

Pinery Water and Wastewater District

2017 Rates and Fees Study

Final Report
October 26, 2017

October 26, 2017
Heather Beasley
Manager
Pinery Water and Wastewater District
5242 Old Schoolhouse Road
Parker, CO 80134

Re: Final Report – 2017 Rates and Fees Study

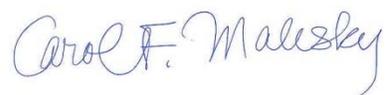
Dear Heather,

Stantec Consulting Services is pleased to present this Final Report of the 2017 Rates and Fees Study (Study) prepared for the Pinery Water and Wastewater District (District).

Key findings and recommendations are provided in the attached report. We appreciate the fine assistance provided by you and all of the members of staff who participated in this Study.

If you have any questions, please do not hesitate to call me at (330) 271-9125 or email me at carol.malesky@stantec.com. We appreciate the opportunity to be of service to the District, and look forward to the possibility of doing so again in the future.

Sincerely,



Carol Malesky
Principal

Enclosure

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EXECUTIVE SUMMARY

Stantec Consulting was engaged in February 2017 to complete a Rates and Fees (Study) for the Pinery Water and Wastewater District (District). The Study's goal was to evaluate cash flows and annual revenue requirements for a 10-year planning period of 2018 through 2027. Current year budget and assumptions for future years' cost and revenue projections were evaluated to assess the need for rate increases. Projected increases are to support the capital and operating costs arising from the District's capital improvement program (CIP) as well as the costs of the District's ongoing mission towards advancing long-term sustainability, innovative solutions, fiscal responsibility, and excellent service.

OBJECTIVES

Develop Pricing Objectives – Stantec met with District staff and the Board of Directors (Board) to determine and prioritize rate structure objectives and discuss alternatives. These objectives were considered in the subsequent analyses.

Analyze Tap Fees – A thorough review was conducted of the existing and future wastewater and water system costs. Stantec analyzed the available capacity of each system as well as growth that will be added by the Water Supply Infrastructure Efficiency (WISE) project, Cherry Creek Project Water Authority (CCPWA) projects, and Pinery Local Supply projects.

Update Financial Planning Models – Building on the financial planning framework in the current wastewater and water financial plans, Stantec updated the multi-year forecasting model for both systems that determines the level of annual revenue required to satisfy projected annual operating, debt service, and capital cost requirements, as well as maintain adequate reserves. This task resulted in forecasted annual rate increases to balance the sources and uses of the District's funds.

Complete Cost-of-Service Analysis – The analysis involved a cost allocation process to reflect the appropriate distribution of system costs not only to each of the wastewater and water systems, but also to the system functions. Stantec projected revenue under the District’s existing rates to determine if rates by class are recovering the class revenue requirements as determined in the cost-of-service analysis.

Design Rates – Stantec reviewed the District’s existing rate structures and developed modifications, as directed by the Board, to ensure that the District’s rates conform to accepted industry practice and reflect the appropriate distribution of system costs, while achieving its policy objectives, such as fiscal stability and conservation. This included an analysis of the tiers of the rate structure to ensure fairness and equality across both small and large users of the system.

PRICING OBJECTIVES

The Board participated in a working session and was presented with various pricing objectives. They collaborated with District staff to determine which objectives should be prioritized in the rate-setting process. This was an important step in the Study because these priorities would serve as the area of focus for what alternatives were considered in the rate-setting analysis. The following objectives are listed, in order, as the Board’s primary goals with respect to the District’s rates:

1. Revenue stability
2. Intergenerational equity
3. Conservation
4. Minimizing administrative burden

As part of this process, the Board was also presented with information about a water budget rate structure, which, if implemented, would align with several of their primary goals. Although a water budget rate structure was not proposed in the Study, Stantec has included information about this type of structure in this report.

PROPOSED TAP FEES

To properly recover growth-related capital improvement costs from new customers, Stantec reviewed the District’s tap fee methodology and underlying assumptions. Updated capital improvement cost and customer projections result in slight revisions to the proposed tap fees for the District. Table ES-1 and Table ES-2 below show the proposed tap fees for 2018-2022 for the wastewater and water systems, respectively.

Table ES-1 - Wastewater Tap Fee Assessment Schedule 2018-2022¹

Meter Size	Capacity Ratio	Existing	Proposed 2018	Projected 2019	Projected 2020	Projected 2021	Projected 2022
¾"	1	\$ 7,030	\$ 7,030	\$ 7,220	\$ 7,415	\$ 7,615	\$ 7,821
1"	2	14,060	14,060	14,440	14,829	15,230	15,641
1 ½"	4	28,120	28,120	28,879	29,659	30,460	31,282
2"	7	49,210	49,210	50,539	51,903	53,305	54,744
3"	16	112,480	112,480	115,517	118,636	121,839	125,129

Table ES-2 - Water Tap Fee Assessment Schedule 2018-2022¹

Meter Size	Capacity Ratio	Existing	Proposed 2018	Projected 2019	Projected 2020	Projected 2021	Projected 2022
¾"	1	\$ 31,965	\$ 33,253	\$ 34,151	\$ 35,073	\$ 36,020	\$ 36,992
1"	2	63,930	66,506	68,302	70,146	72,040	73,985
1 ½"	4	127,860	133,012	136,603	140,292	144,079	147,970
2"	7	223,755	232,772	239,057	245,511	252,140	258,948
3"	16	511,440	532,049	546,414	561,168	576,319	591,880

¹ Projected annual tap fee escalation is 2.7% based on five-year average increase in ENR Construction Cost Index 2011-2015.

PROPOSED FORECAST OF RATE INCREASES

This analysis evaluated the sufficiency of the District’s revenues to meet its current and projected financial requirements over a ten-year projection period, and determined the level of any rate revenue increases necessary in each year of the projection period to provide sufficient revenues to fund the District’s cost requirements. Table ES-3 and Table ES-4 on the following page show the rate revenues and proposed rate increases for the projection period for the wastewater and water systems, respectively. While there are no rate increases projected for the wastewater system in this period, rate revenues are expected to increase due to growth in the District’s customers.

Table ES-3 - Summary of Proposed Wastewater System Rate Revenues and Rate Increases

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Rate Revenues (Million \$)	\$ 2.32	\$ 2.35	\$ 2.38	\$ 2.42	\$ 2.45	\$ 2.48	\$ 2.51	\$ 2.55	\$ 2.58	\$ 2.61
Proposed Rate Increase	N/A	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table ES-4: Summary of Proposed Water System Rate Revenues and Rate Increases

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Rate Revenues (Million \$)	\$ 4.13	\$ 4.36	\$ 4.55	\$ 4.75	\$ 5.01	\$ 5.28	\$ 5.56	\$ 5.86	\$ 6.23	\$ 6.63
Proposed Rate Increase	N/A	4.0%	3.0%	3.0%	4.0%	4.0%	4.0%	4.0%	5.0%	5.0%

PROPOSED RATE SCHEDULES

The cost-of-service (COS) analysis update completed for the District follows generally accepted utility ratemaking methodologies as described by the American Water Works Association and Water Environment Federation. Costs to serve each class of customers were calculated in the COS analysis. Stantec’s rate design model was used to calculate rates that recover those costs.

Stantec examined the District’s current wastewater and water rates and developed proposed rate modifications that fairly and equitably recover the District’s current costs of service and revenue requirements from its customers. These rate schedules conform to accepted industry practices as well as meet the Board’s objectives. The tables below and on the following page shows the existing and proposed 2018 rates for the wastewater and water utility.

Table ES-5 Wastewater Rate Design - Existing and Proposed 2018 Rates

Existing Base Rates		Proposed 2018 Base Rates	
Residential			
	\$ 42.92		\$ 42.92
Commercial			
3/4"	60.41		60.41
1"	120.81		120.81
1 1/2"	241.63		241.63
2"	422.86		422.86
3"	966.53		966.53
Wholesale			
	5.93/kgal		5.93/kgal

Table ES-6 Water Residential Rate Design - Existing and Proposed 2018 Rates

Existing Rates			Proposed 2018 Rates		
Base Rate		\$ 29.22	Base Rate		\$ 29.22
Threshold (kgal)			Threshold (kgal)		
Tier 1	3	2.33	Tier 1	5	2.58
Tier 2	20	3.38	Tier 2	20	3.74
Tier 3	30	4.26	Tier 3	30	4.71
Tier 4	50	5.54	Tier 4	50	6.13
Tier 5	60	7.56	Tier 5	60	8.36
Tier 6	>60	15.17	Tier 6	>60	16.78

Table ES-7 Water Commercial Rate Design - Existing and Proposed 2018 Rates

Existing Rates			Proposed 2018 Rates		
Base Rate (3/4")		\$ 30.02	Base Rate (3/4")		\$ 29.22
Threshold (kgal)			Threshold (kgal)		
Tier 1	3	2.34	Tier 1	5	2.58
Tier 2	20	3.39	Tier 2	20	3.74
Tier 3	30	4.26	Tier 3	30	4.71
Tier 4	50	5.55	Tier 4	50	6.13
Tier 5	>50	7.58	Tier 5	>50	8.36

Table ES-8 Water Other Customers Rate Design - Existing and Proposed 2018 Rates

Existing Rates		Proposed 2018 Rates	
Large Irrigators		Large Irrigators	
Base Rate	\$ 30.02	Base Rate	\$ 29.22
Usage rate, \$ per kgal	3.63	Usage rate, \$ per kgal	3.83
Golf Courses		Golf Courses	
Base Rate	30.02	Base Rate	29.22
Usage rate, \$ per kgal		Usage rate, \$ per kgal	
Pradera & CO GC	3.03	Pradera & CO GC	3.15
Pinery GC	3.33	Pinery GC	3.46

PROPOSED MISCELLANEOUS FEES

Bulk water charges, transfer fees, shut off fees, and other miscellaneous charges were reviewed and compared against similar charges assessed by other local and regional utilities. Stantec proposes that the District's miscellaneous fees remain unchanged at this time, with the exception of bulk water rates that are proposed to be aligned with commercial water rates. Table ES-9 on the following page shows existing and proposed miscellaneous fees.

