

Village of La Grange Park, Illinois

2017 Water and Sewer Rate Study



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EXECUTIVE SUMMARY

Baxter & Woodman has completed an analysis of the Village of La Grange Park's water and sewer rates along with an analysis of the systems' capital needs. The purpose of this study is to provide the Village with feasible alternatives for setting utility rates to cover operating, debt service and capital improvement expenses while maintaining appropriate cash balances in the Water and Sewer Funds. The scope of this report includes:

- Analyzing the current water usage trends;
- Preparing a 5-year projection of water and sewer expenses, including incorporation of the Village's 5-year capital improvement plan;
- Preparing a 5-year projection of revenues necessary to meet water and sewer utility expenses; and
- Identifying systems of equitable water and sewer rates to meet revenue requirements for the next 5 years.

A review of the Village's water pumping and billing records over the past five years shows a declining trend in water sales which is typical for water utilities in the Chicagoland area. This decline in usage results in lower system revenues. During this same period, the Village has seen a significant increase in the cost of purchasing water from the Brookfield-North Riverside Water Commission (BNRWC). This increase is, in large part, due to the increased unit cost of water supplied to the BNRWC by the City of Chicago. From 2012 to 2015, the City of Chicago raised wholesale water rates by 90% over the four year period and these cost have been passed on to the Village of La Grange Park.

In addition to declining water demand and increasing costs, the Village of La Grange Park has aging infrastructure and must continue to invest in renewal of water and sewer systems which are reaching the end of their useful life. The water main break rate for the Village is more than twice what is accepted as the industry standard. This high break rate is attributable to the age of the system and indicates that much of the system is reaching the end of its useful life. The current rate structure is insufficient to support the recommended investment in infrastructure and will be unable to keep up with projected decreases in per capita water usage combined with increases in operating expenses. Even without increasing capital investments in infrastructure, the water and sewer funds are both projected to have negative balances within the ten year planning period. A planned series of rate increases for both water and sewer is necessary to maintain a well-functioning, reliable water and sewer systems.

The infrastructure renewal analysis conducted on both the water and sewer systems identified capital funding levels which exceed the current funds generated by the existing rates. The analysis suggests annual investments of \$1.0 to \$1.2 million in the water system over the next five years with increasing annual amounts thereafter. The sewer evaluation recommended annual invest levels of

\$200,000 to \$300,000 per year over the next 5 years with increased investment thereafter. These investment levels are required to simply keep pace with the replacement of failing infrastructure. A second level of capital investments was reviewed. This level of investment would increase the performance of the system, not merely maintain the current functional level. These improvements included water main looping projects to improve fire flow and system circulation, and a new water tower and pressure zone to improve pressures in the southwest corner of the Village.

Four alternate investment scenarios were evaluated to determine the impacts to the rate payers of funding the proposed capital improvements. The first two alternates look at investing in system replacements to reduce the number of water main breaks and repair sewer systems where there is excessive infiltration or pipes are structurally deficient. The difference between the first and second alternate is the method of financing the improvements. The first alternate looks at a “pay as you go” funding where projects are funded out of the operating revenues of the system. The second alternate assumes debt financing for improvements. For the purposes of this study, the debt funding is assumed to be a 20 year loan with level debt service payments over the life of the loan. Interest rates are assumed to be 4% for debt incurred in the near future and 6% for debt incurred in 2023. Better interest rates may be available to the Village through IEPA low interest loans or through the bond market; however, a conservative estimate was used in this study so that projected rates will be sufficient to support the debt payments. The life of the asset being financed with debt is expected to far exceed the length of the loan. These alternates are referred to throughout the report as “Recommended Improvements” and “Recommended Improvements – Debt” respectively.

The third and fourth alternates move beyond maintaining the existing systems level of service to provide system enhancements for fire flow and system pressures. The third alternate looks at paying for the improvements using only system revenues while the fourth alternate assumes debt financing of the capital improvements. These alternates are referred to throughout the report as “Enhanced Improvements” and “Enhanced Improvements – Debt.”

User rates shown in the study for each of the alternates will provide sufficient revenues to achieve the goals of supporting projected operating expenses and capital improvements over the 5-year study period while maintaining fund balances at or above the minimum values. The level of investment and means of financing the desired level of investment are policy decisions to be made by the Village Board.

The proposed rates for the next ten years for each of the alternates are provided in Figure 1. As the figure shows and as would be expected, the highest user rate is for performing the Enhanced Improvements on a pay as you go basis. The Recommended Improvements – Debt alternate results in the lowest water and sewer rates; however, what the graph does not depict is that the debt service payments will continue for many years into the future thereby reducing available cash for future improvements. The quarterly bill for a typical residential user (1,400 CF) is presented as Table 1

FIGURE 1
Combined Water & Sewer Rate

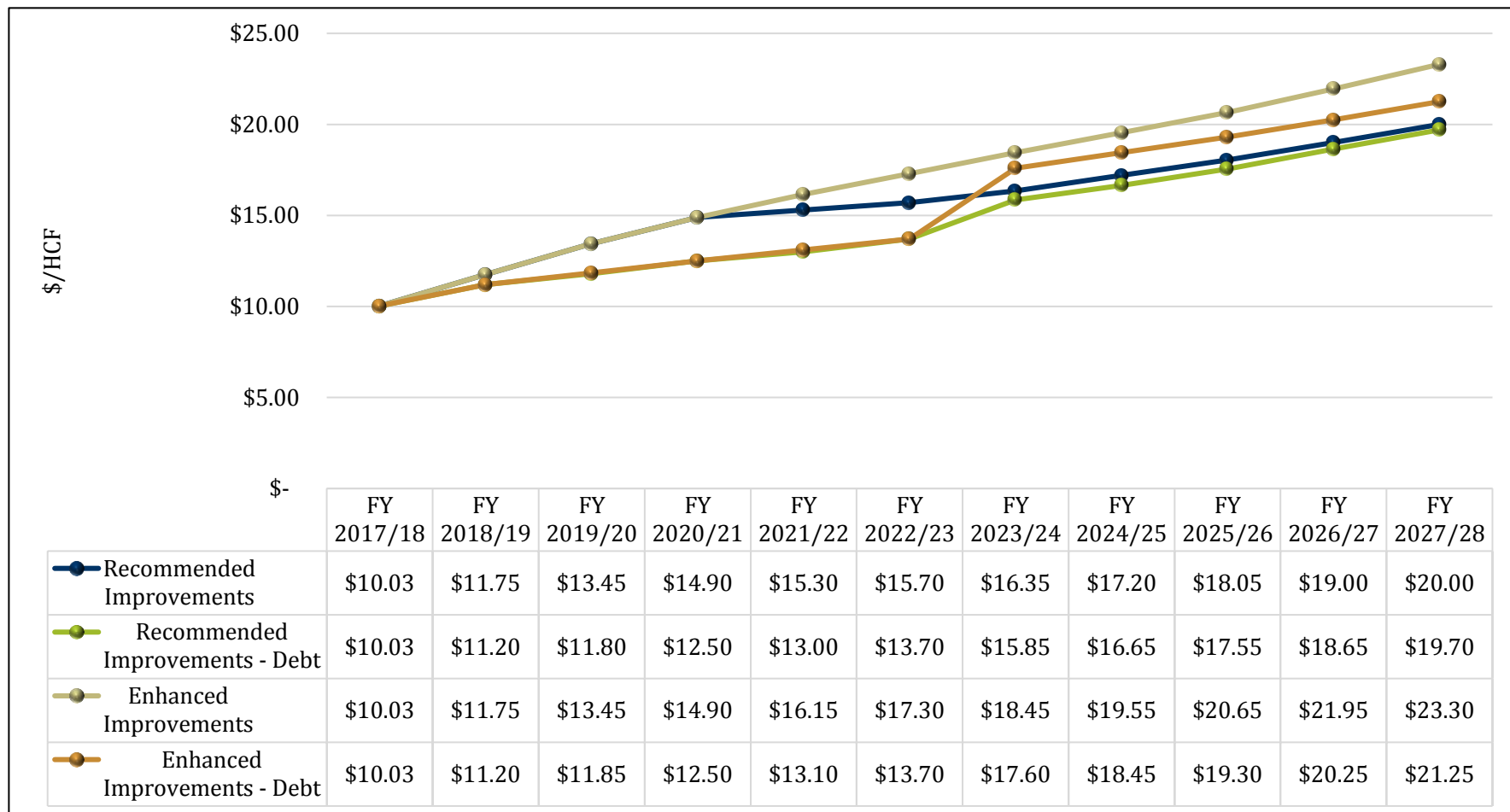
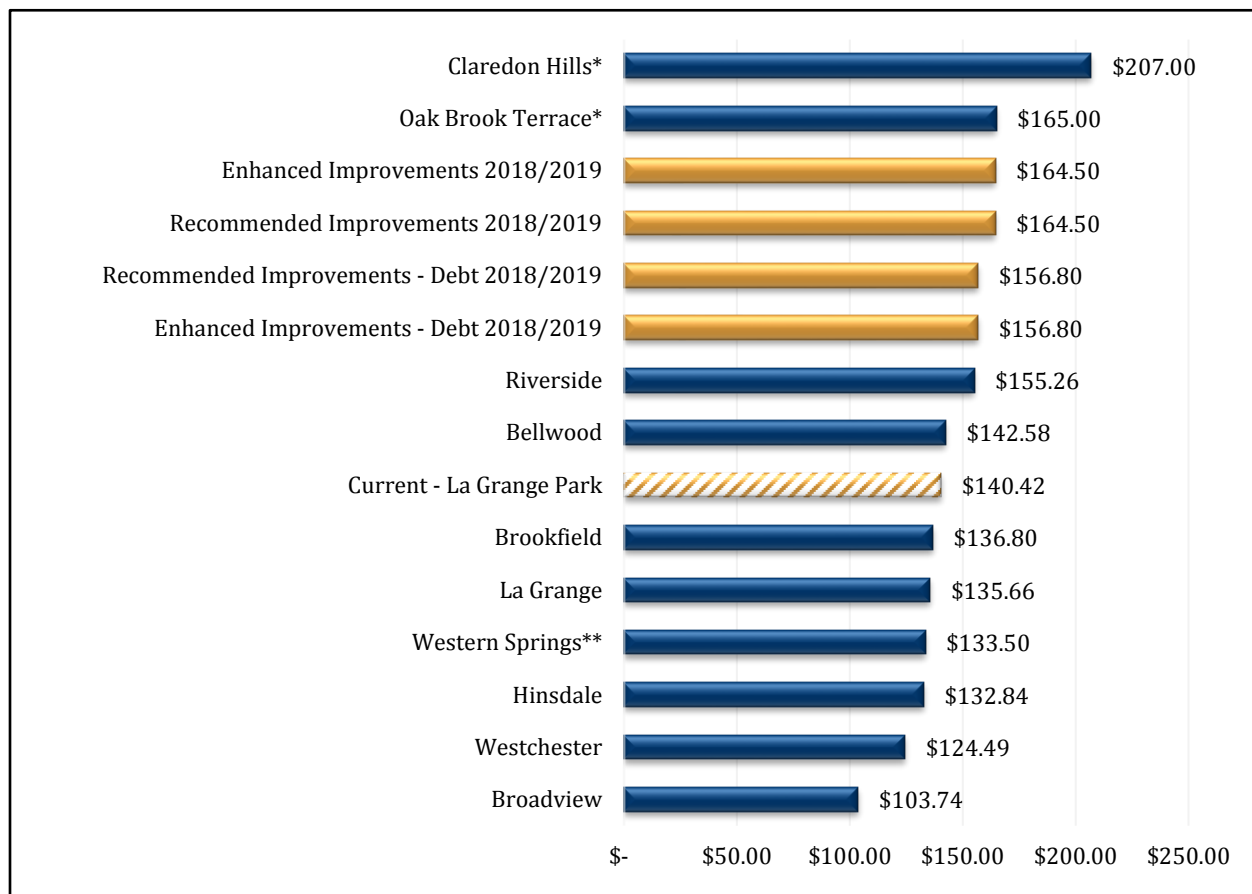


TABLE 1
Quarterly Bill for Typical Residential Usage

Year	Recommended Improvements		Recommended Improvements - Debt		Enhanced Improvements		Enhanced Improvements - Debt	
	Quarterly Bill	Increase	Quarterly Bill	Increase	Quarterly Bill	Increase	Quarterly Bill	Increase
FY 2017/18	\$140.42		\$140.42		\$140.42		\$140.42	
FY 2018/19	\$164.50	\$24.08	\$156.80	\$16.38	\$164.50	\$24.08	\$156.80	\$16.38
FY 2019/20	\$188.30	\$23.80	\$165.20	\$ 8.40	\$188.30	\$23.80	\$165.90	\$ 9.10
FY 2020/21	\$208.60	\$20.30	\$175.00	\$ 9.80	\$208.60	\$20.30	\$175.00	\$ 9.10
FY 2021/22	\$214.20	\$ 5.60	\$182.00	\$ 7.00	\$226.10	\$17.50	\$183.40	\$ 8.40
FY 2022/23	\$219.80	\$ 5.60	\$191.80	\$ 9.80	\$242.20	\$16.10	\$191.80	\$ 8.40
FY 2023/24	\$228.90	\$ 9.10	\$221.90	\$30.10	\$258.30	\$16.10	\$246.40	\$54.60
FY 2024/25	\$240.80	\$11.90	\$233.10	\$11.20	\$273.70	\$15.40	\$258.30	\$11.90
FY 2025/26	\$252.70	\$11.90	\$245.70	\$12.60	\$289.10	\$15.40	\$270.20	\$11.90
FY 2026/27	\$266.00	\$13.30	\$261.10	\$15.40	\$307.30	\$18.20	\$283.50	\$13.30
FY 2027/28	\$280.00	\$14.00	\$275.80	\$14.70	\$326.20	\$18.90	\$297.50	\$14.00

Figure 2 shows what the typical residential user would pay in FY2018/2019 under the proposed rate increases for each of the alternates evaluated relative to what the same usage would cost in neighboring communities. Neighboring communities are likely to face the same issues as La Grange Park and will need to increase their rates in coming years to keep pace. It should also be noted that the communities of Oak Brook Terrace and Clarendon Hills are located in the Flagg Creek Water Reclamation District, which does not levee property taxes unlike the Metropolitan Water Reclamation District of Greater Chicago to which La Grange Park is tributary. The Village of Western Springs uses well water as opposed to purchasing Lake Michigan water like other comparison communities. All these factors need to be considered when comparing rates between communities.

FIGURE 2

Bill Comparison with Neighboring Communities

* Tributary to Flagg Creek Water Reclamation District

** Community Utilizes Well Water

The spreadsheet model used within this study will be provided to the Village for your use going forward. As part of the annual budgeting process, the Village should review the projected revenues and expenses against the year-end actual values so that corrections to the proposed rates can be

made as warranted. This rate study as a whole should be revisited as the Village nears the end of the 5-year study period to reassess the needs of the community. Predictions of usage trends, inflationary measures and other external factors beyond a 5-year period become difficult and the reliability of these projections diminish.

