

Sanitary Sewer and Water Utilities Revenue Sufficiency Analysis and SAW Financial Compliance Report

Prepared for

**Village of St. Charles,
Michigan**



**Village of
St. Charles, MI**

Submitted

September 2019

by **Municipal Analytics**



Insights and applications for better financial management

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September 24, 2019

Village Council
Village of St. Charles
110 W. Spruce Street
St Charles, MI 48655

Dear Village Council,

We have completed the Village's Sanitary Sewer Revenue Sufficiency Analysis and Financial Compliance study for the SAW grant program. The primary goal of this study has been to determine the rates required to produce revenues sufficient to fund the Village's wastewater operations, maintenance and replacement (OM&R), capital and debt service requirements. The recently completed wastewater asset management study by Spicer Group engineers resulted in an Asset Management Plan (AMP) and Capital Improvement Plan (CIP) for the wastewater collection and treatment system. The findings of that study have been incorporated into this rate study. The resulting recommendations for rates and financial management of the utility are summarized in this report.

In addition to evaluating the rate requirements for the sanitary sewer utility, the Village requested the study be expanded to include the water utility finances and rates as well.

Municipal Analytics appreciates the opportunity to work with the Village on this study.

If you should have any questions about this analysis, please do not hesitate to contact me at 734-277-4454.

Very truly yours,

A handwritten signature in black ink, appearing to read "John Kaczor".

John Kaczor
Principal

**VILLAGE OF SAINT CHARLES
SANITARY SEWER & WATER UTILITIES
REVENUE SUFFICIENCY ANALYSIS
AND SAW PROGRAM FINANCIAL COMPLIANCE REPORT**

TABLE OF CONTENTS

SECTION 1. INTRODUCTION 1

1.1. Background 1

1.2. Description of Wastewater System..... 1

1.3. Description of Water System 1

1.4. Scope of Study 2

SECTION 2. ANALYSIS 2

2.1. Rate Model 2

2.2. Sewer Operating Budget 2

2.3. Water Operating Budget 4

2.4. Customer Base 5

2.4. Existing Debt 6

2.5. Rate Structures 6

2.6. Cash Balances and Reserve Targets 6

2.7. Assumptions 7

2.8. Asset Management Program and Capital Improvement Plans..... 7

2.9. Borrowing 8

SECTION 3. RESULTS 8

3.1. Budget Forecast: Sewer..... 9

3.2. Budget Forecast: Water..... 10

3.3. Revenue Required from Rates 10

3.4. Rate Requirements: Sewer 11

3.5. Rate Requirements: Water 12

3.6. Impact on Cash Reserves..... 12

3.5. Impact on Customers 13

3.6. Alternative Scenarios 13

SECTION 4. CONCLUSION AND RECOMMENDATIONS 14

4.1. Rate Adoption 14

4.2. Future Action Required 15

SECTION 1. INTRODUCTION

Municipal Analytics was engaged by Spicer Group to develop the financial analysis and rate requirements of the SAW grant received by the Village of St. Charles. This report summarizes the findings and recommendations resulting from the combined efforts of the Village, Spicer Group and Municipal Analytics to provide the Village with an operations and maintenance budget, capital investment strategy and financial plan to ensure adequate funds are available to sustain the Sewer and Water Funds for the subsequent 5-10 years.

1.1. Background

The Village of St. Charles was awarded a grant through the Michigan Stormwater, Asset Management, and Wastewater (SAW) program in 2016. The primary focus of the SAW program was to develop a comprehensive inventory and assessment of the Village's wastewater infrastructure, and to prepare an Asset Management Plan (AMP). As part of the SAW program, the Village was required to develop a rate strategy to fund the capital improvement identified in the AMP.

Concurrent with the sanitary sewer AMP, the Village engaged Spicer engineers to evaluate the Village-owned water system assets as well. The resulting CIP from this assessment was used to develop water revenue requirements and rates.

The focus of this financial analysis and rate study has been on determining the rates required to sufficiently fund the OM&R, capital and debt service needs of the wastewater and water utilities in St. Charles. By combining the analysis of both utilities, Village officials were better able to fully evaluate the financial needs and rate impacts of addressing water and sewer utility capital needs over a 10-year period.

1.2. Description of Wastewater System

The Village's wastewater collection system consists of 259 manhole structures and approximately 13 miles of gravity sewer mains ranging from 6-inch to 12-inch in diameter. In addition, the Village operates and maintains three pump stations which convey wastewater from the collection system to the wastewater stabilization lagoon (WWSL), located in the northeast portion of the Village, for treatment prior to discharge.

The WWSL comprises three cells and is operated as to discharge treated effluent twice per year into a tributary of Beaver Creek. The system is currently permitted by Certificate of Coverage #MIG580092, with an annual permitted discharge volume of 82 million gallons per year (MGY), as set by the MDEQ in the Village's NPDES General Permit, effective 8/1/2019 - 4/1/2024.

1.3. Description of Water System

The Village purchases its treated municipal water from the City of Saginaw and distributes it through a network of mains within the village and to a small number of customers outside of the village. Of the 19 miles of water main owned by the Village, just under 50% is asbestos concrete, 20% is cast iron and 17% is PVC. About 10% of the system's mains are of unknown material. The average age of known mains is about 40 years, and 23% of the system's mains are of an unknown age.

1.4. Scope of Study

To gain an understanding of the St. Charles' sewer and water utilities finances and operations, we reviewed the Village's utility budgets, financial reports, billing records, debt obligations, capital needs, utility ordinances and organizational documents. The study focused on determining the revenue required to fully satisfy the cash needs of the enterprise funds. Revenue requirements were then considered in light of the Village's customer base and user charge system, and recommendations were made regarding the rates required to fund OM&R, capital and debt service expenditures. The Village has been provided a working Utility Financial Analytics tool to aid in future rate setting.

SECTION 2. ANALYSIS

Determining sufficient utility rates requires a number of financial and customer inputs, assumptions, policy considerations and customer impact analysis. These inputs have been integrated into a comprehensive rate model, developed in Excel spreadsheet format. In this section, each of these components is addressed, to provide a framework for the developed rates presented in Section 3.

2.1. Rate Model

To calculate revenue requirements and the resulting rates needed to fund operations, we have prepared an Excel-based rate model. The model encompasses the financial and customer data needed to prepare a thorough rate analysis. The ten-year financial plan is driven by a number of assumptions and integrates the anticipated capital improvement investments expected in the coming years. Outputs of the model include summary charts and tables displaying the interaction between assumptions, rates, cash balances, debt service and coverage ratios, and other metrics. Through the use of the model, the rates outlined in Section 3 were developed and tested. Using the model, several alternative rate options were evaluated. The final rate recommendations, based on the capital investments identified through the AMP process, were reviewed with the Village and Spicer engineers prior to completion of this study. The model has been provided to the Village for ongoing future use in setting rates.