Table ES-9 - Summary of Miscellaneous Fees

Description	Existing	2018
Turn On	\$ 55	No Change
Turn Off	55	No Change
Shutoff	110	No Change
Returned Check	30	No Change
Transfer Fee	45	No Change
Meter Test Fee	165	No Change
Late Payment Fee	\$10 + 1% per month on past due balance	No Change
Bulk water		
Monthly Meter Rental Fee	\$ 190.61	\$ 185.53
Volume (per kgal)	7.02	8.36

SUMMARY OF 2017 ANALYSIS

The proposed rates are based on projected operating and capital costs, as well as estimated number of accounts, water consumption, and wastewater usage. If costs or customer usage change, the proposed rates may need to be reviewed to ensure sufficient revenues to meet the District's requirements.

The financial plan update determined that water rate increases are needed during the forecasted period, but no changes are required for wastewater rates. Stantec recommends that the District continue to monitor its revenues and costs and review its rates if major changes occur. Any changes to the assumptions or costs may have a measurable effect on the projections presented in this report.

SECTION 1. TAP FEES

1.1 BACKGROUND

Tap fees are one-time charges to new connections that recover a proportionate share of investments in capacity to serve new customers. Currently, the Pinery Water and Wastewater District (District) has implemented tap fees from the 2014 Cost-of-Service Rates and Fees Study with annual rate increases to account for increases in construction costs. Updated capital improvement program (CIP) projects and steady projected growth in the future require an update to the tap fee calculations to capture all necessary costs to new growth in the system. This section outlines the tap fee methodology used and the wastewater and water tap fees proposed for consideration by the District's Board of Directors (Board).

The primary policy for tap fees that the Board considered is that "growth pays for the costs of growth." Such a policy supports that existing customers do not subsidize future customers, as well as prevents the subsidization of existing customers by future customers.

1.2 METHODOLOGY

The American Water Works Association (AWWA) and Water Environment Federation (WEF) publish recommended industry guidelines for calculating tap fees. The two organizations describe three general approaches:

1. Equity buy-in method.
2. Incremental cost method.
3. Combined or hybrid method that includes elements of both of the above.

The first approach, the equity buy-in approach, reimburses prior investments in facilities that are currently available to provide capacity to new connections. The cost basis used in the buy-in approach is equal to the valuation of existing physical assets with capacity to serve projected demand. The equity buy-in method is most

applicable in instances where the system has sufficient capacity to provide service to existing customers and to foreseeable new connections.

The second approach, the incremental cost approach, allows the District to recover costs for future investment in capital projects that will increase available capacity for projected development. The cost basis of the incremental approach is the sum of the estimated capital improvement costs for projects partially or entirely intended to expand the capacity of the system. Capital projects related to renewal and replacement, repair of the system, or operational enhancements were not included in the calculations. The incremental approach applies best when the existing system is not capable of providing service for new connections, and new infrastructure is needed to expand the system.

Finally, the third approach is known as the combined or hybrid approach. This method combines the equity buy-in and incremental cost approaches to derive a single proportional fee that accounts for the costs of existing and proposed capacity over all new connections.

The buy-in method was used for the wastewater system tap fee calculation because there is sufficient existing capacity in the system to serve all new customers. The combined method was used for the water system tap fee calculation for two main reasons: 1) this method was applied in past studies and will ensure continuity between studies and years; 2) new customers will utilize existing capacity and will also require new capacity. Further, for the water supply component of the water tap fee, the incremental cost method was used since all water supply related capital project costs are to serve new customers in the future.

1.3 WASTEWATER ANALYSIS

1.3.1 EXISTING SYSTEM CAPACITY

For the wastewater system, an estimate of current and available system capacity was used to calculate the wastewater system tap fees. The underlying assumption is that one single family equivalent (SFE) – the capacity needed to serve an average residential customer - for wastewater is 240 gallons per day (gpd).

Per discussion with District staff, the total existing wastewater system capacity was determined to be 2.0 million gallons per day (MGD). However, 0.6 MGD of capacity is reserved for intergovernmental agreements. Therefore, the remaining capacity of 1.4 MGD is used as the existing capacity available for the District's existing and future customers. Table 1-1 below shows the existing wastewater system capacity.

Table 1-1 Summary of Existing Wastewater System Capacity

Existing Wastewater System Capacity	
Existing System Capacity (MGD)	2.0
Less Capacity Reserve for IGAs (MGD)	0.6
System Capacity for Customers (MGD)	1.4

1.3.2 ASSET VALUATION

To measure the value of the existing capacity, four valuation methods were used: original cost, net book value, replacement cost, and replacement cost less depreciation. For this study, the replacement cost valuation method is recommended in order to be consistent with last study and also to recover the cost to replace an asset at the present value, which is determined by calculating the cost of the assets in today's dollars using the Engineering News Record (ENR) index. The index is applied to the original cost of each asset to recognize the cost to reproduce the system assets. Asset values were adjusted to account for any asset costs that are recovered from other sources, such as developer contributed assets and outstanding principal on debt that is paid by District's rate revenues. Table 1-2 on the next page summarizes the net asset value of the wastewater system.

Table 1-2 Summary of Existing Wastewater System Capacity

Description	Replacement Cost
Asset Class	
155-Sewer System	\$ 41,891,963
175-WastewaterTreatPlant	33,585,677
180-GIS program	257,393
191-Building-New Office	1,344,251
192-Vehicles	202,224
194-Furn./Office Equip.	57,974
196-Buildings	279,900
197-Building Maint	1,328,671
Total Asset Value	\$ 78,948,052
Less	
Developer Contributed Assets	\$ 25,896,140
Developer Contributions for WWTP Expansion	8,100,000
Outstanding Principal on Wastewater Related Debt	4,760,000
Net Asset Value	\$ 40,191,913

1.3.3 RECOMMENDATIONS

The equity buy-in fee per equivalent unit in the system is determined by dividing the net system asset value by the number of equivalent residential units the system is capable of serving. Table 1-3 below summarizes the calculation of the wastewater system tap fee.

Table 1-3 Summary of Wastewater Tap Fee Calculation

Description	Wastewater System
Net Asset Value	\$ 40,191,913
System Capacity for Customers (gpd)	1,400,000
Unit Cost of Wastewater Infrastructure Capacity (\$/gpd)	28.71
Capacity Required to Serve One SFE (gpd)	240
Wastewater Equity Buy-in Tap Fee per SFE	\$ 6,890
Existing Tap Fee	7,030
Increase / (Decrease)	(140)

Given the small difference in fee from the existing tap fee and Stantec's recommended approach to adjusting tap fees between studies by applying the five-year historical change in the ENR index, we recommend no change to the District's wastewater tap fee in 2018. Beginning in 2019, we recommend the District apply an escalation factor to the fee equal to the change in the ENR index.

1.4 WATER ANALYSIS

1.4.1 EXISTING SYSTEM CAPACITY

The District’s water tap fee is comprised of two components: water system tap fee and water supply tap fee. Capacities were evaluated for both the water system and the water supply. The total existing capacity of the water system is 9.8 MGD of treatment capacity. On the water supply side, because all future capital improvement projects are to serve new customers, the incremental fee method was used to determine the water supply tap fee. Therefore, no existing capacity for water supply is evaluated in this study.

To determine how many SFEs the existing water system can serve, Stantec first determined an SFE unit to be based on maximum day (max day) demand for water system and average day demand for water supply. Using billing data for the past three fiscal years (2014-2016), Stantec calculated the average day demand per SFE to be 550 gpd. Based on historical production data and discussion with District staff, a reasonable system-wide peak day factor was determined to be 2.8. Therefore, the max day demand to serve one SFE is 1,540 gpd (average day demand × peak day factor).