The Village of La Grange Park should discuss any information and material contained in this report with any and all internal or external advisors and experts that the Village deems appropriate before acting on this information. Baxter & Woodman is not acting as a financial advisor to the Village and does not owe a fiduciary duty pursuant to Section 15B of the Securities Exchange Act to the Village of La Grange Park with respect to the information and material contained in this report.

1. WATER AND SEWER SYSTEMS

The Village of La Grange Park operates a public water system consisting of three ground storage tanks (totaling 2.5 million gallons of storage) and associated pump station, one 250,000 gallon elevated storage tank and approximately 42 miles of water system distribution piping. The systems are operated and maintained by the Village's Public Works Department. Water is supplied to the Village's water distribution system by the BNRWC which, in turn, purchases water from the City of Chicago. Much of the Village's current distribution system was constructed in the early 1900s and is reaching the end of its life expectancy.

The sanitary sewage collection system is largely a combined sewer system and consists of 47 miles of gravity sewers. Sewage from the collection system flows to Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) facilities for treatment. As with the water system, much of the sewer system was constructed in the early 1900s and is reaching the end of its expected life.

The Village has a mixture of residential, commercial and institutional land uses. These areas are largely developed, with little land available for new development other than infill development and/or redevelopment.

1.1 Water System Evaluation

Baxter & Woodman completed a review of the Village's Water System to help develop a detailed 5-year Water System Capital Improvement Plan (CIP) with a more general look at the 10-year time horizon. Our review included meetings with Village staff; a review of the 2016 facilities inspection reports prepared by Preferred Tank and Tower; review of the Village's system maps and evaluation of water main needs.

1.1.1 Pumping Facilities

The Village's pumping facilities are all well maintained and in good working order. Review of the pump station evaluations by Preferred Tank and Tower shows that significant maintenance for the pump station does not appear necessary in the near future. The current budget maintains a line item for routine maintenance items such as cleaning and sediment removal, pump repair and rebuild, maintenance of piping and electrical systems and minor structural repairs if necessary.

1.1.2 Water Storage Facilities

The Village's water storage facilities consist of one elevated tank and three ground storage tanks. As with the pumping facilities, the storage facilities are in generally good condition. No major capital improvements are anticipated for the ground storage facilities in the 10-year planning period. The elevated storage tank is also in good repair with an estimated remaining life of 7 to 10 years before full tower repainting will be required. Village staff has identified a location in the southwest portion

of town where system pressures are less than desirable. In order to increase system pressure in this area, a secondary pressure zone would need to be established with an elevated storage tank.

1.1.3 Water Distribution System

As part of the rate study, a review of the water system was conducted to identify needed system improvements and quantify the associated costs. As part of this analysis, the water distribution system was reviewed to determine a recommended level of investment in water main replacement or renewal. The system age is described in Table 2.

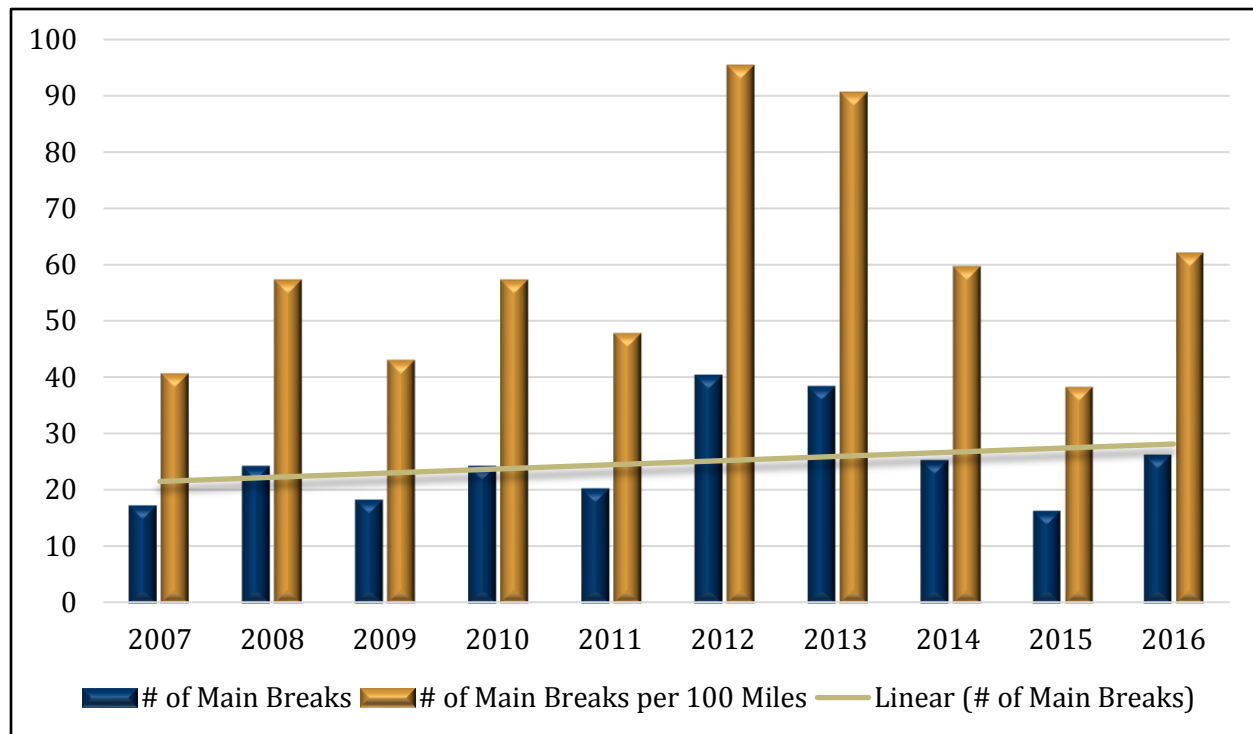
TABLE 2
Water Main Length by Date of Installation

Decade of Installation	Age in 2020	Length (ft)	% of Total System
1900	120	12,085	6.2%
1920	100	51,935	26.4%
1950	70	95,280	48.5%
1960	60	24,345	12.4%
1980	40	1,340	0.7%
1990	30	6,125	3.1%
2000	20	5,323	2.7%

The basic assumptions for the renewal analysis are that pipes have an expected life of 100 years except those installed in the 1950s and 1960s which have an expected life of 80 years. The 1950s and 1960s pipe materials are known across the industry to have a higher rate of breaks and, therefore, a lesser life span than those materials used either prior to or after this time period. The Village maintains approximately 42 miles of water main; of which, roughly 60% was installed in the 1950s and 1960s and roughly 33% was installed between 1900 and 1950. Pipe longevity can vary based on factors such as installation techniques, variation in pipe materials, external forces such as frost heave or drought as well as variations in system pressure. In general, the Village can expect to see an increasing rate of pipe failures over the next 10 to 20 years as this asset reaches the limits of its useful life.

A review of the break history shows that, over the past decade, an average of around 25 breaks per year have been observed (see Figure 3). For comparison purposes, the number of breaks is normalized to the number of breaks per 100 miles of water main. The American Water Works Association (AWWA) set a target of 25 breaks per year per 100 miles of main as an acceptable level. In comparison, the Village experiences an average of 59 breaks per year per 100 miles of main. This high break rate is a function of the system age and indicates the need for accelerating the water main replacement program.

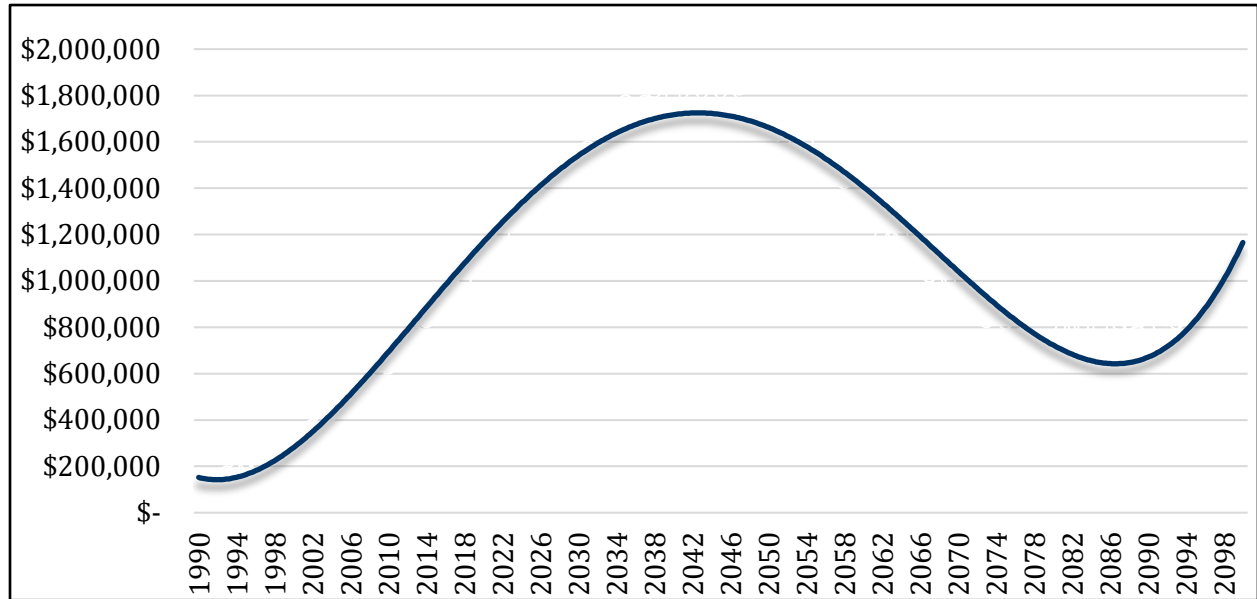
FIGURE 3
History of Main Breaks



In order to estimate the appropriate investment level for renewal of the water distribution system, the Village pipes were grouped together by the decade in which they were installed and a predictive water main failure model was developed. A replacement cost for failed mains was then calculated based on the year of failure and accounting for inflationary construction costs. The curve shown in Figure 4 shows the estimated annual cost for water main replacement in the coming years.

When this replacement scenario is evaluated, the approximate value of the annual water main replacement necessary to keep pace with the rate at which pipes are reaching their end of life is \$1,000,000 to \$1,200,000 over the 5-year study period and up to \$1,400,000 when looking at the 10-year time horizon. As Figure 4 shows, the peak of replacements is expected to occur around 2045 with an annual expenditure of approximately \$1,800,000 in water main replacement costs. The Village is currently at the first portion of the uphill climb and is likely behind in replacement of aging mains as evidenced by the above average break history over the past 10 years. It should be noted that an investment of \$1M to \$1.4M will provide for system renewal. While some benefits to fire flow and water pressure may be achieved, the primary purpose of these improvements is to minimize failures and increase system reliability, rather than to improve system performance.

FIGURE 4

Projected Annual Water Main Renewal Expenditure

1.2 Sewer System Evaluation

The Village owns and operates the sanitary sewer collection system for the Village residents. The system is largely a combined sewer system with discharges flowing to the MWRDGC Salt Creek interceptor sewer. In times of heavy rainfall, when the combined sewer system becomes overwhelmed, flows above the system capacity are discharged via relief sewers to Salt Creek and to the deep tunnel.

Similar to the water distribution system, much of the sanitary sewer system is about 100 years old and is reaching the end of its useful life (see Table 3). Unlike the water system, when a sewer begins to structurally fail, the impacts may not be immediately identifiable. A partially collapsed or blocked sewer may not be identified until a significant rainfall event occurs and the failure causes sewer backups into building basements.

TABLE 3

Sanitary Sewer Length by Date of Installation

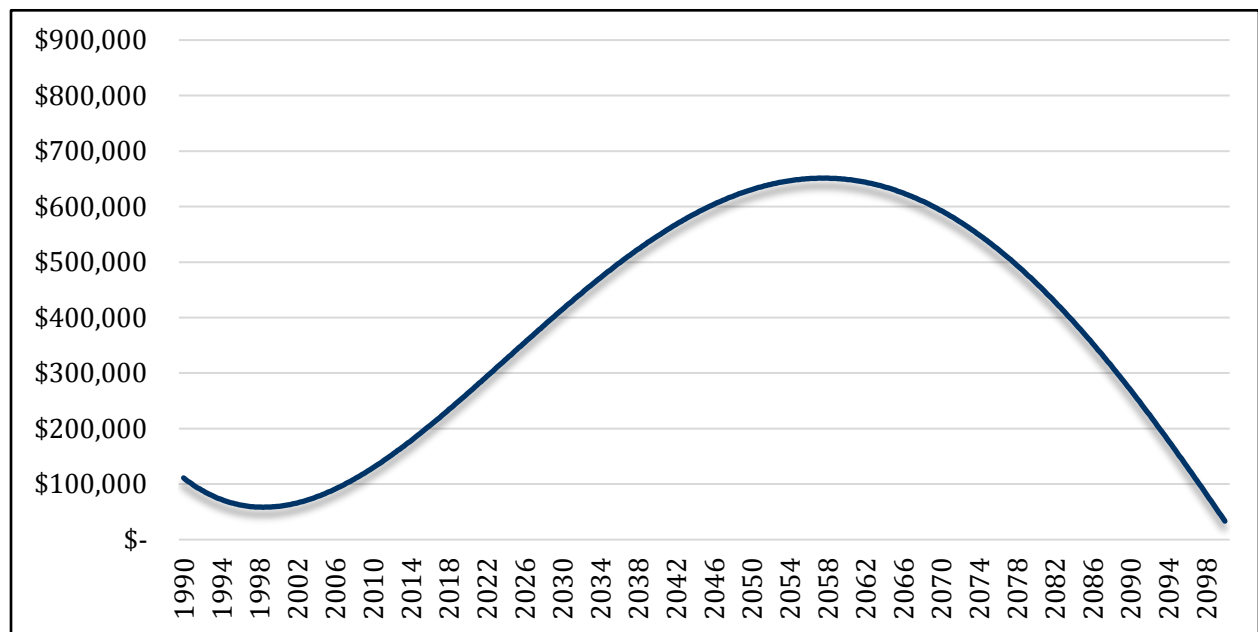
Decade of Installation	Age in 2020	Length (ft)	% of Total System
1890	130	19,465	7.8%
1900	120	16,715	6.7%
1920	100	86,265	34.7%
1950	70	125,845	50.7%

The Village has been proactively performing televising and cleaning of existing sewers to identify failure locations, assess the general condition of the pipe structures and develop a capital plan for repair and renewal of the collection system. Appendix A contains Village maps showing locations which have been televised and locations where improvements have been completed. Standard industry practice is to excavate and replace segments of pipe which have collapsed and insert a cured in place pipe (CIPP) liner at locations where structural damage is evident, but the full diameter of the flow path is unobstructed. The CIPP liner restores structural integrity of the pipe and eliminates inflow through pipe joints, thus extending the life of the pipe for many years.