2.2. Sewer Operating Budget

Sewer cash-based operating expenditures have averaged about \$153,000 per year for the past several years, excluding SAW Grant expenditures. The largest expense item has been labor (approximately \$98,000/year), followed by building and equipment rental and utilities. These and other expenditures are detailed below:

	Actual	Actual	Actual	Amended
	2016	2017	2018	Budget
FYE 3/31:	2016	2017	2018	2019
Sewer Expenditures				
Transfers/Equity changes (from budget)				
Trans to Retirement Fund				18,284
Increase to Fund Equity, see below				-
Transfer to OPEB Fund				12,858
Subtotal	-	-	-	31,142
Administration				
Wages-Admin	44,653	38,185	25,528	26,050
FICA	3,398	2,914	2,005	1,993
OPEB		-	-	-
Retirement	17,064	28,257	17,698	-
Supplies-O	-	144	-	300
Postage	-	-	-	1,000
Audit	2,013	2,361	2,077	2,077
Contr Services	-	140	200	2,400
Memberships & Dues	-	-	-	100
Conferences & Workshops	-	-	90	400
Telephone	1,400	1,658	1,145	2,757
Comp Equip Rental	600	600	600	600
Building Rental	12,500	12,500	12,500	12,500
Misc	-	-	-	2,416
Subtotal	81,629	86,758	61,844	52,593
Operations & Maintenance				
Wages	18,423	21,652	7,496	11,050
Overtime Wages	431	716	267	2,243
FICA	1,424	1,663	627	1,017
BCBS	19,192	19,308	16,345	9,319
Life/Dental/Disability Ins	2,416	2,339	1,350	2,305
Worker's Comp	714	295	350	500
Operating Supp	906	2,536	1,434	2,000
Contr Services	3,071	3,698	30,953	3,800
Insurance	415	705	803	900
Utilities	9,863	8,503	7,985	10,000
Repairs & Mtce	5,679	6,583	5,483	10,000
Equipment Rental	7,919	7,219	10,472	11,569
Misc	-	-	90	-
Depreciation Expense				-
Capital Outlay	499	-	-	-
Subtotal	70,952	75,218	83,655	64,703
SAW Grant				
FICA		277	17	
SAW Grant Misc		64,536	377,539	242,000
Subtotal	-	64,813	377,556	242,000
Debt Service				
TOTAL SEWER EXPENDITURES	152,581	226,789	523,055	390,438

Sewer operating revenues are composed primarily of user charges. Other regular revenues, as seen below, include penalties, interest earnings and several years of transfers from the Industrial Park Fund.

	Actual	Actual	Actual	Amended
FYE 3/31:	2016	2017	2018	Budget
				2019
Revenues				
Grant Funds		54,226	339,239	220,000
Connection Fees	\$ -	1,525	-	-
Sewer Charges	\$ 153,943	157,479	153,748	155,290
Penalties-Utility Bills	\$ 2,910	3,255	2,389	3,000
Interest Income	\$ 1,687	2,169	2,959	1,800
Transfer from Ind Park Fund	\$ 10,000	10,000	10,000	-
Miscellaneous	\$ -	12	82	-
Undesignated Fund Bal	\$ -	-	-	-
Total Sewer Revenues	168,539	228,667	508,417	380,090

2.3. Water Operating Budget

Water utility fund expenditures have risen an average of about 5% each year for the past three years. The primary expense in the Water Fund is purchased water from Saginaw (44%), followed by labor costs (31%). The Village paid off its water debt in FY 2017.

	Budget	Budget	Actual	Amended
FYE 3/31:	2016	2017	2018	Budget
				2019
Expenditures				
Administration				
WAGES-ADMIN	41,574	38,864	50,827	50,436
METER READING	2,275	-	(686)	-
SALARY-WATER BOARD REP	420	420	420	420
FICA	3,387	2,973	3,888	3,859
OPEB	-	5,000	-	-
RETIREMENT	16,779	16,776	32,653	-
SUPPLIES-O	200	150	-	200
POSTAGE	1,250	46	71	1,500
AUDIT	2,013	2,361	2,077	2,077
CONTR SERVICES	10,000	2,030	1,327	3,500
MEMBERSHIPS & DUES	600	612	440	600
CONFERENCES & WORKSHOPS	500	-	140	500
TELEPHONE	1,800	1,700	1,647	3,514
COMP EQUIP RENTAL	500	500	500	500
BUILDING RENTAL	5,000	5,000	5,000	5,000
MISC	200	-	-	200
Subtotal	86,498	76,432	98,304	72,306
Operations & Maintenance				
WAGES	28,435	29,888	23,233	31,645
METER READING	2,750	2,426	1,543	2,448
OVERTIME WAGES	2,500	3,000	1,862	3,000
FICA	2,580	2,702	2,082	2,838
BCBS	18,982	18,752	32,075	22,365
LIFE/DENTAL/DISABILITY INS	2,682	2,604	3,372	5,680
WORKER'S COMP	900	516	612	650

	Budget	Budget	Actual	Amended
	2016	2017	2018	Budget
FYE 3/31:	2016	2017	2018	2019
OPERATING SUPP	2,500	1,600	1,906	2,500
CONTR SERVICES	2,750	25,637	43,634	12,500
INSURANCE	675	924	973	1,090
UTILITIES	1,000	1,000	1,073	1,650
PURCHASED WATER	170,500	199,071	189,348	200,000
REPAIRS & MTCE	10,000	8,000	2,551	9,379
EQUIPMENT RENTAL	12,000	9,000	14,455	15,995
MISC	1,000	14	45	1,000
CAPITAL OUTLAY	4,500	-	-	18,000
CAPITAL FROM AMP/CIP				
CAPITAL OUTLAY - METERS	13,500	13,000	14,720	10,523
Subtotal	277,254	318,135	333,484	341,263
Depreciation & Debt Service				
BOND PMTS-PRINCIPAL	35,000	35,000	-	-
BOND PAYMENT INTEREST	4,979	1,505	333	-
PAYING AGENT FEES	400	350	175	-
Subtotal	40,379	36,855	508	-
Contrib to Other Funds				
TRANS TO RETIREMENT FUND	-	-	-	36,568
TRANSFER TO FUND EQUITY	-	-	-	-
TRANSFER TO OPEB FUND			-	12,858
Subtotal	-	-	-	49,426
TOTAL WATER EXPENDITURES	404,131	431,422	432,295	462,995

Revenues received into the Water Fund come primarily from user charges, with smaller amounts paid in fees, rental and interest income.

	Budget	Budget	Actual	Amended
	2016	2017	2018	Budget
FYE 3/31:	2016	2017	2018	2019
Revenues				
CONNECTION FEES		1,000		
WATER CHARGES-IN	314,727	377,672	356,892	396,556
WATER CHARGES-OUT	75,900	91,080	87,288	95,634
PENALTIES-UTILITY BILLS	6,000	8,633	7,049	6,000
INTEREST INCOME	1,500	1,478	2,476	1,200
HYDRANT RENTAL	15,400	15,400	154	154
MISCELLANEOUS	-	747	4,068	-
TOTAL REVENUES	413,527	496,010	457,927	499,544

2.4. Customer Base

The Village sanitary sewer utility serves approximately 894 active customer accounts. The water utility serves 845 customers within the Village and about 112 township customers.

