



# Hidden Valley Lake Community Services District

## Board Workshop

DATE: March 18, 2019  
TIME: 5:30 PM  
PLACE: Hidden Valley Lake CSD  
Administration Office, Boardroom  
19400 Hartmann Road  
Hidden Valley Lake, CA

- 1) CALL TO ORDER
- 2) PLEDGE OF ALLEGIANCE
- 3) ROLL CALL
- 4) APPROVAL OF AGENDA
- 5) DISCUSSION AND POSSIBLE ACTION: NBS Rate Study, provide direction to staff
- 6) PUBLIC COMMENT
- 7) ADJOURNMENT

Public records are available upon request. Board Packets are posted on our website at [www.hvlcsd.org/meetings](http://www.hvlcsd.org/meetings).

In compliance to the Americans with Disabilities Act, if you need special accommodations to participate in or attend the meeting please contact the District Office at 987-9201 at least 48 hours prior to the scheduled meeting.

Public shall be given the opportunity to comment on each agenda item before the Governing Board acts on that item, G.C. 54953.3. All other comments will be taken under Public Comment.



**HIDDEN VALLEY LAKE**  
**COMMUNITY SERVICES DISTRICT**

## **WATER, SEWER & RECYCLED WATER RATE STUDY REPORT**

*Administrative Draft Report*

**October 2018** (Revised February 2019)

**OFFICE LOCATIONS:**

*Temecula –Headquarters*  
32605 Temecula Parkway, Suite 100  
Temecula, CA 92592

*San Francisco - Regional Office*  
San Francisco, CA 94102

*Davis - Regional Office*  
Davis, CA 95616

Phone: 800.676.7516

[www.nbsgov.com](http://www.nbsgov.com)

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## SECTION 1. BACKGROUND, PURPOSE AND OVERVIEW OF THE STUDY

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### BACKGROUND

In 2014, the Hidden Valley Community Services District (“District”) retained NBS to complete a water and sewer rate study which resulted in a March 2015 rate study report, and new rates were implemented soon after. However, within a month, the San Juan Capistrano court decision was issued; this decision had significant implications for how tiered rates are designed. Essentially, the decision required water agencies to “*demonstrate that the tiers correspond to the actual cost of providing service at a given level of usage.*” In addition, the severe drought across California and mandated conservation prompted the District to replace its four-tiered rates with a new uniform (single tier) rate and new drought surcharges.

***“Significant declines in water use have impacted the District’s revenues and reserves.”***

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Since then, the District has been pondering additional changes in consumption patterns, water supply limitations, future CIP funding requirements, and the desire to continue to improve the fairness and equity of rates. In light of these considerations, an updated rate study was needed.

### PURPOSE

The District retained NBS again in December 2017 to re-evaluate its water, sewer and recycled water rates to ensure its rates meet basic Proposition 218 (Prop 218) requirements, industry standards, and reflect the District’s priority of maintaining transparent communications between the District and its residents and businesses.

### OVERVIEW OF THE STUDY

In developing the proposed new water and sewer rates, NBS and District Staff worked cooperatively to develop and present an overview of study results and rate alternatives to the District’s Board on February 12, 2019. The Board provided NBS and District Staff with direction and feedback. Based on this input, NBS recommends the water, sewer and recycled water rates summarized below.

**Key Issues Addressed** – In addition to ensuring that water and sewer rates collect sufficient revenue to meet the annual operating costs and capital improvement plans, other key issues addressed included:

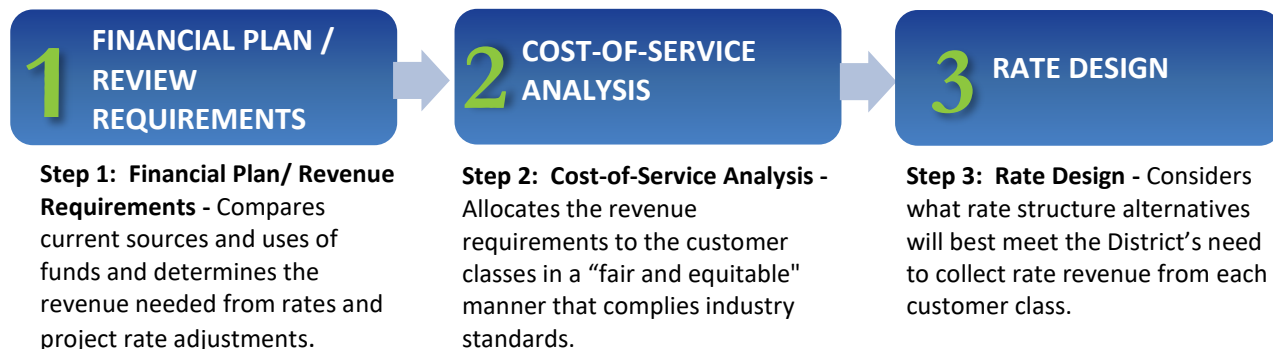
- Lower water sales over the last few years due to the drought and conservation concerns
- In particular, consumption records indicate that commercial water use has significantly increased while residential has significantly decreased
- Chromium 6 treatment costs
- Water supply limitations and potential need to build a new well
- Changes in annual operating costs, including potential adjustments resulting from the District’s salary survey
- The need to build adequate CIP and replacement reserves
- SRF loans and debt service payments

**Recommendations** – As a part of the long-range financial plan, NBS evaluated projected revenues and expenditures to determine net revenue requirements. In light of the water utility’s declines in water sales and planned capital improvements, it will be critical to rebuild water reserve funds. While the sewer utility has reasonably healthy reserves, those reserves will be needed to cover current deficits and fund capital projects. NBS recommends the District adopt the rate increases shown in the water, sewer and recycled water rates described below in this report.

## RATE STUDY METHODOLOGY

**Components of the Rate Study Methodology** – A comprehensive utility rate study typically has three major components: (1) the utility’s overall revenue requirements and financial plan, (2) the cost-of-service for each customer class, and (3) rate structure design, as shown in **Figure 1**. These components reflect industry standards, primarily from the American Water Works Association (AWWA)<sup>1</sup>, and address the general requirements for equity and fairness. In terms of the chronology of the study, these three steps represent the order they were performed in this study.

**Figure 1: Primary Components of a Rate Study**



The following sections in this report present an overview of the methodologies, assumptions, and data used along with the financial plans and rates developed.

**Rate Design Criteria** – Several criteria are typically considered in setting rates and developing sound rate structures. The fundamentals of this process have been documented in several rate-setting manuals. For example, the foundation for evaluating rate structures is generally credited to James C. Bonbright in the *Principles of Public Utility Rates*<sup>2</sup>, which outlines pricing policies, theories, and economic concepts along with various rate designs. The other common industry standard is AWWA Manual M1. The following is a simplified list of the attributes of a sound rate structure:

- Rates should be easy to understand from the customer’s perspective.
- Rates should be easy to administer from the utility’s perspective.
- Rates should promote the efficient allocation of the resource.
- Rates should be equitable and non-discriminating (e.g., cost based).
- There should be continuity in the rate making philosophy over time.
- Other utility policies should be considered (e.g., encouraging conservation & economic development).
- Rates should consider the customer’s ability to pay.
- Rates should provide month-to-month and year-to-year revenue stability.

The following section covers basic rate design criteria that NBS and District staff considered as a part of their review of the rate structure alternatives.

<sup>1</sup> *Principles of Water Rates, Fees, and Charges*, Manual of Water Supply Practices, M1, AWWA, seventh edition, 2017.

<sup>2</sup> James C. Bonbright; Albert L. Danielsen and David R. Kamerschen, *Principles of Public Utility Rates*, (Arlington, VA: Public Utilities Report, Inc., Second Edition, 1988), p. 383-384.

**Rate Structure Issues** – The relationship between fixed costs and variable costs is one of the most fundamental rate structures considerations. Fixed costs typically do not vary with the amount of water consumed. Debt service and District personnel are examples of fixed costs. In contrast, variable costs such as the cost of chemicals and electricity tend to change with the quantity of water sold. The vast majority of rate structures contain a fixed or minimum charge in combination with a volumetric charge.

The District’s rate design objectives are not necessarily the same as those in other communities. For example, some communities, particularly those with very expensive purchased water costs, place a very high priority on conservation-oriented rates. Other communities, particularly those who have many low-income customers, want to implement low-income subsidies.

In the last rate study, the District considered various combinations of fixed vs. variable charges, and determined that collecting 60 percent of rate revenue from fixed charges and 40 percent from variable charges was preferred. Additionally, the previous four-tiered volumetric rates were replaced with a single-tier (uniform) volumetric rate. This water rate design still appears to be a good fit in light of the District’s projected water sales and need to consider revenue sufficiency going forward.

### **Key Financial Assumptions**

Following are the key assumptions used in the water, sewer and recycled water rate analyses:

- **Funding of Capital Projects** – After extensive review of the planned capital improvement projects (CIP) and funding requirements by the District and its engineering consultant, the District has decided that the water utility will fund 50% with SRF loans and the other 50% with Prop 1 Grants to fund the high CIP costs over the next several years. The sewer and recycled water utility will fund the majority of the projects with rate revenue.
- **Reserve Targets** – The water utility reserves are below target levels, while the sewer utility reserves are currently in decent shape and slightly above target levels. Going forward, the target reserves for operations and maintenance (O&M) and capital rehabilitation and replacement (R&R) follow general industry standards for utility fund management. This includes approximately 90-days of O&M expenses for both the water and sewer Operating and Maintenance Reserves, and approximately 3% of net assets as the target reserve level for the Rehabilitation and Replacement Reserves.
- **Inflation and Growth Projections:**
  - ✓ Customer growth is assumed to be 0.25% annually. While some additional growth may occur<sup>3</sup>, NBS did not rely on any additional growth during the next five years.
  - ✓ General cost inflation is about 3% annually.
  - ✓ Operating expenses, which include among other things labor costs, health benefits, and retirement benefits, are inflated at a rate of approximately 3% to 4% annually.
  - ✓ No inflation is added to other costs.