Based on data provided by District staff, total number of SFEs through build out is 5,780. Currently, the existing water system serves about 4,300 SFEs. The system unsubscribed percentage is calculated as new SFEs divided by total number of SFEs at build out.

Table 1-4 below summarizes the existing water system capacity.

Table 1-4 Existing Water System Capacity

Existing Water System Capacity	
Existing System Capacity (MGD)	9.8
% System Unsubscribed	26%
System Capacity Unsubscribed (MGD)	2.5

1.4.2 ASSET VALUATION

Similar to the wastewater tap fee, the replacement cost method was used to determine current system value. This asset value was also adjusted to account for assets that are recovered from other sources. To determine the non-subscribed

asset value, which should be recovered through the buy-in portion of the tap fee, Stantec applied the non-subscribed capacity percentage to the net asset value of the water system. Table 1-5 below is a summary of the existing asset value for the water system.

Table 1-5 Existing Water System Value

Description	Water System Replacement Cost
Asset Class	
135-Water System	\$ 100,570,522
150-Bingham Lake & Dam	1,155,895
98-Land & Right of Way	1,271,172
Growth Related WISE Assets & CWIP	0
Total Asset Value	\$ 102,997,588
Less	
Developer Contributed Assets	\$ 20,258,135
Outstanding Principal on Water Related Debt (Dec 31, 2017)	0
2010 Revenue Note	7,605,495
2015 CWRPDA	0
Net Asset Value	\$ 75,133,959
% System Unsubscribed	26%
Net Asset Value Unsubscribed	\$ 19,238,453

Table 1-6 below summarizes the equity buy-in cost for the water system.

Table 1-6 Water System Equity Buy-in Cost Fee Calculation

Equity Buy-in Cost Fee Calculation	
Net Asset Value Unsubscribed	\$ 19,238,453
System Capacity Unsubscribed (gpd)	2,509,343
Unit Cost of Unsubscribed Capacity	\$ 7.67
Capacity Required to Serve One SFE (gpd)	1,540
Equity Buy-in Cost Tap Fee	\$ 11,807

1.4.3 GROWTH-RELATED CAPITAL IMPROVEMENTS

The District provided capital improvement needs for both water system and water supply through 2027. This data includes descriptions, total project costs, year costs are expected to occur, and growth-related portions of each project. Growth-related water system projects include Pump station 1 replacement, Reservoir 7B, 8B, 9C, and Zone D pipeline, as well as construction work in progress (CWIP) for

Zone A Pipeline. Growth-related water supply projects include Water Infrastructure and Supply Efficiency (WISE) projects, Cherry Creek Project Water Authority (CCPWA) projects, and Pinery local water supply projects. Included as part of the incremental cost for the water supply system are growth-related WISE assets and CWIP costs. Growth-related CIP costs, separated by water system and water supply, are identified in Table 1-7 below.

Table 1-7 Summary of Water System Capital Improvements Project Costs

Water System		Water Supply	
Growth Related CIP	\$ 7,738,763	Growth Related CIP	\$ 19,773,115
Growth Related CWIP	332,415	Growth Related WISE Assets & CWIP	2,291,924
Total Incremental Assets	\$ 8,071,178	Total Incremental Assets	\$ 22,065,039

The incremental cost fee can be calculated based on the growth-related CIP costs and the additional capacity added for new customers. The total capacity provided by the growth-related water supply CIP is 1,105 acre-feet, which equates to 986,257 gpd. This includes capacity provided by WISE, CCPWA, and Pinery local supply projects. Table 1-8 below summarizes the incremental cost tap fee for both water system and water supply system.

Table 1-8 Water System Incremental Cost Fee Calculation

Description	Water System	Water Supply
Total Incremental Assets	\$ 8,071,178	\$ 22,065,039
Total Incremental Capacity (gpd)	2,509,343	986,257
Unit Cost of Unsubscribed Capacity (\$/gpd)	3.22	22.37
Capacity Required to Serve One SFE (gpd)	1,540	550
Incremental Cost Tap Fee	\$ 4,954	\$ 2,305

1.4.4 CARRYING COSTS OF CAPITAL

Financial carrying costs in the context of tap fees occur when the District is expending capital for expansion of its systems while incrementally recovering those up-front expenditures over time. Expenditures are front-loaded and the recovery of the fees takes place over a long period of time; therefore, there is a time value of money assessment called carrying costs. Tap fees collected from new customers partially offset the capital projects planned for construction, but full recovery of those CIP costs cannot be expected to occur until all of the planned units (i.e. customers) have connected to the system and paid their fee.

Therefore, carrying costs occur due to the difference between cash outflow and cash inflow over time. If cash outflow exceeds cash inflow, then carrying costs accrue to the District making cash payments for projects. Stantec factored in the carrying costs of the District's planned CIP and calculated the amount to be added to the tap fee that would make the District whole through build-out. The proposed tap fees presented in Table 1-9 include the carrying cost for each system.

Table 1-9 Summary of Carrying Costs by System Component

Description	Water System	Water Supply
Carrying Cost	\$ 1,029	\$ 3,159

1.5 TAP FEE RECOMMENDATIONS

Using the combined method, a weighted average based on existing and future capacity is used to determine the combined water system tap fee. Table 1-10 below shows net values of existing water system assets, future water system and water supply capital improvements, total water system and water supply capacity, and finally, the proposed tap fee for the water system and water supply.

Table 1-10 Combined Method Capacity Fee

Description	Water System	Water Supply
Net Asset Value Unsubscribed	\$ 19,238,453	\$ 0
Incremental Assets of Capacity Fee	8,071,178	22,065,039
Total Asset Value	\$ 27,309,631	\$ 22,065,039
Total Capacity of the System	2,509,343	986,257
Unit Cost of Unsubscribed Capacity	10.88	22.37
Capacity Required to Serve One SFE (gpd)	1,540	550
Subtotal Proposed Tap Fee per SFE	\$ 16,760	\$ 12,305
Carrying Cost	1,029	3,159
Total Proposed Tap Fee per SFE	\$ 17,789	\$ 15,464

The total water tap fee combines the water system tap fee, calculated using the combined method and water supply tap fee, calculated using the incremental cost method. Table 1-11 below summarizes the total water tap fee by component.

Table 1-11 Total Water Tap Fee for ¾" Meter in 2018

Description	Water System	Water Supply	Total
Total Proposed Tap Fee per SFE	\$ 17,789	\$ 15,464	\$ 33,253

1.6 ASSESSMENT SCHEDULES

The District's existing tap fee assessment schedules are based on a set of meter equivalency ratios. Table 1-12 and Table 1-13 below summarize the tap fee schedule for both wastewater and water by meter size from 2018-2022. Tap fees are escalated based on the historical five-year ENR index. The average increase of ENR index from 2012-2016 is 2.7 percent.

Table 1-12 Wastewater Tap Fee Assessment Schedule 2018-2022¹

Meter Size	Capacity Ratio	Existing	Proposed 2018	Projected 2019	Projected 2020	Projected 2021	Projected 2022
¾"	1	\$ 7,030	\$ 7,030	\$ 7,220	\$ 7,415	\$ 7,615	\$ 7,821
1"	2	14,060	14,060	14,440	14,829	15,230	15,641
1 ½"	4	28,120	28,120	28,879	29,659	30,460	31,282
2"	7	49,210	49,210	50,539	51,903	53,305	54,744
3"	16	112,480	112,480	115,517	118,636	121,839	125,129

Table 1-13 Water Tap Fee Assessment Schedule 2018-2022¹

Meter Size	Capacity Ratio	Existing	Proposed 2018	Projected 2019	Projected 2020	Projected 2021	Projected 2022
¾"	1	\$ 31,965	\$ 33,253	\$ 34,151	\$ 35,073	\$ 36,020	\$ 36,992
1"	2	63,930	66,506	68,302	70,146	72,040	73,985
1 ½"	4	127,860	133,012	136,603	140,292	144,079	147,970
2"	7	223,755	232,772	239,057	245,511	252,140	258,948
3"	16	511,440	532,049	546,414	561,168	576,319	591,880

¹ Projected annual tap fee escalation is 2.7% based on five-year average increase in ENR Construction Cost Index 2011-2015.

SECTION 2. FINANCIAL PLANS

2.1 LONG-TERM FINANCIAL PLANS

Task 2 of the Rates and Fees Study (Study) scope of work for the District provides long-term financial planning tools for the District’s wastewater and water systems. The financial plans use the District’s growth assumptions, operating budget, and projected capital expenses to determine revenue requirements that will also meet each utility’s operating and capital requirements, as well as other financial goals maintained by the District. This report summarizes the assumptions and calculations supporting rate revenues over a 10-year period that were proposed for consideration by the Board.

A summary of proposed changes to rate revenues and rate increases are presented below.