An analysis similar to what was completed for the water distribution system was completed for the sanitary sewer collection system. As with the water system analysis, costs shown are for sewer renewal only and do not include improvements to system capacity or performance. The proposed investment level will only enhance system reliability.

Over the past several years, the Village has invested approximately \$100,000 annually on point repair and lining of sewers. As Figure 5 shows, the analysis recommends investing between \$200,000 and \$300,000 annually over the next five years and up to about \$400,000 at the ten year time horizon. Based on the model results, the Village would need to continue to increase annual investments up to approximately a \$650,000 annual investment around 2060.

FIGURE 5
Projected Annual Sewer Renewal Expenditure



1.3 Capital Improvement Plan

Based on the investment levels identified above, along with existing system improvement priorities identified by the Village staff and Village Consulting Engineer (Hancock Engineering), Baxter & Woodman has identified capital improvement needs for the water and sewer systems.

1.3.1 Water System Capital Improvements

For the water main improvements, the needs are largely based on the break history of existing mains. Appendix B shows the break history for the Village over the past 5 years. The identified needs were then prioritized and a detailed 5-year plan for improvements was created. The plan is divided into three separate sections.

1. The first section identifies specific projects for the first 5 years of the plan and also identifies the year in which the projects are projected to take place. This part of the plan serves as the basis for the capital improvement portion of the rate projections which are discussed at a later point in this report.
2. The second section of the capital plan is for years 6 through 10. Specific projects are identified, but the year of the improvement is not specified. Because the projections are so far into the future, it is difficult to predict with any certainty which projects will be the priorities within this timeframe or the year in which these projects will need to be completed.
3. The third section identifies projects which would enhance system performance, but are not mission critical for maintaining the current level of service provided to customers today. The projects identified in this category include:
 - West Side Water Tower and Pressure Zone – the southwest side of the Village has lower water pressure due to the higher elevation of the ground. In order to resolve this issue, a second pressure zone would need to be established for this section of the community which would include a new water tower.
 - Richmond Avenue Water Main - New installation of 1,400 feet of 8-inch pipe to connect existing mains and improve capacity to Nazareth Academy, one of the major water users on the system, and approximately 200 homes in the surrounding area.
4. The following improvements are recommended to improve system looping and connections between existing higher capacity water mains. These improvements will enhance water quality and improve fire flow capacities within the system.
 - 26th Street Water Main – Replacement of 2,800 feet of existing 6-inch main with 12-inch diameter main to connect existing 10-inch mains.
 - Oak Avenue Water Main – New installation of 700 feet of 8-inch pipe to connect existing mains.

- 30th Street – New installation of 2,500 feet of 8-inch main to connect existing mains and provide better looping.
- Beach Avenue – Replacement of 1,500 feet of existing 6-inch with 8-inch main to address low fire flows.
- Pine Tree Lane – New installation of 350 feet of 8-inch main to connect two dead ends.

1.3.2 Sewer System Capital Improvements

Unlike the water main replacement, sewer system improvements are less disruptive to the residents and often require less damage to existing roads, sidewalks and landscape. CIPP lining can be completed from within existing manholes and require little in the way of surface disturbances. Unlike a water main replacement which requires excavation for the full length of the new pipe, a sanitary sewer point repair excavation is limited to only that which is necessary for the repair; typically 20 to 30 feet. This, along with the lower cost of mobilization, allows the sewer lining and repair operations to be more fluid. As such, specific locations for lining and point repair improvements have not been identified as part of the planning process. Rather, an annual investment amount, as determined from the analysis above, is used for the basis of planning for sewer system improvements.

In discussions with Village staff, the flooding issues associated with the central portion of the Village were identified as a concern. Based on the report and estimate prepared by Hancock Engineering in 2016, the estimated cost to mitigate this situation was \$8.2 million. A project of this size would require the Village to acquire additional debt financing. This project falls into the capital plan under the system enhancement category with no date established for project implementation.

1.3.3 Alternate Capital Plans Evaluated

Appendix C contains the projected water and sewer capital plans for each of the Alternates which are discussed in the following sections of this report. Alternate A looks at the recommended improvements for replacement of deteriorating water and sewer pipe infrastructure. It does not include capital improvements which improve the functionality of the system, but rather only improvements that maintain the current level of service. Alternate A finances these improvements on a “pay as you go” basis. The second alternate evaluated (Alternate B) looks at these same capital improvements, but utilizes debt financing to fund the improvements.

Alternates C and D look at adding the water system enhancements discussed in Section 1.3.1 to the project list in years 6-10 of the capital plan. Similar to Alternates A and B, Alternate C evaluates funding the improvements on a pay as you go basis with Alternate D looking at the implications of using debt financing for both the first 5 years of the capital plan and then undertaking a second debt issuance to fund the projects in years 6-10 of the plan.

2. CURRENT WATER AND SEWER RATES

The Village bills system users on a quarterly basis for water and sewer services with the intent of collecting sufficient revenue to allow these utilities to be self-sustaining and self-renewing. The Village bills all metered customers for the volume of water utilized within the billing period. All other fees, such as late fees, turn on fees and meter sales are billed when specific services are rendered. Table 4 summarizes the billing rates under the FY 2017/2018 rates.

TABLE 4
Existing Billing Rates

Water Usage per 100 cubic feet	\$ 7.71
Sewer Usage per 100 cubic feet	\$ 2.32
Total	\$10.03

Revenues from the Water and Sewer Usage fees are placed in the Water Fund and Sewer Fund, respectively. The Village also has a minimum bill of 600 cubic feet for the three month billing cycle. Any accounts which are active for the full billing cycle and use less than 600 cubic feet are still billed as if they had utilized this amount.

3. PROJECTED WATER AND SEWER USAGE

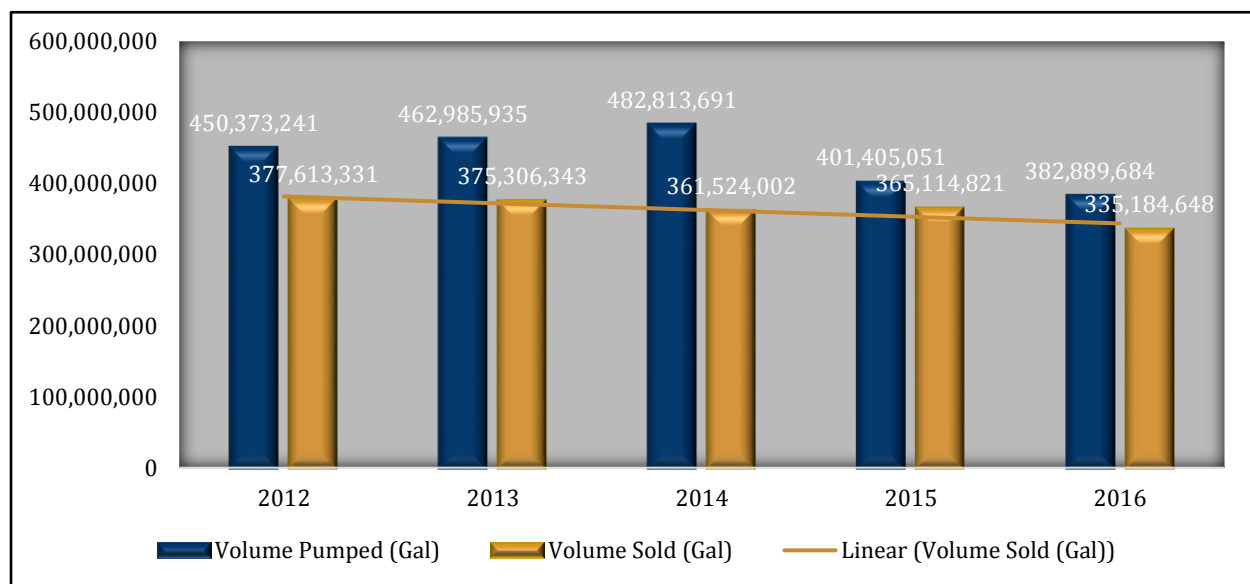
Under the current rate structure, revenues to support the water and sewer systems are generated almost entirely through the volumetric sale of water. Over 99% of the fund revenue comes from water usage with the remainder of the revenue from miscellaneous fees and interest on fund balances. Because the fund revenue is almost completely reliant on water sales, a thorough analysis of water usage trends is warranted. As a basis for projecting the future water usage and, thus, the system revenues, Baxter & Woodman reviewed data related to the volume of water pumped into the system as well as the amount of water sold to customers and utilized by the Village over the past 5 years. Table 5 and Figure 6 summarize this information.

TABLE 5
Summary of Water Pumped and Water Sold

Billing Period	Water Pumped (Gal)	Water Billed (Gal)	Unbilled* Water (%)
2012	450,373,241	377,613,331	16%
2013	462,985,935	375,306,343	19%
2014	482,813,691	361,524,002	25%
2015	401,405,051	365,114,821	9%
2016	382,889,684	335,184,648	12%

*Unbilled water includes water for hydrant flushing, fire fighting, and system operation and maintenance as well as leakage.

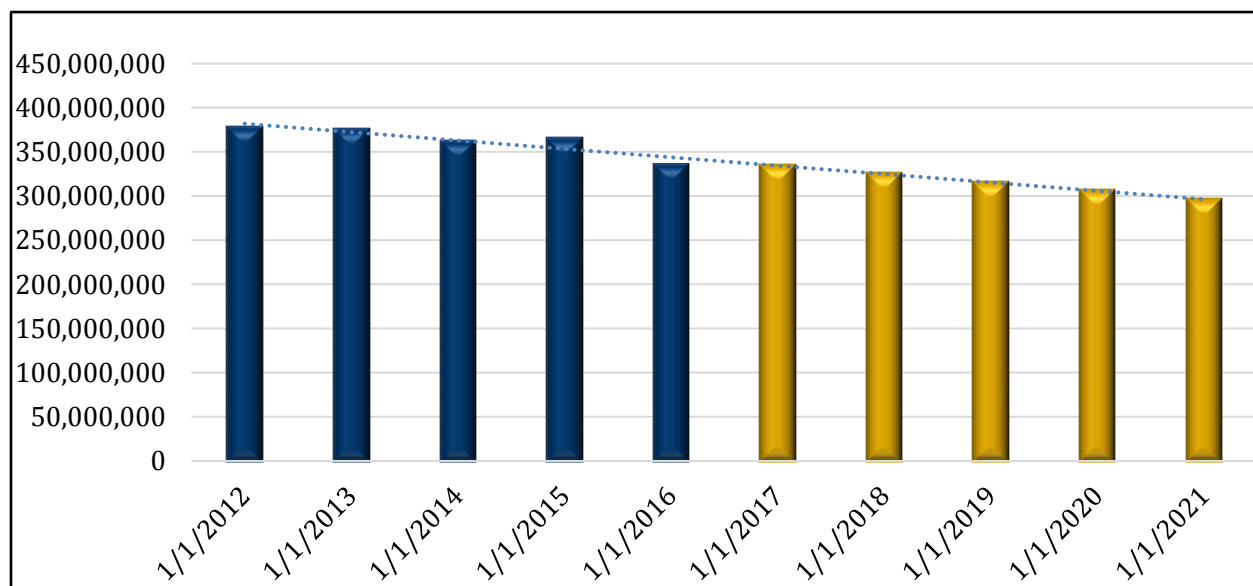
FIGURE 6
Water Pumped vs. Water Billed



Note the overall declining trend in water usage over the last few years. This trend is typical for northern Illinois communities. While there has not been any definitive research regarding the cause of the decline in water usage, anecdotal evidence suggests that the increase in high efficiency plumbing fixtures along with public awareness campaigns related to the conservation of water are, in part, contributing to the declining per capita water usage rates. Increased annual precipitation and other climate related variables may also play a role in declining per capita water usage.

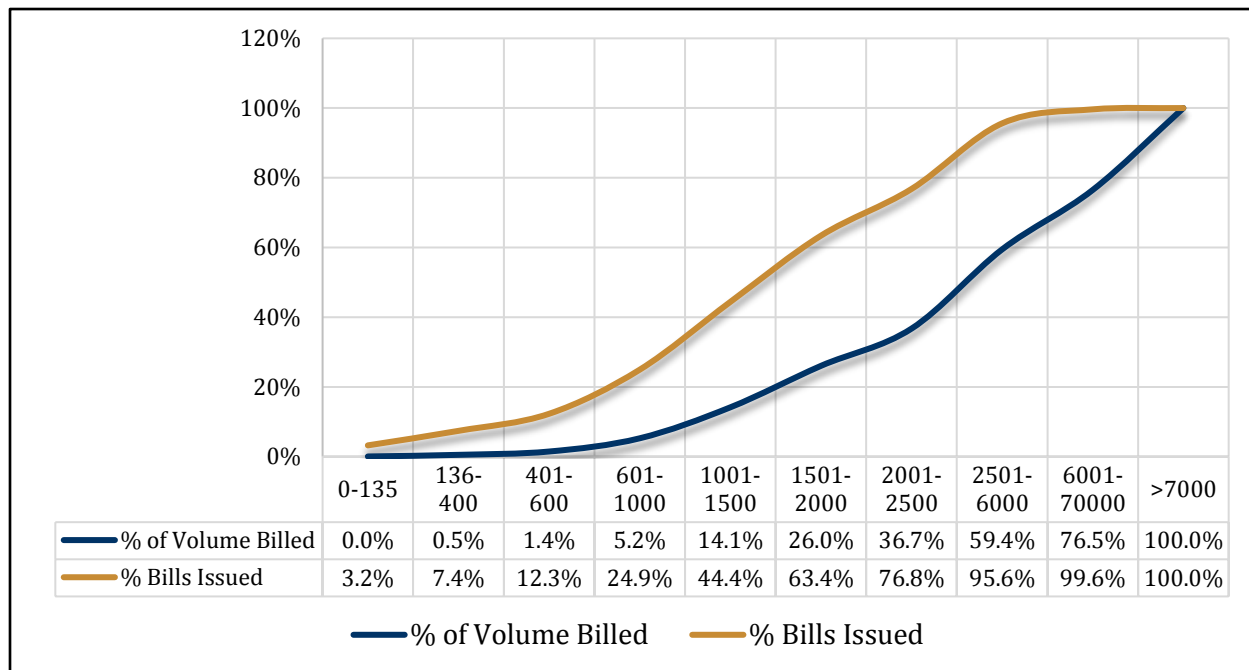
As the Village is not anticipating significant population growth, and water usage is trending downward, the revenue projections in this analysis have been made utilizing the average water usage trend line to project future water consumption over the term of the study (see Figure 7 – gold colored bars indicate projected water sales). These assumptions are intended to avoid over-estimating revenue.