The next two sections discuss the water, sewer and recycled water rate studies.

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<sup>3</sup> The District has roughly 700 undeveloped lots, these are not expected to develop within the timeframe of this study.

## SECTION 2. WATER RATE STUDY

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### A. KEY WATER RATE STUDY ISSUES

The water rate analysis was undertaken with a few specific objectives, including:

- Analyze consumption data changes over past several years.
- Generating additional revenue to meet projected funding requirements and rebuild reserve funds,
- Consider the percent of water rate revenue collected from volumetric rates vs. fixed monthly charges in light of recent conservation. In 2017, the District’s water rates collected approximately 60% of rate revenue from fixed charges and 40% from volumetric rates, which was the rate design adopted in the last rate study.
- Update fixed charges and volumetric rates to reflect changes in consumption patterns.

NBS developed several water rate alternatives over the course of this study based on industry standards and cost-of-service principles. The fixed and volumetric charges were calculated based on the net revenue requirements, number of customer accounts, water consumption, and other District-provided information. The following are the basic components included in this analysis:

- **Developing Unit Costs:** The water revenue requirements were “functionalized” into three categories: (1) fixed capacity costs; (2) variable costs (or volume-based), and; (3) customer service costs. Unit costs for each of these categories were then allocated to functional areas, including water consumption, peaking factors, number of accounts by meter size, and customer class.
- **Determining Revenue Requirements by Customer Class:** The total revenue collected from each customer class was determined using the unit costs and the total units belonging to each class. For example, volume-related costs are allocated based on the water consumption for each class, while customer costs are allocated based on number of meters. Once the revenue requirement for each customer class is determined, collecting these revenue requirements from each customer class is addressed in the rate design task.
- **Rate Design and Fixed vs. Variable Costs:** The revenue requirements for each customer class are collected from fixed charges and volumetric rates. The cost of service analysis indicated that an allocation of 60% of the costs to fixed and 40% to variable rates is a reasonable basis for rate design. State agencies, such as the California Water Efficiency Partnership, would like water utilities to collect at least 70% of rate revenue from volumetric rates. However, many utilities prefer to collect less than 70% from volumetric rates because of the revenue instability that can result when water use drops unexpectedly. As a compromise, NBS recommends the rates proposed in this report collect 40% of revenue from volumetric charges and 60% from fixed charges.

*“The best way to promote financial stability is to collect fixed costs through fixed charges.”*

### B. WATER UTILITY REVENUE REQUIREMENTS

Rate increases for municipal utilities are governed by the need to meet operating and capital costs, and maintain adequate debt coverage. It is also important to maintain reasonable reserves in order to handle minor emergencies, fund working capital, maintain a good credit rating, and generally follow sound financial management practices. The current financial state of the District’s water utility is as follows:



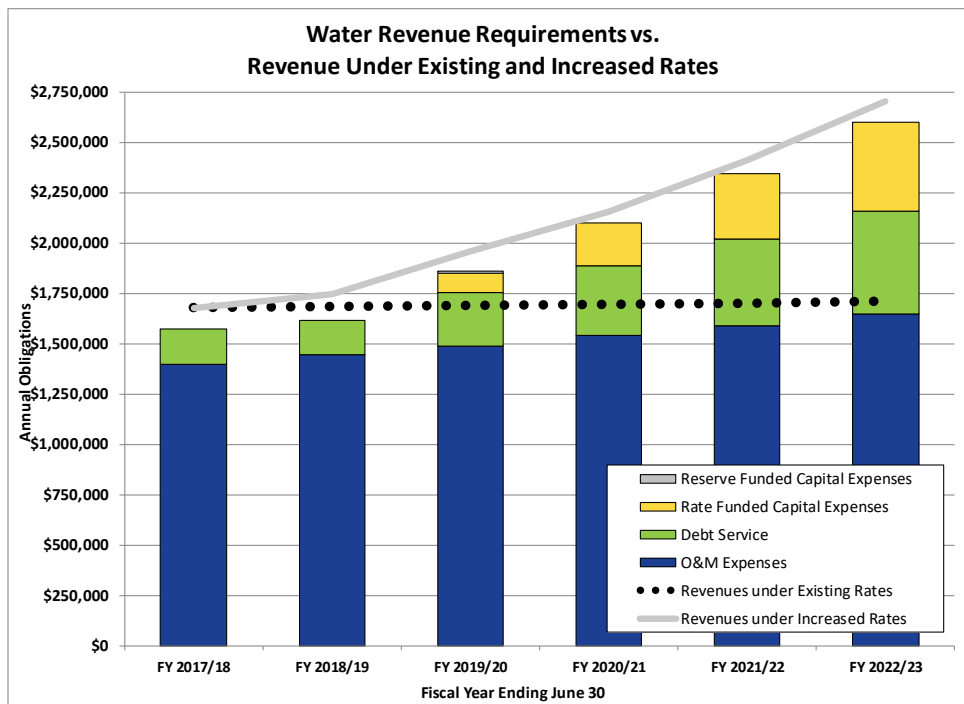
**Meeting Net Revenue Requirements:** For Fiscal Years 2017/18 through 2022/23, the projected net revenue requirement that must be recovered from rates increases by almost 68%, from \$1.50 million to \$2.26 million, as shown in **Figures 2 and 3**. Although the water utility's current rates produce a small surplus, without additional rate increases that surplus will turn into a deficit of almost \$900,000 by FY 2022/23.

**Figure 2. Summary of Water Revenue Requirements**

Summary of Sources and Uses of Funds and Net Revenue Requirements <sup>1</sup>	Budget		Projected			
	FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
<b>Sources of Water Funds</b>						
Rate Revenue Under Existing Rates	\$ 1,606,921	\$ 1,610,938	\$ 1,614,966	\$ 1,619,003	\$ 1,623,051	\$ 1,627,108
Other Operating Revenue	69,800	69,912	70,024	70,137	70,250	70,363
Interest Earnings	500	1,926	3,440	5,895	8,414	11,355
<b>Total Sources of Potable Funds</b>	<b>\$ 1,677,221</b>	<b>\$ 1,682,776</b>	<b>\$ 1,688,430</b>	<b>\$ 1,695,035</b>	<b>\$ 1,701,714</b>	<b>\$ 1,708,826</b>
<b>Uses of Water Funds</b>						
Salaries & Benefits	\$ 637,403	\$ 657,036	\$ 679,277	\$ 704,353	\$ 732,619	\$ 764,604
Water Rights	70,000	72,380	74,551	76,788	79,015	81,306
Repair & Replacement	185,000	191,290	197,029	202,940	208,825	214,881
Electricity	107,711	109,865	112,063	114,304	116,590	118,922
All Other Expenses	399,009	413,111	426,215	439,759	453,357	467,403
Potable System Debt Service	171,672	171,374	262,384	345,953	427,641	509,435
Rate-Funded Capital Expenses	-	-	97,780	213,747	325,917	441,138
<b>Total Use of Potable Water Funds</b>	<b>\$ 1,570,795</b>	<b>\$ 1,615,056</b>	<b>\$ 1,849,298</b>	<b>\$ 2,097,843</b>	<b>\$ 2,343,963</b>	<b>\$ 2,597,688</b>
<b>Surplus/(Deficiency) before Rate Increase</b>	<b>\$ 106,426</b>	<b>\$ 67,720</b>	<b>\$ (160,868)</b>	<b>\$ (402,808)</b>	<b>\$ (642,249)</b>	<b>\$ (888,862)</b>
Additional Revenue from Rate Increases	-	64,438	268,730	458,243	709,281	991,634
<b>Surplus/(Deficiency) after Rate Increase</b>	<b>\$ 106,426</b>	<b>\$ 132,158</b>	<b>\$ 107,862</b>	<b>\$ 55,435</b>	<b>\$ 67,032</b>	<b>\$ 102,772</b>
<b>Projected Annual Potable Rate Revenue Increase</b>	<b>0.00%</b>	<b>8.00%</b>	<b>8.00%</b>	<b>10.00%</b>	<b>12.00%</b>	<b>12.00%</b>
<b>Net Revenue Requirement - Potable System</b>	<b>\$ 1,500,495</b>	<b>\$ 1,543,218</b>	<b>\$ 1,775,834</b>	<b>\$ 2,021,811</b>	<b>\$ 2,265,300</b>	<b>\$ 2,515,970</b>
<b>Overall Debt Coverage Ratio</b>	<b>6.05</b>	<b>6.36</b>	<b>4.87</b>	<b>4.18</b>	<b>3.92</b>	<b>3.80</b>

1. Revenues and Expenditures budgeted for FY 2017-18 found in source file: #1 - Approved 2018-2018 budget.pdf

**Figure 3. Water Revenue Requirements through FY 2022/23**





The District is planning on using SRF funding as well as Prop 1 Grant funding to pay for the Capital Improvement Plans. To fund the debt service that will start in FY 19/20, recommended annual rate increases of 8%, 8%, 10%, 12% and 12% are needed starting in FY 18/19 to fund all O&M costs and CIP debt service payments.