Table 2-1: Summary of Proposed Wastewater System Rate Revenues and Rate Increases

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Rate Revenues (Million \$)	\$ 2.32	\$ 2.35	\$ 2.38	\$ 2.42	\$ 2.45	\$ 2.48	\$ 2.51	\$ 2.55	\$ 2.58	\$ 2.61
Proposed Rate Increase	N/A	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 2-2: Summary of Proposed Water System Rate Revenues and Rate Increases

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Rate Revenues (Million \$)	\$ 4.13	\$ 4.36	\$ 4.55	\$ 4.75	\$ 5.01	\$ 5.28	\$ 5.56	\$ 5.86	\$ 6.23	\$ 6.63
Proposed Rate Increase	N/A	4.0%	3.0%	3.0%	4.0%	4.0%	4.0%	4.0%	5.0%	5.0%

2.2 FINANCIAL PLANNING ASSUMPTIONS

Estimating future revenues and expenses requires various assumptions to be applied in the financial plans. The table on the following page summarizes the key forecasting assumptions used in the wastewater and water financial planning

analyses. Percentages for 2019 – 2026 represent the average for these eight years of projections.

Table 2-3: Key Assumptions for Forecasting Wastewater and Water Revenues and Expenses

	2017	2018	2019-2026
Avg. Customer Growth (SFEs)	N/A	1.42%	1.33%
O&M Cost Inflation Factors	N/A	2.30%	2.30%
Capital Cost Inflation Factors	N/A	0.00%	2.70%
Fund Balance Interest Rate	1.00%	1.00%	1.00%

Additional assumptions were included throughout the financial planning period.

1. The 10-year capital improvement plan was derived from documents provided by District staff that projected project costs over the planning period. Annual inflationary factors were applied to project costs to account for the increase in construction costs.
2. Typical projections of rate revenues for future years are based on revenue under existing rates for the current year. Conservative growth in accounts and usage per account were assumed before proposed rate revenue increases.
3. Wastewater and water tap fee revenues for 2018 and beyond were based on the analysis described in Section 1. The Board-approved wastewater tap fee is \$7,030 and water tap fee is \$33,253. These tap fees were each escalated using the ENR capital inflation estimate.
4. Debt issues are projected for the wastewater system in 2019 and for the water system in 2023 and 2026. Assumptions include 4.0 percent cost of issuance, no debt reserve requirement, 30-year repayment terms at 4.0 percent annual interest for the wastewater issuance and 3.5 percent annual interest for the water issuances.

2.3 REVENUE REQUIREMENTS

Revenue requirements for the District’s wastewater and water systems are the sum of the total operating and capital expenditures in each year (including debt service requirements, funding of reserve accounts, and cash funding of capital expenditures) that must be recovered from wastewater and water revenues. Determining the revenue requirements for what is called the test year is important because the calculated rates need to recover the revenue requirements in the appropriate year. For this analysis, the first test year for which rates were developed was 2018. The financial planning analysis projects revenue requirements for multiple years beyond the test year. For each year in the analysis, subsequent tables present components of the revenue requirements.

2.3.1 OPERATING EXPENSES

Operating expenses include the expenses for operations, plus other expenses that are shared between the wastewater and water systems. The District’s operating budget is organized by operating expenses specific to each utility and other expenses such as accounting, administration, billing, insurance, and other expenses. Expenses were escalated by applying the general inflation estimates provided previously in this section. It is important to note that some costs escalate in part due to system growth in addition to the escalation factor used. Operating and maintenance (O&M) expenses for the wastewater and water systems are summarized below.

Table 2-4: Projected Wastewater System O&M Expenses

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Regular O&M (Million \$)	\$ 1.48	\$ 1.52	\$ 1.56	\$ 1.59	\$ 1.63	\$ 1.73	\$ 1.77	\$ 1.84	\$ 1.88	\$ 1.92
CIP O&M (Million \$)	0.00	0.00	0.00	0.00	0.00	0.06	0.06	0.08	0.08	0.08

Table 2-5: Projected Water System O&M Expenses

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Regular O&M (Million \$)	\$ 3.03	\$ 3.10	\$ 3.18	\$ 3.25	\$ 3.33	\$ 3.41	\$ 3.50	\$ 3.58	\$ 3.67	\$ 3.76
Water Supply O&M (Million \$)	0.36	0.52	0.67	0.73	1.38	1.42	1.42	1.45	1.50	1.38

2.3.2 CAPITAL IMPROVEMENT EXPENDITURES

Capital improvement expenditures include any planned expenditures for infrastructure-related items. The capital improvement plan provided by the District was included in the financial plans through 2027. As mentioned previously, inflation for CIP projects was applied to the projects for future projections. Water system CIP includes water supply projects associated with WISE, CCPWA, and Pinery local water supply projects, which are shown separately in the table below. A portion of the capital improvements each year is funded by rate revenues for system improvements and tap fees for growth-related capital. The portion for growth-related projects are identified in the tables below.

Table 2-6: Projected Wastewater System Capital Improvement Expenditures

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total WW Capital (Million \$)	\$ 0.53	\$ 0.95	\$ 1.25	\$ 2.35	\$ 2.12	\$ 0.98	\$ 0.07	\$ 1.01	\$ 1.04	\$ 0.46
Percent Growth	57%	33%	76%	83%	68%	93%	93%	35%	35%	84%

Table 2-7: Projected Water System Capital Improvement Expenditures

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
General Capital (Million \$)	\$ 5.97	\$ 2.78	\$ 3.49	\$ 0.85	\$ 1.05	\$ 1.07	\$ 2.02	\$ 2.07	\$ 2.13	\$ 2.19
Water Supply (Million \$)	5.19	2.48	1.37	1.93	2.49	2.99	3.53	4.45	3.74	1.96
Total Water Capital (Million \$)	11.15	5.26	4.85	2.78	3.54	4.07	5.55	6.52	5.86	4.14
Percent Growth	31%	11%	20%	49%	49%	51%	69%	78%	82%	74%

2.3.3 DEBT SERVICE AND COVERAGE REQUIREMENTS

Outstanding Debt

The District is currently obligated to repay a series of Colorado Water Resources and Power Development Authority (CWRPDA) loans for the wastewater system and a Revenue Note, Colorado Water Conservation Board (CWCB) loan, and CWRPDA loan for the water system.

Proposed Debt

Stantec is currently projecting needs for future debt issues for each system. The proceeds needed are projected after considering fund balances, debt service coverage ratios, and rate revenues. Wastewater fund bond proceeds will fund the aeration and additional filter train projects in 2019-2023. Proceeds from water bond issues will fund the water treatment plant, well, and reservoir projects in the later years of the planning period.

Coverage Requirements

Assumptions of the District's rate covenants for outstanding debt are that revenue available for debt service on wastewater and water bonds and CWRPDA loans must be greater than or equal to 125 percent of total debt service each year. CWRPDA loans and the Wells Fargo Note actually require a minimum coverage of 110 percent of maximum annual debt service. Stantec assumes a more conservative minimum of 125 percent. Revenue available for debt service in this calculation is equal to gross revenues including tap fees. Operating expenses were then subtracted from gross revenues to determine revenue available for debt service. The financial plan meets this coverage requirement when calculated as a single entity as well as within each individual system.

Existing and proposed annual debt service results are presented in the tables below.

Table 2-8: Projected Wastewater System Annual Debt Service

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Existing Debt (Million \$)	\$ 0.81	\$ 0.81	\$ 0.81	\$ 0.81	\$ 0.81	\$ 0.81	\$ 0.81	\$ 0.34	\$ 0.34	\$ 0.34
Proposed Debt (Million \$)	0.00	0.00	0.10	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Total Debt (Million \$)	\$ 0.81	\$ 0.81	\$ 0.91	\$ 1.00	\$ 1.01	\$ 1.01	\$ 1.01	\$ 0.55	\$ 0.55	\$ 0.55

Table 2-9: Projected Water System Annual Debt Service

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Existing Debt (Million \$)	\$ 1.69	\$ 1.68	\$ 1.69	\$ 1.69	\$ 1.68	\$ 1.71	\$ 2.10	\$ 2.10	\$ 2.10	\$ 2.10
Proposed Debt (Million \$)	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.87	0.87	1.39
Total Debt (Million \$)	\$ 1.69	\$ 1.68	\$ 1.69	\$ 1.69	\$ 1.69	\$ 1.71	\$ 2.53	\$ 2.97	\$ 2.97	\$ 3.48

2.3.4 SOURCES AND USES OF FUNDS

Part of determining revenue requirements involves balancing the sources of funds and the uses of funds for each system. Sources of funds include rate revenues, operating revenues, tap fees, and bond and loan proceeds. Beginning fund balances and interest income are also sources of funds.

Uses of funds include O&M expenses, debt service payments, cash funded capital improvements, and transfers to other funds. Additions to fund balances are also a use of funds. In years where sources of funds are greater than the uses of funds, fund balances are increasing. In years where uses of funds are greater than sources of funds, fund balances are drawn down.