Based on population trends, the number of customers is assumed to remain unchanged for the 10-year forecast period considered in this study.

2.4. Existing Debt

The Village of St. Charles has no outstanding debt related to its wastewater or water systems.

2.5. Rate Structures

Sewer customers have for many years been billed a quarterly flat charge based on 30 units of metered water usage. Any usage over 30 units was billed on a per-unit basis. In the Village of St. Charles, a billing unit consists of 1,000 gallons of metered water. Sewer rates at the beginning of the current Village fiscal year included:

- Sewer flat charge: \$42.00/quarter
- Unit cost in excess of 30 units: \$0.50/1,000 gallons

The **water** rate structure is based on three separate charges:

- A quarterly ready-to-serve charge, which is based on meter size:

5/8 inch	\$	41.76
3/4 inch	\$	51.62
1 inch	\$	59.79
1.25 inch	\$	87.02
1.5 inch	\$	111.08
2 inch	\$	160.73
3 inch	\$	293.45
4 inch	\$	440.91
6 inch	\$	617.86
8 inch	\$	737.30

- A minimum usage charge based on 5 units of metered water: \$26.38
- A commodity charge for usage in excess of 5 units: \$4.64

Water customers outside of the Village limit are charged two times the in-Village rates.

2.6. Cash Balances and Reserve Targets

According to the latest audited financial statement of the Village, dated March 31, 2019, the Sewer Fund had an available cash balance of \$561,935. The Water Fund’s cash balance on the same date was \$464,964.

St. Charles does not currently have a formal cash reserve policy. In lieu of a formal policy, the rate model uses the following reserve levels as cash reserve targets:

- 90 days O&M expenditures
- 125% of annual debt service payments (water debt reserve is phased in over 3 years to aid in rate smoothing)
- 10% of the utility system assets

When these targets are applied, the sewer cash reserve target level for 2019 was \$292,531. The target level of cash reserves in the Water Fund for FYE 2019 was \$348,384. The Village is in a healthy cash position, which will lend stability to future rate requirements.

2.7. Assumptions

The ten-year financial outlook of the sewer and water operating funds is based on several assumptions, as outlined below:

FYE 3/31:	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
General inflation	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Wages & Salaries	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Medical & Dental Ins	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Fringes	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Wholesale Water	8.0%	8.0%	8.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Retirement	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Utilities	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Administration	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%

Each line item of the budget has been assigned one of these assumptions, which were reviewed and affirmed as reasonable by the Village management team and engineers.

In developing the model, alternative assumptions were tested. The chosen assumptions are believed to be the most likely outcome, although it would be very unlikely to have actual future values exactly match the assumptions. In forecasting future costs and revenues, it is important to consider trends more than actual values. Since we cannot predict the future, it is often best to adopt one year of rates at a time. Further adjustments can be made each year to the financial and/or customer information as actual current numbers become available. This will allow the most accurate rate calculation each year.

2.8. Asset Management Program and Capital Improvement Plans

Sewer AMP/CIP

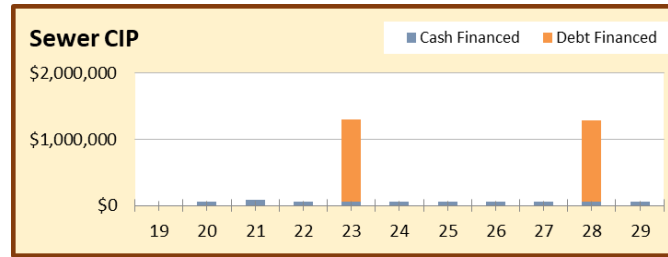
The AMP evaluation identified a number of major capital improvements that will be required in the near and distant future. The Village Council reviewed each of the identified capital needs and determined the preferred level of service for each project. After several meetings and careful consideration of the impact on system integrity and customer rates, the Council agreed to undertake those projects that met critical needs, reduced potential for critical failure and extended the useful life of the sewer system. In summary, the projects will include:

- Repair/replace several sections of collection system pipes
- Rehabilitation, replace and/or upgrades to 3 pump stations
- Replace effluent valves at lagoon
- Improvements on the primary influent structure

Additionally, the Village plans to annually invest in manhole repairs and cured-in-place pipe lining in areas of highest priority.

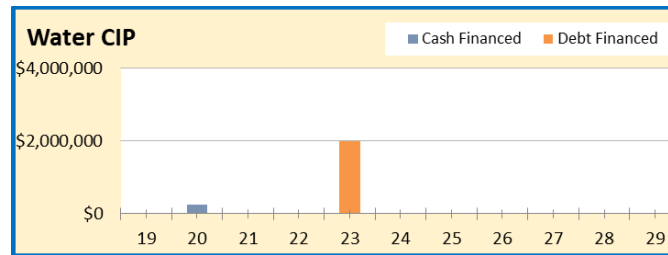
The total cost of the identified projects over the next ten years is estimated to be \$3.1M. The bulk of this investment is expected to be financed through two bond issues. About \$600,000 of improvements will be paid for directly with cash from rates and charges.

The level and timing of sewer capital investments required of the Village is summarized in the following chart:



Water AMP/CIP

Similar to the sewer AMP, the Village undertook an assessment of the engineer’s recommended capital improvements to ensure the continued integrity of the water distribution system. The primary focus of improvements will be on replacement of older mains that are at highest risk of failure. Expected investment in the system over the next ten years will be about \$2.25M. Funding will come primarily from bond sales, as seen in the chart below.



All of the projects identified through the AMP process have been included in the rate model.

2.9. Borrowing

As noted, the Village is expecting to issue debt to fund the majority of its water and sewer capital needs over the next ten years. Total sewer debt is estimated to be \$2.5M, and water debt will be about \$2.25M. The rate model assumes bonds issuances will be for a 20-year term and interest rates will be 3.0% - 4.0%.

The Village is exploring USDA Rural Development grants and loans as part of its funding strategy. Should funds become available, the Village should update the rate model to understand the impact on rates of potential lower cost funding options.

SECTION 3. RESULTS

Using the Utility Financial Analytics Tool developed specifically for the Village of St. Charles, the above described variables and assumptions were integrated into a ten-year forecasted cash-based operating budget. The annual expenditures were then allocated to fixed versus variable costs. The fixed costs were divided by the number of customers to determine the quarterly RTS charge required. Variable costs were divided by the estimated annual billable units to determine the rate per 1,000 gallons. The results of this analysis are summarized in the following subsections.

