

Water and Sewer Rate Sufficiency Study North Beach, MD

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February 2024

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Water and Sewer Rate Sufficiency Study
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Purpose/Objectives of Study

1. To review the Town's FY 2019 through 2024 water and sewer rate structures for revenue sufficiency, i.e., expense coverage, cash balances, stability, and fairness.
2. To analyze demographics, historic water consumption trends, and Town growth for projecting:
 - a. Water usage
 - b. Wastewater flows
 - c. Water and sewer revenues based on water usage, customer connections, and projected base and usage rates
3. To update MCET's water and sewer rate model that:
 - a. Calculates operating revenue/expense coverage ratios (Recommended cover – greater than 1.05)
 - b. Trends cash balances/cash reserves - recommended unreserved cash balances greater than 6 months of operating and maintenance (O&M) expenses
4. To recommend base and water usage rates for the next five years (2025 – 2029) for stabilizing revenues to cover water and sewer (fixed and variable) expenses, i.e., O&M, debt, and capital expenses to:
 - a. Provide sufficient water and sewer operating revenues and adequate cash balances in the Water and Sewer Enterprise Funds
 - b. Cover rising O&M expenses associated with the operation of the water and sewer systems due to inflation.
 - c. Cover needed capital expenses for water and sewer system infrastructure repairs and replacements where needed.
 - d. Cover North Beach's share of fixed and variable O&M, capital, and reserve expenses at the Chesapeake Beach Water Reclamation Treatment Plant (CBWRTP)

Acknowledgements

Assistance by the Town of North Beach staff was essential for this rate sufficiency assessment, particularly assistance by:

Mayor Mike Benton, Town of North Beach

Ms. Joanne Hunt, Town Treasurer

Mr. Donald (Donnie) Bowen, Director of Public Works

Ms. Kelley Osbourn, Administrative Assistant, Billing

Town officials provided valuable planning and demographic data (i.e., population and household information) and insights on Town growth; Water usage data; Wastewater treated data; Town Comprehensive Planning documents; Audited annual financial statements; budget documents; Enterprise fund and accounting practices; inter- jurisdictional cost sharing agreements for the Chesapeake Beach Water Reclamation Treatment Plant (CBWRTP) between Chesapeake Beach, North Beach, Calvert County, and Anne Arundel County; and 5 years of water and sewer service rate information.

Executive Summary

1. Budget summaries and Financial Statements for the two Enterprise Funds i.e. Water and Sewer, needed for this study were provided in advance.
2. Town staff was very cooperative in sharing details of Town water and sewer systems along with the billing system.
3. Town water and sewer rate structures and rates were explained in detail.

Study Summary

1. Cash balances in both Funds had cash balances equal to nearly one year of expenses, a benchmark for all enterprise funds.
2. Water Fund - minimum and usage charges need to be **increased 5%** annually from FY 2025 through FY 2028 to keep up with COLA and inflation effects on expenses to maintain cash balances.
3. MCET recommends that a reserve for current and future capital needs be established equal to 25% of annual expenses in the Water Fund.
4. Sewer Fund - minimum and usage charges can be **decreased** in FY 2025 to FY 2023 levels with no increases needed through FY 2028; in FY 2029, rates may need to be **increased 5%** annually to keep up with COLA and inflation effects on expenses to maintain cash balances.
5. MCET recommends that a reserve for current and future capital needs be established equal to 50% of annual expenses in the Sewer Fund.
6. MCET noticed a possible oversight in the calculation of wastewater Equivalent Residential Units (ERUs) used for calculating jurisdictional flows to the Chesapeake Beach Water Reclamation Treatment Plant (CBWRTP). One ERU equals 190 gpd for an average 3-person family household. However, each jurisdiction has nonfamily households contributing wastewater at reduced flows. A single occupant, nonfamily household would only be contributing about 63 gpd or 1/3rd of an EDU. Similarly, a two-person nonfamily household would only contribute 126 gpd, or 2/3rd of an EDU. MCET recommends that the jurisdictional partners who share treatment at the plant meet to resolve this issue.

Introduction

In December 2023, North Beach requested the Maryland Center for Environmental Training (MCET) to perform a water and sewer rate study and recommend a 5-year, fair and equitable rate structure to ensure coverage of future increases in water and sewer O&M, debt, and capital expenses.

MCET's financial analysis process included a review of the Town's historic water and sewer service rate structure (FY 2018 – FY 2024). A fixed rate (\$/quarter/bill) minimum water usage, a usage charge (\$/1000 gallons/quarter), and a beneficial charge (\$/unit/quarter) are collected from customers and used to cover O&M, debt, and pay-as-you-go (PAYGO) capital expenses.

Town water and sewer revenues are collected through existing customer service charges, new meter charges, tap fees, and rental fees from cell tower users of the elevated water storage tank. Cellular tower rental income is assumed to continue for rate setting purposes.

Water and sewer revenues and expenses are audited and recorded in Financial Statements separate from the General Fund. Historic water and sewer revenue and expense information (FY 2018 – FY 2023) was collected from the Town's annual Financial Statements.