FIGURE 7
Volume of Water Sold



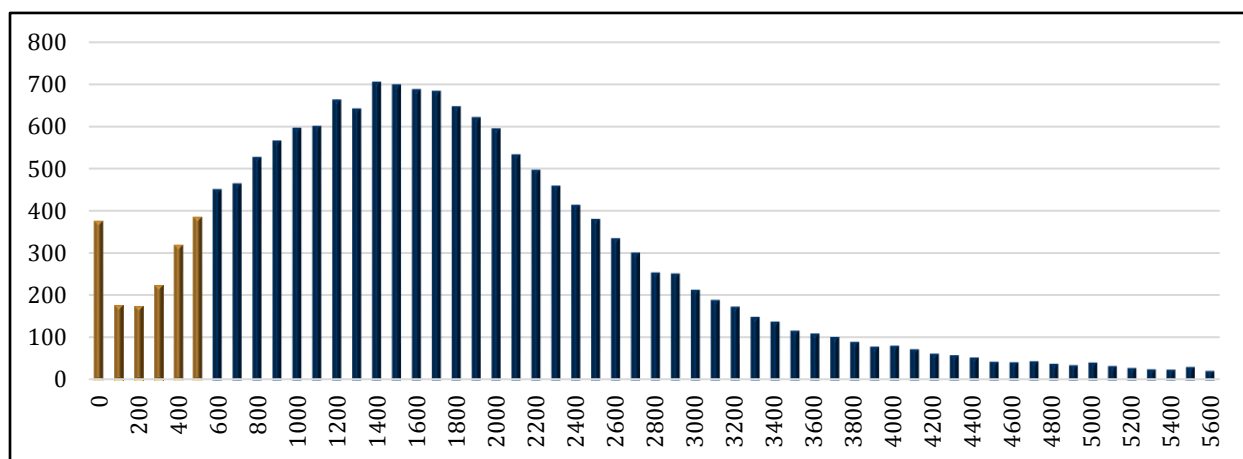
Baxter & Woodman conducted a review of the customer usage trends. Figure 8 shows roughly 63% of the system users consume only 26% of the water volume sold while 0.4% of the users consume 23.5% of the water. The number of truly high volume users is relatively small and, therefore, the loss of one or more of these accounts could have a significant impact on water revenues. If a high volume user were to no longer be a customer of the Village water system, the projections contained in this report should be revisited to evaluate the impact on overall system revenue.

FIGURE 8
Customer Usage Distribution



The distribution of bills issued was evaluated to determine the usage of the typical residential customer. Figure 9 shows the number of bills issued in 100 cubic foot increments. The usage volume most frequently billed for is 1,400 cubic feet for a three month period. It should also be noted that a number of bills (12.3%) are below the minimum usage (shown in gold).

FIGURE 9
Annual Bills Issued per Volume Sold



4. PROJECTED WATER AND SEWER REVENUES

Revenues generated by the Water and Sewer Usage fees are allocated to the Water and Sewer Funds, respectively. Each fund should be financially independent and although they are interrelated funds, they will be analyzed independently.

4.1 Rate Structure

Various types of rate structures are used by municipalities in developing their user charge system. Each method has positive and negative implications. Following is a brief review of alternative rate structures which can be employed.

Declining Block Rate – Under this structure, the cost of water decreases as usage increases. For example, the rate per 1,000 gallons for the first 9,000 gallons of usage per month is higher than the rate per 1,000 gallons for usage between 10,000 and 20,000 gallons, which is higher than the rate per 1,000 gallons for usage above 20,000 gallons. This type of rate structure is typically utilized in communities where there are significant industrial users who require large quantities of water.

Inclining Block Rate – This structure is similar to the declining block rate except rates increase with increased usage. This type of system is designed to encourage a conservation mindset to consumers.

Seasonal Rates – The seasonal structure is designed to encourage water conservation during the summer months when water usage tends to peak. The structure is similar to that of the inclining block rate except that the higher rates are only in effect during the summer months where usage peaks.

Meter Charge – In addition to the usage rates, each customer pays a separate fixed fee on a monthly basis. The amount of the fee is based on the size of the meter. Those with larger meters pay a higher fee. The rationale behind this type of fee is that the higher capacity users require larger infrastructure and, therefore, should bear a higher proportion of the costs.

Fixed Fee/Usage Fee – Under this type of fee structure, all system users pay a minimum monthly fee for the prescribed amount of water (typically around 3,000 gallons). This fee is paid regardless of whether or not 3,000 gallons of water is used. Any water usage above this amount is paid for at the price per 1,000 gallons used. A typical drawback to this type of fee structure is that those with a fixed income are typically the lower water users. This fee structure requires that these accounts pay for more water than they actually use. The upside for this type of structure is that it provides a certain amount of stability to the revenue stream. This is the type of fee structure currently utilized by the Village.

Usage Fee – Under this structure, each user pays for each 1,000 gallons of water utilized. This type of structure is easy to understand and relatively equitable to all parties. The drawback to this type

of structure is that system users who use minimal amounts of water are not paying an equal share for the fixed costs associated with operating the system.

The Village currently employs a Fixed Fee/Usage Fee which charges each user based on the amount of water used in the billing period with a minimum of 600 cubic feet for each 3-month period.

In looking at the potential to change the rate structure, the project team discussed the functionality of the current rate structure. Staff indicated that they receive relatively few complaints regarding the rate structure; historical revenues are stable and adequately support the ongoing operations of the system; and the system is easily understood by the rate payers. Because of these reasons and the familiarity of system users with the current fee structure, we recommend that the Village maintain its current Fixed Fee/Usage Fee based rate structure.

4.2 Revenue Projections

As discussed in Section 3 of this report, the per capita consumption of water is declining and consequently, revenues would be expected to decline. For this study, future revenues are developed by multiplying the anticipated annual water usage by the projected unit cost. The current ordinance sets a minimum quarterly usage volume of 600 CF. The revenue generated by the minimum bill is roughly equivalent to the fixed costs associated with operating the system. Although there are a significant number of users who received the minimum quarterly bill, the revenue projections do not include any modifications for those who use below the minimum amount. This is a relatively low volume of water, the impact of which is below the accuracy of any total usage projections.

4.3 Historical Rate Increases

In 2012, the City of Chicago, which supplies water to the BNRWC which in turn supplies water to the Village, began a series of significant rate increases for water sales. Chicago implemented a 25%, 15%, 15% and 15% rate increase from 2012 through 2015. At the end of the four year period, the cost for purchasing water had increase by 90%. These rate increases resulted in the need for the Village to increase rates to cover the increased expense of purchasing water. The Village water rates in FY 2010/2011 were \$4.96/HCF. The current rates are \$7.71/HCF; a 55% increase over the 7 year period. Over the same 7 year period, the cost of sewer service increased from \$2.10 to \$2.32 which is a 10% increase. This small increase was instituted to support the backup prevention program initiated by the Village in 2015 along with a 5% increase in 2017 to keep pace with rising costs. Otherwise, there have been no rate increases to support operating or capital expenses.

5. PROJECTED FUND EXPENSES

A thorough and detailed review of expenses associated with the Water Fund and Sewer Fund was conducted.

5.1 Water Fund Expenses

The Water Fund expenses consist of those items necessary for ongoing operations of the water supply and distribution system. These expenses include such things as personnel, chemicals, electricity, utilities, routine equipment and facilities maintenance, and purchase of water from the BNRWC. A summary of these expenses is found as part of Appendix D.

In developing the expense projections for the 5-year study period, Baxter & Woodman reviewed each budgeted line item expense and worked with Village staff to assign an inflation factor where appropriate. Expenses were then generated for each of the 5 years based on the prior year budget and the inflation factor. There are no major operational changes anticipated at this time, therefore, current manpower and routine maintenance and material needs are not anticipated to change significantly. Budget line items in these areas are adjusted only for inflation.

Approximately 70% of the operating cost associated with providing water service to Village customers is the expense of purchasing water from the BNRWC. The BNRWC, in turn, purchases their water from the City of Chicago. As discussed in Section 4.3 of this report, significant increases in the cost of water have been seen by the Village over the past few years. Going forward, annual rate increases from the City of Chicago are set to increase at the lesser of the Consumer Price Index or 5%. In addition to the potential increases in water purchase cost, the BNRWC is adding a \$0.08 per 1,000 gallons to support maintenance and improvements to their delivery system which provides water to the Village. For the purposes of this study, an annual rate increase of 5% has been assumed. Table 6 shows the projected rate schedule for the purchase of water from the BNRWC over the course of the study period.

TABLE 6

Historical and Projected Brookfield North Riverside Water Commission Rates

Year	BNRWC Rate Charge per 1,000 gallons	BNRWC Rate Charge per 100 cubic feet
2008/09	\$2.32	\$1.74
2009/10	\$2.55	\$1.91
2010/11	\$2.80	\$2.09
2011/12	\$2.85	\$2.13
2012/13	\$3.42	\$2.56
2013/14	\$3.82	\$2.86
2014/15	\$4.29	\$3.21
2015/16	\$4.84	\$3.62
2016/17	\$4.94	\$3.70
2017/18	\$5.15	\$3.85
2018/19	\$5.45	\$4.08
2019/20	\$5.72	\$4.28
2020/21	\$6.01	\$4.50
2021/22	\$6.31	\$4.72

Based on the assumptions stated above, the operating expenses are slated to grow from \$2.90 million in 2018 to \$3.08 million in 2022. This 6% increase in expenses must be funded by revenues from water sales that are expected to decline from 447,000 hundred cubic feet (HCF) to 396,000 HCF or an 11% decrease. This increase in operational expenses does not include any investment in capital necessary to maintain a reliable water supply and distribution system. As noted in subsection 1.1.3, the recommended annual investment level in water system renewal is \$1M to \$1.4M over and above the operating expenses.

5.2 Sewer Fund Expenses

Expenses for the operation of the wastewater collection system are primarily driven by the personnel and equipment costs associated with routine maintenance of the system. These costs are projected to rise at the general inflationary rate. Operational costs are expected to rise from \$510,000 in 2018 to \$565,000 in 2022 (11% increase). As with the water fund, the additional revenue will need to be generated by a system where water consumption is projected to decline by 11% over the same period. The increases in expenses do not allow for any system repair or improvements; only basic maintenance. Subsection 1.2 of this report recommends continuing the Village's current sewer lining and point repair program. These costs are not included in the operational costs and the recommended annual investment is \$200,000 to \$300,000.

In addition to the ongoing operational expenses, the Village also has outstanding debt for sewer projects which were undertaken in the past. Debt service payments are approximately \$390,000 annually and will be completed in FY 2025/2026. When debt payments are completed, the Village will need to evaluate if they want to adjust rates, take on additional debt for another large project, or increase the operating budget and tackle additional sewer lining and repair.

6. FISCAL POLICIES AND GOALS

In order to evaluate potential changes to the water and sewer rates, the following policies or goals are recommended.

- In accordance with the AWWA recommendations, the recommended target fund balance has been set at 25% of the operating expense. Fund balances below this target should be avoided as they do not allow sufficient cash reserves for unexpected operational expenses which occur from time to time. Fund balances significantly above the target fund balance should also be avoided as the accumulation of cash is not of benefit to the system rate payers unless it is in anticipation of a planned capital expenditure.
- The sewer fund must retain in reserves an amount equal to the annual bond payment. This is to allow for the abatement of property taxes associated with the bond. This amount is over and above the 25% operating reserve discussed above. In addition, the bond covenant requires net revenue to be equal to at least 1.25 times the debt service payment.
- Historically, the Village uses a “pay as you go” philosophy for replacement of infrastructure. Alternates A and C maintain this philosophy. Alternates B and D look at the use of debt to fund water system capital improvements planned for the next 5 years. Given the relatively low interest rates which are currently available, debt financing becomes an option worthy of consideration. For this analysis, it has been assumed that the bond covenants which are set forth in the existing sewer debt issuance will also be applicable to future debt issuances for water system improvements. The requirement for maintaining revenue at 1.25 times the debt service payment results in the accumulation of funds. Therefore, the alternates involving debt use the accumulated fund balance to undertake a planned capital improvement project, rather than debt financing all capital projects.
- The Village currently has a minimum quarterly bill equal to 600 cubic feet. The revenue generated by this minimum billing is approximately equal to the cost of basic systems operation. It is recommended that this minimum billing amount be maintained to support the basic operations of the system. System users who do not utilize the full 600 cubic feet of water per billing cycle still benefit from the fire protection provided by the water system and the efficient removal of sanitary sewerage and stormwater drainage from the community.

The above policies and goals will be used as guidelines as potential changes to the rates are considered in the following sections of this report.

7. BASELINE REVENUE AND EXPENSE ANALYSIS

Under the Baseline scenario, it is assumed that the Village will not increase water and sewer rates above current levels, and water and sewer capital improvements will continue at the same pace as the past several years (\$200,000 per year in sewer improvements and \$425,000 per year in watermain improvements). Given these parameters and the revenue and expense projections discussed above, the water fund will be operating at an annual deficit and will consume existing cash reserves with the annual deficit continuing to widen. Correspondingly, as Figure 10 shows, the water fund balance will begin to diminish and will drop below the target fund balance in FY 2020/21 and will become negative in FY 2021/22. The sewer fund projections are similar as shown in Figure 11.

