		
5/8 inch	30	1.00	$12,077
3/4 inch	30	1.00	$12,077
1 inch	50	1.67	$20,128
1.5 inch	100	3.33	$40,256
2 inch	160	5.33	$64,410
	Compound Class I Meters		
3 inch	320	10.67	$128,820
4 inch	500	16.67	$201,281
6 inch	1,000	33.33	$402,561
8 inch	1,600	53.33	$644,098

1. Meter flow rates are from *AWWA M-1* Table B-1.

E. Water Capacity Fee Findings Statements

The new water capacity fees calculated in this report are based on regulatory requirements and generally accepted industry standards, and further detailed in *Appendix A*. This study concludes the following findings:

- The purpose of the City's water capacity fee is to ensure that new and upsized connections reimburse and/or mitigate a reasonable portion of the City's planned capital investment projects. These investments benefit and/or are necessary to accommodate the increased demand for water service.
- The City uses capacity fee proceeds to fund capital investments in the water system, which include the future design and construction of planned facilities.
- Capacity fees for new water customers vary depending on the size of the water meter serving the connection. Meter size is generally proportionate to the demands that a parcel places on the water utility system, specifically the peaking requirements related to the meter size.
- The City has made investments in water infrastructure and plans to invest further in expanded and upgraded facilities. These investments make possible the availability and continued reliable provision of utility service of high-quality water sufficient to meet the demands of growth within the City's service area.
- Without capital investment in existing facilities, the water system capacity available to serve the needs of future connections would be uncertain. Without planned investments in future facilities, water service would not be sustainable at the level of service received by current users. The total value of planned water system assets that are attributable to serving future connections is identified in *Appendix A*.
- Upon payment of a capacity fee, a new customer incurs the obligation to pay the same ongoing service rates as existing customers, regardless of the date of connection to the system or the

actual start of service. These fees ensure that, over time, ongoing service rates are not disproportionately burdened by the accommodation of system growth.

Section 3. Wastewater Capacity Fee Study

The same methodology used to calculate the City's capacity fees for the water utility was used for the wastewater utility (i.e., a combination of the system buy-in and incremental cost methods). This combination approach requires new customers to pay both their fair share of existing system assets as well as their share of the planned future capital improvements needed to provide them with capacity in the City's wastewater system. As a result, new customers connecting to the City's wastewater system would enter as equal participants to the existing customers regarding their financial commitment and obligations to the utility.

The wastewater capacity fees also used the replacement-cost-new-less-depreciation (RCNLD) value of existing system assets to calculate the system buy-in component of the capacity fee. Inflation values from the Handy Whitman Index of Public Utility Construction Costs for Water Utility Construction were used to estimate the replacement value of the existing system assets. NBS believes this is an accurate inflation index and can be used for wastewater utilities.

A detailed summary of the wastewater utility's capacity fee calculations is included in *Appendix B.*

A. Existing Connections and Projected Future Growth

Different types of customers have the potential to use more of the wastewater system's capacity depending on the flow and the strength of wastewater effluent. The potential capacity demanded is therefore proportional to the type of customer (i.e., single-family residential, multi-family residential, Class-A, Class-B, Class-C, or Class-D commercial, etc.).

The number of equivalent dwelling units (EDUs) is used as a variable for the potential demand that each customer can place on the wastewater system. A significant portion of a wastewater system's capacity and, in turn, the utility's fixed capital costs, are related to meeting system capacity requirements. Therefore, the capacity fee for a new service will be proportional to the number of EDUs assigned to each connecting customer.

The result of the analysis on projected future growth summarized in **Figure 10** shows that there are currently 4,425 connections to the City's wastewater system, there are 7,602 EDUs.

Figure 10. Current Equivalent Dwelling Units

Meter Size	Existing Number of Accounts[1]	Existing Equivalent Units (EDUs)[1]
Single Family/Duplex	3,406	3,542
Multi Family	207	2,465
Mobile Home	2	2
Commercial Base		
Class A Usage	562	1,015
Class B Usage	14	223
Class C Usage	59	98
Class D Usage	33	35
GV FLAT	37	59
NID FLAT	51	109
Compound Meter	5	5
NO-CHARGE NID METERS	49	49
Total	**4,425**	**7,602**

1. Number of meters and EDUs from November 2021.

The wastewater capacity fee analysis assumes the EDU growth is proportional to the growth of vacant parcels per the 2016 Wastewater Master Plan. The result, as shown in **Figure 11**, is the expected 1,726 new EDUs which is approximately a 18.5% allocation of costs to these future customers.