3.1. Budget Forecast: Sewer

Each line item in the sewer operating budget was forecasted using the assumptions discussed in section 2.7, above. The resulting 10-year budget forecast is presented below:

	Amended													
	Actual	Budget	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Assumption
FYE 3/31:	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029		
Revenues														
Grant Funds	339,239	220,000	-	-	-	-	-	-	-	-	-	-	-	Zero out
Connection Fees	-	-	381	477	214	268	335	324	285	303	312	306	306	Avg 4 prior yrs
Sewer Charges	153,748	155,290	151,380	175,524	200,589	241,259	259,958	272,464	301,252	363,924	409,686	448,529	448,529	Custom
Penalties-Utility Bills	2,389	3,000	2,889	2,883	2,790	2,891	2,863	2,857	2,850	2,865	2,859	2,858	2,858	Avg 4 prior yrs
Interest Income	2,959	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	No change
Transfer from Ind Park Fund	10,000	-	-	-	-	-	-	-	-	-	-	-	-	Zero out
Miscellaneous	82	-	-	24	27	13	16	20	19	17	18	18	18	Avg 4 prior yrs
Undesignated Fund Bal	-	-	-	-	-	-	-	-	-	-	-	-	-	Zero out
Total Sewer Revenues	508,417	380,090	156,450	180,708	205,420	246,230	264,972	277,464	306,206	368,909	414,675	453,511		
Sewer Expenditures														
Transfers/Equity changes (from budget)														
Trans to Retirement Fund	-	18,284	19,381	20,544	21,777	23,083	24,468	25,936	27,492	29,142	30,890	32,744	32,744	Retirement
Increase to Fund Equity, see below	-	-	-	-	-	-	-	-	-	-	-	-	-	Zero out
Transfer to OPEB Fund	-	12,858	13,501	14,176	14,885	15,629	16,410	17,231	18,092	18,997	19,947	20,944	20,944	Medical & Dental In
Subtotal	-	31,142	32,882	34,720	36,661	38,712	40,879	43,167	45,585	48,139	50,837	53,688		
Administration														
Wages-Admin	25,528	26,050	26,571	27,102	27,644	28,197	28,761	29,337	29,923	30,522	31,132	31,755	31,755	Wages & Salaries
FICA	2,005	1,993	2,033	2,074	2,115	2,157	2,200	2,244	2,289	2,335	2,382	2,429	2,429	Wages & Salaries
OPEB	-	-	-	-	-	-	-	-	-	-	-	-	-	Medical & Dental In
Retirement	17,698	-	-	-	-	-	-	-	-	-	-	-	-	Medical & Dental In
Supplies-O	-	300	111	139	137	172	140	147	149	152	147	149	149	Avg 4 prior yrs
Postage	-	1,000	1,020	1,040	1,061	1,082	1,104	1,126	1,149	1,172	1,195	1,219	1,219	General inflation
Audit	2,077	2,077	2,119	2,161	2,204	2,248	2,293	2,339	2,386	2,434	2,482	2,532	2,532	General inflation
Contr Services	200	2,400	2,448	2,497	2,547	2,598	2,650	2,703	2,757	2,812	2,868	2,926	2,926	General inflation
Memberships & Dues	-	100	102	104	106	108	110	113	115	117	120	122	122	General inflation
Conferences & Workshops	90	400	408	416	424	433	442	450	459	469	478	488	488	General inflation
Telephone	1,145	2,757	2,812	2,868	2,926	2,984	3,044	3,105	3,167	3,230	3,295	3,361	3,361	General inflation
Comp Equip Rental	600	600	612	624	637	649	662	676	689	703	717	731	731	General inflation
Building Rental	12,500	12,500	12,875	13,261	13,659	14,069	14,491	14,926	15,373	15,835	16,310	16,799	16,799	Administration
Misc	-	2,416	604	755	944	1,180	871	937	983	993	946	965	965	Avg 4 prior yrs
Subtotal	61,844	52,593	51,714	53,042	54,405	55,878	56,768	58,102	59,440	60,772	62,071	63,475		
Operations & Maintenance														
Wages	7,496	11,050	11,271	11,496	11,726	11,961	12,200	12,444	12,693	12,947	13,206	13,470	13,470	Wages & Salaries
Overtime Wages	267	2,243	2,288	2,334	2,380	2,428	2,476	2,526	2,577	2,628	2,681	2,734	2,734	Wages & Salaries
FICA	627	1,017	1,037	1,058	1,079	1,101	1,123	1,145	1,168	1,192	1,215	1,240	1,240	Wages & Salaries
BCBS	16,345	9,319	9,785	10,274	10,788	11,327	11,894	12,488	13,113	13,768	14,457	15,180	15,180	Medical & Dental In
Life/Dental/Disability Ins	1,350	2,305	2,420	2,541	2,668	2,802	2,942	3,089	3,243	3,406	3,576	3,755	3,755	Medical & Dental In
Worker's Comp	350	500	510	520	531	541	552	563	574	586	598	609	609	Wages & Salaries
Operating Supp	1,434	2,000	2,040	2,081	2,122	2,165	2,208	2,252	2,297	2,343	2,390	2,438	2,438	General inflation
Contr Services	30,953	3,800	3,876	3,954	4,033	4,113	4,196	4,279	4,365	4,452	4,541	4,632	4,632	General inflation
Insurance	803	900	918	936	955	974	994	1,014	1,034	1,054	1,076	1,097	1,097	General inflation
Utilities	7,985	10,000	10,400	10,816	11,249	11,699	12,167	12,653	13,159	13,686	14,233	14,802	14,802	Utilities
Repairs & Mtce	5,483	10,000	6,936	7,251	7,418	7,901	7,376	7,487	7,545	7,577	7,496	7,526	7,526	Avg 4 prior yrs
Equipment Rental	10,472	11,569	9,295	9,639	10,243	10,186	9,841	9,977	10,062	10,017	9,974	10,008	10,008	Avg 4 prior yrs
Misc	90	-	23	28	35	21	27	28	28	26	27	27	27	Avg 4 prior yrs
Depreciation Expense	-	-	-	-	-	-	-	-	-	-	-	-	-	Zero out
Capital Outlay	-	-	65,000	85,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	Custom
Subtotal	83,655	64,703	125,799	147,928	125,228	127,220	127,995	129,946	131,859	133,682	135,470	137,518		
SAW Grant														
FICA	17	-	-	-	-	-	-	-	-	-	-	-	-	Zero out
SAW Grant Misc	377,539	242,000	-	-	-	-	-	-	-	-	-	-	-	Zero out
Subtotal	377,556	242,000	-	-	-	-	-	-	-	-	-	-	-	
Debt Service														
							86,194	86,194	86,194	86,194	86,194	178,657	178,657	Custom
TOTAL SEWER EXPENDITURES	523,055	390,438	210,395	235,690	216,294	221,810	311,836	317,409	323,077	328,787	334,573	433,338		
NET REVENUES (EXPENDITURES)	(14,638)	(10,348)	(53,946)	(54,982)	(10,874)	24,420	(46,864)	(39,945)	(16,871)	40,122	80,102	20,173		

3.2. Budget Forecast: Water

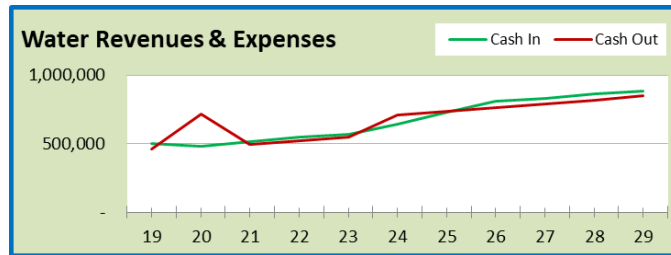
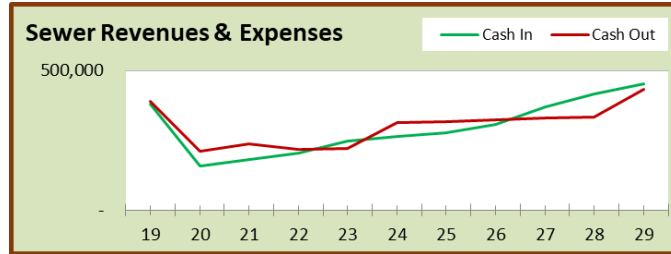
After applying debt service, capital needs and operating assumptions to the Water Fund budget, the resulting 10-year forecast was used as the basis for future revenue requirements.