Demographic data (i.e., population and housing units) and water consumption data were essential to this study. Demographic, water production, and water billing/consumption data was provided by the Town to compute water usage per capita and per household consumption. Wastewater flows (FY 2018 – FY 2023) treated at the Chesapeake Beach Wastewater Treatment Plant were also reviewed and analyzed. Revenues needed to cover future expenses will be projected using forecasted water usage quantities and service rates.

Like most Towns and cities, water and sewer service rates for the Town of North Beach include quarterly base fees (minimum and benefit charges) and Usage Charges (\$/1,000 gals/qtr, or \$/TG/qtr). Customer revenues and Town

expenditures are recorded in separate Water and Sewer Enterprise Funds. Coverage of Town expenditures by customer revenues along with fund cash balances are monitored for rate sufficiency in annually audited Financial Statements.

Fixed base fees (\$/Qtr./min. and \$/Qtr./Act.) are established to cover fixed O&M expenses and debt expenses, respectively. Quarterly volumetric usage charges, \$/1000 gals/Account (\$/TG/Act.) are determined based on metered water consumption for every active customer. Charging customers for the actual cost of water and wastewater service guarantees revenues needed to cover the costs of operation, treatment, storage, and distribution of water along with the collection and treatment of wastewater.

The concept of recovering costs of running the town's water and sewer systems through user charges is called "full-cost pricing". Ideally, full-cost pricing:

1. Ensures rates that are sufficient and stable sources of funds. Charging the full cost of delivering water and treatment of wastewater services ensures a positive "financial position" for the Town to provide services now and in the future.
2. Provides information on costs to customers. How much you ask customers to pay sends a signal about the value of the services being provided. Charging for the full cost of services provided helps customers recognize the value of the service and be more mindful of their water use and wastewater disposal.

Water and Sewer Rate Setting Procedures and Revenue Sufficiency Studies

In 2005, the U. S. Environmental Protection Agency (EPA) published a handbook titled “Setting Small Drinking Water System Rates for a Sustainable Future.” It helps managers of small systems understand how to set rates to cover the full costs of providing a safe and reliable supply of drinking water to customers (and treatment of wastewater). The handbook recommends informing customers of the supplier’s water (and sewer) rate structure so customers will understand that they are paying a fair share of the cost of providing safe drinking water (and wastewater treatment). EPA notes that small rate increases over several years is more acceptable to customers than infrequent, large rate increases.

As a water and wastewater system owner, one of the town’s most important jobs is making sure that water and sewer rates bring in enough money to cover the full costs of providing services, both now and in the future. EPA’s guide is designed to help owners, operators, and managers of community water systems (CWSs) and wastewater treatment systems serving 3,300 or fewer persons understand the full costs of providing a safe and adequate supply of drinking water and wastewater treatment disposal services to their customers and how to set water and sewer rates that reflect those costs.

The EPA handbook suggests the following step-by-step procedure for developing and implementing proper water (and sewer) rates:

1. Determine the full cost of providing water and wastewater services.
2. Determine current revenues.
3. Determine expenses (including the cost of anticipated services and repairs).
4. Calculate the amount of money needed from customers to fully cover current and projected costs.
5. Evaluate various rate structures; then use the appropriate rate structure to calculate water and sewer rates.
6. Implement the rates.
7. Review rates and rate structure regularly and make changes when needed.

Water and sewer (W&S) agencies use a range of rate structures to bill customers for services. Almost all W&S agencies use a combination of fixed “base charges” and variable “volumetric charges”. However, considerable variations exist in how rates are calculated and how different customer classes are charged. Regardless, the price of water and sewer services must roughly equal its cost or value to produce water and/or treat wastewater if equity among customers is to be maintained, a concept principle referred to as “cost-based” or “cost of service”.

Small towns face a challenge in providing water and sewer services because they serve a smaller customer base. Small towns need to periodically evaluate water and sewer rates to ensure that “revenues cover (exceed) expenses.”

The primary tests for rate adequacy are available cash balances and cover ratios. Target cash balances should be equal to or greater than one year of expenses. Unlike budgeting where revenues are projected to equal expenses (cover ratio of 1.0), actual cover ratios should be slightly greater than 1.0, i.e. 1.05. When revenues are slightly greater than expenses, the surpluses will add cash to the cash balance. Both cash balances and cover ratio parameters are considered “best management practices” for determining rate sufficiency.

Additional key questions to answer during revenue sufficiency assessments:

1. Are revenues covering current expenses?
2. Is the population increasing or decreasing?
3. Is water usage increasing or decreasing (water conservation)?
4. Will projected revenues cover future expenses?
5. Are unreserved cash balances available for unexpected expenses?
6. Is the Town rate structure fair and equitable to water and sewer customers?
7. Is the Town financially able to build new facilities?
8. Can the Town apply for grants and/or loans?
9. What effects do the economy, inflation, or interest rate changes have on Town revenues?

If the full cost of producing and distributing water and/or if wastewater collection and treatment costs exceeds revenues, the Town should consider setting higher rates or pursuing other options such as reducing operating costs or finding additional sources of revenue such as grants or loans.