The net difference between sources and uses of funds each year represents the change in fund balances. Each year, the goal is to balance the need for rate revenue increases and debt issues with sources and uses of funds. The tables below show the annual sources and uses of funds, as well as additions to and subtractions from fund balances.

Table 2-10: Projected Wastewater System Sources and Uses of Funds

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Sources (Million \$)	\$ 2.79	\$ 2.98	\$ 6.58	\$ 3.14	\$ 3.17	\$ 3.20	\$ 3.24	\$ 3.28	\$ 3.32	\$ 3.37
Uses (Million \$)	2.82	3.28	3.85	4.95	4.77	3.79	3.86	3.50	3.57	3.01
Change in Fund Balance (Million \$)	(0.03)	(0.29)	2.73	(1.81)	(1.60)	(0.58)	(0.62)	(0.21)	(0.25)	0.36

Table 2-11: Projected Water System Sources and Uses of Funds

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Sources (Million \$)	\$15.60	\$11.97	\$10.00	\$ 8.24	\$ 8.98	\$ 9.03	\$24.99	\$ 9.34	\$ 9.75	\$29.14
Uses (Million \$)	16.22	10.56	10.39	8.45	9.94	10.61	13.61	14.52	14.00	13.49
Change in Fund Balance (Million \$)	(0.63)	1.41	(0.39)	(0.21)	(0.96)	(1.57)	11.38	(5.18)	(4.26)	15.65

2.3.5 FUND BALANCES

The District's wastewater and water systems' projected cash and investment balances and annual unrestricted cash flow were used to determine the amount of fund balance available for capital, operating, and debt expenditures.

By policy, the District’s Board established specific fund reserves. Fund reserves ensure the District maintains healthy fund balances to address unexpected drops in revenues due to weather or emergency capital improvement needs. Reserves restrict the use of fund balances each year.

The following tables present the projected year-end fund balances and the target reserves for the wastewater and water systems.

Table 2-12: Projected Wastewater System Fund Balances and Reserve Targets

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Ending Balance (Million \$)	\$5.67	\$5.38	\$8.11	\$6.29	\$4.69	\$4.10	\$3.49	\$3.27	\$3.03	\$3.39
Target (Million \$)	1.77	1.76	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75
Externally Restricted										
Operation Reserve for CWRPDA 2002 Loan (Million \$)	\$1.25	\$1.25	\$1.25	\$1.25	\$1.25	\$1.25	\$1.25	\$1.25	\$1.25	\$1.25
Internally Restricted										
Rate Stabilization Fund (Million \$)	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50
Medical Benefits Reserve (Million \$)	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 2-13: Projected Water System Fund Balances and Reserve Targets (Million \$)

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Ending Balance (Million \$)	\$3.89	\$5.30	\$4.91	\$4.70	\$3.74	\$2.17	\$13.55	\$8.37	\$4.11	\$19.77
Target (Million \$)	1.93	1.91	1.90	1.90	1.90	1.90	1.93	1.93	1.93	1.93
Externally Restricted										
Wells Fargo - 2010 Debt Service Reserve (Million \$)	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03
Internally Restricted										
Groundwater Protection (Million \$)	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Rate Stabilization Fund (Million \$)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Medical Benefits Reserve (Million \$)	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Well Rehab (Million \$)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
CWCB Loan Debt Reserve (Million \$)	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.05	0.05	0.05

2.4 REQUIRED RATE REVENUES AND PROPOSED RATE REVENUE INCREASES

As presented in Table 2-1, there is no required rate increase needed for the wastewater system between 2018 and 2026. The water system will require a 4.0 percent rate increase in 2018, followed by a 3.0 percent rate increase in 2019 and 2020, and a 4.0 percent rate increase each year from 2021 until 2024. Depending on the rate structure, a customer may not necessarily experience a bill increase equivalent to the rate increase implemented in that year. The next section in this report includes an evaluation of the proposed revenue requirements under existing and alternative rate structures for each of the District’s customer classes.

SECTION 3. COST-OF-SERVICE

Following the calculation of revenue requirements for 2018 in the long-term financial planning models, the Study's scope includes the cost-of-service (COS) analysis for both the wastewater and water systems. This section outlines the steps completed in the COS analysis and presents the rates resulting from the analysis in order to achieve the District's goals.

3.1 COST-OF-SERVICE STEPS

The following steps were used to prepare the COS analysis:

1. Determine the revenue requirements for a specified annual period referred to as a test year. Revenue requirements are defined as the amount of revenue the District must recover from the rates charged to customers in order to meet the operating and capital expenditures anticipated for the test year. The revenue requirements were described in more detail in the financial planning section of this report. For purposes of evaluating alternative rates and rate structures, 2018 was used as the test year.
2. Allocate the revenue requirements to functions and customer classes. Following cost allocation guidelines from AWWA and WEF, revenue requirements are allocated to functions of the wastewater and water systems as well as to specific customer classes based on how various classes actually use the system functions. Demand characteristics of customer classes and allocations of costs to customer classes are summarized in this section.
3. Determine rates for service. Rates are based on the allocated costs of service for each customer class, meaning that recommended rates for a given class reflect the cost of serving that class.

3.2 REVENUE REQUIREMENTS

- Revenue requirements for the District's wastewater and water systems include total operating and capital expenditures (including debt service requirements, funding of reserve accounts, and cash funding of capital expenditures) that must

be recovered from the revenues provided from its rate and fee structure. Revenue requirements for 2018 are summarized in Table 3-1

Table 3-1 below. Note that the bond proceeds in the water fund are existing proceeds from CWCB. Non-rate revenues include miscellaneous fees and charges that reduce the revenue required from rates. These non-rate revenues include:

Wastewater System

- Tap fees
- Canyon South service charges
- Ready-to-serve fees
- Investment income
- Late charges

Water System

- Tap fee
- Ground water protection fees
- IREA rebates
- Water supply project fees
- Ready-to-serve fees
- Investment income

Table 3-1 Summary of Revenue Requirement for Wastewater and Water- Test Year 2018

Description	Wastewater	Water
Operating and Maintenance Expenses	\$ 1,519,458	\$ 3,618,266
Annual Debt Service - Outstanding Debt	809,920	1,683,330
Annual Debt-Service - Projected Issues		
Capital Projects	945,764	5,256,720
Change in Fund Balance	(292,667)	1,411,367
Total Revenue Requirement	\$ 2,982,475	\$ 11,969,683
(Less) Non-User Rate Revenue		
Other Revenues	120,000	760,695
Debt Proceeds		3,221,208
Total Other Capital Inflows	64,000	1,491,000
Total Tap Fees	442,890	2,094,939
Interest/Investment Earnings	3,938	45,694
Total User-Charge Requirement	\$ 2,351,648	\$ 4,356,147

3.3 CUSTOMER DEMAND CHARACTERISTICS

Wastewater System

Currently, wastewater customers are assessed a fixed charge per month regardless of their wastewater flow and domestic strength waste. Based on the financial planning forecast and discussions with District staff and the Board, no changes are proposed to the existing wastewater rate structure. Wastewater customer characteristics by customer class are used to allocate the rate revenue requirements to District’s customers. Usage information by customer class is included in the wastewater cost-of-service model and used to validate that the existing flat rates are recovering the costs of service appropriately.

The District’s wastewater customer classes include:

- Residential
- Commercial
- Contract/Wholesale (Out-of-District Wholesale)

The units of service are summarized in the table below, including flows and equivalent bills (monthly bills times the number of billed accounts).

Table 3-2 Summary of Wastewater Customer Characteristics - Test Year 2018

Customer Class	Flows (kgal)	Equivalent Bills
Residential	236,792	54,624
Commercial	10,468	946
Contract/ Wholesale	16,238	12
Totals	263,498	55,582

Water System

Cost-of-service ratemaking is a process of allocating the system rate revenue requirements to customers based on the demands they place on the system. Individual customer demands vary depending on the nature of the use at the location where service is provided. For example, water service demand for a family residing in a typical single-family home is different than the water service demand for an irrigation customer, primarily due to peak use behavior, which drives the need for infrastructure sizing. As a practical matter, it is not feasible to allocate system costs at the individual account level. Industry practice, as promulgated by AWWA’s M1 Manual, is to group customers with

similar system needs into customer classes. Rates were then developed for each customer class.

The District's water customer classes include:

- Residential
- Commercial
- Large Irrigation
- Pinery Golf Irrigation
- Colorado Golf Course (CGC) & Pradera Golf Irrigation

Costs in a water system are incurred as a result of customer demands. Customer demands are measured on various levels based on the notion of cost causation, which means the District incurs a cost of providing service as a result of a particular kind of demand. AWWA describes two generally accepted methods for allocating costs: the base extra capacity method and the commodity demand method. Stantec followed the base extra-capacity method for characterizing the District's customer demands and allocation of system costs. Categories of usage and costs include:

- Base or average day demands.
- Extra-capacity demands - usage greater than average day demands.
- Customer - representing the number of billed meters.