		Amended												
	Actual	Budget	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Assumption
FYE 3/31:	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029		
Revenues														
CONNECTION FEES														General inflation
WATER CHARGES-IN	356,892	396,556	387,942	412,053	438,788	455,550	516,050	590,909	653,410	672,547	696,881	714,492	714,492	Custom
WATER CHARGES-OUT	87,288	95,634	85,231	90,536	96,419	100,104	113,476	129,970	143,756	147,943	153,291	157,174	157,174	Custom
PENALTIES-UTILITY BILLS	7,049	6,000	6,120	6,242	6,367	6,495	6,624	6,757	6,892	7,030	7,171	7,314	7,314	General inflation
INTEREST INCOME	2,476	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	No change
HYDRANT RENTAL	154	154	154	154	154	154	154	154	154	154	154	154	154	No change
MISCELLANEOUS	4,068	-	1,204	1,505	1,694	1,101	1,376	1,419	1,397	1,323	1,379	1,379	1,379	Avg 4 prior yrs
TOTAL REVENUES	457,927	499,544	481,850	511,690	544,622	564,603	638,879	730,409	806,810	830,197	860,075	881,713	881,713	
Expenditures														
Administration														
WAGES-ADMIN	50,827	50,436	51,445	52,474	53,523	54,594	55,685	56,799	57,935	59,094	60,276	61,481	61,481	Wages & Salaries
METER READING (686)	-	-	-	-	-	-	-	-	-	-	-	-	-	Wages & Salaries
SALARY-WATER BOARD REP	420	420	428	437	446	455	464	473	482	492	502	512	512	Wages & Salaries
FICA	3,888	3,859	3,936	4,015	4,095	4,177	4,261	4,346	4,433	4,521	4,612	4,704	4,704	Wages & Salaries
OPEB	-	-	-	-	-	-	-	-	-	-	-	-	-	Zero out
RETIREMENT	32,653	-	-	-	-	-	-	-	-	-	-	-	-	Retirement
SUPPLIES-O	-	200	204	208	212	216	221	225	230	234	239	244	244	General inflation
POSTAGE	71	1,500	1,530	1,561	1,592	1,624	1,656	1,689	1,723	1,757	1,793	1,828	1,828	General inflation
AUDIT	2,077	2,077	2,119	2,161	2,204	2,248	2,293	2,339	2,386	2,434	2,482	2,532	2,532	General inflation
CONTR SERVICES	1,327	3,500	3,570	3,641	3,714	3,789	3,864	3,942	4,020	4,101	4,183	4,266	4,266	General inflation
MEMBERSHIPS & DUES	440	600	612	624	637	649	662	676	689	703	717	731	731	General inflation
CONFERENCES & WORKSHOPS	140	500	510	520	531	541	552	563	574	586	598	609	609	General inflation
TELEPHONE	1,647	3,514	3,584	3,656	3,729	3,804	3,880	3,957	4,036	4,117	4,200	4,284	4,284	General inflation
COMP EQUIP RENTAL	500	500	510	520	531	541	552	563	574	586	598	609	609	General inflation
BUILDING RENTAL	5,000	5,000	5,150	5,305	5,464	5,628	5,796	5,970	6,149	6,334	6,524	6,720	6,720	Administration
MISC	-	200	100	75	94	117	96	96	101	103	99	99	99	Avg 4 prior yrs
Subtotal	98,304	72,306	73,698	75,197	76,771	78,382	79,983	81,638	83,334	85,062	86,821	88,621	88,621	
Operations & Maintenance														
WAGES	23,233	31,645	32,278	32,923	33,582	34,254	34,939	35,637	36,350	37,077	37,819	38,575	38,575	Wages & Salaries
METER READING	1,543	2,448	2,497	2,547	2,598	2,650	2,703	2,757	2,812	2,868	2,926	2,984	2,984	Wages & Salaries
OVERTIME WAGES	1,862	3,000	3,060	3,121	3,184	3,247	3,312	3,378	3,446	3,515	3,585	3,657	3,657	Wages & Salaries
FICA	2,082	2,838	2,895	2,953	3,012	3,072	3,133	3,196	3,260	3,325	3,392	3,460	3,460	Wages & Salaries
BCBS	32,075	22,365	23,483	24,657	25,890	27,185	28,544	29,971	31,470	33,043	34,695	36,430	36,430	Medical & Dental Ins
LIFE/DENTAL/DISABILITY INS	3,372	5,680	5,964	6,262	6,575	6,904	7,249	7,612	7,992	8,392	8,812	9,252	9,252	Medical & Dental Ins
WORKER'S COMP	612	650	663	676	690	704	718	732	747	762	777	792	792	Wages & Salaries
OPERATING SUPP	1,906	2,500	2,550	2,601	2,653	2,706	2,760	2,815	2,872	2,929	2,988	3,047	3,047	General inflation
CONTR SERVICES	43,634	12,500	12,750	13,005	13,265	13,530	13,801	14,077	14,359	14,646	14,939	15,237	15,237	General inflation
INSURANCE	973	1,090	1,112	1,134	1,157	1,180	1,203	1,228	1,252	1,277	1,303	1,329	1,329	General inflation
UTILITIES	1,073	1,650	1,716	1,785	1,856	1,930	2,007	2,088	2,171	2,258	2,348	2,442	2,442	Utilities
PURCHASED WATER	189,348	200,000	216,000	233,280	251,942	267,059	283,082	300,067	318,071	337,156	357,385	378,828	378,828	Wholesale Water
REPAIRS & MTCE	2,551	9,379	7,483	6,853	6,566	7,570	7,118	7,027	7,070	7,196	7,103	7,099	7,099	Avg 4 prior yrs
EQUIPMENT RENTAL	14,455	15,995	12,863	13,078	14,098	14,008	13,512	13,674	13,823	13,754	13,691	13,735	13,735	Avg 4 prior yrs
MISC	45	1,000	515	393	488	599	499	495	520	528	511	514	514	Avg 4 prior yrs
CAPITAL OUTLAY	-	18,000	5,625	5,906	7,383	9,229	7,036	7,388	7,759	7,853	7,509	7,627	7,627	Avg 4 prior yrs
CAPITAL FROM AMP/CIP	-	-	245,000	-	-	-	-	-	-	-	-	-	-	Custom
CAPITAL OUTLAY - METERS	14,720	10,523	12,936	12,795	12,743	12,249	12,681	12,617	12,573	12,530	12,600	12,580	12,580	Avg 4 prior yrs
Subtotal	333,484	341,263	589,388	363,970	387,682	408,076	424,298	444,760	466,547	489,110	512,381	537,590	537,590	
Depreciation & Debt Service														
BOND PMTS-PRINCIPAL	-	-	-	-	-	-	76,664	78,964	81,333	83,773	86,286	88,875	88,875	Custom
BOND PAYMENT INTEREST	333	-	-	-	-	-	61,800	59,500	57,131	54,691	52,178	49,589	49,589	Custom
PAYING AGENT FEES	175	-	-	-	-	-	-	-	-	-	-	-	-	No change
Subtotal	508	-	-	-	-	-	138,464	138,464	138,464	138,464	138,464	138,464	138,464	
Contrib to Other Funds														
TRANS TO RETIREMENT FUND	-	36,568	38,762	41,088	43,553	46,166	48,936	51,872	54,985	58,284	61,781	65,488	65,488	Retirement
TRANSFER TO FUND EQUITY	-	-	-	-	-	-	-	-	-	-	-	-	-	Zero out
TRANSFER TO OPEB FUND	-	12,858	13,501	14,176	14,885	15,629	16,410	17,231	18,092	18,997	19,947	20,944	20,944	Medical & Dental Ins
Subtotal	-	49,426	52,263	55,264	58,438	61,795	65,347	69,103	73,077	77,281	81,728	86,432	86,432	
TOTAL WATER EXPENDITURES	432,295	462,995	715,349	494,431	522,891	548,254	708,092	733,966	761,423	789,917	819,394	851,107	851,107	
NET REVENUES (EXPENDITURES)	25,632	36,549	(233,499)	17,260	21,731	16,350	(69,213)	(3,557)	45,387	40,280	40,682	30,606	30,606	