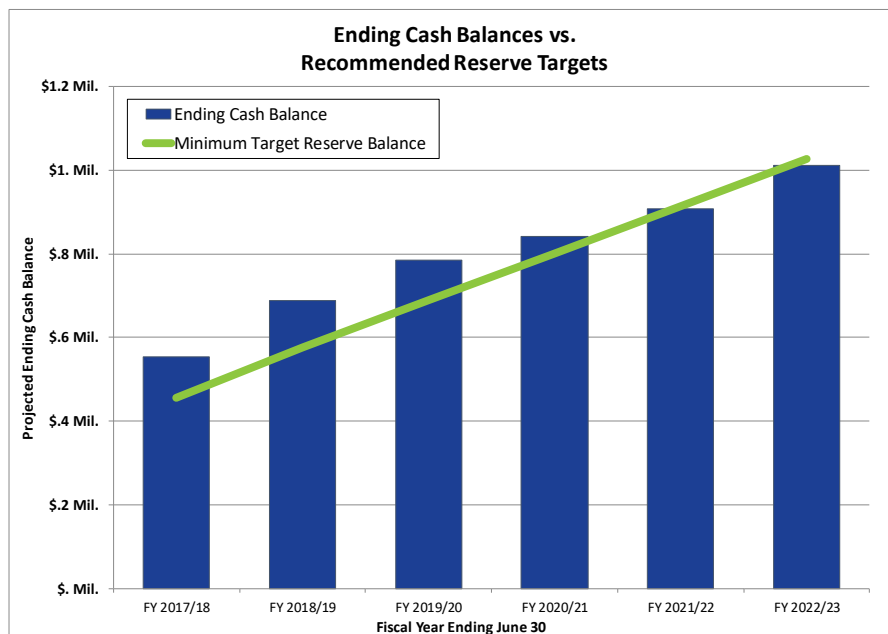
**Figure 4** summarizes the projected reserve fund balances and reserve targets for the next five years. **Figure 5** indicates that, assuming the proposed rate increases are adopted, the District’s reserves will increase over the next five years, and will keep up with the reserve fund target, which is growing to account for the additional capital improvements the District will be building.

**Figure 4. Summary of Water Reserve Funds**

Beginning Reserve Fund Balances and Recommended Reserve Targets	Budget		Projected			
	FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
<b>Operating Reserve <sup>1</sup></b>						
Ending Balance	\$ 350,000	\$ 361,000	\$ 372,000	\$ 385,000	\$ 398,000	\$ 412,000
<i>Recommended Minimum Target</i>	<i>350,000</i>	<i>361,000</i>	<i>372,000</i>	<i>385,000</i>	<i>398,000</i>	<i>412,000</i>
<b>Water Capital Fund <sup>2</sup></b>						
Ending Balance	\$ 204,963	\$ 327,014	\$ 413,962	\$ 456,397	\$ 510,429	\$ 599,200
<i>Recommended Minimum Target</i>	<i>105,400</i>	<i>216,000</i>	<i>317,100</i>	<i>415,900</i>	<i>515,200</i>	<i>614,900</i>
<b>Debt Reserve <sup>3</sup></b>						
Ending Balance	\$ 171,672	\$ 171,374	\$ 172,231	\$ 173,523	\$ 175,258	\$ 177,449
<i>Recommended Minimum Target</i>	<i>171,672</i>	<i>171,374</i>	<i>262,384</i>	<i>345,953</i>	<i>427,641</i>	<i>509,435</i>
<b>Total Ending Balance</b>	<b>\$ 726,635</b>	<b>\$ 859,388</b>	<b>\$ 958,193</b>	<b>\$ 1,014,919</b>	<b>\$ 1,083,686</b>	<b>\$ 1,188,649</b>
<b>Total Recommended Minimum Target</b>	<b>627,072</b>	<b>748,374</b>	<b>951,484</b>	<b>1,146,853</b>	<b>1,340,841</b>	<b>1,536,335</b>

1. Water Operations Cash balance found in Source File: #3 - FY End 2017 Hidden Valley Lake Audit.pdf, Page 12.
2. Water Operations restricted for capital facilities found in Source File: #3 - FY End 2017 Hidden Valley Lake Audit.pdf, Page 13.
3. Water Operations restricted for debt service found in Source File: #3 - FY End 2017 Hidden Valley Lake Audit.pdf, Page 13.

**Figure 5. Water Reserve Funds through FY 2022/23**



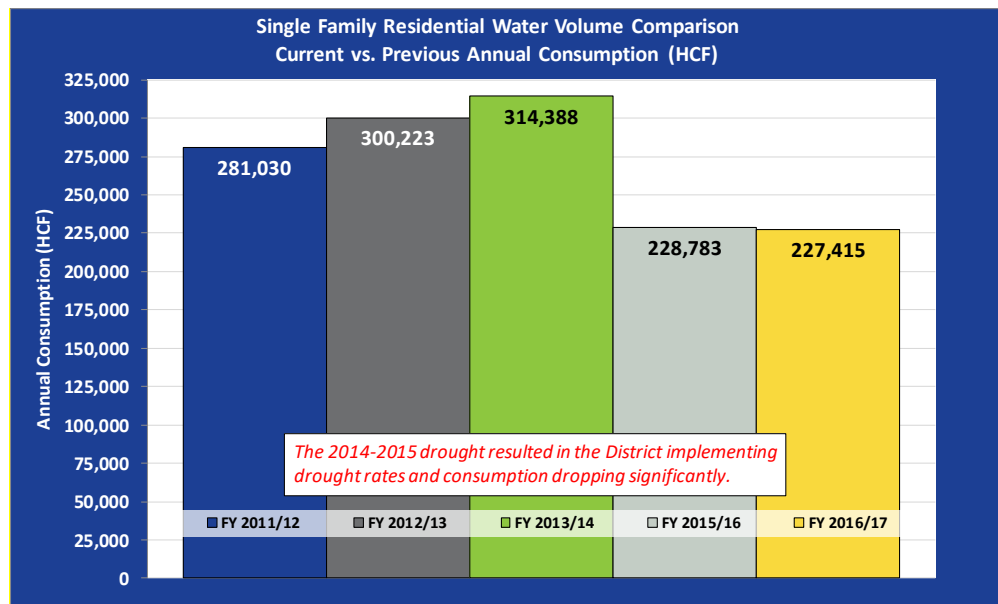
**Building and Maintaining Reserve Funds:** The Water Utility should maintain sufficient reserves. NBS recommends the District adopt and maintain the following reserve fund target balances:

- ✓ **Operating Reserve** should normally be equal to 25% of the Utility’s budgeted annual operating expenses, which is equal to a three-month (or 90-day) cash cushion for normal operations. An Operating Reserve is intended to promote financial viability in the event of any short-term fluctuation in revenues and/or expenditures. Fluctuations might be caused by weather patterns, the natural inflow and outflow of cash during billing cycles, natural variability in demand-based revenue streams (e.g., volumetric charges), and – particularly in periods of economic distress – changes or trends in age of receivables.
- ✓ **Capital Rehabilitation and Replacement (R&R) Reserve** are typically about 3% of net depreciable capital assets, which equates to a 33-year replacement cycle for capital assets.
- ✓ **Debt Reserve** is the reserve requirement for the CEIDB loan of approximately \$170,000.
- ✓ **OPEB<sup>4</sup> Reserve** – The District’s is establishing this reserve fund to begin addressing its current liability for post-retirement benefits, with the intent of increasing annual contributions in the future.

A summary of the water utility’s proposed 10-year financial plan is included in Appendix A – Water Rate Study Summary Tables. These tables include revenue requirements, reserve funds, revenue source and proposed rate increases for the 10-year period.

**Summary of Changing Consumption Patterns:** NBS confirmed that customer billing data indicates that the District has experienced lower than expected water rate revenues. This was primarily related to the drop in residential water use shown in **Figure 6**, which indicate that residential consumption decreased by 27%. This reflects the drought and drought-related conservation mandates that impacted water supplies throughout most of California. An additional factor that affected consumption was the drought surcharges that the District implemented from 2015 until April 2017.

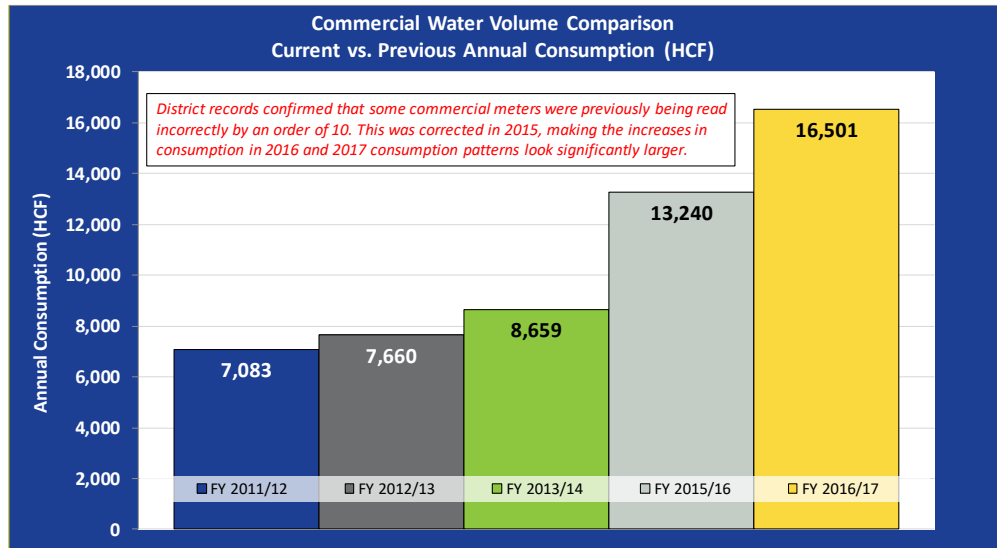
**Figure 6: Annual Water Consumption for Single Family Residential Customers from 2011-2017**



<sup>4</sup> OPEB refers to “Other Post-Employment Benefits”.