FIGURE 10

Projected Water Fund Revenues/Expenses and Fund Balance - Baseline

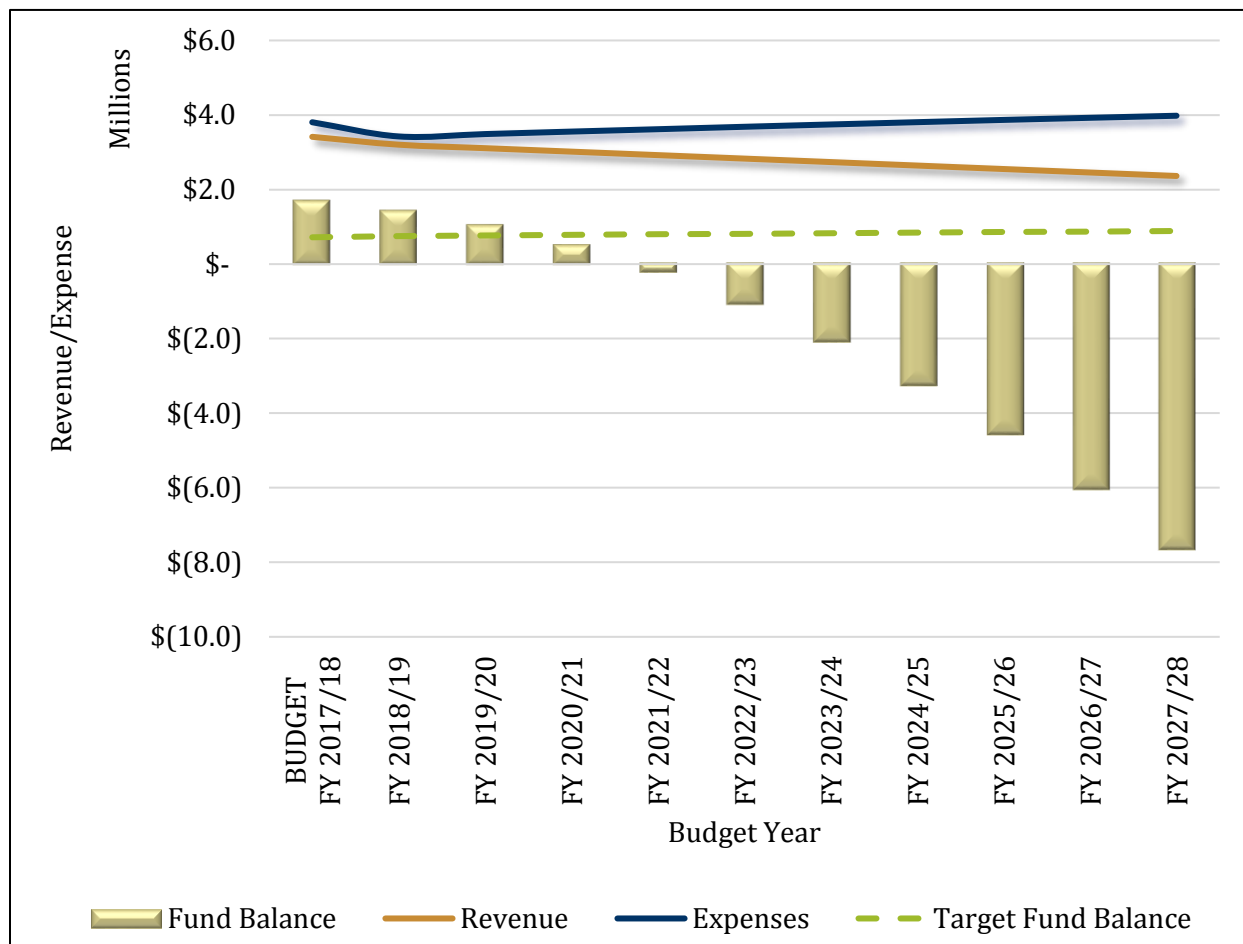
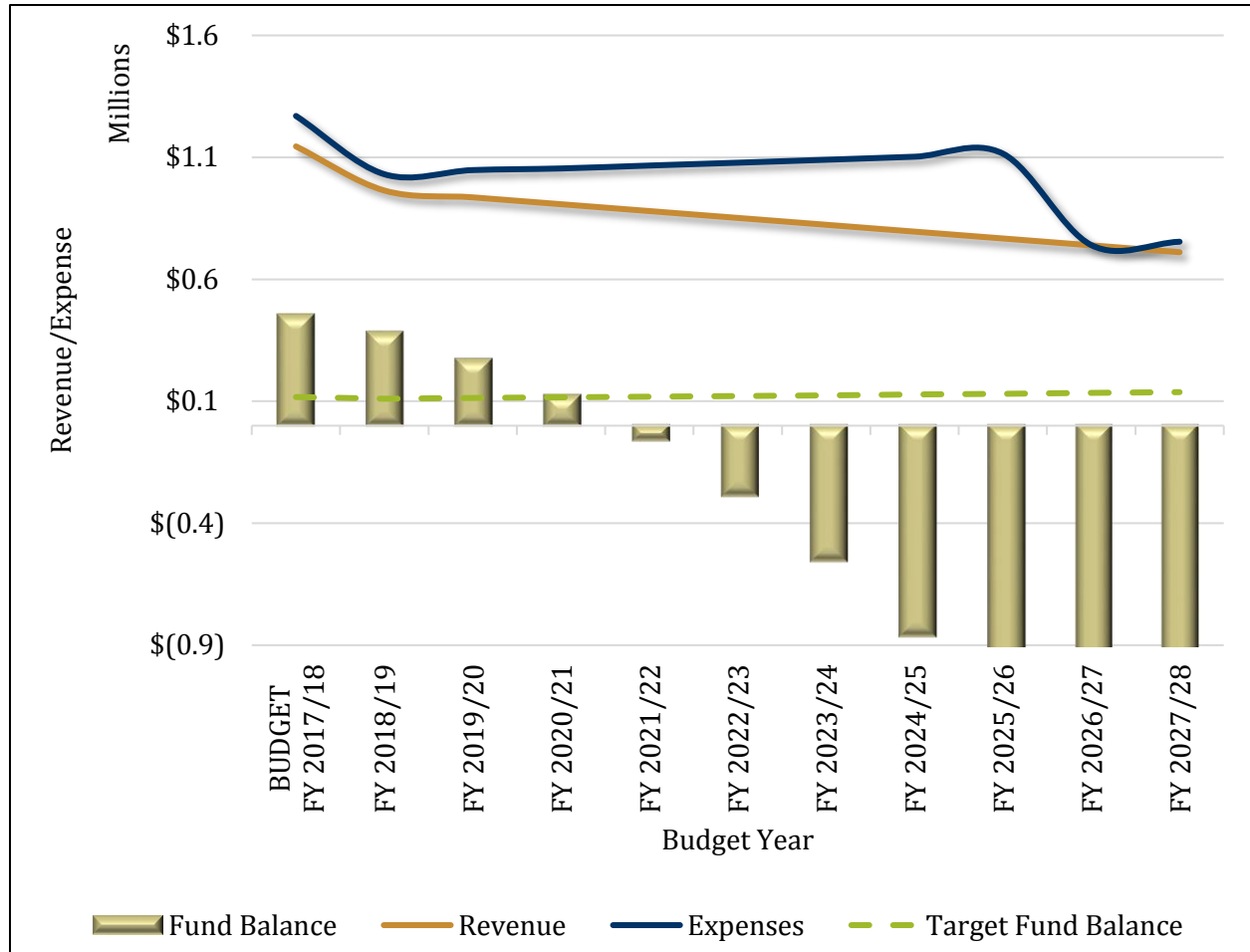


FIGURE 11

Projected Sewer Fund Revenues/Expenses and Fund Balance - Baseline

This baseline scenario is unsustainable. Although the fund balances are above the target value for several years, the gap between revenues and expenses quickly becomes significant resulting in the declining fund balance. Also of note is the drop in expenses starting in FY 2026/27. This reduction is due to the ending of debt service payments in FY 2025/26.

8. WATER AND SEWER RATE ALTERNATES OVERVIEW

In working with Village staff, several rate increase options to meet the projected system expenses were discussed. Four alternates were explored in detail and those alternates are discussed in this report. The basic assumptions discussed above (declining water usage and inflationary increases for expenses) are held in each of the following analyses.

8.1 Alternate A - Recommended Improvements

The first alternate evaluated utilizes the capital improvement investment rates for water and sewer renewal as set forth in Section 1 of this report as well as escalating the rates a sufficient amount to overcome the loss of revenue due to reduced water consumption and the increased operating expenses.

Table 7 shows the proposed rates under this option. The rates for water usage by users within the Village limits increases annually between \$0.25 and \$1.54 per HCF used. The total increase over 5 years is \$4.79 per 100 cubic feet. Sewer charges for users within the Village increase between \$0.10 and \$0.25 annually per HCF. The total increase over 5 years is \$0.88 per 100 cubic feet. Table 7 also shows the quarterly bills for a minimum volume user (600 cubic feet) and a typical residential user (1,400 cubic feet). A typical user can expect to see their bills increase by \$79.38 per billing period or \$318 per year over the course of the next 5 years. Over the full 10-year study period, the typical user can expect their bill to increase by \$140 per bill or \$560 per year.

TABLE 7
Proposed Rates - Alternate A

	Proposed Rates			Quarterly Bill	
	Water (HCF)	Sewer (HCF)	Total (HCF)	Minimum (600 CF)	Typical User (1,400 CF)
FY 2017/18	\$ 7.71	\$2.32	\$10.03	\$ 60.18	\$140.42
FY 2018/19	\$ 9.25	\$2.50	\$11.75	\$ 70.50	\$164.50
FY 2019/20	\$10.75	\$2.70	\$13.45	\$ 80.70	\$188.30
FY 2020/21	\$12.00	\$2.90	\$14.90	\$ 89.40	\$208.60
FY 2021/22	\$12.25	\$3.05	\$15.30	\$ 91.80	\$214.20
FY 2022/23	\$12.50	\$3.20	\$15.70	\$ 94.20	\$219.80
FY 2023/24	\$13.00	\$3.35	\$16.35	\$ 98.10	\$228.90
FY 2024/25	\$13.75	\$3.45	\$17.20	\$103.20	\$240.80
FY 2025/26	\$14.50	\$3.55	\$18.05	\$108.30	\$252.70
FY 2026/27	\$15.25	\$3.75	\$19.00	\$114.00	\$266.00
FY 2027/28	\$16.00	\$4.00	\$20.00	\$120.00	\$280.00

Figure 12 shows the projected revenues, expenses and fund balances for the Water Fund and Figure 13 shows the same for the Sewer Fund under Alternate A. The 10-year projections for these funds are provided as Appendix E. As Figure 12 and Figure 13 show, the water and sewer revenues and expenses are closely matched under this scenario with the first few years of the study period showing a slight deficit in both funds. This deficit draws the fund balances down relatively close to the target fund balance.

FIGURE 12

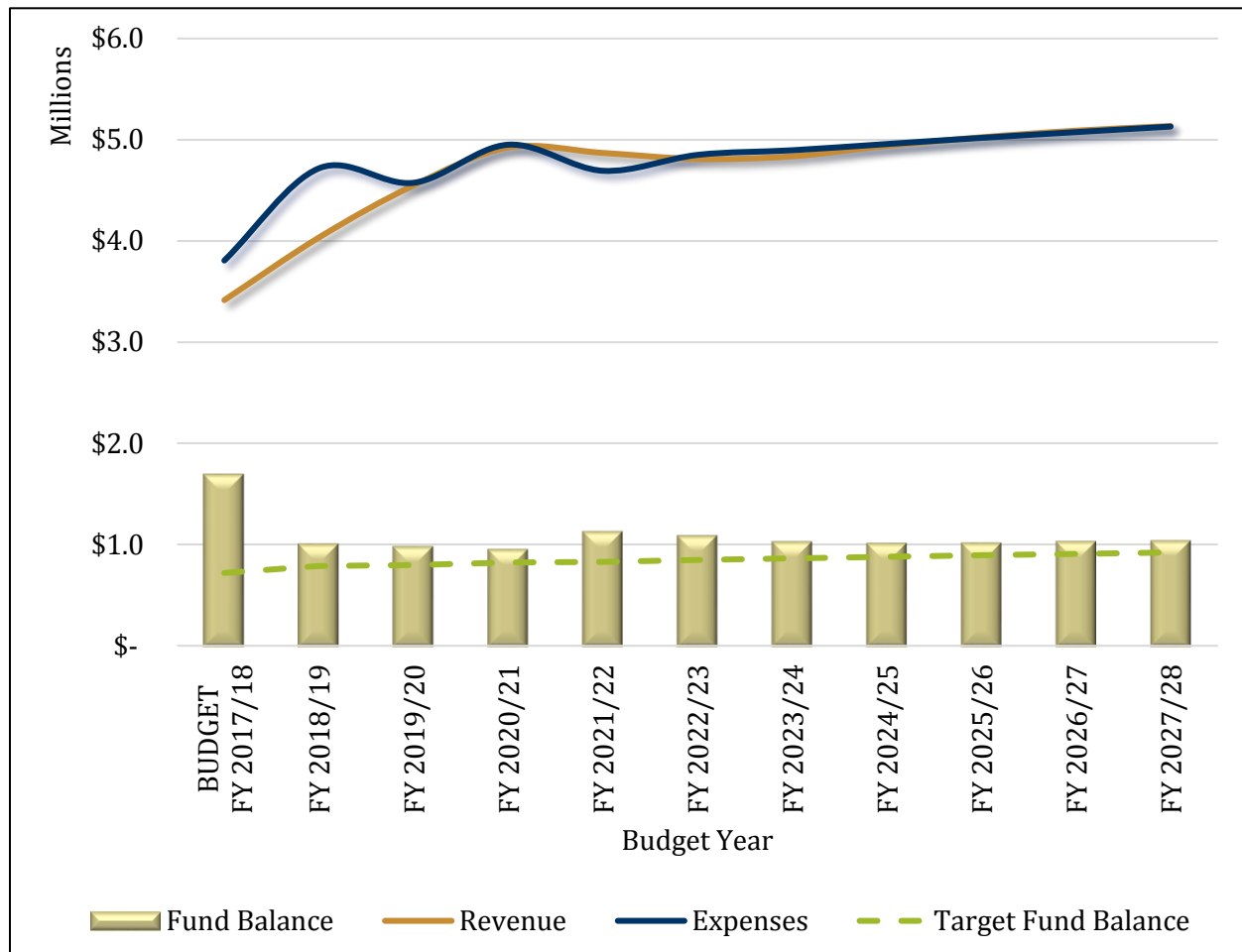
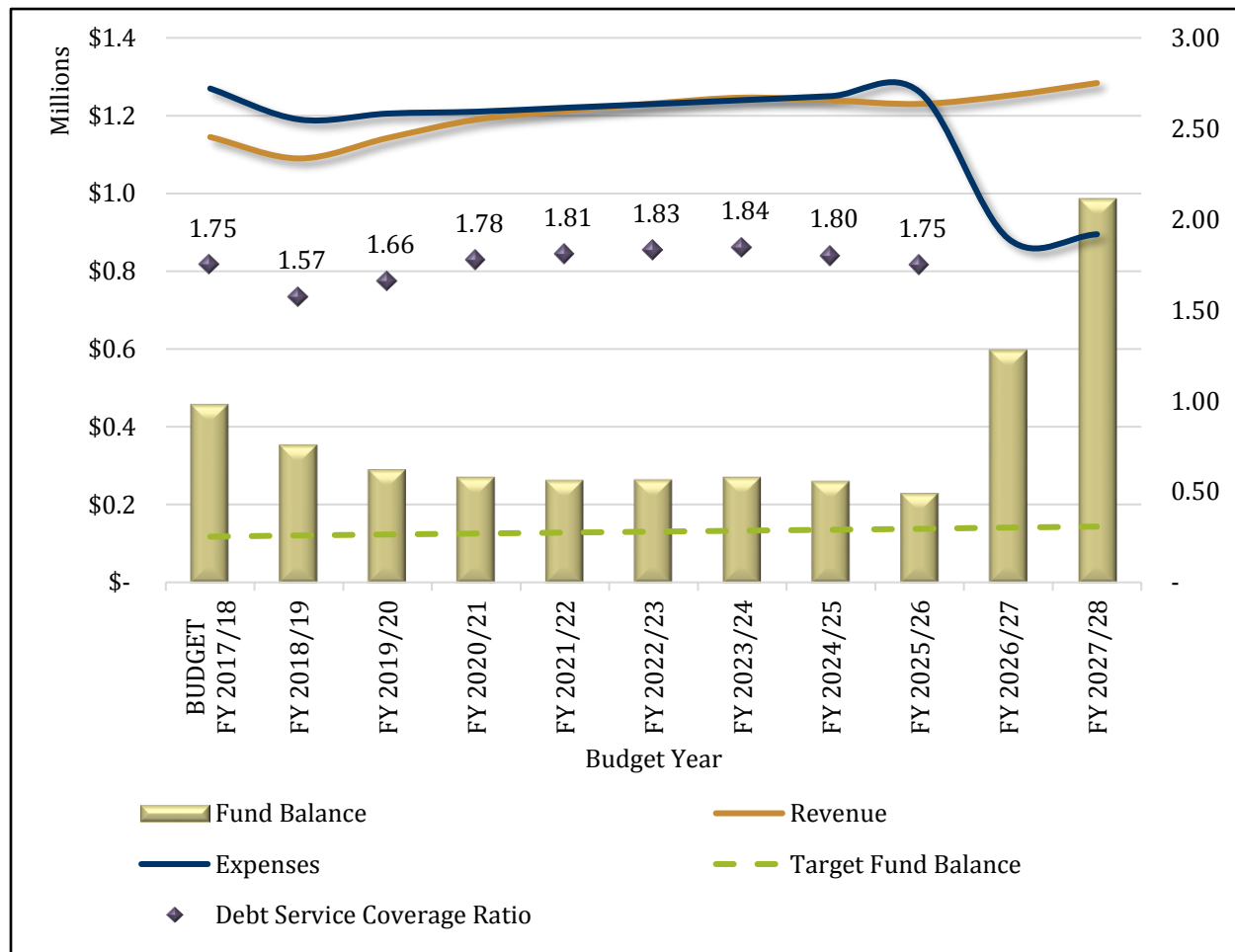
Projected Water Fund Revenues/Expenses and Fund Balance – Alternate A