3.3. Revenue Required from Rates

Revenue from rates should be adequate to cover the cash needs of each utility fund, less any non-rate revenues. Additionally, cash reserve targets need to be considered, and revenue requirements need to

be adjusted to account for excesses or shortfalls in cash reserves. As seen below, the recommended rates are sufficient to cover the cash needs of the water and sewer utilities for most years included in the rate analysis. The imbalance between revenues and expenditures in most years reflects the highly variable costs of capital and debt service, compared to the more stable increase in rate revenues.



3.4. Rate Requirements: Sewer

Existing rates summarized in Section 2.5 highlight the difference between the sewer and water rate structures. Sewer is based almost entirely on a flat quarterly charge which includes 30 units of metered water usage. The minimum water usage charge is based on five units, and the water rates include a RTS charge. These discrepancies were discussed and addressed in the developed rate recommendations for sewer, which now include a fixed quarterly RTS charge, a minimum usage charge based on five units and a commodity charge for any usage over the minimum. This should result in a more uniform rate design that reflects industry standards for allocating utility costs to customers. Under this approach, larger users are responsible for a larger portion of the fixed costs of the system. This more proportional allocation of costs equitably spreads costs across different users.

The estimated rates required to fund sewer operations, capital and debt over the next ten years are based on the three charges noted above:

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Quarterly SEWER RTS											
5/8 inch	\$ -	\$ 24.20	\$ 27.31	\$ 30.21	\$ 36.13	\$ 38.86	\$ 41.06	\$ 45.81	\$ 57.21	\$ 65.86	\$ 71.67
3/4 inch	\$ -	\$ 24.20	\$ 27.31	\$ 30.21	\$ 36.13	\$ 38.86	\$ 41.06	\$ 45.81	\$ 57.21	\$ 65.86	\$ 71.67
1 inch	\$ -	\$ 36.30	\$ 40.96	\$ 45.31	\$ 54.19	\$ 58.30	\$ 61.60	\$ 68.72	\$ 85.82	\$ 98.80	\$ 107.51
1.25 inch	\$ -	\$ 96.80	\$ 109.22	\$ 120.83	\$ 144.50	\$ 155.46	\$ 164.26	\$ 183.25	\$ 228.84	\$ 263.46	\$ 286.70
1.5 inch	\$ -	\$ 121.00	\$ 136.53	\$ 151.04	\$ 180.63	\$ 194.32	\$ 205.32	\$ 229.06	\$ 286.05	\$ 329.32	\$ 358.37
2 inch	\$ -	\$ 193.60	\$ 218.45	\$ 241.66	\$ 289.00	\$ 310.92	\$ 328.52	\$ 366.50	\$ 457.68	\$ 526.91	\$ 573.39
3 inch	\$ -	\$ 363.00	\$ 409.59	\$ 453.11	\$ 541.88	\$ 582.97	\$ 615.97	\$ 687.19	\$ 858.15	\$ 987.96	\$ 1,075.12
4 inch	\$ -	\$ 605.00	\$ 682.65	\$ 755.18	\$ 903.13	\$ 971.61	\$ 1,026.61	\$ 1,145.31	\$ 1,430.26	\$ 1,646.59	\$ 1,791.86
6 inch	\$ -	\$ 1,210.01	\$ 1,365.31	\$ 1,510.35	\$ 1,806.27	\$ 1,943.22	\$ 2,053.23	\$ 2,290.62	\$ 2,860.51	\$ 3,293.19	\$ 3,583.72
8 inch	\$ -	\$ 1,936.01	\$ 2,184.50	\$ 2,416.56	\$ 2,890.03	\$ 3,109.16	\$ 3,285.17	\$ 3,664.99	\$ 4,576.82	\$ 5,269.10	\$ 5,733.95
Min Charge: SEWER	\$ 42.00	\$ 10.20	\$ 12.55	\$ 15.30	\$ 18.60	\$ 20.10	\$ 20.75	\$ 22.55	\$ 25.45	\$ 27.25	\$ 30.25
Commodity Charge	\$ 0.50	\$ 2.04	\$ 2.51	\$ 3.06	\$ 3.72	\$ 4.02	\$ 4.15	\$ 4.51	\$ 5.09	\$ 5.45	\$ 6.05

3.5. Rate Requirements: Water

The structure of existing water rates and charges is within the industry standard framework. The only change recommended to the water rate structure was to move the RTS meter-based charges to the AWWA standard meter ratios. Current charges are based on meter ratios developed many years ago, and there is no record of the basis for using the current ratios. By moving to AWWA standard ratios, the Village will be more in line with established variances based on meter size. Current and recommended meter ratios are summarized below. The sewer RTS charges above use the AWWA meter ratios as well.