District staff also became aware of an issue of incorrect meter readings for some commercial and municipal customers. The lower than actual readings gives the impression that there were significant increases in commercial water use after 2013-14, as shown in **Figure 7**. However, it is likely that the previous consumption was just under-recorded.

**Figure 7: Annual Water Consumption for Commercial Customers from 2011-2017**



**C. CURRENT VS. PROPOSED WATER RATES**

Currently, the District charges all customer classes with a standard 5/8” meter a monthly fixed charge of \$33.93, plus a uniform commodity rate of \$2.30/hcf for all water consumed. The proposed new rates follow this same rate design. **Figure 8** compares the current and proposed rates for Fiscal Year 2018/19 through 2022/23. **Figure 9** compares monthly bills for residential customers under current and proposed rates at varying levels of water consumption, and **Figure 10** provides a comparison of water bills for other regional communities.

**Figure 8. Current and Proposed Water Rates for FY 2018/19 through 2022/23**

Water Rate Schedule	Current Rates	Proposed Rates				
		FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
<i>Projected Increase in Rate Revenue</i>		8.00%	8.00%	10.00%	12.00%	12.00%
<b>% Fixed</b>	<b>60%</b>	<b>60%</b>	<b>60%</b>	<b>60%</b>	<b>60%</b>	<b>60%</b>
<b>% Variable</b>	<b>40%</b>	<b>40%</b>	<b>40%</b>	<b>40%</b>	<b>40%</b>	<b>40%</b>
<b>Fixed Service Charge</b>						
<i>Monthly Fixed Service Charge:</i>						
5/8 inch	\$33.93	\$34.15	\$36.88	\$40.57	\$45.44	\$50.89
3/4 inch	\$33.93	\$34.15	\$36.88	\$40.57	\$45.44	\$50.89
1 inch	\$81.37	\$81.93	\$88.49	\$97.34	\$109.02	\$122.10
1.5 inch	\$160.42	\$161.57	\$174.50	\$191.95	\$214.98	\$240.78
2 inch	\$255.28	\$257.14	\$277.71	\$305.48	\$342.14	\$383.20
<b>Potable Water Commodity Charges</b>						
Uniform Rate						
SFR and MFR:	\$2.30	\$2.53	\$2.74	\$3.01	\$3.37	\$3.77
Commercial	\$2.30	\$2.74	\$2.96	\$3.26	\$3.65	\$4.08
Municipal	\$2.30	\$3.03	\$3.27	\$3.60	\$4.03	\$4.52

Figure 9. Comparison of Monthly Water Bills for Single-Family Residential Customers

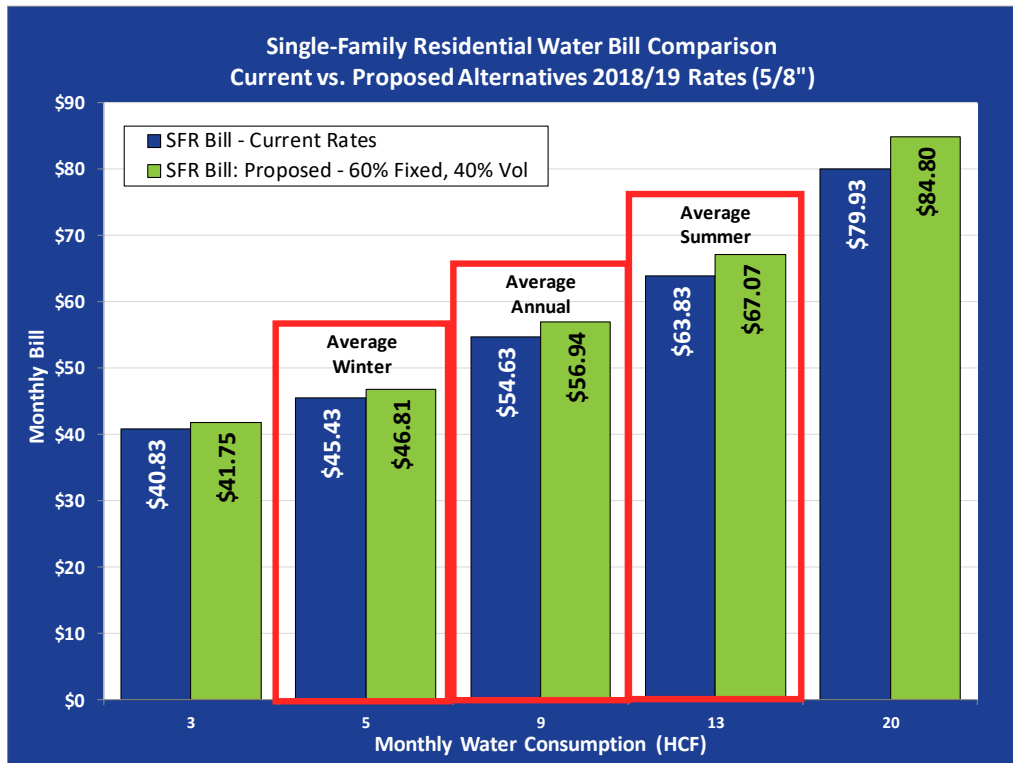
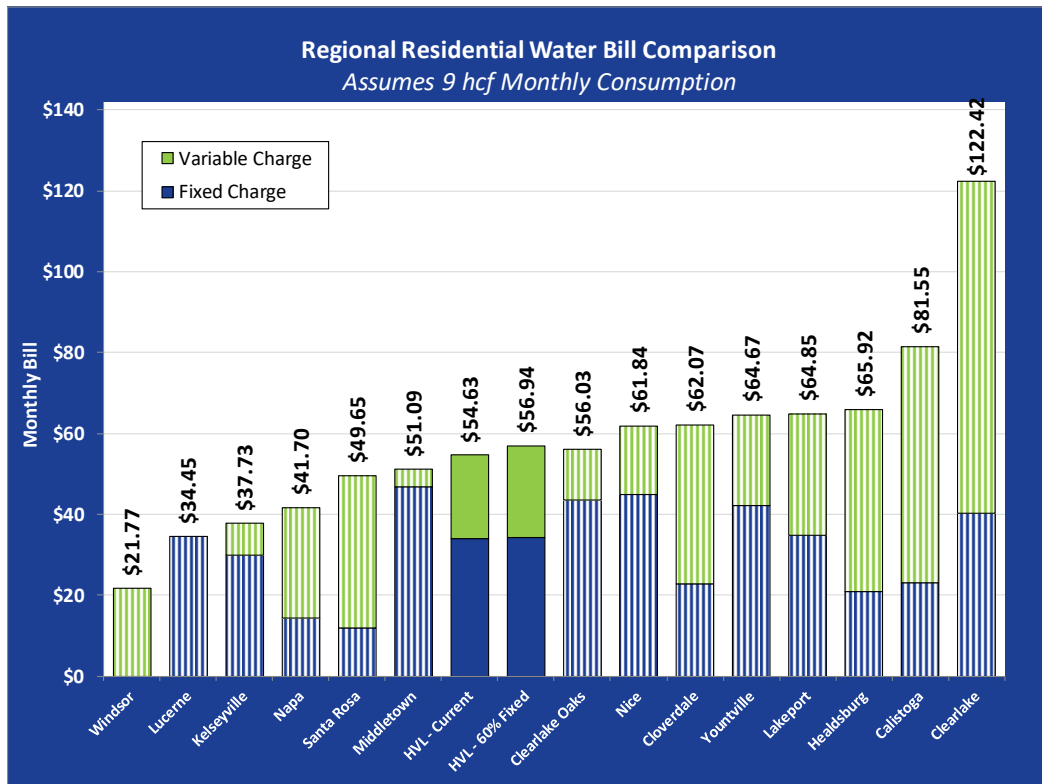


Figure 10. Regional Comparison of Monthly Water Bills for Single-Family Residential



## SECTION 3. SEWER AND RECYCLED WATER RATE STUDY

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### A. KEY SEWER AND RECYCLED WATER RATE STUDY ISSUES

Some of the specific objectives addressed in the sewer rate analysis included:

- Generating additional revenue needed to meet projected funding requirements.
- Updating the volumetric-based charge for residential customers that maintains the average winter water use basis. This is more equitable than a 100-percent flat rate because it reflects the differences in effluent generation and therefore better aligns with the cost of service.
- Updating the volumetric rate for commercial customers that relies on average winter water use for improving equity, as explained below there have been significant changes in consumption data and the cost-basis for commercial customers that NBS believes is better represented by winter water use.
- Updating recycled water rates for the one customer within the District, which is the Golf Course.

As with the water rates, the proposed sewer rates were developed based on industry standards and cost-of-service principles, and reflect input from District staff and the District Board. However, it is ultimately the District Board that decides whether to adopt and implement these recommended rates.