Setting the right rates for water and sewer services is one of the most important obligations of small water systems. Proper rates ensure that these systems cover their costs while still providing affordable service. Setting fair rates builds positive relationships with the people they serve.

Water and Sewer Rate Structures

Most W&S agencies use the same rate structure for residential, business, commercial, and industrial customers, but some have separate rates for different customer classes. Water and sewer bills are almost always calculated based on metered water consumption quantities (Volumetric usage, 1000Gals/qtr.) Consequently, water use patterns have a strong influence on revenue receipts and on an agency's financial position. The relative share of an agency's water usage consumed by different customer sectors can affect the agency's revenue and costs, and the vulnerability of its revenue generation to customer demand fluctuations, e.g., seasonal customers, seasonal variations., wet, dry weather conditions, etc.

Water and sewer rates are priced to generate revenues that will cover operating and maintenance expenses (O&M), debt, and pay-as-you-go (PAYGO) capital expenses. Water and sewer rates should be cost-based, equitable, and set at a level to ensure revenue sufficiency. Rates should also be easy to understand and administer.

Three rate structures commonly used for billing W&S services are as follows:

1. Fixed base rate (\$/Unit/quarter)
2. Fixed base rate (\$/Minimum/quarter) for a prescribed minimum water usage along with a volumetric rate (\$/1000 gals) for water usage over the minimum, either "tiered" or single usage rate

3. Uniform volumetric rate (\$/1000 gals), no minimum water usage rate

Currently, the rate structure used by the Town for billing water and sewer service is a combination of a fixed minimum base rate (i.e. for a minimum volume) and a volumetric rate for water usage. With an adequate, fixed rate/volumetric rate structure, the Town is assured recovery of fixed expenses, e.g., salary expenses, utility, and debt expenses. A combination fixed rate/volumetric rate structure is Town friendly for revenue generation purposes.

Water and sewer service rates are adopted to recover the cost of operating, maintaining, and financing improvements in water and sewer systems. Typically, water and sewer charges are collected at the beginning of each quarter based on water used in the prior quarter.

Water and Sewer rate studies and revenue sufficiency studies typically consist of three interrelated analyses:

1. Multi-year Financial Analysis: Expenses and revenues are projected 3 - 5 years in financial forecasts to identify annual increases in operating and maintenance (O&M) expenses, any known capital improvement program (CIP) expenses, and debt service expenses for capital improvements. The analysis compares revenues to expenses (e.g., coverage ratio, typically greater than 1.0) to determine annual revenue adjustments, which typically result in rate increases. In addition, the long-term financial forecast identifies and maintains adequate cash reserves based on agency fiscal policies, e.g., typically cash reserves equal to 12 months of expenses.
2. Cost of Service Analysis: Annual expenses and revenues are identified and distributed between the water and sewer systems. The analysis can allocate revenue requirements based on how costs are incurred. For example, what fixed expenses should be considered in a base rate, what variable expenses should be included in the volumetric rates.
3. Rate Design: Equitable and proportionate schedules of fixed and volumetric rates are prepared and designed to recover water and sewer expenses.

Rate schedules developed consider both the pricing and structure of the rates to collect the appropriate and targeted level of revenues.

Policy objectives are also considered during rate design, such as target minimum cash reserves and coverage ratios and encouragement of water conservation. Policy objectives are blended with cost-of-service objectives to achieve a balance of rate equity and fairness, financial stability, and resource conservation goals.

North Beach service rates from FY 2019 through FY 2024 are shown in Table 1. that follows.