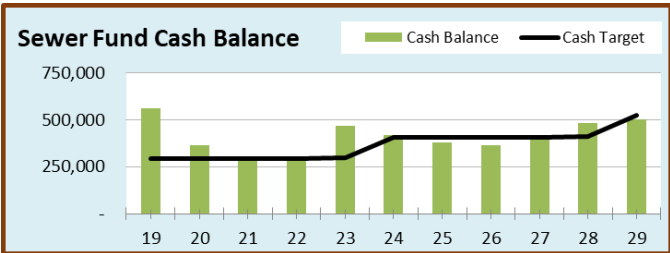
	AWWA	St. Charles
5/8 inch	1.00	1.00
3/4 inch	1.00	1.24
1 inch	1.50	1.43
1.25 inch	4.00	2.08
1.5 inch	5.00	2.66
2 inch	8.00	3.85
3 inch	15.00	7.03
4 inch	25.00	10.56
6 inch	50.00	14.80
8 inch	80.00	17.66

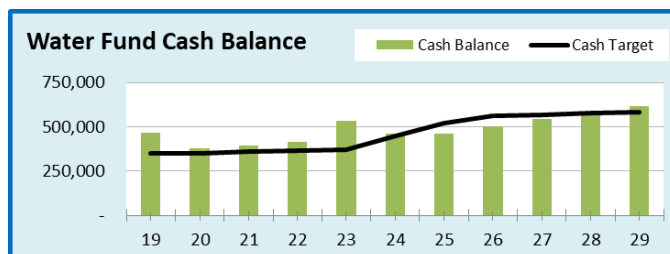
The estimated rate schedule for water is summarized below:

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Quarterly WATER RTS											
5/8 inch	\$ 41.76	\$ 45.33	\$ 48.75	\$ 52.61	\$ 54.75	\$ 68.07	\$ 80.53	\$ 92.15	\$ 92.99	\$ 95.95	\$ 99.13
3/4 inch	\$ 51.62	\$ 45.33	\$ 48.75	\$ 52.61	\$ 54.75	\$ 68.07	\$ 80.53	\$ 92.15	\$ 92.99	\$ 95.95	\$ 99.13
1 inch	\$ 59.79	\$ 67.99	\$ 73.13	\$ 78.92	\$ 82.13	\$ 102.10	\$ 120.80	\$ 138.22	\$ 139.49	\$ 143.93	\$ 148.70
1.25 inch	\$ 87.02	\$ 181.30	\$ 195.00	\$ 210.45	\$ 219.01	\$ 272.27	\$ 322.12	\$ 368.58	\$ 371.97	\$ 383.80	\$ 396.53
1.5 inch	\$ 111.08	\$ 226.63	\$ 243.75	\$ 263.07	\$ 273.76	\$ 340.34	\$ 402.65	\$ 460.73	\$ 464.96	\$ 479.75	\$ 495.67
2 inch	\$ 160.73	\$ 362.60	\$ 390.01	\$ 420.90	\$ 438.02	\$ 544.54	\$ 644.24	\$ 737.17	\$ 743.93	\$ 767.60	\$ 793.07
3 inch	\$ 293.45	\$ 679.88	\$ 731.26	\$ 789.20	\$ 821.29	\$ 1,021.01	\$ 1,207.96	\$ 1,382.19	\$ 1,394.87	\$ 1,439.26	\$ 1,487.01
4 inch	\$ 440.91	\$ 1,133.13	\$ 1,218.77	\$ 1,315.33	\$ 1,368.82	\$ 1,701.68	\$ 2,013.27	\$ 2,303.64	\$ 2,324.79	\$ 2,398.76	\$ 2,478.34
6 inch	\$ 617.86	\$ 2,266.26	\$ 2,437.55	\$ 2,630.65	\$ 2,737.65	\$ 3,403.36	\$ 4,026.53	\$ 4,607.29	\$ 4,649.58	\$ 4,797.52	\$ 4,956.69
8 inch	\$ 737.30	\$ 3,626.01	\$ 3,900.07	\$ 4,209.04	\$ 4,380.24	\$ 5,445.38	\$ 6,442.45	\$ 7,371.66	\$ 7,439.32	\$ 7,676.03	\$ 7,930.70
Min Charge: WATER	\$ 26.38	\$ 24.00	\$ 25.20	\$ 26.50	\$ 27.45	\$ 28.20	\$ 31.05	\$ 32.85	\$ 34.70	\$ 36.15	\$ 36.70
Commodity charge:	\$ 4.64	\$ 4.80	\$ 5.04	\$ 5.30	\$ 5.49	\$ 5.64	\$ 6.21	\$ 6.57	\$ 6.94	\$ 7.23	\$ 7.34

3.6. Impact on Cash Reserves

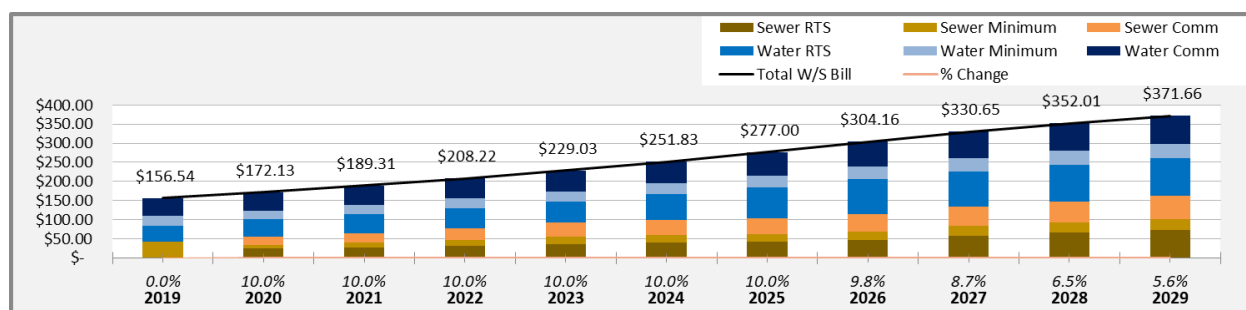
The revenue and expenditure charts shown in Section 3.3, above, illustrate the expected shortfalls and excesses in each fund over the forecast period. The Village’s current strong cash position will allow the Village to smooth rates over time. In years when expenditures exceed revenues, cash reserves will be used to fund operations, capital and debt. As rates increase each year, the Village can expect some years in which revenues exceed expenditures. In these years, cash reserves will be replenished. The following charts illustrate forecasted cash balances in each fund:





3.5. Impact on Customers

It is important to consider the impact of rate changes on customers, as well as on the utility’s finances. By evaluating both the sewer and water funds, the Village was able to understand the impact on customers’ total bill. Every effort was made to minimize the impact on customers while also ensuring the integrity, safety and quality of both utilities. The chart below illustrates the expected 10% per year increase in combined water and sewer rates for the average Village residential customer for the next seven years, followed by a gradual moderation of rate increases in later years. While this level of annual increase may seem high, it is important to remember that rates in the Village have not increased in 15 years. The accumulation of deferred maintenance must be addressed to avoid more drastic financial impacts to the utilities and the customers they serve.