The proposed rate structure for residential customers continues to include a fixed monthly charge per housing equivalent unit (HEU) plus a volumetric rate based on their average winter water consumption. This volumetric charge is used to set the volumetric charge each month for the subsequent 12 months and, in this respect, acts like a fixed charge except it varies based on each customer's winter consumption. The rate structure for commercial customers is similar, with a fixed monthly charge per HEU plus a volumetric rate based on *monthly* (not average winter) water consumption.

The updated rates were set based on the net revenue requirements, number of customer accounts and housing equivalent units, water consumption, and the estimated volume and strength of the effluent. The following are the basic components of this analysis:

- **Customer classes:** Customer classes are typically determined by grouping customers with similar flow and strength characteristics in order to reflect the cost differences in serving each type of customer. The District's existing customer classes have been retained in the proposed rates developed:
  - **Residential** – Consists of single-family and multi-family residential properties; multi-family accounts are assessed fixed charges based on the number of housing equivalent units (HEUs), with single-family account representing one HEU.
  - **Commercial** – Includes all commercial, industrial and municipal users.
  - **Recycled Water** – The District has only one recycled water meter, which is at the golf course. The recycled water rate represents the additional treatment costs of recycled water, which should not be paid by sewer customers.
- **Cost Allocation Factors:** For the purpose of allocating costs to customer classes, the sewer revenue requirements were "functionalized" into five categories:
  1. Flow (volume) related costs
  2. Strength costs related to biochemical oxygen demand (BOD)
  3. Strength costs related to total suspended solids (TSS)
  4. Customer service-related costs, and
  5. Recycled water related costs.

These cost allocation factors represent varying levels of the cost of service. For example, effluent with higher levels of BOD and TSS is costlier to treat and, therefore, should be allocated a greater proportion of treatment costs. Details documenting these cost allocations are shown in Appendix B.

- **Determining Revenue Requirements by Customer Class:** Based on these cost allocation factors, revenue requirements were allocated to each customer class. For example, customer costs are allocated based on number of accounts and billable units, flow-related costs are allocated based on the estimated effluent generated by each class, and strength-related costs are allocated based on estimated strength of wastewater discharged by each customer class. Once the revenue requirement for each customer class is determined, collecting these revenue requirements from each customer class is reflected in the rate design.
- **Rate Design:** The revenue requirements collected from residential customers were based on the number of housing equivalent units and, for residential customers, the average winter water consumption. Average winter water use is the best means of estimating potential flow to the wastewater treatment plant because outdoor irrigation is typically at its lowest during the winter months. Revenue requirements recovered from commercial and industrial customers through fixed charges are based on the number of HEUs; their monthly water consumption is applied to monthly water use. This is because the amount of wastewater discharged by commercial users is generally assumed to correlate to their water use.

## B. SEWER UTILITY REVENUE REQUIREMENTS

Rate increases are governed by the need to meet the operating and capital costs, debt service payments and reserves included in the revenue requirements. The District's sewer utility is summarized as follows:

- **Meeting Net Revenue Requirements:** The District's sewer utility is currently running a small structural deficit that is likely to increase to over \$400,000 per year without rate increases. The proposed rate increases would stabilize this deficit over the next five years. Projected net revenue requirements (i.e., total annual expenses less non-rate revenue) increase by approximately 30% in Fiscal Years 2018/19 through 2022/23 from about \$1,350,000 to \$1,760,000.
- **Building and Maintaining Reserve Funds:** The District should maintain sufficient reserves for the Utility. NBS recommends that the District adopt and maintain the following reserve fund targets:
  - ✓ **Operating Reserve** equal to 25% of the Utility's budgeted annual operating expenses. This reserve target is equal to a three-month (or 90-day) cash cushion for normal operations. An Operating Reserve is intended to promote financial viability in the event of any short-term fluctuation in revenues and/or expenditures.
  - ✓ **Capital Facilities Reserve** equal to a minimum of 3% of net depreciable capital assets (or approximately \$100,000 based on a total system asset value of approximately \$3.4 million). This reserve provides for capital repair and replacement needs.
  - ✓ **Debt Reserve** equal to the reserve requirements for the existing and planned debt, which is approximately \$32,000 annually.

Figures 11 and 12 summarize the sources and uses of funds, including net revenue requirements, and the recommended annual percent increases in total rate revenue for the next five years. This figure shows the small deficit in FY 2017/18 and, without rate increases, grows to over \$400,000 by FY 2022/23. With rate increases, the deficit turns into small but increasing surpluses in subsequent years. These surpluses are used to replenish reserves, with the intent of meeting future target reserve-fund balances.

**Figure 11. Summary of Sewer Revenue Requirements**

Summary of Sources and Uses of Funds and Net Revenue Requirements	Budgeted		Projected			
	FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
<b>Sources of Sewer Funds</b>						
Rate Revenue Under Current Rates - Sewer	\$ 1,180,469	\$ 1,183,420	\$ 1,186,379	\$ 1,189,345	\$ 1,192,318	\$ 1,195,299
Rate Revenue Under Current Rates - RW	90,000	125,000	125,000	125,000	125,000	125,000
Non-Rate Revenues	8,500	8,521	8,543	8,564	8,585	8,607
Interest Earnings	500	3,204	3,469	3,891	4,753	5,986
<b>Total Sources of Funds</b>	<b>\$ 1,279,469</b>	<b>\$ 1,320,145</b>	<b>\$ 1,323,390</b>	<b>\$ 1,326,800</b>	<b>\$ 1,330,656</b>	<b>\$ 1,334,892</b>
<b>Uses of Sewer Funds</b>						
Operating Expenses	\$ 1,278,383	\$ 1,320,734	\$ 1,362,781	\$ 1,406,221	\$ 1,450,635	\$ 1,496,511
Existing Debt Service	32,218	32,245	32,258	32,255	32,238	32,205
New Debt Service	-	-	3,644	7,397	11,262	15,244
Rate Funded Capital Expenses	-	-	23,353	145,307	207,656	213,886
<b>Total Use of Funds</b>	<b>\$ 1,310,601</b>	<b>\$ 1,352,979</b>	<b>\$ 1,422,035</b>	<b>\$ 1,591,180</b>	<b>\$ 1,701,791</b>	<b>\$ 1,757,846</b>
<b>Surplus (Deficiency) before Rate Increase</b>	<b>\$ (31,132)</b>	<b>\$ (32,834)</b>	<b>\$ (98,645)</b>	<b>\$ (264,380)</b>	<b>\$ (371,135)</b>	<b>\$ (422,954)</b>
Additional Revenue from Rate Increases <sup>1</sup>	-	82,839	171,906	267,654	370,568	481,170
<b>Surplus (Deficiency) after Rate Increase</b>	<b>\$ (31,132)</b>	<b>\$ 50,005</b>	<b>\$ 73,261</b>	<b>\$ 3,274</b>	<b>\$ (567)</b>	<b>\$ 58,215</b>
<b>Projected Annual Rate Revenue Increase - Sewer</b>	<b>0.00%</b>	<b>7.00%</b>	<b>7.00%</b>	<b>7.00%</b>	<b>7.00%</b>	<b>7.00%</b>
Cumulative Increases	0.00%	7.00%	14.49%	22.50%	31.08%	40.26%
<b>Projected Annual Rate Revenue Increase - RW</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>
Cumulative Increases	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
<b>Net Revenue Requirement <sup>2</sup></b>	<b>\$ 1,301,601</b>	<b>\$ 1,341,254</b>	<b>\$ 1,410,024</b>	<b>\$ 1,578,725</b>	<b>\$ 1,688,453</b>	<b>\$ 1,743,253</b>