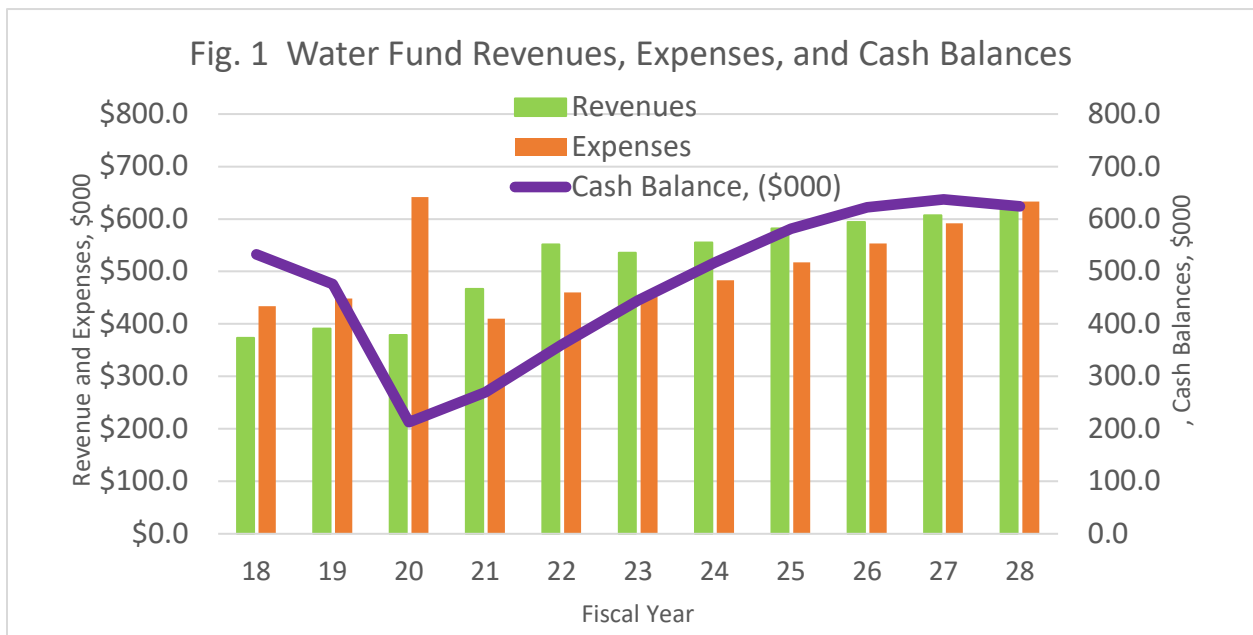
Summary – Base Rates and Usage Charges

Table 1. Water and Sewer Rates, North Beach, Maryland						
<u>Fees and Charges</u>	Fiscal Year					
	2019	2020	2021	2022	2023	2024
Minimum, gallons	8,000	6,000	5,000	4,000	4,000	3,000
<u>Water</u>						
Minimum Charge, \$/Qtr.	42.20	42.20	42.20	42.20	42.20	50.00
Benefit Fee, \$/Act./Qtr.	102.00	107.00	107.00	107.00	100.00	100.00
Usage, \$/TG/Qtr.;				6.25	6.25	9.00
Tier 1 7 – 20 TGs		4.00				
9 – 25 TGs	2.50					
6 – 50 TGs			4.75			
Tier 2 21 – 50 TGs		4.75				
25 – 50 TGs	3.00					
Tier 3 >50 TGs	3.50	6.25	6.25			
Water Tap Fee, \$						3,500
Water Meter Fee, \$						3,000
<u>Sewer</u>						
Minimum Charge, \$/Qtr.	91.00	91.00	91.00	126.00	126.00	172.00
Benefit Fee, \$/Act./Qtr.	250.00	245.00	250.00	250.00	118.00	118.00
Usage Charge, \$/TG gals				7.25	7.25	13.00
Tier 1 7 – 20 TGs		5.00				
9 – 25 TGs	3.30					
6 – 50 TGs			6.00			
Tier 2 21 – 50 TGs		6.00				
25 – 50 TGs	4.15					
Tier 3 >50 TGs	4.64	7.25	7.25			
Sewer Tap Fee, \$						17,250

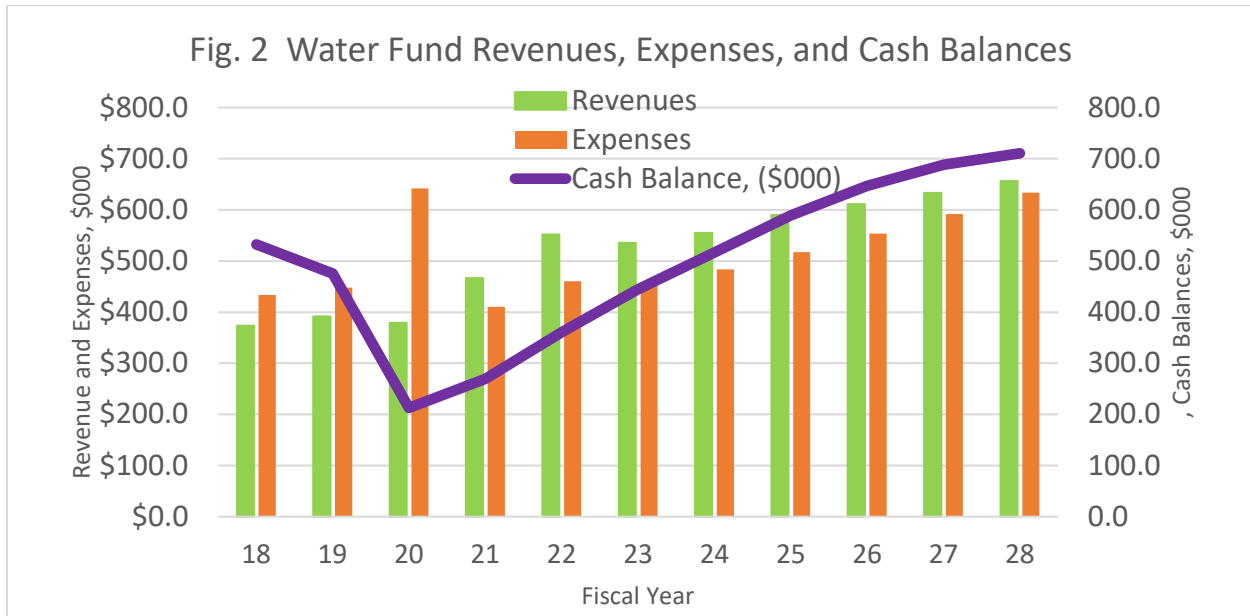
The Water Fund

Water and Sewer Enterprise Funds must each be self-supporting. The cost of operating and maintaining the water system must be supported by water fees and volumetric charges collected from water customers. Likewise, the cost of operating and maintaining the sewer system must be supported by sewer fees and charges collected from sewer customers.