FIGURE 13

Projected Sewer Fund Revenues/Expenses and Fund Balance – Alternate A

In reviewing the proposed rate increase, a point of comparison often used is to determine how Village costs for water and sewer compare to surrounding communities. These comparisons must be used cautiously as each system is unique and rates are subject to many influences. For example, a significant factor impacting a community's rates is where the community is within their major equipment replacement cycle. A neighboring community may be 2 to 3 years away from undertaking a major capital improvement program which will require the issuance of new debt and, subsequently, require a significant increase in rates. When comparing La Grange Park rates to a neighboring community which has not invested in infrastructure, the rates may be significantly higher; however, in 2 to 3 years, the rates may be much more comparable. Bearing these issues in mind, Table 8 shows how the current rate compares to comparable neighboring communities as well as how the proposed rate will compare in FY2018/19 if neighboring communities make no changes to their current rates.

TABLE 8

Bill Comparison with Neighboring Communities for 1,400 CF of Water - Alternate A

Community	Typical Water Bill	Typical Sewer Bill	Water & Sewer Bill Combined
Broadview	\$ 92.40	\$11.34	\$103.74
Westchester	\$ 99.68	\$24.81	\$124.49
Hinsdale	\$115.51	\$17.33	\$132.84
Western Springs**	\$133.50	***	\$133.50
La Grange	\$114.66	\$21.00	\$135.66
Brookfield	\$107.63	\$29.17	\$136.80
La Grange Park FY 2017/18	\$107.94	\$32.48	\$140.42
Bellwood	\$117.29	\$25.29	\$142.58
Riverside	\$130.76	\$24.50	\$155.26
La Grange Park FY 2018/19	\$129.50	\$35.00	\$164.50
Oak Brook Terrace*	\$104.69	\$60.31	\$165.00
Clarendon Hills*	\$146.69	\$60.31	\$207.00

* Tributary to Flagg Creek Water Reclamation District

** Community Utilizes Well Water

*** Sewer Cost is Included in Water Rate

8.2 Alternate B – Recommended Improvements – Debt Funded

Under Alternate B, the Village would perform the same improvements as were described in Alternate A; however, the proposed improvements scheduled to take place over the first 5 years of the study period are funded using debt. From FY2018/19 on, the debt service payments are included in the expense line item. Level debt service payments are assumed for a 20-year loan with an annual interest rate of 4%. A second debt issuance is proposed for capital improvements planned for years 6-10. This is also assumed to be a 20 year level debt payment loan with a 6% interest rate.

Table 9 shows the proposed rates under this option. The rates for water usage by users within the Village limits increase annually between \$0.35 and \$2.00 per HCF used. The total increase over 5 years is \$2.79 per HCF. Sewer charges for users within the Village increase between \$0.10 and \$0.25 annually per HCF used. The total increase over 5 years is \$0.88 per HCF. Table 9 also shows the quarterly bills for a minimum volume user (600 cubic feet) and a typical residential user (1,400 cubic feet). A typical user can expect to see their bills increase by \$51.38 per billing period or \$206 per year over the course of the next 5 years. Over the full 10-year study period, the typical user can expect their bill to increase by \$135.58 per bill or \$542 per year.

TABLE 9
Proposed Rates - Alternate B

	Proposed Rates			Quarterly Bill	
	Water (HCF)	Sewer (HCF)	Total (HCF)	Minimum (600 CF)	Typical User (1,400 CF)
FY 2017/18	\$ 7.71	\$2.32	\$10.03	\$ 60.18	\$140.42
FY 2018/19	\$ 8.70	\$2.50	\$11.20	\$ 67.20	\$156.80
FY 2019/20	\$ 9.10	\$2.70	\$11.80	\$ 70.80	\$165.20
FY 2020/21	\$ 9.60	\$2.90	\$12.50	\$ 75.00	\$175.00
FY 2021/22	\$ 9.95	\$3.05	\$13.00	\$ 78.00	\$182.00
FY 2022/23	\$10.50	\$3.20	\$13.70	\$ 82.20	\$191.80
FY 2023/24	\$12.50	\$3.35	\$15.85	\$ 95.10	\$221.90
FY 2024/25	\$13.20	\$3.45	\$16.65	\$ 99.90	\$233.10
FY 2025/26	\$14.00	\$3.55	\$17.55	\$105.30	\$245.70
FY 2026/27	\$14.90	\$3.75	\$18.65	\$111.90	\$261.10
FY 2027/28	\$15.70	\$4.00	\$19.70	\$118.20	\$275.80

Figure 14 shows the projected revenues, expenses and fund balances for the Water Fund and Figure 15 shows the same for the Sewer Fund under Alternate B. The 10-year projections for these funds are provided as Appendix F. As these figures show, the water and sewer revenues and expenses are closely matched under this scenario with the first few years of the study period. Due to the bond covenant requiring that net system revenues exceed the bond payment by 25%, the fund balance is projected to steadily increase over the study period. At the end of the study period, a capital project is to be paid for using cash reserves, thus reducing the fund balance.

FIGURE 14

Projected Water Fund Revenues/Expenses and Fund Balance – Alternate B

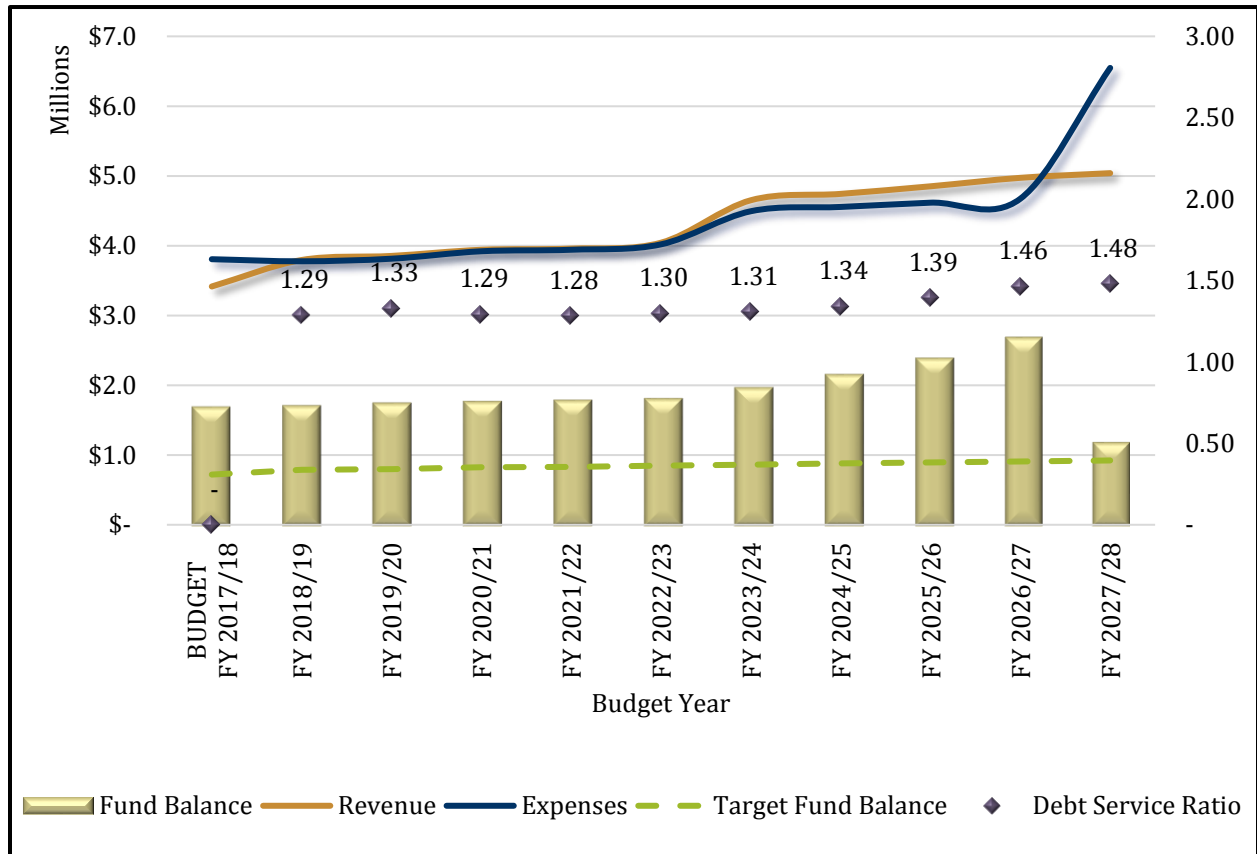


Figure 15 shows the projected sewer fund revenues, expenses and fund balance.

FIGURE 15

Projected Sewer Fund Revenues/Expenses and Fund Balance - Alternate B

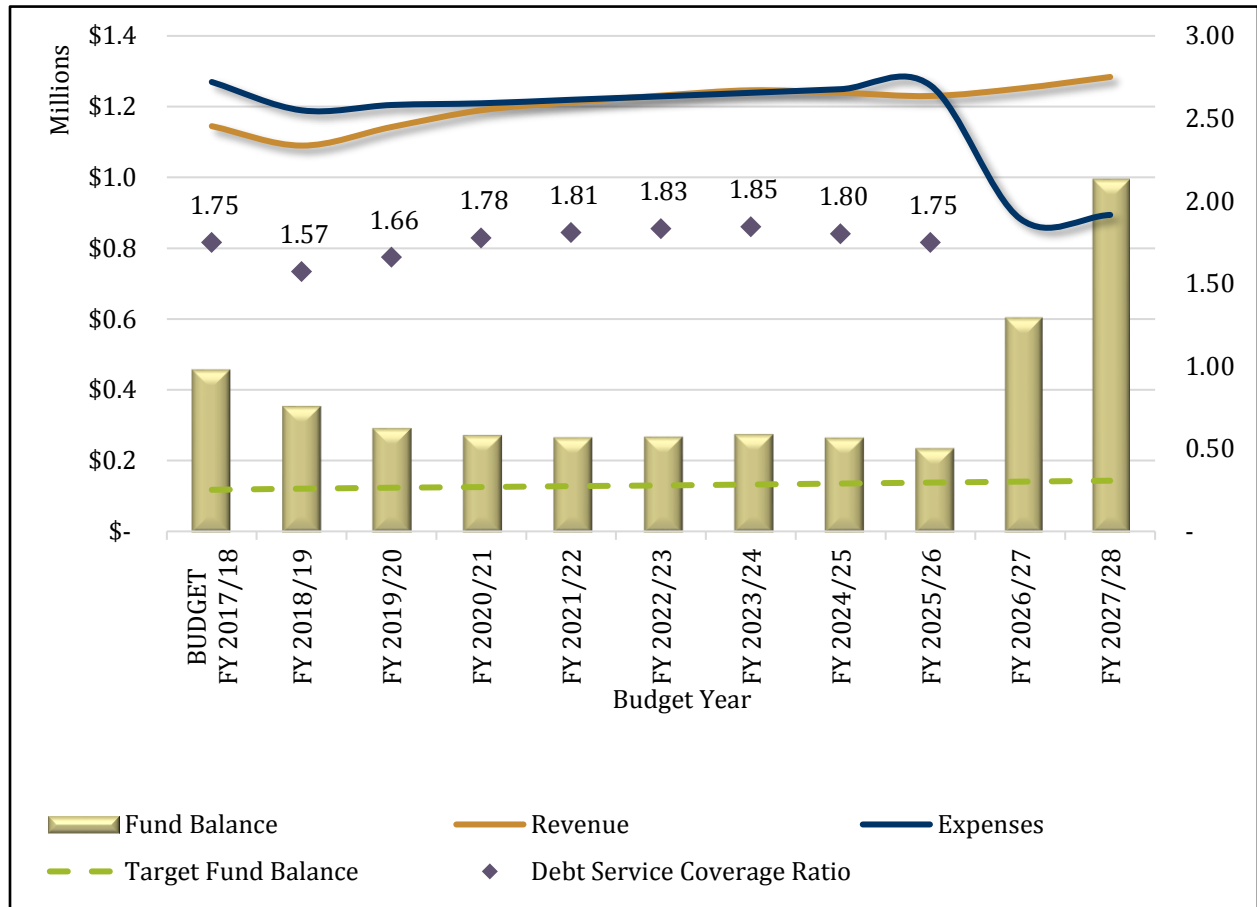


Table 10 shows how the current rate compares to comparable neighboring communities as well as how the proposed rate will compare in FY2018/19.

TABLE 10

Bill Comparison with Neighboring Communities for 1,400 CF of Water - Alternate B

Community	Typical Water Bill	Typical Sewer Bill	Water & Sewer Bill Combined
Broadview	\$ 92.40	\$11.34	\$103.74
Westchester	\$ 99.68	\$24.81	\$124.49
Hinsdale	\$115.51	\$17.33	\$132.84
Western Springs**	\$133.50	***	\$133.50
La Grange	\$114.66	\$21.00	\$135.66
Brookfield	\$107.63	\$29.17	\$136.80
La Grange Park FY2017/18	\$107.94	\$32.48	\$140.42
Bellwood	\$117.29	\$25.29	\$142.58
Riverside	\$130.76	\$24.50	\$155.26
La Grange Park FY2018/19	\$121.80	\$35.00	\$156.80
Oak Brook Terrace*	\$104.69	\$60.31	\$165.00
Clarendon Hills*	\$146.69	\$60.31	\$207.00

* Tributary to Flagg Creek Water Reclamation District

** Community Utilizes Well Water

*** Sewer Cost is Included in Water Rate

The comparison shows that the proposed increase in rates under Alternate B will leave La Grange Park within the middle of the pack in a two-year timeframe.