1. Assumes new rates are implemented January 1, 2019

2. Total Use of Funds less non-rate revenues and interest earnings. This is the annual amount needed from rates.

**Figure 12. Sewer Revenue Requirements through FY 2022/23**

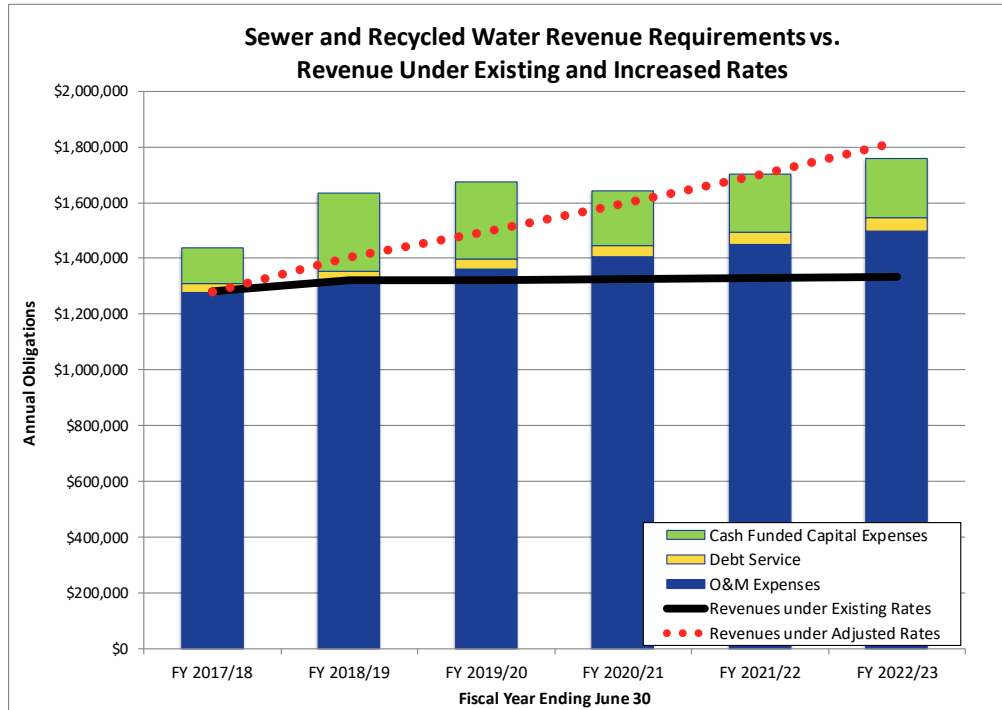


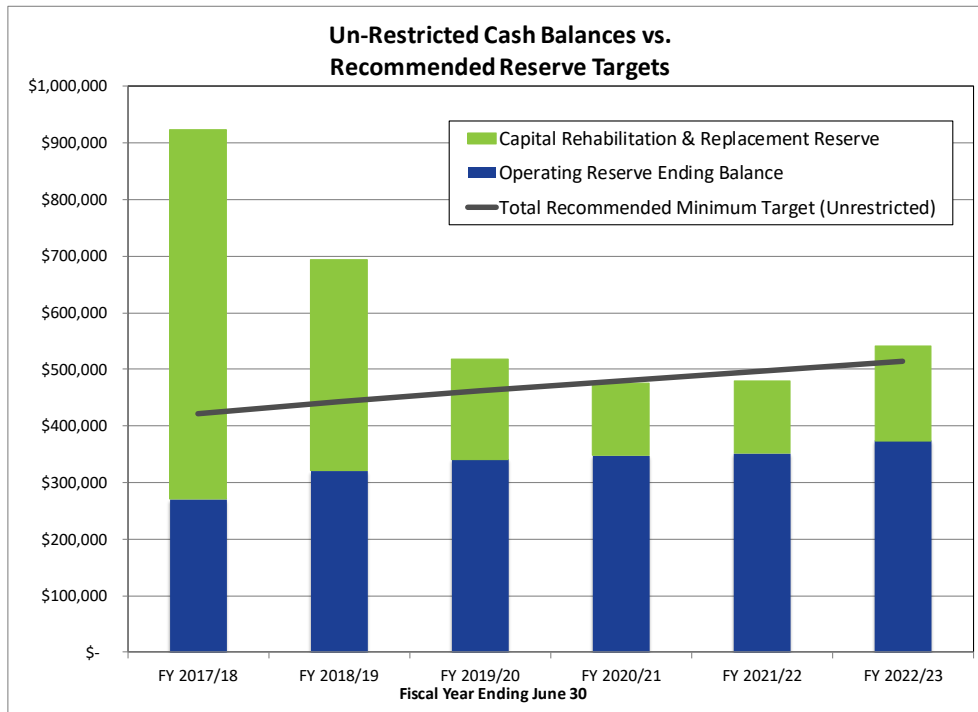
Figure 13 summarizes the projected reserve fund balances and reserve targets, for the next five years. Figure 14 indicates that, assuming the proposed rate increases are adopted, the District’s initial surplus reserves will be drawn down over the next two years, but will then keep up with the reserve fund target, which is growing slightly due to the addition of capital improvements over the next five years.



**Figure 13. Summary of Sewer Reserve Funds**

Beginning Reserve Fund Balances and Recommended Reserve Targets	FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
	<b>Operating Reserve</b>					
Ending Balance	\$ 270,653	\$ 320,771	\$ 341,000	\$ 348,269	\$ 351,891	\$ 374,000
<i>Recommended Minimum Target</i>	<i>320,000</i>	<i>330,000</i>	<i>341,000</i>	<i>352,000</i>	<i>363,000</i>	<i>374,000</i>
<b>Capital Facilities Reserve</b>						
Ending Balance	\$ 652,596	\$ 372,951	\$ 177,837	\$ 127,000	\$ 127,000	\$ 167,492
<i>Recommended Minimum Target</i>	<i>102,000</i>	<i>112,000</i>	<i>121,000</i>	<i>127,000</i>	<i>134,000</i>	<i>141,000</i>
<b>Debt Reserve</b>						
Ending Balance	\$ 32,345	\$ 32,345	\$ 32,345	\$ 32,345	\$ 32,345	\$ 32,345
<i>Recommended Minimum Target</i>	<i>32,345</i>	<i>32,345</i>	<i>32,345</i>	<i>32,345</i>	<i>32,345</i>	<i>32,345</i>
<b>Total Ending Balance</b>	<b>\$ 955,594</b>	<b>\$ 726,067</b>	<b>\$ 551,182</b>	<b>\$ 507,614</b>	<b>\$ 511,236</b>	<b>\$ 573,837</b>
<i>Total Recommended Minimum Target</i>	<i>\$ 454,345</i>	<i>\$ 474,345</i>	<i>\$ 494,345</i>	<i>\$ 511,345</i>	<i>\$ 529,345</i>	<i>\$ 547,345</i>
<i>Total Recommended Minimum Target (Unrestricted)</i>	<i>\$ 422,000</i>	<i>\$ 442,000</i>	<i>\$ 462,000</i>	<i>\$ 479,000</i>	<i>\$ 497,000</i>	<i>\$ 515,000</i>

**Figure 14. Sewer Reserve Funds Through FY 2022/23**



A summary of the sewer utility’s proposed 10-year financial plan is included in Appendix B – Sewer Rate Study Summary Tables. These tables include revenue requirements, reserve funds, revenue source and proposed rate increases for the 10-year period.

**C. SEWER CUSTOMER CHARACTERISTICS**

The five factors used in allocating costs as a part of the sewer cost-of-service analysis are effluent (flow), BOD, TSS, customer costs, and recycled water costs. Water consumption data from January 2017 through December 2017 was used to estimate the flows to the District’s wastewater treatment plant. Residential bills reflect average winter consumption because it is correlated to the amount of residential effluent that goes to the treatment plant.

For residential customers, the average winter water consumption used to calculate their bills is assumed to include four billing periods; December 2016 - March 2017 were considered the “winter” months because consumption is lowest in these months. Based on water consumption records summarized in **Figure 15**, residential customers account for approximately 95.6% of effluent at the plant (i.e., single-family = 93% and multi-family = 2.6%). Commercial customers account for the remaining 4.4% of the flow.

**Figure 15. Summary of Estimated Flow to Treatment Plant**

Development of the FLOW Allocation Factor						
Customer Class	Number of HEUs <sup>1</sup>	Annual Volume (hcf)	Average Winter Monthly Consumption <sup>3</sup> (hcf)	Annual Winter Average Based Volume (hcf)	Adjusted Annual Volume (hcf)	Percentage of Adjusted Volume
Single Family Residential	1,444	150,261	7,342	88,109	124,553	93.0%
Multi-Family Residential	54	3,615	201	2,417	3,416	2.6%
Commercial	35	10,224	347	4,158	5,878	4.4%
Municipal	1	63	5	61	87	0.1%
<b>Total <sup>2</sup></b>	<b>1,534</b>	<b>164,163</b>	<b>7,895</b>	<b>94,745</b>	<b>133,934</b>	<b>100.0%</b>
					133,934	Flow (hcf/yr.)
					1.41	Flow Adj. Factor

1. Consumption and Meters from source files: *NBS 2018 - #17\_Manipulated Sewer Billing Data.xlsx* (data combined and summarized in pivot tables).

2. Recycled Water excluded from flow allocation factor. One customer only in the District, volumetric rate only.

3. Includes months of December 2016 through March 2017.

**Customer Class Effluent Strengths** – Effluent strength factors for individual customer classes<sup>5</sup> are shown in **Figure 16** and described below.

**Figure 16. Summary of Annual Flow and Strength Characteristics by Customer Class**

Development of the STRENGTH Allocation Factor									
Customer Class	Adjusted Annual Flow (hcf)	Biochemical Oxygen Demand (BOD)				Total Suspended Solids (TSS)			
		Average Strength Factor (mg/l) <sup>2</sup>	Calculated BOD (lbs./yr.)	Adjusted BOD (lbs./yr.)	Percent of Total	Average Strength Factor (mg/l) <sup>2</sup>	Calculated TSS (lbs./yr.)	Adjusted TSS (lbs./yr.)	Percent of Total
Single Family Residential	124,553	200	155,401	181,420	93.0%	180	139,861	150,306	93.0%
Multi Family Residential	3,416	200	4,262	4,976	2.6%	180	3,836	4,123	2.6%
Commercial <sup>1</sup>	5,878	200	7,334	8,562	4.4%	180	6,601	7,094	4.4%
Municipal	87	200	108	126	0.1%	180	97	105	0.1%
<b>Total</b>	<b>133,934</b>		<b>167,105</b>	<b>195,084</b>	<b>100%</b>		<b>150,395</b>	<b>161,627</b>	<b>100%</b>
		<i>Target, from WWTP Data</i>		<i>195,084 BOD (lbs./yr.)</i>				<i>161,627 TSS (lbs./yr.)</i>	
				<i>1.17 BOD Adj. Factor</i>				<i>1.07 TSS Adj. Factor</i>	

1. Commercial was previously billed on monthly water use, now if billed on average winter; as a result it is more typical of indoor/residential strengths.