Below in Figure 1., is a graph of revenues and expenses along with fund (cash) balances in the Water Fund from FY 2018 and projected through FY 2028. Projected water rates increased 3% annually from FY 2025 through FY 2028. The projected cover ratio is only 1.03, even though a minimum cover of 1.05 is recommended.



To maintain a cover ratio greater than 1.05 and build up cash balances, MCET recommends a 5% annual rate increase. See Figure 2.



Water base and usage rates were adequate for covering 2018 – 2023 operating expenses and debt, except in FY 20. In FY 20, unplanned maintenance and repair work reduced fund cash balances to less than six months of operating and maintenance (O&M) expenses. Fortunately, by FY 2023, the water fund was able to increase the cash balance to approximately one year of O&M expenses through rate increases. A minimum cash balance equal to one year of O&M expenses is recommended.

The Town has a very active water conservation program. Since FY 2018, unfortunately, water conservation has created a damper on customer water usage, and an observed decline in water usage revenue. When water usage falls, revenues fall with it, unless water and sewer rates are increased. A decrease in water sales does not lead to a commensurate reduction in O&M expenses. Consistent decreases in water usage from year to year can lead to significant revenue shortfalls for utilities. Excessive declines in water use over recent years have caught many utilities off-guard as revenues have fallen below budgeted levels.

If the Town determines that a major capital improvement program (CIP) is needed to Replace, Repair, and Remediate (RR&R) the Town's water tower, water lines, and water hydrants, cash balances can be used to cover any debt and capital expenses until water rate increases can be considered and adopted in the future (i.e., FY 2025 through FY 2028).

Cash Reserves: - Currently, the Town has not identified cash reserves in the Water Fund. Cash reserves are funds set aside (separate from user charges and other non-rate revenues) to cover unplanned operating and capital-related costs. These reserves provide a buffer for unexpected expenses and help maintain financial stability for water systems.

The terms "reserves" and "fund balance" are often used interchangeably. For the purposes of developing a financial policy that addresses reserves, the distinction should be made within the scope and purpose component of the policy. Whether defined as a "general operating reserve" or simply "general operating fund balance" will be determined by the needs of the Town.

Typically, when utilities are discussing the need for reserves, it's usually for future outlays for capital, i.e., water line breaks. Other areas of consideration are emergencies, economic downturns, and inevitable unforeseen events that would trigger a fiscal hardship. It is essential to clearly define the intended use for each reserve and/or fund balance established by a utility.

Fiscal crisis will often trigger policy creation, but the objective of reserve and fund balance policies is to minimize the potential financial crisis as well as provide financial stability to the funds. Some of the most common reserves are:

1. Contingency Reserves
2. Rainy Day Funds
3. Emergency Reserves
4. Current and Future Capital Needs Reserve

MCET recommends a minimum amount equal to 25% of annual expenditures be reserved in the Water Fund cash balance for current and future capital needs.

Enterprise fund balances and cash reserves play crucial roles in ensuring the financial health and sustainability of water and sewer utilities. Planning and setting aside reserves can mitigate the impact of future capital projects and repair costs on annual budgets.

To maintain cash balances, MCET recommends that the minimum rate and usage charge be increased 5% annually to keep cash balances equal to 1 year of O&M expenses. The projected cover ratio is 1.05. Note that the effect of inflation and colas (i.e., 4.0% to 6.0% annually) on system expenses exceeds the effect of Town growth on revenues (i.e., \cong 0.5% annually).

Recommendations:

- 1. Increase water usage rates by 5.0% annually from FY 2025 through FY 2028.**
- 2. Set up a reserve in the Water Fund cash balance equal to 25% of annual expenditures for current and future capital needs.**

The Sewer Fund

Inter-Jurisdictional Agreements

On January 16, 1981, and amended May 29, 1990, the Town of Chesapeake Beach, along with the Town of North Beach, and Calvert County, Maryland, entered into an inter-jurisdictional agreement to build and operate a wastewater treatment plant located in Chesapeake Beach.

Partnership of the plant in 1990 was allocated as follows:

47% to the Town of Chesapeake Beach

24% to the Town of North Beach

29% to Calvert County,

On August 15, 1996, the partners entered into another inter-jurisdictional agreement to include Anne Arundel County, Maryland, where Anne Arundel County agreed to construct plant improvements to increase plant capacity by a minimum of 177,500 gpd (gals/per day). With that plant upgrade, plant capacity was increased to 1.5 mgd (million gals per day). Per the 1996 agreement, Anne Arundel does not have any ownership of the plant but is entitled to an allocation of 157,500 gpd.