Figure 11. Existing and Projected Service Numbers – Wastewater Utility

Demographic Statistics	Existing Total	Long Term Estimated Growth[1]	% Allocation Factors		Cumulative Change	
			Existing Customers	New Customers	Population increase	% Increase
Vacant Parcel growth	14,910	18,296	81.5%	18.5%	3,386	22.7%
Estimated EDU growth	7,602	9,329	81.5%	18.5%	1,726	22.7%

1. Vacant parcel growth estimate for long term estimated in 2016 Wastewater Master Plan.
Estimated EDU growth calculated from the percent allocated to new customers from population growth estimates.
Source file: wastewater_master_plan.pdf, page 3.10

B. Existing and Planned Future Assets

The wastewater utility's capital assets include existing assets and planned capital improvements (i.e., the system buy-in and incremental assets). As with the water capacity fee, the estimated replacement costs (RCNLD value) were developed as the cost basis for the new wastewater capacity fees.

After adjustments to account for assets that were considered to have no remaining value, the resulting RCNLD value of existing assets are summarized in **Figure 12** as the System Buy-In Cost Basis. The RCNLD costs were allocated to existing users based on the 81.5% allocation factor shown in Figure 11 and 18.5% allocation factor for future users). The resulting allocation of existing system assets to existing and future users is shown in Figure 12 where future users are allocated about $11.9 million of existing wastewater assets.

Figure 12. Summary of Existing Asset Values – Wastewater Utility

Asset Category[1]	System Buy-In Cost Basis[1]	Allocation Basis (%)[2]		Distribution of Cost Basis ($)	
		Existing Customers	Future Customers	Existing Customers	Future Customers
Sewer Fund					
Sewer Treatment Plant & Buildings	$ 386,879	81.5%	18.5%	$ 315,280	$ 71,599
Sewer Treatment Plant Improvements	$ 49,223,284	81.5%	18.5%	40,113,641	9,109,644
Sewer Mains	$ 13,856,926	81.5%	18.5%	11,292,455	2,564,470
Sewer Machinery & Equipment	$ 864,673	81.5%	18.5%	704,650	160,023
Total Capital Facilities & Equipment	**$ 64,331,762**	**81.5%**	**18.5%**	**$ 52,426,026**	**$ 11,905,736**

1. Source file for Grass Valley current sewer assets as of July 2022: *Fixed Assets & Deprc. FY 2020-21.xlsx*
2. Based on proportionate allocation between existing and future users. See Table 2 in Exhibit 1 for demographic expectations.

The estimated cost of planned future improvements is used to calculate the system development component of the capacity fee through FY 2041/42. The City's current plan is updated annually with the City Budget, so an assumption of $1.5 million in annual CIP is used in future years. Based on the 18.5% allocation factor for a few of the projects, future customers were allocated about $3.2 million of these future capital project costs, as shown in **Figure 13**.

Figure 13. Planned Assets Allocated to Current & Future Customers - Wastewater Utility

Capital Project Description[1]	Future Cost Estimate (thru FY41/42)[1]	% Allocation			Distribution of Cost Basis ($)		
		Exclude from Analysis	Existing Customers	Future Customers	Exclude from Analysis	Existing Customers	Future Customers
NPDES 2008-13	$ 60,000	100.0%	0.0%	0.0%	$ 60,000	$ -	$ -
Annual Sewer Maintenance	200,000	100.0%	0.0%	0.0%	200,000	-	-
Annual WWTP Project	1,300,000	100.0%	0.0%	0.0%	1,300,000	-	-
Slate Creek Life Station	450,000	0.0%	81.5%	18.5%	-	366,720	83,280
2018 WWTP Improvements	50,000	0.0%	81.5%	18.5%	-	40,747	9,253
Sewer Rate Study	100,000	100.0%	0.0%	0.0%	100,000	-	-
Pipeline Improvements	2,780,000	0.0%	81.5%	18.5%	-	2,265,512	514,488
Lift Station Improvements	70,000	0.0%	81.5%	18.5%	-	57,045	12,955
WWTP Improvements	6,800,000	0.0%	81.5%	18.5%	-	5,541,539	1,258,461
Future Projects[2]	7,125,000	0.0%	81.5%	18.5%	-	5,806,392	1,318,608
Total	**$ 18,935,000**	**6.7%**	**57.1%**	**13.0%**	**$ 1,660,000**	**$ 14,077,954**	**$ 3,197,046**

1. FY2021/22 capital improvement project costs from budget found in source file: *Water_Sewer Budget Report FY 2021-22.pdf,* Some assets are excluded because they do not contribute to system growth.
2. Future projects estimated at $1.5 million annually, and future customers are estimated to be responsible for 25% of total through FY 2042.