8.3 Alternate C – Enhanced Improvements

Under Alternate C, the Village would perform the same improvements as were described in Alternate A – Recommended Improvements; however, additional improvements which enhance the performance of the system are also included in the analysis. These improvements include:

- The addition of a new 500,000-gallon elevated storage tank on the west side to develop a new pressure zone and increase system pressures.
- The addition of new mains for flow improvement at various locations throughout the Village.

The proposed rates were set to maintain a steady increase in rates over the 10-year period and still be able to meet the fund balance requirements throughout. The proposed rates will accumulate cash in FY 2020/21 and FY 2021/22 to offset the larger expenditures planned for the coming years.

Table 11 shows the proposed rates under this option. The rates for water usage by users within the Village limits increases annually between \$1.00 and \$1.54 per HCF used. The total increase over 5 years is \$6.39 per HCF. Sewer charges for users within the Village increase between \$0.10 and \$0.25

Village of La Grange Park, Illinois

annually per HCF used. The total increase over 5 years is \$0.88 per HCF. Table 11 also shows the quarterly bills for a minimum volume user (600 cubic feet) and a typical residential user (1,400 cubic feet). A typical user can expect to see their bills increase by \$101.78 per billing period or \$407 per year over the course of the next 5 years. Over the full 10-year study period, the typical user can expect their bill to increase by \$185.78 per bill or \$743 per year.

TABLE 11
Proposed Rates - Alternate C

	Proposed Rates			Quarterly Bill	
	Water (HCF)	Sewer (HCF)	Total (HCF)	Minimum (600 CF)	Typical User (1,400 CF)
FY 2017/18	\$ 7.71	\$2.32	\$10.03	\$ 60.18	\$140.42
FY 2018/19	\$ 9.25	\$2.50	\$11.75	\$ 70.50	\$164.50
FY 2019/20	\$10.75	\$2.70	\$13.45	\$ 80.70	\$188.30
FY 2020/21	\$12.00	\$2.90	\$14.90	\$ 89.40	\$208.60
FY 2021/22	\$13.10	\$3.05	\$16.15	\$ 96.90	\$226.10
FY 2022/23	\$14.10	\$3.20	\$17.30	\$103.80	\$242.20
FY 2023/24	\$15.10	\$3.35	\$18.45	\$110.70	\$258.30
FY 2024/25	\$16.10	\$3.45	\$19.55	\$117.30	\$273.70
FY 2025/26	\$17.10	\$3.55	\$20.65	\$123.90	\$289.10
FY 2026/27	\$18.20	\$3.75	\$21.95	\$131.70	\$307.30
FY 2027/28	\$19.30	\$4.00	\$23.30	\$139.80	\$326.20

Figure 16 shows the projected revenues, expenses and fund balances for the Water Fund and Figure 17 shows the same for the Sewer Fund under Alternate C. The 10-year projections for these funds are provided as Appendix G. As these figures show, the water and sewer revenues and expenses are closely matched under this scenario with the first few years of the study period showing a slight deficit in both funds. This deficit draws the fund balances down relatively close to the target fund balance.

FIGURE 16

Projected Water Fund Revenues/Expenses and Fund Balance – Alternate C

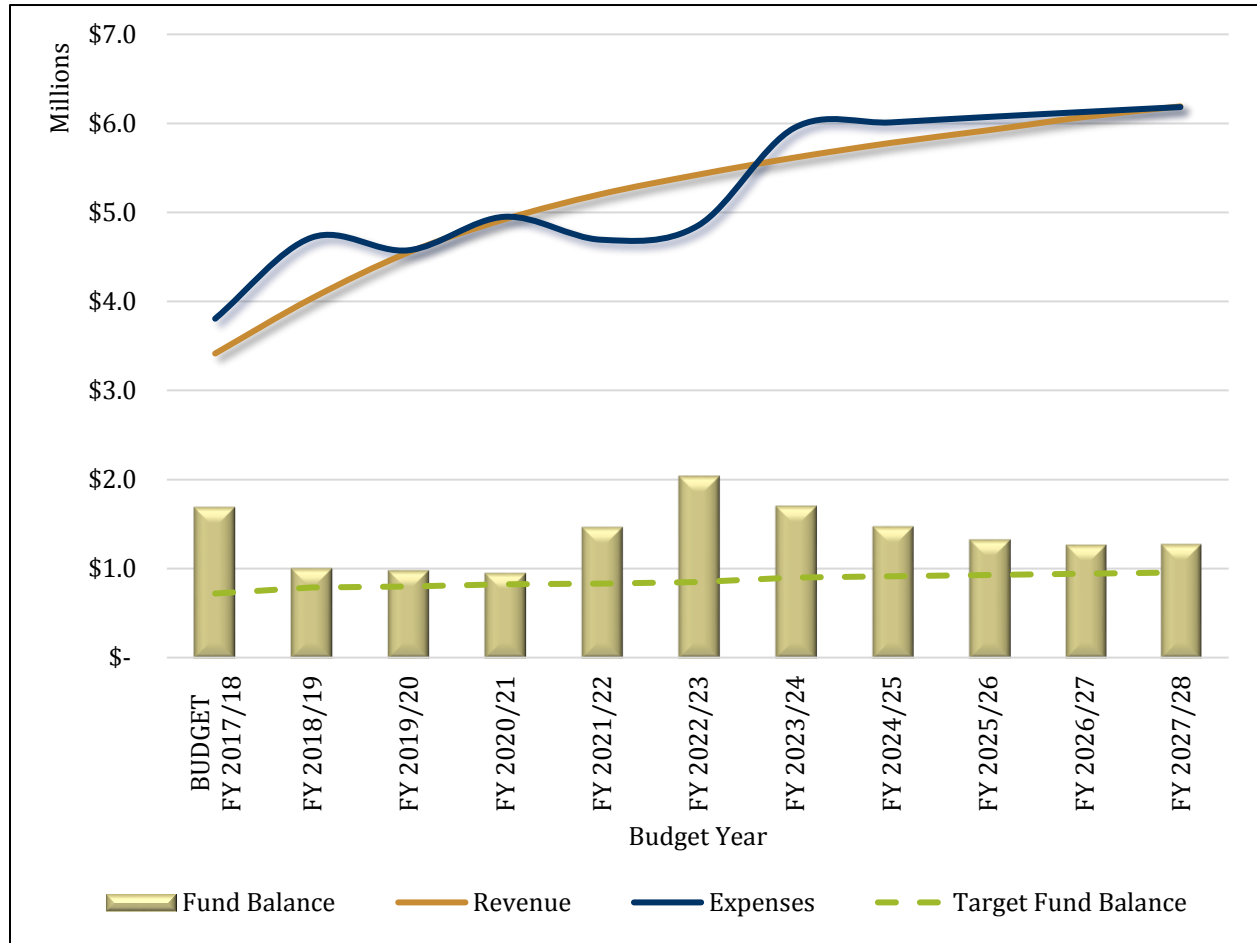


FIGURE 17

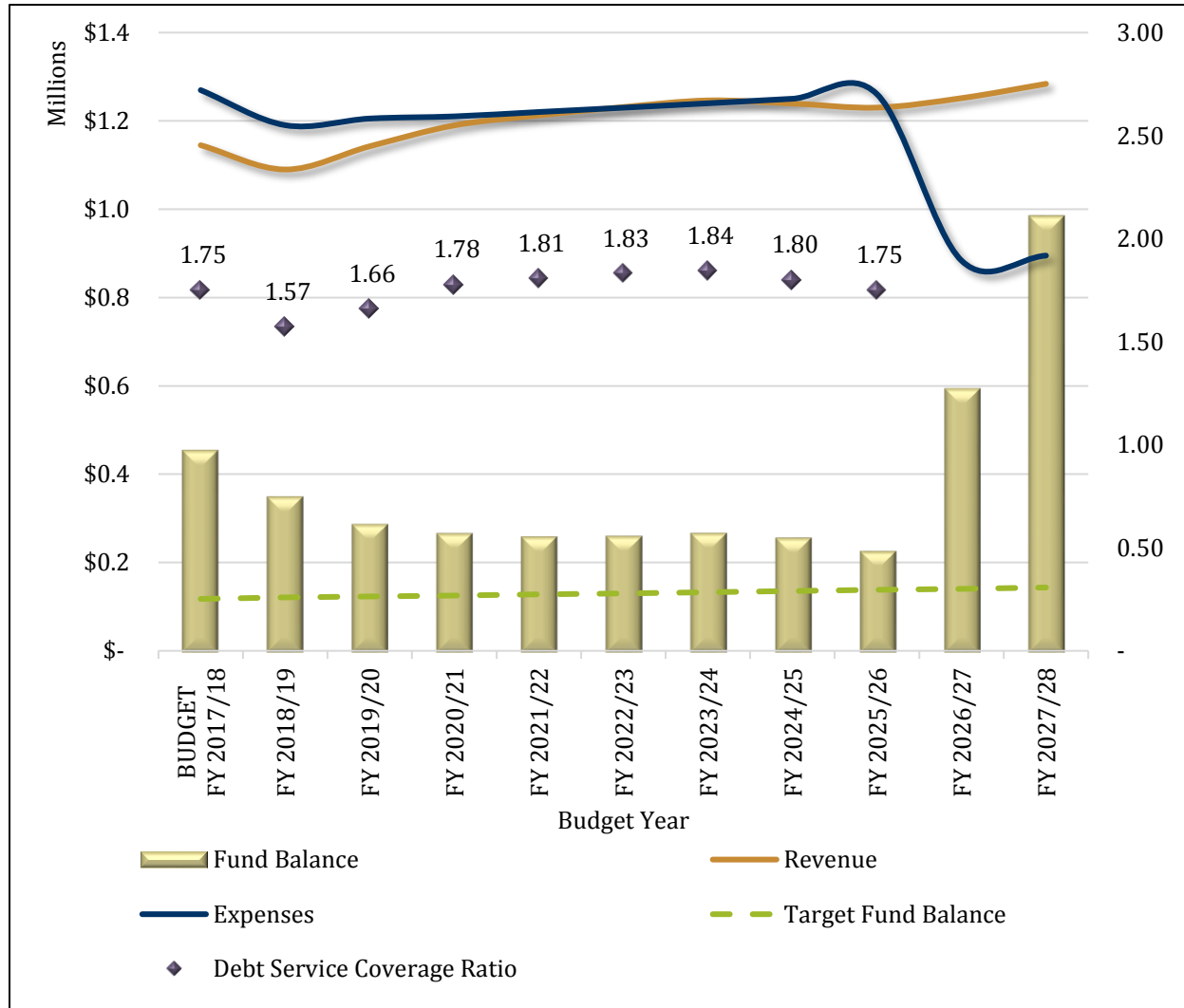
Projected Sewer Fund Revenues/Expenses and Fund Balance – Alternate C

Table 12 shows how the current rate compares to comparable neighboring communities as well as how the proposed rate will compare in FY2018/19.

TABLE 12

Bill Comparison with Neighboring Communities for 1,400 CF of Water - Alternate C

Community	Typical Water Bill	Typical Sewer Bill	Water & Sewer Bill Combined
Broadview	\$ 92.40	\$11.34	\$103.74
Westchester	\$ 99.68	\$24.81	\$124.49
Hinsdale	\$115.51	\$17.33	\$132.84
Western Springs**	\$133.50	***	\$133.50
La Grange	\$114.66	\$21.00	\$135.66
Brookfield	\$107.63	\$29.17	\$136.80
La Grange Park FY 2017/18	\$107.94	\$32.48	\$140.42
Bellwood	\$117.29	\$25.29	\$142.58
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Oak Brook Terrace*	\$104.69	\$60.31	\$165.00
Clarendon Hills*	\$146.69	\$60.31	\$207.00

* Tributary to Flagg Creek Water Reclamation District

** Community Utilizes Well Water

*** Sewer Cost is Included in Water Rate

The proposed rates for Alternate C are the same in FY2018/19 as those in Alternate A and consequently, the comparison with neighboring communities remains unchanged. The significant differences between Alternate A and C rates occur in FY2020/21 and beyond.

8.4 Alternate D – Enhanced Improvements – Debt Funded

Under Alternate D, the Village would perform the same improvements as were described in Alternate C – Enhanced Improvements; however, the proposed improvements would be funded with two debt issuances. The first issuance would be in FY2018/19 with the second issuance in FY2022/23.

Table 13 shows the proposed rates under this option. The rates for water usage by users within the Village limits increases annually between \$0.45 and \$3.75 per HCF used. The total increase over 5 years is \$2.79 per HCF. Sewer charges for users within the Village increase between \$0.10 and \$0.25 annually per HCF used. The total increase over 5 years is \$0.88 per HCF. Table 13 also shows the quarterly bills for a minimum volume user (600 cubic feet) and a typical user (1,400 cubic feet). A typical user can expect to see their bills increase by \$51.38 per billing period or \$206 per year over the course of the next 5 years. Over the full 10-year study period, the typical user can expect their bill to increase by \$157.08 per bill or \$628 per year.

TABLE 13
Proposed Rates - Alternate D

	Proposed Rates			Quarterly Bill	
	Water (HCF)	Sewer (HCF)	Total (HCF)	Minimum (600 CF)	Typical User (1,400 CF)
FY 2017/18	\$ 7.71	\$2.32	\$10.03	\$ 60.18	\$140.42
FY 2018/19	\$ 8.70	\$2.50	\$11.20	\$ 67.20	\$156.80
FY 2019/20	\$ 9.15	\$2.70	\$11.85	\$ 71.10	\$165.90
FY 2020/21	\$ 9.60	\$2.90	\$12.50	\$ 75.00	\$175.00
FY 2021/22	\$10.05	\$3.05	\$13.10	\$ 78.60	\$183.40
FY 2022/23	\$10.50	\$3.20	\$13.70	\$ 82.20	\$191.80
FY 2023/24	\$14.25	\$3.35	\$17.60	\$105.60	\$246.40
FY 2024/25	\$15.00	\$3.45	\$18.45	\$110.70	\$258.30
FY 2025/26	\$15.75	\$3.55	\$19.30	\$115.80	\$270.20
FY 2026/27	\$16.50	\$3.75	\$20.25	\$121.50	\$283.50
FY 2027/28	\$17.25	\$4.00	\$21.25	\$127.50	\$297.50

Figure 18 shows the projected revenues, expenses and fund balances for the Water Fund and Figure 19 shows the same for the Sewer Fund under Alternate D. The 10-year projections for these funds are provided as Appendix H. Due to the bond covenant requiring that net system revenues exceed the bond payment by 25%, the fund balance is projected to steadily increase over the study period. At the end of the study period, a capital project is to be paid for using cash reserves, thus reducing the fund balance.