Once increased capacity became available, plant fixed charges were allocated as follows:

744,900 gpd to Chesapeake Beach (49.66%); 0.745 mgd

271,350 gpd to the North Beach (18.09%); 0.271 mgd

327,150 gpd to Calvert County (21.81%); 0.327 mgd

157,500 to Anne Arundel County (10.44%); 0.158 mgd

Variable plant expenses are allocated based on EDU derived flows for the year. One EDU in service equals 190 gpd. All fixed and capital expenditures are billed to jurisdictions based on plant allocation percentages. The following is a table of allocated EDUs, allocated wastewater flows, and estimates of jurisdictional wastewater flows by based on the number of EDUs in service.

Table 2. Allocation of EDUs

	GPD/EDU	Allocated EDUs	Allocated Flow, GPD	Reported EDUs in Use	Projected GPD by EDUs in Use
Anne Arundel County	250	550	137,500	471	117,750
Chesapeake Beach	190	4328	822,300	2490	473,100
Calvert County	190	1526	290,000	593	112,670
North Beach	190	1317	250,200	1236	234,745
Anne Arundel, Calvert, and North Beach	250, 190, 190	3393	677,700	2300	465,165

If the number of EDUs in use for North Beach, i.e. 1,236 or any other jurisdiction includes non-family, single occupant households as EDUs, then the number of EDUs in use needs to be reduced. Family households, averaging 3.0 occupants per occupied dwelling equal one EDU, 190 gpd. A nonfamily dwelling unit with only one occupant equals 0.33 EDUs, 63 gpd. And a nonfamily household with two unrelated individuals equals 127 gpd.

Wastewater Flows and EDUs. The most recent 5-year average of North Beach wastewater flow treated at the CBWRTP was 150,000 gpd or approximately 18.5% of the CBWRTP total plant flow of 810,000 gpd. The most recent 3-year average of water metered to customers was 112,000 gpd. The difference in flows, (i.e., inflow/infiltration of 38,000 gpd) represents an I/I rate of 25%.

Dividing 150,00 gpd by 190 GPD/EDU equals only 788 EDUs based on current wastewater flows and %I/I, not 1,236 as reported by CBWRTP. Again, note that nonfamily households use far less water than family households and account for less wastewater flows and fewer EDUs. Following is a table showing North Beach’s water usage, wastewater flows, and EDUs in use at the CBWRTP.

Table 3. North Beach - Water, Wastewater, and EDUs					
Customer Class	Accounts	Water	Wastewater		EDUs
		GPD	GPD	MGD	
Non-Residential	53	14,866	19,815	0.020	104
Families	490	73,990	93,100	0.093	490
Non-Families	489	23,557	36,925	0.037	194
Totals	1,032	112,413	149,840	0.150	788

Households: Family and non-family. A household consists of one or more people who occupy a housing unit. Not all households contain families. Under the U.S. Census Bureau definition, family households consist of two or more individuals who are related by birth, marriage, or adoption, although family households may include other unrelated people.

A nonfamily household is defined as one or more people living in a private dwelling who are “not related”. For example, two college students renting an apartment off-campus is a nonfamily household. A single person living in a house is a nonfamily household. Four people who share a house but are not related are also in a nonfamily household.

A household becomes a **family household** if **either of the two members** are related by **birth, marriage, or adoption**, regardless of the total number of household members.

Other instances:

If a **mother, child**, and an **unrelated roommate** share expenses, it is considered a **family household**.

A **same-sex couple** is now classified as a **family unit** in the 2020 census, whereas in the 2000 census, they were not.

A **grandchild** living with a **single grandparent** is a non-family household. If both grandparents are alive, it becomes a family household.

In the United States, approximately **17.26%** of households fall into the nonfamily category. The average nonfamily household consists of **1.25 individuals**, while the average family household has **3.2** individuals.