2. Typical strength factors for BOD and TSS are derived from the State Water Resources Control Board Revenue Program Guidelines, Appendix G.

- **Residential** customers, including single-family, multi-family and mobile homes, have BOD and TSS strength factors of 200 mg/l, which is within the normal range for residential users.
- **Commercial** customers can have individual strength factors that are higher or lower than residential, depending on the particular type of commercial uses. In the District’s case, NBS and the District believe that commercial effluent is, on average, consistent with residential strengths. Therefore, strength factors assigned to commercial class customers are the same as residential customers.

<sup>5</sup> Strength factors for each customer class were derived from the State Water Resources Control Board Revenue Program Guidelines, Appendix G, page G-21 “Commercial User Strength Characteristics.”

**Figure 17** compares the total number of accounts and billing units (depending on how customers are billed) by customer class. **Figure 18** then summarizes the total rate revenue requirements by customer class resulting from the cost-of-service cost allocation components previously shown in Figure 12 (Revenue Requirements), Figure 15 (Flow and Strength Characteristics), and Figure 16 (Customer Costs).

**Figure 17. Number of Accounts and Billing Units by Customer Class**

Development of the CUSTOMER Allocation Factor					
Customer Class	Number of Accounts	Percentage of Accounts	Number of HEUs	Percentage of Assigned HEUs	Average HEUs per Account
Single Family Residential	1,444	97.0%	1,444	94.2%	1.00
Multi-Family Residential	27	1.8%	54	3.5%	2.00
Commercial & Industrial	15	1.0%	35	2.3%	2.30
Municipal	1	0.1%	1	0.1%	1.00
Recycled Irrigation	1	0.1%	0	0.0%	0.00
<b>Total</b>	<b>1,488</b>	<b>100.0%</b>	<b>1,534</b>	<b>100.0%</b>	<b>1.03</b>

**Figure 18. Summary of Rate Revenue Requirements by Customer Class**

Allocation of FY 2018/19 Revenue Requirements by Customer Class							
Customer Class	Cost Classification Components					Cost-of-Service Net Revenue Req't.	% of COS Net Revenue Req't.
	Volume	Treatment		Customer Related	Recycled Water		
		BOD	TSS				
<b>Net Revenue Requirements</b> <sup>1</sup>	<b>\$ 550,641</b>	<b>\$ 282,746</b>	<b>\$ 282,746</b>	<b>\$ 146,794</b>	<b>\$ 128,332</b>	<b>\$ 1,391,260</b>	--
	39.6%	20.3%	20.3%	10.6%	9.2%	100.0%	
SFR and MFR	\$ 526,117	\$270,154	\$270,154	\$145,117	\$ -	\$1,211,542	87.1%
Commercial	24,167	12,410	12,410	1,480	-	50,466	3.6%
Municipal	356	183	183	99	-	821	0.1%
Recycled Irrigation	-	-	-	99	128,332	128,431	9.2%
<b>Total</b>	<b>\$ 550,641</b>	<b>\$ 282,746</b>	<b>\$ 282,746</b>	<b>\$ 146,794</b>	<b>\$ 128,332</b>	<b>\$1,391,260</b>	<b>100%</b>

1. Revenue requirement for each customer class is determined by multiplying the revenue requirement from each cost classification by the allocation factors for each customer class.

#### D. CURRENT VS. PROPOSED SEWER RATES

Currently, all customers pay the same fixed monthly charge based on their number of household equivalent units (HEUs). Both residential and commercial customers also pay a volumetric monthly rate, but the uniform volumetric rate for residential customers is applied to average winter water use, while commercial customers pay a slightly higher volumetric rate that is applied to monthly water use.

**Changes in Residential vs. Commercial Sewer Rates** – The proposed rates retain the same customer classes, which combine single- and multi-family residential customers, and combine commercial with municipal customers. However, as previously noted, water consumption for commercial customers is now significantly higher than previously thought due to meter misreads that have now been corrected. That new consumption data has increased the costs allocated to commercial customers and, as a result, NBS is recommending realigning commercial fixed and volumetric rates to account for these higher costs as follows: (1) higher commercial costs are largely allocated to their fixed charges, and (2) the volumetric rate for commercial was set equal to the residential volumetric rate.

The rationale for this approach is that since commercial customers tend to be larger water meters and have higher consumption, but on average have the same strength as residential customers, it makes more sense to have the same volumetric rates as residential customers but a higher fixed charge (which reflects capacity-related costs). Therefore, while all customers will continue to pay a volumetric rate, this rate will now be the same for both residential and commercial customers. In contrast, the fixed monthly charge, which is currently the same for all customers, will now be higher for commercial customers, who will pay a fixed rate of \$91.24/HEU vs. the proposed residential fixed charge of \$52.57/HEU per month.

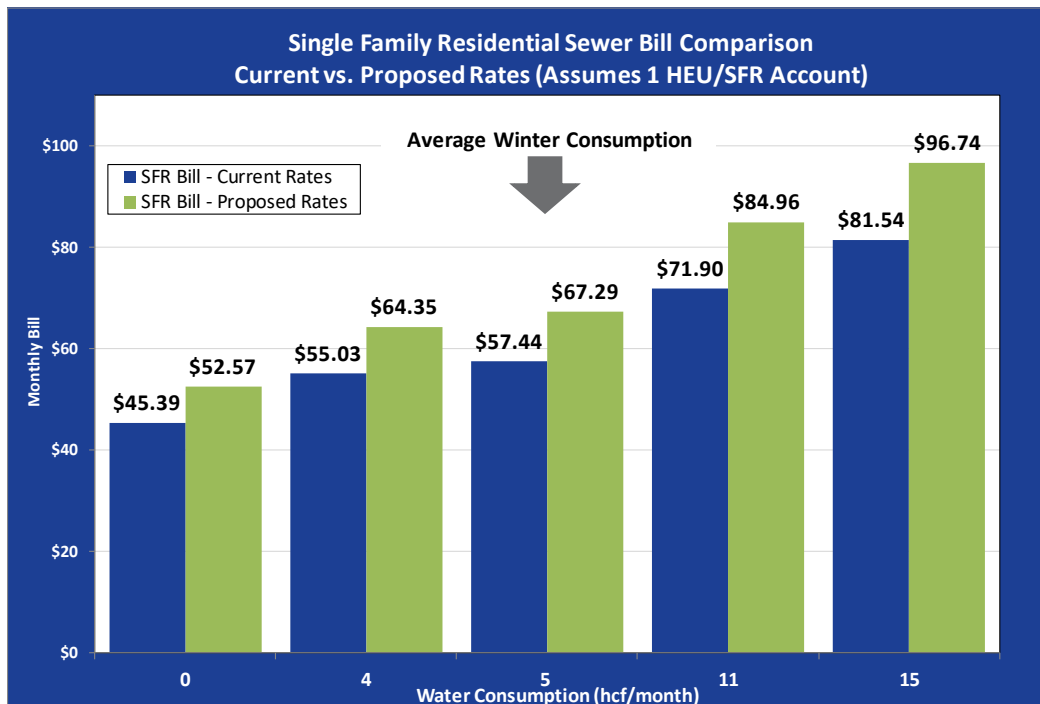
Figure 19 shows current and proposed sewer rates for FY 2018/19 through FY 2022/23. Figure 20 compares the average monthly sewer bills for residential customers under current and proposed rates. Figure 21 compares commercial bills under current vs. proposed rates.

**Figure 19. Current vs. Proposed Sewer Rates**

Sewer Rate Schedule	Current Rates <sup>1</sup>	Proposed Sewer Rates				
		FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23
<i>% Increase in Annual Rate Revenue:</i>		7.00%	7.00%	7.00%	7.00%	7.00%
<b>Fixed Service Charge per HEU</b>						
Residential	\$45.39	\$52.57	\$56.25	\$60.19	\$64.40	\$68.91
Commercial and Municipal	\$45.39	\$91.24	\$97.63	\$104.47	\$111.78	\$119.60
<b>Volumetric Charge (\$/hcf)</b>						
Residential (Applied to <u>Avg. Winter Water Use</u> )	\$2.41	\$2.94	\$3.15	\$3.37	\$3.61	\$3.86
Commercial and Municipal (Applied to <u>Avg. Winter Water Use</u> ) <sup>2</sup>	\$2.62	\$2.94	\$3.15	\$3.37	\$3.60	\$3.85

1. Sewer customers are charged on the basis of their number of assigned Housing Equivalent Units (HEUs).
2. Commercial and Municipal volumetric charges, currently based on monthly water use and now will be based on average winter water use.