C. Adjustments to the Cost Basis

Two adjustments were made to the cost basis to account for existing wastewater cash reserves and outstanding debt. Existing cash reserves are treated as an asset since they are no different than other wastewater assets. The existing cash reserves allocated to future customers is about $985,000, as summarized in **Figure 14**.

Figure 14. Cash Reserves Allocated to Future Customers – Wastewater Utility

Cash Reserves	Beginning Cash[1]	% Allocation		$ - Allocation	
		Existing Customers	Future Customers	Existing Customers	Future Customers
Un-restricted Reserves					
Sewer Operating Reserve	$ 1,808,699	81.5%	18.5%	$ 1,473,967	$ 334,732
Working Capital Reserve	$ 850,000	81.5%	18.5%	$ 692,692	$ 157,308
System Reinvestment Reserve	$ 1,735,887	81.5%	18.5%	$ 1,414,630	$ 321,257
Emergency Reserve	$ 750,000	81.5%	18.5%	$ 611,199	$ 138,801
Glenbrook Sewer Reserve		81.5%	18.5%	$ -	$ -
Restricted Reserves					
Debt Service Reserve[2]	$ 178,874	81.5%	18.5%	$ 145,770	$ 33,104
Wastewater Connection Fee Reserve	$ -	81.5%	18.5%	$ -	$ -
Total Beginning Cash	**$ 5,323,460**	**81.5%**	**18.5%**	**$ 4,338,259**	**$ 985,201**

1. Beginning cash balance for the Sewer Fund is found in trial balance. Source File: *Trial Balance - Water_Sewer as of 092021.pdf*
   Cash Balances for individual funds from City staff: Email from Dec. 9, 2021
2. Beginning cash balance for two debt reserves from City staff: *Email from Dec. 9, 2021*
3. Connection fees are used for applicable items each year as they are collected.
   Connection Fee revenue from current budget: *Water_Sewer Budget Report FY2021-22.pdf*

The credit to the cost basis related to outstanding bonds was included because some existing assets were at least partially funded with revenue bonds that will be paid in future years by the existing customers. Since new connections pay their share of existing asset values, including the remaining outstanding debt principal on those same assets would double count the asset values included in the capacity fees. For this reason, a credit is given for the value of future principal debt payments to avoid this double charging of new customers. **Figure 15** shows that the credit provided to future users is about $1.5 million, or about 18.5% of the total outstanding principal costs.

Figure 15. Debt Service Allocated to Future Customers – Wastewater Utility

Bond Issue	Outstanding Principal[1]	% Allocation		$ - Allocation	
		Existing Customers	Future Customers	Existing Customers	Future Customers
Enterprise Vehicle Leases	$ 16,318	81.5%	18.5%	$ 13,298	$ 3,020
Wastewater Revenue Refunding Bond	$ 2,555,000	81.5%	18.5%	$ 2,082,152	$ 472,848
SRF - Sewer Plant Expansion	$ 1,058,677	81.5%	18.5%	$ 862,750	$ 195,927
BofA Leasing - Automated Meter Reading Equipment	$ 230,820	81.5%	18.5%	$ 188,103	$ 42,717
Municipal Finance Corporation - Solar Equipment Lease	$ 2,285,660	81.5%	18.5%	$ 1,862,658	$ 423,002
2020 Pension Bonds, Capital One - Sewer 13.4%	$ 2,257,632	81.5%	18.5%	$ 1,839,817	$ 417,815
Grand Total	**$ 8,404,108**	**81.5%**	**18.5%**	**$ 6,848,778**	**$ 1,555,330**

1. Sewer debt found in source files: *Water & Sewer Debt Schedules - June 30, 2020.xlsx*

D. Calculated Capacity Fees – Wastewater Utility

The sum of the existing and planned asset values (that is, the system buy-in and system development costs), along with the adjustments for existing cash reserves and outstanding principal payments, defines the total cost basis allocated to future customers. **Figure 16** summarizes how this cost basis is developed.