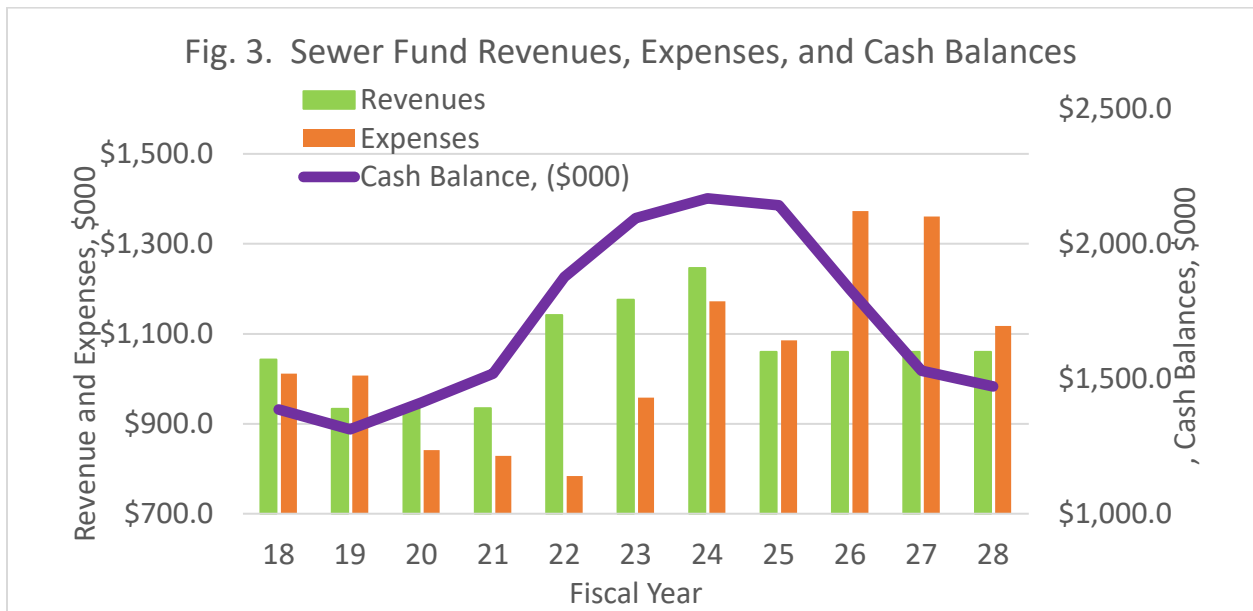
The Chesapeake Beach Water Reclamation Treatment Plant (CBWRTP) The provides aeration for nitrification along with deep bed filters for denitrification. Chemicals are added for phosphorus removal. The plant meets Maryland discharge standards for Nitrogen (< 3.0 mg/L) and Phosphorus (< 0.3 mg/L). For disinfection, the plant uses UV light.

Chesapeake Beach provides all accounting functions for the treatment plant and invoices the other governmental entities for their proportional share of operating and maintenance expenses and capital expenditures. The Town accounts for respective allocations of the treatment plant operations, maintenance, reserves, and capital expenses in the Town's Utility Fund. The Town recovers plant costs through customer user charges and interjurisdictional billings.

Table 4 below shows estimated CBWRTP fixed and variable expenses, projected by Chesapeake Beach along with North Beach’s share of expenses for FY 23 through FY 28.

Table 4. – Annual Projected Expenses, CBWRTP						
Fiscal Year	Chesapeake Beach WRTP, \$			North Beach Share, \$		
	Fixed Costs	Variable Costs	Total	Fixed Costs	Variable Costs	Total
2023	1,650,641	796,470	2,447,111	298,601	143,285	441,886
2024	2,682,646	899,800	3,582,446	481,671	166,463	648,134
2025	2,058,489	925,985	2,984,474	373,281	171,307	544,588
2026	3,507,330	973,084	4,480,413	634,476	180,020	814,496
2027	3,265,389	1,039,975	4,305,364	590,709	192,395	783,104
2028	1,759,124	1,089,572	2,848,696	318,226	201,571	519,796

Sewer base rates and usage fee increases are NOT necessary. Instead, in FY 2025, the base and usage charge rates should be **reduced** to FY 2023 levels and use cash balances to help cover expenses. Below, in Figure 2, is a graph of revenues and expenses along with cash balances in the Sewer Fund from FY 2018 projected through FY 2028 with no rate changes beyond FY 2025. Sewer base and usage rates were adequate to cover 2018 through 2023 operating expenses, debt, and capital expenses. However, projected cover ratios beyond FY 2024 will be less than 1.0 due to no rate increases and high capital expenses at the CBWRTP. Cash balances will decrease dramatically. Rates may need to increase in FY 2029 when cash balances equal one year of expenses.



Cash Reserves: - Currently, the Town has not identified cash reserves in the Sewer Fund. Cash reserves are funds set aside (separate from user charges and other non-rate revenues) to cover unplanned operating and capital-related costs. These reserves provide a buffer for unexpected expenses and help maintain financial stability for water the wastewater systems.

MCET recommends a minimum amount equal to 50% of annual expenditures be reserved in the Sewer Fund cash balance for current and future capital needs.

Recommendations:

- 1. No Sewer Rate increases are needed; Instead, FY 2025 rates should be reduced to FY 2023 levels, which will be adequate through FY 2028**
- 2. Set up a reserve in the Sewer Fund cash balance equal to 50% of annual expenditures for current and future capital needs.**

Rate Recommendations - Summary

1. Future water rates need to be increased 5% annually, depending on desired Water Fund cash balances.
2. Future sewer rates need to be decreased in FY 2025 to FY 2023 levels. No rate increases are likely needed until FY 2029.
3. Recommended future rates are shown in Table 5.