FIGURE 18

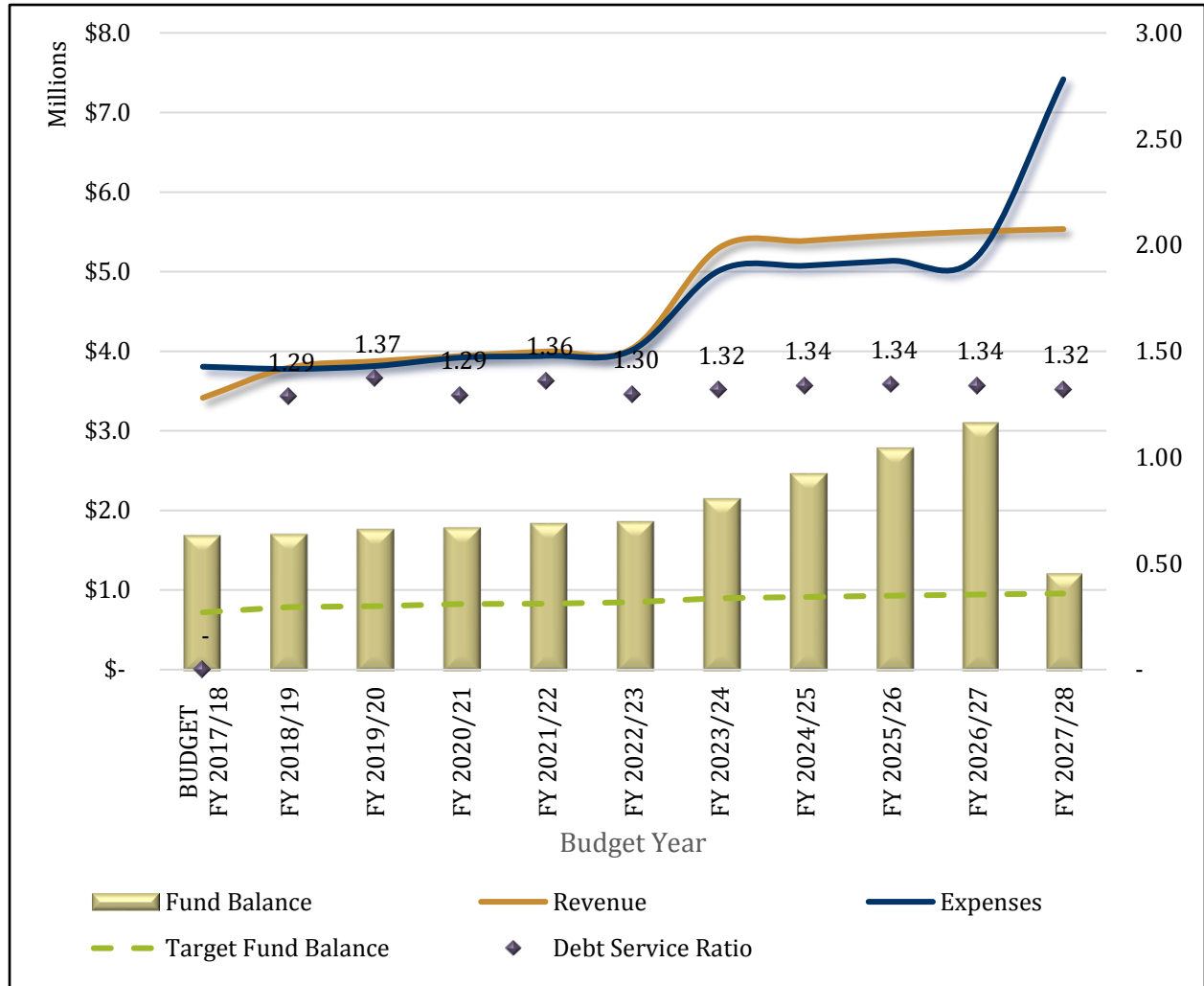
Projected Water Fund Revenues/Expenses and Fund Balance – Alternate D

FIGURE 19

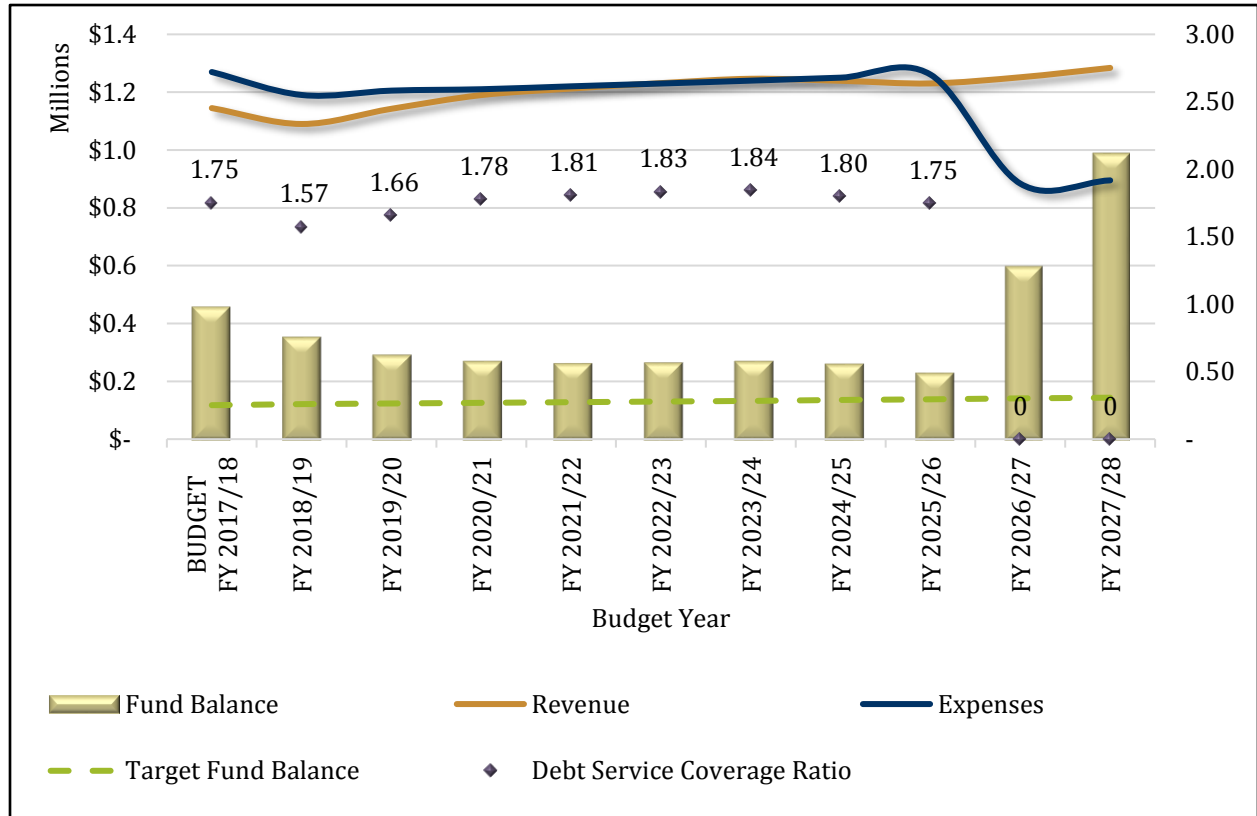
Projected Sewer Fund Revenues/Expenses and Fund Balance – Alternate D

Table 14 shows how the current rate compares to comparable neighboring communities as well as how the proposed rate will compare in FY2018/19.

TABLE 14

Bill Comparison with Neighboring Communities for 1,400 CF of Water - Alternate D

Community	Typical Water Bill	Typical Sewer Bill	Water & Sewer Bill Combined
Broadview	\$ 92.40	\$11.34	\$103.74
Westchester	\$ 99.68	\$24.81	\$124.49
Hinsdale	\$115.51	\$17.33	\$132.84
Western Springs**	\$133.50	***	\$133.50
La Grange	\$114.66	\$21.00	\$135.66
Brookfield	\$107.63	\$29.17	\$136.80
La Grange Park FY 2017/18	\$107.94	\$32.48	\$140.42
Bellwood	\$117.29	\$25.29	\$142.58
Riverside	\$130.76	\$24.50	\$155.26
La Grange Park FY 2018/19	\$121.80	\$35.00	\$156.80
Oak Brook Terrace*	\$104.69	\$60.31	\$165.00
Clarendon Hills*	\$146.69	\$60.31	\$207.00

* Tributary to Flagg Creek Water Reclamation District

** Community Utilizes Well Water

*** Sewer Cost is Included in Water Rate

Although the proposed bills for the typical user are lower for this alternate, it should be noted that the debt service payments will continue over a twenty year period and will diminish the available funds for additional improvements needed in the future. A summary of the proposed rates for all four alternates is provided as Table 15.

TABLE 15

Water & Sewer Combined Rate Comparison – All Alternates

	Recommended Improvements	Recommended Improvements - Debt	Enhanced Improvements	Enhanced Improvements - Debt
FY 2017/18	\$10.03	\$10.03	\$10.03	\$10.03
FY 2018/19	\$11.75	\$11.20	\$11.75	\$11.20
FY 2019/20	\$13.45	\$11.80	\$13.45	\$11.85
FY 2020/21	\$14.90	\$12.50	\$14.90	\$12.50
FY 2021/22	\$15.30	\$13.00	\$16.15	\$13.10
FY 2022/23	\$15.70	\$13.70	\$17.30	\$13.70
FY 2023/24	\$16.35	\$15.85	\$18.45	\$17.60
FY 2024/25	\$17.20	\$16.65	\$19.55	\$18.45
FY 2025/26	\$18.05	\$17.55	\$20.65	\$19.30
FY 2026/27	\$19.00	\$18.65	\$21.95	\$20.25
FY 2027/28	\$20.00	\$19.70	\$23.30	\$21.25

Village of La Grange Park, Illinois

8.5 Affordability Analysis

In evaluating the four alternates, the impacts of increased rates should be considered for all income levels. The following analysis is based on census data from the 2015 American Community Survey. The information was input to a spreadsheet model developed by the University of North Carolina Environmental Finance Center for comparison of rate impacts. The analysis determines the percentage of household income which is spent on water and sewer bills to determine the affordability of these utilities. While there is no industry standard as to what percent of a household's income should be spent on water and sewer utilities, many communities set 2.5% as a threshold value. This value is typically compared against the median household income for the community rather than against specific income levels.

TABLE 16

Typical Water & Sewer Bill as % of Household Income

Household Income Bracket (All Households)	% of Population	Current Rates	Alt. A in FY 2021/22	Alt. B in FY 2021/22	Alt. C in FY 2021/22	Alt. D in FY 2021/22
Less than \$10,000	5.0%	5.45%	8.63%	7.33%	9.11%	7.39%
\$10,000 to \$14,999	4.2%	3.63%	5.75%	4.89%	6.07%	4.93%
\$15,000 to \$24,999	7.0%	2.18%	3.45%	2.93%	3.64%	2.96%
\$25,000 to \$34,999	7.8%	1.56%	2.47%	2.10%	2.60%	2.11%
\$35,000 to \$49,999	12.1%	1.09%	1.73%	1.47%	1.82%	1.48%
\$50,000 to \$74,999	13.7%	0.73%	1.15%	0.98%	1.21%	0.99%
\$75,000 to \$99,999	12.8%	0.54%	0.86%	0.73%	0.91%	0.74%
\$100,000 to \$149,999	19.2%	0.36%	0.58%	0.49%	0.61%	0.49%
\$150,000 or more	18.2%	0.27%	0.43%	0.37%	0.46%	0.37%

The median household income for La Grange Park is \$75,116. Within this income bracket, the proposed rates for all three alternates appear to be quite affordable. However, for the lower income brackets (less than \$25,000, shown in red) affordability is more of a concern. Approximately 16% of the Village's population falls into the low income category. Often, the lower income population are senior citizens living on a fixed income. While they are typically lower volume water consumers, it can still be difficult to absorb water and sewer rate increases into their household budget. Overall, municipal water supply delivers a superior product at a very affordable rate and public water supplies remain a fantastic value for consumers.

9. CONCLUSION AND RECOMMENDATIONS

The Village of La Grange Park has aging infrastructure and must continue to invest in renewal of water and sewer systems which are reaching the end of their useful life. The current rate structure is insufficient to support the recommended investment in infrastructure necessary to maintain the existing level of service, and will be unable to keep up with projected decreases in per capita water usage combined with increases in operating expenses. A planned rate increase for both water and sewer are necessary to maintain a well-functioning, reliable water and sewer system.

The rate increases proposed for each of the four alternatives will achieve the goals of supporting projected operating expenses and identified capital improvements over the 5-year study period while maintaining fund balances at or above the minimum values. All options require increases to the water and sewer usage rates to keep pace with inflation and overcome the loss of revenue due to a projected decrease in per capita water consumption.

9.1 Recommended Options

Each of the proposed alternates will provide sufficient funds for a sustainable well maintained water and sewer system. It is a matter of Village Board policy to determine if only the recommended options are funded or if the system enhancements will be funded to provide a higher level of service to the system users. As currently operating, the system adequately meets the needs of the community and provides an acceptable level of service to its customers. The proposed enhancements would allow for a more robust and resilient system. Extreme weather events such as the drought of 2012 and extended severe cold weather experienced during the polar vortex of 2014 place added stresses on subsurface water distribution and wastewater collection systems. A more robust distribution network will provide added protection to the Village's users in the event of extreme weather or other unforeseen circumstances. This added level of protection does come at a cost to rate payers and the Board must weigh the increase in cost against the risks associated with such events.

The method of financing improvements is also a matter of Board policy. Interest rates are currently at historic lows, but are anticipated to rise in the coming years. There are several advantages to utilizing debt financing at the low rates we are currently experiencing. Debt financing allows user rates to remain lower in the short term; places the burden of paying for infrastructure improvements onto the persons receiving the benefit of the improvements and levels out expenses associated with large capital projects. These benefits do come at the cost of interest payments, debt issuance fees and often times bond covenants which limit or restrict the Village's use of water and sewer funds in order to secure the debt. While this study utilizes relatively conservative loan terms for debt financing, programs such as the IEPA's low interest loan program are potential sources of financing where interest rates are significantly lower than what has been assumed in the study. The municipal bond market may also offer lower terms than what has been assumed in this analysis. The Village should discuss financing options with their bond counsel prior to determining the best vehicle for raising capital if a debt financing alternate is selected.

9.2 Action Plan

Our review focused on the funds impacted by water and sewer rates, however, staff familiar with the overall finances of the Village should also be consulted. The Village should implement the chosen alternate by adopting an ordinance revising the current rate structure to reflect the selected option. The 5% rate increase which was recently implemented by the Board is accounted for in this analysis. Going forward, the Village should select the desired alternate and implement the associated rate increases to become effective June 1, 2018.

This rate study should also be revisited annually during the budget process and more thoroughly at the end of the 5-year study period to reassess the needs of the community. Predictions of usage trends, inflationary measures and other external factors beyond a 5-year period become difficult and the reliability of these projections diminish. Once rate increases are in place, the Village should monitor fund values against the projected balances and identify any significant discrepancies.