Using 2014-2016 billing data, we projected units of service for customer demand in 2018. Units of service are summarized in the table below.

Table 3-3 Summary of Water Customer Characteristics - Test Year 2018

Customer Class	# of Customer Accounts	# of Eq. Meters	Total Annual Usage (kgal)	Avg. Day Usage (kgal)	Max-Day Usage (kgal)
Residential	4,437	4,437	607,711	1,665	4,202
Commercial	25	68	19,353	53	111
Large Irrigation	52	95	64,477	177	567
Pinery Golf Irrigation	1	29	62,393	171	483
CGC & Pradera Golf Irrigation	6	58	96,966	266	751
Totals	4,521	4,687	850,901	2,331	6,114

3.4 ASSIGNMENT OF FUNCTIONAL CHARACTERISTICS

The tables below summarize the allocation parameters and cost sharing groups for respective system functions based on an assigned allocation type. For example, source of supply is allocated 100% joint with allocation type "Base". This indicates that all customers will proportionately share source of supply costs based on total water usage by customer class, measured in gallons.

Percentage allocations of functions to base, max-day, max-hour, etc. are based on actual water demands calculated from billing data. Wastewater functional allocations were all on a customer characteristics basis.

Table 3-4 Summary of Wastewater Functional Component Assignment to Allocation Factors

System Function/Name	Allocation Type	Cost Share	Flow	Customer
Collection System	Customer	Joint	0%	100%
Interceptors	Customer	Joint	0%	100%
Treatment	Customer	Joint	0%	100%
Indirect	Customer	Joint	0%	100%
Admin	Customer	Joint	0%	100%
Metering	Customer	Joint	0%	100%

Table 3-5 Summary of Water Functional Component Assignment to Allocation Factors

System Function/Name	Allocation Type	Cost Share	Base	Max-Day	Max-Hour	Customer	Meter
Supply	Base	Joint	100%	0%	0%	0%	0%
Treatment	Max-Day	Joint	38%	62%	0%	0%	0%
Transmission & Distribution	Max-Day	Joint	26%	43%	31%	0%	0%
Storage	Max-Day	Joint	26%	43%	31%	0%	0%
Pumping	Max-Day	Joint	26%	43%	31%	0%	0%
Administration	Customer	Joint	0%	0%	0%	100%	0%
Metering	Meter	Joint	0%	0%	0%	0%	100%
Indirect	Indirect	Joint	64%	20%	14%	0%	2%

3.5 FUNCTIONALIZED SYSTEM COSTS

3.5.1 O&M EXPENSES

The District prepared its budgeted 2017 revenue and expenditures for both wastewater and water combined. Staff helped in the process of separating wastewater and water

O&M expenses. O&M expenses were allocated to various functions using the allocation scheme developed in the last study and reviewed by District staff for any necessary changes. The functional categories and associated values were used in determining an appropriate allocation of the O&M costs to respective customer classes based on usage characteristics. The functions included in the COS analysis are listed in Table 3-6 and Table 3-7 below, which provide a summary of the test year (2018) O&M expenses by function for both the wastewater and water systems.

Table 3-6 Summary of Wastewater O&M Expenses - Test Year 2018

System Function	Wastewater System O&M
Collection System	\$ 173,760
Interceptors	173,760
Treatment	714,581
Indirect	0
Admin	446,293
Metering	11,064
Total	\$ 1,519,458

Table 3-7 Summary of Water O&M Expenses - Test Year 2018

System Function	Water System O&M
Supply	\$ 1,047,374
Treatment	272,931
Transmission & Distribution	83,413
Storage	83,413
Pumping	488,059
Administration	689,239
Metering	12,498
Indirect	941,339
Total	\$ 3,618,266

3.5.2 CAPITAL EXPENDITURES

Similar to O&M, the capital costs of the wastewater and water systems required allocations to functions. Capital costs include annual debt service, cash-funded capital expenditures, and changes in fund balances. Rather than allocate these capital costs directly, this process assigns the value of each of the District's fixed assets to a specific system function or functions. For example, pump stations were allocated 100% to the pumping system function. The allocations of asset value by system function were then

utilized to allocate test year capital costs to each system function. This methodology is used based on the concept that the system’s existing mix of asset values is a good representation of the capital investments that have been and will be made in the system over time. The below tables summarize these capital costs by function.

Table 3-8 Summary of Wastewater Capital Expenditures - Test Year 2018

System Function	Wastewater System Capital
Collection System	\$ 842,307
Interceptors	1,212
Treatment	585,099
Indirect	15,522
Admin	21,032
Metering	0
Total	\$ 1,465,173

Table 3-9 Summary of Water Capital Expenditures - Test Year 2018

System Function	Water System Capital
Supply	\$ 6,505,954
Treatment	0
Transmission & Distribution	707,734
Storage	550,318
Pumping	270,167
Administration	0
Metering	0
Indirect	317,246
Total	\$ 8,351,417

3.5.3 NON-RATE REVENUES

Non-rate revenues are revenues collected for other services provided by the District. In the COS analysis, this revenue is used to reduce the need for rate revenue. Non-rate revenue includes tap fees, ready-to-serve fees, water project fees, miscellaneous charges, and investment earnings. Eligible non-rate revenue was allocated equally among customer classes by the same distribution proportions used when allocating costs. These costs are shown in the tables on the following page.

Table 3-10 Summary of Wastewater Non-Rate Revenues- Test Year 2018

Revenue Description	Joint	Total
Wholesale/Contract Revenues	100%	\$ 0
Other Revenues	100%	120,000
Projected Debt Proceeds	100%	0
Total Other Capital Inflows	100%	64,000
Total Tap Fees	100%	442,890
Interest/Investment Earnings	100%	3,938
Total		\$ 630,828

Table 3-11 Summary of Water Non-Rate Revenues- Test Year 2018

Revenue Description	Joint	Total
Wholesale/Contract Revenues	100%	\$ 0
Other Revenues	100%	760,695
Projected Debt Proceeds	100%	3,221,208
Total Other Capital Inflows	100%	1,491,000
Total Tap Fees	100%	2,094,939
Interest/Investment Earnings	100%	45,694
Total		\$ 7,613,536

3.6 ALLOCATED COST-OF-SERVICE BY CUSTOMER CLASS

Once costs are allocated to functions, each customer class' water demands, customer characteristics, and other service requirements are applied to determine costs of service by class. The tables on the following page summarize cost-of-service revenue requirements by customer class for both the wastewater and water systems and the projected 2018 revenues by customer class under existing rates.

Since the last water COS study, the District has been under-collecting revenues from large irrigation customers and golf courses. The Board and District staff were aware of the problem and had implemented more aggressive rate increases from 2015-2017 to these customers compared to residential and commercial customers. As a result, shown in the tables on the following page, even though there are still differences between the existing rate charges and class cost-of-service requirement, the differences have become smaller. The District and the Board are dedicated to continuing narrowing the difference to reach the goal of having equitable and defensible rates.

All wastewater customers are paying a fixed monthly charge based on meter size with one exception. This is an out-of-district wholesale customer that is billed based on its wastewater flow at \$5.93/kgal. Since the wastewater cost-of-service model allocates user

charge rate revenue based on single family equivalent units, it is not taking into account the wholesale customer's wastewater flow. Therefore, it shows a lower revenue requirement than the projected 2018 revenue, which includes the wholesale customer. The wastewater model serves the purpose of verifying whether the District is collecting enough rate revenue from its wastewater customers in total. As presented in the table below, the projected 2018 rate revenues is slightly above the cost-of-service revenue requirement for test year 2018.

Table 3-12 Summary of Wastewater Cost-of-Service Results by Class – Test Year 2018

Customer Class	Class Cost-of Service	Revenues under Projected 2018 Rates	Difference	% Difference
Residential	\$ 2,311,123	\$ 2,200,424	\$ (110,699)	-5.03%
Commercial	40,017	40,594	577	1.42%
Contract/ Wholesale	508	118,191	117,683	99.57%
Total	\$ 2,351,647	\$ 2,359,209	\$ 7,561	0.3%

Table 3-13 Summary of Water Cost-of-Service Results by Class – Test Year 2018

Customer Class	Class Cost-of Service 2018	Revenues under Projected 2018 Rates	Difference	% Difference
Residential	\$ 3,359,571	\$ 3,482,420	\$ 122,849	3.5%
Commercial	81,262	103,688	22,426	21.6%
Large Irrigation	319,483	262,255	(57,229)	-21.8%
Pinery Golf Irrigation	232,865	216,445	(16,420)	-7.6%
CGC & Pradera Golf Irrigation	362,966	307,471	(55,495)	-18.0%
Total	\$ 4,356,147	\$ 4,372,279	\$ 16,131	0.4%

The impacts of the COS analysis to rates and customers are presented in the following section.