Figure 16. Summary of Cost Basis Allocated to Future Customers – Wastewater Utility

System Asset Values Allocated to Future Development	Replacement Cost
Costs Included in Existing System Buy-In:	
Existing Assets	$ 11,905,736
Planned, Future Capital Projects	3,197,046
Total: Existing & Future System Costs	$ 15,102,782
Adjustments to Cost Basis:	
Cash Reserves	$ 1,555,330
Outstanding Long-Term Debt (Principal)	(985,201)
Total: Adjustments to Cost Basis	$ 570,129
Total System Cost Basis for New Development	**$ 15,672,910**

The total adjusted cost basis is then divided by the number of future customers, measured in EDUs, expected to connect to the system (1,726 EDUs shown in Figure 11). The calculation for the base wastewater capacity fee is shown in **Figure 17**.

Figure 17. Summary of New Base Capacity Fee – Wastewater Utility

Summary of Capacity Fee Calculation	System Cost Basis	Estimated EDU Increase	Base Capacity Fee per EDU
Current Capacity Fee			$12,370
Proposed Sewer Capacity Fee	$ 15,672,910	1,726	$9,078

E. Wastewater Capacity Fee Findings Statements

The new wastewater capacity fees calculated in this study are based on regulatory requirements and generally accepted industry standards, and are further detailed in *Appendix B*. This study concludes the following findings:

- The purpose of the City's wastewater capacity fee is to ensure that new connections reimburse and/or mitigate a reasonable portion of the City's planned capital investments. These investments benefit and/or are necessary to accommodate increased demand for wastewater service.
- The City uses capacity fee proceeds to fund capital investments in the wastewater system, which include the future design and construction of planned facilities.
- All parcels seeking permission to connect to the City's wastewater system are subject to the wastewater capacity fee, payment of which is a condition of connection approval.
- Capacity fees for new wastewater customers vary depending on the estimated number of EDUs the connection will serve, which is generally proportionate to the demands a parcel places on the wastewater utility system.

- The City has made investments in wastewater infrastructure and plans to invest further in expanded and upgraded facilities. These investments make possible the availability and continued reliable provision of utility service sufficient to meet demands of growth within the City's service area.
- Without capital investment in existing facilities, the wastewater system capacity available to serve the needs of future connections would be uncertain. Without planned investments in future facilities, wastewater service would not be sustainable at the level of service enjoyed by current users.
- Upon payment of a capacity fee, a new customer incurs the obligation to pay the same ongoing service rates as existing customers regardless of the date of connection to the systems or the actual start of service.

Section 4. Recommendations and Next Steps

A. Consultant Recommendations and Next Steps

NBS recommends the City take the following actions:

- **Approve and Accept this Study Report**: NBS recommends the City Council formally approve and adopt this Study and its recommendations and proceed with the steps outlined below to implement the new capacity fees. This will provide documentation of the study and the basis for adopting the new capacity fees.
- **Implement New Water and Wastewater Capacity Fees:** Based on the analysis presented in this report, the City Council should implement the new water capacity fee and new wastewater capacity fee as described in this study.
- **Periodically Review Capacity Fees:** Any time an Agency adopts new fees, they should be periodically reviewed to incorporate new capacity plans, significant repair and replacement projects, or new planning data (i.e. customer growth estimates). This will help ensure the fees generate sufficient revenue to cover the cost of capital projects, support the fiscal health of the City, and future customers bear their fair share of infrastructure costs. NBS also recommends applying an inflation factor to the capacity fees on an annual basis. Annually, the City should review the Engineering News Record's Construction Cost Indices and calculate the percentage change in construction costs and apply that change to the capacity fees to ensure they keep pace with cost inflation.

B. Principal Assumptions and Considerations

In preparing this study and the recommendations included herein, NBS has relied on a number of principal assumptions and considerations with regard to financial matters, number of customer accounts, asset records, planned capital improvements, and other conditions and events that may occur in the future. This information and assumptions were provided by sources we believe to be reliable, although NBS has not independently verified this data.

While we believe NBS' use of such information and assumptions is reasonable for the purpose of this Study and its recommendations, some assumptions will invariably not materialize as stated herein or may vary significantly due to unanticipated events and circumstances. Therefore, the actual results can be expected to vary from those projected to the extent that actual future conditions differ from those assumed by us or provided to us by others.

Appendix A. Water Capacity Fee Study Summary Tables

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Appendix B. Wastewater Capacity Fee Study Summary Tables