**Figure 20. Residential Sewer Bill Comparison – Current vs. Proposed Rates**



**Figure 21. Commercial Sewer Bill Comparison – Current vs. Proposed Rates**

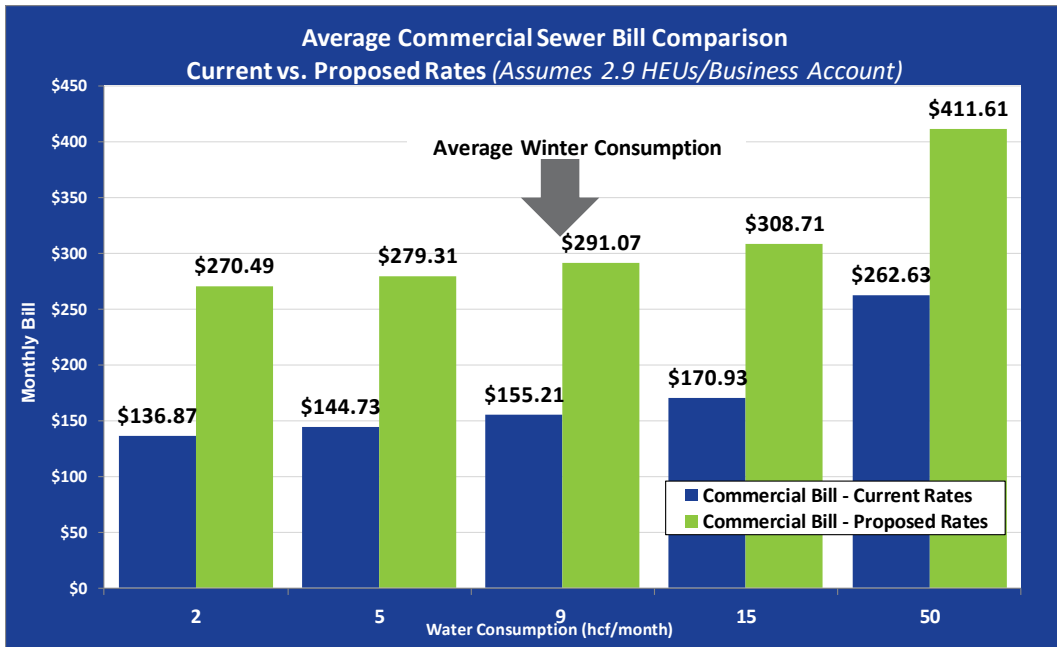
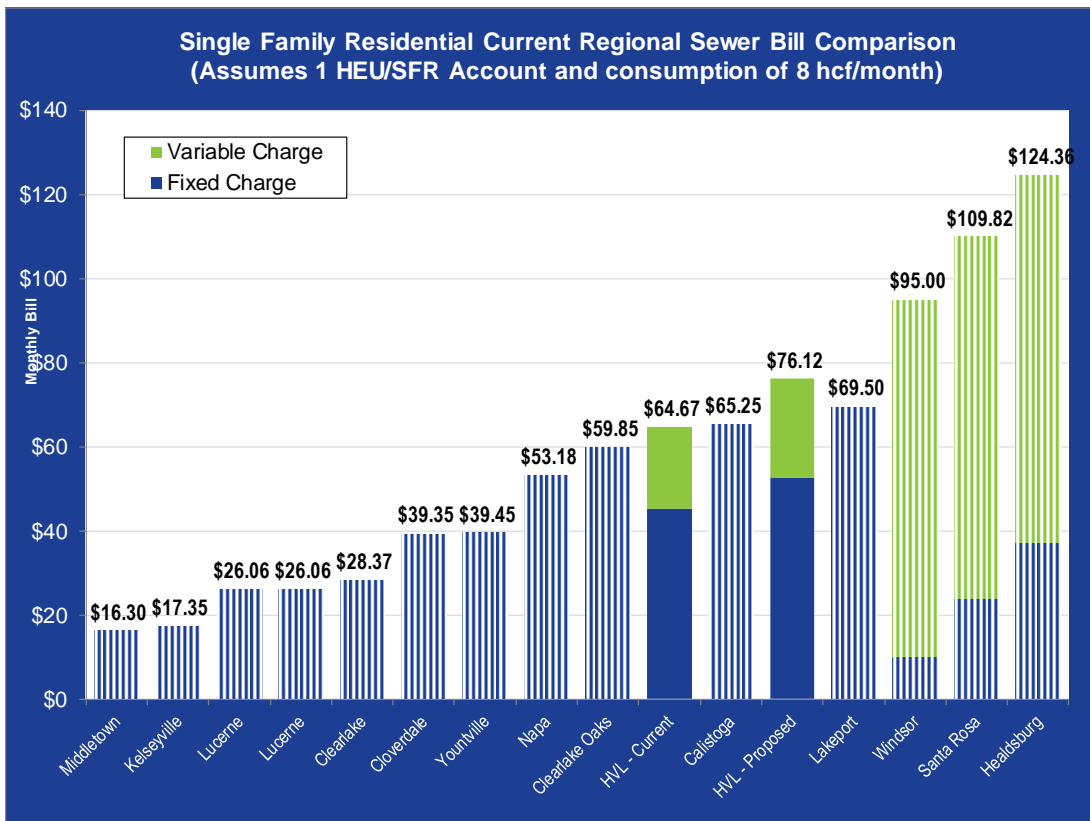


Figure 22 provides a comparison of monthly sewer bills for other communities in the region.

**Figure 22. Regional Sewer Bill Comparison – Single Family Residential**



**E. CURRENT VS. PROPOSED RECYCLED WATER RATES.**

The District has maintained one recycled water customer and has not evaluated the rate structure since its inception. The current rate is \$291.75 per acre foot. NBS considered the sewer utility’s annual expenses and how those expenses might be allocated to the recycled water customer. The District’s one recycled water customer, the golf course, is owned by the homeowner’s association, who are to a large extent the same properties receiving water and sewer service provided by the District.

**Basis for Setting Recycled Water Rate** – There is no established industry standard for setting recycled water rates, and many agencies arbitrarily set rates at some percent below potable volumetric rates. There is also no clear allocation of benefits accruing from a recycled water program: are there benefits to using recycled water instead of discharging effluent from the treatment plant? Do the lower water quality standards for recycled water make it less valuable than potable water? Do the additional constituents in recycled water translate into higher costs for recycled water irrigation systems? The answers to these questions is generally “yes”.

Whether there is an issue of allocating recycled water costs to individuals within the homeowner’s association, such as golfers vs. non-golfers, is an issue that would be more appropriately addressed by the homeowner’s association rather than the District.<sup>6</sup>

**Proposed Recycled Water Rate** – In view of these factors, the current recycled water rate is, in NBS’ opinion, a reasonable and fair rate. However, we did calculate an updated rate using the annual recycled water consumption and a reasonable allocation of the annual revenue requirement. A recommended volumetric rate is \$292.31 per acre foot. **Figure 23** summarizes the calculation of the recycled water charge.

**Figure 23. Proposed Recycled Water Rates**

Customer Class	Total Annual RW Use <sup>1</sup>	Annual Rev. Req't			Monthly Fixed Charge	Volumetric Charge
		Total	Fixed	Volumetric		
Recycled Irrigation (hcf)	191,386					
Recycled Irrigation (Acre Ft)	439	\$128,431	\$0	\$128,431	\$0.00	\$0.67/hcf \$292.31/AF

1. Actual 2017 consumption

<sup>6</sup> For example, recycled water costs could be incorporated into green fees and/or other charges paid by golfers.

## SECTION 4. RECOMMENDATIONS AND NEXT STEPS

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### CONSULTANT RECOMMENDATIONS

A number of factors have impacted the District's water and sewer rates in the last several years. The drought and its mandated conservation efforts, the corresponding lower water sales, and the correction of some commercial water reading problems have been notable. In light of these factors, NBS has reevaluated water, sewer and recycled water rates and made adjustments that, in our opinion, best represent the overall rate objectives of the District in a fair, equitable, and defensible manner. NBS

The following are NBS' recommendations for the District following careful review of this report:

- **Approve and Accept This Study Report:** NBS recommends the District Board formally approve and adopt this report, its recommendations, and accompanying appendices. This will document the rate study analyses and the basis for recommended rates.
- **Complete a Review by a Qualified Attorney:** This rate study outlines proposed new rates. Because NBS are not attorneys, we do not provide legal opinions and, therefore, must defer to the review by legal counsel with respect to compliance with Proposition 218 and related State laws, as well as legal assistance developing acceptable language for new resolutions to implement these rates.
- **Implement Recommended Levels of Rate Increases and Proposed Rates:** Based on the analysis presented in this report, the District Board should implement the proposed rates recommended in this report (see Figures 8, 19, and 23) for the next five years. These rate adjustments are structured based on industry standards and are necessary to ensure the following objectives are met:
  - Water rates that promote water conservation and reflect the cost of providing water service to each customer class.
  - Sewer rates that more appropriately reflect the cost of providing sewer service to each customer class; in particular, commercial fixed charges based on better consumption data to improve equity between customers in the sewer utility.
  - Maintaining the financial health of the District's water and sewer utilities.
  - Recycled water rates that can reasonably be considered fair and equitable to both the golf course and the District.
- **Adopt Reserve Fund Targets:** NBS recommends the District Board adopt the proposed reserve fund targets described in Sections 2 and 3 of this report for the water and sewer utilities. The District should periodically evaluate reserve fund levels and make it a long-term goal to achieve and maintain these levels for the Operating, Capital, and Debt Reserves.

### NEXT STEPS

- **Annually Review Rates and Revenue** – Any time an Agency adopts new utility rates or rate structures, those new rates should be closely monitored over the next several years to ensure the revenue generated is sufficient to meet the annual revenue requirements. Changing economic, water consumption patterns, new regulatory mandates, and unplanned capital improvements all underscore the need for this annual review.



*Note: The attached Technical Appendices provide more detailed information on the analysis of the water and sewer revenue requirements, cost of service and rate design analyses that have been summarized in this report.*

## **PRINCIPAL ASSUMPTIONS AND CONSIDERATIONS**

In preparing this report 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, billing records, and other conditions and events that may occur in the future. This information and assumptions, including the District's budgets and customer account information provided by District staff, are 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 report 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 RATE ANALYSIS**

## APPENDIX B – SEWER RATE ANALYSIS