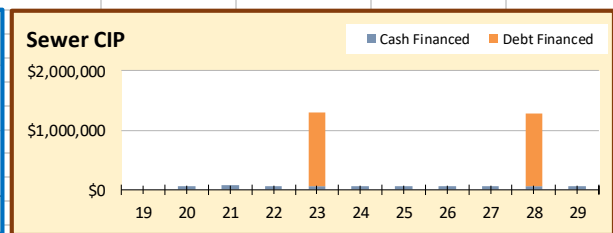
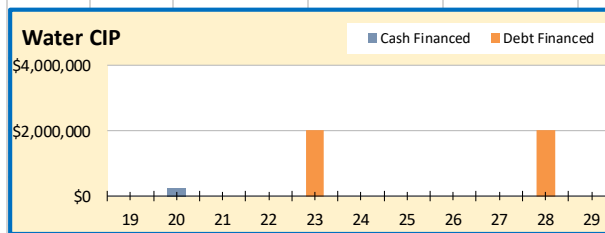
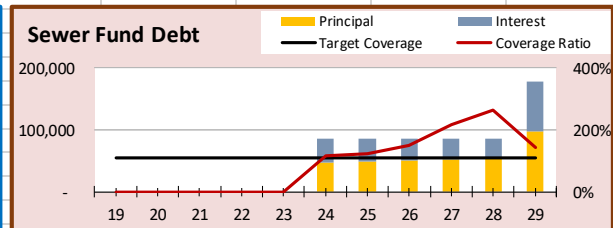
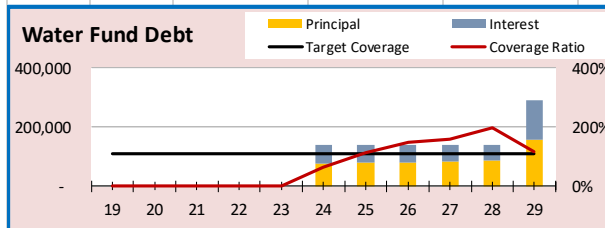
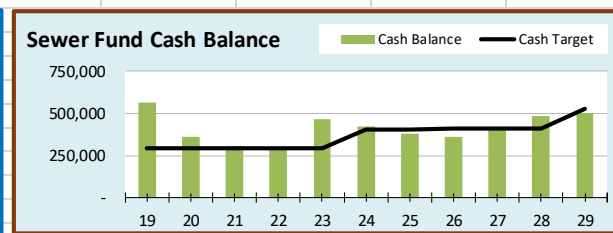
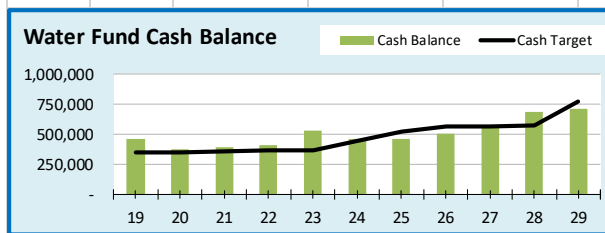
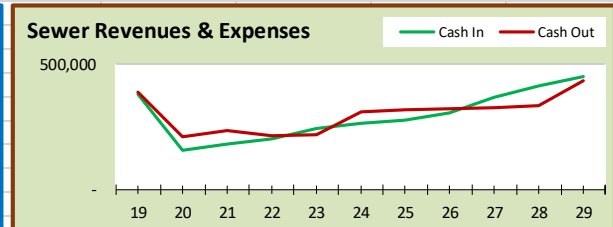
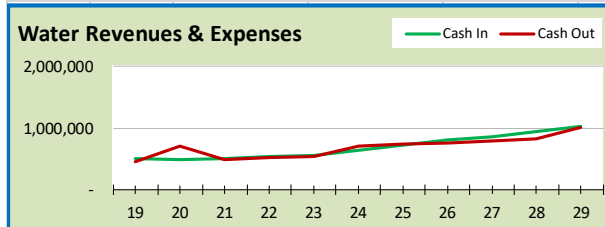
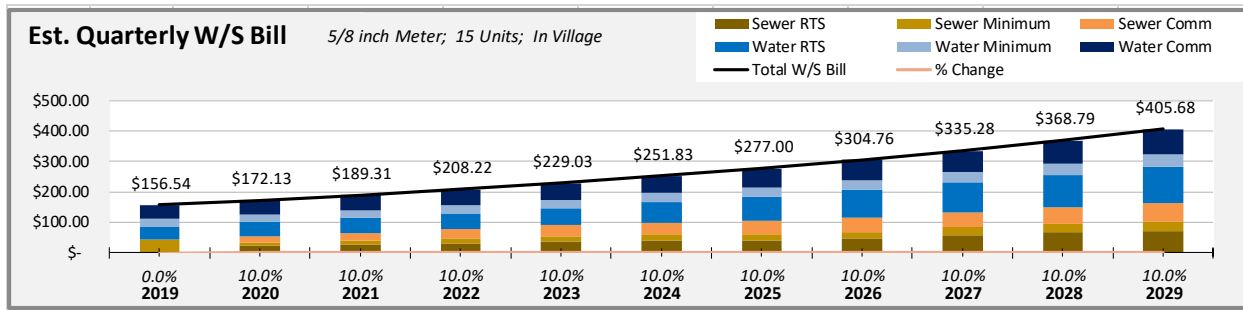


Customers with larger meters or higher usage, or those served by only one utility, will be impacted differently, depending on each customer’s individual characteristics. This rate forecast illustrates only a typical residential customer.

The rate trajectory illustrated above is based on assumptions related to annual operating expenditures, cost of capital and debt financing options, as well as to customer base and usage. It is possible rates will be higher or lower than initially forecast.

3.6. Alternative Scenarios

Throughout this study many scenarios were evaluated, including different rate structures, higher and lower levels of service, timing of debt issuance and different operation assumptions. In the end, the most significant alternative scenario related to the potential for a second bond issue to fund a second phase of water system improvements. The impact of a second water bond in 2028, in the amount of \$2.0M, would require several additional years of 10% increases to generate the cash needed to fund the higher debt service. This scenario is summarized in the following charts:



SECTION 4. CONCLUSION AND RECOMMENDATIONS

At the conclusion of the financial study, the Village Council was provided with the findings and recommendations of the analysis as described in this report.

4.1. Rate Adoption

In response to the financial analysis and rate recommendations of this study, the Village Council approved a motion to adopt the recommended 5-year rate plan at its September 11, 2019 regular meeting.

This rate adoption is the first step in complying with the recommendations of the financial analysis and rate study performed in compliance with the SAW program.

4.2. Future Action Required

The Village is encouraged to annually update and review the rate model to ensure revenue requirements will be achieved for at least the next five-year period. In response to this recommendation, as part of its rate adoption the Village moved to annually review and revise rates to ensure they remain at an appropriate level to fund operations, capital and debt service, as well as maintain adequate reserves. As necessary, rates should be modified to meet the cash needs of the operating budget and the cash reserve targets of the sewer fund. At a minimum, rates should be adjusted annually to reflect the inflationary cost increases associated with operating the sewer utility.