SECTION 4. RATE DESIGN

As part of the Study, Stantec evaluated alternative rate structures on a cost-of-service basis. This was completed by determining the costs to serve the District's customers while maintaining the District's goals of fiscal responsibility and conservation.

The District's existing water rate structure is commonly referred to as an inclining block structure. This structure is characterized by unit charges for water usage that increase as the total volume of water usage increases. Inherently, this structure encourages sustainable water use through the reduction of overall water use as well as lessening the burden of peak water demands in a homogenous customer base. The District residential rate structure includes six tiers (five tiers for commercial customers) and also features a monthly service charge charged to customers, regardless of the amount of water consumed. Accounting for both wastewater and water, the fixed charge makes up about 62 percent of revenues, which results in very stable and predictable revenues.

There are three important considerations that need to be addressed when designing rates:

1. Equity among different classes of customers (interclass).
2. Equity inside each class related to different customers in the class (intraclass).
3. Revenue stability of the utility as it pertains to the rate design.

The alternatives evaluated by Stantec were expected to recover the customer class revenue requirements with no material surplus or shortage, meaning that the rates are not expected to produce any measurable subsidies from one class to another. Inclining block rates carry more risk than their uniform, declining, and flat rate counterparts; this is due to dependence on a piece of revenues coming from consumption at higher volumes, and therefore higher rates. In a water conserving environment, it is expected that customers would conserve water, especially discretionary uses of water, leading to reductions in volumes and therefore revenues. Also, the customer receives a price signal to reduce usage as they move through the structure. An estimate of water conservation was considered in the rate design process to account for this impact and rates were calculated to recover the full 2018 costs of service.

4.1 WASTEWATER RATE DESIGN

The District's existing wastewater rates are flat, meaning that each residential user pays the same monthly rate regardless of use. Commercial customer's flat rate is based on meter size. Wholesale wastewater customers pay a rate per 1,000 gallons that is based on a contract with the District. Stantec verified that the separate classes are equitably sharing in system costs and, due to the financial health of the fund, is not recommending a rate structure change for wastewater at this time.

Table 4-1 Wastewater Rate Design - Existing and Proposed 2018 Rates

Existing Base Rates		Proposed 2018 Base Rates	
Residential			
	\$ 42.92		\$ 42.92
Commercial			
3/4"	\$ 60.41		\$ 60.41
1"	120.81		120.81
1 1/2"	241.63		241.63
2"	422.86		422.86
3"	966.53		966.53
Wholesale			
	\$ 5.93/kgal		\$ 5.93/kgal

4.2 WATER RATE DESIGN

With District input and feedback, Stantec evaluated multiple alternatives to the residential rate structure, ranging from the status quo to adjusting tier thresholds to better align its rate schedule with industry practice. Proposed changes to irrigation and golf course rates were more rudimentary and consisted of aligning the rates with overall designated increases proposed to further achieving cost-of-service based rates by class. Water rate alternatives evaluated are as follows:

1. Status quo (existing structure).
2. Adjusting threshold for Tier 1 from 3 kgals to 5 kgals.
3. Adjust threshold for Tier 1 to 5 kgals and reduce the rate ratio between Tier 6 and Tier 1 to 4.25 from 6.51.

Board direction resulted in selection of the second scenario. Existing rates and proposed rates for this scenario are shown in the tables below.

Table 4-2 Water Residential Rate Design - Existing and Proposed 2018 Rates

Existing Rates			Proposed 2018 Rates		
Base Rate		\$ 29.22	Base Rate		\$ 29.22
Threshold (kgal)			Threshold (kgal)		
Tier 1	3	2.33	Tier 1	5	2.58
Tier 2	20	3.38	Tier 2	20	3.74
Tier 3	30	4.26	Tier 3	30	4.71
Tier 4	50	5.54	Tier 4	50	6.13
Tier 5	60	7.56	Tier 5	60	8.36
Tier 6	>60	15.17	Tier 6	>60	16.78

Table 4-3 Water Commercial Rate Design - Existing and Proposed 2018 Rates

Existing Rates			Proposed 2018 Rates		
Base Rate (3/4")		\$ 30.02	Base Rate (3/4")		\$ 29.22
Threshold (kgal)			Threshold (kgal)		
Tier 1	3	\$ 2.34	Tier 1	5	\$ 2.58
Tier 2	20	3.39	Tier 2	20	3.74
Tier 3	30	4.26	Tier 3	30	4.71
Tier 4	50	5.55	Tier 4	50	6.13
Tier 5	>50	7.58	Tier 5	>50	8.36

Table 4-4 Water Other Customers Rate Design - Existing and Proposed 2018 Rates

Existing Rates		Proposed 2018 Rates	
Large Irrigators		Large Irrigators	
Base Rate	\$ 30.02	Base Rate	\$ 29.22
Usage rate, \$ per kgal	3.63	Usage rate, \$ per kgal	3.83
Golf Courses		Golf Courses	
Base Rate	\$ 30.02	Base Rate	\$ 29.22
Usage rate, \$ per kgal		Usage rate, \$ per kgal	
Pradera & CO GC	3.03	Pradera & CO GC	3.15
Pinery GC	3.33	Pinery GC	3.46

4.2.1 RESIDENTIAL WATER RATES

As shown in Table 4-2, for residential customers, proposed rates maintain the existing base rate, but include an adjustment to the Tier 1 threshold. To recover revenue requirements, usage rates increase by approximately 10 percent. However, overall residential volumetric revenues are projected to increase by 6.3 percent due to the adjustment in the Tier 1 threshold, which charges some water usage at a lower rate than under the existing rate structure. No other changes have been recommended to the tier ratios.

4.2.2 COMMERCIAL WATER RATES

The proposed commercial base rate for a ¾" meter equals the proposed residential base rate. Commercial and residential customers of the same meter size place a comparable burden on the customer service and metering systems of the utility, which justifies having the same base rate. In fact, prior to 2015, residential and commercial base rates for the District were equal for a ¾" meter. Similarly, the proposed volume rates for commercial equal the proposed residential volume rates, although commercial meter sizes greater than ¾" have higher tier thresholds. The commercial rate structure only consists of five tiers because more than 30% of commercial bills typically have monthly usage exceeding 50,000 gallons per month.

4.2.3 IRRIGATOR AND GOLF COURSE WATER RATES

Table 4-4 shows the large irrigator and golf course customer classes of the water system. Proposed base rates for 2018 are aligned with the other customer classes and represent a small decrease from existing rates for these users. Base rates represent a small portion of revenues collected from large irrigators and golf course at slightly less than three percent of the total revenues from these classes. The proposed usage charges increased by five percent and four percent for irrigators and golf courses, respectively.

4.2.4 WATER BILL IMPACTS

With any rate design, it is important to determine how the proposed changes affect all customers to determine if implementation is feasible. For the recommended rate design changes, Figure 4-1 through Figure 4-3 on the following pages present general impacts by usage levels. The residential and commercial charts show negative bill impacts in usage amounts from four to eight thousand gallons, meaning some customers will experience a decrease in monthly bills. This is due to the adjustment in the tier threshold, which puts some usage at a lower rate. The large irrigator chart shows bill increases for all customers, except those that have no water usage, because, only the proposed base rate decreased.

Appendix D presents residential bill impacts for low and high water users of all rate design scenarios evaluated in this study.