Table 5. - Recommended Water and Sewer Rates				
Fiscal Year	Water Charges		Sewer Charges	
	Minimum, \$/Qtr	Usage, \$/TG	Minimum, \$/Qtr	Usage, \$/TG
2023	\$42.20	\$6.25	\$126.00	\$7.25
2024	\$50.00	\$9.00	\$172.00	\$13.00
2025	\$52.50	\$9.50	\$126.00	\$7.25
2026	\$55.00	\$10.00	\$126.00	\$7.25
2027	\$57.75	\$10.50	\$126.00	\$7.25
2028	\$60.75	\$11.00	\$126.00	\$7.25

Demographics

Customer base (e.g., population, housing units, number of accounts) and water consumption data were essential to this study. Demographic and water consumption data was provided by the Town and trended (FY 2018 – FY 2023) to compute water usage on a per Family Unit, per household, and per capita basis. Revenues needed to cover future expenses are projected using best estimates of forecasted number of accounts, historic water usage parameters, and projected water and sewer service rates.

Pumped and metered water data, rainfall data, and wastewater treated data was provided by the Town’s Department of Water and Wastewater Operations. Water consumption data is used to determine water usage per household (gpd/household), water usage per capita (gpd/capita), and per family (gpd/family). For modeling purposes, water consumption in gpd/family and gpd/capita is preferred over gpd/household for forecasting purposes.

Water usage: Determining water consumption is critical when setting water and sewer rates since water usage per customer has been declining over the past two decades. Whether the result of changes in rates, weather, household size, water conservation policies, economic realities, or a combination of all factors, lower levels of water use per customer likely represents a “new normal” for water and sewer utilities. Future financing strategies should focus on maintaining revenue stability and financial solvency in the context of lower water demand.

Significant Observations - FY 2018 - 2023

Water System - Water for the town is supplied by two deep wells into the Aquia aquifer and stored in the ¼ million-gallon elevated storage tank near 11th Street. All water supplied to town customers is metered. The water supply is treated with chlorine as required by the State Health Codes. An iron reducing agent is also used.

The Town bills customers quarterly for water and sewer based on metered water. The Town has 1032 water accounts and averages 112,400 gpd of water as shown in Table 6.

Table 6. Metered Water and Accounts					
	Comm.	Gov't	Inst.	Resid.	Total
Water Use, TGs/Qtr.	1,167	141.6	43.6	8,877	10,230
Water Use, TGs/day	12.8	1.55	0.48	97.5	112.4
Accounts	41	7	5	979	1032

Unaccounted for and unbilled water (water loss in the system) is only 13%.

Table 7. Pumped and Metered Water				
3-year Averages (gpd) FY 2019 – FY 2022		Permitted Capacity (gpd)	Maximum Demand (gpd)	Available Capacity (gpd)
Pumped (Wells)	129,000			
Metered	112,000	The Town's unaccounted for water is below national averages (15%).		
Unaccounted for	17,000			
% Loss	13%			

The most recent 5-year average of North Beach wastewater treated at the CBWRTP was 150,000 gpd or approximately 18.5% of the CBWRTP total flow

Table 8. Wastewater Treated					
5-year Average (gpd) FY 2019 – FY 2023		Permitted Capacity (gpd)	Peak Capacity (gpd)	Available Capacity (gpd)	
Wastewater Treated	150,000	271,350			
Water to customers	112,000	I/I in most wastewater systems: Low 20 to 25% High 25 to 35% Excessive 50%			
I/I	38,000				
% I/I	25%				

Table 9. Demographics				
	2000	2010	2020	2023
Population:	1,880	1,978	2,146	2,191
In Families	1,403	1,431	1,480	1,517
In Nonfamilies	477	547	666	674
Housing Units	895	1,063	1,143	1,168
Households	802	911	977	1038
% Occupancy	89.6%	85.6%	85.5%	88.9%
Families	466	495	502	521
Nonfamilies	336	416	475	517
Family Size	3.01	2.89	2.95	3.00

Future rates should provide reliable, stable, and adequate revenue to meet the Town’s financial, operational, and regulatory requirements. Rate levels should be stable from year to year - no “rate shocks”. Conservative growth assumptions and prudent financial planning are fundamental in ensuring adequate revenues to promote agency financial stability.

Guidelines from the Water Environmental Federation’s (WEF), “Financing and Charges for Wastewater Systems” and the American Water Works Association’s (AWWA), “Principles of Water Rates, Fees, and Charges” were used to develop recommended water and sewer rates and rate structures in this study.

References and Source Information

- A. Town of North Beach rate structures since 2018
- B. Annual Financial Statements and budgets for Town of North Beach, FY 2018 to FY 2023, Water and Sewer Enterprise Fund Exhibits
- C. Annual Financial Statements and budgets for Town of Chesapeake Beach, FY 2018 to FY 2023, Utility Fund Exhibits
- D. Water and Sewer Debt Schedules for the Town of North Beach
- E. Maryland's, "2010 and 2020 Census Profile of General Population and Housing Characteristics" for the Town of North Beach
- F. AWWA's, "Principles of Water Rates, Fees, and Charges", Manual of Water Supply Practices – M1, 2000
- G. WEF's, "Financing and Charges for Wastewater Systems", Manual of Practice No. 27, 2004
- H. ICMA's, "Evaluating Financial Condition", A Handbook for Local Government, 2003
- I. EPA's "Setting Small Drinking Water System Rates for a Sustainable Future" 816-R-05-006 January 2006, www.epa.gov/safewater