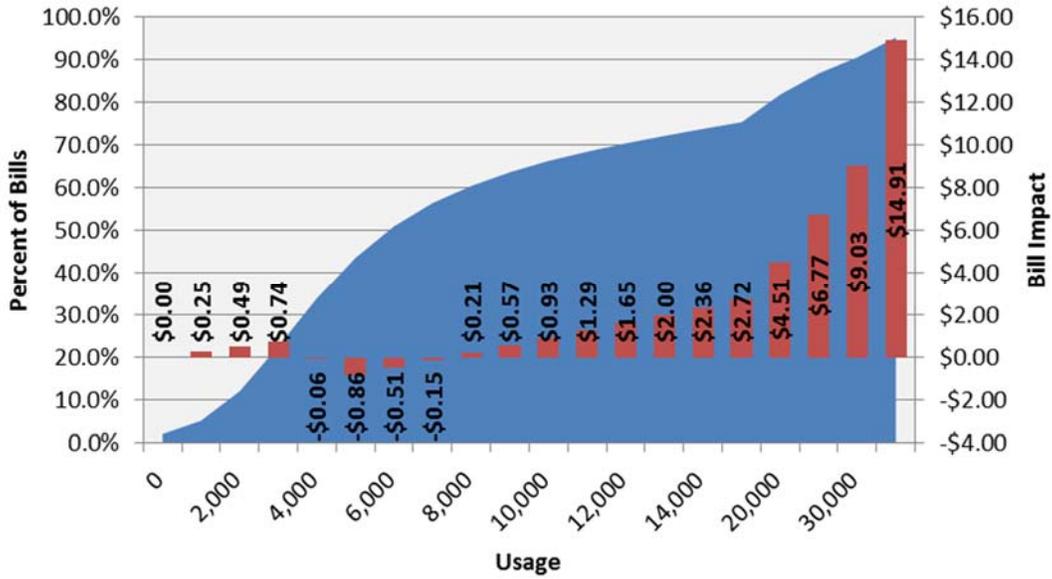


Figure 4-1 - Residential Bill Impact - 2018 Rate Design

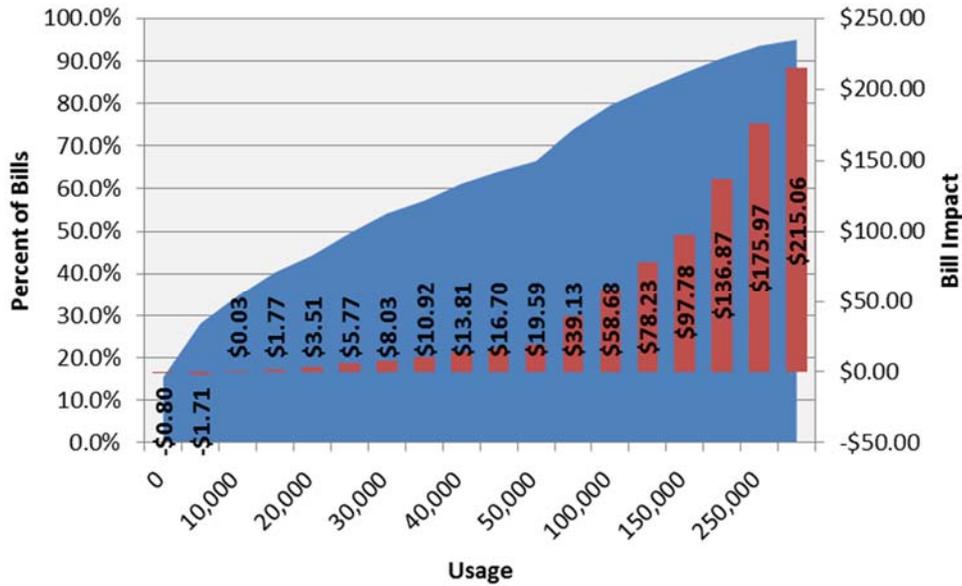


Figure 4-2 - Commercial 3/4" Bill Impact - 2018 Rate Design

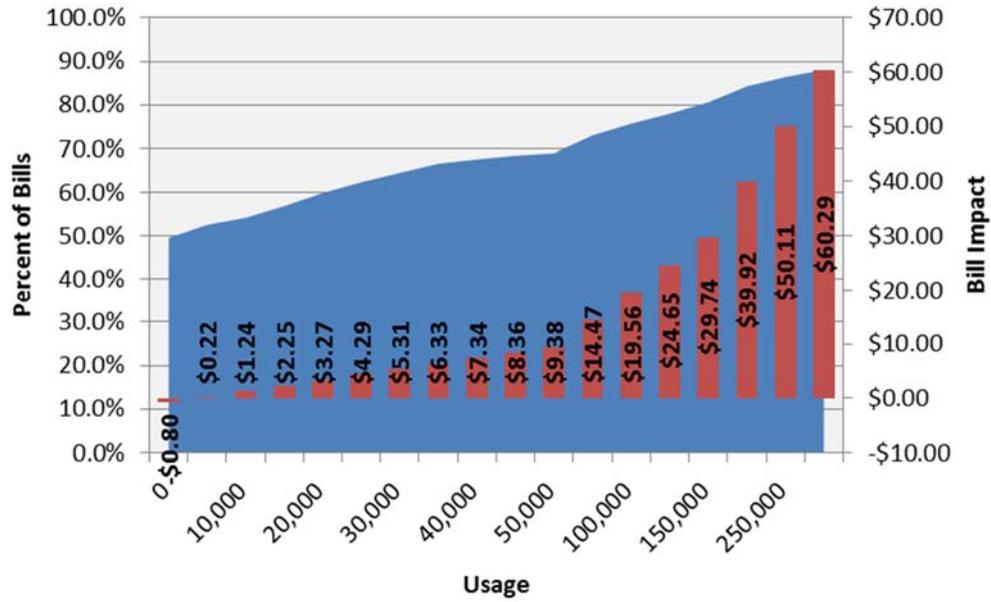


Figure 4-3 - Irrigator 4" Bill Impact - 2018 Rate Design

SECTION 5. MISCELLANEOUS FEES

This section of the report presents the analysis of miscellaneous service charges that was completed as part of the Study.

The District currently applies miscellaneous service charges in relation to the provision of specific services to individual customers. Turn on/off fees, shut off fees, and meter tests are examples of the types of services for which the District has service charges.

Stantec reviewed with staff the list of miscellaneous fees, shown on the following page. Fees were evaluated by conducting a survey of similar utilities' practices and fee amounts in comparison with the District's charges. Utilities included in this survey are:

- Arapahoe County Water and Wastewater Authority
- Aurora Water
- Castle Pines North Metropolitan District
- Castle Rock Water
- Centennial Water & Sanitation District
- Consolidated Mutual Water Co
- Denver Water
- Left Hand Water District
- Parker Water & Sanitation District
- Roxborough Water & Sanitation District
- Stonegate Village Metropolitan District

Based on the survey, miscellaneous fees charged by the District were determined to be reasonable when compared to the other utilities. Stantec recommended that no changes should be made to these miscellaneous fees. Please see Appendix E for the full survey.

Stantec also reviewed the bulk water charge. The District allows temporary water service for construction and seasonal activities from hydrants around the District. Each use is metered and charged at the bulk water rate.

From the last rates and fee study, bulk water monthly meter rental fee was set to equal the 3" commercial meter monthly service charge. In discussions with District management, the raw water volumetric rate is also proposed to be aligned with the commercial water rate at the highest tier. This reflects the cost of temporary use of a large quantity of potable water. Table 5-1 below summarizes the existing miscellaneous fees and bulk water rates with the proposed fees and rates for 2018.

Table 5-1 Summary of Miscellaneous Fees

Description	Existing	2018
Turn On	\$ 55	No Change
Turn Off	55	No Change
Shutoff	110	No Change
Returned Check	30	No Change
Transfer Fee	45	No Change
Meter Test Fee	165	No Change
Late Payment Fee	\$10 + 1% per month on past due balance	No Change
Bulk water		
Monthly Meter Rental Fee	\$ 190.61	\$ 185.53
Volume (per kgal)	7.02	\$ 8.36

SECTION 6. SUMMARY

Based on analysis of the District's projected O&M and capital costs, as well as estimated number of accounts, water consumption, and wastewater usage, Stantec proposes adjustments to the District's tap fees and water rates. If costs or customer usage change, the proposed rates and fees may need to be reviewed to ensure sufficient revenues to meet the District's requirements.

The financial plan update determined that water rate increases are needed during the forecasted period, but no changes are required for wastewater rates. Water rate structure scenarios were developed by Stantec and District staff and presented to the Board for consideration. Based on Board direction, an adjustment to the District's water rate Tier 1 is proposed. Water rate adjustments are proposed as well to meet the District's revenue requirements projected for 2018.

Stantec recommends that the District continue to monitor its revenues and costs and review its rates if major changes occur. Any changes to the assumptions or costs may have a measurable effect on the projections presented in this report.

As part of its review of alternative rate structures, the Board is interested in a water budget-based rate structure. Several communities in the region (Castle Rock Water, City of Boulder, and Centennial Water & Sanitation District) have implemented water budget-based rate structures. Water budget-based rate structures are believed to be conservation based rate structures that allow for efficient use of water by individual customers. Implementing such a rate structure, however, requires planning, data, and the ability to monitor and adjust allocated water amounts according to individual needs.

Should the District wish to conduct a feasibility study regarding what is required to develop and maintain a water budget-based rate structure, the following information is needed at a minimum:

- Monthly billing data.
- Persons per household for each residential account.
- Irrigable area/lot size for each account.

- Monthly evapotranspiration rate (ET) data (typically for turf grass).
- Monthly rainfall.
- Items for discussion:
 - Number of usage tiers; cost basis for rates by tier.
 - Anticipated variances (water budget adjustments for circumstances such as: temporary occupants in a household, filling pools, spas, or ponds).
 - Water budgets for non-residential customers.

This option may help the District to achieve its goals of long-term sustainability and financial stability.

DISCLAIMER

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Additionally, the purpose of this document is to summarize Stantec's analysis and findings related to this project, and it is not intended to address all aspects that may surround the subject area. Therefore, this document may have limitations, assumptions, or reliance on data that are not readily apparent on the face of it. Moreover, the reader should understand that Stantec was called on to provide judgments on a variety of critical factors which are incapable of precise measurement. As such, the use of this document and its findings by the Pinery Water and Wastewater District should only occur after consultation with Stantec, and any use of this document and findings by any other person is done so entirely at their own risk.

